

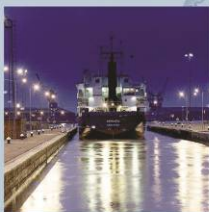
Joint Nature Conservation Committee

**Developing the Evidence Base for Impact Assessments for
Recommended dSACs and dSPAs
Appendix G: Site Assessment Documents
for dSACs and dSPAs**

Report R.2462

August 2015

Creating sustainable solutions for the marine environment



Page intentionally left blank

Joint Nature Conservation Committee

Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs

Appendix G: Site Assessment Documents for dSACs and dSPAs

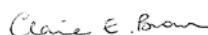


Date: August 2015

Project Ref: R/4321/1

Report No: R.2462

© ABP Marine Environmental Research Ltd

Version	Details of Change	Date
1	Issue for Client Comment	18.06.2015
2	Issue after Review	27.07.2015
3	Issue after SNCB Review	11.08.2015

Document Authorisation		Signature	Date
Project Manager:	C E Brown		11.08.2015
Quality Manager:	S F Walmsley		11.08.2015
Project Director:	S C Hull		11.08.2015

ABP Marine Environmental Research Ltd

Quayside Suite, Medina Chambers, Town Quay, Southampton, Hampshire SO14 2AQ

Tel: +44 (0) 23 8071 1840
Web: www.abpmer.co.uk

Fax: +44 (0) 23 8071 1841
Email: enquiries@abpmer.co.uk

ABPmer is certified by:



Disclaimer:

- *Any 'Draft' issue of this report, and any information contained therein, may be subject to updates and clarifications on the basis of any review comments before 'Final' issue. All content should therefore be considered provisional, and should not be disclosed to third parties without seeking prior clarification from ABP Marine Environmental Research Ltd ("ABPmer") of the suitability of the information for the intended disclosure and should not be relied upon by the addressee or any other person.*
- *Unless previously agreed between the addressee and ABPmer, in writing, the 'Final' issue of this report can be relied on by the addressee only. ABPmer accepts no liability for the use by or reliance on this report or any of the results or methods presented in this report by any party that is not the addressee of the report. In the event the addressee discloses the report to any third party, the addressee shall make such third party aware that ABPmer shall not be liable to such third party in relation to the contents of the report and shall indemnify ABPmer in the event that ABPmer suffers any loss or damage as a result of the addressee failing to make such third party so aware.*
- *Sections of this report rely on data supplied by or drawn from third party sources. Unless previously agreed between the addressee and ABPmer, in writing, ABPmer accepts no liability for loss or damage suffered by the addressee or any third party as a result of any reliance on third party data contained in the report or on any conclusions drawn by ABPmer which are based on such third party data.*

Appendix G

Site Assessment Documents for dSACs and dSPAs



Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs

Appendix G: Site Assessment Documents for dSACs and dSPAs

Contents

	Page
G.1 North Minch dSAC [NOM].....	11
G.1.1 Site Summary.....	11
G.1.1.1 Summary of Costs and Benefits.....	12
G.1.2 Human Activity Summaries.....	14
G.1.2.1 Human Activities that Would Be Impacted by Designation of the Site	14
G.1.2.2 Human Activities that Would Benefit from Designation of the Site	16
G.1.2.3 Human Activities that Would Be Unaffected by Designation of the Site	16
G.1.3 Social and Distributional Analysis of Impacts from Designation of the Site	17
G.1.4 Anticipated Impacts to Ecosystem Services	18
G.2 Southern Sea of Hebrides dSAC [SSH].....	21
G.2.1 Site Summary.....	21
G.2.1.1 Summary of Costs and Benefits.....	22
G.2.2 Human Activity Summaries.....	24
G.2.2.1 Human Activities that Would Be Impacted by Designation of the Site	24
G.2.2.2 Human Activities that Would Benefit from Designation of the Site	27
G.2.2.3 Human Activities that Would Be Unaffected by Designation of the Site	27
G.2.3 Social and Distributional Analysis of Impacts from Designation of the Site	28
G.2.4 Anticipated Impacts to Ecosystem Services	29
G.3 North Channel and Outer Solway dSAC [NCS]	33
G.3.1 Site Summary.....	33
G.3.1.1 Summary of Costs and Benefits.....	34
G.3.2 Human Activity Summaries.....	36
G.3.2.1 Human Activities that Would Be Impacted by Designation of the Site	36
G.3.2.2 Human Activities that Would Benefit from Designation of the Site	41
G.3.2.3 Human Activities that Would Be Unaffected by Designation of the Site	41
G.3.3 Social and Distributional Analysis of Impacts from Designation of the Site	42
G.3.4 Anticipated Impacts to Ecosystem Services	43
G.4 North Anglesey Marine / Gogledd Môn Forol dSAC [NAM]	47
G.4.1 Site Summary.....	47
G.4.1.1 Summary of Costs and Benefits.....	48
G.4.2 Human Activity Summaries.....	50
G.4.2.1 Human Activities that Would Be Impacted by Designation of the Site	50
G.4.2.2 Human Activities that Would Benefit from Designation of the Site	54
G.4.2.3 Human Activities that Would Be Unaffected by Designation of the Site	54
G.4.3 Social and Distributional Analysis of Impacts from Designation of the Site	55
G.4.4 Anticipated Impacts to Ecosystem Services	56

G.5	West Wales Marine / Gorllewin Cymru Forol dSAC [WWM]	60
G.5.1	Site Summary	60
G.5.1.1	Summary of Costs and Benefits	61
G.5.2	Human Activity Summaries	63
G.5.2.1	Human Activities that Would Be Impacted by Designation of the Site	63
G.5.2.2	Human Activities that Would Benefit from Designation of the Site	67
G.5.2.3	Human Activities that Would Be Unaffected by Designation of the Site	67
G.5.3	Social and Distributional Analysis of Impacts from Designation of the Site	68
G.5.4	Anticipated Impacts to Ecosystem Services	69
G.6	Bristol Channel Approaches / Dynesfeydd Môr Hafren dSAC [BCA]	73
G.6.1	Site Summary	73
G.6.1.1	Summary of Costs and Benefits	74
G.6.2	Human Activity Summaries	76
G.6.2.1	Human Activities that Would Be Impacted by Designation of the Site	76
G.6.2.2	Human Activities that Would Benefit from Designation of the Site	79
G.6.2.3	Human Activities that Would Be Unaffected by Designation of the Site	79
G.6.3	Social and Distributional Analysis of Impacts from Designation of the Site	80
G.6.4	Anticipated Impacts to Ecosystem Services	81
G.7	Southern North Sea dSAC [SNS]	85
G.7.1	Site Summary	85
G.7.1.1	Summary of Costs and Benefits	86
G.7.2	Human Activity Summaries	89
G.7.2.1	Human Activities that Would Be Impacted by Designation of the Site	89
G.7.2.2	Human Activities that Would Benefit from Designation of the Site	96
G.7.2.3	Human Activities that Would Be Unaffected by Designation of the Site	96
G.7.3	Social and Distributional Analysis of Impacts from Designation of the Site	97
G.7.4	Anticipated Impacts to Ecosystem Services	98
G.8	Outer Moray Firth dSAC [OMF]	103
G.8.1	Site Summary	103
G.8.1.1	Summary of Costs and Benefits	104
G.8.2	Human Activity Summaries	106
G.8.2.1	Human Activities that Would Be Impacted by Designation of the Site	106
G.8.2.2	Human Activities that Would Benefit from Designation of the Site	111
G.8.2.3	Human Activities that Would Be Unaffected by Designation of the Site	111
G.8.3	Social and Distributional Analysis of Impacts from Designation of the Site	112
G.8.4	Anticipated Impacts to Ecosystem Services	113
G.9	Anglesey Terns / Morwenoliaid Ynys Mon dSPA [ATN]	117
G.9.1	Site Summary	117
G.9.1.1	Summary of Costs and Benefits	118
G.9.2	Human Activity Summaries	120
G.9.2.1	Human Activities that Would Be Impacted by Designation of the Site	120
G.9.2.2	Human Activities that Would Benefit from Designation of the Site	121
G.9.2.3	Human Activities that Would Be Unaffected by Designation of the Site	121
G.9.3	Social and Distributional Analysis of Impacts from Designation of the Site	122
G.9.4	Anticipated Impacts to Ecosystem Services	123

G.10	Northern Cardigan Bay / Gogledd Bae Ceredigion dSPA [NCB]	127
G.10.1	Site Summary	127
G.10.1.1	Summary of Costs and Benefits	128
G.10.2	Human Activity Summaries	130
G.10.2.1	Human Activities that Would Be Impacted by Designation of the Site	130
G.10.2.2	Human Activities that Would Benefit from Designation of the Site	133
G.10.2.3	Human Activities that Would Be Unaffected by Designation of the Site	133
G.10.3	Social and Distributional Analysis of Impacts from Designation of the Site	134
G.10.4	Anticipated Impacts to Ecosystem Services	135
G.11	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro dSPA [SSS]	138
G.11.1	Site Summary	138
G.11.1.1	Summary of Costs and Benefits	139
G.11.2	Human Activity Summaries	141
G.11.2.1	Human Activities that Would Be Impacted by Designation of the Site	141
G.11.2.2	Human Activities that Would Benefit from Designation of the Site	144
G.11.2.3	Human Activities that Would Be Unaffected by Designation of the Site	144
G.11.3	Social and Distributional Analysis of Impacts from Designation of the Site	145
G.11.4	Anticipated Impacts to Ecosystem Services	146

Tables

(Table titles are the same for each section)

1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives
- 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)
- 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)
- 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)
- 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)
- 3a. Aquaculture (Finfish)
- 3b. Commercial Fisheries
4. Human Activities that Would Benefit from Designation of the Site
5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site Activity
- 6a. Social Impacts
- 6b. Distribution of Social Impacts – Location, Age and Gender
- 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups
7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC

Figures

G.1.1	Human Activities which Occur within the Draft SAC: North Minch (Aquaculture, Ports and Harbours, Recreational Boating, Military)	19
G.1.2	Fishing Activities which Occur within the Draft SAC: North Minch	20
G.2.1	Human Activities which Occur within the Draft SAC: Southern Sea of Hebrides (Aquaculture, Ports and Harbours, Offshore Renewables)	30
G.2.2	Human Activities which Occur within the Draft SAC: Southern Sea of Hebrides (Recreational Boating, Military)	31
G.2.3	Fishing Activities which Occur within the Draft SAC: Southern Sea of Hebrides	32
G.3.1	Human Activities which Occur within the Draft SAC: North Channel and Outer Solway (Aquaculture, Offshore Renewables, Recreational Boating)	44
G.3.2	Human Activities which Occur within the Draft SAC: North Channel and Outer Solway (Ports and Harbours, Oil and Gas, Military)	45
G.3.3	Fishing Activities which Occur within the Draft SAC: North Channel and Outer Solway	46
G.4.1	Human Activities which Occur within the Draft SAC: North Anglesey Marine / Gogledd Môn Forol (Ports and Harbours, Oil and Gas, Military)	57
G.4.2	Human Activities which Occur within the Draft SAC: North Anglesey Marine / Gogledd Môn Forol (Offshore Renewables, Recreational Boating)	58
G.4.3	Fishing Activities which Occur within the Draft SAC: North Anglesey Marine / Gogledd Môn Forol	59
G.5.1	Human Activities which Occur within the Draft SAC: West Wales Marine / Gorllewin Cymru Forol (Aggregates, Ports and Harbours, Oil and Gas, Offshore Renewables)	70
G.5.2	Human Activities which Occur within the Draft SAC: West Wales Marine / Gorllewin Cymru Forol (Recreational Boating, Military)	71
G.5.3	Fishing Activities which Occur within the Draft SAC: West Wales Marine / Gorllewin Cymru Forol	72
G.6.1	Human Activities which Occur within the Draft SAC: Bristol Channel Approaches / Dynesfeydd Môr Hafren (Ports and Harbours, Oil and Gas, Military)	82
G.6.2	Human Activities which Occur within the Draft SAC: Bristol Channel Approaches / Dynesfeydd Môr Hafren (Aggregates, Offshore Renewables, Recreational Boating)	83
G.6.3	Fishing Activities which Occur within the Draft SAC: Bristol Channel Approaches / Dynesfeydd Môr Hafren	84
G.7.1	Human Activities which Occur within the Draft SAC: Southern North Sea (Offshore Renewables, Military)	99
G.7.2	Human Activities which Occur within the Draft SAC: Southern North Sea (Aggregates, Ports and Harbours)	100
G.7.3	Human Activities which Occur within the Draft SAC: Southern North Sea (Oil and Gas, Recreational Boating)	101
G.7.4	Fishing Activities which Occur within the Draft SAC: Southern North Sea	102
G.8.1	Human Activities which Occur within the Draft SAC: Outer Moray Firth (Aquaculture, Ports and Harbours, Oil and Gas)	114
G.8.2	Human Activities which Occur within the Draft SAC: Outer Moray Firth (Offshore Renewables, Recreational Boating, Military)	115
G.8.3	Fishing Activities which Occur within the Draft SAC: Outer Moray Firth	116

G.9.1	Human Activities which Occur within the Draft SPA: Anglesey Terns / Morwenoliaid Ynys Mon (Ports and Harbours, Oil and Gas, Offshore Renewables, Military)	124
G.9.2	Human Activities which Occur within the Draft SPA: Anglesey Terns / Morwenoliaid Ynys Mon (Recreational Boating)	125
G.9.3	Fishing Activities which Occur within the Draft SPA: Anglesey Terns / Morwenoliaid Ynys Mon	126
G.10.1	Human Activities which Occur within the Draft SPA: Northern Cardigan Bay / Gogledd Bae Ceredigion (Ports and Harbours, Oil and Gas, Recreational Boating, Military)	136
G.10.2	Fishing Activities which Occur within the Draft SPA: Northern Cardigan Bay / Gogledd Bae Ceredigion.....	137
G.11.1	Human Activities which Occur within the Draft SPA: Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro (Ports and Harbours, Oil and Gas, Offshore Renewables).....	147
G.11.2	Human Activities which Occur within the Draft SPA: Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro (Recreational Boating, Military).....	148
G.11.3	Fishing Activities which Occur within the Draft SPA: Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro.....	149

G. Scenarios for Recommended dSAC and dSPA Proposals

G.1 North Minch dSAC [NOM]

Site Area (km²): [2271.33]

G.1.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [NOM]				
Proposed Protected Features				
The North Minch site has been recognised as an area with persistent high densities of harbour porpoise. The area included within the site covers important summer habitat which emerged as one of the top 10% persistent high density areas for this season in the UK. The West Scotland Management Unit (MU) has generally high densities of porpoises on the continental shelf. Only sparse data were available for the winter season resulting in an analysis based on the summer season. The probability of presence was more closely linked to the surface sediment, and salinity. Porpoises in this region showed a peak in the probability of presence associated with areas of coarse sand and gravel and reduced densities in oceanic waters with high surface salinity (>35psu). The physical characteristics of the North Minch site are well aligned to the predictors determined from the DHI model. The site incorporates a mosaic of substrate types, including areas of coarse and mixed sediments as described. Additionally the site borders the mainland and Lewis that have freshwater influence resulting in the surface water salinity possibly being lower than that of oceanic waters found further away from the coast.				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Summer season	>2% to 15% of the UK part of the MU population	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution . However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: SNH Inshore Draft Special Area of Conservation :North Minch SAC Selection Assessment Document Version 8 (May 2015).				

G.1.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NOM]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Aquaculture (Finfish)	76	168	601
Commercial Fisheries	0	6	0
Commercial Fisheries (GVA)	0	0	1,390
Military	National Costs	National Costs	National Costs
Total Quantified Economic Costs	76	174	1,991
Non-Quantified Economic Costs			
Aquaculture (Finfish)	<ul style="list-style-type: none"> Uncertainty concerning the level and location of future planning applications. 	<ul style="list-style-type: none"> Uncertainty concerning the level and location of future planning applications. 	<ul style="list-style-type: none"> Uncertainty concerning the level and location of future planning applications.
Commercial Fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC; and Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)				[NOM]
Description	Public Sector Costs			
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)	
Quantified Public Sector Costs (Discounted)				
Preparation of Marine Management Schemes	0	0	0	
Preparation of Statutory Instruments	0	0	3	
Development of voluntary measures	0	0	0	
Site monitoring	National Costs	National Costs	National Costs	
Managing the impact of geophysical surveys	8	8	8	
Compliance and enforcement	0	0	0	
Promotion of public understanding	0	0	0	
Regulatory and advisory costs associated with licensing decisions	10	10	10	
Costs to TCE associated with potential leasing revenues foregone	0	0	0	
Total Quantified Public Sector Costs	18	18	21	
Non-Quantified Public Sector Costs				
None identified.				

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)						[NOM]
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis			
			Spatial Scale	Sector	Social Groups	
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of £1.39m direct GVA, and 4 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Scotland. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to demersal trawl/seine. Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in lower and middle income groups. X	
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/-x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.						

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)			[NOM]
Impact	Description		
Ecosystem Services Impact (Moderate and High Impacts)	Relevance	Scale of Benefits	
Non-use value	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery	
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).			

G.1.2 Human Activity Summaries

G.1.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Aquaculture (Finfish) [NOM]			
Nine aquaculture sites currently exist within the boundaries of the NOM dSAC boundary, namely Loch Ewe Poolewe, Aultbea, Isle Ewe, Ardmair, Tanera, Fada, Loch An Sal, Ghlas Mhor and Poll Loiscann. Stattic Point is the only other aquaculture site within 1km of the dSAC boundary. Six out of the ten sites within 1km of the dSAC are not currently producing fish (Loch Ewe Poolewe, Aultbea, Loch An Sal, Ghlas Mhor, Poll Loiscann and Stattic Point). The remaining four sites that are producing fish (Isle Ewe, Ardmair, Tanera and Fada) all farm salmon. (Sources: Marine Harvest (Scotland) Ltd, Wester Ross Fisheries Ltd, Scottish Sea Farms Ltd and Finfish Ltd)			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitats Regulations Assessment of new applications or extensions within or near site boundaries. 	<ul style="list-style-type: none"> Habitats Regulations Assessment of new applications or extensions within or near site boundaries; and Deployment of harbour porpoise friendly Acoustic Deterrent Devices (ADDs) when current ADDs come to the end of their life. 	<ul style="list-style-type: none"> Habitats Regulations Assessment of new applications or extensions within or near site boundaries; and Replacement of ADDs with anti-predator nets.
Description of one-off costs	<ul style="list-style-type: none"> Estimated that five applications made every five years, assuming costs fall in 2017, 2022, 2027, and 2032 - £5.2k per application. 	<ul style="list-style-type: none"> Estimated that five applications made every five years, assuming costs fall in 2017, 2022, 2027, and 2032 - £5.2k per application; and Assumed that 95% of operational sites within dSAC (4 sites) use ADDs. Estimated that one-sixth of these sites will replace ADDs each year post 2017 with harbour porpoise friendly ADDs at an additional cost of £21.6k per site (50% of sites will require porpoise friendly ADDs, i.e. 2 sites). 	<ul style="list-style-type: none"> Estimated that five applications made every five years, assuming costs fall in 2017, 2022, 2027, and 2032 - £5.2k per application; and Assume all sites using ADDs within the dSAC (4 sites) are to replace them with anti-predator nets in 2016. Average cost per site is estimated at £45k and it is assumed that nets need to be replaced every six years.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty concerning the level and location of future planning applications. 	<ul style="list-style-type: none"> Uncertainty concerning the level and location of future planning applications. 	<ul style="list-style-type: none"> Uncertainty concerning the level and location of future planning applications.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	104	234	824
Average annual costs	5	12	41
Present value of total costs (2015–2034)	76	168	601
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

Table 3b. Commercial Fisheries

[NOM]

The NOM dSAC intersects with four ICES rectangles, with the majority of the site falling within 45E4. According to ICES rectangle landings statistics, demersal trawls/seines, pots and traps, dredges, other passive gears and gears using hooks (over- 10m) and demersal trawls/seines, pots and traps, dredges, gears using hooks and other passive gears (10m and under) vessels operate within these ICES rectangles. The value of catches from the NOM dSAC site was £3,145,000 (over-10m vessels) and £1,587,600 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).

According to MMO surveillance data (2011-2013), Scottish demersal stern trawlers comprised the majority of sightings across the site.

Non-UK fishing activity (2007-2010) indicates that a minimum of 4 French (2 demersal trawlers, 1 nets and 1 line), 3 Spanish (2 line and 1 demersal trawl gear), 2 Irish (1 net and 1 pelagic gear) and 1 Faroese over-15m vessels operate within the NOM dSAC boundary.

Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.

Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.

It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">No change to existing.	<ul style="list-style-type: none">Bycatch mitigation measures (pingers) on all under-12m vessels using set nets. Seven <12m vessels estimated to fish within the site; average length of set net 550m. Unit cost of pingers £43.48/100m set net over 5 year period (non-GVA cost).Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).	<ul style="list-style-type: none">100% reduction in net gear effort across the site (GVA impact)10% reduction in mobile bottom gear effort across the site (GVA impact)10% reduction in mobile pelagic gear effort across the site (GVA impact)Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Cost of pingers £6k	<ul style="list-style-type: none">None.
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Loss of >10m fishing income (annual values, £k):<ul style="list-style-type: none">Demersal trawls/seines (241.4);Dredges (6.6).Loss of <10m fishing income (annual values, £k):<ul style="list-style-type: none">Demersal trawls/seines (18.9);Drift and set nets (0.4);Dredges (0.1).
Description of non-quantified costs	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual.	<ul style="list-style-type: none">Loss of value of catches from non-UK vessels using nets, mobile bottom contact and mobile pelagic gears in the dSAC.Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	7	0
Average annual costs	0	<1	0
Present value of total costs (2015–2034)	0	6	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	1.927
Average annual change to GVA	0	0	0.096
Present value of total change in GVA (2015–2034)	0	0	1.390
Direct and Indirect reduction in employment	0	0	4
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

G.1.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [NOM]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.1.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [NOM]	
Activity	Description
None identified.	

G.1.3 Social and Distributional Analysis of Impacts from Designation of the Site

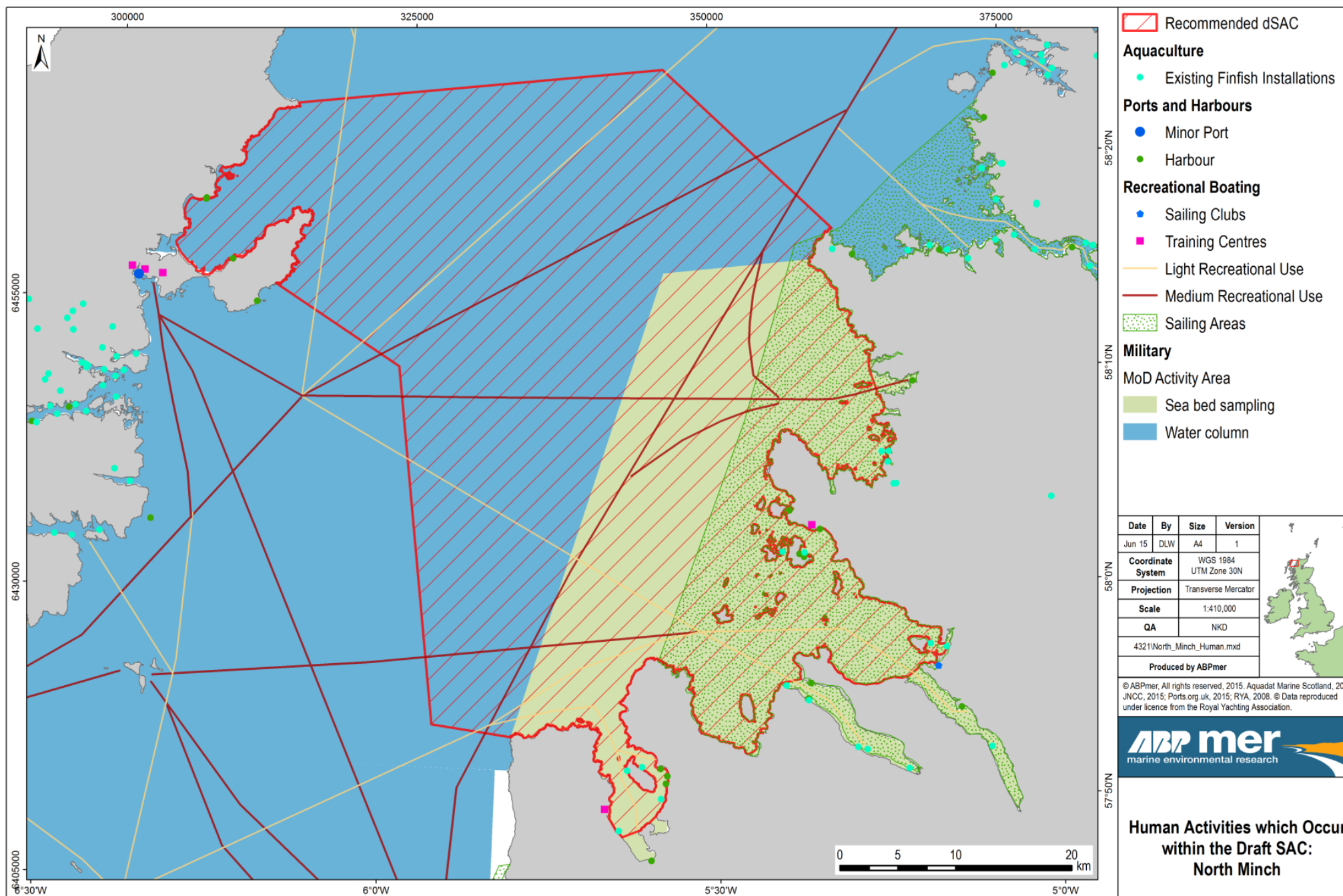
Table 6a. Social Impacts [NOM]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of £1.39m direct GVA, and 4 FTE.	Employment and community cohesion.	Risk of X
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

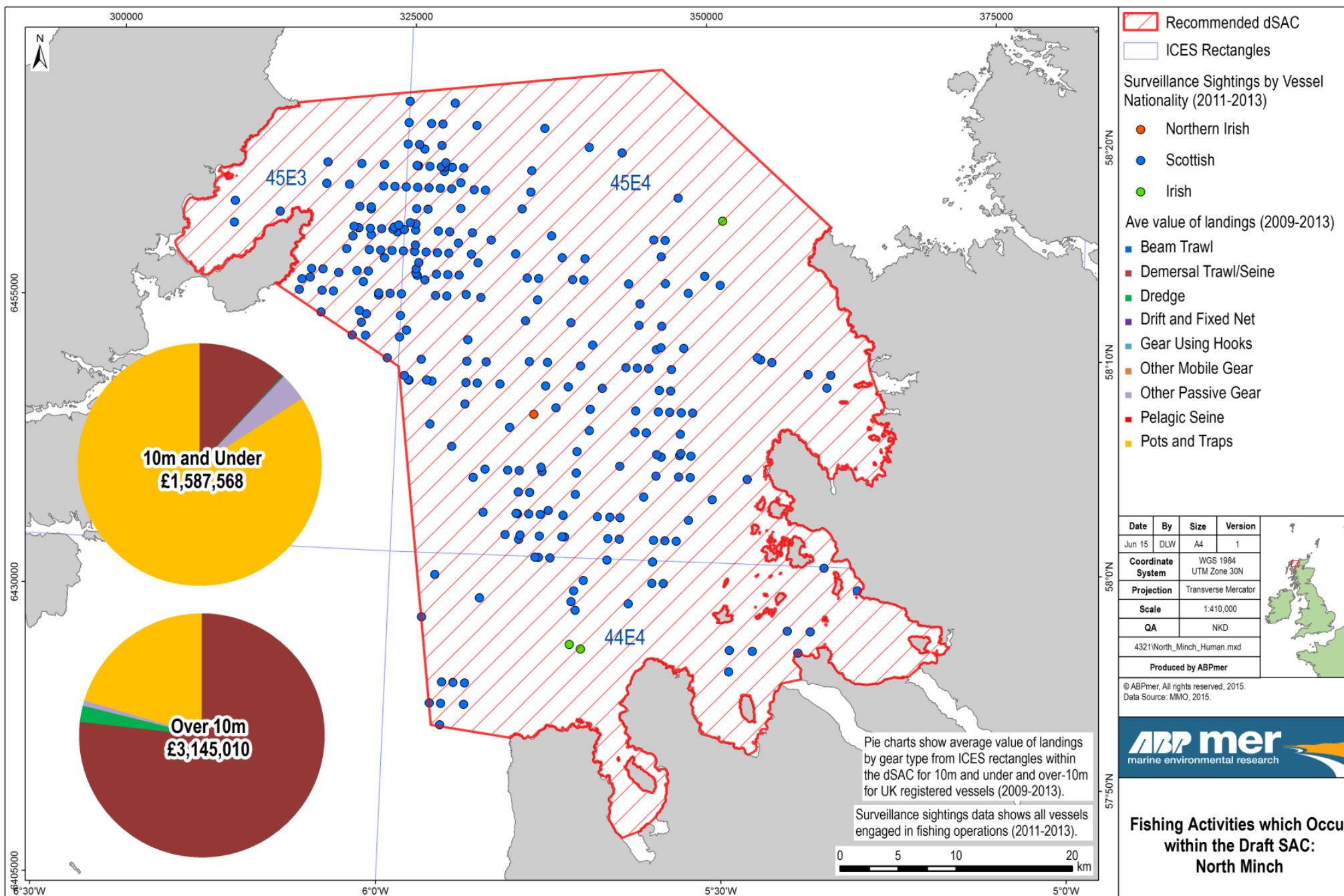
Table 6b. Distribution of Social Impacts – Location, Age and Gender [NOM]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	NW Scotland	It is not possible to associate the jobs impacts with specific ports	Rural Coastal and Island	0	Risk of X	0	Risk of X	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [NOM]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels > 10m	Demersal trawl/ Seine	Risk of X	Risk of X	0	0	0	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.1.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC									[NOM]
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence	
			Lower	Intermediate	Upper				
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate	
Fish for non-human consumption		Stocks reduced from potential maximum							
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain	
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Moderate	Minimal	High.	
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate	
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate	





G.2 Southern Sea of Hebrides dSAC [SSH]

Site Area (km²): [4768.91]

G.2.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [SSH]				
Proposed Protected Features				
The Southern Sea of Hebrides site has been recognised as an area with predicted high densities of harbour porpoise. The area included within the site covers important summer habitat which emerged as one of the top 10% persistent high density areas for this season in the UK. The West Scotland MU has generally high densities of porpoises on the continental shelf. Only sparse data were available for the winter season resulting in an analysis based on the summer season. The probability of presence was more closely linked to the surface sediment, and salinity. Porpoises in this region showed a peak in the probability of presence associated with areas of coarse sand and gravel and reduced densities in oceanic waters with high surface salinity (>35psu). The physical characteristics of the Southern Sea of Hebrides site are well aligned to the predictors determined from the DHI model for determining the probability of presence and the density of harbour porpoise. The site incorporates a mosaic of substrate types, including notable areas of coarse sediments as described, which appear to be areas of preference to harbour porpoise based on the model predictors. Additionally the site borders the mainland and is interspersed with many islands that have freshwater influence resulting in the surface water salinity possibly being lower than that of oceanic waters found further away from the coast.				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Summer season	15% to 100% of the UK part of the MU population	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution. However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: SNH Inshore Draft Special Area of Conservation: Southern Sea of Hebrides SAC Selection Assessment Document Version 8 (May 2015).				

G.2.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSH]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Aquaculture (Finfish)	153	612	2,642
Commercial Fisheries	0	0	0
Commercial Fisheries (GVA)	0	0	2,630
Military	National Costs	National Costs	National Costs
Ports and Harbours	21	21	21
Total Quantified Economic Costs	174	633	5,293
Non-Quantified Economic Costs			
Aquaculture	<ul style="list-style-type: none"> ▪ Uncertainty concerning the level and location of future planning applications; and ▪ Costs associated with increased predation and escapes. 	<ul style="list-style-type: none"> ▪ Uncertainty concerning the level and location of future planning applications; and ▪ Costs associated with increased predation and escapes. 	<ul style="list-style-type: none"> ▪ Uncertainty concerning the level and location of future planning applications; and ▪ Costs associated with increased predation and escapes.
Commercial Fisheries	<ul style="list-style-type: none"> ▪ None. 	<ul style="list-style-type: none"> ▪ Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> ▪ Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. ▪ Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Ports and Harbours	<ul style="list-style-type: none"> ▪ Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> ▪ Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> ▪ Uncertainty of the location, nature and timing of future port development activity; and ▪ Prohibition of developments involving percussive piling and explosives within 26km of the dSAC boundary.
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSH]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	0	8
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	22	22	22
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	24	24	24
Costs to TCE associated with potential leasing revenues foregone	0	0	0
Total Quantified Public Sector Costs	45	45	54
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSH]				
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis	
			Spatial Scale	Sector
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of approximately £2.63m direct GVA, and up to 7 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Scotland. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to demersal trawl/seine and dredge. Risk of impacts is to vessels >10m. X
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.				

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSH]		
Impact	Description	
Ecosystem Services Impact (Moderate and High Impacts)	Relevance	Scale of Benefits
Non-use value	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).		

G.2.2 Human Activity Summaries

G.2.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Aquaculture (Finfish)		[SSH]	
In total, 35 aquaculture sites lie within 1km of the SSH dSAC boundary (Ormsary Family Unit, Ormsary Broodstock Unit, Ormsary Hatchery, Ormsary Smolt Unit, Liath Eilean Loch Caolisport, Ardifuir, Bagh Dail Nan Cean, Shuna SW (Rubh'an Trilleachain), Lunga East Side, Poll Na Gille, Shuna Castle, Port Na Cro, Kerrera C (Cutters Rock), Kerrera A, Kerrera B, Dunstaffnage, Inch Kenneth, Lismore South, Geasgill, Knock, Scallastle, Walters (East Lismore), Lismore West, Loch Tuath, Gometra, Fishnish (A), Fishnish (B), Lochaline West Pier, Lismore North, Fiunary, Shuna, Forrester's, Kingairloch, Bloody Bay and Oronsay East), only eight lie outwith the SSH dSACs boundary (Ormsary Family Unit, Ormsary Broodstock Unit, Ormsary Hatchery, Ormsary Smolt Unit, Ardifuir, Kerrera A, Knock and Kingairloch). Of the 35 sites within 1km of the SSH dSAC, nine have been identified as non-operational, namely Ormsary Family Unit; Liath Eilean Loch Caolisport, Kerrera C (Cutters Rock), Kerrera A, Lismore South, Lochaline West Pier, Fiunary, Forrester's and Oronsay East. All operational sites farm salmon, and the Shuna Castle site farms salmon and rainbow trout. Seven sites within the SSH dSAC have been identified as being non-operational (Liath Eilean Loch Caolisport, Kerrera C (Cutters Rock), Lismore South, Lochaline West Pier, Fiunary, Forrester's, Oronsay East) leaving 20 site producing fish within the dSAC. (Source: Landcatch Natural Selection Ltd, Marine Harvest (Scotland) Ltd, Kames Fish Farming Ltd, Marine Harvest (Scotland) Ltd, Scottish Sea Farms Ltd and The Scottish Salmon Company)			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">Habitats Regulations Assessment of new applications or extensions within or near site boundaries.	<ul style="list-style-type: none">Habitats Regulations Assessment of new applications or extensions within or near site boundaries; andDeployment of harbour porpoise friendly Acoustic Deterrent Devices (ADDs) when current ADDs come to the end of their life.	<ul style="list-style-type: none">Habitats Regulations Assessment of new applications or extensions within or near site boundaries; andReplacement of ADDs with anti-predator nets.
Description of one-off costs	<ul style="list-style-type: none">Estimated that ten applications made every five years, assuming costs fall in 2017, 2022, 2027 and 2032 - £5.2k per application.	<ul style="list-style-type: none">Estimated that ten applications made every five years, assuming costs fall in 2017, 2022, 2027 and 2032 - £5.2k per application; andAssumed that 95% of operational sites within dSAC (19 sites) use ADDs. Estimated that one-sixth of these sites will replace ADDs each year post 2017 with harbour porpoise friendly ADDs at an additional cost of £21.6k per site (50% of sites will require porpoise friendly ADDs, rounded up to sites).	<ul style="list-style-type: none">Estimated that ten applications made every five years, assuming costs fall in 2017, 2022, 2027 and 2032 - £5.2k per application; andAssumed all sites using ADDs within the dSAC (19 sites) are to replace them with anti-predator nets in 2016. Average cost per site is estimated at £45k and it is assumed that nets need to be replaced every six years.
Description of recurring costs	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.
Description of non-quantified costs	<ul style="list-style-type: none">Uncertainty concerning the level and location of future planning applications.	<ul style="list-style-type: none">Uncertainty concerning the level and location of future planning applications.	<ul style="list-style-type: none">Uncertainty concerning the level and location of future planning applications.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	208	856	3,628 (£3.6 million)
Average annual costs	10	43	181 (£0.18 million)
Present value of total costs (2015–2034)	153	612	2,642 (£2.6 million)
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

Table 3b. Commercial Fisheries

SSH

The SSH dSAC intersects with six ICES rectangles, with the majority of the site falling within 41E3. According to ICES rectangle landings statistics, demersal trawls/seines, pots and traps, dredges, other passive gears and other mobile gears (over- 10m) and pots and traps, other passive gears, demersal trawls/seines and dredges (10m and under) vessels operate within these ICES rectangles. The value of catches from the SSH dSAC site was £6,399,100 (over-10m vessels) and £3,507,000 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).

According to MMO surveillance data (2011-2013), Scottish demersal stern trawlers, Scottish scallop dredgers and Scottish potter/whelkers comprised the majority of sightings across the site.

Non-UK fishing activity (2007-2010) indicates that one Irish over-15m pelagic gear vessel operates within the SSH dSAC boundary.

Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.

Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.

It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">No change to existing.	<ul style="list-style-type: none">Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).	<ul style="list-style-type: none">100% reduction in net gear effort across the site (GVA impact)10% reduction in mobile bottom gear effort across the site (GVA impact)10% reduction in mobile pelagic gear effort across the site (GVA impact)Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None	<ul style="list-style-type: none">None.
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Loss of >10m fishing income (annual values, £k):<ul style="list-style-type: none">Demersal trawls/seines (323.6);Dredges (116.7);Other mobile gears (0.6);Beam trawls (<0.1).Loss of <10m fishing income (annual values, £k):<ul style="list-style-type: none">Demersal trawls/seines (23.0);Dredges (9.8);Other mobile gears (<0.1).

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC; and Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	0	0
Average annual costs	0	0	0
Present value of total costs (2015–2034)	0	0	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	3.645
Average annual change to GVA	0	0	0.182
Present value of total change in GVA (2015–2034)	0	0	2.630
Direct and Indirect reduction in employment	0	0	7.2
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3c. Ports and Harbours [SSH]			
Glensanda is the only port located within 26km of the SSH dSAC boundary. It is assumed that the port will undertake one development involving percussive piling/explosives every five years. As it is the only port within 50km of the SSH dSAC boundary, it represents cost for the lower, intermediate and upper scenarios.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 50km of the dSAC boundary.
Description of one-off costs	<ul style="list-style-type: none"> HRA of piling/explosive activity associated with port developments within 26km of the dSAC boundary - £7.1k per development. One major port within 26km of the dSAC boundary, assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017. 	<ul style="list-style-type: none"> HRA of piling/explosive activity associated with port developments within 26km of the dSAC boundary - £7.1k per development. One major port within 26km of the dSAC boundary, assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017. 	<ul style="list-style-type: none"> HRA of piling/explosive activity associated with port developments within 26km of the dSAC boundary - £7.1k per development. One major port within 26km of the dSAC boundary, assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive piling and explosives within 26km of the SSH dSAC boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	28	28	28
Average annual costs	1	1	1
Present value of total costs (2015–2034)	21	21	21
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.2.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [SSH]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.2.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [SSH]	
Activity	Description
None identified.	

G.2.3 Social and Distributional Analysis of Impacts from Designation of the Site

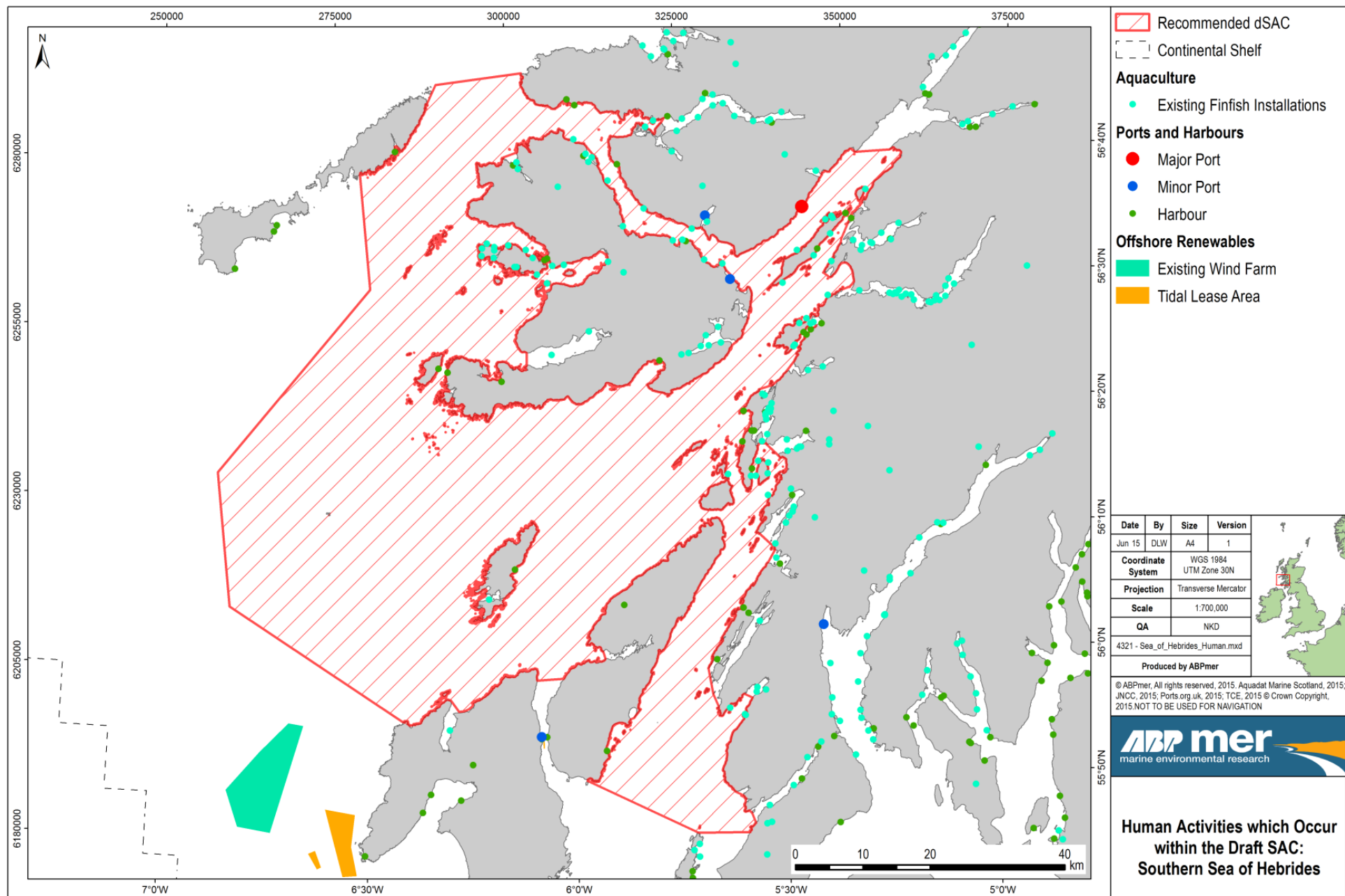
Table 6a. Social Impacts [SSH]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of approximately £2.63m direct GVA, and up to 7 FTE.	Risk to employment and community cohesion.	Risk of X
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

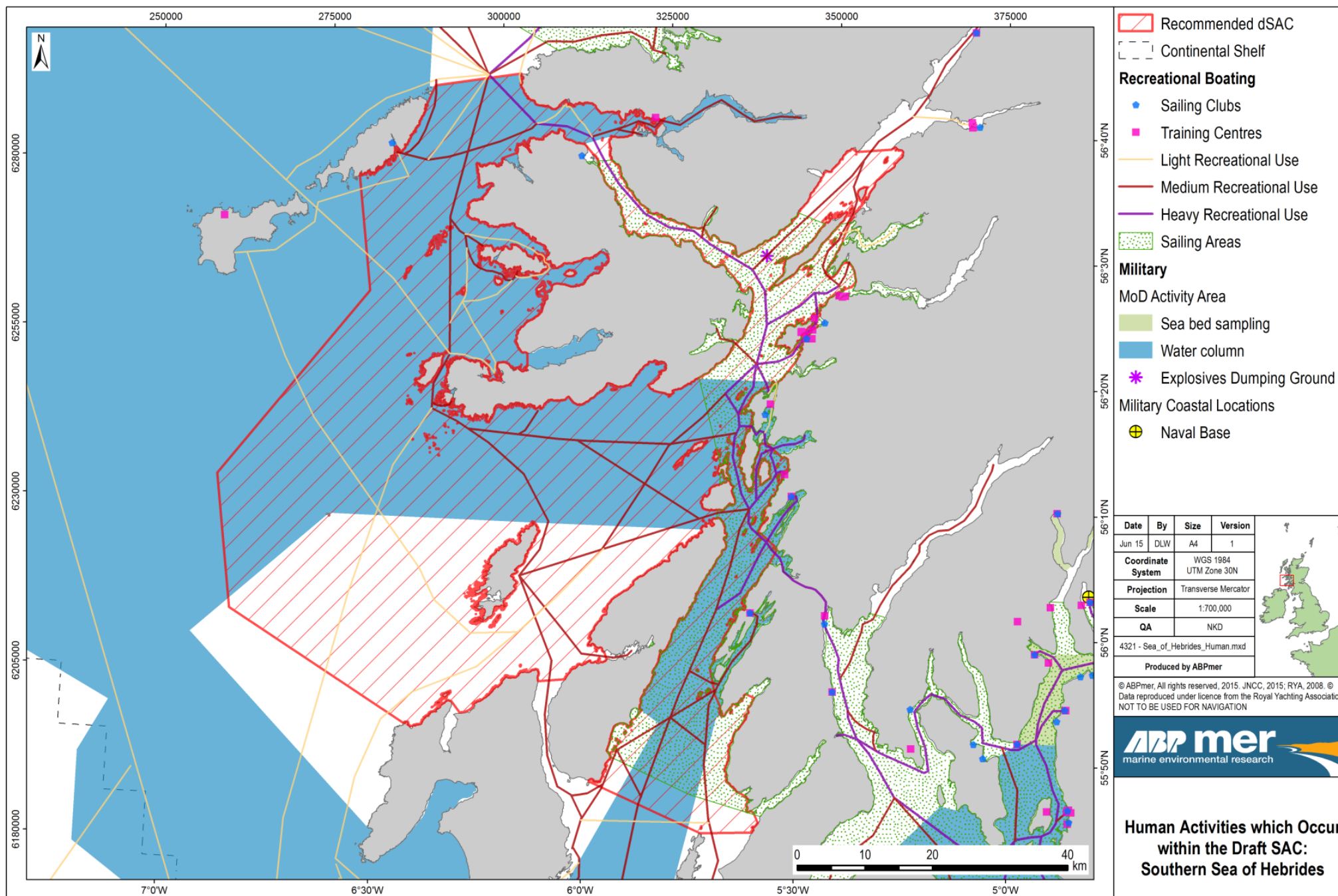
Table 6b. Distribution of Social Impacts – Location, Age and Gender [SSH]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	West Scotland	It is not possible to associate the jobs impacts with specific ports.	Rural coastal and Island	0	Risk of X	0	Risk of X	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

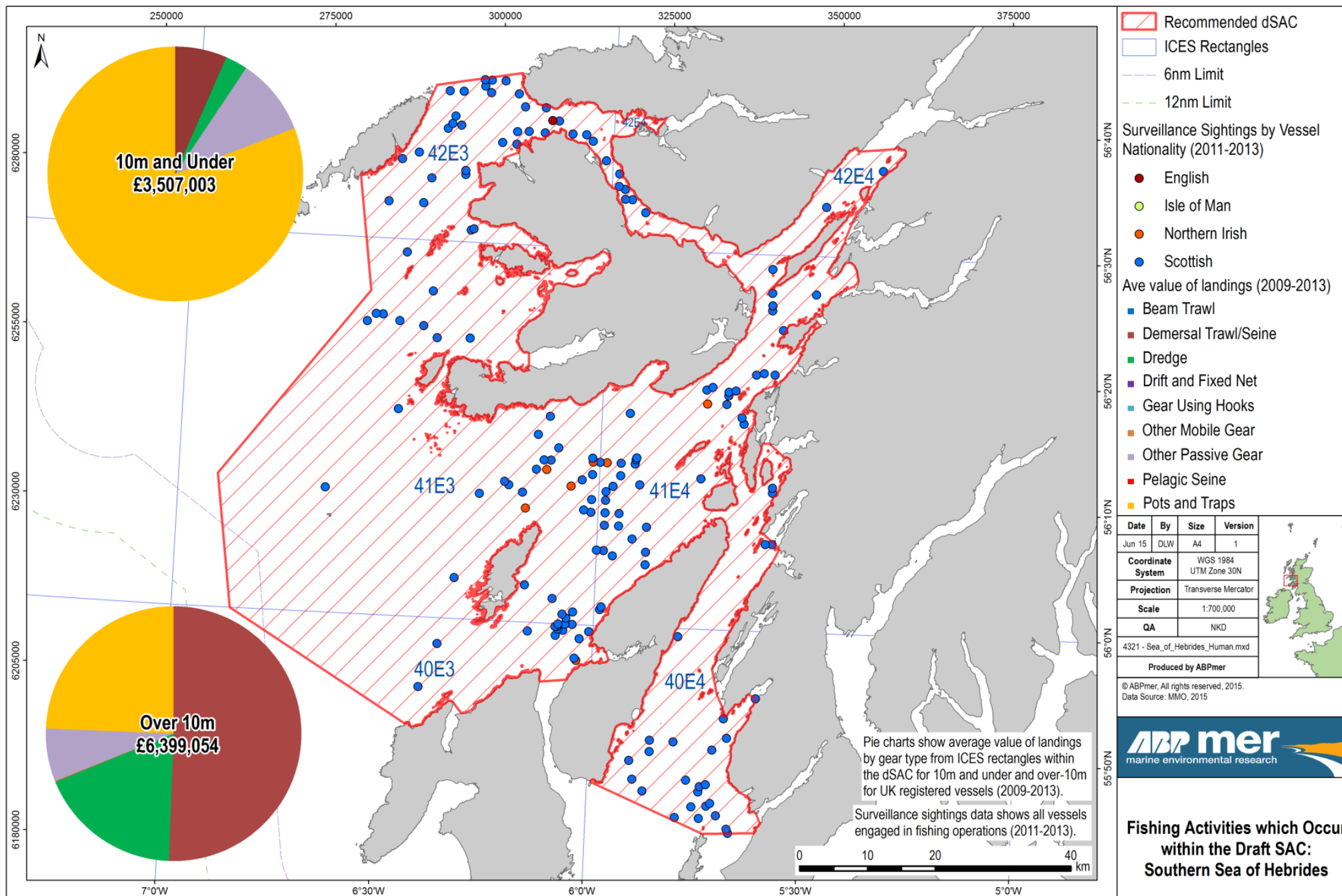
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [SSH]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	>10m sector	Demersal trawl/ seine; dredge.	Risk of X	Risk of X	0	0	0	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.2.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC [SSH]								
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence
			Lower	Intermediate	Upper			
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate
Fish for non-human consumption		Stocks reduced from potential maximum						
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Moderate	Minimal	High.
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate







G.3 North Channel and Outer Solway dSAC [NCS]

Site Area (km²): [4016.81]

G.3.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [NCS]				
Proposed Protected Features				
<p>The North Channel and Outer Solway site has been recognised as an area with persistent high densities of harbour porpoise. The area included within the site covers important winter habitat which emerged as one of the top 10% persistent high density areas for this season in the UK. The site also includes a 2 to 8km wide strip from Mew Island (Copelands) near Donaghadee to Island Magee, near Larne. The area within this strip is supported by land-based sightings. The site includes locations where some of the largest groups of harbour porpoise have been counted in Northern Ireland over the period from 1996 to 2014, ranging from 20 to 100 individuals in any one count. Also constant effort data from watch points along this coastal strip, compared to watch points elsewhere in Northern Ireland, indicates that this is the best location in Northern Ireland for harbour porpoise sightings. Furthermore the modelling data from DHI (Heinänen & Skov, 2015) indicates that there is a small coastal strip in this locality which is within the top 10% of high density areas for harbour porpoise in the summer, although the associated confidence is low. For the Celtic and Irish Seas MU, the DHI model results for both the summer and winter seasons show water depth and variables within the water column (particularly current speed in the winter) are the most important physical factors that increase the probability of presence and density of harbour porpoise. The predicted densities of harbour porpoise show considerable variation during the periods they spend in offshore waters and more persistent pattern in coastal areas. There is an indication that the porpoises within the Celtic and Irish Seas MU have a preference to water depths shallower than 40m. Areas of higher eddy activity (turbulence) were preferred along with tidal current speeds of 0.4-0.6m/s, although faster currents (0.8-1.0m/s) were also used in the summer. Lower densities of harbour porpoise were found in areas with high levels of shipping traffic (threshold at approximately 50 ships per day) in the summer. The physical characteristics of the North Channel and Outer Solway site are well aligned to the predictors determined from the DHI model. Much of the site incorporates shallow depths of less than 40m and the seabed energy layer of EU Seamap indicates that most of the site is of moderate energy. In particular the coastal strip from the Copelands to south of Cloughy on the Northern Irish coast, the coast around the Mull of Galloway and Luce Bay, and an area of sea running from the tip of the Mull of Galloway across to the Isle of Man, are all areas that have higher current energy, and where it could be expected that eddy activity (turbulence) would be higher.</p>				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Winter season	>2% to 15% of the UK part of the MU population	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution. However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: SNH, JNCC, DOE. Inshore and Offshore Draft Special Area of Conservation: North Channel and Outer Solway SAC Selection Assessment Document Version 9 (May 2015).				

G.3.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NCS]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Commercial Fisheries	0	1	0
Commercial Fisheries (GVA)	0	0	3,022
Military	National Costs	National Costs	National Costs
Offshore Renewables – Wind	0	0	29
Offshore Renewables – Tidal	39	248	0
Offshore Renewables – Tidal (GVA)	0	0	46,093 (£46.1 million)
Ports and Harbours	104	104	104
Total Quantified Economic Costs	143	353	49,248
Non-Quantified Economic Costs			
Commercial Fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Offshore Renewables	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Ports and Harbours	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive piling and explosives within 26km of the dSAC boundary.
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NCS]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	8	8
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	15	15	15
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	14	14	16
Costs to TCE associated with potential leasing revenues foregone	0	0	3,209
Total Quantified Public Sector Costs	29	37	3,248
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NCS]					
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis		
			Spatial Scale	Sector	Social Groups
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of £3.022m direct GVA, and 8 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Scotland. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to beam trawl, demersal trawl/seine, dredge, drift and set nets. Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in lower and middle income groups. X
	Energy Generation	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: GVA of approximately £46.1m (PV, 20 years). Reduction of employment in construction (2018 – 2019, annual average): 525; and in operation (2020 – 2034): 25 p.a. Tidal energy only.	Risk to coast of Scotland. It is not possible to associate the jobs impacts with specific ports. Risk to rural and urban coastal communities. XXX	Tidal energy sector, and its construction supply chain. XXX	Very large scale of impacts mean there would be effects on overall community cohesion, affecting all social groups present. XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.					

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NCS]			
Impact		Description	
Ecosystem Services Impact (Moderate and High Impacts)		Relevance	Scale of Benefits
Non-use value		Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).			

G.3.2 Human Activity Summaries

G.3.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Commercial Fisheries		[NCS]	
<p>The NCS dSAC intersects with five ICES rectangles, with the majority of the site falling across three ICES rectangles: 38E5, 38E4 and 37E4. According to ICES rectangle landings statistics, demersal trawls/seines, dredges, pots and traps, other passive gears, beam trawls and drift and set nets (over- 10m) and pots and traps, demersal trawls/seines, dredges, drift and set nets, gears using hooks and other passive gears (10m and under) vessels operate within these ICES rectangles. The value of catches from the NCS dSAC site was £5,116,100 (over-10m vessels) and £1,530,600 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).</p> <p>According to MMO surveillance data (2011-2013), Northern Irish trawlers comprised the majority of sightings within the site boundary, followed by Northern Irish potter/whelkers, demersal stern trawlers and scallop dredgers.</p> <p>Non-UK fishing activity (2007-2010) indicates that Spanish (2 demersal trawlers), French (1 demersal trawler) and Irish (1 pelagic gear) over-15m vessels operate within the NCS dSAC boundary.</p> <p>Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.</p> <p>Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.</p> <p>It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">No change to existing.	<ul style="list-style-type: none">Bycatch mitigation measures (pingers) on all under-12m vessels using set nets. one <12m vessel is estimated to fish within the site; average length of set net 550m. Unit cost of pingers £43.48/100m set net over 5 year period (non-GVA cost).Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).	<ul style="list-style-type: none">100% reduction in net gear effort across the site (GVA impact)10% reduction in mobile bottom gear effort across the site (GVA impact)10% reduction in mobile pelagic gear effort across the site (GVA impact)Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Cost of pingers £1k.	<ul style="list-style-type: none">None.
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Loss of >10m fishing income (annual values, £k):<ul style="list-style-type: none">Demersal trawls/seines (360.1);Dredges (109.7);Drift and set nets (0.2);Beam trawls (0.1).

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
			<ul style="list-style-type: none"> Loss of <10m fishing income (annual values, £k): <ul style="list-style-type: none"> Drift and set nets (15.6) Demersal trawls/seines (15.3); Dredges (11.5); Beam trawls (0.1).
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	1	0
Average annual costs	0	<1	0
Present value of total costs (2015–2034)	0	1	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	4.188
Average annual change to GVA	0	0	0.209
Present value of total change in GVA (2015–2034)	0	0	3.022
Direct and Indirect reduction in employment	0	0	7.7
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3b. Offshore Renewables – Offshore Wind [NCS]			
<p>There are currently no operational offshore wind developments within the NCS dSAC boundary. There is one operational offshore wind development (Robin Rigg) within 26km (but >5km) of the NCS dSPA boundary. Robin Rigg (E.ON Climate & Renewables, 180 MW) is a fully operational (since September 2010) offshore wind development comprising of two wind farms (East and West; 90 MW capacity each). However, based on the measures proposed, no costs are anticipated to be incurred by fully operational developments. Therefore, economic costs and management measures associated with energy generation in this dSAC are described in light of known possible future developments as described below.</p> <p>The Walney Extension (DONG Energy) offshore wind farm (750 MW), which is partially located within 50km (but >26km) of the NCS dSAC boundary (39.1%), was consented in 2014 and is anticipated to comprise up to 207 wind turbines. For the purpose of this assessment, it is assumed that offshore construction works will commence in 2016 and be completed in 2019, with the array operational in 2020.</p> <p>See Table 3c for tidal energy developments within the NCS dSAC boundary and within 50km of the boundary. There are no planned, consented or operational wave energy developments within the NCS dSAC boundary or within 50km.</p> <p>It should be noted that additional cost impacts could also arise as a result of consenting delays. The cost impacts and uncertainty associated with SAC designation may affect investor confidence.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 50km (but >26km) of site boundary.
Description of one-off costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 50km (but >26km) of site boundary - £30k per development. Applications estimated for one offshore wind development (Walney Extension) to be submitted in 2016.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	0	30
Average annual costs	0	0	2
Present value of total costs (2015–2034)	0	0	29
Economic Impacts (£m)			
Total change in GVA (2015–2034)	0	0	0
Average annual change to GVA	0	0	0
Present value of total change in GVA (2015–2034)	0	0	0
Direct and Indirect reduction in employment	0	0	0
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%. Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period. Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20). Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%. Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers.</p>			

Table 3c. Offshore Renewables – Tidal				[NCS]
There are currently no operational tidal energy generation developments within the NCS dSAC boundary. Therefore, economic costs and management measures associated with energy generation in this dSAC are described in light of known possible future developments as described below.				
The Mull of Galloway (Siemens MCT; Atlantis Resources Ltd) is a potential (not consented) tidal energy development located wholly within NCS dSAC boundary. With a projected capacity of 30 MW, it is anticipated that the array could comprise 30 tidal turbines (based on the Anglesey Skerries Tidal Array). For the purpose of this assessment, it is assumed that planning application will be submitted in 2016 and the development will be granted consent in 2017, with construction works in 2018 and 2019 and the array to be operational in 2020.				
See Table 3b for offshore wind developments within the NCS dSAC boundary and within 50km of the boundary. There are no planned, consented or operational wave energy developments within the NCS dSAC boundary or within 50km.				
It should be noted that additional cost impacts could also arise as a result of consenting delays. The cost impacts and uncertainty associated with SAC designation may affect investor confidence.				
Economic Costs on the Activity of Designation of the Site				
	Lower Estimate	Intermediate Estimate	Upper Estimate	
Assumptions for cost impacts	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary; and Additional assessment (HRA) for certain geophysical surveys within site boundary. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary; Additional assessment (HRA) for certain geophysical surveys within site boundary; and Additional mitigation measures (active sonar system) to reduce collision risk within site boundary (20% of developments). 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments (including those already consented) within site boundary are not permitted. 	
Description of one-off costs	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary - £30k per development. Applications estimated for one tidal development (Mull of Galloway) to be submitted in 2016; and Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Surveys estimated for one tidal development to be conducted in 2017 (Mull of Galloway); and Post-construction - £1k per survey. Surveys estimated for one tidal development to be conducted in 2021 (Mull of Galloway). 	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary - £30k per development. Applications estimated for one tidal development (Mull of Galloway) to be submitted in 2016; Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Surveys estimated for one tidal development to be conducted in 2017 (Mull of Galloway); and Post-construction - £1k per survey. Surveys estimated for one tidal development to be conducted in 2021 (Mull of Galloway); Additional mitigation measures (active sonar system) to reduce collision risk within site boundary - £40k per turbine. Costs incurred for one tidal development in 2019 (Mull of Galloway, 30 turbines, assumed 20% of turbines will require active sonar system). 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments within site boundary are not permitted. Construction expenditure (GVA) estimated for one tidal development based on costs from Regeneris Consulting and Cardiff University (2013): <ul style="list-style-type: none"> Mull of Galloway - £19.2m per year over two years (2018 and 2019). 	
Description of recurring costs	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. Surveys estimated each year for one tidal development to be conducted from 2022-2034 (Mull of Galloway). 	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. Surveys estimated each year for one tidal development to be conducted from 2022-2034 (Mull of Galloway). 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments within site boundary are not permitted. Operational expenditure (GVA) estimated for one tidal development based on costs from Regeneris Consulting and Cardiff University (2013): <ul style="list-style-type: none"> Mull of Galloway - £1.2m per year from 2020-2034. 	

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	45	285	0
Average annual costs	2	14	0
Present value of total costs (2015–2034)	39	248	0
Economic Impacts (£m)			
Total change in GVA (2015–2034)	0	0	56.400 (£56.4 million)
Average annual change to GVA	0	0	2.820 (£2.8 million)
Present value of total change in GVA (2015–2034)	0	0	46.093 (£46.1 million)
Direct, Indirect and Induced reduction in employment (annual average)	0	0	525 (construction; 2018 – 2019) 25 (operation; 2020 – 2034)
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%. Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period. Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20). Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%. Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers.</p>			

Table 3d. Ports and Harbours [NCS]			
Five major ports are located within 26km of the NCS dSAC, namely Belfast, Cairnryan, Kilroot, Larne, Stranraer. Under the assumption that each major port will undertake one development involving percussive piling/ explosives every five years beginning in 2017, these ports will incur a cost for the development of a HRA in the lower and intermediate scenarios. The upper scenario captures ports within 50km of the NCS dSAC; however, no additional major ports are present within this area. Thus, costs incurred by Belfast, Cairnryan, Kilroot, Larne, Stranraer ports also represent the upper scenario.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 50km of the dSAC boundary.
Description of one-off costs	<ul style="list-style-type: none"> Five major ports within 26km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 £7.1k per application. 	<ul style="list-style-type: none"> Five major ports within 26km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 £7.1k per application. 	<ul style="list-style-type: none"> Five major ports within 50km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 £7.1k per application.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive piling and explosives within 26km of the dSAC boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	142	142	142
Average annual costs	7	7	7
Present value of total costs (2015–2034)	104	104	104
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.3.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [NCS]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact.	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.3.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5 Human Activities that are Present but Which Would be Unaffected by Designation of the Site [NCS]	
Activity	Description
None identified.	

G.3.3 Social and Distributional Analysis of Impacts from Designation of the Site

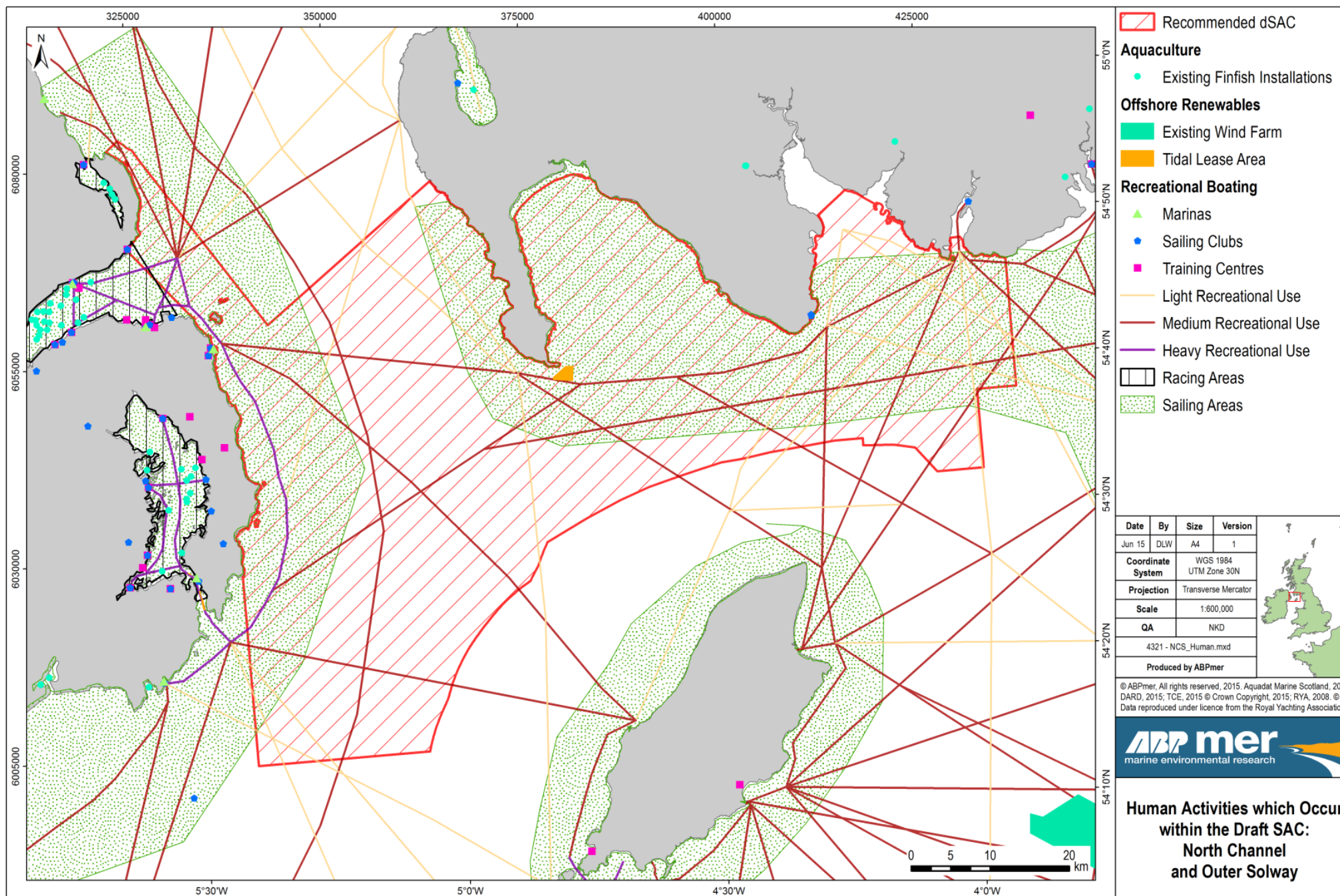
Table 6a. Social Impacts [NCS]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of £3.022m direct GVA, and 8 FTE.	Employment and community cohesion.	Risk of X
Energy Generation	Reduction in GVA and employment.	Intermediate scenario, no impact. Upper scenario only: GVA of approximately £46.1m (PV, 20 years). Reduction of employment in construction (2018 – 2019, annual average): 525; and in operation (2020 – 2034): 25 p.a. Tidal energy only.	Employment and community cohesion.	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/-: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

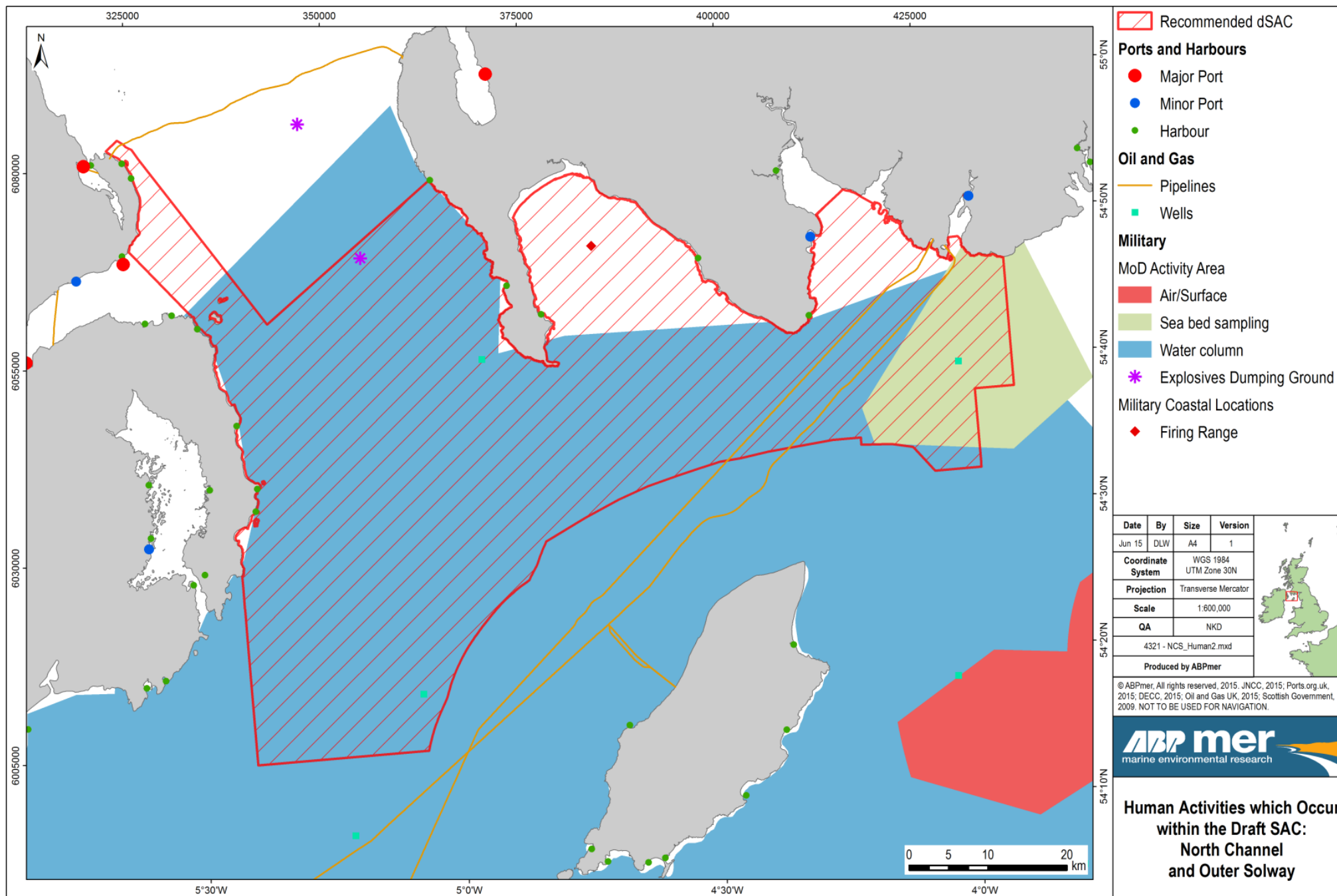
Table 6b. Distribution of Social Impacts – Location, Age and Gender [NCS]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	SW Scotland	It is not possible to associate the jobs impacts with specific ports	Rural Coastal and Island	0	Risk of X	0	Risk of X	0
Energy Generation	SW Scotland		Rural and Urban Coastal	0	Risk of XXX	0	Risk of XXX	Risk of XX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/-: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

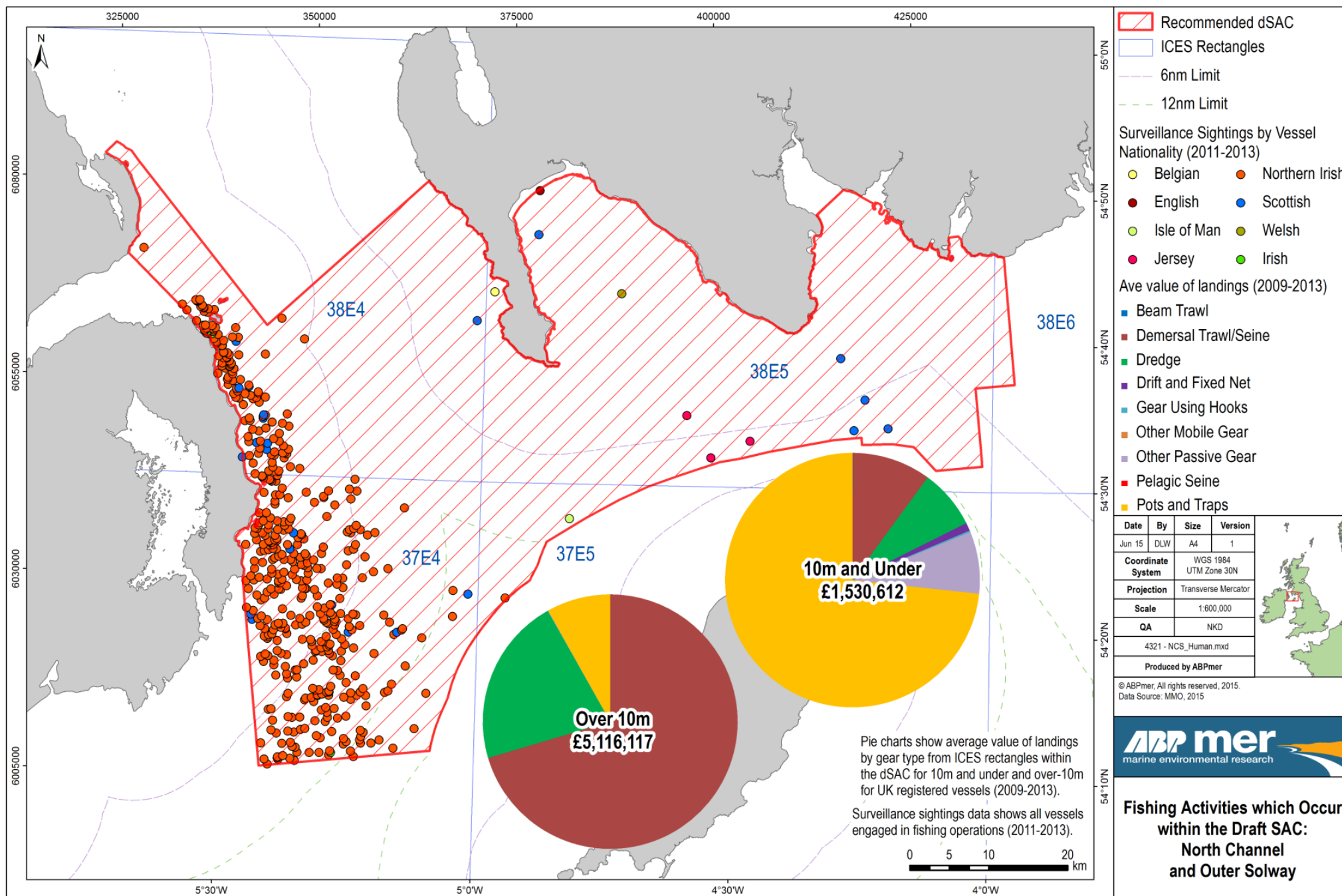
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [NCS]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Beam trawl; demersal trawl/ seine; dredge; drift and set nets	Risk of X	Risk of X	0	0	0	0
Energy Generation			Risk of XXX	Risk of XXX	Risk of XX			
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/-: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.3.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC									[NCS]
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence	
			Lower	Intermediate	Upper				
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate	
Fish for non-human consumption		Stocks reduced from potential maximum							
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain	
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Moderate	Minimal	High.	
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate	
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate	







G.4 North Anglesey Marine / Gogledd Môn Forol dSAC [NAM]

Site Area (km²): [3,235]

G.4.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [NAM]				
Proposed Protected Features				
<p>The North Anglesey Marine (Gogledd Môn Forol) site has been recognised as an area with predicted high densities of harbour porpoises. The area included within the site covers important summer habitat for porpoises, which was identified as part of the top 10% persistent high density areas for the summer seasons within the UK. The coast around Anglesey provides many suitable places to conduct dedicated shore watches for cetaceans. The North Anglesey Marine site includes coastal areas with some of the highest count rates in the UK (Evans <i>et al.</i> 2015), further supporting the area as an important site for harbour porpoise. The physical characteristics of the North Anglesey Marine site are well aligned to the predictors determined from the DHI model for determining the probability of presence and the density of harbour porpoise. Much of the site incorporates shallow depths of around 40m, with some deeper areas out into the channel beyond the 12nm boundary. The seabed energy layer of EU SeaMap indicates that the energy levels, including both current and wave energy, are medium to high across almost all of the site, with particular high energy around the coast of Anglesey. This supports the presence of harbour porpoise in the region based on the model predictors, regarding the preference of the species to occur in areas where current and eddy activity is high. North Anglesey Marine site is located in the Celtic and Irish Sea harbour porpoise management unit and contains the Annex II species 'harbour porpoise' as a qualifying species. Additionally, three other sites; North Channel and Outer Solway SAC, West Wales Marine (Gorllewin Cymru Forol) SAC and Bristol Channel Approaches (Dynesfeydd Môr Hafren) SAC, make up a network of sites designated for Annex II 'harbour porpoise' within this management unit.</p>				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Summer season	>2% to 15% of the UK part of the MU population	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution. However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: JNCC Inshore and Offshore Special Area of Conservation (SAC): North Anglesey Marine (Gogledd Môn Forol) SAC Selection Assessment Document (SACSAD) Version 2.0 (May 2015).				

G.4.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NAM]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Commercial Fisheries	0	30	0
Commercial Fisheries (GVA)	0	0	1,848
Military	National Costs	National Costs	National Costs
Offshore Renewables	109	110	0
Offshore Renewables (GVA)	0	0	32,246 (£32.2 million)
Ports and Harbours	21	21	21
Total Quantified Economic Costs	130	161	34,115
Non-Quantified Economic Costs			
Commercial Fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Offshore Renewables	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Ports and Harbours	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive pilling and explosives within 26km of the dSAC boundary.
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NAM]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	8	8
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	8	8	8
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	15	15	5
Costs to TCE associated with potential leasing revenues foregone	0	0	2,290
Total Quantified Public Sector Costs	23	31	2,311
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NAM]					
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis		
			Spatial Scale	Sector	Social Groups
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of £1.848m direct GVA, and 4 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Wales. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to demersal trawl/seine, dredge, drift and set nets. Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in lower and middle income groups. X
	Energy Generation	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: GVA of approximately £32.2m (PV, 20 years). Reduction of employment in construction (2016 – 2019, annual average): 175; and in operation (2018 – 2034): 16 p.a. Tidal energy only.	Risk to coast of Wales. It is not possible to associate the jobs impacts with specific ports. Risk to rural and urban coastal communities. XXX	Tidal energy sector, and its construction supply chain. XXX	Very large scale of impacts mean there would be effects on overall community cohesion, affecting all social groups present. XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.					

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NAM]		
Impact	Description	
Ecosystem Services Impact (Moderate and High Impacts)	Relevance	Scale of Benefits
Non-use value	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).		

G.4.2 Human Activity Summaries

G.4.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Commercial Fisheries [NAM]			
<p>The NOM dSAC intersects with four ICES rectangles, with the majority of the site falling within 36E5. According to ICES rectangle landings statistics, dredges, demersal trawls/seines, pots and traps, beam trawls, gears using hooks and drift and set nets (over- 10m) and pots and traps, demersal trawls/seines, dredges, gears using hooks, drift and set nets, beam trawls and other mobile gears (10m and under) vessels operate within these ICES rectangles. The value of catches from the NAM dSAC site was £3,066,600 (over-10m vessels) and £272,300 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).</p> <p>According to MMO surveillance data (2011-2013), Belgian beam trawlers and Scottish scallop dredgers comprised the majority of sightings across the site.</p> <p>Non-UK fishing activity (2007-2010) indicates that a minimum of 5 Belgian demersal trawlers, 3 Spanish (2 line and 1 demersal trawl gear), 5 Irish (2 pelagic, 1 demersal trawler, 1 dredge and 1 net) and 1 Norwegian over-15m vessels operate within the NAM dSAC boundary.</p> <p>Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.</p> <p>Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.</p> <p>It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> No change to existing. 	<ul style="list-style-type: none"> Bycatch mitigation measures (pingers) on all under-12m vessels using set nets. 37 <12m vessels estimated to fish within the site; average length of set net 550m. Unit cost of pingers £43.48/100m set net over 5 year period (non-GVA cost). Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost). 	<ul style="list-style-type: none"> 100% reduction in net gear effort across the site (GVA impact) 10% reduction in mobile bottom gear effort across the site (GVA impact) 10% reduction in mobile pelagic gear effort across the site (GVA impact) Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Cost of pingers £30k 	<ul style="list-style-type: none"> None.
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Loss of >10m fishing income (annual values, £k): <ul style="list-style-type: none"> Dredges (190.8); Demersal trawls/seines (90.7); Beam trawls (0.8); Drift and set nets (0.6).

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
			<ul style="list-style-type: none"> Loss of <10m fishing income (annual values, £k): <ul style="list-style-type: none"> Demersal trawls/seines (5.4); Dredges (4.9); Drift and set nets (0.3); Beam trawls (<0.1); Other mobile gears (<0.1).
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	39	0
Average annual costs	0	2	0
Present value of total costs (2015–2034)	0	30	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	2.561
Average annual change to GVA	0	0	0.128
Present value of total change in GVA (2015–2034)	0	0	1.848
Direct and Indirect reduction in employment	0	0	4.4
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3b. Offshore Renewables				[NAM]
<p>There are currently no operational energy generation developments within the NAM dSAC boundary. The fully operational North Hoyle (60 MW) and Rhyl Flats (90 MW) offshore wind farms, comprising 30 and 25 wind turbines respectively, are located within 50km (but >26km) of the site boundary. In addition, construction of the Gwynt y Môr (576 MW) offshore wind farm (160 wind turbines), also located within 50km (but >26km) of the site boundary, is nearing completion and it is anticipated to be operational in 2015. No further planned offshore wind developments are located with 50km of the NAM dSAC boundary. Therefore, economic costs and management measures associated with energy generation in this dSAC are described in light of known possible future tidal developments as described below.</p> <p>The Anglesey Skerries Tidal Array (Sea Generation (Wales) Ltd), a 10 MW tidal array comprising five 'SeaGen S' (2 MW each; twin turbine) devices, was granted consent in 2013 and is to be located wholly within the NAM dSAC boundary. It is anticipated that construction works will occur during 2016 and 2017 and the array will be operational in 2018. The Holyhead Deep (Minesto UK Ltd) tidal development (10 MW; not consented) is to be located wholly within the NAM dSAC boundary, comprising up to 20 turbines (0.5 MW each). For the purpose of this assessment, it is assumed that planning application will be submitted in 2016 and the development will be granted consent in 2017, with construction works in 2018 and 2019 and the array to be operational in 2020. The West Anglesey Demonstration Zone is a potential (not consented) tidal energy test site to be located partially within the NAM dSAC boundary (85.3%).</p> <p>There are no planned, consented or operational wave energy developments within the NAM dSAC boundary or within 50km.</p> <p>It should be noted that additional cost impacts could also arise as a result of consenting delays. The cost impacts and uncertainty associated with SAC designation may affect investor confidence.</p>				
Economic Costs on the Activity of Designation of the Site				
	Lower Estimate	Intermediate Estimate	Upper Estimate	
Assumptions for cost impacts	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary; and Additional assessment (HRA) for certain geophysical surveys within site boundary. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary; Additional assessment (HRA) for certain geophysical surveys within site boundary; and Additional mitigation measures (MMO's) to reduce or limit impacts of geophysical surveys within site boundary. 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments (including those already consented) within site boundary are not permitted. 	
Description of one-off costs	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary - £30k per development. Applications estimated for three tidal developments (Anglesey Skerries Tidal Array, Holyhead Deep, West Anglesey Demonstration Zone) to be submitted in 2016; and Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2016 (Anglesey Skerries Tidal Array) and 2017 (Holyhead Deep). Post-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2019 (Anglesey Skerries Tidal Array) and 2021 (Holyhead Deep). 	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary - £30k per development. Applications estimated for three tidal developments (Anglesey Skerries Tidal Array, Holyhead Deep, West Anglesey Demonstration Zone) to be submitted in 2016; Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2016 (Anglesey Skerries Tidal Array) and 2017 (Holyhead Deep). Post-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2019 (Anglesey Skerries Tidal Array) and 2021 (Holyhead Deep). Additional mitigation measures (MMO's) to reduce or limit impacts of geophysical surveys within site boundary - £400 per day per MMO. Costs incurred for one MMO for one day for two tidal developments in 2016 (Anglesey Skerries Tidal Array) and 2017 (Holyhead Deep). 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments within site boundary are not permitted. Construction expenditure (GVA) estimated for two tidal developments based on costs from Regeneris Consulting and Cardiff University (2013): <ul style="list-style-type: none"> Anglesey Skerries Tidal Array - £6.4m per year over two years (2016 and 2017); and Holyhead Deep - £6.4m per year over two years (2018 and 2019). 	

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of recurring costs	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. Surveys estimated each year for two tidal developments to be conducted from 2020-2034 (Anglesey Skerries Tidal Array) and 2022-2034 (Holyhead Deep). 	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. Surveys estimated each year for two tidal developments to be conducted from 2020-2034 (Anglesey Skerries Tidal Array) and 2022-2034 (Holyhead Deep). 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments within site boundary are not permitted. Operational expenditure (GVA) estimated for two tidal developments based on costs from Regeneris Consulting and Cardiff University (2013): <ul style="list-style-type: none"> Anglesey Skerries Tidal Array - £0.4m per year from 2018-2034; and Holyhead Deep - £0.4m per year from 2020-2034.
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	122	123	0
Average annual costs	6	6	0
Present value of total costs (2015–2034)	109	110	0
Economic Impacts (£m)			
Total change in GVA (2015–2034)	0	0	38.400 (£38.4 million)
Average annual change to GVA	0	0	1.920 (£1.9 million)
Present value of total change in GVA (2015–2034)	0	0	32.246 (£32.2 million)
Direct, Indirect and Induced reduction in employment (annual average)	0	0	175 (construction; 2016 – 2019) 16 (operation; 2018 – 2034)
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers.</p>			

Table 3c Ports and Harbours [NAM]			
Holyhead is only one port located within 26km of the NAM dSAC boundary. It is assumed that the port will undertake one development involving percussive piling/ explosives every five years. As it is the only port within 50km of the NAM dSAC boundary, Holyhead represents costs for the lower, intermediate and upper scenarios.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 50km of the dSAC boundary.
Description of one-off costs	<ul style="list-style-type: none"> One major port within 26km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k per application. 	<ul style="list-style-type: none"> One major port within 26km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k per application. 	<ul style="list-style-type: none"> One major port within 50km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k per application.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive piling and explosives within 26km of the dSAC boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	28	28	28
Average annual costs	1	1	1
Present value of total costs (2015–2034)	21	21	21
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.4.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [NAM]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.4.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [NAM]	
Activity	Description
None identified.	

G.4.3 Social and Distributional Analysis of Impacts from Designation of the Site

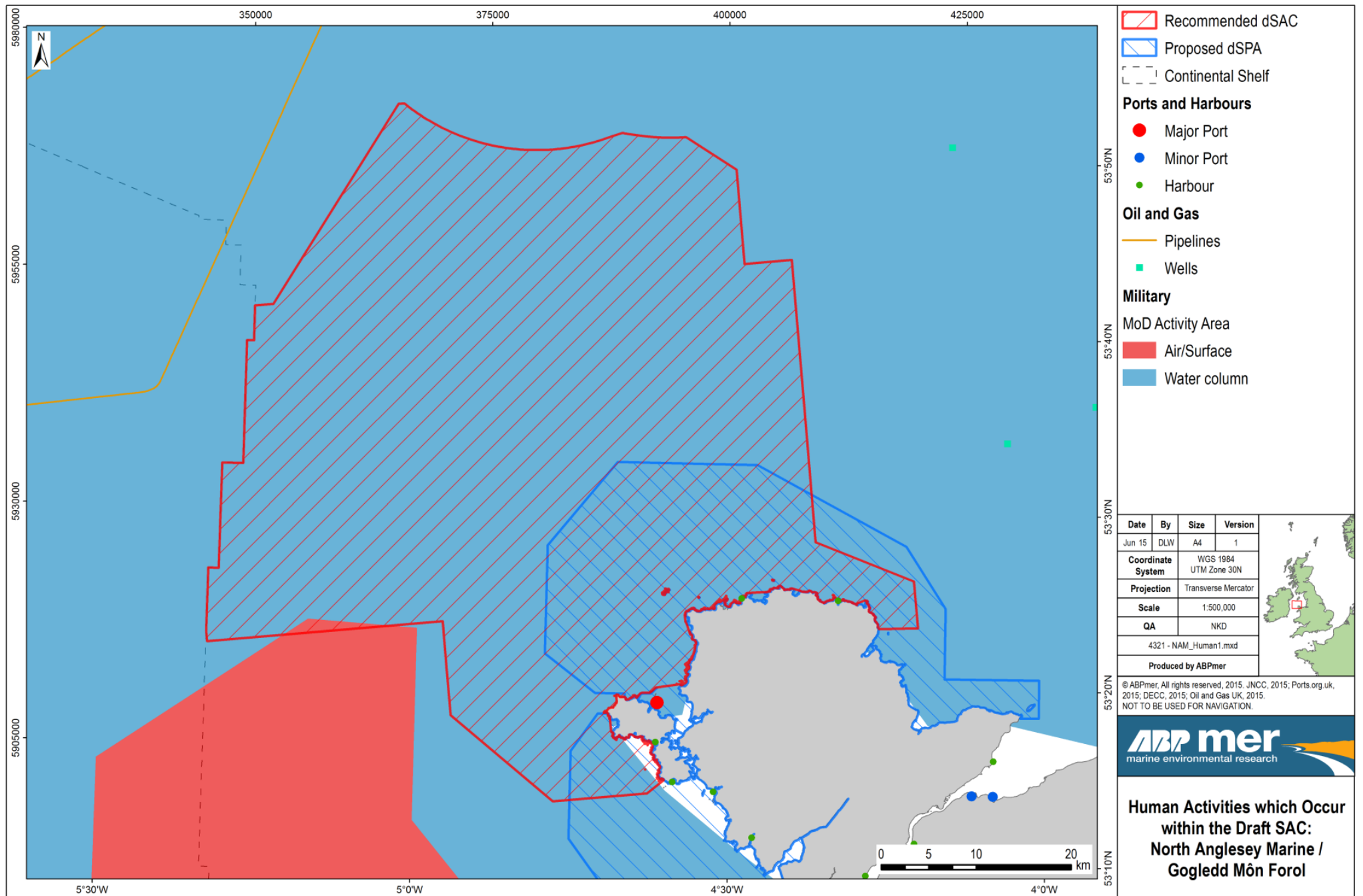
Table 6a. Social Impacts [NAM]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of £1.848m direct GVA, and 4 FTE.	Risk to employment and community cohesion.	Risk of X
Energy Generation	Reduction in GVA and employment.	Intermediate scenario, no impact. Upper scenario only: GVA of approximately £32.2m (PV, 20 years). Reduction of employment in construction (2016 – 2019, annual average): 175; and in operation (2018 – 2034): 16 p.a. Tidal energy only.	Employment and community cohesion.	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

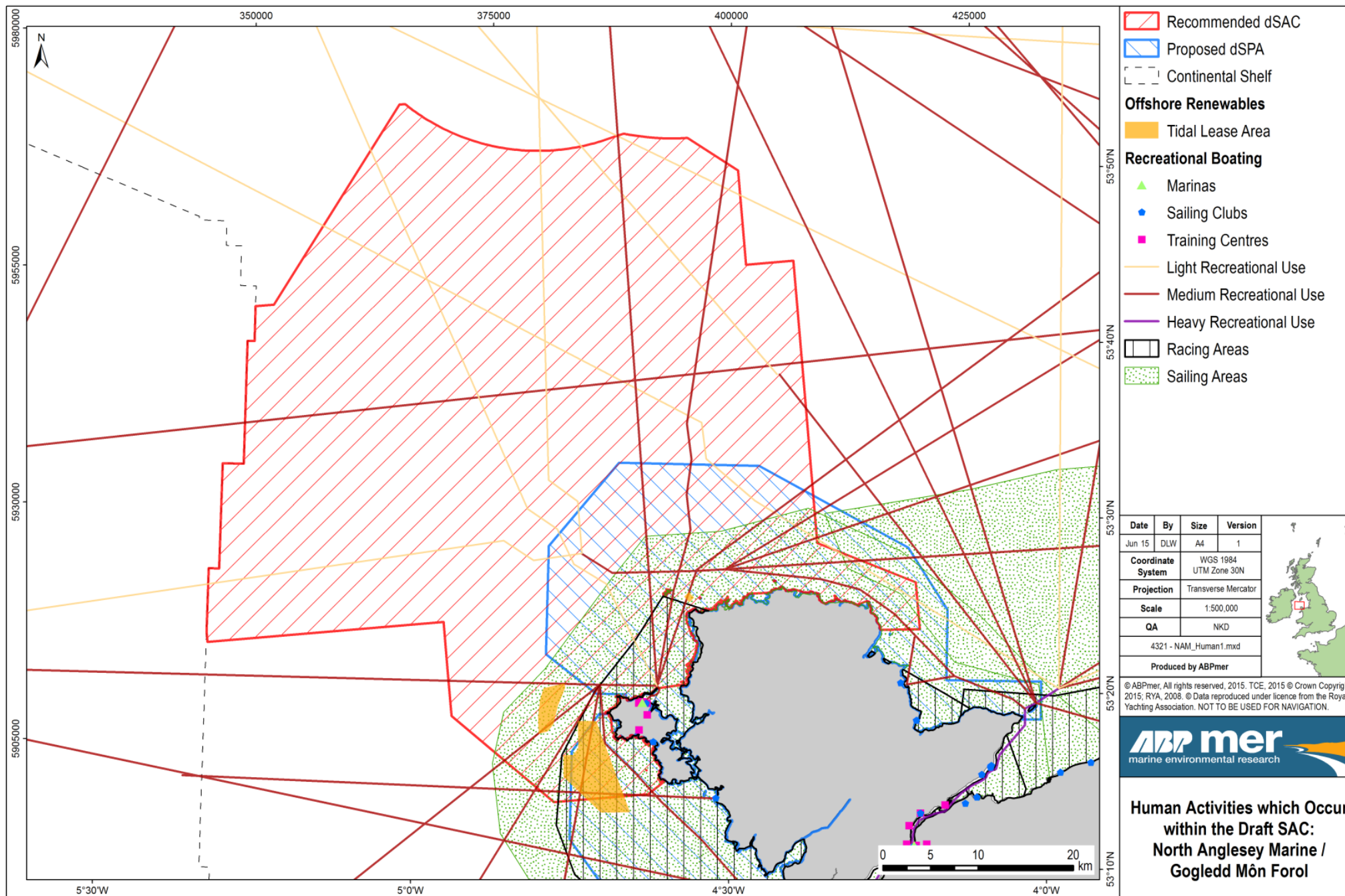
Table 6b. Distribution of Social Impacts – Location, Age and Gender [NAM]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	Wales	It is not possible to associate the jobs impacts with specific ports.	Rural Coastal and Island		Risk of X		Risk of X	
Energy Generation	Wales		Rural and Urban Coastal					
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

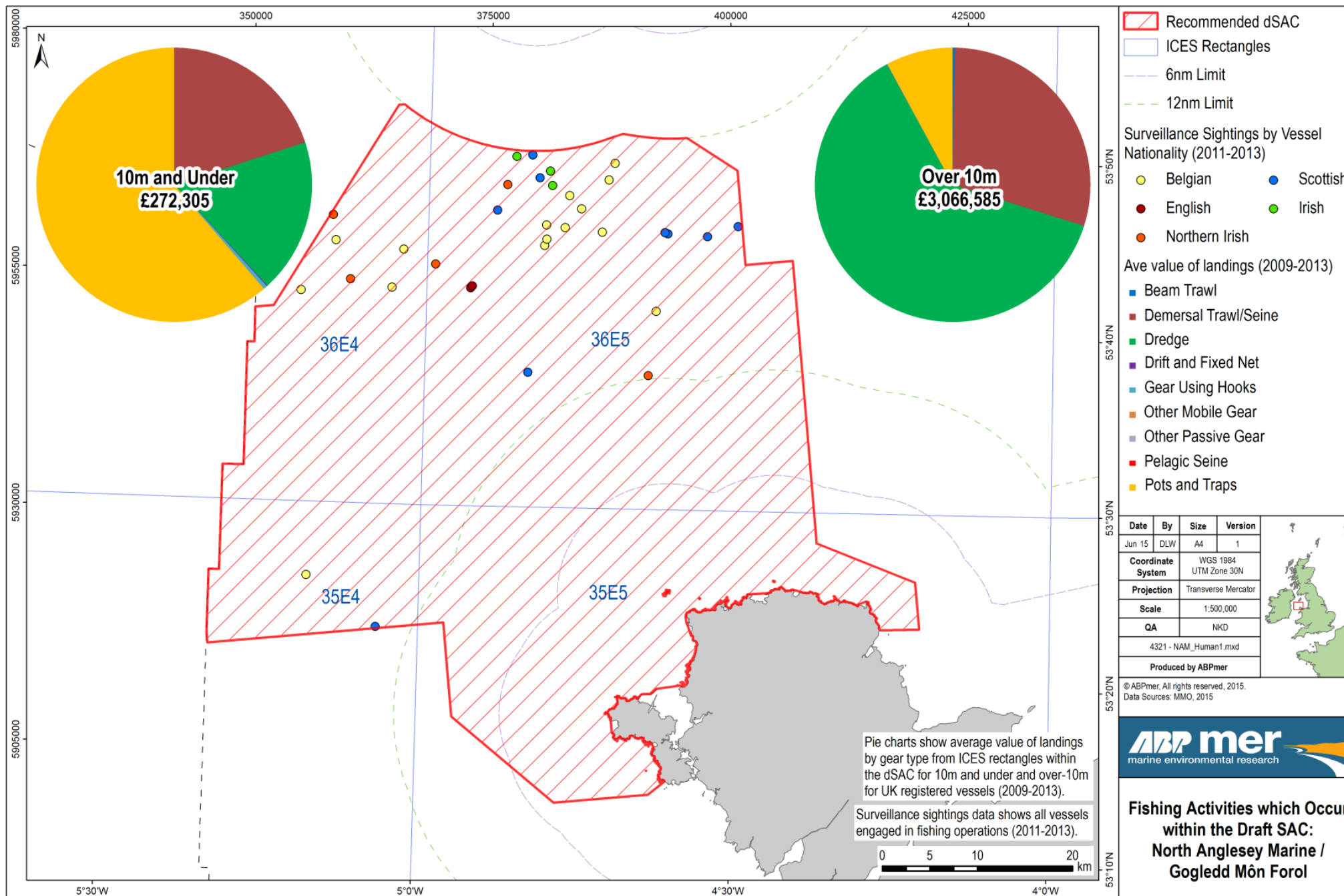
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [NAM]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Demersal trawl/seine; dredge; drift and set nets	Risk of X	Risk of X	0	0	0	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.4.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC									[NAM]
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence	
			Lower	Intermediate	Upper				
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate	
Fish for non-human consumption		Stocks reduced from potential maximum							
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain	
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Moderate	Minimal	High.	
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate	
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate	







G.5 West Wales Marine / Gorllewin Cymru Forol dSAC [WWM]

Site Area (km²): [7334.3]

G.5.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [WWM]				
Proposed Protected Features				
The West Wales Marine / Gorllewin Cymru Forol site has been recognised as an area with the top 10% predicted persistent high densities of harbour porpoise. The area included within the site covers important summer habitat for porpoises, while a part of this site in Cardigan Bay was also identified as important during winter. The physical characteristics of the West Wales Marine site are well aligned to the environmental variables determining the probability of presence and the density of harbour porpoise. Much of the site incorporates shallow depths of around 40m, with some deeper areas beyond the 12nm boundary. The seabed energy layer of EU SeaMap indicates that the energy levels, including current and wave energy, are low to medium across most of the site but with high energy around Pembrokeshire islands and the tip of the Llŷn Peninsula. The West Wales Marine site is located in the Celtic and Irish Sea harbour porpoise management unit and contains the Annex II species 'harbour porpoise' as a qualifying species.				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Summer season	>2% to 15% of the UK part of the MU population	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution. However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: NRW, JNCC: Inshore and Offshore Special Area of Conservation (SAC): West Wales Marine /Gorllewin Cymru Forol SAC Selection Assessment Document (SACSAD) Version 2.0 (May 2015).				

G.5.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [WWM]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Commercial fisheries	0	30	0
Commercial fisheries (GVA)	0	0	3,426
Military	National Costs	National Costs	National Costs
Offshore Renewables	83	83	0
Offshore Renewables (GVA)	0	0	18,769 (£18.8 million)
Ports and Harbours	42	42	42
Total Quantified Economic Costs	125	155	22,237
Non-Quantified Economic Costs			
Commercial fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Offshore Renewables	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Ports and Harbours	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive pilling and explosives within 26km of the dSAC boundary.
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [WWM]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	8	8
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	13	13	13
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	12	12	4
Costs to TCE associated with potential leasing revenues foregone	0	0	1,374
Total Quantified Public Sector Costs	25	33	1,399
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [WWM]					
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis		
			Spatial Scale	Sector	Social Groups
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of £3.426m direct GVA, and 8 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Wales. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to demersal trawl/seine, dredge, drift and set nets and pelagic seine. Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in lower and middle income groups. X
	Energy Generation	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: GVA of approximately £18.8m (PV, 20 years). Reduction of employment in construction (2016 – 2020, annual average) 196; and in operation (2018 – 2034): 9 p.a. Tidal energy only.	Risk to coast of Wales. It is not possible to associate the jobs impacts with specific ports. Risk to rural and urban coastal communities. XXX	Tidal energy sector, and its construction supply chain. XXX	Very large scale of impacts mean there would be effects on overall community cohesion, affecting all social groups present. XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.					

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [WWM]		
Impact	Description	
Ecosystem Services Impact (Moderate and High Impacts)	Relevance	Scale of Benefits
Non-use value	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).		

G.5.2 Human Activity Summaries

G.5.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Commercial Fisheries [WWM]			
<p>The WWM dSAC intersects with six ICES rectangles, with the majority of the site falling within 33E5. According to ICES rectangle landings statistics, dredges, pots and traps, demersal trawls/seines, beam trawls, drift and set nets, gears using hooks and pelagic seines (over- 10m) and pots and traps, dredges, drift and fixed nets, gears using hooks, other passive gears, demersal trawls/seines and pelagic seines (10m and under) vessels operate within these ICES rectangles. The value of catches from the WWM dSAC site was £4,640,100 (over-10m vessels) and £2,601,500 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).</p> <p>According to MMO surveillance data (2011-2013), English and Welsh scallop dredgers, followed by Welsh potter/whelkers (all under-15m) and Scottish, Irish and Welsh scallop dredgers and Belgian beam trawlers (all over-15m) comprised the majority of sightings across the site.</p> <p>Non-UK fishing activity (2007-2010) indicates that a minimum of 7 Belgian (demersal trawlers), 2 French (2 net gear), 3 Irish (1 dredge, 1 demersal trawl and 1 pelagic gear) and 1 Dutch (dredger) over-15m vessels operate within the WWM dSAC boundary.</p> <p>Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.</p> <p>Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.</p> <p>It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> No change to existing. 	<ul style="list-style-type: none"> Bycatch mitigation measures (pingers) on all under-12m vessels using set nets. 36 <12m vessels estimated to fish within the site; average length of set net 550m. Unit cost of pingers £43.48/100m set net over 5 year period (non-GVA cost). Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost). 	<ul style="list-style-type: none"> 100% reduction in net gear effort across the site (GVA impact) 10% reduction in mobile bottom gear effort across the site (GVA impact) 10% reduction in mobile pelagic gear effort across the site (GVA impact) Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Cost of pingers £30k. 	<ul style="list-style-type: none"> None.
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Loss of >10m fishing income (annual values, £k): <ul style="list-style-type: none"> Dredges (329.1); Drift and set nets (16.8); Demersal trawls/seines (5.0); Beam trawls (4.8); Pelagic seines (<0.1).

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
			<ul style="list-style-type: none"> Loss of <10m fishing income (annual values, £k): <ul style="list-style-type: none"> Dredges (88.1); Drift and set nets (60.3); Demersal trawls/seines (0.5); Pelagic seines (<0.1).
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	38	0
Average annual costs	0	2	0
Present value of total costs (2015–2034)	0	30	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	4.748
Average annual change to GVA	0	0	0.237
Present value of total change in GVA (2015–2034)	0	0	3.426
Direct and Indirect reduction in employment	0	0	7.6
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3b. Offshore Renewables [WWM]			
<p>There are currently no operational energy generation developments within the WWM dSAC boundary. Therefore, economic costs and management measures associated with energy generation in this dSAC are described in light of known possible future developments as described below.</p> <p>Ramsey Sound (Tidal Energy Ltd) is a consented tidal development, comprising one DeltaStream device (1.2 MW) with three turbines, located wholly within the WWM dSAC boundary. The fabrication of the first of these turbines was completed in 2014 (0.4 MW), ready for installation in 2015. The two remaining turbines are to be installed in 2016 and, thus, the device is anticipated to be fully operational in 2017. The Ramsey Sound project aims to provide valuable technical input for a larger scale tidal development, St David's Head (10 MW), comprising up to nine DeltaStream devices (27 turbines). For the purpose of this assessment, it is assumed that the development will be granted consent in 2016, with construction works in 2017 and the array to be operational in 2018.</p> <p>The South Pembrokeshire Demonstration Zone (Wave Hub) is a potential wave test site to be located partially within the WWM dSAC boundary (16.0%). However, based on the measures proposed by JNCC, there are no anticipated significant effects in relation to wave energy developments and, therefore, it is unlikely that any costs will be incurred.</p> <p>There are no planned, consented or operational offshore wind developments within the WWM dSAC boundary or within 50km.</p> <p>It should be noted that additional cost impacts could also arise as a result of consenting delays. The cost impacts and uncertainty associated with SAC designation may affect investor confidence.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary; and Additional assessment (HRA) for certain geophysical surveys within site boundary. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary; Additional assessment (HRA) for certain geophysical surveys within site boundary; and Additional mitigation measures (MMO's) to reduce or limit impacts of geophysical surveys within site boundary. 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments (including those already consented) within site boundary are not permitted.
Description of one-off costs	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary - £30k per development. Applications estimated for two tidal developments (Ramsey Sound, St David's Head) to be submitted in 2016; and Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2016 (Ramsey Sound) and 2017 (St David's Head). Post-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2018 (Ramsey Sound) and 2019 (St David's Head). 	<ul style="list-style-type: none"> Additional assessment (HRA) of new tidal developments within site boundary - £30k per development. Applications estimated for two tidal developments (Ramsey Sound, St David's Head) to be submitted in 2016; Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2016 (Ramsey Sound) and 2017 (St David's Head). Post-construction - £1k per survey. Surveys estimated for two tidal developments to be conducted in 2018 (Ramsey Sound) and 2019 (St David's Head). Additional mitigation measures (MMO's) to reduce or limit impacts of geophysical surveys within site boundary - £400 per day per MMO. Costs incurred for one MMO for one day for two tidal developments in 2016 (Ramsey Sound) and 2017 (St David's Head). 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments within site boundary are not permitted. Construction expenditure (GVA) estimated for two tidal developments based on costs from Regeneris Consulting and Cardiff University (2013): <ul style="list-style-type: none"> Ramsey Sound - £1.536m per year in 2016; and St David's Head - £12.8m per year in 2017.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of recurring costs	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. Surveys estimated each year for two tidal developments to be conducted from 2019-2034 (Ramsey Sound) and 2020-2034 (St David's Head). 	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. Surveys estimated each year for two tidal developments to be conducted from 2019-2034 (Ramsey Sound) and 2020-2034 (St David's Head). 	<ul style="list-style-type: none"> Removal or avoidance of collision risk pressure whereby tidal stream developments within site boundary are not permitted. Operational expenditure (GVA) estimated for two tidal developments based on costs from Regeneris Consulting and Cardiff University (2013): <ul style="list-style-type: none"> Ramsey Sound - £0.048m per year from 2017-2034; and St David's Head - £0.4m per year from 2018-2034.
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	95	96	0
Average annual costs	5	5	0
Present value of total costs (2015–2034)	83	83	0
Economic Impacts (£m)			
Total change in GVA (2015–2034)	0	0	22.000 (£22 million)
Average annual change to GVA	0	0	1.100 (£1.1 million)
Present value of total change in GVA (2015–2034)	0	0	18.769 (£18.8 million)
Direct, Indirect and Induced reduction in employment (annual average)	0	0	196 (construction: 2016 – 2017) 9 (operation: 2017 – 2034)
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers.</p>			

Table 3c. Ports and Harbours [WWM]			
Fishguard and Milford Haven are the only two major ports located within 26km of the WWM dSAC boundary. It is assumed that these ports will undertake one development involving percussive piling/ explosives every five years beginning in 2017. There are no further major ports within 50km of the WWM dSAC, thus Fishguard and Milford Haven represent costs for the lower, intermediate and upper scenarios.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 50km of the dSAC boundary.
Description of one-off costs	<ul style="list-style-type: none"> Two major port within 26km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k per application. 	<ul style="list-style-type: none"> Two major port within 26km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k per application. 	<ul style="list-style-type: none"> Two major port within 50km of the dSAC boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k per application.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive piling and explosives within 26km of the dSAC boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	57	57	57
Average annual costs	3	3	3
Present value of total costs (2015–2034)	42	42	42
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.5.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [WWM]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.5.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [WWM]	
Activity	Description
None identified.	

G.5.3 Social and Distributional Analysis of Impacts from Designation of the Site

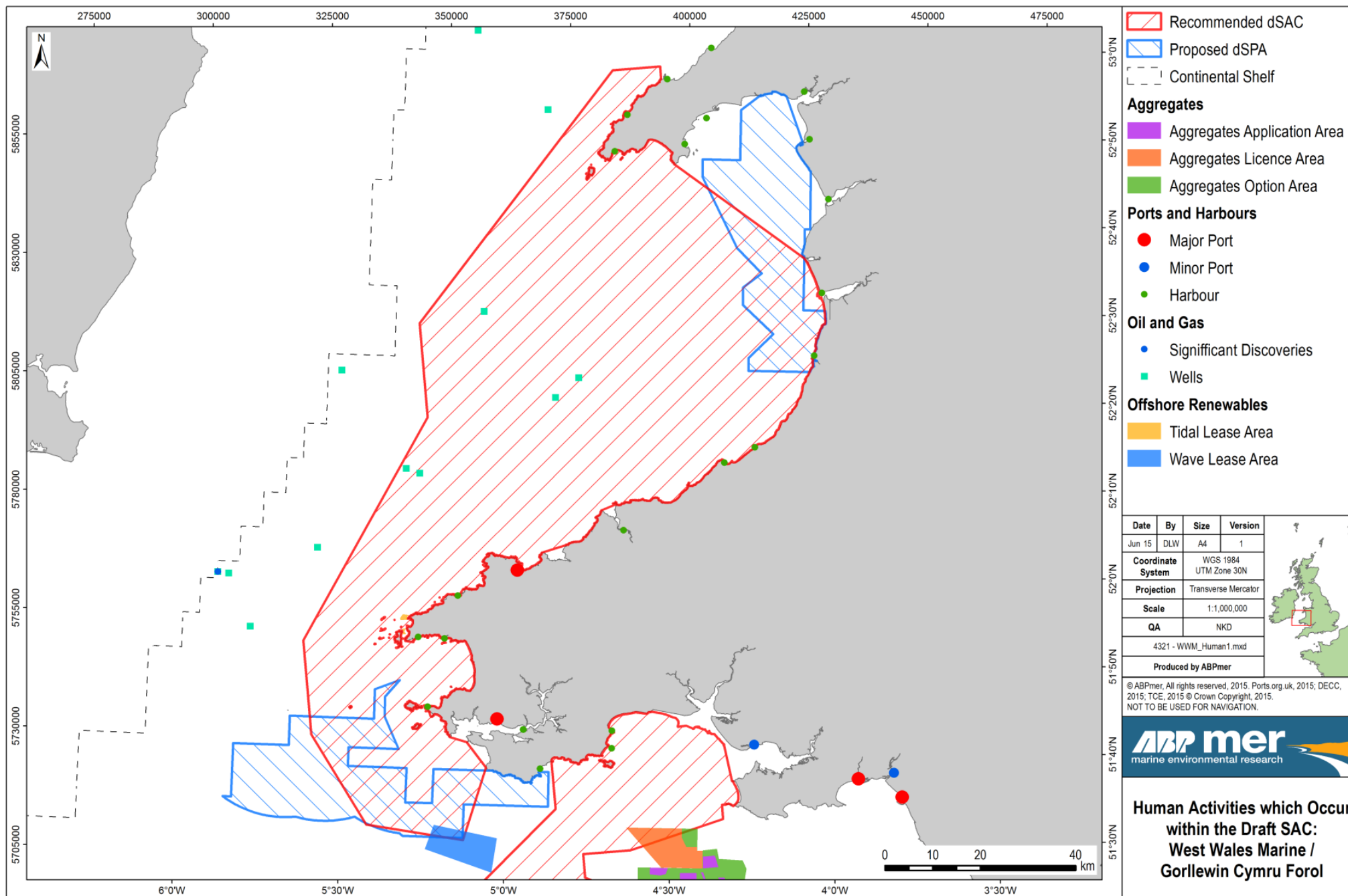
Table 6a. Social Impacts [WWM]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of £3.426m direct GVA, and 8 FTE.	Employment and community cohesion.	Risk of X
Energy Generation	Reduction in GVA and employment.	Intermediate scenario, no impact. Upper scenario only: GVA of approximately £18.8m (PV, 20 years). Reduction of employment in construction (2016 – 2020, annual average) 196; and in operation (2018 – 2034): 9 p.a. Tidal energy only.	Employment and community cohesion.	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

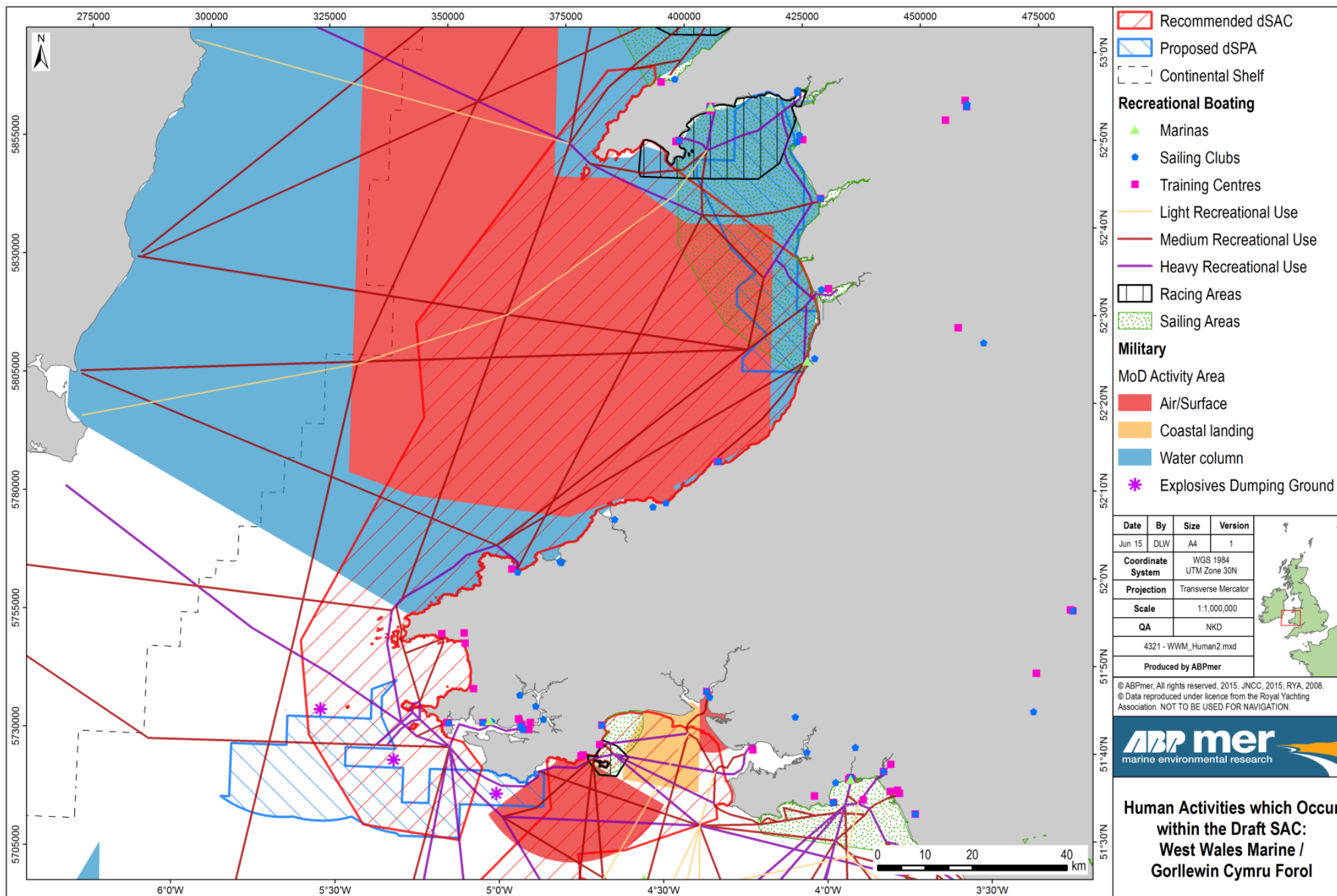
Table 6b. Distribution of Social Impacts – Location, Age and Gender [WWM]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	Wales	It is not possible to associate the jobs impacts with specific ports	Rural Coastal and Island	0	Risk of X	0	Risk of X	0
Energy Generation	Wales		Rural and Urban Coastal	Risk of XXX	Risk of XXX		Risk of XXX	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

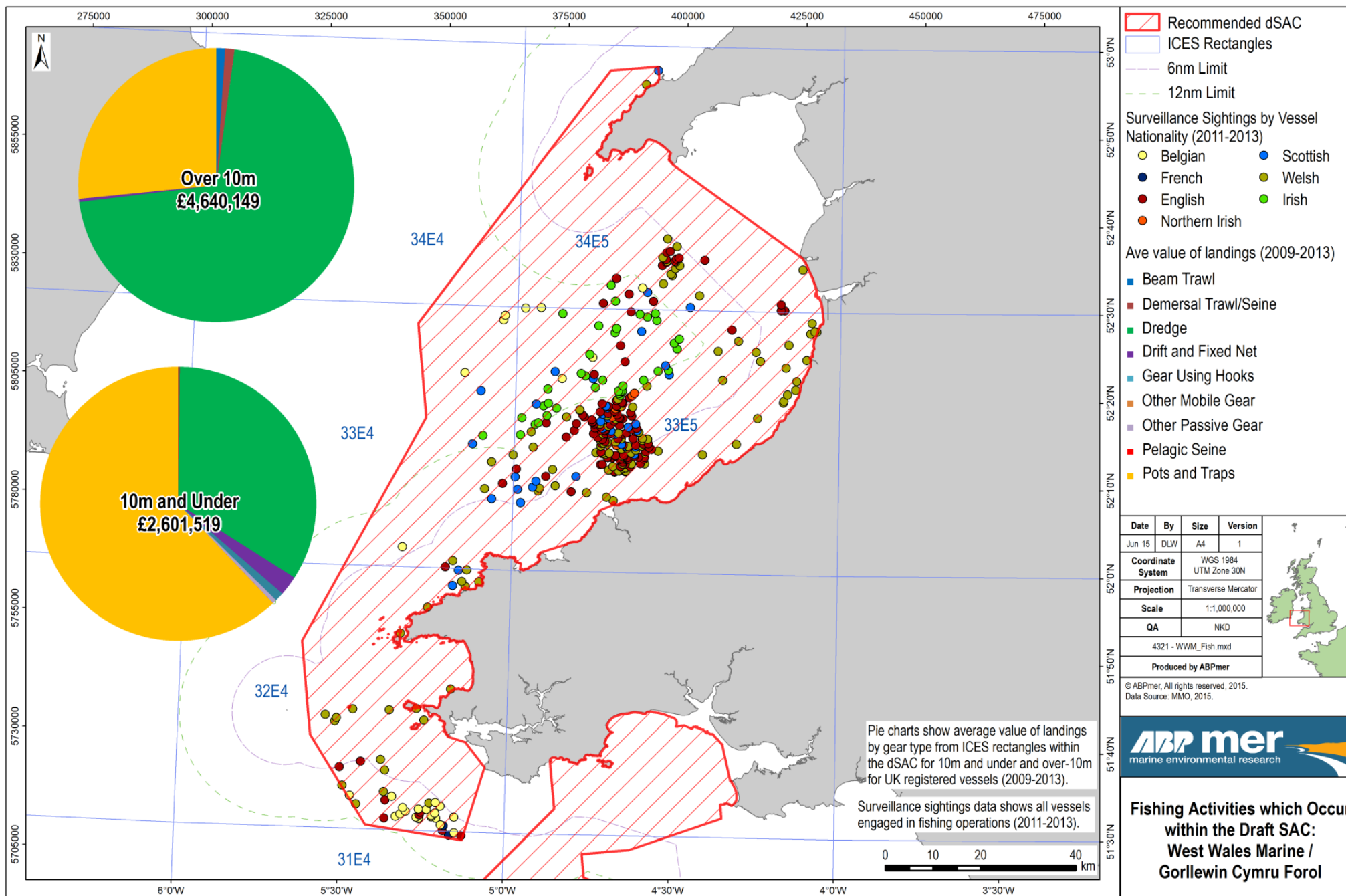
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [WWM]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Demersal trawl/seine; dredge; drift and set nets; pelagic seine.	Risk of X	Risk of X	0	0	0	0
Energy Generation			Risk of XXX	Risk of XXX	Risk of XX			
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.5.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC [WWW]								
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence
			Lower	Intermediate	Upper			
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate
Fish for non-human consumption		Stocks reduced from potential maximum						
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Moderate	Minimal	High.
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate







G.6 Bristol Channel Approaches / Dynesfeydd Môr Hafren dSAC [BCA]

Site Area (km²): [5,818]

G.6.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [BCA]				
Proposed Protected Features				
<p>The Bristol Channel Approaches (Dynesfeydd Môr Hafren) site has been recognised as an area with predicted high densities of harbour porpoises. The entire site has been identified as an important area for porpoises during the winter season, and the northern part in Welsh waters is also an important summer area. These emerged as part of the top 10% persistent high density areas for these seasons within the UK. The physical characteristics of the Bristol Channel Approaches site are well aligned to the predictors determined from the DHI model for determining the probability of presence and the density of harbour porpoise. Much of the site incorporates shallow depths of around 50m). The seabed energy layer of EU SeaMap indicates that the energy levels, including both current and wave energy, is medium across the majority of the site, with patches of high energy where the site meets the coast around Devon, Cornwall and south Wales. This supports the presence of harbour porpoise in the region based on the model predictors, regarding the preference of the species to occur in areas where current and eddy activity is high. The Bristol Channel Approaches site is located in the Celtic and Irish Sea harbour porpoise management unit and contains the Annex II Species 'harbour porpoise' as a qualifying feature. Additionally, three other sites; North Channel and Outer Solway, North Anglesey Marine and West Wales Marine, make up a network of sites designated for Annex II 'harbour porpoise' within this management unit.</p>				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Both seasons	>2% to 15% of the UK part of the MU population.	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution. However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: NE, NRW, JNCC Inshore and Offshore Special Area of Conservation: Bristol Channel Approaches (Dynesfeydd Môr Hafren) SAC Selection Assessment Document. Version 2.0 (May 2015).				

G.6.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [BCA]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Aggregates	10	12	12
Commercial Fisheries	0	544	0
Commercial Fisheries (GVA)	0	0	5,693
Military	National Costs	National Costs	National Costs
Ports and Harbours	21	21	63
Total Quantified Economic Costs	31	577	5,768
Non-Quantified Economic Costs			
Aggregates	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site. 	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site; and Depending on the survey vessel, it may not have sufficient space to accommodate the extra MMO survey staff. Should this prove to be the case, then larger survey vessels would need to be hired, potentially resulting in a doubling of survey costs. 	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site; and The extent to which the number and duration of geophysical surveys might need to be limited is unclear.
Commercial fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Ports and Harbours	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive pilling and explosives within 26km of the dSAC boundary.
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)				[BCA]
Description	Public Sector Costs			
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)	
Quantified Public Sector Costs (Discounted)				
Preparation of Marine Management Schemes	0	0	0	
Preparation of Statutory Instruments	0	8	8	
Development of voluntary measures	0	0	0	
Site monitoring	National Costs	National Costs	National Costs	
Managing the impact of geophysical surveys	24	24	24	
Compliance and enforcement	0	0	0	
Promotion of public understanding	0	0	0	
Regulatory and advisory costs associated with licensing decisions	3	3	7	
Costs to TCE associated with potential leasing revenues foregone	0	0	0	
Total Quantified Public Sector Costs	27	35	39	
Non-Quantified Public Sector Costs				
None identified.				

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)						[BCA]
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis			
			Spatial Scale	Sector	Social Groups	
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of £5.693m direct GVA, and 12 FTE. Risk to 'way of life' and individual identity.	Risk to coast of England. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to dredge, drift and set nets and pelagic seine. Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in lower and middle income groups. X	
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/-x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.						

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)				[BCA]
Impact		Description		
Ecosystem Services Impact (Moderate and High Impacts)		Relevance	Scale of Benefits	
Non-use value		Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery	
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).				

G.6.2 Human Activity Summaries

G.6.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Aggregates				[BCA]
The Noble Banks site is the only area within the BCA dSAC boundary to be currently licenced for marine aggregate extraction and is owned by Llanelli Sand Dredging Ltd. Active dredging takes place in the northern sector of the Nobel Banks site. No application areas exist within the dSAC; however, one option area, again at Noble Banks and owned by Llanelli Sand Dredging Ltd, is present.				
Economic Costs on the Activity of Designation of the Site				
	Lower Estimate	Intermediate Estimate	Upper Estimate	
Assumptions for cost impacts	<ul style="list-style-type: none">Habitats Regulations Assessment (HRA) required for geophysical surveys occurring within the dSAC.	<ul style="list-style-type: none">Habitats Regulations Assessment (HRA) required for geophysical surveys occurring within the dSAC; andUse of MMO's as enhanced mitigation measures when undertaking geophysical surveys for option areas.	<ul style="list-style-type: none">Habitats Regulations Assessment (HRA) required for geophysical surveys occurring within the dSAC; andLimit the number and duration of geophysical surveys within the dSAC boundary (could not be quantified, thus intermediate costs used).	
Description of one-off costs	<ul style="list-style-type: none">One geophysical survey occurs within each licenced area every 3 years - £1k per survey; andFor option areas it is assumed geophysical surveys will be carried out in 2016 and full licences are granted in 2021 in which year geophysical surveys will also take place. Each HRA associated with a geophysical survey is assumed to cost £1k.	<ul style="list-style-type: none">One geophysical survey occurs within each licenced area every 3 years - £1k per survey; andFor option areas it is assumed geophysical surveys will be carried out in 2016 and full licences are granted in 2021 in which year geophysical surveys will also take place. Each HRA associated with a geophysical survey is assumed to cost £1k; andTwo MMOs required per survey day for option areas at a cost of £400 per MMO per surveyor. It has been estimated that each option area will require a survey lasting one day, hence one survey day in 2016 when geophysical surveys are expected to occur and one survey day in 2021 when licences are expected to be granted with accompanying geophysical surveys.	<ul style="list-style-type: none">One geophysical survey occurs within each licenced area every 3 years - £1k per survey; andFor option areas it is assumed geophysical surveys will be carried out in 2016 and full licences are granted in 2021 in which year geophysical surveys will also take place. Each HRA associated with a geophysical survey is assumed to cost £1k.	
Description of recurring costs	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	
Description of non-quantified costs	<ul style="list-style-type: none">Uncertainty around the number of geophysical surveys required over the assessment period for each site.	<ul style="list-style-type: none">Uncertainty around the number of geophysical surveys required over the assessment period for each site; andDepending on the survey vessel, it may not have sufficient space to accommodate the extra MMO survey staff. Should this prove to be the case, then larger survey vessels would need to be hired, potentially resulting in a doubling of survey costs.	<ul style="list-style-type: none">Uncertainty around the number of geophysical surveys required over the assessment period for each site; andThe extent to which the number and duration of geophysical surveys might need to be limited is unclear.	
Quantified Costs on the Activity of Designation of the Site (£k)				
Total costs (2015–2034)	14	16	16	
Average annual costs	1	1	1	
Present value of total costs (2015–2034)	10	12	12	
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.				

Table 3b. Commercial Fisheries				[BCA]
<p>The BCA dSAC intersects with six ICES rectangles, with the majority of the site falling within 31E5 and 30E5. According to ICES rectangle landings statistics, pots and traps, demersal trawls/seines, beam trawls, dredges, drift and set nets, gears using hooks and pelagic seines (over- 10m) and pots and traps, drift and set nets, gears using hooks, demersal trawls/seines, other passive gears, dredges, beam trawls, pelagic seines and other mobile gears (10m and under) vessels operate within these ICES rectangles. The value of catches from the BCA dSAC site was £2,720,100 (over-10m vessels) and £2,480,800 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).</p> <p>According to MMO surveillance data (2011-2013), English potter/whelkers (under-12m) and Belgian beam trawlers (over-15m) comprised the majority of sightings across the site.</p> <p>Non-UK fishing activity (2007-2010) indicates that a minimum of 8 French (6 demersal trawlers, 1 nets and 1 pelagic gear) and 7 Belgian (demersal trawlers) over-15m vessels operate within the BCA dSAC boundary.</p> <p>Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.</p> <p>Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.</p> <p>It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.</p>				
Economic Costs on the Activity of Designation of the Site				
	Lower Estimate	Intermediate Estimate	Upper Estimate	
Assumptions for cost impacts	<ul style="list-style-type: none"> No change to existing. 	<ul style="list-style-type: none"> Bycatch mitigation measures (pingers) on all under-12m vessels using set nets. 178 <12m vessels estimated to fish within the site; average length of set net 550m (3000m for Cornish vessels). Unit cost of pingers £43.48/100m set net over 5 year period (non-GVA cost). Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost). 	<ul style="list-style-type: none"> 100% reduction in net gear effort across the site (GVA impact) 10% reduction in mobile bottom gear effort across the site (GVA impact) 10% reduction in mobile pelagic gear effort across the site (GVA impact) Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost). 	
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Cost of pingers £544k. 	<ul style="list-style-type: none"> None. 	
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Loss of >10m fishing income (annual values, £k): <ul style="list-style-type: none"> Drift and set nets (151.2); Demersal trawls/seines (63.7); Beam trawls (57.2); Dredges (23.6); Pelagic seines (0.3). Loss of <10m fishing income (annual values, £k): <ul style="list-style-type: none"> Drift and set nets (482.3); Demersal trawls/seines (15.3); Dredges (1.6); Beam trawls (0.1); Pelagic seines (<0.1); Other mobile gears (<0.1). 	

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	691	0
Average annual costs	0	35	0
Present value of total costs (2015–2034)	0	544	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	7.889
Average annual change to GVA	0	0	0.394
Present value of total change in GVA (2015–2034)	0	0	5.693
Direct and Indirect reduction in employment	0	0	12
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3c. Ports and Harbours [BCA]			
Swansea is the only major port that lies within a 26km buffer of the BCA dSAC boundary. Under the assumption that each major port will undertake one development involving percussive piling/ explosives every five years, this ports will incur a cost for the development of a HRA in the lower and intermediate scenarios. The upper scenario captures ports within a 50km buffer of the BCA dSAC, within which are an additional two major ports, namely Fowey and Port Talbot. Thus, three major ports would incur costs under the upper scenario.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 50km of the dSAC boundary.
Description of one-off costs	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary - £7.1k per development. One major port within 26km of the dSAC boundary, assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 26km of the dSAC boundary - £7.1k per development. One major port within 26km of the dSAC boundary, assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/explosive activity associated with port developments within 50km of the dSAC boundary - £7.1k per development. Three major ports within 50km of the dSAC boundary, assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive piling and explosives within 26km of the dSAC boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	28	28	85
Average annual costs	1	1	4
Present value of total costs (2015–2034)	21	21	63
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.6.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [BCA]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.6.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [BCA]	
Activity	Description
Energy Generation	There is one potential energy generation development located within the BCA dSAC boundary, North Cornwall Demonstration Zone (Wave Hub). In addition, the South Pembrokeshire Demonstration Zone (Wave Hub) is located within 5km of the BCA dSAC boundary. However, no management measures are proposed for wave energy developments and, therefore, no costs are anticipated.

G.6.3 Social and Distributional Analysis of Impacts from Designation of the Site

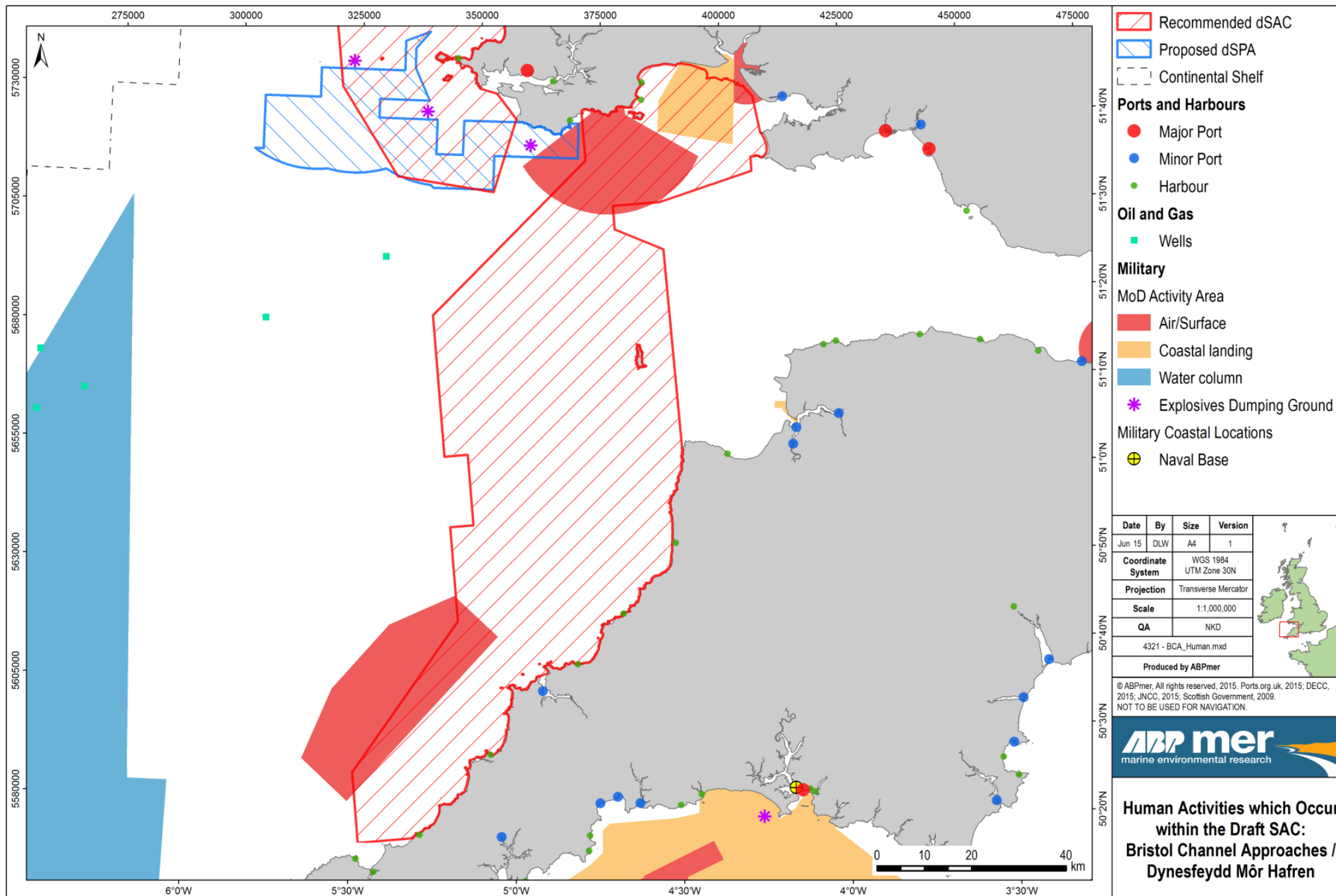
Table 6a. Social Impacts [BCA]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of £5.693m direct GVA, and 12 FTE.	Employment and community cohesion.	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

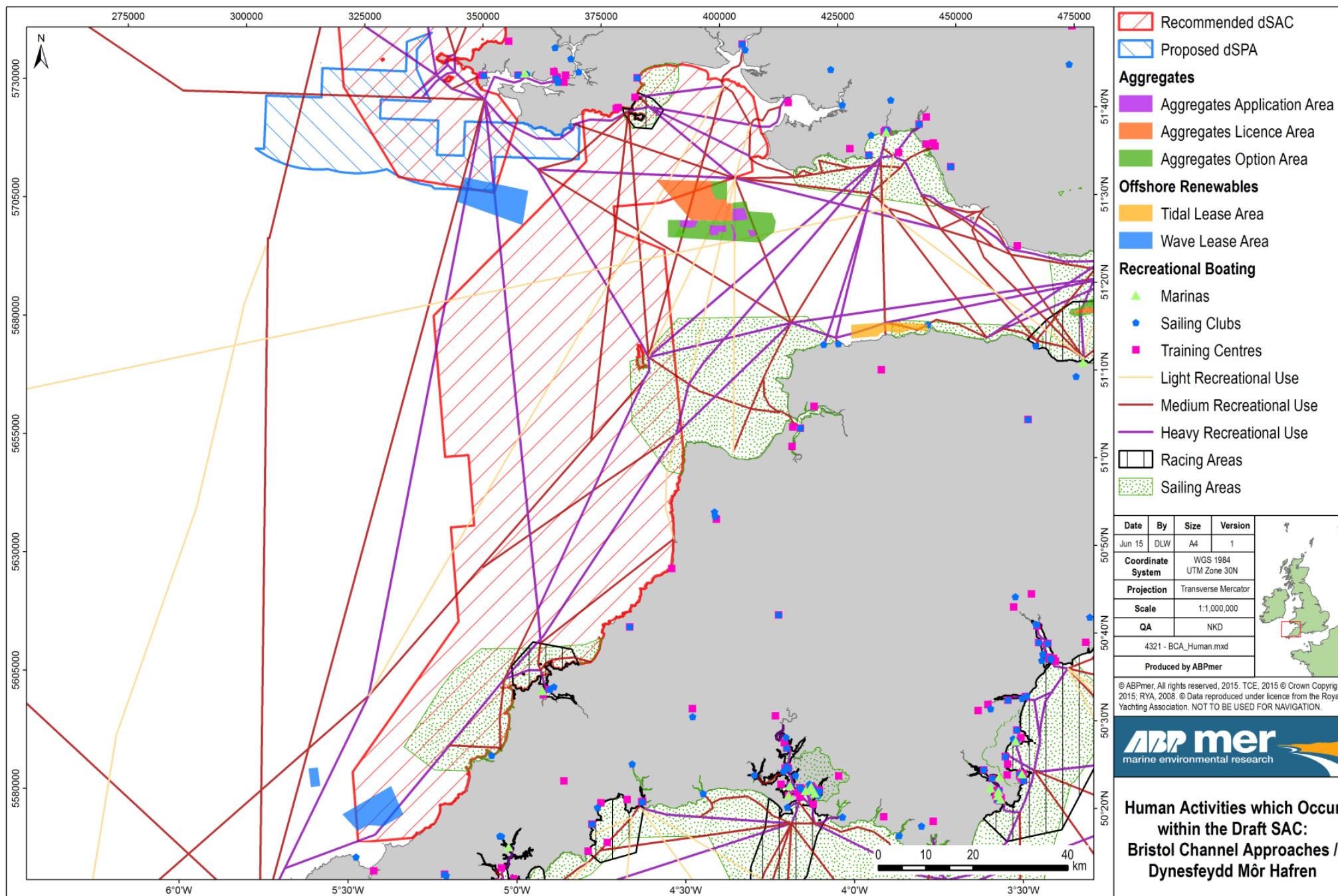
Table 6b. Distribution of Social Impacts – Location, Age and Gender [BCA]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	SW England	It is not possible to associate the jobs impacts with specific ports.	Rural Coastal and Island	0	Risk of X	0	Risk of X	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

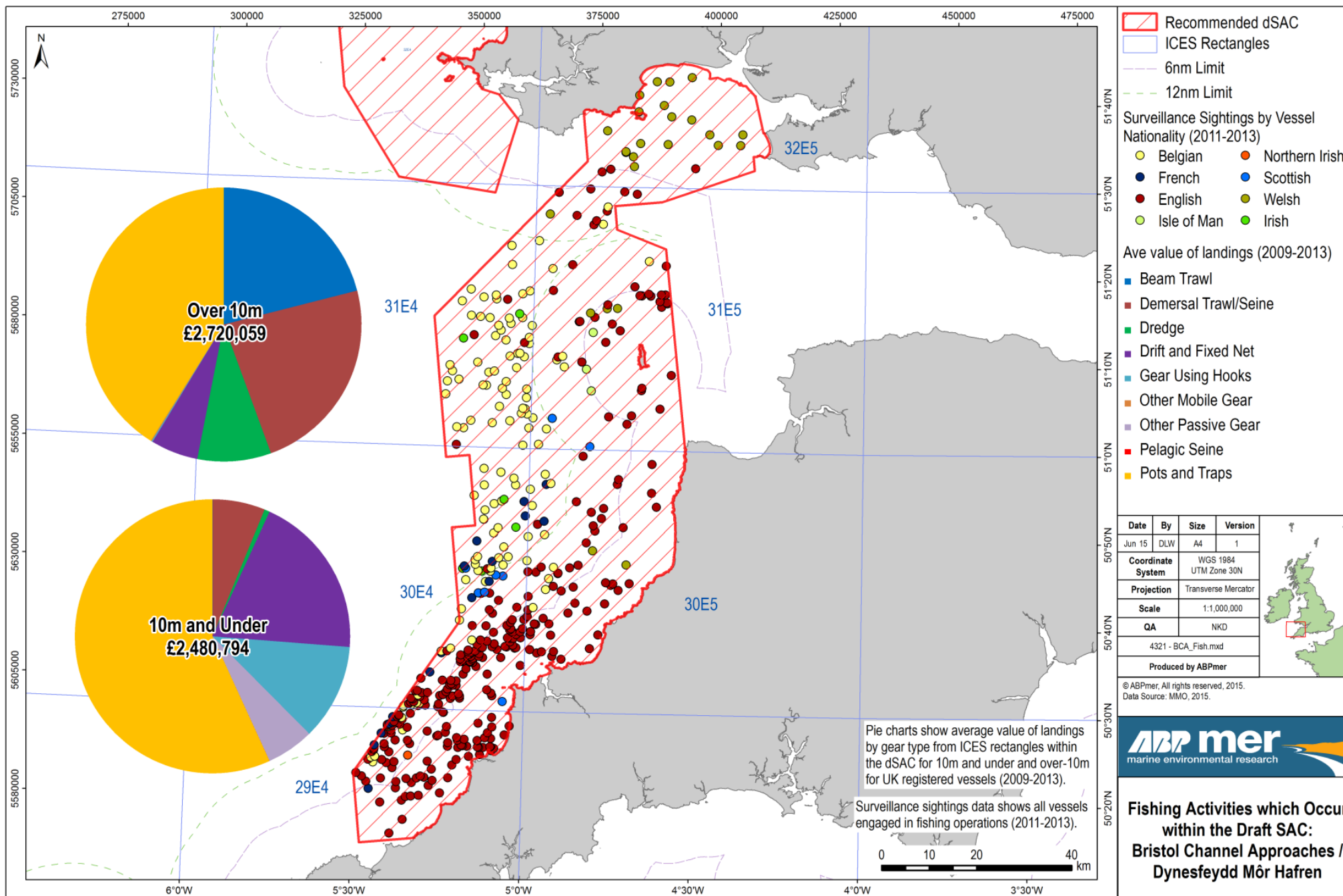
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [BCA]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Dredge; drift and set nets; pelagic seine.	Risk of X	Risk of X	0	0	0	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.6.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC									[BCA]
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence	
			Lower	Intermediate	Upper				
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate	
Fish for non-human consumption		Stocks reduced from potential maximum							
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain	
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	High.	
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate	
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate	







G.7 Southern North Sea dSAC [SNS]

Site Area (km²): [36,957.7]

G.7.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [SNS]				
Proposed Protected Features				
<p>The Southern North Sea site has been recognised as an area with predicted high densities of harbour porpoises. The main area included within the site covers important winter and summer habitat, which emerged as part of the top 10% persistent high density areas for these seasons within the UK. Approximately two thirds of the site, the northern part, is recognised as important for porpoises during the summer season, whilst the southern part is more important during the winter. The physical characteristics of the Southern North Sea site are well aligned to the predictors determined from the DHI model for determining the probability of presence and the density of harbour porpoise. The majority of the site incorporates shallow depths of around 40m (see section 8). The seabed energy layer of EU SeaMap indicates that the energy levels, including both current and wave energy, are predominantly medium across almost all of the site, with some pockets of high energy around the coast of Kent, down in the very southern tip where the water flows into the channel, and also in the north east portion of the site. This supports the presence of harbour porpoise in the region based on the model predictors, regarding the preference of the species to occur in areas where current and eddy activity is high. The Southern North Sea site is located in the North Sea harbour porpoise management unit and contains the Annex II Species 'harbour porpoise' as a qualifying feature. The Outer Moray Firth draft SAC for harbour porpoise is also within the North Sea Management Unit.</p>				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Both seasons	>15% to 100% of the UK part of the MU population	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution. However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: NE, JNCC Inshore and Offshore Special Area of Conservation: Southern North Sea SAC Selection Assessment Document Version 2.0 (May 2015)				

G.7.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SNS]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Aggregates	85	120	120
Commercial Fisheries	0	250	0
Commercial Fisheries (GVA)	0	0	8,956
Military	National Costs	National Costs	National Costs
Offshore Renewables	536	606	376
Offshore Renewables (GVA)	0	0	1,923,929 (£1.92 billion)
Oil and Gas	448	1,824	1,824
Ports and Harbours	83	83	209
Total Quantified Economic Costs	1,152	2,883	1,935,414 (£1.94 billion)
Non-Quantified Economic Costs			
Aggregates	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site. 	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site; and Depending on the survey vessel, it may not have sufficient space to accommodate the extra MMO survey staff. Should this prove to be the case, then larger survey vessels would need to be hired, potentially resulting in a doubling of survey costs. 	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site; and The extent to which the number and duration of geophysical surveys might need to be limited is unclear.
Commercial fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC; and Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Offshore Renewables	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)				[SNS]
Human Activity	Cost Impact on Activity			
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)	
Oil and Gas	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment; and Enhanced mitigation measures associated with the use of explosives during decommissioning activities within 1km of the dSAC. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment; Limiting the number and duration of geophysical surveys within or near site boundaries; and Prohibition on use of explosives within 1km of the dSAC boundary. 	
Ports and Harbours	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive pilling and explosives within 26km of the boundary. 	
Note: For detailed information on economic cost impacts on activities, see Table 3.				

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SNS]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	8	8
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	26	26	26
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	129	129	126
Costs to TCE associated with potential leasing revenues foregone	0	0	324,794 (£324.8 million)
Total Quantified Public Sector Costs	155	163	324,956 (£325.0 million)
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SNS]					
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis		
			Spatial Scale	Sector	Social Groups
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of £8.956m direct GVA, and 22 FTE. Risk to 'way of life' and individual identity.	Risk to coast of North Sea. It is not possible to associate the jobs impacts with specific ports. Risk to rural and urban coastal communities. XX	Risk to dredge, drift and set nets. Risk of impacts is to vessels >10m. XX	Risk of employment impacts for working age men in lower and middle income groups. XX
	Energy Generation	Reduced income and employment: Upper scenario: GVA of approximately £1.92 billion (PV, 20 years). Reduction of employment in construction (2017 – 2021, annual average): 5,353; and in operation (2020 – 2034): 730 p.a. Wind energy only.	Risk of job impacts could be experienced anywhere along the East Coast, though main construction facilities likely to be in Humber at Hull and Killingholme. Risk to rural and urban coastal communities. XXX	Risk to wind energy sector, and its construction supply chain. XXX	Risk of very large scale of impacts which would mean there would be effects on overall community cohesion, affecting all social groups present. XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.					

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SNS]		
Impact	Description	
Ecosystem Services Impact (Moderate and High Impacts)	Relevance	Scale of Benefits
Non-use value	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).		

G.7.2 Human Activity Summaries

G.7.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Aggregates		[SNS]	
There are currently 21 areas licenced for aggregate extraction within the SNS dSAC (in areas 296, 212, 254, 401/2A, 401/2B, 508, 240, 228, 513/1, 328/1, 328/2, 328/3, 361/1, 242, 361/2, 361/3, 511, 513/2, 512, and 2x 430). A further 22 application areas exist within the dSAC boundary (in areas 466/1, 485/2, 485/1, 483, 492, 484, 507/5, 507/2, 507/4, 507/1, 507/3, 510/2, 507/6, 501/2, 501/1, 494, 512, 513/2, 509/3, 510/1, 498 and 498) as well as 11 option areas (in areas 517, 516, 490, 492, 494, 501, 485, 483, 484, 498, 498). Active dredging occurs within 15 of the currently licenced areas, resulting in 6 areas where licences are present but no dredging takes place as of January 2015 (these are areas 401/2B, 361/1, 361/2, 361/3, 296, and 328/3).			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">Habitats Regulations Assessment (HRA) required for geophysical surveys occurring within the dSAC.	<ul style="list-style-type: none">Habitats Regulations Assessment (HRA) required for geophysical surveys occurring within the dSAC; andUse of MMO's as enhanced mitigation measures when undertaking geophysical surveys for application and option areas.	<ul style="list-style-type: none">Habitats Regulations Assessment (HRA) required for geophysical surveys occurring within the dSAC; andLimit the number and duration of geophysical surveys within the dSAC boundary (could not be quantified, thus intermediate costs used).
Description of one-off costs	<ul style="list-style-type: none">One geophysical survey occurs within each licenced area every 3 years. From 2017 a regional programme takes over whereby the SNS is split into three regions. It is assumed that one survey is carried out in each region each year from 2017 onwards each with a HRA cost of £1k;For each application area it is assumed that full licences for all sites granted in 2017 and geophysical surveys carried out for all 22 sites in that year. Thereafter monitoring included in regional programme Each HRA associated with a geophysical survey is assumed to cost £1k; andFor option areas it is assumed geophysical surveys will be carried out in 2016 and full licences are granted in 2021 in which year geophysical surveys will also take place. Each HRA associated with a geophysical survey is assumed to cost £1k.	<ul style="list-style-type: none">One geophysical survey occurs within each licenced area every 3 years. From 2017 a regional programme takes over whereby the SNS is split into three regions. It is assumed that one survey is carried out in each region each year from 2017 onwards each with a HRA cost of £1k;For each application areas it is assumed the full licences for all sites granted in 2017 and geophysical surveys carried out for all 22 sites in that year. Thereafter monitoring included in regional programme Each HRA associated with a geophysical survey is assumed to cost £1k;For option areas it is assumed geophysical surveys will be carried out in 2016 and full licences are granted in 2021 in which year geophysical surveys will also take place. Each HRA associated with a geophysical survey is assumed to cost £1k; andTwo MMOs required per survey day for option and application areas at a cost of £400 per MMO per surveyor. It has been estimated that each area will require a survey lasting one day, hence 22 survey days for application sites and 11 survey days for option areas. The cost for application sites is estimated to fall in 2017 when licences are expected to be granted and in 2016 and 2021 for option areas (relating to the timing of geophysical surveys).	<ul style="list-style-type: none">One geophysical survey occurs within each licenced area every 3 years. From 2017 a regional programme takes over whereby the SNS is split into three regions. It is assumed that one survey is carried out in each region each year from 2017 onwards each with a HRA cost of £1k;For each application areas it is assumed the full licences for all sites granted in 2017 and geophysical surveys carried out for all 22 sites in that year. Thereafter monitoring included in regional programme. Each HRA associated with a geophysical survey is assumed to cost £1k; andFor option areas it is assumed geophysical surveys will be carried out in 2016 and full licences are granted in 2021 in which year geophysical surveys will also take place. Each HRA associated with a geophysical survey is assumed to cost £1k.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site. 	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site; and Depending on the survey vessel, it may not have sufficient space to accommodate the extra MMO survey staff. Should this prove to be the case, then larger survey vessels would need to be hired, potentially resulting in a doubling of survey costs. 	<ul style="list-style-type: none"> Uncertainty around the number of geophysical surveys required over the assessment period for each site; and The extent to which the number and duration of geophysical surveys might need to be limited is unclear.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	105	143	143
Average annual costs	5	7	7
Present value of total costs (2015–2034)	85	120	120
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p>			

Table 3b. Commercial Fisheries				[SNS]
<p>The SNS dSAC intersects with twenty-five ICES rectangles, with the majority of the site falling within 34F2, 38F1, 37F1, 33F2, 36F1 and 39F1. According to ICES rectangle landings statistics, demersal trawls/seines, beam trawls, pots and traps, dredges, other mobile gears, drift and set nets, gears using hooks and other passive gears (over- 10m) and pots and traps, drift and set nets, demersal trawls/seines, gears using hooks, dredges, other mobile gears, beam trawls and other passive gears, (10m and under) vessels operate within these ICES rectangles. The value of catches from the SNS dSAC site was £7,930,000 (over-10m vessels) and £2,801,900 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).</p> <p>According to MMO surveillance data (2011-2013), Dutch beam trawlers (over-40m) and Belgian beam trawlers (over-15m), followed by French trawlers (15-40m) and Dutch beam trawlers (15m-40m) comprised the majority of sightings across the site.</p> <p>Non-UK fishing activity (2007-2010) indicates that a minimum of 19 French demersal trawlers, 15 Belgian (14 demersal trawlers, 1 net gear), 15 Danish (9 demersal trawlers, 4 pelagic gear, 2 nets), 12 Dutch (11 demersal trawlers, 1 pelagic gear), 1 German demersal trawler and 4 Norwegian over-15m vessels operate within the SNS dSAC boundary.</p> <p>Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.</p> <p>Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.</p> <p>It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.</p>				
Economic Costs on the Activity of Designation of the Site				
	Lower Estimate	Intermediate Estimate	Upper Estimate	
Assumptions for cost impacts	<ul style="list-style-type: none"> No change to existing. 	<ul style="list-style-type: none"> Bycatch mitigation measures (pingers) on all under-12m vessels using set nets. 156 <12m vessels estimated to fish within the site; average length of set net 1000m in Lincolnshire, 2000m in Suffolk, 700m in Norfolk, 550m elsewhere. Unit cost of pingers £43.48/100m set net over 5 year period (non-GVA cost). Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost). 	<ul style="list-style-type: none"> 100% reduction in net gear effort across the site (GVA impact) 10% reduction in mobile bottom gear effort across the site (GVA impact) 10% reduction in mobile pelagic gear effort across the site (GVA impact) Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost). 	
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Cost of pingers £250k. 	<ul style="list-style-type: none"> None. 	
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Loss of >10m fishing income (annual values, £k): <ul style="list-style-type: none"> Demersal trawls/seines (274.3); Beam trawls (221.5); Drift and set nets (85.6); Dredges (53.5); Other mobile gears (14.1). Loss of <10m fishing income (annual values, £k): <ul style="list-style-type: none"> Drift and set nets (735.9); Demersal trawls/seines (46.5); Dredges (5.3); Other mobile gears (0.2); Beam trawls (0.1). 	

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC; and Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	317	0
Average annual costs	0	16	0
Present value of total costs (2015–2034)	0	250	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	12.411
Average annual change to GVA	0	0	0.621
Present value of total change in GVA (2015–2034)	0	0	8.956
Direct and Indirect reduction in employment	0	0	21.7
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3c. Offshore Renewables		[SNS]	
<p>There are three operational offshore wind developments located within the SNS dSAC boundary; namely Greater Gabbard (504 MW), Scroby Sands (60 MW) and Thanet (300 MW). In addition, the London Array 1 (630 MW), Westernmost Rough (210 MW, under construction), Gunfleet Sands I and II (173 MW) and Humber Gateway (219 MW, under construction) are located within 26km of the boundary and Gunfleet Sands III Demonstration Site (12 MW), Kentish Flats (90 MW), Kentish Flats Extension (49.5 MW, under construction) and Sheringham Shoal (317 MW) are located within 50km of the boundary. However, based on the measures proposed, no costs are anticipated to be incurred by fully operational developments. Therefore, economic costs and management measures associated with energy generation in this dSAC are described in light of known possible future developments.</p> <p>There are numerous planned or consented offshore wind developments located wholly or partially within the SNS dSAC boundary, namely Galloper (Greater Gabbard Extension), Dogger Bank Creyke Beck A and B, Dogger Bank Teesside B and C, Hornsea One (Heron), Hornsea Two (Optimus and Breesea), East Anglia (One, Three and Four). There are also further planned or consented offshore wind developments located wholly or partially within 26km of the boundary (Hornsea One (Njord), Dogger Bank Teesside A and D, Triton Knoll and Dudgeon) and 50km of the boundary (Race Bank).</p> <p>The Hornsea Area of Search is partially located (~60%) within the SNS dSAC boundary. Hornsea One (DONG Energy, 1,200 MW) was granted consent in December 2014, with the offshore wind development comprising two wind farms (Heron and Njord, 600 MW each) with up to 120 turbines to be installed at each site. Hornsea Two (Smart Wind, 1,800 MW) is a similar project (not consented) in that it is planned to comprise two wind farms (Optimus and Breesea, 900 MW each) with up to 180 turbines to be installed at each site.</p> <p>The Dogger Bank of Search is partially located (~33%) within the SNS dSAC boundary. The development of the Dogger Bank Area of Search, progressed by Forewind (RWE Innogy UK, SSE, Statkraft and Statoil), is split into three projects each comprising two wind farms, namely Creyke Beck A and B, Teesside A and B and Teesside C and D. The first of these developments, Creyke Beck A and B (2,400 MW), was granted development consent in February 2015 with each wind farm (1,200 MW) comprising up to 200 turbines. Planning application for the second development, Teesside A and B (2,400 MW total, up to 400 turbines), was submitted in March 2014 and is currently under consideration by the Secretary of State. The planning application for the final development, Teesside C and D (2,400 MW total, up to 400 turbines), could be submitted as early as 2016.</p> <p>The East Anglia Area of Search is almost entirely (~99.5%) located within the SNS dSAC boundary. East Anglia One (ScottishPower Renewables, 714 MW) was granted development consent in June 2014 and awarded a Contract for Difference awarded in 2015. It is anticipated that construction works will commence in 2017, with the first of 100 turbines installed by 2019 and the project fully operational during 2020. Subsequent projects in the area, East Anglia Three (1,200 MW, 172 turbines) and Four (1,200 MW, 240 turbines), are currently in development.</p> <p>The Galloper (Greater Gabbard Extension) (SSE Renewables and RWE Innogy, 336 MW, 56 turbines) offshore wind development was granted consent in May 2013. Triton Knoll (RWE Innogy and Statkraft, 900 MW, 288 turbines) was also granted consent in 2013. Both the Dudgeon (Statoil, Masdar and Statkraft, 402 MW, 67 turbines) and Race Bank (DONG Energy, 580 MW, 91 turbines) developments were granted consent in July 2012..</p> <p>There are no planned, consented or operational tidal or wave energy developments within the SNS dSAC boundary or within 50km.</p> <p>It should be noted that additional cost impacts could also arise as a result of consenting delays. The cost impacts and uncertainty associated with SAC designation may affect investor confidence.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">Additional assessment (HRA) of new offshore wind developments within 26km of site boundary; andAdditional assessment (HRA) for certain geophysical surveys within site boundary.	<ul style="list-style-type: none">Additional assessment (HRA) of new offshore wind developments within 26km of site boundary; andAdditional assessment (HRA) for certain geophysical surveys within site boundary; andAdditional mitigation measures (MMO's) to reduce or limit impacts of geophysical surveys (for projects without CfD) within site boundary.	<ul style="list-style-type: none">Additional assessment (HRA) of new offshore wind developments within 50km (but >26km) of site boundary;Additional assessment (HRA) for certain geophysical surveys within site boundary; andProhibition on percussive pile driving within site boundary whereby offshore wind developments (including those already consented) are not permitted (100%).
Description of one-off costs	<ul style="list-style-type: none">Additional assessment (HRA) of new offshore wind developments within 26km of site boundary - £30k per development.; andAdditional assessment (HRA) for certain geophysical surveys within site boundary:<ul style="list-style-type: none">Pre-construction - £1k per survey.Post-construction - £1k per survey.	<ul style="list-style-type: none">Additional assessment (HRA) of new offshore wind developments within 26km of site boundary - £30k per development.;Additional assessment (HRA) for certain geophysical surveys within site boundary:<ul style="list-style-type: none">Pre-construction - £1k per survey.Post-construction - £1k per survey.	<ul style="list-style-type: none">Additional assessment (HRA) of new offshore wind developments within 50km (but >26km) of site boundary - £30k per development;Additional assessment (HRA) for certain geophysical surveys within site boundary:<ul style="list-style-type: none">Pre-construction - £1k per survey.Post-construction - £1k per survey.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
		<ul style="list-style-type: none"> Additional mitigation measures (MMO's) to reduce or limit impacts of geophysical surveys (for projects without CfD) within site boundary - £400 per day per MMO. Costs incurred for two MMO's for 10 day each. 	<ul style="list-style-type: none"> Prohibition on percussive pile driving within 26km of site boundary whereby offshore wind developments (including those already consented) are not permitted (100%). Construction expenditure (GVA) based on costs from Seagreen Phase 1.
Description of recurring costs	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey.. 	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. 	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. Prohibition on percussive pile driving within site boundary in the period to 2020 whereby offshore wind developments (including those already consented) are not permitted (100%). Operational expenditure (GVA) based on costs from Seagreen Phase 1.
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	593	673	406
Average annual costs	30	34	20
Present value of total costs (2015–2034)	536	606	376
Economic Impacts (£m)			
Total change in GVA (2015–2034)	0	0	2,562.075 (£2.56 billion)
Average annual change to GVA	0	0	128.104 (£128.1 million)
Present value of total change in GVA (2015–2034)	0	0	1,923.929 (£1.92 billion)
Direct, Indirect and Induced reduction in employment (annual average)	0	0	5,353 (construction; 2017 – 2021) 730 (operation; 2020 – 2034)
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers.</p>			

Table 3d. Oil and Gas [SNS]			
<p>The majority of areas currently licenced for oil and gas extraction around the UK are located within the North Sea. There are currently 165 licenced blocks within 5km of the SNS dSAC, 145 of these block fall within the SNS dSAC boundary. Data from DECC suggest that there are 154 oil fields within licenced areas in the Southern North Sea; field status was only available for 124 of these fields which indicated that 94 were producing oil, 19 had ceased production and 13 had suspended production as of April 2015. Oil and gas exploration and development requires a number of geophysical surveys, all of which produce noise that has the potential to affect harbour porpoise. In 2012, 2013 and 2014 there were 26, 24 and 25 surveys undertaken respectively within the SNS dSAC boundary which equated to a total of approximately 1,292 survey days. These surveys consisted of seismic, sub-bottom, multibeam, seismic and multibeam, multibeam and sub-bottom and one unknown survey (in 2013).</p> <p>The decommissioning of infrastructure that has come to the end of its life may require explosives. It is unlikely that this technique would be used to decommission well heads within the dSAC; however, it is possible that explosives could be used to remove smaller structures.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of geophysical surveys or decommissioning activities using explosives within or near dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of geophysical surveys or decommissioning activities using explosives within or near dSAC boundary; and The use of Passive Acoustic Monitoring (PAM) as enhanced mitigation measures for geophysical surveys. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of geophysical surveys or decommissioning activities using explosives within or near dSAC boundary; Limit the number and duration of geophysical surveys within or near site boundary (could not be quantified, thus intermediate costs used); and Prohibition on use of explosives in decommissioning activities within or near site boundary (could not be quantified, thus intermediate costs used).
Description of one-off costs	<ul style="list-style-type: none"> Assumed that there will be 25 geophysical surveys per year requiring HRA, decreasing 50% (to 13 surveys per year) by 2034 at a rate of roughly 2% per year. Each survey has been estimated to cost £1k; and Ten HRAs in relation to explosions per year at a cost of £1k each. 	<ul style="list-style-type: none"> Assumed that there will be 25 geophysical surveys per year requiring HRA, decreasing 50% (to 13 surveys per year) by 2034 at a rate of roughly 2% per year. Each survey has been estimated to cost £1k; Ten HRAs in relation to explosions per year at a cost of £1k each; and Estimated 300 surveys days per year each for PAM with a cost of £400 per day. Number of days to decrease 50% by 2034. 	<ul style="list-style-type: none"> Assumed that there will be 25 geophysical surveys per year requiring HRA, decreasing 50% (to 13 surveys per year) by 2034 at a rate of roughly 2% per year. Each survey has been estimated to cost £1k. Ten HRAs in relation to explosions per year at a cost of £1k each.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment; and Enhanced mitigation measures associated with the use of explosives during decommissioning activities within 1km of the dSAC boundary. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment; Limiting the number and duration of geophysical surveys within or near site boundaries; and Prohibition on use of explosives within 1km of the dSAC boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	595	2,395	2,395
Average annual costs	30	120	120
Present value of total costs (2015–2034)	448	1,824	1,824
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p>			

Table 3e. Ports and Harbours [SNS]			
Four major ports lie within a 26km buffer of the SNS dSAC, namely Great Yarmouth, Dover, Felixstowe and Ramsgate. Under the assumption that each major port will undertake one development involving percussive piling/ explosives every five years, these ports will incur a cost for the development of a HRA in the lower and intermediate scenarios. The upper scenario captures ports within a 50km of the SNS dSAC, hence an additional six major ports (Grimsby, Harwich, Hull, Immingham, Ipswich, New Holland) would incur such costs.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	▪ Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 26km of the boundary.	▪ Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 26km of the boundary.	▪ Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 50km of the boundary.
Description of one-off costs	▪ Four major ports within 26km of the boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k.	▪ Four major ports within 26km of the boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k.	▪ Ten major ports within 50km of the boundary. Assuming a development requiring piling or explosives will occur at each port every 5 years beginning in 2017 - £7.1k.
Description of recurring costs	▪ None.	▪ None.	▪ None.
Description of non-quantified costs	▪ Uncertainty of the location, nature and timing of future port development activity.	▪ Uncertainty of the location, nature and timing of future port development activity.	▪ Uncertainty of the location, nature and timing of future port development activity; and ▪ Prohibition of developments involving percussive piling and explosives within 26km of the boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	114	114	284
Average annual costs	6	6	14
Present value of total costs (2015–2034)	83	83	209
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.7.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [SNS]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.7.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [SNS]	
Activity	Description
None identified.	

G.7.3 Social and Distributional Analysis of Impacts from Designation of the Site

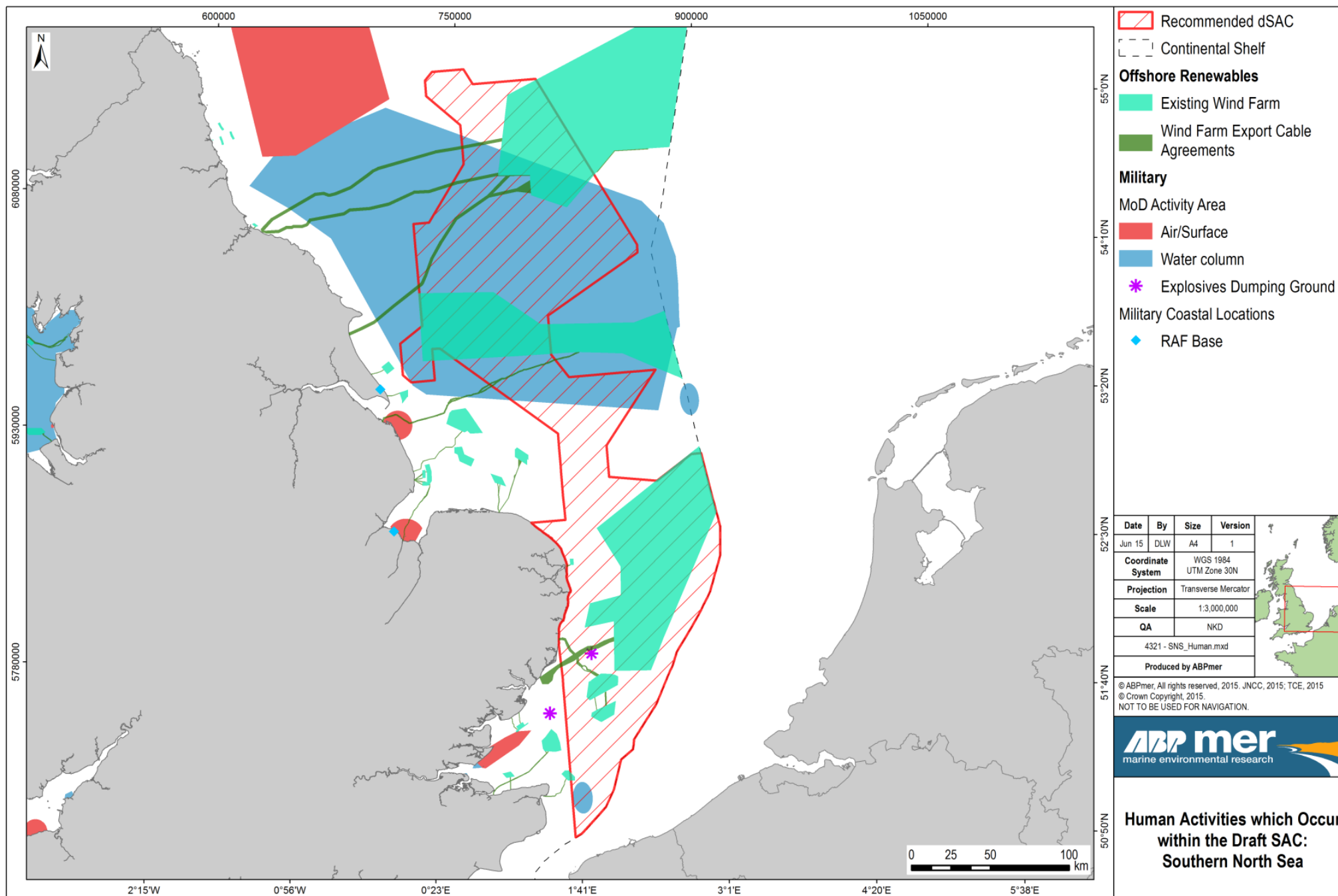
Table 6a. Social Impacts [SNS]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of £8.956m direct GVA, and 22 FTE.	Employment and community cohesion.	Risk of XX
Energy Generation	Reduction in GVA and employment.	Upper scenario: GVA of approximately £1.92 billion (PV, 20 years). Reduction of employment in construction (2017 – 2021, annual average): 5,353; and in operation (2020 – 2034): 730 p.a. Wind energy only.	Employment and community cohesion.	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

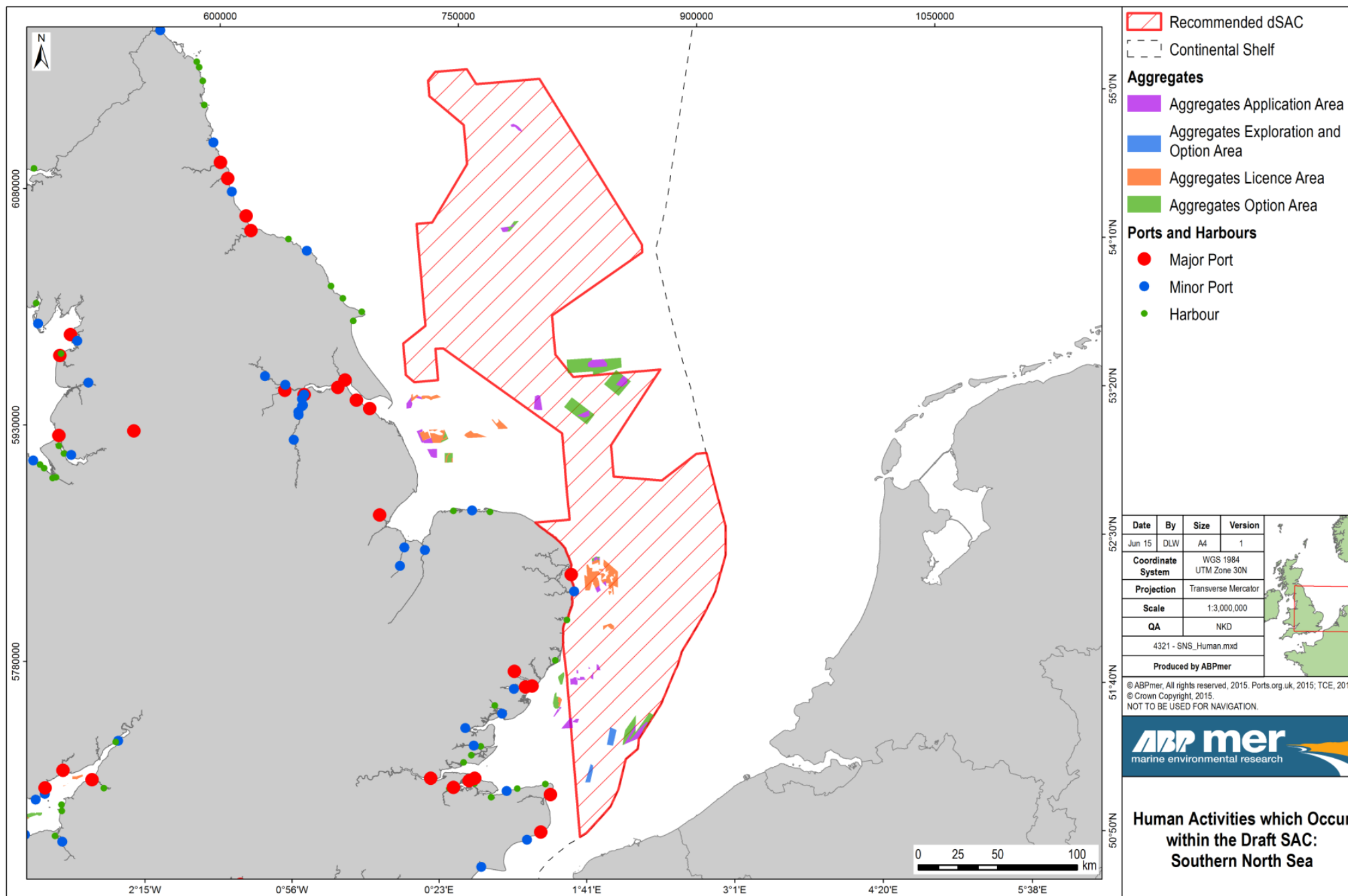
Table 6b. Distribution of Social Impacts – Location, Age and Gender [SNS]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	North Sea	It is not possible to associate the jobs impacts with specific ports.	Rural and Urban Coastal	0	Risk of XX	0	Risk of XX	0
Energy Generation	North Sea	Job impacts could be experienced anywhere along the East Coast, though main construction facilities likely to be in Humber at Hull and Killingholme.	Rural and Urban Coastal	Risk of XXX	Risk of XXX		Risk of XXX	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

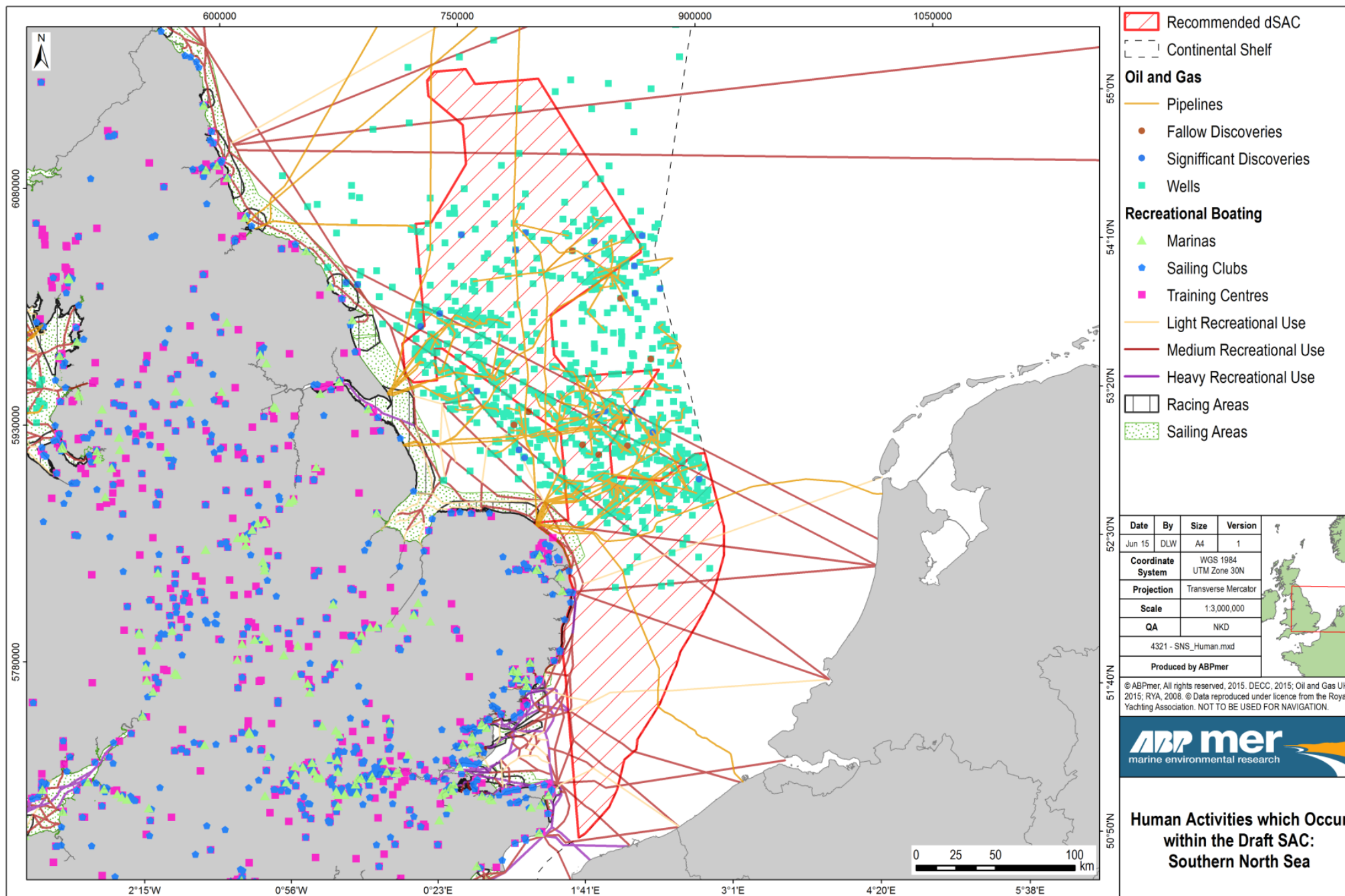
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [SNS]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Dredge; drift and set nets.	Risk of X	Risk of XX	0	0	0	0
Energy Generation			Risk of XXX	Risk of XXX	Risk of XX		Risk of XX	Risk of XX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

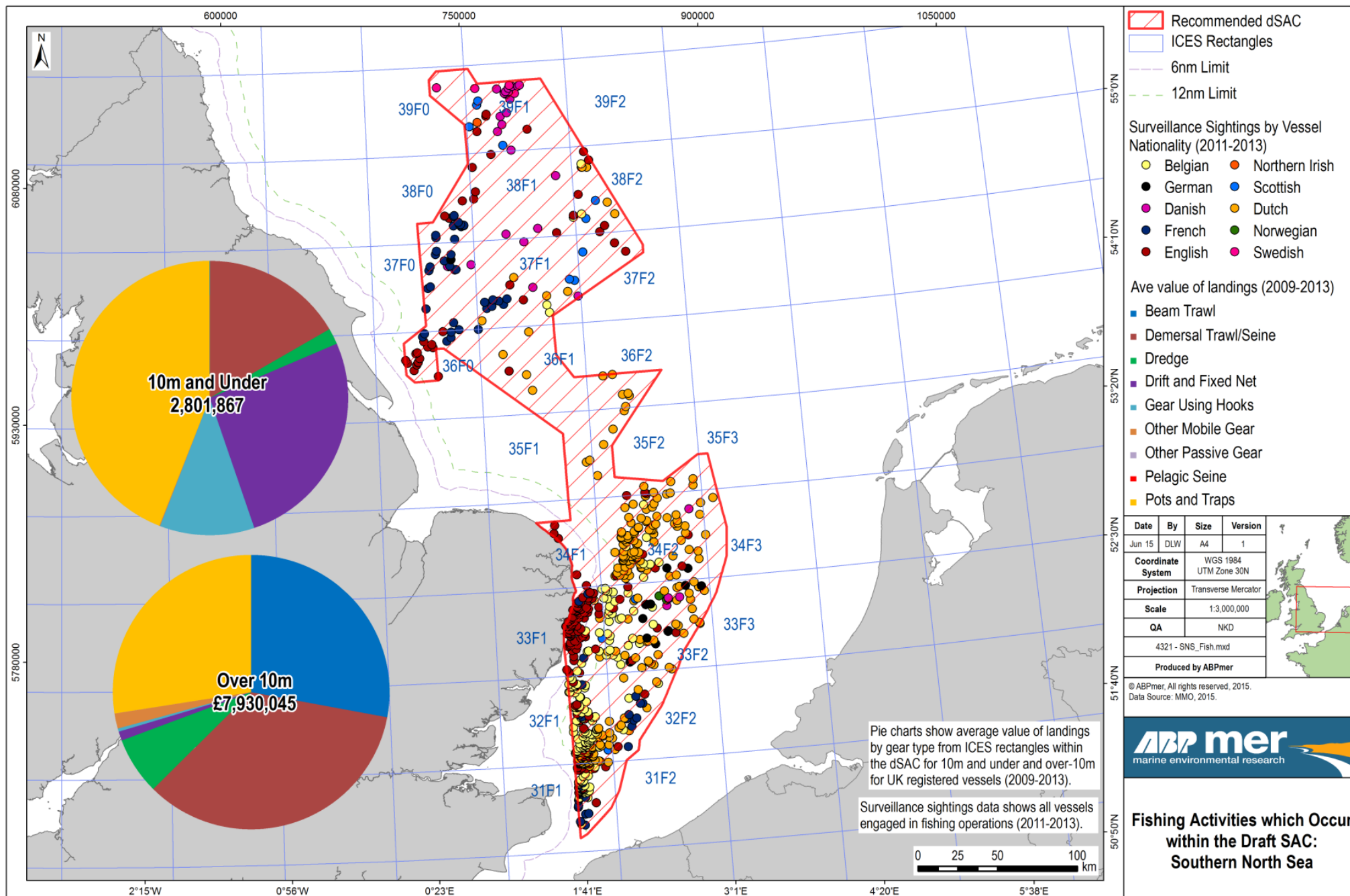
G.7.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC [SNS]								
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence
			Lower	Intermediate	Upper			
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate
Fish for non-human consumption		Stocks reduced from potential maximum						
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	High.
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate









G.8 Outer Moray Firth dSAC [OMF]

Site Area (km²): [4298.69]

G.8.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives [OMF]				
Proposed Protected Features				
<p>The Outer Moray Firth site has been recognised as an area with persistent high densities of harbour porpoise. The area included within the site covers important summer habitat but the site did not emerge as one of top 10% of persistent high density areas for the winter due to low confidence in the model across much of the site, resulting from limited observations during this season. The porpoise density in the North Sea management unit peaked in stable waters (based on vertical differences in temperature) with lower gradients of eddy activity (turbulence); higher densities were also found in areas with current speeds of 0.4-0.6m/s, with a preference for water depths between 30 and 50m throughout the year, whilst an added preference of deeper water of approximately 200m was found during the summer season. The area incorporates depths in the preferable depths of harbour porpoise near the coast and over Smith Bank and deeper areas in the Southern Trench. Additionally, the waters off Fraserburgh produce frontal zones with strong horizontal gradients in surface and/or bottom temperatures. Fronts can concentrate nutrients and plankton and are often associated with pelagic biodiversity hotspots as they attract prey assemblages and subsequently such areas are often targeted by higher trophic level foragers such as cetaceans. Also, within the Outer Moray Firth site, large numbers of unidentified juvenile fish have been recorded within the Southern Trench in addition to commercial fish species such as whiting and pouting, and this maybe a beneficial resource for harbour porpoise in this area.</p>				
Summary of Confidence in Presence, Extent and Condition of Proposed Protected Features and Conservation Objectives				
Proposed Protected Feature	Feature Presence	Estimated Abundance of Feature	Confidence in Estimated Abundance of Feature	Confidence in Feature Condition
Biodiversity Features				
Harbour porpoise	Summer season	>0% to 2% of the relevant UK management unit population	95%	Harbour porpoise have been assessed to have a favourable conservation status in both UK wide and European Atlantic waters despite the ongoing human activities as no significant change in national population had been recorded, although there have been changes in distribution . However, current pressures may be such that the conservation status of harbour porpoise may be at risk in the future.
References: SNH, JNCC Inshore and Offshore Draft Special Area of Conservation: Outer Moray Firth SAC Selection Assessment Document Version 9 (May 2015).				

G.8.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [OMF]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Commercial Fisheries	0	0	0
Commercial Fisheries (GVA)	0	0	2,460
Offshore Renewables	210	210	58
Offshore Renewables (GVA)	0	0	854,209 (£854.2 million)
Oil and Gas	38	85	85
Ports and Harbours	22	22	42
Total Quantified Economic Costs	270	317	856,854 (£856.9 million)
Non-Quantified Economic Costs			
Commercial Fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC; and Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Offshore Renewables	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Oil and Gas	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment; and Limiting the number and duration of geophysical surveys within or near site boundaries.
Ports and Harbours	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive pilling and explosives within 26km of the OMF dSAC boundary.
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [OMF]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	0	8
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	4	4	4
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	37	37	24
Costs to TCE associated with potential leasing revenues foregone	0	0	172,995 (£173.0 million)
Total Quantified Public Sector Costs	40	40	173,031 (£173.0 million)
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [OMF]					
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis		
			Spatial Scale	Sector	Social Groups
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario, no impact. Upper scenario only: loss of £2.46m direct GVA, and 7 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Scotland. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to dredge and pelagic seine. Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in lower and middle income groups. X
	Energy Generation	Reduced income and employment: Upper scenario: GVA of approximately £854.2m (PV, 20 years). Reduction of employment in construction (2016 – 2023, annual average): 1,470; and in operation (2020 – 2034): 326 p.a. Wind energy only.	Risk to coast of Scotland. Construction could take place from Nigg/Cromarty/Ardersier, with O&M also provided by other ports. Risk to rural and urban coastal communities. XXX	Risk to wind energy sector, and its construction supply chain. XXX	Risk of very large scale of impacts mean there would be effects on overall community cohesion, affecting all social groups present. XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.					

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)			[OMF]
Impact	Description		
Ecosystem Services Impact (Moderate and High Impacts)	Relevance	Scale of Benefits	
Non-use value	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery	
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).			

G.8.2 Human Activity Summaries

G.8.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Commercial Fisheries

OMF

The OMF dSAC intersects with six ICES rectangles, with the majority of the site falling within 44E7, 45E7 and 44E8. According to ICES rectangle landings statistics, demersal trawls/seines, dredges, pots and traps and pelagic seines (over-10m) and pots and traps, demersal trawls/seines, gears using hooks, dredges and other passive gears (10m and under) vessels operate within these ICES rectangles. The value of catches from the OMF dSAC site was £4,546,400 (over-10m vessels) and £804,400 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix B Section 3.7)).

According to MMO surveillance data (2011-2013), Scottish demersal stern trawlers (over-15m) followed by Scottish scallop dredgers (over-15m) comprised the majority of sightings across the site.

Non-UK fishing activity (2007-2010) indicates that 1 Faroese over-15m vessel operates within the OMF dSAC boundary.

Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix B.

Where the potential cost of designation relates to the implementation of bycatch reduction measures, such as harbour porpoise deterrent devices, these are not considered to affect GVA of the sector and, therefore, are indicated as 'non-GVA impacts'.

It is important to note that all GVA costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">No change to existing.	<ul style="list-style-type: none">Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).	<ul style="list-style-type: none">100% reduction in net gear effort across the site (GVA impact)10% reduction in mobile bottom gear effort across the site (GVA impact)10% reduction in mobile pelagic gear effort across the site (GVA impact)Mitigation measures on all salmon nets, as appropriate, seasonal or annual (non-quantified cost).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None	<ul style="list-style-type: none">None.
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Loss of >10m fishing income (annual values, £k):<ul style="list-style-type: none">Demersal trawls/seines (350.9);Dredges (94.0);Pelagic seines (4.2).Loss of <10m fishing income (annual values, £k):<ul style="list-style-type: none">Demersal trawls/seines (14.7);Dredges (0.1).

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Enforcement and monitoring of implementation of bycatch mitigation measures, seasonal or annual. 	<ul style="list-style-type: none"> Loss of value of catches from non-UK vessels using set nets, mobile bottom contact and mobile pelagic gears in the dSAC. Displacement impacts (additional fishing pressure on other areas, potential conflict with other vessels, additional steaming time/fuel costs, gear development and adaptation costs, and additional quota costs).
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	0	0
Average annual costs	0	0	0
Present value of total costs (2015–2034)	0	0	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	3.409
Average annual change to GVA	0	0	0.170
Present value of total change in GVA (2015–2034)	0	0	2.460
Direct and Indirect reduction in employment	0	0	7 jobs
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%. Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period. Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20). Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%. Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3b. Offshore Renewables				[OMF]
<p>There is one operational offshore wind development (Beatrice Demonstrator Site) located partially within the NCS dSPA boundary (66.5%). The Beatrice Demonstrator Site (Scottish and Southern Energy and Talisman Energy (UK), 10 MW) has been operational since 2007 and comprises two wind turbines (5 MW capacity each). However, based on the measures proposed, no costs are anticipated to be incurred by fully operational developments. Therefore, economic costs and management measures associated with energy generation in this dSAC are described in light of known possible future developments. There are four planned or consented offshore wind developments (Moray Firth, Beatrice, Hywind, European Offshore Wind Deployment Centre) located within the OMF dSAC boundary or within 26km.</p> <p>The Beatrice (SSE Renewables, Repsol Nuevas Energias UK and Copenhagen Infrastructure Partners) offshore wind farm development (664 MW) is partially located within the OMF dSAC boundary (87.9%). The development, which consists of up to 140 wind turbines, was consented in March 2014 and awarded a Contract for Difference in May 2014.</p> <p>The Moray Firth (Moray Offshore Renewables Limited) offshore wind farm development (1,116 MW), located within the OMF dSAC boundary, was granted consent in March 2014. The development is divided between three offshore wind farms, namely Telford, Stevenson and MacColl (372 MW each; 62 wind turbines each). For the purpose of this assessment, it is assumed that construction works will be staggered between the three wind farms (staggered start of construction may occur in different order).</p> <p>The Hywind Scotland Pilot Park Project is an offshore wind development in planning (pre-consent) which is to be located within 5km of the OMF dSAC boundary. Statoil Wind Limited (SWL) submitted a Scoping Report for the development in October 2013, reporting a potential capacity of up to 30 MW. The European Offshore Wind Deployment Centre (Vattenfall and Aberdeen Renewable Energy Group, up to 100 MW) is a potential wind energy demonstration site located within 26km of the OMF dSAC boundary (up to 11 turbines).</p> <p>There are no planned, consented or operational tidal or wave energy developments within the OMF dSAC boundary or within 50km.</p> <p>It should be noted that additional cost impacts could also arise as a result of consenting delays. The cost impacts and uncertainty associated with SAC designation may affect investor confidence.</p>				
Economic Costs on the Activity of Designation of the Site				
	Lower Estimate	Intermediate Estimate	Upper Estimate	
Assumptions for cost impacts	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 26km of site boundary; and Additional assessment (HRA) for certain geophysical surveys within site boundary. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 26km of site boundary; and Additional assessment (HRA) for certain geophysical surveys within site boundary. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 50km of site boundary; and Additional assessment (HRA) for certain geophysical surveys within site boundary; and Prohibition on percussive pile driving within site boundary whereby offshore wind developments (including those already consented) are not permitted (100%). 	
Description of one-off costs	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 26km of site boundary - £30k per development; and Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Post-construction - £1k per survey. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 26km of site boundary - £30k per development; and Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Post-construction - £1k per survey. 	<ul style="list-style-type: none"> Additional assessment (HRA) of new offshore wind developments within 26km of site boundary - £30k per development; Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Pre-construction - £1k per survey. Post-construction - £1k per survey. Prohibition on percussive pile driving within 26km of site boundary whereby offshore wind developments (including those already consented) are not permitted (100%). Construction expenditure (GVA) based on costs from Seagreen Phase 1. 	
Description of recurring costs	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. 	<ul style="list-style-type: none"> Additional assessment (HRA) for certain geophysical surveys within site boundary: <ul style="list-style-type: none"> Post-construction - £1k per survey. 	<ul style="list-style-type: none"> Prohibition on percussive pile driving within site boundary whereby offshore wind developments (including those already consented) are not permitted (100%). Operational expenditure (GVA) based on costs from Seagreen Phase 1. 	

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	234	234	60
Average annual costs	12	12	3
Present value of total costs (2015–2034)	210	210	58
Economic Impacts (£m)			
Total change in GVA (2015–2034)	0	0	1,136.133 (£1.13 billion)
Average annual change to GVA	0	0	56.807 (£56.8 million)
Present value of total change in GVA (2015–2034)	0	0	854.209 (£854.2 million)
Direct, Indirect and Induced reduction in employment (annual average)	0	0	1,470 (construction; 2016 – 2023) 326 (operation; 2020 – 2034)
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers.</p>			

Table 3c. Oil and Gas [OMF]			
The majority of areas currently licenced for oil and gas extraction around the UK are located within the North Sea. There are currently 16 licenced blocks within 5km of the OMF dSAC, 14 of these blocks fall within the dSAC boundary. Oil and gas exploration and development requires a number of geophysical surveys, all of which produce noise that has the potential to affect harbour porpoise. In 2012, 2013 and 2014 there were 1, 4 and 3 surveys undertaken respectively within the OMF dSAC boundary which equated to a total of approximately 89 survey days. These surveys consisted of seismic, multibeam and sub-bottom surveys with one seismic and multibeam survey occurring in 2013. It is not anticipated that explosives will be used in decommissioning activities with the OMF dSAC during the assessment period.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of geophysical surveys or decommissioning activities using explosives within or near dSAC boundaries. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of geophysical surveys or decommissioning activities using explosives within or near dSAC boundaries; and The use of Passive Acoustic Monitoring (PAM) as enhanced mitigation measures for geophysical surveys. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of geophysical surveys or decommissioning activities using explosives within or near dSAC boundary; and Limit the number and duration of geophysical surveys within or near site boundary (could not be quantified, thus intermediate costs used).
Description of one-off costs	<ul style="list-style-type: none"> Assumed that there will be 3 geophysical surveys per year requiring HRA, decreasing 50% (to 2 surveys per year) by 2034. Each survey has been estimated to cost £1k. 	<ul style="list-style-type: none"> Assumed that there will be 3 geophysical surveys per year requiring HRA, decreasing 50% (to 2 surveys per year) by 2034. Each survey has been estimated to cost £1k; and Estimated 10 surveys days per year each for PAM with a cost of £400 per day. Number of days to decrease 50% by 2034. 	<ul style="list-style-type: none"> Assumed that there will be 3 geophysical surveys per year requiring HRA, decreasing 50% (to 2 surveys per year) by 2034. Each survey has been estimated to cost £1k.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment. 	<ul style="list-style-type: none"> Costs of project delays during consenting; risk of deterrent to investment; and Limiting the number and duration of geophysical surveys within or near site boundaries.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	50	110	110
Average annual costs	3	6	6
Present value of total costs (2015–2034)	38	85	85
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

Table 3d. Ports and Harbours [OMF]			
One major port, Peterhead, lies within a 26km buffer of the OMF dSAC. The port at Peterhead is currently awaiting consent to develop the inner harbour and new fish market. It has been assumed that a HRA will be undertaken for this development in 2016; thereafter a development involving percussive piling or explosive activity has been estimated to occur every five years. One other major port, Aberdeen, falls within the 50km buffer of the OMF dSAC used to assess the upper scenario. It has been assumed that, starting in 2017, this port will undertake a development involving percussive piling or explosive activity every five years, each which will require a HRA.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 26km of the OMF dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 26km of the OMF dSAC boundary. 	<ul style="list-style-type: none"> Habitat Regulations Assessment (HRA) of piling/ explosive activity associated with port developments within 50km of the OMF dSAC boundary.
Description of one-off costs	<ul style="list-style-type: none"> One major port (Peterhead) within 26km of the dSAC boundary. Assuming a development requiring piling or explosives occurs in 2016 then every subsequent 5 years - £7.1k per application. 	<ul style="list-style-type: none"> One major port (Peterhead) within 26km of the dSAC boundary. Assuming a development requiring piling or explosives occurs in 2016 then every subsequent 5 years - £7.1k per application. 	<ul style="list-style-type: none"> Two major ports within 50km of the dSAC boundary. Assuming Peterhead development requires a HRA in 2016 then every subsequent 5 years. Other port (Aberdeen) is assumed to undertake a development requiring piling or explosives every five years beginning in 2017 each requiring a HRA - £7.1k each.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity. 	<ul style="list-style-type: none"> Uncertainty of the location, nature and timing of future port development activity; and Prohibition of developments involving percussive piling and explosives within 26km of the dSAC boundary.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	28	28	57
Average annual costs	1	1	3
Present value of total costs (2015–2034)	22	22	42
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.8.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [OMF]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.8.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [OMF]	
Activity	Description
None identified.	

G.8.3 Social and Distributional Analysis of Impacts from Designation of the Site

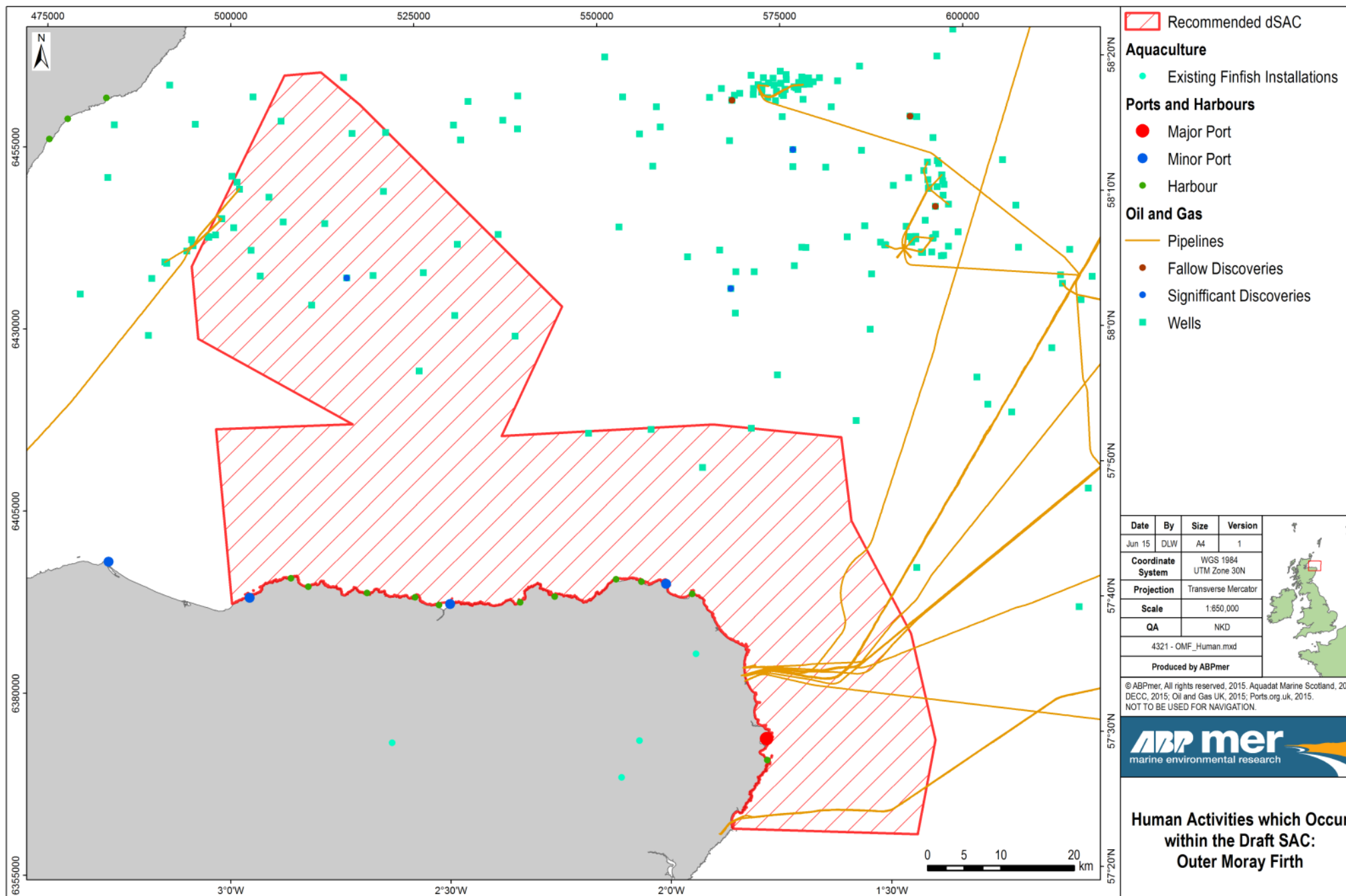
Table 6a. Social Impacts [OMF]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario, no impact. Upper scenario only: loss of £2.46m direct GVA, and 7 FTE.	Employment and community cohesion.	Risk of X
Energy Generation	Reduction in GVA and employment.	Upper scenario: GVA of approximately £854.2m (PV, 20 years). Reduction of employment in construction (2016 – 2023, annual average): 1,470; and in operation (2020 – 2034): 326 p.a. Wind energy only.	Employment and community cohesion.	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

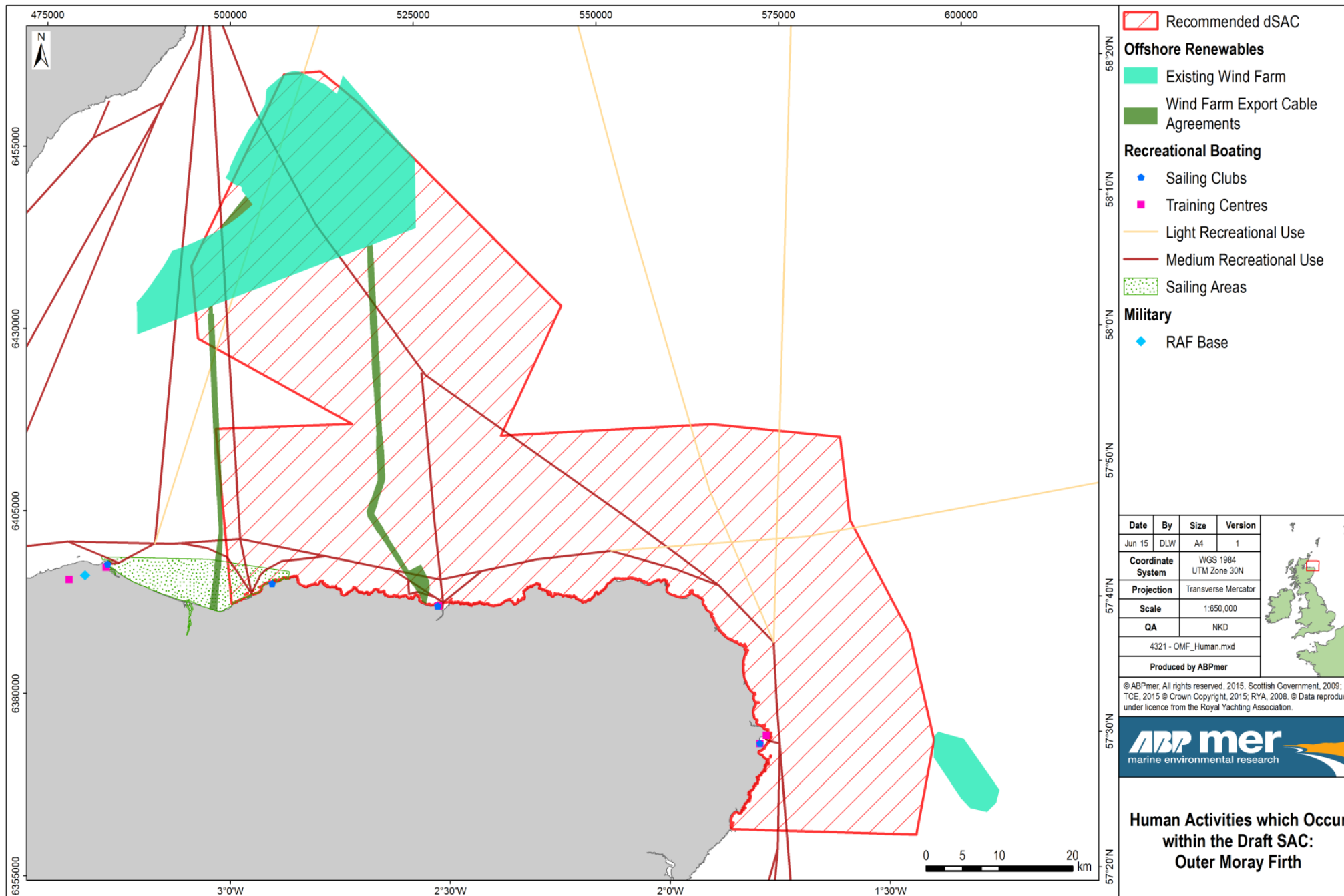
Table 6b. Distribution of Social Impacts – Location, Age and Gender [OMF]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	NW Scotland	It is not possible to associate the jobs impacts with specific ports.	Rural Coastal and Island	0	Risk of X	0	Risk of X	0
Energy Generation	NW Scotland	Construction could take place from Nigg/Cromarty/ Ardersier, with O&M also provided by other ports.	Rural and Urban Coastal	Risk of XXX	Risk of XXX	Risk of XXX	Risk of XXX	Risk of XXX
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

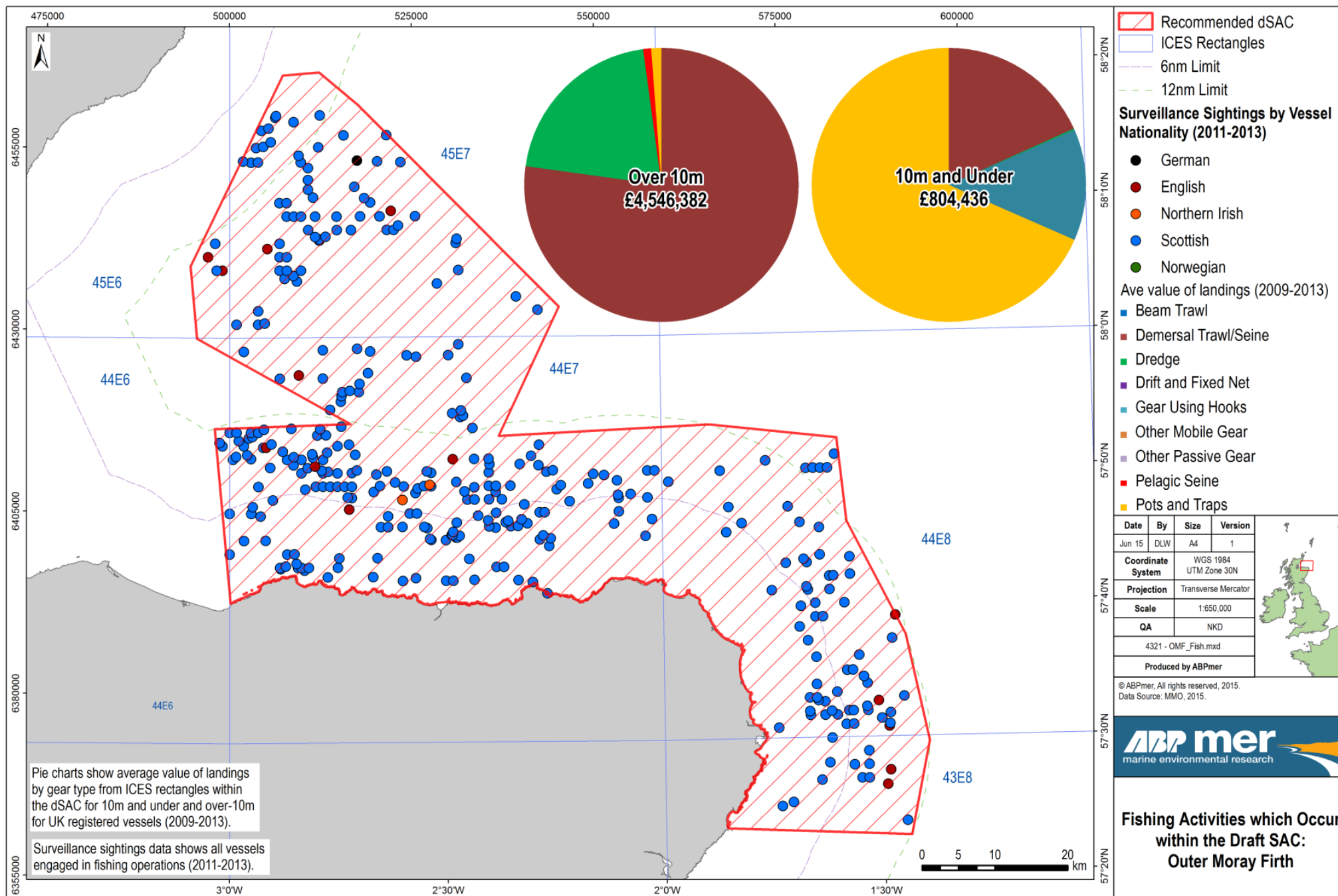
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [OMF]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Dredge; pelagic seine.	Risk of X	Risk of X	0	0	0	0
Energy Generation			Risk of XXX	Risk of XXX	Risk of XX			
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.8.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC [OMF]								
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence
			Lower	Intermediate	Upper			
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate
Fish for non-human consumption		Stocks reduced from potential maximum						
Non-use value of natural environment	Moderate, harbour porpoise, and contribution of the site to MPA network, have non-use value.	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Low - Moderate, single feature, but contributes to halting decline of marine biodiversity	Moderate	Low, responses to management measures, and value to society all uncertain
Recreation	Low, significant within site, but feature of low relevance to recreation	Minimal	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	High.
Research and Education	Minimal	Minimal, whether research uses site in future uncertain.	Minimal, protection of harbour porpoise population (and marine ecosystem) at site			Low	Minimal	Moderate
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate







G.9 Anglesey Terns / Morwenoliaid Ynys Mon dSPA [ATN]

Site Area (km²): [1,017]

G.9.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives		[ATN]
Proposed Protected Features		
Common tern, Arctic tern, Sandwich tern and Roseate tern.		
References: NRW IA- SPA management scenarios as provided on 25 March 2015.		

G.9.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [ATN]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Commercial Fisheries	0	0	0
Commercial Fisheries (GVA)	0	0	0
Total Quantified Economic Costs	0	0	0
Non-Quantified Economic Costs			
None identified.	■	■	■

Note: For detailed information on economic cost impacts on activities, see Table 3.

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [ATN]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	0	0
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	0	0	0
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	0	0	0
Costs to TCE associated with potential leasing revenues foregone	0	0	0
Total Quantified Public Sector Costs	0	0	0
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)						[ATN]
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis			
			Spatial Scale	Sector	Social Groups	
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: No impact to intermediate or upper scenario. Risk to 'way of life' and individual identity.	Risk to coast of Wales. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. 0	Risk to demersal trawl/seine, dredge, drift and set nets, pots and traps. Risk of impacts is to vessels >10m. 0	Risk of employment impacts for working age men in lower and middle income groups. 0	
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.						

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)				[ATN]
Impact		Description		
Ecosystem Services Impact (Moderate and High Impacts)		Relevance	Scale of Benefits	
Non-use value		Moderate – High, protected birds, and contribution of the site to MPA network, have non-use value (Kenter <i>et al.</i> 2013).	Moderate, range of features contributes to halting decline of marine biodiversity	
Research and Education		Moderate, features subject to long term scientific study (e.g. breeding birds)	Low - Moderate for studied features.	
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).				

G.9.2 Human Activity Summaries

G.9.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Commercial Fisheries [ATN]			
<p>The ATN dSPA intersects with two ICES rectangles, with the majority of the site falling within 35E5. According to ICES rectangle landings statistics, dredges, pots and traps, demersal trawls/seines, beam trawls, gears using hooks and drift and set nets (over- 10m) and pots and traps, dredges, demersal trawls/seines, gears using hooks, drift and set nets and other mobile gears (10m and under) vessels operate within these ICES rectangles. The value of catches from the ATN dSPA site was £502,400 (over-10m vessels) and £208,400 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix C Section 2.7)).</p> <p>According to MMO surveillance data (2011-2013), English under-12m (one beam trawler and one unknown gear) comprised the only two recorded sightings within the site boundary.</p> <p>Non-UK fishing activity (2007-2010) indicates that a minimum of 1 Irish (pelagic gear) over-15m vessel operates within the ATN dSPA boundary.</p> <p>Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix C.</p> <p>It is important to note that all costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	▪ No change to existing.	▪ No change to existing.	▪ No change to existing.
Description of one-off costs (non-GVA costs)	▪ None.	▪ None.	▪ None.
Description of recurring costs (GVA impacts)	▪ None.	▪ None.	▪ None.
Description of non-quantified costs	▪ Reduce overall fishing effort, apply spatial controls.	▪ Reduce overall fishing effort, apply spatial controls.	▪ Reduce overall fishing effort, apply spatial controls.
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	0	0
Average annual costs	0	0	0
Present value of total costs (2015–2034)	0	0	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0	0
Average annual change to GVA	0	0	0
Present value of total change in GVA (2015–2034)	0	0	0
Direct and Indirect reduction in employment	0	0	0
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%. Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period. Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20). Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%. Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

G.9.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [ATN]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.9.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [ATN]	
Activity	Description
Offshore Renewables	There are currently no operational energy generation developments within the ATN dSPA boundary. In addition, there are no operational energy generation developments within 5km of the ATN dSPA boundary. The Anglesey Skerries Tidal Array (Sea Generation (Wales) Ltd), a 10 MW tidal array comprising five 'SeaGen S' (2 MW each; twin turbine) devices, was granted consent in 2013 and is to be located wholly within the ATN dSPA boundary. It is anticipated that construction works will occur during 2016 and 2017 and the array will be operational in 2018. The Holyhead Deep (Minesto UK Ltd) tidal development (10 MW; not consented) is to be located almost entirely within the ATN dSPA boundary (98.3%), comprising up to 20 turbines (0.5 MW each). For the purpose of this assessment, it is assumed that planning application will be submitted in 2016 and the development will be granted consent in 2017, with construction works in 2018 and 2019 and the array to be operational in 2020. The West Anglesey Demonstration Zone is a potential (not consented) tidal energy test site to be located partially within the ATN dSPA boundary (88.9%). However, NRW advice indicates that tidal stream development is unlikely to pose a significant risk to the features for which the ATN dSPA is proposed. On this basis it has been assumed that no additional costs would be incurred. There are no planned or consented offshore wind or wave energy developments within the ATN dSPA boundary or within 5km.
Ports and Harbours	There are six ports/harbours located within the ATN dSPA boundary, namely Amlwch, Cemaes Bay, Holyhead, Rhoscolyn, Rhosneigr and Trearddur Bay. However, given that HRAs would already be required for potential port development and maintenance dredging renewals within the vicinity of the existing SPAs and SACs, the new designation would not pose any significant additional costs on developers.
Recreational Boating	A management measure to prohibit the use of motorised pleasure craft within 500m of known breeding sites for terms within the ATN dSPA between 1 May and 31 August could impact recreational boating in the area (upper scenario only). However, it has been assumed that there would be no significant cost to the recreational boating sector associated with the proposed measure (it is likely that such costs would be borne by the public sector).

G.9.3 Social and Distributional Analysis of Impacts from Designation of the Site

Table 6a. Social Impacts [ATN]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	No impact in intermediate or upper scenario.	Employment and community cohesion.	-

Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected.
* These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.

Table 6b. Distribution of Social Impacts – Location, Age and Gender [ATN]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	Wales	It is not possible to associate the jobs impacts with specific ports.	Rural Coastal and Island	0	0	0	0	0

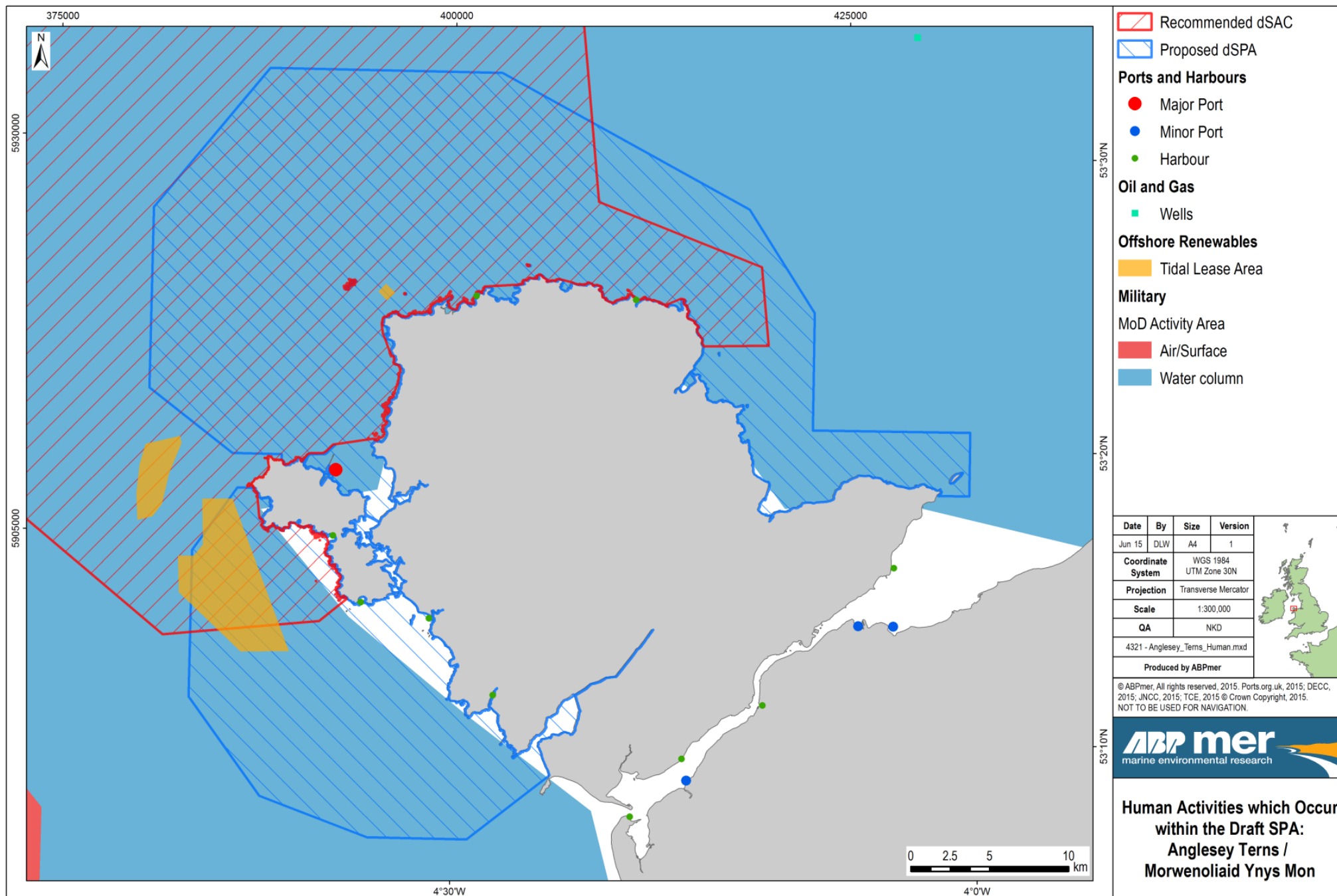
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected.
* Based on value of landings by home port affected under intermediate scenario.

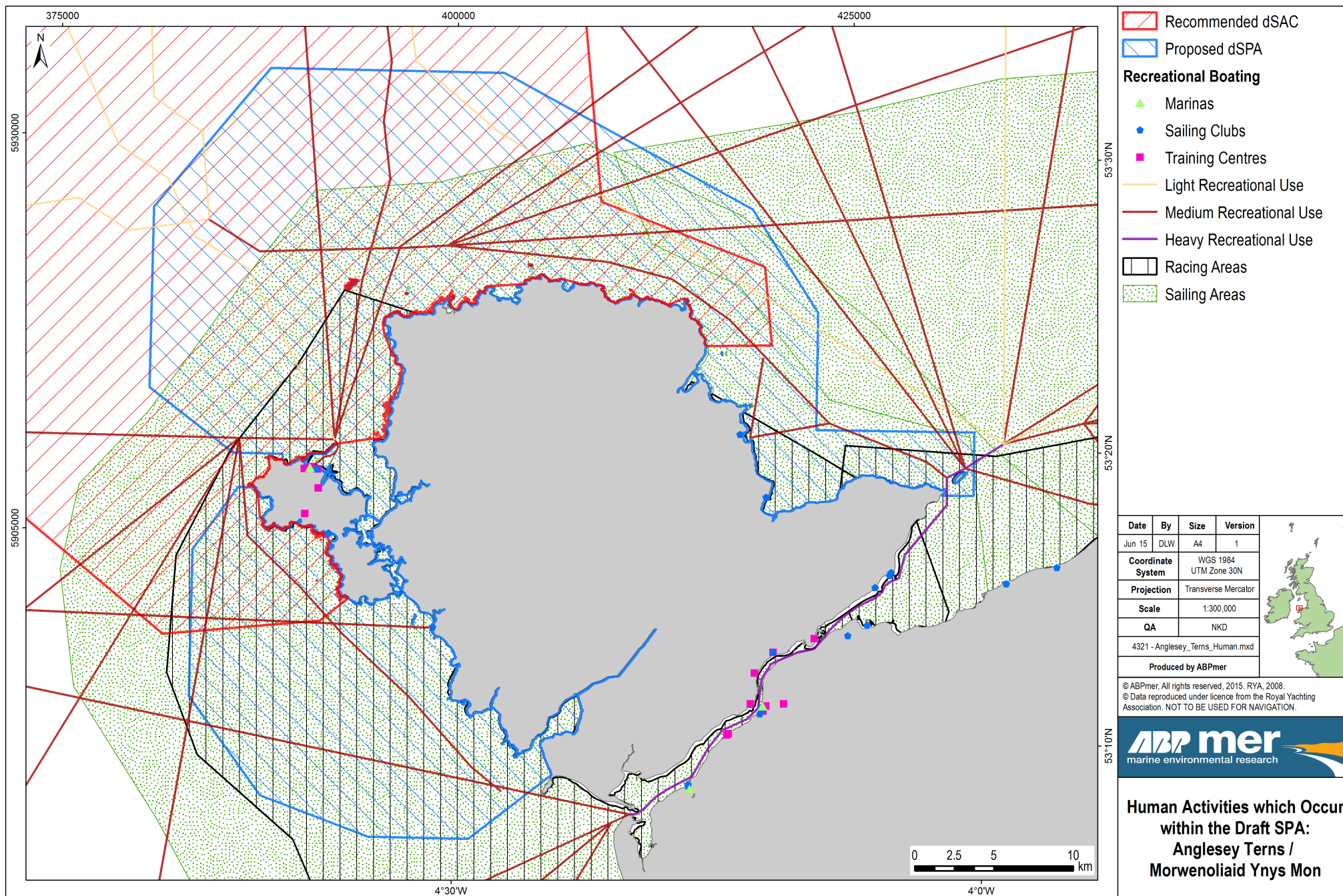
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [ATN]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Demersal trawl/seine; dredge; drift and set nets; pots and traps.	0	0	0	0	0	0

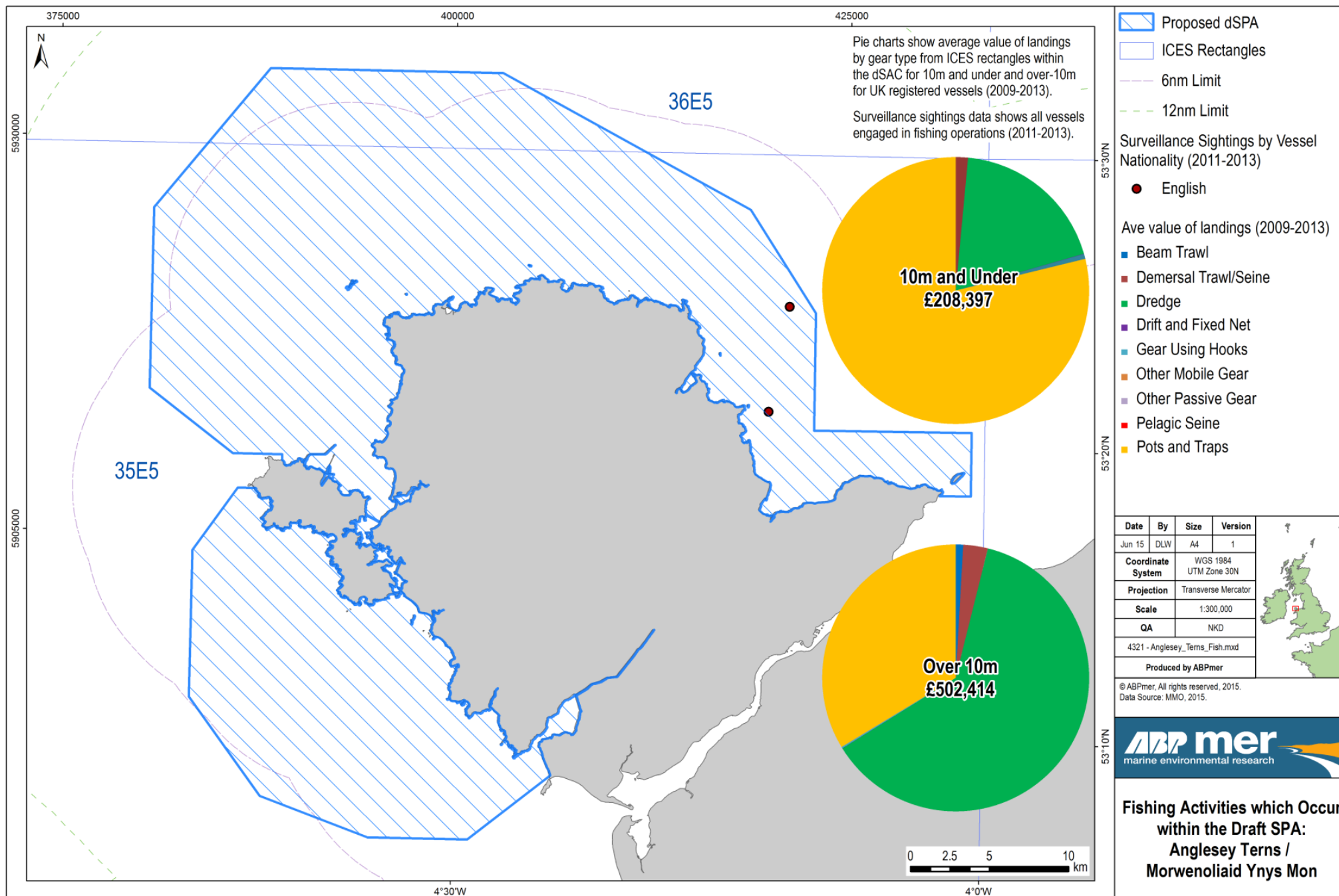
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected.
* Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.

G.9.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC [ATN]								
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence
			Lower	Intermediate	Upper			
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal, small recovery of fish stocks possible	Low	Low	Moderate
Fish for non-human consumption		Stocks reduced from potential maximum						
Non-use value of natural environment	Moderate – High, protected birds, and contribution of the site to MPA network, have non-use value (Kenter <i>et al.</i> 2013).	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Moderate, range of features contributes to halting decline of marine biodiversity	Moderate	Moderate, extent of features, responses to management measures, and value to society all uncertain
Recreation	Moderate, wildlife tourism and recreation (including angling/ diving, Kenter <i>et al.</i> 2013) at site	Recreation value of the site may decline	Minimal	Low, protection of features of site that contribute to recreation		Moderate, recreation and tourism support jobs, and are highly valued (including angling/ diving, Kenter <i>et al.</i> 2013).	Low	Low – Moderate, extent of change from management measures uncertain.
Research and Education	Moderate, features subject to long term scientific study (e.g. breeding birds)	Characteristics subject to scientific study may decline	Low - Moderate, protection of features improve future research opportunities. Designation may play role in communicating management needs.			Low - Moderate for studied features.	Low - Moderate	Low – Moderate, extent to which research uses site in future uncertain.
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate







G.10 Northern Cardigan Bay / Gogledd Bae Ceredigion dSPA [NCB]

Site Area (km²): [830]

G.10.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives		[NCB]
Proposed Protected Features		
Red throated diver		
References: NRW IA- SPA management scenarios as provided on 25 March 2015.		

G.10.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NCB]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Commercial Fisheries	0	0	0
Commercial Fisheries (GVA)	0	95	443
Ports and Harbours	29	29	29
Recreational Boating	0	0	1
Total Quantified Economic Costs	29	124	473
Non-Quantified Economic Costs			
Commercial Fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Spatial management plan to minimise disturbance from fishing vessels from 1 to 31 October. 	<ul style="list-style-type: none"> Restrict vessel movements within the site by designation of defined access routes to all ports/harbours adjacent to the site.
Ports and Harbours	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain.
Recreational boating	<ul style="list-style-type: none"> The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The requirement for management measures is uncertain.

Note: For detailed information on economic cost impacts on activities, see Table 3.

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [NCB]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	3	3
Development of voluntary measures	4	4	4
Site monitoring	272	272	272
Managing the impact of geophysical surveys	0	0	0
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	3	3	3
Costs to TCE associated with potential leasing revenues foregone	0	0	0
Total Quantified Public Sector Costs	279	282	282
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)						[NCB]
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis			
			Spatial Scale	Sector	Social Groups	
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario: loss of £0.095m direct GVA, <1 FTE. Upper scenario: loss of £0.443m direct GVA, and 1 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Wales. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal and island communities. X	Risk to demersal trawl/ seine; dredge; drift and set nets; other passive gears; pots and traps. Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in middle income group. X	
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.						

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive)				[NCB]
Impact		Description		
Ecosystem Services Impact (Moderate and High Impacts)		Relevance	Scale of Benefits	
Non-use value		Moderate – High, protected birds, and contribution of the site to MPA network, have non-use value (Kenter <i>et al.</i> 2013).	Moderate, range of features contributes to halting decline of marine biodiversity	
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).				

G.10.2 Human Activity Summaries

G.10.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Commercial Fisheries

[NCB]

The NCB dSPA intersects with two ICES rectangles, with the majority of the site falling within 34E5. According to ICES rectangle landings statistics, dredges, pots and traps, beam trawls, demersal trawls/seines, drift and set nets, gears using hooks and other passive gears (over- 10m) and pots and traps, dredges, drift and set nets, gears using hooks, demersal trawls/seines and other passive gears (10m and under) vessels operate within these ICES rectangles. The value of catches from the NCB dSPA site was £391,900 (over-10m vessels) and £271,200 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix C Section 2.7)).

According to MMO surveillance data (2011-2013), the majority of recorded sightings across the site comprised Welsh potter/whelkers (under-12m), followed by English scallop dredgers (under-12m).

Non-UK fishing activity (2007-2010) indicates that no foreign nationality over-15m vessels operate within the NCB dSPA boundary.

Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix C.

It is important to note that all costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">No change to existing.	<ul style="list-style-type: none">5% reduction in set net gear and other static gear effort across the site (GVA impact).	<ul style="list-style-type: none">10% reduction in mobile bottom gear effort across the site (GVA impact)10% reduction in mobile pelagic gear effort across the site (GVA impact)10% reduction in net gear and other static gear effort across the site (GVA impact).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.
Description of recurring costs (GVA impacts)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Loss of >10m fishing income (annual values, £k):<ul style="list-style-type: none">Pots and traps (5.1);Drift and set nets (<0.1);Gears using hooks (<0.1);Other passive gears (<0.1).Loss of <10m fishing income (annual values, £k):<ul style="list-style-type: none">Pots and traps (8.9);Drift and set nets (0.2);Gears using hooks (<0.1);Other passive gears (<0.1).	<ul style="list-style-type: none">Loss of >10m fishing income (annual values, £k):<ul style="list-style-type: none">Dredges (29.0);Pots and traps (10.1);Beam trawls (<0.1);Demersal trawls/seines (<0.1);Drift and set nets (<0.1);Gears using hooks (<0.1);Other passive gears (<0.1).Loss of <10m fishing income (annual values, £k):<ul style="list-style-type: none">Pots and traps (17.8);Dredges (8.9);Drift and set nets (0.4);Gears using hooks (<0.1);

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
			<ul style="list-style-type: none"> - Demersal trawls/seines (<0.1); - Other passive gears (<0.1).
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Spatial management plan to minimise disturbance from fishing vessels from 1 to 31 October. 	<ul style="list-style-type: none"> Restrict vessel movements within the site by designation of defined access routes to all ports/harbours adjacent to the site.
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	0	0
Average annual costs	0	0	0
Present value of total costs (2015–2034)	0	0	0
Economic (GVA) Impacts (£m)			
Total change in GVA (2015–2034)	0	0.132	0.615
Average annual change to GVA	0	0.007	0.031
Present value of total change in GVA (2015–2034)	0	0.095	0.443
Direct and Indirect reduction in employment	0	0.2	1
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%. Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period. Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20). Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%. Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3b. Ports and Harbours [NCB]			
<p>A number of harbours and ports, both major and minor, are present within the NCB dSPA boundary; however, they are located within existing SPA designations. In these areas, developments and dredge disposal licences would already require a HRA that takes into consideration all the bird features for which the dSPA is being proposed. It is therefore considered that the new designations would not pose any significant additional costs on developments in these areas.</p> <p>There are six ports within the NCB dSPA boundary that lie outwith existing SPA designations, namely Aberystwyth, Pensarn, Aberdyfi, Abersoch, Barmouth and Portmadoc (all minor ports/ harbours). Developments for ports and harbours within SACs also already require a HRA in respect of SAC features; however, should the proposed SPA designations be confirmed, additional assessment of the impact on the protected bird features would be required. Pensarn, Aberdyfi, Barmouth and Portmadoc (all minor ports/harbours) are all located within the Pen Llyn a'r Sarnau/ Llyn Peninsula and the Sarnau SAC, but are included in the assessment for HRA costs.</p>			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations). 	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations). 	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations).
Description of one-off costs	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations) - £7.1k per application. HRA costs are relevant to six minor ports/harbours within the dSPA. Assume each of these ports undertakes one development every 20 year (in 2026) that requires a single HRA. 	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations) - £7.1k per application. HRA costs are relevant to six minor ports/harbours within the dSPA. Assume each of these ports undertakes one development every 20 year (in 2026) that requires a single HRA. 	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations) - £7.1k per application. HRA costs are relevant to six minor ports/harbours within the dSPA. Assume each of these ports undertakes one development every 20 year (in 2026) that requires a single HRA.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	43	43	43
Average annual costs	2	2	2
Present value of total costs (2015–2034)	29	29	29
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p>			

Table 3c. Recreational boating [NCB]			
AIS information translated from the Marine Management Organisation (MMO) in 2012 suggests that three unique recreational vessels transited through the NCB dSPA boundary. In total, these vessels made ten transits through the NCB dSPA. The use of AIS on recreational vessels is not compulsory, therefore these data do not give a comprehensive representation of the recreational vessel activity within the NCB dSPA. Other recreational craft such as sailing boats and motorised boats are likely to be present within NCB dSPA but not represented by AIS data. There are six sailing/yacht clubs in the area which are likely to host recreational vessels that use waters within the NCB dSAC.			
Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Prohibit use of motorised pleasure craft within most sensitive areas of Northern Cardigan Bay/Gogledd Bae Ceredigion dSPA between 1st October and 31st March.
Description of one-off costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> The development of a single zoning plan within the dSAC is estimated to cost the RYA £1k. Costs estimated to be incurred in 2016.
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None.
Description of non-quantified costs	<ul style="list-style-type: none"> The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The requirement for management measures is uncertain.
Quantified Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	0	1
Average annual costs	0	0	0
Present value of total costs (2015–2034)	0	0	1
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

G.10.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [NCB]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).	Minimal, management measures have little impact	Low, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	

G.10.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [NCB]	
Activity	Description
None identified.	

G.10.3 Social and Distributional Analysis of Impacts from Designation of the Site

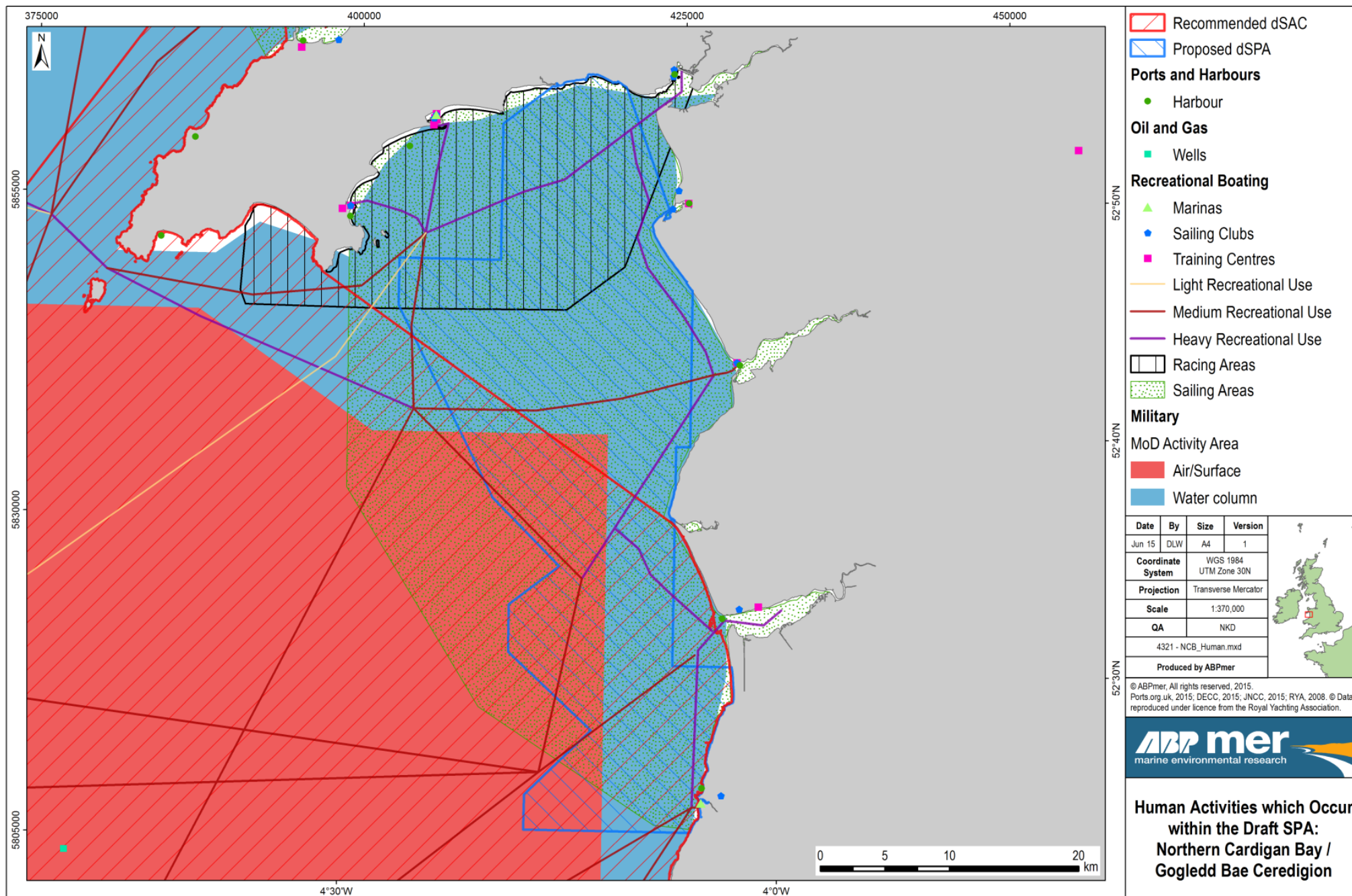
Table 6a. Social Impacts [NCB]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario: loss of £0.095m direct GVA, <1 FTE. Upper scenario: loss of £0.443m direct GVA, and 1 FTE.	Employment and community cohesion.	Risk of X
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

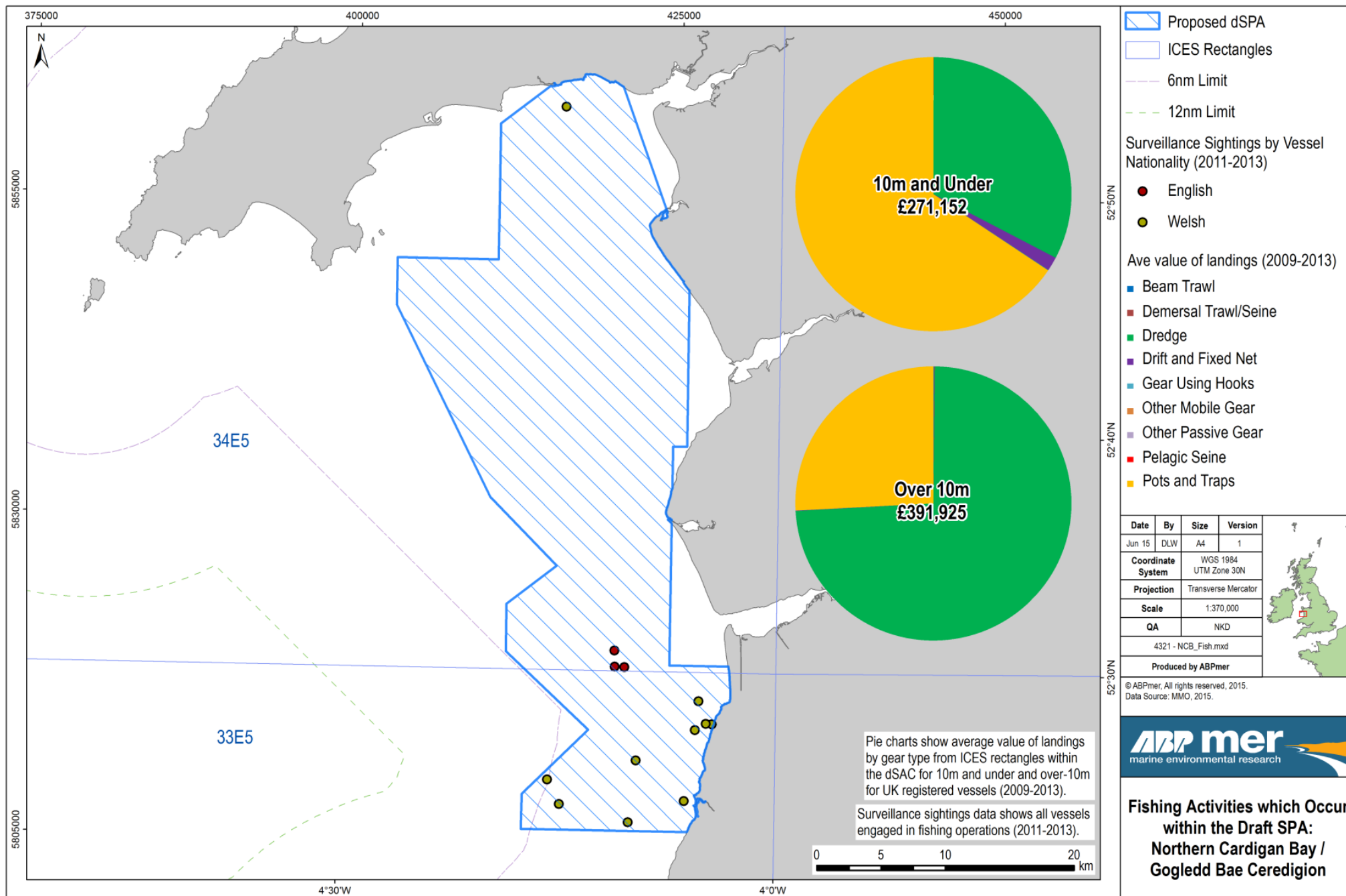
Table 6b. Distribution of Social Impacts – Location, Age and Gender [NCB]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	Wales	It is not possible to associate the jobs impacts with specific ports.	Rural Coastal	0	Risk of X	0	Risk of X	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [NCB]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m	Demersal trawl/ seine; dredge; drift and set nets; other passive gears; pots and traps.	0	Risk of X	0	0	0	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.10.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC [NCB]								
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence
			Lower	Intermediate	Upper			
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible Low, protection of feature of site from decline, and/or allowing some recovery,	Low	Low	Moderate
Fish for non-human consumption		Stocks reduced from potential maximum						
Non-use value of natural environment	Low, protected feature, and contribution of the site to MPA network, have non-use value (Kenter <i>et al.</i> 2013).	Non-use value of the site may decline	Minimal, protection of site	Low -, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery but small additional impact given existing designations with which it overlaps		Moderate, range of features contributes to halting decline of marine biodiversity	Moderate	Moderate, extent of features, responses to management measures, and value to society all uncertain
Recreation	Moderate, wildlife tourism and recreation (including angling/ diving, Kenter <i>et al.</i> 2013) at site	Recreation value of the site may decline	Minimal	Low, protection of features of site that contribute to recreation		Moderate, recreation and tourism support jobs, and are highly valued (including angling/ diving, Kenter <i>et al.</i> 2013).	Low.	Low – Moderate, extent of change from management measures uncertain.
Research and Education	Low	Characteristics subject to scientific study may decline	Low - Moderate, protection of features improve future research opportunities. Designation may play role in communicating management needs.			Low	Low	Low – Moderate, extent to which research uses site in future uncertain.
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate





G.11 Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro dSPA [SSS]

Site Area (km²): [923]

G.11.1 Site Summary

Table 1. Summary of Proposed Protected Features, Data Confidence and Conservation Objectives	[SSS]
Proposed Protected Features	
Manx shearwater, Atlantic puffin, European storm petrel, Lesser black backed gull and Seabird assemblage. The SPA is also classified for Chough and Short-eared owl, but these are terrestrial species and not relevant to the Impact Assessment of the proposed marine extension.	
References: NRW IA- SPA management scenarios as provided on 25 March 2015.	

G.11.1.1 Summary of Costs and Benefits

Table 2a. Site-Specific Economic Costs on Human Activities Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSS]			
Human Activity	Cost Impact on Activity		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Economic Costs (Discounted)			
Commercial Fisheries	0	0	0
Commercial Fisheries (GVA)	0	0	157
Ports and Harbours	67	67	67
Total Quantified Economic Costs	67	67	224
Non-Quantified Economic Costs			
Commercial Fisheries	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Spatial management plan to minimise disturbance from fishing vessels from 1 to 31 October. 	<ul style="list-style-type: none"> Restrict vessel movements within the site by designation of defined access routes to all ports/harbours adjacent to the site.
Ports and Harbours	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain.
Note: For detailed information on economic cost impacts on activities, see Table 3.			

Table 2b. Site-Specific Public Sector Costs Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSS]			
Description	Public Sector Costs		
	Lower Estimate (£k)	Intermediate Estimate (£k)	Upper Estimate (£k)
Quantified Public Sector Costs (Discounted)			
Preparation of Marine Management Schemes	0	0	0
Preparation of Statutory Instruments	0	0	8
Development of voluntary measures	0	0	0
Site monitoring	National Costs	National Costs	National Costs
Managing the impact of geophysical surveys	0	0	0
Compliance and enforcement	0	0	0
Promotion of public understanding	0	0	0
Regulatory and advisory costs associated with licensing decisions	7	7	7
Costs to TCE associated with potential leasing revenues foregone	0	0	0
Total Quantified Public Sector Costs	7	7	15
Non-Quantified Public Sector Costs			
None identified.			

Table 2c. Summary of Social Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSS]					
Key Areas of Social Impact	Description	Scale of Expected Impact across Scenarios, Average (Mean no. of Jobs Affected)	Distributional Analysis		
			Spatial Scale	Sector	Social Groups
Employment and community cohesion	Commercial Fisheries	Reduced income and employment: Intermediate scenario: no impact. Upper scenario: loss of £0.157m direct GVA, and <1 FTE. Risk to 'way of life' and individual identity.	Risk to coast of Wales. It is not possible to associate the jobs impacts with specific ports. Risk to rural coastal communities. X	Risk of impacts is to vessels >10m. X	Risk of employment impacts for working age men in middle income group. X
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. Note: For detailed information on social impacts by sector, see Table 6a. For more detailed information on distribution of social impacts by sector see Tables 6b and 6c.					

Table 2d. Environmental Impacts Arising from the Designation and Management of the Site (Over 2015 to 2034 Inclusive) [SSS]		
Impact	Description	
Ecosystem Services Impact (Moderate and High Impacts)	Relevance	Scale of Benefits
Non-use value	Moderate – High, protected birds, and contribution of the site to MPA network, have non-use value (Kenter <i>et al.</i> 2013).	Moderate, range of features contributes to halting decline of marine biodiversity
Research and Education	Moderate, features subject to long term scientific study (e.g. breeding birds).	Low - Moderate for studied features.
Note: For detailed information on ecosystem services impacts, see Table 7. For detailed information on other impacts, see Tables 3 and 4 (activities experiencing impacts).		

G.11.2 Human Activity Summaries

G.11.2.1 Human Activities that Would Be Impacted by Designation of the Site

Table 3a. Commercial Fisheries

[SSS]

The SSS dSPA intersects with three ICES rectangles, with the majority of the site falling within 32E4. According to ICES rectangle landings statistics, pots and traps, demersal trawls/seines, beam trawls, drift and set nets, dredges, pelagic seines and gears using hooks (over- 10m) and pots and traps, drift and set nets, gears using hooks, other passive gears, dredges, demersal trawls/seines and pelagic seines (10m and under) vessels operate within these ICES rectangles. The value of catches from the SSS dSPA site was £279,000 (over-10m vessels) and £438,300 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix C Section 2.7)).

There is an additional management area for the SSS dSPA called the Puffin Box (see Fishing Activities figure below), which lies wholly within ICES rectangle 32E4. Pots and traps comprise the greatest value of landings for both the over-10m and under-10m sectors in this area, according to ICES rectangle landings statistics. The value of catches from the Puffin Box site was £8,400 (over-10m vessels) and £13,300 (10m and under vessels) as indicated by ICES rectangle landings data (annual average for 2009-2013, 2015 prices, calculated by the applying the proportional area technique to estimate value of landings from the site (see Appendix C Section 2.7)).

According to MMO surveillance data (2011-2013), Belgian beam trawlers (24-40m) and all other types of Belgian trawlers (24-40m) comprised the majority of sightings across the site. One Welsh potter/whelker (under-12m) vessel was sighted within the Puffin Box in April 2012.

Non-UK fishing activity (2007-2010) indicates that a minimum of 7 Belgian demersal trawl gear, 5 French (4demersal trawl and 1 net gear) and, 1 Irish pelagic gear over-15m vessels operate within the SSS dSPA boundary. No foreign over-15m fishing activity was recorded within the Puffin Box site.

Where the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities, any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The cost estimates for this sector have therefore been estimated in terms of GVA. GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix C.

It is important to note that all costs presented below assume that all affected landings are lost, that is, there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table may overestimate the costs.

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
Assumptions for cost impacts	<ul style="list-style-type: none">No change to existing.	<ul style="list-style-type: none">No change to existing.	<ul style="list-style-type: none">10% reduction in mobile bottom gear effort across the site (GVA impact)10% reduction in mobile pelagic gear effort across the site (GVA impact)100% reduction in net gear and other static gear effort within the "Puffin Box" (immediately to the west of Skomer Island) from 1 May to 31 August. (GVA impact).
Description of one-off costs (non-GVA costs)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.
Description of recurring costs for SSS dSPA site (GVA impacts)	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">None.	<ul style="list-style-type: none">Loss of >10m fishing income (annual values, £k) for SSS dSPA site:<ul style="list-style-type: none">Demersal trawls/seines (2.5);Beam trawls (2.4);Dredges (0.4);Pelagic seines (<0.1).

Economic Costs on the Activity of Designation of the Site			
	Lower Estimate	Intermediate Estimate	Upper Estimate
			<ul style="list-style-type: none"> Loss of <10m fishing income (annual values, £k) for SSS dSPA site: <ul style="list-style-type: none"> Dredges (0.3); Demersal trawls/seines (0.2); Pelagic seines (<0.1).
Description of recurring costs for Puffin Box (GVA impacts)	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Loss of >10m fishing income (annual values, £k) for Puffin Box: <ul style="list-style-type: none"> Pots and traps (5.6); Drift and set nets (0.2); Gears using hooks (<0.1). Loss of <10m fishing income (annual values, £k) for Puffin Box: <ul style="list-style-type: none"> Pots and traps (11.7); Gears using hooks (0.8); Drift and set nets (0.6); Other passive gears (<0.1).
Description of non-quantified costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Spatial management plan to minimise disturbance from fishing vessels from 1 to 31 October. 	<ul style="list-style-type: none"> Restrict vessel movements within the site by designation of defined access routes to all ports/harbours adjacent to the site.
Quantified (non-GVA) Costs on the Activity of Designation of the Site (£k)			
Total costs (2015–2034)	0	0	0
Average annual costs	0	0	0
Present value of total costs (2015–2034)	0	0	0
Economic (GVA) Impacts for SSS dSPA site including Puffin Box (£m)			
Total change in GVA (2015–2034)	0	0	0.217
Average annual change to GVA	0	0	0.011
Present value of total change in GVA (2015–2034)	0	0	0.157
Direct and Indirect reduction in employment	0	0	0.4
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period.</p> <p>Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p> <p>Total change in GVA (2015–2034) = The change in direct GVA in the sector for the site summed over the 20 year period.</p> <p>Average annual change to GVA = Total change in direct GVA in the sector for the site divided by the total number of years under analysis (i.e. 20).</p> <p>Present value of total change in GVA (2015–2034) = Total change in direct GVA in the sector for the site discounted to current value, using a discount rate of 3.5%.</p> <p>Direct and Indirect reduction in Employment = The average (mean) reduction in direct employment in the sector plus the indirect reduction in employment on the sector's suppliers (full time equivalent (FTE) jobs).</p>			

Table 3b. Ports and Harbours				[SSS]
<p>A number of harbours and ports, both major and minor, are present within the SSS dSPA boundary; however, they are located within existing SPA designations. In these areas, developments and dredge disposal licences would already require a HRA that takes into consideration all the bird features for which the dSPA is being proposed. It is therefore considered that the new designations would not pose any significant additional costs on developments in these areas.</p> <p>There is one port within the SSS dSPA boundary that is located outwith existing SPA designations, namely Stackpole Quay (minor port/harbour). Developments and dredge disposal licences for ports and harbours within SACs also already require a HRA in respect of SAC features; however, should the dSPA designations be confirmed, additional assessment of the impact on the protected bird features would be required. Stackpole Quay is located within the Pembrokeshire Marine/Sir Benfro Forol SAC, but is included in the assessment for HRA costs. There are two open dredge material disposal sites (Milford Haven Two and Milford Haven Three) located within the SSS dSPA boundary.</p>				
Economic Costs on the Activity of Designation of the Site				
	Lower Estimate	Intermediate Estimate	Upper Estimate	
Assumptions for cost impacts	<ul style="list-style-type: none"> Costs associated with HRA for new developments and dredge material disposal licences located within dSPA (but outside existing SPA designations). 	<ul style="list-style-type: none"> Costs associated with HRA for new developments and dredge material disposal licences located within dSPA (but outside existing SPA designations). 	<ul style="list-style-type: none"> Costs associated with HRA for new developments and dredge material disposal licences located within dSPA (but outside existing SPA designations). 	
Description of one-off costs	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations) - £7.1k per application. HRA costs are relevant to one minor port/harbour within the dSPA. Assume port undertakes one development every 20 year (in 2026) that requires a single HRA; and Costs associated with HRA for dredge material disposal licences located within dSPA (but outside existing SPA designations) - £7.1k per licence application. HRA costs are relevant to two open dredge disposal sites. Assume port reapplies for a dredge material disposal licence requiring HRA every three years beginning in 2017. 	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations) - £7.1k per application. HRA costs are relevant to one minor port/harbour within the dSPA. Assume port undertakes one development every 20 year (in 2026) that requires a single HRA; and Costs associated with HRA for dredge material disposal licences located within dSPA (but outside existing SPA designations) - £7.1k per licence application. HRA costs are relevant to two open dredge disposal sites. Assume port reapplies for a dredge material disposal licence requiring HRA every three years beginning in 2017. 	<ul style="list-style-type: none"> Costs associated with HRA for new developments located within dSPA (but outside existing SPA designations) - £7.1k per application. HRA costs are relevant to one minor port/harbour within the dSPA. Assume port undertakes one development every 20 year (in 2026) that requires a single HRA; and Costs associated with HRA for dredge material disposal licences located within dSPA (but outside existing SPA designations) - £7.1k per licence application. HRA costs are relevant to two open dredge disposal sites. Assume port reapplies for a dredge material disposal licence requiring HRA every three years beginning in 2017. 	
Description of recurring costs	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None. 	
Description of non-quantified costs	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	<ul style="list-style-type: none"> The location, nature and timing of future port development activity is uncertain; and The requirement for management measures is uncertain. 	
Quantified Costs on the Activity of Designation of the Site (£k)				
Total costs (2015–2034)	92	92	92	
Average annual costs	5	5	5	
Present value of total costs (2015–2034)	67	67	67	
<p>Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.</p>				

G.11.2.2 Human Activities that Would Benefit from Designation of the Site

Table 4. Human Activities that Would Benefit from Designation of the Site [SSS]				
Activity	Description	Lower Estimate	Intermediate Estimate	Upper Estimate
Marine wildlife tourism	Tourism based around observation of features protected at site (seabird colonies)	Minimal, management measures have little impact	Low – Moderate, scale and/or quality of activity may increase due to protection of features of site that contribute to tourism and recreation from decline, possibly allowing some recovery.	
Marine recreation	Recreation activities using the marine environment, for which wildlife and environmental quality are part of the motivation for the activity (e.g. angling, recreational boating).			

G.11.2.3 Human Activities that Would Be Unaffected by Designation of the Site

Table 5. Human Activities that are Present but Which Would be Unaffected by Designation of the Site [SSS]	
Activity	Description
Recreational Boating	A management measure to prohibit the use of motorised pleasure craft within the Puffin Box immediately west of the SSS dSPA boundary between 1 May and 31 August could impact recreational boating in the area (upper scenario only). However, it has been assumed that there would be no significant cost to the recreational boating sector associated with the proposed measure (it is likely that such costs would be borne by the public sector).

G.11.3 Social and Distributional Analysis of Impacts from Designation of the Site

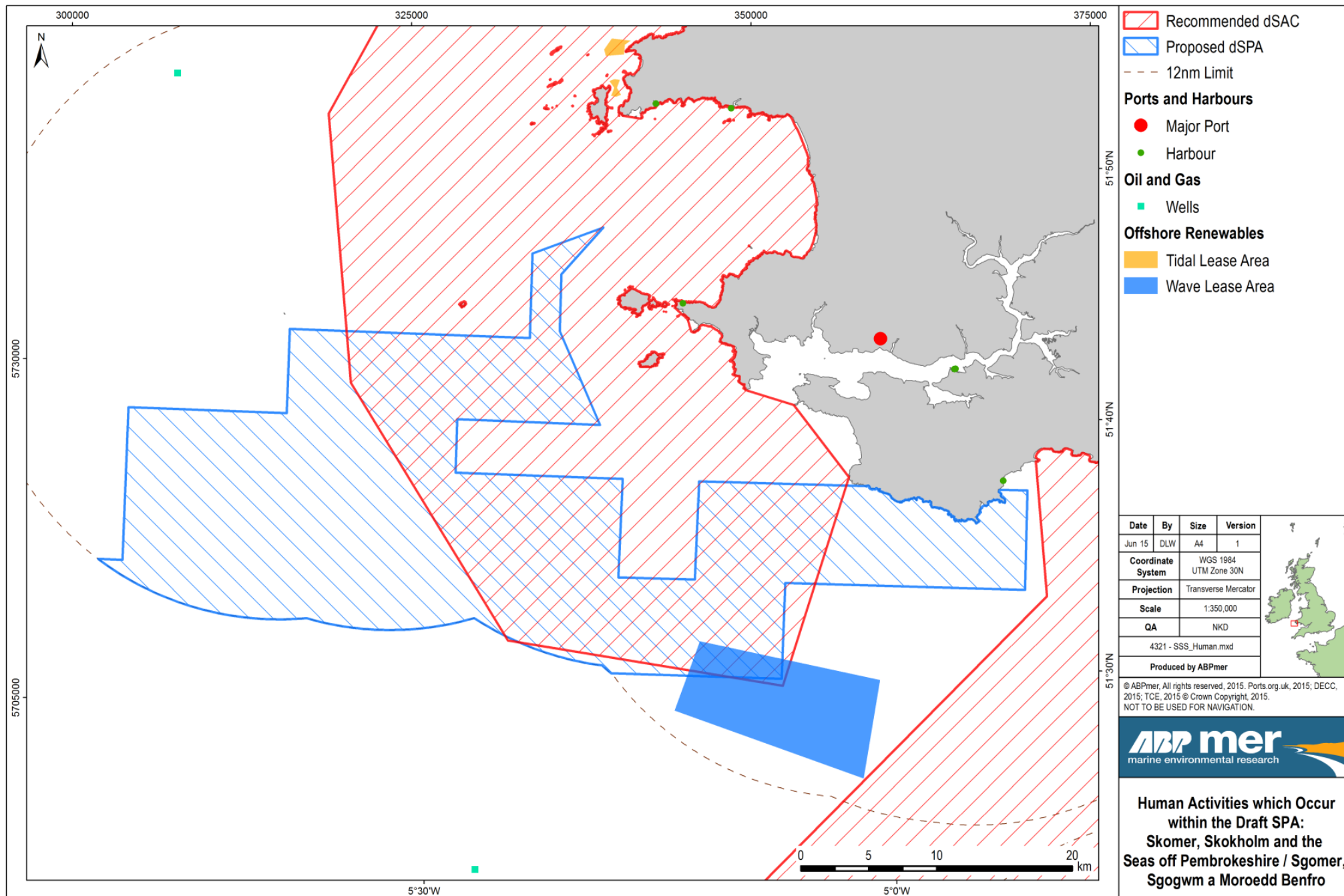
Table 6a. Social Impacts [SSS]				
Sector	Potential Economic Impacts	GVA (PV) and Employment Impacts	Area of Social Impact Affected	Significance of Social Impact
Commercial Fisheries	Reduction in landed value, GVA and employment.	Intermediate scenario: no impact. Upper scenario: loss of £0.157m direct GVA, and <1 FTE.	Employment and community cohesion.	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * These estimates assume zero displacement of fishing activity and hence are likely to overestimate the costs.				

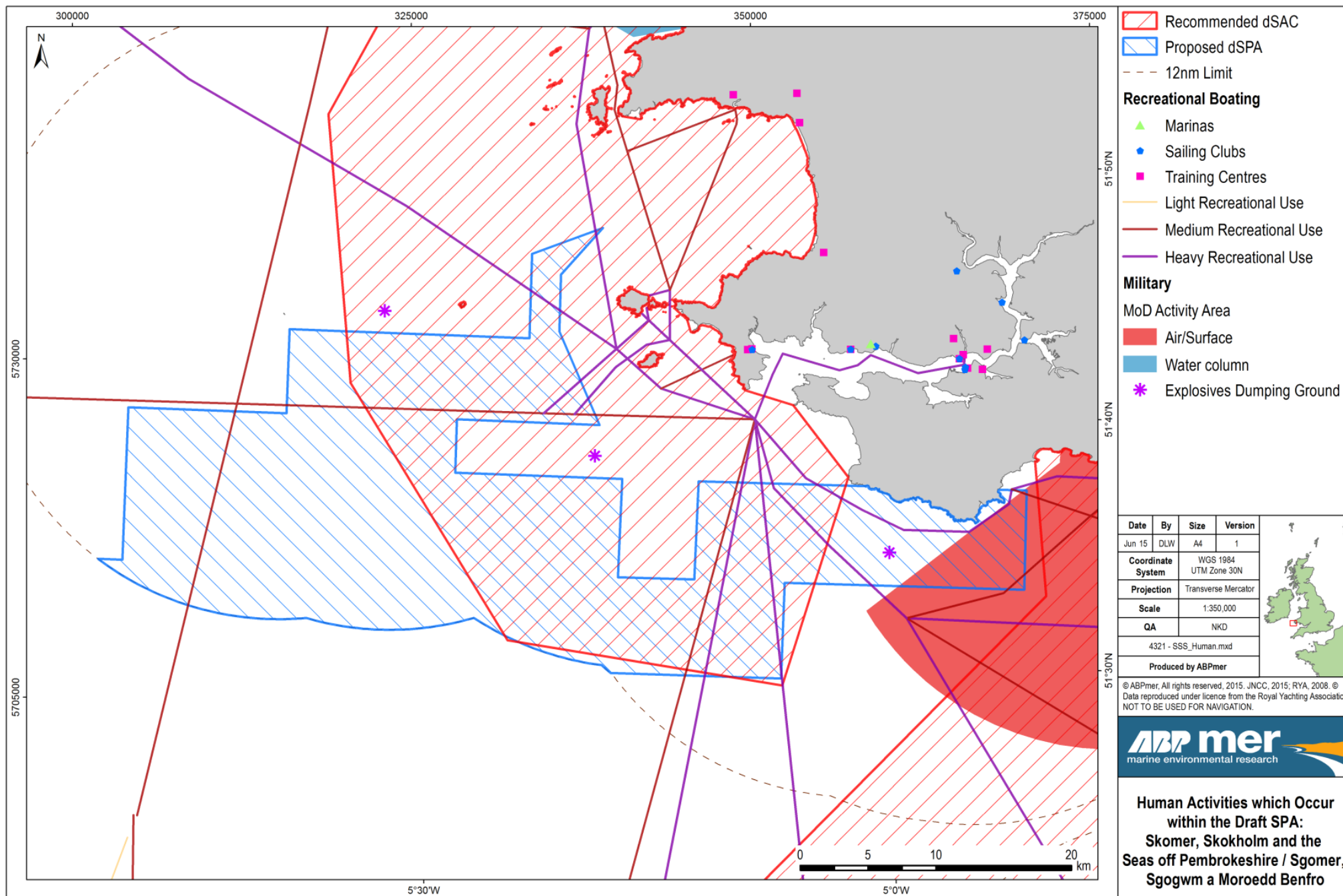
Table 6b. Distribution of Social Impacts – Location, Age and Gender [SSS]								
Sector/Impact	Location			Age			Gender	
	Region	Ports*	Rural, Urban, Coastal or Island	Children	Working Age	Pensionable Age	Male	Female
Commercial Fisheries	Wales	It is not possible to associate the jobs impacts with specific ports.	Rural Coastal	0	Risk of X	0	Risk of X	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on value of landings by home port affected under intermediate scenario.								

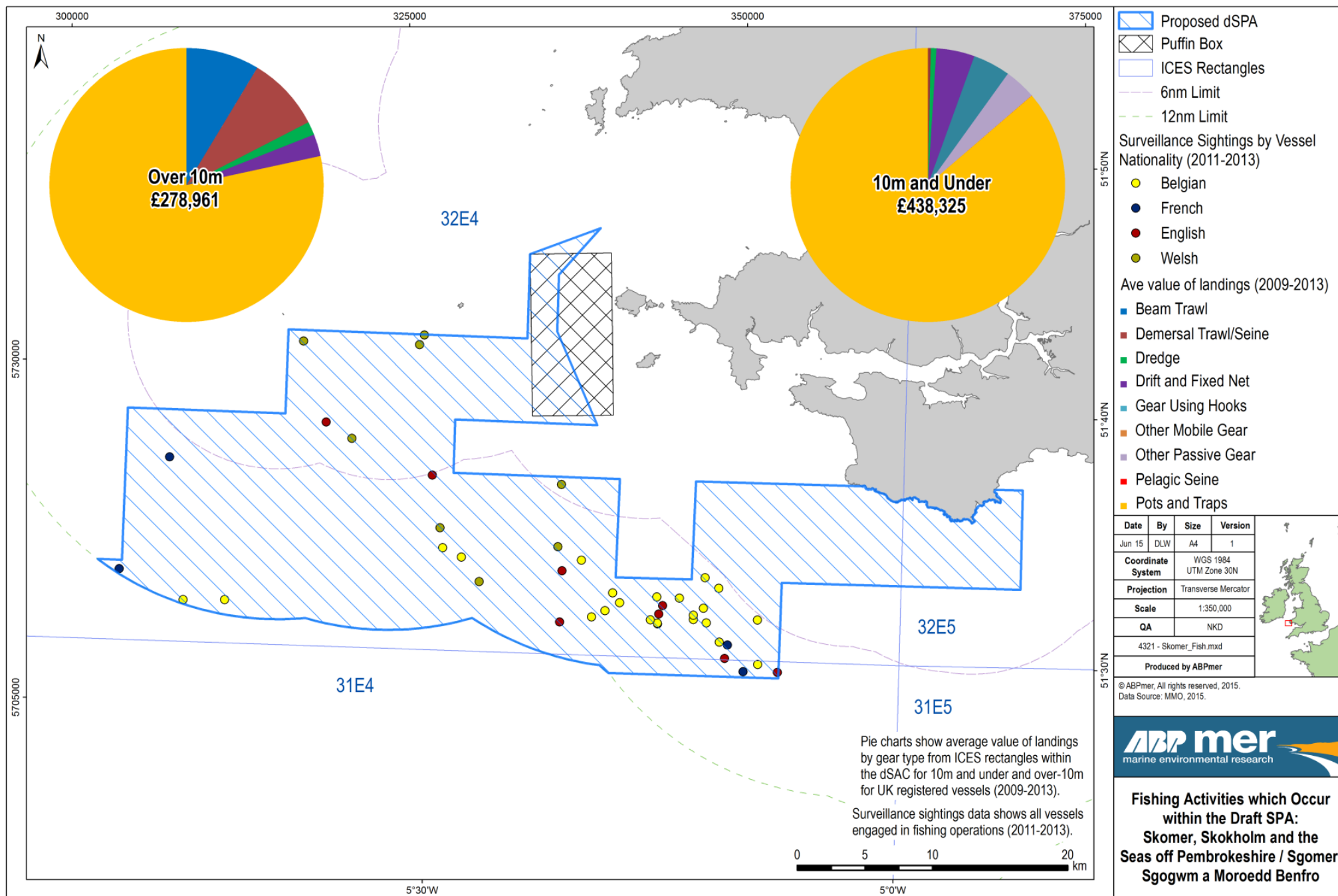
Table 6c. Distribution of Social Impacts – Fishing Groups, Income Groups and Social Groups [SSS]								
Sector/Impact	Fishing Groups		Income Groups			Social Groups		
	Vessel Category <15m >15m	Gear Types	10% Most Deprived	Middle 80%	10% Most Affluent	Crofters	Ethnic Minorities	With Disability or Long-Term Sick
Commercial Fisheries	Risk of impacts is to vessels >10m		0	Risk of X	0	0	0	0
Impacts: +++/xxx: significant effect; ++/xx: possible effects; +/x: minimal effect, if any; 0 – no noticeable effect expected. * Based on costs to gear types/sectors and vessel categories affected under the intermediate scenario.								

G.11.4 Anticipated Impacts to Ecosystem Services

Table 7. Summary of Ecosystem Services Benefits arising from Designation of the Site as an SAC [SSS]								
Services	Relevance to Site	Baseline Level	Estimated Impacts of Designation			Value Weighting	Scale of Benefits	Confidence
			Lower	Intermediate	Upper			
Fish for human consumption	Moderate, benthic habitat contributes to the food web	Stocks not at MSY	Nil		Minimal - Low, small recovery of fish stocks possible	Low	Low	Moderate
Fish for non-human consumption		Stocks reduced from potential maximum						
Non-use value of natural environment	Moderate – High, protected birds, and contribution of the site to MPA network, have non-use value (Kenter <i>et al</i> 2013).	Non-use value of the site may decline	Minimal, protection of site	Low - Moderate, protection of harbour porpoise (and marine ecosystem) from decline, and/or allowing some recovery		Moderate, range of features contributes to halting decline of marine biodiversity	Moderate	Moderate, extent of features, responses to management measures, and value to society all uncertain
Recreation	Moderate, wildlife tourism and recreation (including angling/ diving, Kenter <i>et al</i> 2013) at site	Recreation value of the site may decline	Minimal	Low, protection of features of site that contribute to recreation		Moderate, recreation and tourism support jobs, and are highly valued (including angling/ diving, Kenter <i>et al</i> 2013).	Low.	Low – Moderate, extent of change from management measures uncertain.
Research and Education	Moderate, features subject to long term scientific study (e.g. breeding birds)	Characteristics subject to scientific study may decline	Low - Moderate, protection of features improve future research opportunities. Designation may play role in communicating management needs.			Low - Moderate for studied features.	Low - Moderate	Low – Moderate, extent to which research uses site in future uncertain.
Total value of changes in ecosystem services			Minimal for lower scenario. Low for intermediate scenario, Moderate for upper scenario, mainly based on non-use values.				Low - Moderate	Moderate









ABP Marine Environmental Research Ltd (ABPmer)
Quayside Suite, Medina Chambers, Town Quay, Southampton SO14 2AQ

T +44 (0)23 80 711840

F +44 (0)23 80 711841

E enquiries@abpmer.co.uk

www.abpmer.co.uk

Creating sustainable solutions for the marine environment