

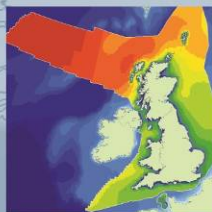
Joint Nature Conservation Committee

**Developing the Evidence Base for Impact Assessments for
Recommended dSACs and dSPAs
Appendix C: Context for Marine Activities and
Proposed Assessment Methods for dSPAs**

Report R.2462

July 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 C: Context for Marine Activities and Proposed Assessment Methods for dSPAs

Date: July 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

Document Authorisation		Signature	Date
Project Manager:	C E Brown		27.07.2015
Quality Manager:	S F Walmsley		27.07.2015
Project Director:	S C Hull		27.07.2015

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 C

Context for Marine Activities and
Proposed Assessment Methods for dSPAs



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

Appendix C: Context for Marine Activities and Proposed Assessment Methods for dSPAs

Contents

	Page
C.1	Aggregates 10
C.1.1	Introduction 10
C.1.2	Sector Definition 10
C.1.3	Overview of Existing Activity 10
C.1.3.1	Location and Intensity of Activity 10
C.1.3.2	Economic Value and Employment 11
C.1.3.3	Future Trends 11
C.1.4	Assumptions on Future Activity 11
C.1.5	Potential Interactions with dSPA Features 11
C.1.6	Potential Management Measures 12
C.1.7	Assessment Methods 12
C.1.7.1	HRA of Marine Licence Applications Within Site Boundaries 12
C.1.7.2	Review of Existing Consents 12
C.1.7.3	Refusal of Consent for New Marine Licence Applications Within Site Boundaries 13
C.1.8	Limitations 13
C.1.9	References 13
C.2	Commercial Fisheries 15
C.2.1	Introduction 15
C.2.2	Sector Definition 15
C.2.3	Overview of Existing Activity 15
C.2.3.1	Location and Intensity of Activity 15
C.2.3.2	Economic Value and Employment 18
C.2.3.3	Future Trends 19
C.2.4	Assumptions on Future Activity 20
C.2.5	Potential Interactions with dSPA Features 21
C.2.6	Potential Management Measures 21
C.2.7	Assessment Methods 21
C.2.7.1	Reductions in Fishing Effort Within dSPAs 21
C.2.8	Limitations 26
C.2.9	References 27
C.3	Offshore Renewables 30
C.3.1	Introduction 30
C.3.2	Sector Definition 30

C.3.3	Overview of Existing Activity	30
C.3.3.1	Location and Intensity of Activity	30
C.3.3.2	Current Economic Value and Employment	32
C.3.3.3	Future Trends.....	33
C.3.4	Assumptions on Future Activity	33
C.3.5	Potential Interactions with dSPA Features.....	34
C.3.6	Potential Management Measures	34
C.3.7	Assessment Methods	35
C.3.7.1	HRA of New Development Within or Near Site Boundaries	37
C.3.7.2	Review of Existing Consents.....	37
C.3.7.3	Refusal of Consent for New Tidal Stream Developments Within Site Boundaries	37
C.3.8	Limitations	37
C.3.9	References	38
C.4	Oil and Gas.....	40
C.4.1	Introduction.....	40
C.4.2	Sector Definition	40
C.4.3	Overview of Existing Activity	40
C.4.3.1	Location and Intensity of Activity	40
C.4.3.2	Economic Value and Employment	41
C.4.3.3	Future Trends.....	41
C.4.4	Assumptions on Future Activity	42
C.4.5	Potential Interactions with dSPA Features.....	42
C.4.6	Potential Management Measures	43
C.4.7	Assessment Methods	43
C.4.7.1	HRA for New Exploration and Development Activity Within or Near Site Boundaries	43
C.4.7.2	Review of Existing Consents.....	44
C.4.7.3	Refusal of Consent for New Developments Within Site Boundaries	44
C.4.8	Limitations	44
C.4.9	References	44
C.5	Ports and Harbours	47
C.5.1	Introduction.....	47
C.5.2	Sector Definition	47
C.5.3	Overview of Existing Activity	47
C.5.3.1	Location and Intensity of Current Activities	48
C.5.3.2	Economic Value and Employment	48
C.5.3.3	Future Trends.....	48
C.5.4	Assumptions on Future Activity	49
C.5.5	Potential Interactions with dSPA Features.....	49
C.5.6	Potential Management Measures	50
C.5.7	Assessment Methods	50
C.5.7.1	HRA for Marine Licence Applications.....	50
C.5.7.2	Review of Existing Consents.....	51
C.5.7.3	Presumption Against New Development Proposals Within or Adjacent to Site Boundaries	52
C.5.8	Limitations	52
C.5.9	References	52

C.6	Recreational Boating	54
C.6.1	Introduction	54
C.6.2	Sector Definition	54
C.6.3	Overview of Existing Activity	54
	C.6.3.1 Location and Intensity of Current Activities	54
	C.6.3.2 Economic Value and Employment	55
	C.6.3.3 Future Trends.....	56
C.6.4	Assumptions on Future Activity	56
C.6.5	Potential Interactions with dSPA Features.....	56
C.6.6	Potential Management Measures	57
C.6.7	Assessment Methods	57
	C.6.7.1 Prohibit Use of Motorised Pleasure Craft Within 500m of Known Breeding Sites for Terns Within Anglesey Terns / Morwenoliaid Ynys Mon dSPA Between 1 May and 31 August	57
	C.6.7.2 Prohibit Use of Motorised Pleasure Craft Within Most Sensitive Areas of North Northern Cardigan Bay / Gogledd Bae Ceredigion dSPA Between 1 October and 31 March	58
	C.6.7.3 Prohibit Use of Motorised Pleasure Craft Within the Puffin Box Immediately West of Skomer, Skokholm and the Seas Off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro dSPA Between 1 May and 31 August.....	58
C.6.8	Limitations	58
C.6.9	References	58

Tables

C.1.1	Marine aggregate information sources	10
C.1.2	Potential management measures for marine aggregates sector	12
C.2.1	Commercial fisheries information sources	15
C.2.2	Number of seafood processing units and employment in Wales	18
C.2.3	Potential management measures for the commercial fisheries sector	21
C.2.4	GVA as a percentage of total income by area, fleet segment and gear type, average 2009–2013.....	23
C.2.5	Marine fishing and freshwater fishing: Type I and Type II GVA multipliers and employment effects	24
C.3.1	Offshore renewables information sources	30
C.3.2	Existing and planned wind, tidal and wave renewable energy projects in Welsh Inshore and Offshore Waters as at 10 June 2015	31
C.3.3	Potential management measures for offshore renewables sector	35
C.3.4	Planned tidal stream development in the vicinity of Anglesey Terns / Morwenoliaid Ynys Mon dSPA	36
C.4.1	Oil and gas information sources	40
C.4.2	Potential management measures for oil and gas sector	43
C.5.1	Information sources	47
C.5.2	Potential management measures for ports and harbours sector	50
C.6.1	Information sources	54
C.6.2	Potential management measures for recreational boating sector	57

Images

C.2.1	Catch by sea area, UK vessels (2013)	16
C.2.2	Landings into the UK and abroad by vessel nationality and species group: 2013 ('000 tonnes).....	17
C.2.3	Number of sea fish processing units by region, 2008 and 2014	17
C.2.4	Quantity and value of landings by UK vessels into the UK and abroad: 2003 to 2013	18

Figures

C1.1	Aggregates	14
C2.1	Proportion of Annual Average Value of Landings (2009 to 2013) from ICES Rectangles by dSPA Site	28
C2.2	Non-UK Fishing Activity over 15m Vessels for All Gear Types (2007-2010)	29
C3.1	Offshore Renewables	39
C4.1	Oil and Gas.....	46
C5.1	Ports and Harbours	53
C6.1	Recreational Boating	60

C. Context for Marine Activities and Proposed Assessment Methods for dSPAs

C.1 Aggregates

C.1.1 Introduction

This appendix provides an overview of existing and potential future activity for the marine aggregates sector in Wales and outlines the methods used to assess the impacts of potential dSPAs on this sector.

C.1.2 Sector Definition

Marine aggregate extraction relates to the removal of (mainly) sand and gravel from the seabed mainly used in the production of concrete for the construction industry.

C.1.3 Overview of Existing Activity

A list of sources to inform the writing of this baseline is provided in Table C.1.1.

Table C.1.1 Marine aggregate information sources

Scale	Information Available	Date	Source
Wales	Licensed marine aggregate sites	Current	The Crown Estate
Wales	Marine aggregate activity	2014	Cefas <i>et al</i> , 2014
Wales	Marine mineral resources map	2013	Bide <i>et al</i> , 2013

C.1.3.1 Location and Intensity of Activity

Marine sand and gravel provide an essential contribution to meeting the demand for construction material in Wales, with marine sand meeting more than 80% of aggregate demand (Gosson 2011; HM Government 2011). The aggregates used in construction need to be of a precise specification, thus locations which provide such material are limited and not necessarily wide spread. Bide *et al* (2013) identifies several areas around the UK in which suitable resources are available; these are located off the south, west and northern coasts of Wales (see Figure C1.1). Despite several locations providing suitable material, there are currently only five areas that are licensed for aggregate extraction in Welsh territorial waters (see Figure C1.1). Four of these sites are located off the south coast and in the Bristol Channel. The fifth site is found off the north coast where an application for the expansion around this extraction area has been submitted. There are also five applications for additional aggregate extraction areas off the south coast in close proximity to the currently licenced site south of Carmarthen Bay as well as one in the Bristol Channel.

In terms of tonnage landed, Welsh marine aggregates account for around 7% of the UK sand and gravel aggregate production (Highley *et al*. 2007). The aggregate extracted from Welsh waters in 2012 was landed at ten wharves in the south west. Approximately 60% of the aggregate was delivered to seven Welsh wharves (Swansea, Barry, Port Talbot, Pembroke, Burry Port, Newport and Cardiff), with

40% landed at three English ports in the south west (Bridgewater, Appledore and Avonmouth) (Welsh Government, 2014).

C.1.3.2 Economic Value and Employment

Marine aggregates make an important contribution to the Welsh economy, providing direct employment within the sector as well as within a range of ancillary activities that support the industry (UKMMAS 2010a). It has been estimated that the industry contributes an annual GVA of approximately £4.12 million to the Welsh economy. Throughout the UK the aggregate industry employs approximately 640 staff (British Geological Survey (BGS), 2007); the number of jobs supported by the industry in Wales has not been specified. Proportionally, as Wales provides approximately 7% of UK marine aggregates, it is likely that roughly 50 people are directly employed by the industry in Wales. However the number of jobs that rely on the sector is likely to be much larger once people employed in wharves, ship building and repair, exploration services, processing, manufacture of products from marine aggregates, and agents involved in the sale of marine aggregates are taken into account.

C.1.3.3 Future Trends

The aggregates supply business is closely linked to the construction sector, which in turn is dependent upon wider economy. Consequently, the demand for marine aggregate materials is likely to be related to the construction of large scale infrastructure such as the expansion and development of ports, nuclear new build and renewable energy. Industry predicts that known marine reserves of sand and gravel aggregates will provide a supply for at least another 50 years, based on the extent of present reserves (UKMMAS 2010).

Although there has not been a specific forecast for the pattern of aggregate exploitation in Wales, that provided for England showing an increase in marine won resource may provide a model for what is likely to occur in Wales. International demand is also likely to increase in the future as supplies from terrestrial sources decline. This however would not currently have an effect on the industry in Wales as no material is exported from Welsh ports (Highley *et al.* 2007).

C.1.4 Assumptions on Future Activity

Should a major infrastructure project in Wales gain consent, the source and extent of aggregates for construction would be one of a number of considerations, including whether sand and gravel reserves in Welsh waters would be sufficient. At present, it is expected that marine-dredged aggregates will continue to supply a similar proportion of overall demand as they have done over the last decade (Welsh Government, 2014; Cuesta Consulting Limited 2013). However due to increasing pressure from climate change, demand for soft engineering solutions may increase for use in coastal protection and flood defence programmes. Bide *et al.* (2013) present a map of marine mineral resources in Welsh waters which document deposits of marine sand and gravel that could be suitable for a range of potential end uses if the market demand arose (See Figure C.1.1).

C.1.5 Potential Interactions with dSPA Features

The main potential interactions with features and sub-features of the dSPA include:

- Physical damage to seabed habitat sub-features through sediment removal and re-deposition of suspended sediment;
- Increased turbidity; and
- Visual and noise disturbance.

C.1.6 Potential Management Measures

Table C.1.2 sets out the management measures that have been identified by NRW as potentially being required to support the achievement of conservation objectives in specific dSACs (see also Appendix D: Management Scenarios).

Table C.1.2 Potential management measures for marine aggregates sector

Management Measure	Scenario		
	Lower	Intermediate	Upper
Habitats Regulations Assessment of marine licence applications within site boundaries	✓	✓	✓
Review of consents for existing marine aggregate licences within site boundaries	✓	✓	✓
Refusal of consent for new marine licence applications within site boundaries			✓

C.1.7 Assessment Methods

C.1.7.1 HRA of Marine Licence Applications Within Site Boundaries

There are currently no existing licensed marine aggregate sites or application areas or prospecting areas within any of the dSPAs. There are some areas of marine aggregate potential that overlap with dSPAs (Bide *et al*, 2013). However, these locations are remote from existing areas of marine aggregate extraction and it is unclear whether any marine aggregate licence applications might be submitted for these areas within the assessment period of the IA (2015 to 2034).

It has therefore been assumed that no marine aggregate licence applications will be submitted within the dSPA site boundaries over the assessment period for the IA.

C.1.7.2 Review of Existing Consents

Under the Habitats Regulations, competent authorities are required to review existing consents when new SPAs are designated where the fulfilment of those consents would be likely to have a significant effect on the new SAC or SPA, noting that such review does not affect anything already done under a consent.

As there is no licensed marine aggregate activity within any of the dSPAs, no review of consents will be required.

C.1.7.3 Refusal of Consent for New Marine Licence Applications Within Site Boundaries

As above, it has been assumed that no marine aggregate licence applications will be submitted within the dSPA site boundaries over the assessment period for the IA.

C.1.8 Limitations

The number, location and timing of future marine aggregate licence applications are uncertain.

C.1.9 References

Bide, T.P., Balson, P.S., Mankelow, J.M., Shaw, R.A., Walters, A.S. and Campbell, E., 2013. The Mineral Resources of Welsh Waters and the Irish Sea. British Geological Survey Open Report, OR/12/097. 26pp.

British Geological Survey (BGS). 2007. The Strategic Importance of the Marine Aggregate Industry to the UK. Research Report OR/07/019.

Cefas, ABPmer, Eunomia & AMEC, 2014. Developing the Welsh National Marine Plan Draft Strategic Scoping Exercise - Incorporating the proposed scope of the Sustainability Appraisal and Strategic Environmental Assessment. August, 2014.

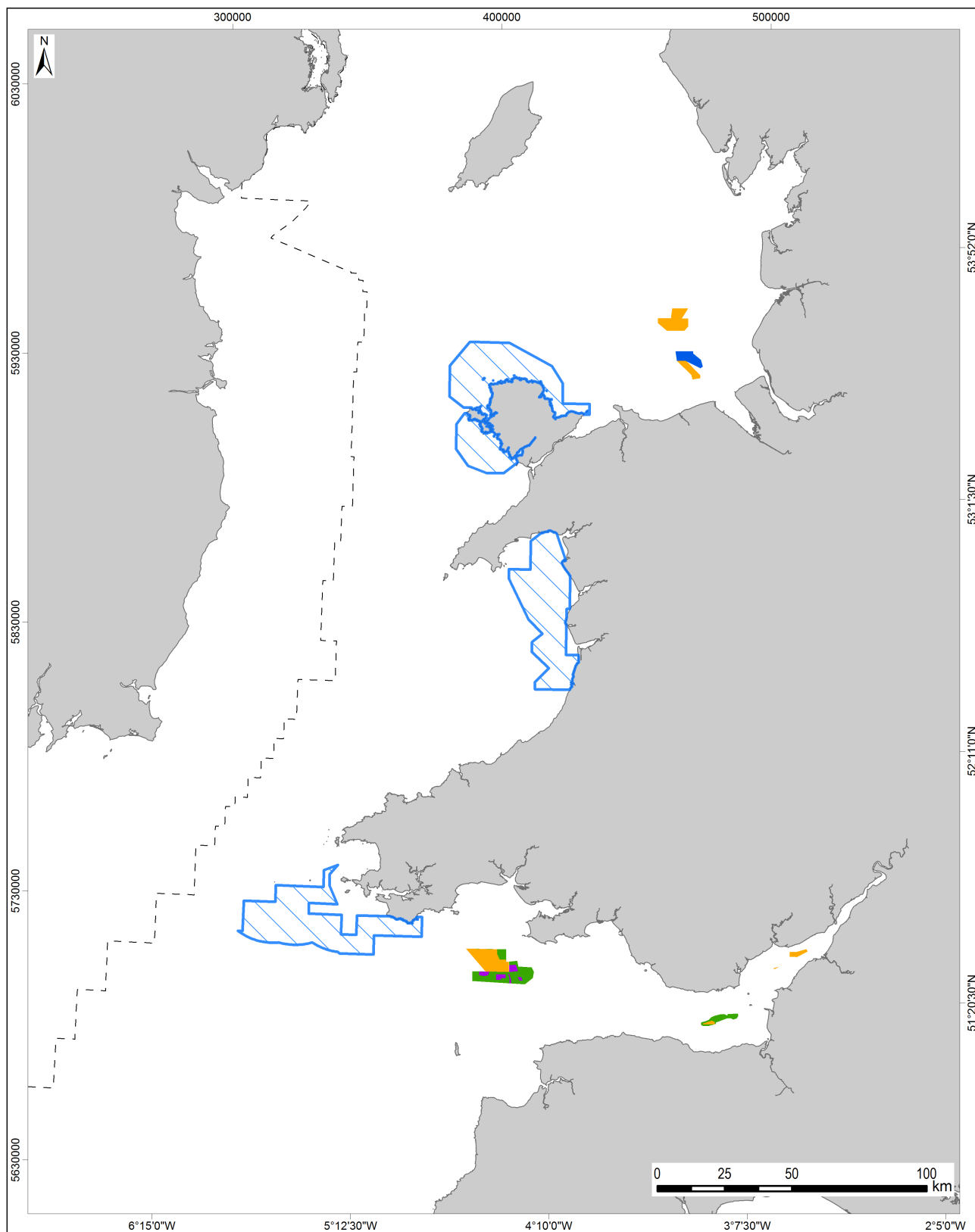
Cuesta Consulting Limited (2013) Regional Technical Statements for the North Wales and South Wales Regional Aggregate Working Parties (1st Review) (Consultation Draft, October 2013) Prepared, on behalf of the Welsh Government and the North Wales and South Wales Regional Aggregate Working.


Gosson P (2011) A century of sand dredging in the Bristol Channel, Vol 2: The Welsh Coast. Amberly Publishing.

Highley D, Hetherington L, Brown T, *et al.* (2007) The strategic importance of the marine aggregate industry to the UK. British Geological Survey
UKMMAS (2010a) Charting Progress 2 Feeder Report: Productive Seas.

HM Government (2011) UK Marine Policy Statement. 1–51.







Welsh Government. 2014. Developing the Welsh National Marine Plan, Draft Strategic Scoping Exercise.






Date	By	Size	Version
Jun 15	DLW	A4	1

Coordinate System	WGS 1984 UTM Zone 30N
Projection	Transverse Mercator
Scale	1:2,000,000
QA	NKD
4321 - FigC1_Aggregates.mxd	
Produced by ABPmer	

	Proposed dSPA		Aggregates Licence Area
	Continental Shelf		Aggregates Option Area
	Aggregates Application Area		
	Aggregates Exploration and Option Area		

© ABPmer, All rights reserved, 2015
Data Source: TCE, 2015 © Crown Copyright, 2015
NOT TO BE USED FOR NAVIGATION



Aggregates

Figure C1.1

C.2 Commercial Fisheries

C.2.1 Introduction

This annex provides an overview of existing and potential future activity for the commercial fisheries sector in Welsh waters and outlines the methods used to assess the impacts of potential dSPAs on this sector.

C.2.2 Sector Definition

For the purpose of this study, commercial fisheries relates to all commercial fishing activity within UK waters and includes the subsequent handling and processing of catches. It includes wild salmon and sea trout fisheries.

C.2.3 Overview of Existing Activity

Information sources used in the assessment are listed in Table C.2.1.

Table C.2.1 Commercial fisheries information sources

Scale	Information Available	Date	Source
Wales	ICES rectangle landings data for UK >10m and <10m vessels	2009-13	MMO
UK	VMS data for non-UK vessels in UK waters (1/200 th ICES rectangle), number of vessels by gear type	2007-2010	MMO
UK	UK fishing vessel numbers by fishing port and length	2013	MMO / EA Geostore
UK	UK Fleet Register – number of vessels and size, by port	2015	MMO
UK	EU Community Fleet Register – details of EU vessels including declared primary and secondary gear type	2015	European Commission
UK	Surveillance sightings data, all vessels including nationality, vessel length and gear type	2011–2013	MMO
Wales	Strategic Scoping Exercise for Welsh Marine Plan	2014	Cefas <i>et al</i> , 2014
UK Fleet (Area VIIa,f,g)	Economic performance of fleet segments	2009–2013	Seafish
UK	Survey of UK Seafood Processing Industry	2015	Seafish

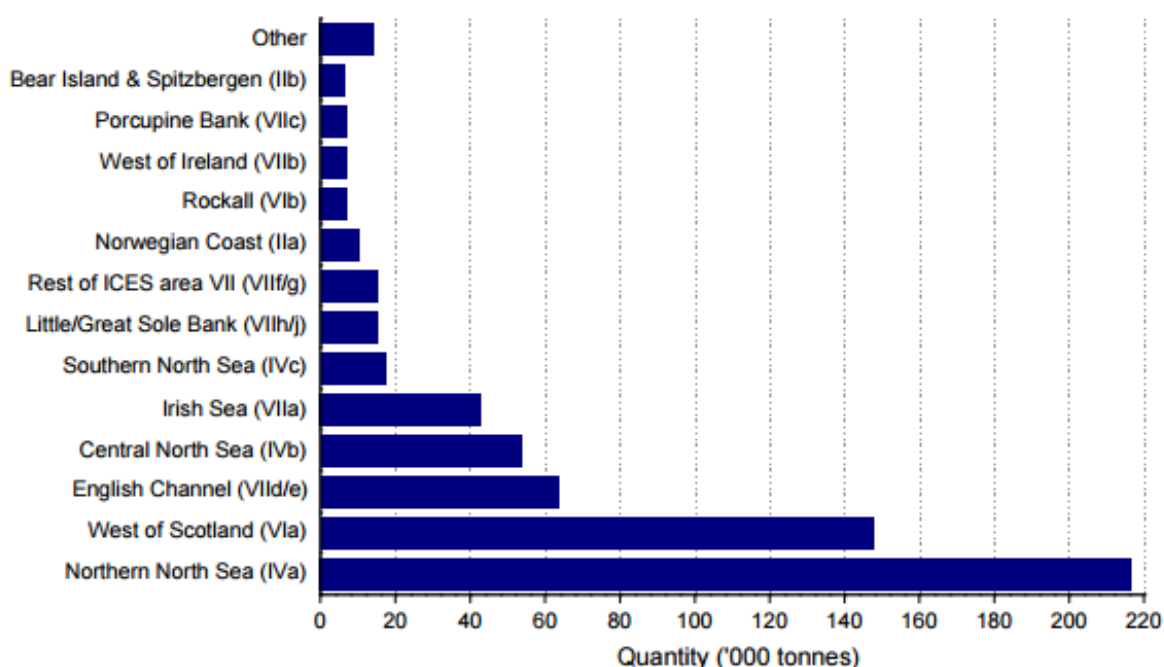
C.2.3.1 Location and Intensity of Activity

The majority of UK commercial fisheries landings by volume derive from the Northern North Sea (ICES Area IVa), followed by West of Scotland (Area VIa). Welsh waters (within Area VIIa Irish Sea and

Areas VII/f/g ('Rest of ICES area VII', relating to the Bristol Channel and approaches) account for a relatively small proportion of UK landings (Image C.2.1). The Welsh fleet accounts for only 1% of UK landings.

In 2011/12 the Welsh Marine Area contributed 4% to the UK's total tonnage of shellfish and fish landings, indicating a relatively small contribution to the UK's total fishery production (Cefas *et al.*, 2015).

Figure C.2.1 shows the value of landings by gear type for UK vessels from each site, using the proportional ICES rectangle technique (see section C.2.7.1). These are mainly derived from dredges and pots and traps in Anglesey Terns and Northern Cardigan Bay dSPAs, and predominantly from pots and traps from Skomer, Skokholm and Seas off Pembrokeshire dSPA.

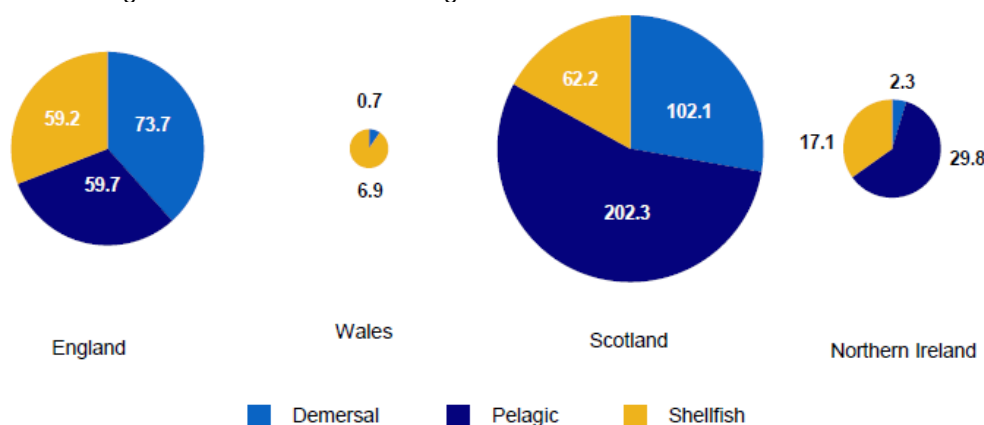


(Source: MMO, 2014)

Image C.2.1 Catch by sea area, UK vessels (2013)

Image C.2.2 shows the breakdown of each country's landings by species type. English vessels' landings are made up predominantly of demersal species (e.g. haddock, cod, whiting, plaice, sole), with equal quantities of pelagic (sardines, horse mackerel) and shellfish species (scallops, nephrops, crabs, lobsters, whelks). Welsh vessels land mainly shellfish species, with a small amount of demersals. The majority of registered fishing vessels in Wales are less than 10 m registered length and fish close to the coast for a wide range of species including bass, crabs, scallops, lobster, prawns, brill, turbot, sole, plaice, rays, cod and whelks. Cockle fisheries are some of the most valuable fisheries in Wales and are often of great local and cultural importance, with the main fisheries located in the Dee Estuary (North Wales) and the Burry Inlet (South Wales) (Cefas *et al.*, 2014). Cefas *et al.*, 2014 also highlights the importance of crab and lobster fisheries for much of the fleet, targeted with pots, and bass for the industry in South and West Wales.

Non-UK vessels also fish in UK waters, having access under the Common Fisheries Policy to waters beyond 12nm. Specific EU Member States also have access to defined areas within 6–12nm, based on historical access. Figure C.2.2 shows fishing areas for non-UK vessels for 2007–2010, based on VMS data. These data show that there are no non-UK vessels fishing within the Anglesey Terns and Northern Cardigan Bay dSPAs. These sites are located within 12nm, and there are no historic access rights for other EU Member States in this part of the Welsh 6–12nm zone. Only the Skomer, Skokholm and Seas off Pembrokeshire dSPA has any non-UK fishing activity within it — French vessels, potentially with a range of gears (demersal trawl and seine, pelagic gears, some nets and traps) and Belgian vessels using demersal trawl and seine gear.

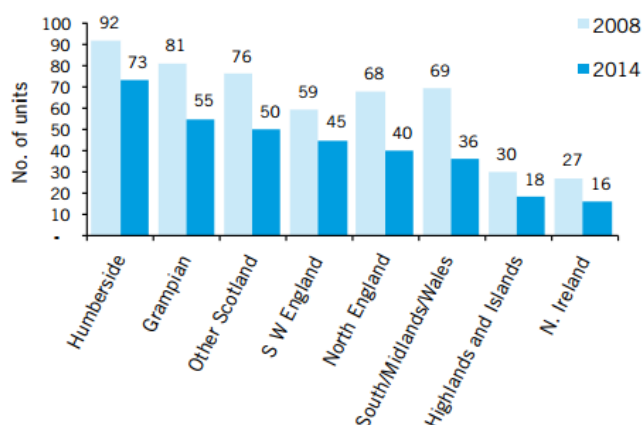


(Source: MMO, 2014)

Image C.2.2 Landings into the UK and abroad by vessel nationality and species group: 2013 ('000 tonnes)

The latest Seafood Processing Industry Report (Seafish, 2105) presents an overview and analysis of the UK seafood processing industry. In 2014, there were 403 fish processing units in the UK providing a total of 19,511 full-time equivalent (FTE) jobs. 333 of these processing units were for sea fish, providing a total of 14,305 FTE jobs.

The processing industry is mainly concentrated in the Humberside and Grampian regions, which together accounted for 38% of sea fish processing units and 52% of FTEs in 2014 (Image C.2.3). The processing units tend to be larger than average in these regions.



(Source: SeaFish, 2015)

Image C.2.3 Number of sea fish processing units by region, 2008 and 2014

Wales lacks a recognisable internal market structure for fisheries, and effectively no added value processing or infrastructure (Cefas *et al.*, 2014). In Wales, the number of seafood majority processors¹ has declined from 11 in 2008 to less than 5 in 2014, with the number of FTEs also declining from 108 to less than 30 over the same period (Table C.2.2). Other processors for whom seafood represents less than half of their turnover ('minority processors') also operate in Wales, but comprehensive figures are not available for these.

Table C.2.2 Number of seafood processing units and employment in Wales

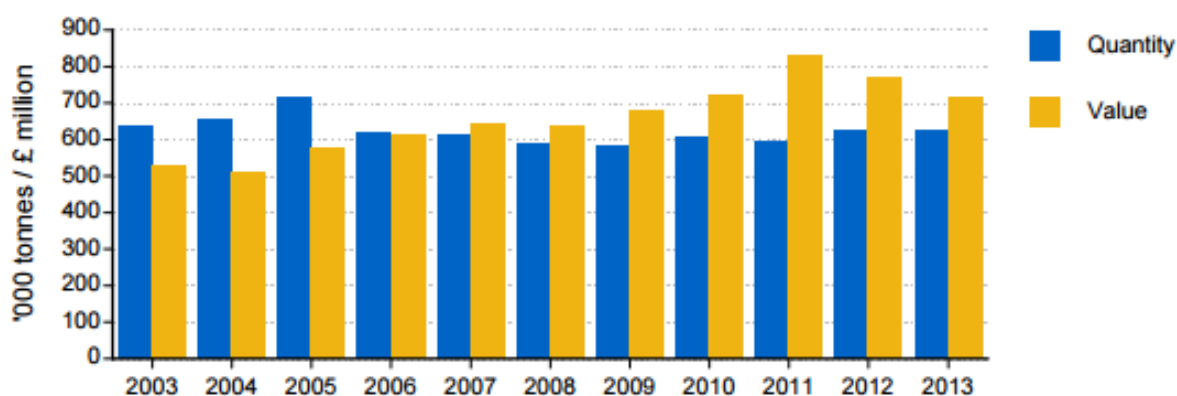
	2008	2010	2012	2014
Number of 'majority' processing units	11	7	5	Less than 5
Total FTE jobs in majority units	108	83	53	Less than 30

(Source: Seafish, pers. comm.)

The majority processors process either shellfish or mixed fish, including salmon, demersal fish (e.g. haddock), pelagic fish (e.g. mackerel, herring), trout and whelks. Both primary (e.g. cutting, filleting, picking, peeling, washing, chilling, packing, heading and gutting) and secondary (e.g. brining, smoking, cooking, freezing, canning, deboning, breaching, vacuum and controlled packaging, production of ready meals) processing activities are undertaken (Yordanova, *pers. comm.*, 2015).

C.2.3.2 Economic Value and Employment

In 2013, UK vessels landed 624,000 tonnes of fish and shellfish into the UK and abroad, with a value of £718 million. The quantity of fish and shellfish landed has remained relatively stable since 2005, with the value steadily rising from 2004 to a peak in 2011, and subsequently declining to 2010 levels in 2013 (Image C.2.4). The gross value added (GVA) for fishing has fluctuated in recent years. GVA for fishing was £476 million in 2013, an increase of 29% in ten years (MMO, 2014). The total GVA of the sector in Wales was estimated to be £21.2 million in 2014, based on the value of fish landed in the Welsh Marine Area (Cefas *et al.*, 2015).



(Source: MMO, 2014)

Image C.2.4 Quantity and value of landings by UK vessels into the UK and abroad: 2003 to 2013

¹ Majority processors are identified as those sites/units/processors that derive 50% or more of their turnover from fish processing activities.

The UK fleet has declined from 8,667 vessels in 2003 to 6,399 vessels in 2013. The decline in fleet numbers has been in part the result of several decommissioning schemes aimed to remove excess fleet capacity in the face of overexploited stocks and falling quotas.

Wales' fleet represents 6% of UK vessels by number, and 4% by power. The under-10m vessels often operate a range of different gear types, including pots, lines, nets and sometimes trawls, to target locally available stocks seasonally.

The Welsh inshore fishing sector supports a large number of businesses, and the fleet works from 33 recognised ports and harbours, plus numerous beaches, coves, estuaries and jetties along the Welsh coastline. Approximately 842 FTEs are directly employed by the sector, and an estimated 8,103 indirectly related jobs (Cefas *et al.*, 2014).

Sea fish processing annual industry turnover from the South/Midlands/Wales region was 19% of the UK total in 2012, representing £0.8 billion. The Gross Value Added (GVA) of the sea fish processing industry from the South/Midlands/Wales region was an estimated £161 million in 2012 (21% of the UK total in 2012).

The SeaFish (2015) report highlighted the supply of raw materials, regulatory and trade developments such as exchange rate movements, skill shortages, securing finance and retailer pressure on suppliers as creating problems for many businesses in the seafood processing industry.

Average processing unit size (average number of FTE jobs per unit) in the South/Midlands/Wales region increased from 36 to 61 (69% increase) (SeaFish, 2015). The increase in unit size in this region has been greater than in other regions.

C.2.3.3 Future Trends

Across European North-East Atlantic waters, fishing pressure on stocks has been reduced significantly in the past decade, with a number of stocks starting to return to more sustainable levels. The number of overfished stocks (where the fishing mortality is higher than that which will provide Maximum Sustainable Yield) has declined from 94% of assessed stocks in 2005 to 39% of assessed stocks in 2013. The number of assessed stocks has increased over the period, from 68 to 82 (COM (2013) 319 final). However, the status of many stocks in the Irish Sea is still below sustainable limits.

The fisheries sector is currently, and is likely to remain, important to many coastal areas in the UK. Fisheries are potentially impacted by both environmental and anthropogenic factors, including:

- Climate change effects (warming seas), which may result in the decline of stocks of cold-water species, such as cod, in waters around the UK as the stocks move northwards. However, new opportunities for warmer-water species may emerge as these species extend northwards into UK seas; Existing more southerly stocks such as red mullet, John Dory and bass may also experience improved productivity in years with higher average sea temperatures (UKMMAS, 2010);

- Anthropogenic effects such as permanent structures, dumping at sea, oil and chemical spills, and the effects of the fisheries themselves, which may impact on the habitats where the fish live; and
- Profitability and political effects, as detailed below.

There are a wide range of factors influencing the financial performance of individual businesses: some are internal to the business (such as strategic decision making, assets and skills), while others are external (and include sectoral competitiveness, the management framework, market conditions and fuel prices). These interact to determine the actual business performance (Scottish Government, 2010).

Landings of fish subject to UK quotas set under the EU Common Fisheries Policy (CFP) generally reflect changes in the quota set, therefore, in the future as species-specific quotas are raised or lowered, this will have an impact on the amount of that species landed. This is difficult to predict and will depend on the recovery and sustainability of individual species as well as the implementation of the 2013 CFP reform, including the landings obligation.

CFP reform, including the implementation of the landings obligation, may affect the distribution of fishing activity and the value of fish landings in the future. The annual Total Allowable Catches determined by area, and the drive to meet the target to achieve an exploitation rate consistent with Maximum Sustainable Yield (F_{MSY}) by 2015 where possible and by 2020 at the latest, together with the development of Multiannual Plans, will also affect the distribution of effort and catches.

Between 2012 and 2014 the number of seafood processors in the South/Midlands/Wales region declined from 38 to 36, but the number of FTE jobs increased, reflecting the larger size of individual processing units required to achieve economies of scale. The growing demand for seafood and signs of economic recovery underpin the UK sea fish processing industry confidence in the long-term sustainability and profitability of seafood processing in the UK (SeaFish, 2015).

C.2.4 Assumptions on Future Activity

The baseline review did not identify any clear future trends for commercial fisheries. Total fishery landings and employment in the fishing industry have been fairly stable since the mid-2000s. Species-specific quotas may be raised or lowered according to stock status and scientific advice, and stock size may change over time, but this is difficult to predict and a species- and area-specific analysis of this type, which would require bio-economic modelling to predict the response of individual fleet *métiers* and stocks to management measures under the Reformed CFP, is beyond the scope of this study. Prices, which may vary according to supply of fish from EU waters (but are also influenced by global demand and supply factors), will affected the value of landings, but are also difficult to predict. As a result of the lack of conclusive evidence on any clear direction for future trends, it has been assumed that the location and intensity of commercial fisheries activities do not change significantly over the period of the assessment. This assumption is consistent with that adopted for the Marine Conservation Zones (MCZs) in England which assumed the spatial distribution and value of landings would remain constant over the 20-year timeframe of the assessment, due to the lack of micro-scale forecasts of future activity (Defra, 2012).

C.2.5 Potential Interactions with dSPA Features

The principal impacts to proposed dSPA features/sub-features from commercial fisheries activity include:

- Habitat damage as a result of mobile gears being drawn across the seabed;
- By-catch of fish or birds within trawls; and
- Visual or noise disturbance of fish or birds.

C.2.6 Potential Management Measures

- Reduction or prohibition of fishing effort within dSPAs for mobile bottom gear, mobile pelagic gear and/or static gear.

Table C.2.3 sets out the management measures that have been identified by JNCC and the country nature conservation bodies as potentially being required to support the achievement of conservation objectives in specific dSPAs, and that are assessed in this impact assessment.

Table C.2.3 Potential management measures for the commercial fisheries sector

Management Measure	Scenario		
	Lower	Intermediate	Upper
10% reduction in mobile bottom gear effort across the site (likely to be focussed seasonally) (GVA impact).			✓
10% reduction in pelagic gear effort across the site (likely to be focussed seasonally) (GVA impact).			✓
100% reduction in nets gear and pots & traps gear effort in 'Puffin box' (immediately west of Skomer Island) between 1 May and 31 August (GVA impact).			✓
5% reduction in static gear effort across the site (GVA impact).		✓	
10% reduction in nets gear and pots & traps gear effort across the site (GVA impact).			✓

The potential management measures assessed for each site under lower, intermediate and upper scenarios are detailed in Appendix G.

C.2.7 Assessment Methods

C.2.7.1 Reductions in Fishing Effort Within dSPAs

Assessment of the cost to the commercial fisheries sector of spatial restriction of fishing activities is in terms of the loss of the value of landings from the area to be closed to fishing (by gear type and vessel size). Where fishing effort is restricted (e.g. 10% reduction in fishing effort), this is assessed as a pro-rata reduction in the value of landings from across the area where the restriction is applied, assuming constant catch-per-unit-effort.

This was assessed quantitatively:

- For UK vessels: Value of landings from the area to be restricted was calculated for affected gear types, based on annual average landings value from ICES rectangle landings data for the years 2009 to 2013. The value of landings from the ICES rectangles that overlap the dSPA site were pro-rated according to the proportion of the ICES rectangle overlapping the site (having first accounted for overlaps with land). The spatial resolution of ICES rectangle landings data is low compared to the size of dSPA sites, resulting in a degree of uncertainty in the costs. These data have been used as they are the official landings data and represent the whole UK fleet of all vessel sizes, and VMS ping data for over-15m vessels were not made available within the timeframe required to carry out the assessment. The ICES rectangle data do not include information on home port, administrative port or port of landing, therefore it is not possible to attribute employment impacts (based on home ports of vessels) geographically, although assumptions can be made for smaller vessels which have a more limited operating range. It was also not possible to attribute potential impacts on the processing sector (based on where catches are landed). The total annual landings values for each gear type were uprated to 2015 values using GDP deflators and averaged over five years for the final analysis.
- For non-UK vessels: Value of landings data for non-UK vessels are not available for vessels that land into non-UK ports. Such data would have to be obtained from the flag states' fisheries authorities. The scope and timeframe of the project does not allow for this to be comprehensively undertaken. Information from VMS pings from non-UK vessels from MMO was used, that indicated the total number of vessels by nationality and gear type fishing in a 1/200th ICES rectangle for the period 2007–2010. The potential number of non-UK vessels that may be affected by management measures in each site, was estimated from the maximum recorded in an ICES sub-rectangle for a particular gear type over the period. This may underestimate the number of vessels affected, particularly in larger sites such as Southern North Sea, as there was no way of identifying whether vessels recorded in each sub-rectangle for each gear type are the same vessel or different vessels.

It was assumed that management measures are implemented in year 1 (no costs in year 0), and the value of landings affected is the same in each subsequent year.

Estimating the impact of lost landings on Gross Value Added (GVA) and employment

The loss of landings that results from a loss of traditional fishing grounds reduces the output of the sector. Any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector (the **direct** effect). If the decrease in output reduces this sector's demand on their suppliers, there will also be knock-on effects on those industries that supply commercial fishing vessels (e.g. diesel suppliers, equipment suppliers, boat manufacturers and repairers and transport providers) (the **indirect** effect).

Estimating the potential impact of a decrease in output (i.e. lost landings) on the commercial fisheries sector and its upstream supply chain, has therefore involved assessing the:

- Direct impact on GVA — the reduced contribution of the commercial fisheries sector to the Welsh economy in terms of GVA;

- Indirect impact on GVA — the knock-on effects on upstream suppliers of the sector in terms of GVA; and
- Direct and indirect effect on employment — the resulting reduction in employment in the commercial fisheries sector and its upstream supply chain.

Estimating the direct impact on GVA

Where relevant, the impact of the loss of landings has been converted to loss of GVA for the catching sector 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 (Seafish, 2014). The average GVA ratios by gear type are presented in Table C.2.4 below.

The Seafish dataset contains financial, economic and operational performance indicators for approximately 30 UK fleet segments for the period 2005–2013 and provides total income and GVA estimates that are specific to individual fleet segments and gear types. The figures presented in Table C.2.4 below are mean values of GVA/total income for each gear type, over the period 2009–2013. This period is consistent with that used for the landings data.

Table C.2.4 GVA as a percentage of total income by area, fleet segment and gear type, average 2009–2013

Gear Type	GVA as a Percentage of Total Income (Mean, 2009–2013)		Seafish Fleet Segments on Which Based	
	Under-10m	Over-10m	Under-10m	Over-10m
All Areas				
Dredge	49%	49%	UK scallop dredge under 15m	UK scallop dredge over 15m
Drift and fixed nets	59%	46%	UK drift and fixed nets under 10m	UK Gill netters over 10m
Gears using hooks	50%	36%	UK hooks under 10m	UK Longliners over 10m
Pelagic seine	51%	51%	Over-40m Pelagic trawls	Over-40m Pelagic trawls
Pots and traps	50%	47%	UK pots and traps under 10m	Average of UK pots and traps 10m-12m and UK Pots and traps over 12m
Area VIIa				
Beam trawl	22%	23%	Average of North Sea beam trawl under 300kW and South West beam trawl under 250kW	Average of North Sea beam trawl over 300kW, North Sea beam trawl under 300kW, South West beam trawl under 250kW, South West beam trawl over 250kW
Demersal trawl/ seine	46%	40%	UK demersal trawls and seines under 10m	Average of Area VIIa demersal trawl over 10m, Area VIIa nephrops over 250kW, Area VIIa nephrops under 250kW
Other mobile gears	46%	33%	UK demersal trawls and seines under 10m	Average of Area VIIa demersal trawl over 10m, Area VIIa nephrops over 250kW, Area VIIa nephrops under 250kW, North Sea beam trawl over 300kW, North Sea beam trawl under 300kW, South West beam trawl under 250kW, South West beam trawl over 250kW, UK scallop dredge over 15m

Gear Type	GVA as a Percentage of Total Income (Mean, 2009–2013)		Seafish Fleet Segments on Which Based	
	Under-10m	Over-10m	Under-10m	Over-10m
Other passive gears	53%	44%	Average of UK drift and fixed nets under 10m, UK pots and traps under 10m, UK hooks under 10m	Average of UK Gill netters over 10m, UK Longliners over 10m, UK pots and traps 10m-12m, UK Pots and traps over 12m
Area VII/f/g				
Beam trawl	34%	34%	South West beam trawl under 250kW	Average of South West beam trawl under 250kW, South West beam trawl over 250kW
Demersal trawl/seine	46%	34%	UK demersal trawls and seines under 10m	Average of Area VIIb-k trawlers 10-24m, Area VIIb-k trawlers 24-40m
Other passive gears	53%	44%	Average of UK drift and fixed nets under 10m, UK pots and traps under 10m, UK hooks under 10m	Average of UK Gill netters over 10m, UK Longliners over 10m, UK pots and traps 10m-12m, UK Pots and traps over 12m
Other mobile gears	46%	37%	UK demersal trawls and seines under 10m	Average of Area VIIb-k trawlers 10-24m, Area VIIb-k trawlers 24-40m, South West beam trawl under 250kW, South West beam trawl over 250kW, UK scallop dredge over 15m

Estimating the indirect impact on GVA and the direct and indirect impacts on employment

The knock-on effects on GVA and employment for commercial fisheries have been estimated using appropriate multipliers.

The industry detail presented in the Input-Output Tables are based on the Standard Industrial Classification (SIC) of Economic Activities 2007 (SIC (2007)), under which sea fishing is classified as 'Marine Fishing and Freshwater Fishing' (Division A, group 03, class 03.1). The industry linkages are summarised as Type I and Type II Output, Employment, Income and GVA Multipliers and Effects. Type I multipliers sum together the direct and indirect effects while Type II multipliers also include induced effects.

The relevant 2011 Type I GVA Multiplier and Employment Effect that have been applied are presented in Table C.2.5 below. The Scottish multipliers are used, as in ABPmer & effec (2015), because UK or England data will be skewed by the London and south-east bias towards the service sector. The Scottish multipliers are still suitable because some of the proposed sites are around Scotland, and for most of the other sites the areas affected (e.g. west Wales) have a much more similar economic structure to Scotland than to the UK.

Table C.2.5 Marine fishing and freshwater fishing: Type I and Type II GVA multipliers and employment effects

Sea Fishing Industry (3.1)	GVA Multiplier	Employment Effect
Type I	1.4	15.9

(Source: Scottish Government, 2014).

The GVA Multiplier is expressed as the ratio of the direct and indirect GVA change to the direct GVA change, due to a unit change in final demand. Applying the multiplier to the estimate reduction in GVA for the industry, provides an estimate of the reduction in GVA for the economy as a whole. It is important to note that designation of the possible dSPAs would not result in a reduction in the final demand for fish. Rather, by restricting fishing activity it would reduce the volume of fish landed and constrain the ability of the Welsh fleet to supply the demand.

The Employment Effect (Table C.2.5) shows the direct plus indirect employment change to a direct output change due to a unit change in final demand. By multiplying the reduction in output (i.e. value of landings affected in millions) by the Employment Effect for the sector, it is possible to estimate the direct and indirect reduction in employment that would result from the potential reduction in output.

The potential cost of designation on the fish processing industry has not been possible to estimate due to limitations in the data sources, which do not provide any information on port of landing. The potential impacts on GVA and employment in the fish processing sector, from a reduction in the volume of locally landed fish, have not been assessed. This reflects the fact that:

- Designation would not reduce the final demand for fish. With no change in final demand, it can be assumed that fish processors will attempt to offset the reduction in locally-landed supplies by importing a greater volume of imported fish; and
- Estimating the reduction in GVA and employment in this sector would also estimate the reduction in the commercial fisheries sector as an indirect effect, and hence would result in double counting.

Displacement issues

All of the quantified impacts on the commercial fishing sector (whether in terms of value of affected landings, GVA or employment) assume that all affected fishing activity is lost, that is, that there is no adaption within the site or displacement of fishing activity to other grounds. This represents the worst-case impact and in reality, vessel owners are likely to try and adapt within the site (e.g. by changing gear type or target species), if that is possible, or, search for alternative fishing grounds in an attempt to maintain profitability. It is difficult to forecast the scale and nature of adaption or displacement of fishing activity that would occur and hence estimate, even qualitatively, the extent to which this would offset the reduced value of landings generated by a new dSPA designation. This will depend on an array of different factors, for example:

- The availability of alternative fishing grounds;
- Whether vessels change gear type and target species;
- The relative catch rates and associated profitability of the new fishing grounds; and
- The effect on other vessels fishing in these grounds.

There are also costs associated with adaption and displacement (such as the costs of developing new gear types and changing gears, increased fuel costs from longer steaming times, changes in costs and earnings patterns of individual vessels, possible additional quota and days at sea costs) and in some cases there may be a lack of suitable alternative fishing grounds. Displacement can also generate conflict between vessels displaced to a new site and vessels previously fishing in that site (or indeed reduce conflict if some gears are prohibited); as well as causing environmental impacts through

targeting of new areas. In light of the difficulties involved in assessing the scale of adaption/displacement of fishing activity and the associated costs, these aspects have not been quantified.

C.2.8 Limitations

- The methodology to assess the value of loss of landings due to effort restrictions or closures used ICES rectangle data. For most sites the spatial resolution of these data is too coarse to provide an accurate picture of the value of landings from the site. The methodology also assumes that the value of landings derived from an ICES rectangle is distributed evenly across the area, which may not be the case. These issues may result in an over- or under-estimate of the value of landings affected.
- The extent to which displacement of activity will occur (rather than loss of the value of landings) is uncertain. The quantification of cost impacts to the sector assumes that all affected fishing activity is lost. In reality, it is likely that some displacement would occur. The cost estimates presented for this sector, therefore, represent worst case estimates, subject to the uncertainties above.
- The quantification of cost impacts to the sector is restricted to UK vessels, as data on non-UK vessels were not available to allow quantification of impacts. Impacts on non-UK vessels were assessed in terms of the number and nationality of vessels likely to be affected by proposed management measures where possible. This may underestimate the number of vessels affected, particularly in larger sites such as Southern North Sea, as there was no way of identifying whether vessels recorded in each sub-rectangle for each gear type were the same vessel or different vessels (they were assumed to be the same).
- The requirements for management measures are uncertain, and the management measures assessed under the scenarios do not reflect the actual management measures that may be adopted on a site-by-site basis following further consultation.
- As the value of future landings cannot be forecast, it is assumed that the value of landings are constant over time. The average value of landings per year estimated for each dSPA is therefore assumed to be the same in each of the 20 years covered by the IA (except the first year, for which it is assumed management measures are not yet in place). In reality, it is likely that the value of landings in each site will fluctuate over time and hence the estimated loss in landings may underestimate or overestimate the true future value of landings. As the GVA and employment estimates are based on the value of affected landings the same limitation applies.
- Although the Sea Fish Industry Authority Costs and Earnings Survey (Seafish, 2014) represents the best data available to estimate GVA on a sector-specific basis, the data have some limitations. For example, the total income, operating profit and crew share data includes income earned by fishing vessels from sources other than fishing (e.g. towage activities, selling quotas and days at sea). The cost estimates do not include non-fishing income and this mismatch may overestimate or underestimate the impact on GVA for some fisheries. Non-fishing income, however, tends to be a fairly insignificant proportion (0%–10%) of total income.
- The multipliers used to estimate the indirect GVA impacts and the direct plus indirect employment effect, that could be generated from the estimated reduction in the value of landings, relate to 'Marine Fishing and Freshwater Fishing' and not the specific gear types affected. They may, therefore, underestimate or overestimate the impacts. The multipliers – which are national multipliers for Scotland – have been applied at the new dSPA site level and regional/port level to estimate the economic impacts by new MPA or marine dSPA and by

region/port. Local and regional multipliers are not available and hence the application of multipliers may overestimate or underestimate the impacts. Finally, application of the multipliers also assumes that a reduction in output is similar to a change in final demand and that there is no rise in the price of fish to offset the reductions in the value of landings.

C.2.9 References

ABPmer & Cefas, 2010. Development of additional data layers of UK- and non-UK fishing effort for use in the planning of marine protected area networks (MB0106). Report No. 4: Contract Variation, August 2010 Further development of fishing layers. Final.

ABPmer & eftec, 2015. The Scottish Marine Protected Area Project Second Iteration of Site Proposals – Developing the Evidence Base for Impact Assessments: Draft Report.

Cefas, ABPmer, Eunomia & AMEC, 2014. Developing the Welsh National Marine Plan Draft Strategic Scoping Exercise - Incorporating the proposed scope of the Sustainability Appraisal and Strategic Environmental Assessment. August, 2014.

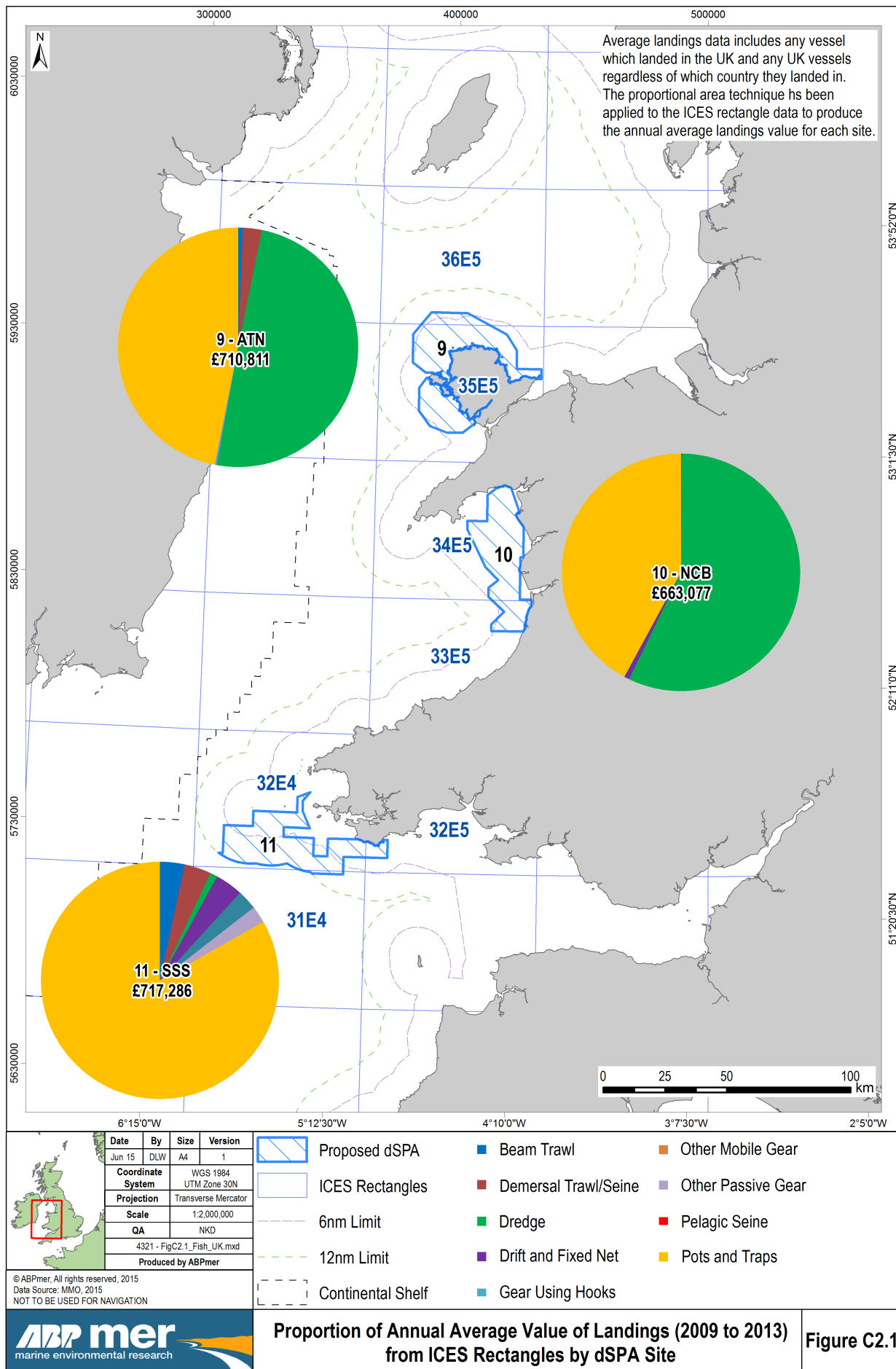
Defra, 2012. Impact Assessment materials in support of the Regional Marine Conservation Zone Projects' Recommendations. Annex H7.

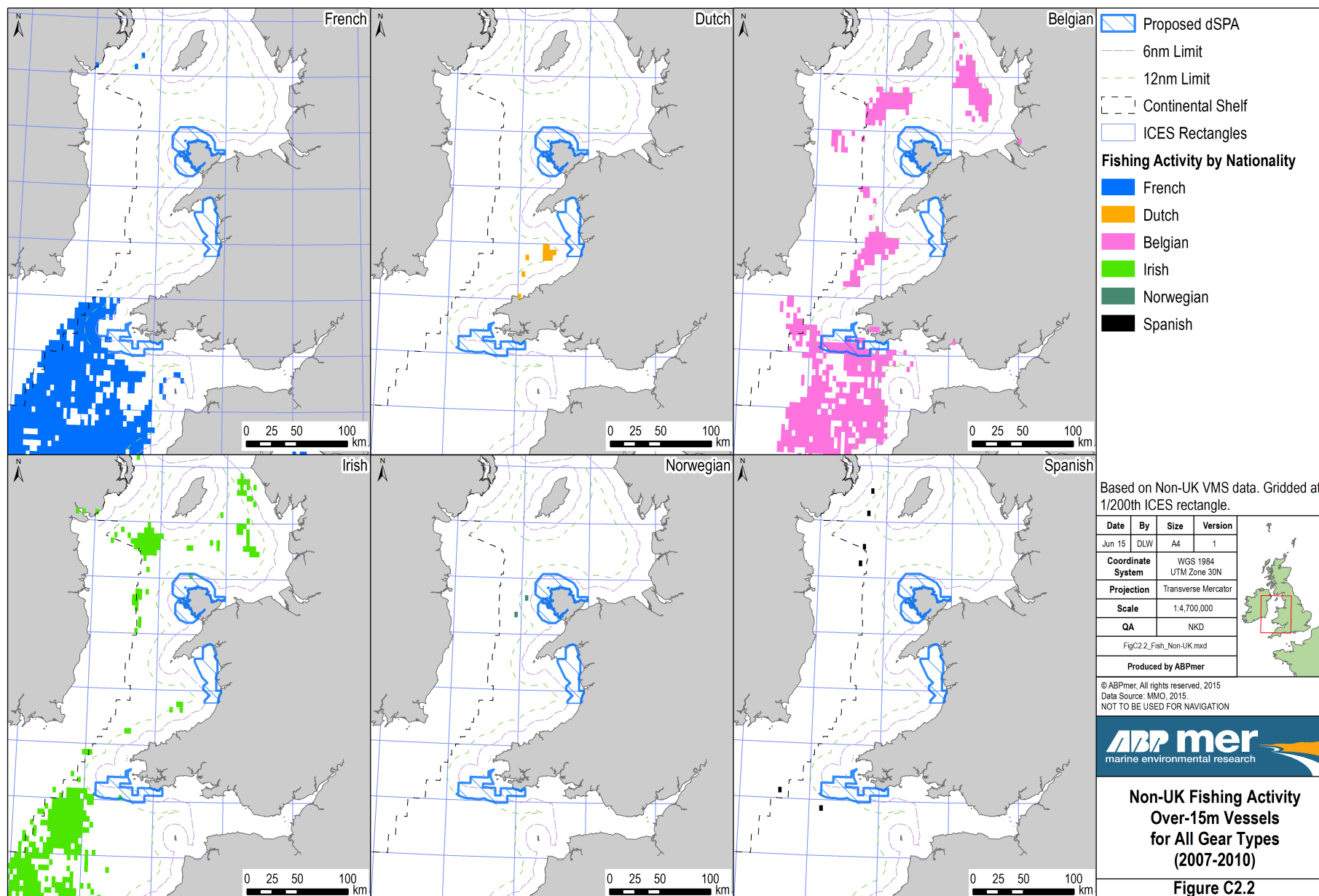
MMO, 2014. UK Sea Fisheries Statistics 2013. Marine Management Organisation.

Scottish Government, 2014. Input-Output Tables 1998-2009 (Latest year 2011), revised 13th August 2014. Available at <http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/Input-Output>.

SeaFish, 2014. Seafish Multi-Year Fleet Economic Performance Dataset. Sea Fish Industry Authority.

SeaFish, 2015. 2014 UK Seafood Processing Industry Report. Edinburgh: Sea Fish Industry Authority. Available online at http://www.seafish.org/media/publications/2014_Seafood_Processing_Industry_Report.pdf.





C.3 Offshore Renewables

C.3.1 Introduction

This appendix provides an overview of existing and potential future activity for the offshore renewables sector in Welsh inshore and offshore waters and outlines the methods used to assess the impacts of potential dSPAs on this sector.

C.3.2 Sector Definition

The offshore renewables sector includes offshore wind, wave, tidal stream and tidal lagoon energy production together with transmission capacity.

C.3.3 Overview of Existing Activity

Information sources used in the assessment are listed in Table C.3.1.

Table C.3.1 Offshore renewables information sources

Scale	Information Available	Date	Source
UK	Wind farm locations (point)	Current	4C Global Offshore Wind Farms Database
UK	Existing wave and tidal lease areas	Current	UK Marine Energy Database
Wales	Renewable energy statistics and future predictions of renewable energy in Wales	2014	Developing the Welsh National Marine Plan, Draft Strategic Scoping Exercise
UK	Socioeconomic benefits of offshore wind	2007 and 2012	European Wind Energy Association (EWEA) and Johnson <i>et al.</i> 2013
Wales	Renewable energy targets	2005	A Technical Advice Note on Renewable Energy published by the Welsh Government
Wales	The future of tidal lagoons in Wales and their economic consequences	2014	Cebr

C.3.3.1 Location and Intensity of Activity

Offshore renewable energy sources currently exploited include offshore wind, wave and tidal energy.

Current and planned offshore renewable energy generation sites in Wales are presented in Figure C3.1 and Table C.3.2.

Table C.3.2 indicates that there are a number of planned offshore renewable energy projects in Welsh Territorial waters. Currently however there are only two developments that are operational, namely North Hoyle and Rhyl Flats off the north coast of Wales. These sites each cover an area of 10km² and respectively contain 30 and 25 monopole mounted turbines, giving a combined capacity of 150MW. The Gwynt y Môr windfarm lies further offshore than North Hoyle and Rhyl Flats and is currently partially operational as some turbines have been installed and are operating. Full build out has not yet been achieved, but the array is predicted to completed and fully operational sometime in 2015. The

finished development will cover an area of 86km² and consist of up to 160 turbines mounted on monopiles (RWE, n.d).

Additionally, all preliminary works for the Delta Stream tidal turbine in Ramsey Sound have been completed and installation of a single demonstration device is imminent. It is expected that the device will be deployed and generating electricity by the end of 2015 (Tidal Energy, 2015). All necessary consents have been granted for the Sea Generation (Wales) tidal stream array at the Skerries, however Siemens announced it was selling the technology developer MCT in November 2014 resulting in the array being put on hold indefinitely. In April 2015 an announcement that Atlantis Resources had acquired the company from Siemens was made (Shankleman, 2015). It has been assumed that the development will proceed.

Table C.3.2 Existing and planned wind, tidal and wave renewable energy projects in Welsh Inshore and Offshore Waters as at 10 June 2015

Energy Type	Name/ Location	Company (Project Website)	Status	Capacity (MW)
Wind	North Hoyle	RWE (http://www.rwe.com/web/cms/en/311612/rwe-innogy/sites/wind-offshore/in-operation/north-hoyle/summary/)	Operational since November 2003	60
	Rhyl Flats	RWE (http://www.rwe.com/web/cms/en/310584/rwe-innogy/sites/wind-offshore/in-operation/rhyl-flats/summary/)	Operational since December 2009	90
	Gwynt y Môr	RWE (http://www.rwe.com/web/cms/en/1202906/rwe-innogy/sites/wind-offshore/under-construction/gwynt-y-mor/)	Currently under construction, due to become fully operational in 2015.	576
	Celtic array	Centrica (project website deleted)	Cancelled due to challenging ground conditions.	N/A
	Atlantic array	RWE (http://www.rwe.com/web/cms/en/354738/rwe-innogy/sites/wind-offshore/developing-sites/atlantic-array/)	Cancelled due to technical challenges.	N/A
Tidal Stream	Seagen Skerries	Sea Generation Wales Ltd. (http://seagenwales.co.uk/)	Consent was granted in 2013 and construction was due to begin in 2015 but has been put on hold with no re-launch date.	10
	Holyhead Deep	Minesto (http://www.minesto.com/technologydevelopment/index.html)	Agreement for Lease granted, consent application is being prepared.	10
	West Anglesey Demonstration Zone	Menter Mon Cyf (http://moralaisenergy.com/en/)	In development. The site has been designated as a tidal current demonstration zone (as of July 2014). Site manager must now attract developers to use the site and collect environmental data.	120

Energy Type	Name/ Location	Company (Project Website)	Status	Capacity (MW)
	St Davids Head	Tidal Energy Ltd. (http://www.tidallenergytld.com/?page_id=1346)	An Agreement for Lease has been granted, a scoping report is being prepared as the first step of the consenting process.	10
	Ramsey Sound	Tidal Energy Ltd. (http://www.tidallenergytld.com/?page_id=650)	Marine licence and planning permissions have been granted. Installation is expected to occur imminently.	1.2
Tidal Range	Swansea Bay Tidal Lagoon	Tidal Lagoon (Swansea Bay) plc (http://www.tidallagoonswanseabay.com/the-project/proposal-overview-and-vision/51/)	Consented 9 June 2015	320
	Newport Tidal Lagoon	Tidal Lagoon Power (http://www.tidallagoonpower.com/h/lagoons/newport/141/)	Stakeholder and community consultation is underway. Scoping report is expected to be submitted in mid-2015	Between 1,800MW and 2,800MW
	Cardiff Bay Tidal Lagoon	Tidal Lagoon (Cardiff) plc (http://www.tidallagooncardiff.com/)	Scoping Opinion was received from the Secretary of State in April 2015.	2800
Wave	South Pembrokeshire Demonstration Zone	Wavehub (http://www.wavehub.co.uk/)	The site has been designated as a wave demonstration zone (as of July 2014). Site manager must now attract developers to use the site and collect environmental data.	30

C.3.3.2 Current Economic Value and Employment

In 2011 marine renewable energy in Wales generated 2,159 Gigawatt hours of electricity, approximately 8% of the total electricity generation in Wales (Welsh Government, 2014). The energy came solely from offshore wind as there are no tidal developments in operation to date. In 2014 the renewables sector was estimated to have contributed £127,181,650 to the Welsh GVA, however (Welsh Government, 2014) it should be noted that this value is likely to include other sources of renewable energy other than just offshore wind.

The potential for employment generation as a result of new offshore renewable developments is regularly referred to in literature. Both job creation and regional development are identified as key potential benefits of offshore wind developments (European Wind Energy Association (EWEA), 2007; Johnson *et al.* 2013). Employment creation is noted a central driver to support offshore renewable energy development in political terms. Impacts of employment (split between manufacturing, installation and operation/maintenance phases) are also anticipated to be experienced onshore (Johnson *et al.* 2013). This was seen in Wales in 2011 when the engineering firm Mabey Bridge opened a new manufacturing facility in Chepstow, resulting in a £38m investment in the area and the creation of 240 jobs (BBC News, 2011).

C.3.3.3 Future Trends

The UK faces a significant challenge in achieving a secure, affordable low carbon energy supply. The Climate Change Act 2008 established a long-term framework to cut greenhouse gas emissions by at least 80% below 1990 levels by 2050. Renewable resources of energy available in Wales include wind (for both coastal and offshore); wave; tidal stream (focused inshore) and tidal range (particularly in the Severn estuary). As a result Wales is likely to contribute significantly to the amount of renewable produced in the UK in the future.

In the Technical Advice Note on Renewable Energy (TAN 8) published in 2005, the Welsh Government set the target of 7,000GWh of electricity per annum to be produced by renewable energy by 2020 (Welsh Government, 2005). Offshore wind deployments are likely to be continually supported by financial incentives such as the Renewables Obligation Certificates (ROCs), Feed-in Tariffs (FiT), and Contract for Difference (CfD) schemes. Combined with the presence of existing turbine tower and sub-components manufacture hub in Chepstow it would seem there is a large potential for the expansion of offshore wind in Wales. Having said this however, there are currently no other planned offshore wind developments in Welsh territorial waters other than the Gwynt y Môr development which is due to be completed sometime in 2015.

The likely future marine power activity within Wales is dominated by a decision about a Severn barrage, with an 8 to 12 GW generation potential (DECC 2013). If this major project were to go ahead the potential in Wales from tidal and wave projects by 2025 could be more than half of the current electricity consumption (Welsh Assembly Government 2008b). Clearly the economic impacts of such a scheme would be substantial. The Welsh Government continues to advocate the Severn Estuary as a strategically important source of renewable energy, whilst recognising the significant environmental and financial challenges (Welsh Government 2014).

The Tidal Lagoon Swansea Bay development was consented in June 2015 (nominal 240MW capacity) and it is anticipated to lead to the creation of £173m of gross value added for Wales and around 1,850 full time equivalent jobs during the development stage (up to 2018). Upon completion, the operational phase of the project could support an estimated £5m in extra output for Wales, and £2.2m in GVA annually for the region. It is estimated that this level of additional output in terms of operating the Lagoon would support around 60 full time equivalent jobs per annum for the longer term (Munday and Jones, 2013). A proposal for a tidal lagoon in Cardiff has also been submitted and received a Scoping Opinion from the Secretary of State in April 2015. Although the socio-economic impacts of the proposal have not yet been quantified, it is expected that economic benefits associated with the construction phase would include the level of GVA generated by the project, increased employment and supply chain opportunities. During operation of the lagoon socio-economic effects are likely to shift more towards employment created as a result of the activities associated with operation and management of the lagoon (Tidal Lagoon Cardiff Ltd, 2015).

C.3.4 Assumptions on Future Activity

An absolute and final decision on the future of the Severn barrage has yet to be made, however the currently it appears that the project is not expected to proceed. This assessment therefore assumes that tidal lagoons are more likely to be developed in the area rather than one very large static barrage. In order to make this assessment the build out of the following developments was assumed:

- Gwynt y Môr wind farm;
- SeaGeneration Wales project, Skerries;
- Holyhead deep;
- Ramsey Sound;
- St Davids Head;
- Swansea Bay tidal lagoon;
- Cardiff tidal lagoon;
- Newport tidal lagoon;
- West Anglesey Demonstration Zone; and
- Wave Hub's Pembrokeshire Demonstration Zone.

Several major wind farm projects in Welsh waters, specifically the Atlantic Array and Celtic Array (Rhiannon, South West and North East Potential Development Areas), have been abandoned in recent years due to financial constraints. Although there are no further offshore wind developments proposed in Welsh waters, future licencing rounds may lead to additional developments. There may also be further leasing rounds for tidal stream and wave developments. Tidal stream technology is close to commercialisation, with the first array scale deployment currently being constructed in the Pentland Firth. As this technology becomes proven at an array scale and becomes less expensive, development may accelerate. Given the amount of tidal resource available in Wales a number of tidal stream projects may be brought forward in the coming years. Wave technology is lagging behind tidal stream and is further from commercialisation. Advances in technology will be required before commercial arrays are deployed in Wales. The amount of time this will take is currently unknown and to a certain extent depends on the support the industry receives from the UK government. The tidal lagoons in Swansea Bay, Cardiff and Newport are currently in the planning stage. A further site has been proposed on the English side of the Severn estuary. Tidal Lagoon Power estimates that if all sites are granted consent, construction of all four sites could be complete by 2027 (Cebr, 2014).

C.3.5 Potential Interactions with dSPA Features

The planning, construction, operation and decommissioning of offshore renewables development have the potential to affect dSPA features through a number of impact pathways. In particular, the construction of infrastructure on the seabed may directly or indirectly change existing seabed substrates and/or lead to smothering of sensitive habitats as a result of sediment plumes. Significant levels of underwater noise may be generated during construction, depending on the methodologies used. This may pose significant risks to hearing-sensitive species, particularly fish. The presence of structures above and below sea level may pose a collision risk to birds. The construction, operation and maintenance of offshore renewable energy devices may cause visual or noise disturbance to birds.

C.3.6 Potential Management Measures

Table C.3.3 sets out the management measures that have been identified by NRW as potentially being required to support the achievement of conservation objectives in specific dSACs (see also Appendix D: Management Scenarios).

There are no existing or planned offshore wind or tidal range developments in the vicinity of any of the dSPAs. The assessment has therefore focused on existing or planned tidal stream or wave energy developments.

Table C.3.3 Potential management measures for offshore renewables sector

Management Measure	Scenario		
	Lower	Intermediate	Upper
Habitats Regulations Assessment (HRA) of new development within or near site boundaries	✓	✓	✓
Review of consents for existing offshore renewables developments within or near site boundaries	✓	✓	✓
Refusal of consent for new offshore wind or tidal developments within or near site boundaries causing significant pressure on dSPA features			✓

The methods by which the cost impacts of these potential management measures have been assessed are described below.

C.3.7 Assessment Methods

Table C.3.4 below summarises planned tidal stream development projects in the vicinity of the Anglesey Terns / Morwenoliaid Ynys Mon dSPA based on publicly available information. This includes information on planned capacity (MW), project status, project timeline and extent of overlap with dSPA boundaries. Where necessary, assumptions have been made about project timelines and construction methods to inform the assessment. This information has been used variously within the specific assessments described below.

Table C.3.4 Planned tidal stream development in the vicinity of Anglesey Terns / Morwenoliaid Ynys Mon dSPA

Development	Project	Status	Programme	Capacity (MW)	No of Turbines	% of Development Within dSAC	% of Development Outside of dSAC But Within 5km
Anglesey Skerries Tidal Array	-	Consented, not yet built.	Project website indicates construction works to start in 2016. Assumed to be completed in 2017 and to be operational by 2018.	10	10	100	0.0
West Anglesey Demonstration Zone	-	In development.	Test site.	-	-	88.9	11.1
Holyhead Deep	-	In development.	Assumed application submitted in 2016, consent granted in 2017. Construction started in 2018 and completed in 2019. Operational in 2020.	10	20	0.0	98.3

C.3.7.1 HRA of New Development Within or Near Site Boundaries

It is assumed that HRA will be required for new development applications (applications not determined by date of designation) or that additional HRA might be required for consented but not yet built developments to assess potential impacts on dSPA conservation objectives as follows:

- Tidal stream development within site boundaries (lower and intermediate scenarios) or within 5km of site boundary (upper scenario).

For the Anglesey Terns / Morwenoliaid Ynys Mon dSPA, NRW considers that HRA would already be required for potential developments within the vicinity of the existing SPA (Ynys Feurig, Cemlyn Bay). For developments within the vicinity of the existing SPA the necessary HRAs would already require consideration of all the bird features for which the dSPA is being proposed and it is considered that the new designation would not pose any significant additional costs on developers.

C.3.7.2 Review of Existing Consents

Under the Habitats Regulations, competent authorities are required to review existing consents when new SPAs are designated where the fulfilment of those consents would be likely to have a significant effect on the new SAC or SPA, noting that such review does not affect anything already done under consent.

There is one existing consented tidal stream development, located wholly within the Anglesey Terns / Morwenoliaid Ynys Mon dSPA – the Anglesey Skerries Tidal Array project. It is assumed that this consent would be reviewed upon designation.

The costs of carrying out the review would be borne by the Welsh Government with advice provided by NRW. Under the lower and intermediate scenarios, NRW does not anticipate that any additional management measures would be required. It has therefore been assumed that the developer would not be required to provide the Welsh Government with any additional information to inform the Review of Consent under these scenarios. Under the upper scenario, the management measure is to prohibit tidal stream development within the dSPA boundary, subject to the provisions of Article 6 of the Habitats Directive. Assuming Welsh Government was minded to revoke the consent, it has been assumed that the developer would not be required to provide any additional information to inform the Review of Consent. However, costs would be incurred in relation to project cancellation (see section 3.7.3 below).

C.3.7.3 Refusal of Consent for New Tidal Stream Developments Within Site Boundaries

NRW advice is that tidal stream development is unlikely to pose a significant risk to the features for which the Anglesey Terns / Morwenoliaid Ynys Mon dSPA is proposed. On this basis it has been assumed that none of the proposed developments would be refused consent under the upper scenario and therefore no additional costs would be incurred.

C.3.8 Limitations

- Uncertainty concerning scale and location of future development for offshore renewables; and
- Uncertainty concerning management measures.

C.3.9 References

BBC News. 2011. Mabey Bridge wind turbine factory opens in Chepstow. 12 May 2011. Available [Online] <http://www.bbc.co.uk/news/uk-wales-13373962>. Accessed 12/05/2015.

Cebr, 2014. The Economic Case for a Tidal Lagoon Industry in the UK, A scenario-based assessment of the macroeconomic impacts of tidal lagoons for power generation on the UK economy. Report for Tidal Lagoon Power Ltd July 2014. Available [Online] http://www.tidallagoonpower.com/storage/documents/The-Economic-Case-for-a-Tidal-Lagoon-Industry-in-the-UK_final.pdf Accessed 13/05/2015

Cefas, ABPmer, Eunomia & AMEC, 2014. Developing the Welsh National Marine Plan Draft Strategic Scoping Exercise - Incorporating the proposed scope of the Sustainability Appraisal and Strategic Environmental Assessment. August, 2014.

Defra, 2012. Impact Assessment materials in support of the Regional Marine Conservation Zone Projects' Recommendations.

European Wind Energy Association (EWEA). 2007. Delivering Offshore Wind Power In Europe. Available [Online] http://www.ewea.org/fileadmin/ewea_documents/images/publications/offshore_report/ewea-offshore_report.pdf Accessed 12/05/2015

Johnson, K., Kerr, S. and Side, J. 2013. Marine renewables and coastal communities—experiences from the offshore oil industry in the 1970s and their relevance to marine renewables in the 2010s. *Marine Policy* 38: 491-499.

Munday, M. and Jones, C. 2013. Turning Tide: the economic significance of the Tidal Lagoon Swansea Bay. Part of the developments Environmental Statement (Appendix 22.1).

RWE. No Date. Gwynt y Môr. Available [Online] <http://www.rwe.com/web/cms/en/1202906/rwe-innogy/sites/wind-offshore/under-construction/gwynt-y-mr/> Accessed 12/05/2015.

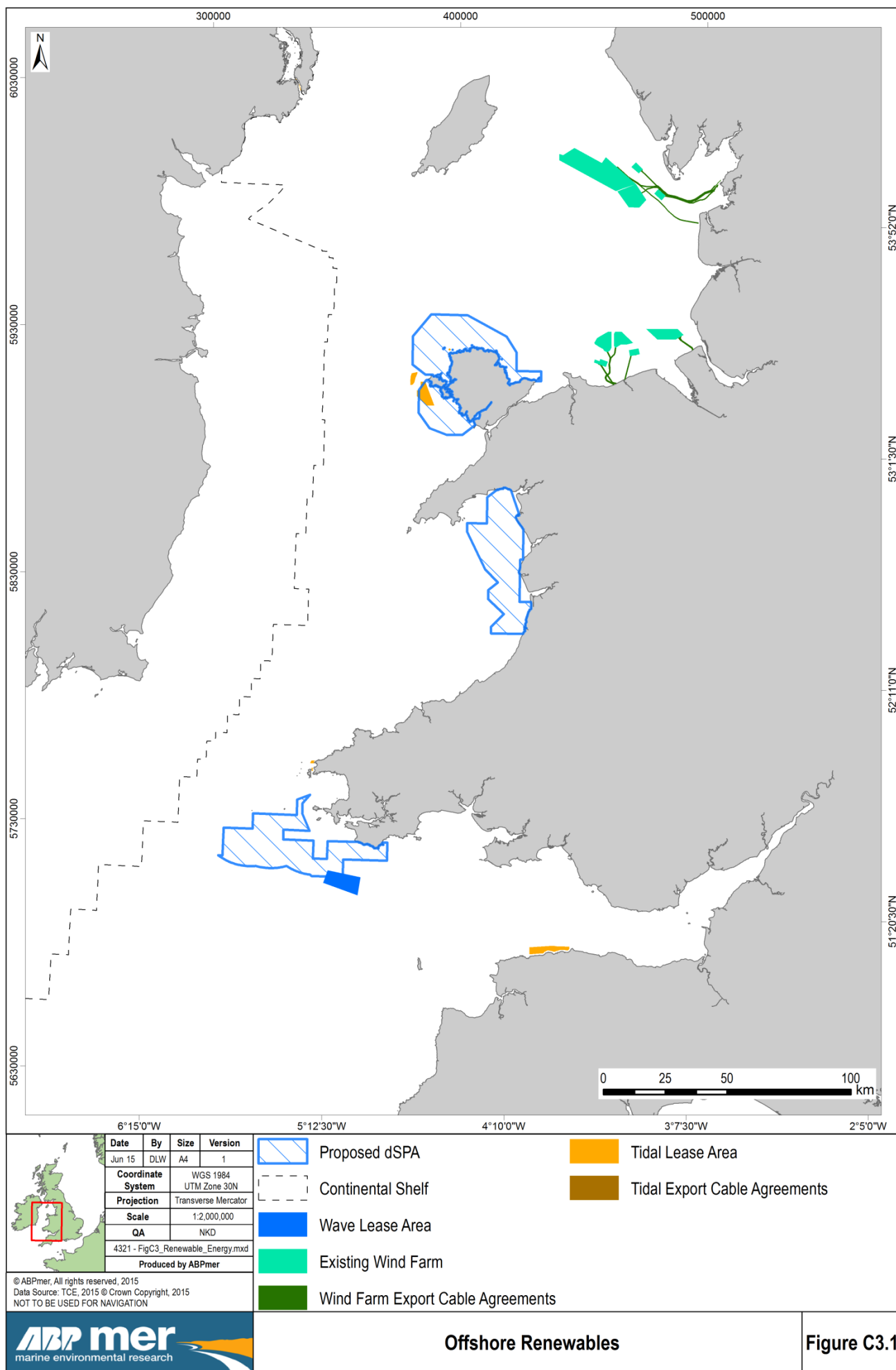
Shankleman, J. 2015. 'Siemens offloads Marine Current Turbines to Atlantis Resources'. *Business Green*. 29th April 2015.

Tidal Energy, 2015. News, Talking Tides: Martin Murphy of Tidal Energy, March 2015. Available [Online] <http://www.tidalenergy ltd.com/?p=2301> Accessed 12/05/2015

Tidal Lagoon Cardiff Ltd. 2015. Proposed Tidal Lagoon Development, Cardiff, South Wales Environmental Impact Assessment Scoping Report March 2015. Available [Online] <http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010073/1.%20Pre-Submission/EIA/Scoping/Scoping%20Request/Scoping%20Report.pdf> Accessed 13/05/2015.

Welsh Government. 2005. Technical Advice Note (TAN) 8: renewable energy. Available [Online] <http://gov.wales/docs/desh/publications/050701technical-advice-note-8-en.pdf> Accessed 13/05/2015.

Welsh Government. 2014. Developing the Welsh National Marine Plan, Draft Strategic Scoping Exercise.



C.4 Oil and Gas

C.4.1 Introduction

This appendix provides an overview of potential future activity for the oil and gas sector relating to UK waters and outlines the methods used to assess the impacts of potential dSPAs on this sector.

C.4.2 Sector Definition

This sector relates to the exploration for and subsequent extraction of oil and gas in the sub-sea environment largely from offshore reserves. Oil reserves include both oil and the liquids and liquefied products obtained from gas fields, gas-condensate fields and from the associated gas in oil fields. Gas reserves are the quantity of gas expected to be available for sale from dry gas fields, gas-condensate fields and oil fields with associated gas. For this assessment, activity within this sector includes exploration, production, interconnectors and gas storage (i.e. the 'upstream' oil and gas sector).

C.4.3 Overview of Existing Activity

Information sources used in the assessment are listed in Table C4.1.

Table C.4.1 Oil and gas information sources

Scale	Information Available	Date	Source
UK	Oil and gas pipeline, field and terminal station location (shapefile)	2015	DECC
UK	Location of currently licenced areas	2015	DECC
UK	Oil and gas employment	2014	Oil and Gas UK 2014 Economic report
UK	Future trends of the oil and gas industry	2015, 2014 & 2011	DECC, Oil and Gas Economic Report 2014 and Baxter <i>et al.</i> (2011)
UK	Potential interactions between dSAC and Oil and Gas industry	2011	JNCC and Natural England
UK	Identification of potential impact pathways	2013	DECC
UK	Identification of potential mitigation measures	2015	Oil and Gas UK
UK	Potential effects on species	2011	JNCC & NE
Wales	Identification of licenced areas in Welsh waters and employment statistics for Milford Haven.	2014	Welsh Governments National Marine Plan
Wales	Information on potential fracking activity	2012	WalesOnline

C.4.3.1 Location and Intensity of Activity

At present there is no oil and gas exploration or production occurring in Welsh waters; however there is a single licenced block present off the west coast of Pembrokeshire and the 28th Oil and Gas Licence Round gave rise to a limited number of offered blocks in Welsh territorial waters. The single licenced area lies in the grid square 103/1 off the west Pembrokeshire coast in which a significant discovery was made (Welsh Government, 2014; DECC, 2015). There were an additional two licenced blocks off the

north coast close to the Point to Ayr, however since the start of the 28th Round process these have been relinquished either in whole or in part. Seventeen blocks were offered for application in the 28th licencing round in Welsh waters. The majority of these are located offshore between Saint David's Head and the middle of Cardigan Bay extending out to the limits of the territorial waters. Two were also offered off the north coast in close proximity to those previously relinquished. Additionally, several onshore facilities currently exist in Wales including the Point of Ayr Gas Terminal on the north coast and several oil refineries in Milford Haven (Welsh Government, 2014).

There are no currently licensed blocks or blocks offered for application in the latest licensing round in Welsh waters that overlap with dSPA sites. Those located off the north coast lie east of the dSAC surrounding the coast of Anglesey and the licenced and offered blocks off the west coast are located north west of the Pembroke dSPA boundary.

C.4.3.2 Economic Value and Employment

Despite the lack of exploration and extraction activity in Welsh territorial waters, Milford Haven is one of the largest oil and gas ports in Northern Europe which handles approximately 25% of the UK's petrol and diesel provisions and up to 30% of the UK's gas requirements (Welsh Government, 2014). Consequently the economic contribution of oil and gas in Pembrokeshire makes up a large proportion of the nation's total economic income from the oil and gas industry which is heavily reliant upon waterways. Although the GVA contribution of the oil and gas industry in Wales has not been quantified, it has been estimated that £324 million of GVA is injected into the Pembrokeshire economy by activities dependent on the waterways (of which oil and gas is one). Approximately £88.5 million of this GVA was put into the Welsh Economy. The Milford Haven Waterway supports over 5,000 jobs in Wales as a whole, directly and indirectly, 80% of which are in Pembrokeshire (including jobs in oil refining, gas processing, power generation and sea transport services) (Welsh Government, 2014).

C.4.3.3 Future Trends

The presence of a licenced block and numerous blocks offered for application indicates that future oil and gas developments in Welsh waters cannot be discounted. The Point of Ayr Gas Terminal supports the Liverpool Bay gas fields which are in decline and unlikely to be producing by 2020 (though this clearly depends on the rate of extraction). As such the Point of Ayr Gas Terminal may become a stranded asset (Welsh Government, 2014). A report has shown the potential suitability for this pipeline network to be utilised as CCS infrastructure given the proximity of large CO₂ emitters (Eunomia, 2011), though this is somewhat speculative at present given the unproven nature of full-scale CCS; however given that projects have started developing in England, the prospect of CCS projects in Welsh waters should be considered for the future. A further consideration is the prospect of shale gas reserves being explored and produced, which has been given a boost by the UK Government's announcement that exploratory hydraulic fracturing (fracking) for shale gas can resume and the establishment of an Office for Unconventional Gas and Oil (DECC, 2012). At present efforts are being concentrated onshore, for example in South Wales, however this technology may become a possibility offshore in future (WalesOnline 2012). This emerging industry remains at an immature stage and is currently not taking place anywhere in the offshore environment (Welsh Government, 2014).

C.4.4 Assumptions on Future Activity

Future oil and gas development depends on the presence of exploitable resources and the economic viability of development. Information on proposed front-end development activity (resource surveys and test wells) is available from awards made under DECC's oil and gas licensing rounds. However, it is difficult to anticipate the extent to which this front end activity might subsequently lead to development projects. Furthermore, information from recent and current licensing rounds provides a relatively short-term view of future activity. Over the next twenty years or so, it is possible that a further 10 or more licensing rounds will be announced by DECC (based on an average of a new round every 18 months to 2 years) (DECC, 2015).

Development is currently limited by the small number of licenced areas in Welsh territorial waters, however as stated above, it is possible that further licencing rounds could result in more licenced areas in Welsh waters. As a result, and combined with the estimated decline in oil and gas production predicted up to 2020, and beyond to 2030 (DECC, 2015c), it has been assumed that no new oil and gas storage sites and no new gas interconnector projects will be developed in or adjacent to dSPA sites in this assessment.

Consideration should also be given to the decommissioning of current infrastructure, especially that relating to the Point of Ayr Gas Terminal which may become redundant post 2020. Pipelines running from this station to the Liverpool Bay gas fields do not overlap with the nearest dSPA around Anglesey. The refineries in Pembrokeshire are closer to dSPA boundaries than the Point of Ayr Gas Terminal however an overlap is still not apparent. Hence, given the distance between existing infrastructure and the dSPAs, it is unlikely that any decommissioning activities will have a direct effect on dSPAs.

C.4.5 Potential Interactions with dSPA Features

Infrastructure for the exploration and drilling for oil and gas may interact with dSPA features in a number of ways. Seismic surveys in the exploration for oil and gas can cause significant impacts or disturbance to a variety of marine species, including diving birds. Construction and operation of oil and gas exploration and production facilities may also cause visual and noise disturbance to birds. The installation of drilling infrastructure and drilling activities will have direct impacts on local benthic features which support birds. Benthic species may suffer lethal effects of surface and sub-surface abrasion and penetration. Disturbance and smothering may occur with the dispersion and deposition of drill cuttings, although this is dependent on hydrodynamic conditions and the particle size of the drill cuttings. Noise disturbance will also result from drilling activities. Once installed, the presence of drilling infrastructure has the potential to interrupt hydrodynamic processes and change local patterns of sediment erosion and deposition. Scour protection to avoid potentially adverse impacts associated with erosion may involve replacing the original soft sediment on the seabed with a rocky substrate, inducing changes in habitat and community structure. Once in place drilling infrastructure may present a barrier to the movement of mobile species and may potentially result in death or injury by collision (JNCC & NE, 2011).

Trenching and burying of pipelines for the transport of oil and gas causes short-term disturbance to the benthic habitat along the route of the pipeline, after which the seabed would be re-colonised. If pipelines are laid directly on the seabed, they may disrupt the hydrodynamic regime and alter the natural transport of sediment within the area. Concrete mattresses may be utilised to stabilise pipelines,

resulting in a permanent loss of soft sediment habitat and a shift to hard substrate. In areas of sand waves, sand crests may be 'shaved' to flatten the seabed for better pipeline installation, altering geomorphological characteristics of the area (JNCC & NE, 2011).

Oil spills can impact all habitat types, although areas of low wave energy are more vulnerable than high energy areas that can naturally disperse oil quickly. In addition to oil pollution, discharges of formation water, crude oil and other production chemicals may affect the surrounding environment if not managed in accordance with best practice.

C.4.6 Potential Management Measures

Table C.4.2 sets out the management measures that have been identified by NRW as potentially being required to support the achievement of conservation objectives in specific dSACs (see also Appendix D: Management Scenarios).

Table C.4.2 Potential management measures for oil and gas sector

Management Measure	Scenario		
	Lower	Intermediate	Upper
Habitats Regulations Assessment (HRA) of new development within or near site boundaries	✓	✓	✓
Review of consents for existing developments within or near site boundaries	✓	✓	✓
Refusal of consent for new developments within site boundaries			✓

The methods by which the cost impacts of these management measures have been assessed are described below.

C.4.7 Assessment Methods

C.4.7.1 HRA for New Exploration and Development Activity Within or Near Site Boundaries

It is assumed that HRA will be required for all new exploration and development activity within 10km of dSPAs under all scenarios. Where exploration or development activity occurs in the vicinity of dSPAs, it will be necessary for the developer to provide information to DECC to determine whether such activity poses a significant risk to the achievement of the conservation objectives for those features.

Currently there is no existing activity and no awards under 26th, 27th or 28th oil and gas licensing rounds within 10km of any of the dSPAs.

Awards for exploration and development may be made in the future, but it is not possible to estimate the number, nature or timing of such awards. Given the lack of historical oil and gas activity within the dSPAs, it is unlikely that significant levels of activity will occur in the future. Based on current information, the cost impact is therefore assessed as £0.

C.4.7.2 Review of Existing Consents

Under the Habitats Regulations, competent authorities are required to review existing consents when new SPAs are designated where the fulfilment of those consents would be likely to have a significant effect on the new SAC or SPA, noting that such review does not affect anything already done under a consent. As there is no existing or consented oil and gas activity within any of the dSPAs, no review of consents will be required.

C.4.7.3 Refusal of Consent for New Developments Within Site Boundaries

It has been assumed that under the upper scenario all proposals for test wells or production facilities within the dSPA site boundaries will be refused consent, although exploration activity would still be permitted. This would create an opportunity cost associated with potential oil and gas reserves that cannot readily be exploited.

As there are currently no awards within dSPA site boundaries, no cost impacts associated with current oil and gas activities would be anticipated. Awards for exploration and development may be made in the future, but it is not possible to estimate the number, nature or timing of such awards. Given the lack of historical oil and gas activity within the dSPAs, it is unlikely that significant levels of activity will occur in the future. Based on current information, the cost impact is therefore assessed as £0.

C.4.8 Limitations

- Uncertainty concerning the location, scale and timing of future development activity, particularly in later years of the assessment period;
- Uncertainty concerning the location and timing of decommissioning activity, particularly in later years of the assessment period;
- Uncertainty concerning the cost impact of project delays associated with additional assessment and monitoring requirements; and
- Uncertainty concerning nature of any possible mitigation measures and implications for future investment.

C.4.9 References

Cefas, ABPmer, Eunomia & AMEC, 2014. Developing the Welsh National Marine Plan Draft Strategic Scoping Exercise - Incorporating the proposed scope of the Sustainability Appraisal and Strategic Environmental Assessment. August, 2014.

Department for Energy and Climate Change (DECC). 2013. UKCS Oil and Gas Production Projections. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/136390/production_projections.pdf

DECC. 2012. New controls announced for shale gas exploration. Available [Online] <https://www.gov.uk/government/news/new-controls-announced-for-shale-gas-exploration> Accessed 24/04/2015.

DECC. 2015. 28th Round of Offshore Licensing Position as of 1 June 2015. Available [Online] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/431079/Current_Licence_Position.pdf Accessed 09/06/2015.

Defra, 2012. Impact Assessment materials in support of the Regional Marine Conservation Zone Projects' Recommendations. Annex H11 Oil, Gas and Carbon Capture and Storage.

Eunomia. 2011. The East Irish Sea CCS Cluster: A Conceptual Design – Technical Report.

JNCC and NE, 2011. General advice on assessing potential impacts of and mitigation for human activities on MCZ features, using existing regulation and legislation. Advice from the Joint Nature Conservation Committee and Natural England to the Regional MCZ Projects. June 2011. 107pp.

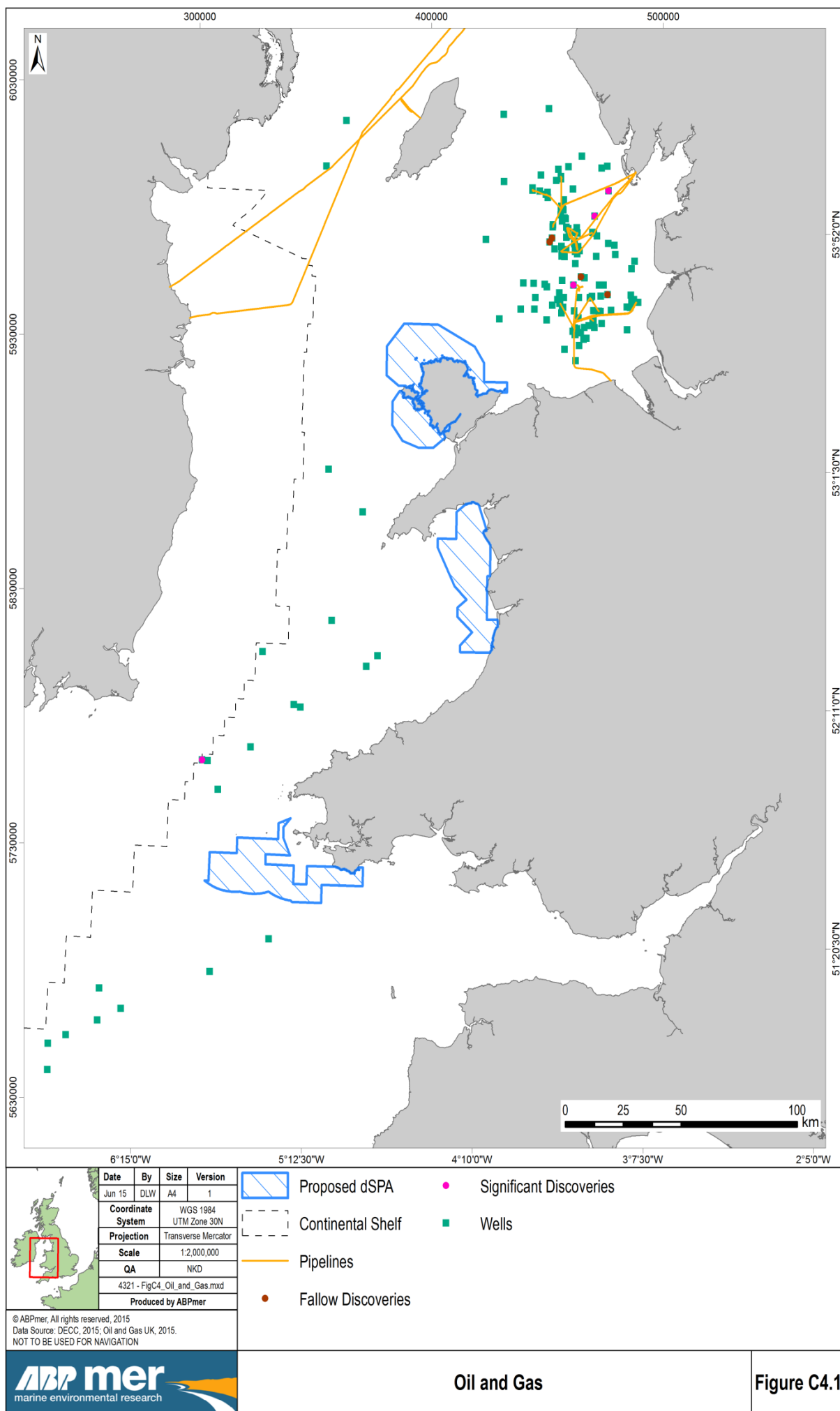
Oil and Gas UK. 2012a. Economic Report 2012.
<http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EC030.pdf>

Oil and Gas UK 2012b. 2012 Decommissioning Insight.
<http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/OP073.pdf>

Saunders, J., Tinch, R., Ozdemiroglu, E. & Hull, S., 2011. Valuing the Marine Estate and UK Seas: Dynamic Baseline Assessment (draft). Marine Estate Research Report for The Crown Estate.

WalesOnline. 2012. Welsh gas firm welcomes Chancellor's warm words on shale gas exploration. Available [Online] <http://www.walesonline.co.uk/business/business-news/welsh-gas-firm-welcomes-chancellors-2012862>. Accessed 24/04/2015.

Welsh Government. 2014. Developing the Welsh National Marine Plan. Draft Strategic Scoping Exercise.



C.5 Ports and Harbours

C.5.1 Introduction

This appendix provides an overview of existing and potential future activity for the ports and harbours sector in Wales and outlines the methods used to assess the impacts of potential new dSPAs on this sector.

C.5.2 Sector Definition

Ports provide the modal interchange points by which goods and people are transported from land to sea. Harbours are by definition, safe havens for vessels to reside and are often commensurate with ports areas. This assessment focuses on potential impacts to terminals and wharves, navigation channels and approaches, anchorages and dredge material disposal sites.

C.5.3 Overview of Existing Activity

A list of sources to inform the writing of this baseline is provided in Table C.5.1.

Table C.5.1 Information sources

Scale	Information Available	Date	Source
Wales	Port and harbour activity	2014	Cefas <i>et al</i> , 2014
UK	Employment and GVA multipliers for ports (all UK)	2009	Oxford Economics (March 2009): 'The Economic Contribution of Ports to the UK Economy' www.ukmajorports.org.uk/file_library/file_library_files/download/173
UK	Ports and Harbours contribution to Employment and GDP (all UK)	2012	Oxford Economics, 2011. The economic impact of the UK's Maritime Services Sector (http://www.maritimeuk.org/key-statistics)
UK	Marine traffic, passenger numbers and cargo volume	2000-2011	Department for Transport 'Transport Statistics' http://www.dft.gov.uk/statistics/series/ports-statistics
UK	Port and harbour locations, port types, port ownership, contact details	Current	Ports and Harbours of the UK, 2011. Website: http://www.ports.org.uk/
UK	Location of UK Ports	2010	ABPmer/CP2
UK	Potential future port developments	2012	DfT National Policy Statement for Ports, 2012
UK	UK port demand forecasts	To 2030	UK Port Demand Forecasts to 2030. MDS Transmodal, 2006, and update 2007.
UK	Update to UK port demand forecasts, taking into account recession	To 2020 and 2030	Port Infrastructure Development UK. Gail Bradford, MDS Transmodal, 2011

C.5.3.1 Location and Intensity of Current Activities

In 2012 the amount of freight passing through Welsh ports equated to 54.6 million tonnes, approximately 11% of the total freight moving through UK ports (Statistics for Wales 2014). Shipping routes cover a significant proportion of the Welsh marine area and major ports include Milford Haven, Port Talbot, Holyhead, Newport, Cardiff, Fishguard, Swansea and Newport (Welsh Government 2011a). Milford Haven is the largest and, in terms of tonnage of freight handled, was recognised as the third busiest port in the UK in 2013 (DfT, 2014). A number of smaller ports, characterised by a quay or jetty and used by a range of vessels, are also present around the coast of Wales. Port type and location in Wales are shown in Figure C.5.1

C.5.3.2 Economic Value and Employment

A number of industries are strongly related to the ports and harbour sector, for example, ship building (building and repairing of vessels), oil and gas, commercial fishing, maritime transport (including ferry services) and leisure moorings. Ports and shipping make a significant contribution to the Welsh economy. According to Welsh Government Statistics there are approximately 575 enterprises in the core marine sector which employ almost 5,000 people in Wales, of which the value to the economy is estimated to be worth £726 million. Recent statistics suggest that in Wales:

- 52,000 people are directly employed in coastal / marine activity;
- 40,000 are indirectly employed;
- £4.8bn in direct income is generated;
- £2bn is raised in indirect and induced activity; and
- £1.5bn of GDP is contributed to the Welsh economy.

C.5.3.3 Future Trends

The UK Government policy for ports was set out in the Interim Report of the ports policy review published in 2007 (DfT, 2007). This report stated that the Government sought to 'encourage sustainable port development to cater for long-term forecast growth in volumes of imports and exports by sea with a competitive and efficient port industry capable of meeting the needs of importers and exporters cost effectively and in a timely manner'. This provides confirmation that the ports industry is supported by Government policy into the future, providing assurance of sustained development.

The increase in offshore renewable activities provides a potential source of income for ports. This is both as a base for industrial processes including manufacture of offshore renewable devices, and as a service provider for the craft needed to install and maintain offshore renewable sites during the construction and operation. Market potential is driven by the location of offshore renewable developments, and the accessibility of ports for the types of craft involved in installation and maintenance activities.

The future use, growth and development of ports are intrinsically linked to world trade patterns and the economic climate, and are reactive to changing economic circumstances.

C.5.4 Assumptions on Future Activity

The timing, location and nature of port development are difficult to predict as it occurs in response to demand. However due to the limited alternatives to shipping freight into Wales shipping is expected continue to provide the only effective way to move the vast majority of freight in and out of the nation, and the provision of sufficient sea port capacity will remain an essential element in ensuring sustainable growth in the Welsh economy. The growing renewable energy industry will have port requirements for activities including manufacture, installation and maintenance, particularly for ports in relatively close proximity to proposed future offshore wind farm developments. Holyhead, Mostyn, Milford Haven (including Pembroke Dock), Port Talbot, Newport and Swansea have all been identified as having the greatest competitive advantage in exploiting the opportunities from low carbon energy sectors, although this doesn't preclude niche roles for other ports in Wales (Welsh Government 2014; Welsh Government 2011). As a result of the continued growth of offshore renewable energy, it has been estimated that the sector is likely to have an annual growth rate of 2% (Welsh Government, 2014).

In the absence of specific information on future port development, it has been assumed for the purposes of this assessment that major ports (ports with throughput >1million tonnes per annum) will undertake one development every five years over the assessment period (starting in 2017) and that minor ports will undertake one development every twenty years over the assessment period (assumed to be in 2026).

It has been assumed that port operators will also need to apply for dredge material disposal licences once every 3 years and that the locations of commercial anchorages and disposal sites do not change over the assessment period.

C.5.5 Potential Interactions with dSPA Features

The main impacts of the construction and operation of ports and harbours within or near proposed marine dSPAs relate to direct damage to seabed habitats and species as a result of dredging or reclamation. Dredging may also lead to elevated concentrations of suspended sediment in the water column, affecting local water quality. Re-deposition of this sediment has the potential to cause smothering of existing seabed habitats. During construction and operational phases, underwater noise and vibration may also be an issue.

Once constructed, ports and harbours may create a permanent barrier for the movement of mobile species, and pose a risk of death or injury by collision. Permanent changes to the hydrography and morphology of the area may change water flow and wave exposure, potentially inducing changes in the emergence regimes of intertidal species. The installation of moorings and regular anchoring of vessels has the potential to cause further damage to the local seabed, and could affect MPA features through pollution and the introduction of non-indigenous species into the area (JNCC & NE, 2011).

Anchorage of commercial vessels may cause direct damage to habitats and species, with further surface and sub-surface abrasion of the seabed occurring from movement of the anchor and chain. A greater area of damage may be created by a circular movement of the ship at anchor.

C.5.6 Potential Management Measures

Table C.5.2 sets out the management measures that have been identified by NRW as potentially being required to support the achievement of conservation objectives in specific dSACs (see also Appendix D: Management Scenarios).

Table C.5.2 Potential management measures for ports and harbours sector

Management Measure	Scenario		
	Lower	Intermediate	Upper
Habitats Regulations Assessment (HRA) of new development within or near site boundaries	✓	✓	✓
Review of consents for existing developments within or near site boundaries	✓	✓	✓
Refusal of consent for new developments within site boundaries			✓

The methods by which the cost impacts of these management measures have been assessed are described below. In addition, it is possible that some of these requirements could result in project delays. It is not possible to reliably quantify the potential cost impact of delays. Where management measures have the potential to cause delay, this is described below in relation to the relevant measures.

In addition, the uncertainty caused by the designations and requirements for management measures may act as a deterrent to investment. It is difficult to quantify this potential impact as it is unclear what level of uncertainty or additional cost might dissuade an investor.

C.5.7 Assessment Methods

C.5.7.1 HRA for Marine Licence Applications

It is assumed that HRA will be required for all port and harbour marine licence applications within 5km of dSPAs under all scenarios. This includes both new port developments and renewal of maintenance dredging disposal licences.

For the Anglesey Terns dSPA and the Skomer, Skokholm and the seas off Pembrokeshire dSPA, NRW considers that HRA would already be required for potential port development and maintenance dredging renewals within the vicinity of the existing SPAs (Ynys Feurig, Cemlyn Bay and The Skerries SPA and Skokholm and Skomer SPA) and SACs (Pen Llyn a'r Sarnau/ Llyn Peninsula and the Sarnau SAC and Pembrokeshire Marine/ Sir Benfro Forol SAC). For developments or maintenance dredging renewals within the vicinity of the existing SPAs the necessary HRAs would already require consideration of all the bird features for which the dSPAs are being proposed and it is considered that the new designations would not pose any significant additional costs on developers in these areas. In practical terms, the only additional effort required of developers would be to include reference to the new designations within any HRA, but no additional effort would be required to assess impacts. For development within or near existing SACs, HRA would already be required in respect of SAC features but should the proposed SPA designations be confirmed, additional assessment of the impact on the protected bird features would be required.

Based on the above, the following Welsh ports are identified as potentially being required to provide additional information to inform HRAs for future marine licence applications (port development or maintenance dredging licences). Minor ports:

- Aberystwyth;
- Pensarn;
- Aberdyfi;
- Abersoch;
- Barmouth;
- Portmadoc; and
- Stackpole Quay.

Pensarn, Aberdyfi, Barmouth and Portmadoc are all located within the Pen Llyn a'r Sarnau/ Llyn Peninsula and the Sarnau SAC. Stackpole Quay is located within the Pembrokeshire Marine/ Sir Benfro Forol SAC.

In addition, there are two open dredge material disposal sites - Milford Haven Two and Milford Haven Three – located within the Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro dSPA.

It has been assumed for the purposes of this assessment that these minor ports will undertake one development every twenty years over the assessment period (assumed to be in 2026). It is assumed that the cost of undertaking and documenting the additional HRA work for potential future port and harbour development at these locations will be £7,100 per application based on Defra (2012) uprated to 2015 prices.

It has been assumed that port operators will also need to apply for dredge material disposal licences once every 3 years over the assessment period for which HRA will be required, starting in 2017. It is assumed that the cost of undertaking and documenting the additional HRA work for maintenance dredging licence renewals will be £7,100 per application based on Defra (2012) uprated to 2015 prices.

C.5.7.2 Review of Existing Consents

Under the Habitats Regulations, competent authorities are required to review existing consents when new SPAs are designated where the fulfilment of those consents would be likely to have a significant effect on the new SAC or SPA, noting that such review does not affect anything already done under a consent.

For ports and harbours, consents may relate to development projects and/or to ongoing activities such as maintenance dredging. Where development projects have been completed, the main impacts of those projects are likely to have already occurred and review of consents is unlikely to be required. For ongoing activities such as maintenance dredging, where these have been occurring for many years, it is likely that any impact on dSPA features is already manifest and continuation of existing levels of activity may be compatible with achievement of site conservation objectives. It is not anticipated that there will be any significant requirement to review existing port and harbour consents, nor that should

any review be carried out, it would lead to any requirement for additional management measures. The cost impact to ports and harbours has therefore been assessed as £0.

C.5.7.3 Presumption Against New Development Proposals Within or Adjacent to Site Boundaries

It is assumed that no new development will be permitted within site boundaries following designation (although existing maintenance dredging would continue to be consented), subject to the provisions of Article 6 of the Habitats Directive.

The ports that could possibly be affected by such a measure include:

- Aberystwyth;
- Pensarn;
- Aberdyfi;
- Abersoch;
- Barmouth;
- Portmadoc; and
- Stackpole Quay.

The cost impacts would be site specific and cannot be quantified.

C.5.8 Limitations

- The location, nature and timing of future port development activity is uncertain; and
- The requirements for management measures are uncertain.

C.5.9 References

Cefas, ABPmer, Eunomia & AMEC, 2014. Developing the Welsh National Marine Plan Draft Strategic Scoping Exercise - Incorporating the proposed scope of the Sustainability Appraisal and Strategic Environmental Assessment. August, 2014.

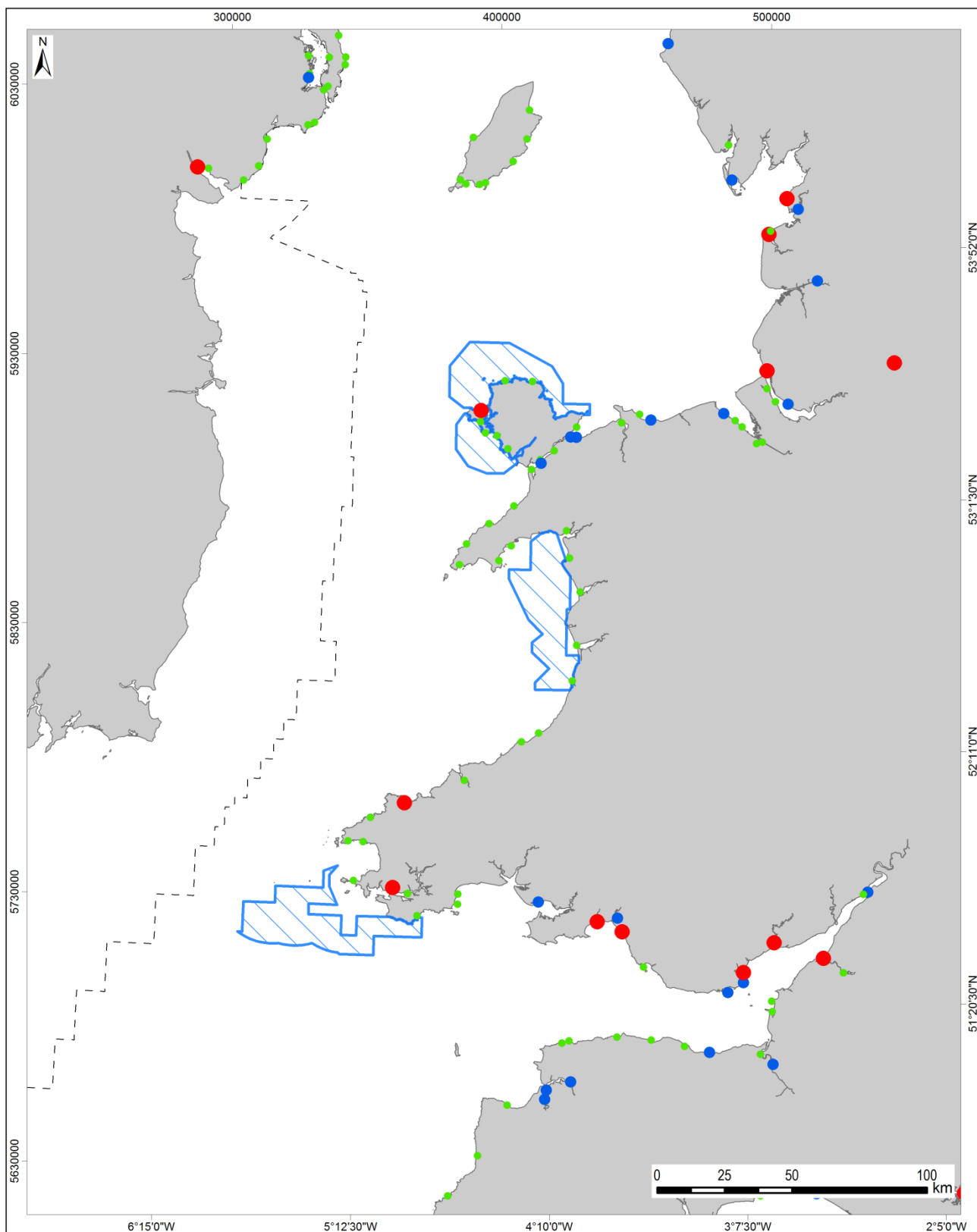
Department for Transport (DfT) 2007. Ports Policy Review Interim Report, 19 July 2007. Available from: www.dft.gov.uk/pgr/shippingports/ports/portspolicyreview/portspolicyreviewinterimreport


Defra, 2012. Impact Assessment materials in support of the Regional Marine Conservation Zone Projects' Recommendations. Annex H12 Ports, Harbours and Shipping

JNCC and NE, 2011. General advice on assessing potential impacts of and mitigation for human activities on MCZ features, using existing regulation and legislation. Advice from the Joint Nature Conservation Committee and Natural England to the Regional MCZ Projects. June 2011. 107pp.

Statistics for Wales (2014) Statistical Bulletin - Sea Transport, 2013.

Welsh Government (2011) Economic Impact of Low Carbon Energy on Welsh Ports.





Date	By	Size	Version
Jun 15	DLW	A4	1
Coordinate System	WGS 1984 UTM Zone 30N		
Projection	Transverse Mercator		
Scale	1:2,000,000		
QA	NKD		
4321 - FigC5_Ports.mxd			
Produced by ABPmer			

© ABPmer, All rights reserved, 2015
Data Source: Ports.org.uk, 2015; DfT, 2014.
NOT TO BE USED FOR NAVIGATION

Proposed dSPA

Continental Shelf

Major Port

Minor Port

Harbour

Ports and Harbours

Figure C5.1

C.6 Recreational Boating

C.6.1 Introduction

This appendix provides an overview of existing and potential future activity for the recreational boating sector in Wales and outlines the methods used to assess the impacts of potential new dSPAs on this sector.

C.6.2 Sector Definition

For the purpose of this study, recreational boating is considered to include recreational activities undertaken in medium and large sailing vessels, yachts, powerboats and motorboats.

C.6.3 Overview of Existing Activity

A list of sources to inform the writing of this baseline is provided in Table C.6.1.

Table C.6.1 Information sources

Scale	Information Available	Date	Source
UK	Participation in water sports	2013	BMF water sports participation survey
Welsh	Marinas, clubs and training centres in wales	2013	Wales Directory & WYA
Welsh	Recreational cruising routes	2008	RYA
UK	Economic contribution of recreational boating	2014	RYA, Superyacht UK, BMF
Welsh	Economic contribution of recreational boating	2012	South & West Wales Marine Leisure Federation
UK	Future trends in recreational boating	2010, 2015 & 2008	UKMMAS, BMF & MCCIP

C.6.3.1 Location and Intensity of Current Activities

The 2013 water sports participation survey (BMF *et al.*, 2013) suggested that participation levels in water sports were the highest recorded since 2007. As a result the participation in boating activities saw an increase of 1.3% relative to 2012. Approximately 3.15 million people in the UK were involved in some kind of boat activity in 2013. Most of the participation in boating activity in the UK is focused around the south coasts, with the region classed as Wales/ South West showing the highest participation values (BMF *et al.*, 2013).

Within the area considered in the Welsh Marine Spatial plan there are 85 Royal Yachting Association (RYA) affiliated member clubs, 64 registered Training Centres (TCs) and thirteen marinas situated along the Welsh coastline (Wales Directory 2013; WYA 2013). There are numerous RYA cruising routes in this area, ranging from light to heavily used routes. Various routes are present around the north east coast of Wales and around Anglesey, most of which are classed as supporting medium amounts of traffic. A fewer number of heavily used routes are present in this area and a single lightly used route runs between Anglesey and the Welsh mainland. The west coast supports fewer cruising

routes only two of which support heavy levels of traffic; a number of lightly used routes are present in Barmouth Bay. More lightly used cruising routes are present around the Pembrokeshire coast. Further east on the south coast of Wales the number of routes increase, all three traffic density categories are represented by these routes with light appearing to be the most common category (see Figure C6.1).

The AIS information used within this study has been translated from the Marine Management Organisation (MMO) 'Mapping UK Shipping Density and Routes from AIS' (MMO, 2014) which uses data provided by the UK Maritime and Coastguard Agency (MCA) from January, March, May, July, September and November 2012. The use of AIS on recreational vessels is not compulsory, therefore these data do not give a comprehensive representation of the recreational vessel activity around Wales; however, the general patterns and routes are indicative and when combined with anecdotal information, provide the information required to inform the impact assessment.

The AIS data shows that a large proportion of the vessel tracks were present off the West coast of Wales, with less activity recorded off the south and north coasts. Few vessels were recorded in the area of water between the Lynn Peninsular and St. David's Peninsular. This suggests that recreational vessels traveling in Welsh territorial waters are most likely to either call at Milford Haven or Holyhead, or transit past the west coast on route to their destination out with Welsh territorial waters. The few tracks present off the south coast appear to mostly use Swansea harbour, the majority of which transit west past the Pembrokeshire coast while others lead south toward the northern Devon and Cornwall coasts. A number of recreational vessel tracks were recorded off the north coast of Wales, however most of these were out with Welsh territorial waters. Those that were present in Welsh waters appear to be associated with the port at Holyhead. As a result of all recreational vessel activity, a total of 240 vessel tracks from 76 unique vessels passed through the dSPAs in 2012.

C.6.3.2 Economic Value and Employment

In 2014 the RYA undertook a study aimed at providing data to increase understanding surrounding the contribution of recreational boating to the national and local economies (RYA 2014). In 2012, the Total Economic Contribution (TEC) of leisure boats was estimated at £2.3 billion per annum (Superyacht UK, 2013). The RYA (2014) report suggests that the average economic contribution from marina based boats is between £9,500 and £19,000. As recreational boating is generally a year round activity, its contribution to the revenue and employment opportunities in coastal areas should not be underestimated (RYA, 2014). Boating tourism is also closely linked with recreational boating and contributed an estimated £3.7 billion to the UK economy in 2012/13, according to the new comprehensive report published by the British Marine Federation. This figure accounts for 3.2% of all tourism expenditure in the UK, and supports approximately 96,000 full-time equivalent (FTE) jobs through direct and indirect effects (BMF, 2014).

Approximately 3% of the total value of the marine recreation industry in the UK occurs in the Welsh Marine Area (BMF 2012). Consequently a number of water sports take place in the area of which recreational boating is the most popular and economically valuable. Recently the Welsh marina industry has steadily expanded its berthing capacity, rising from 3,525 in 2007 to 4,137 in 2010 (South & West Wales Marine Leisure Federation, 2010). In 2010 the total spend in the Welsh economy attributable to marinas was estimated at £23.5 million (additional secondary benefits of £7.1 million), supporting 490 direct FTE and 124 indirect FTE (South & West Wales Marine Leisure Federation 2010). Furthermore the leisure craft industry (including consumer and business services) is estimated to be worth

£66.7million to Wales in 2011, with associated direct FTE of 994 (South & West Wales Marine Leisure Federation 2012).

C.6.3.3 Future Trends

The marine recreation sector has experienced growth in recent years (UKMMAS, 2010) however future growth and stability of the sector will be dependent upon the general health of the UK economy. A strong economy will result in larger amounts of disposable income available to spend on leisure and recreation activities. As a result of the recent global economic downturn, there has been some short-term decline in participation in recreational activities within the UK. However, with infrastructure and technology in place to support the sector, it is expected to continue to grow over the long term (UKMMAS, 2010).

C.6.4 Assumptions on Future Activity

It is assumed that recreational sailing routes, recreational anchorages and sailing and racing areas will not change over the period of the assessment. Levels of participation in recreational boating activities reflect the economic cycle but are generally expected to increase in the long-term. However, for the purposes of this assessment, in the absence of reliable forecasts on future growth, it has been assumed that levels of participation remain constant over the period of the assessment.

The BMF industry trend report for the period June 2014 to November 2014 recorded growth in the leisure market, however, the extent of growth has slowed over the last six months. Leisure new build is showing positive indications of growth with 37% of companies having increased their market. Leisure services have maintained performance levels, increasing for 44% of respondents (BMF, 2015).

Climate change may also play a small part in increasing overall participation numbers. As the frequency of months when conditions are more comfortable for tourism in North-West Europe (MCCIP, 2008) improve, the warmer weather is more likely to attract visitors to coastal locations in Scotland. The net result will be an extension of the tourist season beyond its traditional limits and opening up new destinations. Climate change as a positive influencing factor must be balanced against predictions of increased storminess, and the severity of storms. Provided increased storminess is predominantly in the winter months, this may not be a factor in future recreational boating trends.

C.6.5 Potential Interactions with dSPA Features

The primary interactions of recreational boating with marine dSPA features relate to the construction and use of boating infrastructure and vessel movements. The construction of boating infrastructure such as marinas and slipways may result in a complete loss of local habitat and the potential pollution of the habitats and species within the surrounding area. The installation and use of moorings may cause further physical damage to the seabed, notably to those marine dSPA sub-features particularly vulnerable to disturbance. Similar effects are associated with the regular anchoring of boats, although most marine habitats are resilient to this kind of disturbance. Leachates entering the environment from infrastructure may further pollute surrounding habitats and species, and increased shading as a result of infrastructure development may cause a loss of algal species and the associated infauna. Underwater noise may also be associated with construction activities (JNCC & NE, 2011).

There are also potential impacts to bird features associated with vessel movements in relation to visual and noise disturbance. There are also risks associated with pollution from fuel, oil and lubricants. The introduction of invasive species into new habitats is also of concern. Other interactions of boating with dSPA features include pollution with litter, sewage, zinc anodes and physical impacts associated with boat launching, haul-out and disposal (JNCC & NE, 2011).

C.6.6 Potential Management Measures

The following additional management measures (see Table C.6.3) have been identified by NRW as potentially being required to support the achievement of conservation objectives in specific dSPAs (see Appendix D: Management Scenarios).

Table C.6.2 Potential management measures for recreational boating sector

Management Measure	Scenario		
	Lower	Intermediate	Upper
Prohibit use of motorised pleasure craft within 500m of known breeding sites for terns within Anglesey Terns / Morwenoliaid Ynys Mon dSPA between 1 May and 31 August			✓
Prohibit use of motorised pleasure craft within most sensitive areas of Northern Cardigan Bay / Gogledd Bae Ceredigion dSPA between 1 October and 31 March			✓
Prohibit use of motorised pleasure craft within the Puffin Box immediately west of Skomer within Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro dSPA between 1 May and 31 August			✓

The methods by which the cost impacts of these potential management measures have been assessed are described below.

C.6.7 Assessment Methods

C.6.7.1 Prohibit Use of Motorised Pleasure Craft Within 500m of Known Breeding Sites for Terns Within Anglesey Terns / Morwenoliaid Ynys Mon dSPA Between 1 May and 31 August

For the Anglesey Terns / Morwenoliaid Ynys Mon dSPA within the upper scenario there would be a need to define where the most sensitive areas are. Costs for notifying recreational boating users would be borne by existing publication notices.

Depending on the location of the breeding sites the exclusion area might overlap with racing areas during the period of the restriction. There could be benefit in additionally using marker buoys to delimit the exclusion area. The cost to buoy an area is estimated to be around £5,000 for each mark. However, if required, it is likely that such costs would need to be borne by the public sector.

For the purposes of the IA, it has been assumed that there would be no significant cost to the recreational boating sector associated with the proposed measure, although the level of compliance, in the absence of markers may be reduced.

C.6.7.2 Prohibit Use of Motorised Pleasure Craft Within Most Sensitive Areas of North Northern Cardigan Bay / Gogledd Bae Ceredigion dSPA Between 1 October and 31 March

It has been assumed that where required within the Northern Cardigan Bay / Gogledd Bae Ceredigion dSPA, under the upper scenario only, that some zoning of motorised pleasure craft may be required to minimise risks of disturbance to birds within important foraging areas. It has been assumed that RYA (Wales) is required to contribute to the development of each zoning plan at a cost of £1,000 per site (at 2015 prices) and that this cost is incurred in 2016. It has been assumed that there will be no significant cost associated with disseminating the spatial management plan to recreational boaters. It has been assumed that compliance with the spatial management plan does not impose any significant cost on recreational boaters or the supply chain.

C.6.7.3 Prohibit Use of Motorised Pleasure Craft Within the Puffin Box Immediately West of Skomer, Skokholm and the Seas Off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro dSPA Between 1 May and 31 August

Motorised pleasure craft would be prohibited between 1 May and 31 August with the Puffin Box under the upper scenario in the Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Benfro dSPA, Costs for notifying recreational boating users of this exclusion would be borne by existing publication notices.

Racing occurs within the Puffin Box during the restricted period and depending on the location of the foraging and/or loafing areas the exclusion area might overlap. There could be a benefit in additionally using marker buoys to delimit the exclusion area. The cost to buoy an area is estimated to be around £5,000 for each mark. However, if required, it is likely that such costs would need to be borne by the public sector.

For the purposes of the IA, it has been assumed that there would be no significant cost to the recreational boating sector associated with the proposed measure, although the level of compliance, in the absence of markers may be reduced.

C.6.8 Limitations

- The requirements for management measures are uncertain.

C.6.9 References

British Marine Federation, 2014. Economic Benefits of UK Boating Tourism. British Marine Federation Tourism.

British Marine Federation, MF, MCA, RYA, MMO, BCU and Lifeboats, 2013. Watersports Participation Survey. Executive Summary.

British Marine Federation. 2012. UK Leisure, Superyacht and Small Commercial Marine Industry Key Performance Indicators 2011/12.

MCCIP, 2008. Marine climate change impacts. Annual Report Card 2007-2008.

Northern Irish Tourist Board. 2013. Assessing the Economic Impact of Outdoor Recreation in Northern Ireland. Available [Online] <http://www.sportni.net/sportni/wp-content/uploads/2013/03/Economic-Impact.pdf> Accessed 22/04/2015.

RYA. 2014. Economic Contribution of the Recreational Boater.; Available [Online] http://www.rya.org.uk/SiteCollectionDocuments/legal/Web%20Documents/Environment/Economic_Contribution_From_Recreational_Boating.pdf Accessed 21/04/2015

South & West Wales Marine Leisure Federation (2010) Economic impact of Welsh Marinas.

Superyacht UK. 2013. Superyacht UK survey 2012/13.

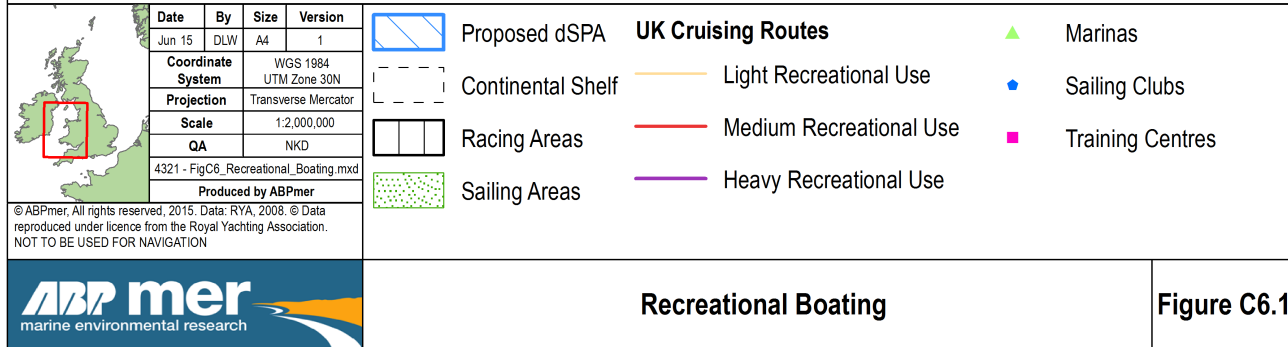
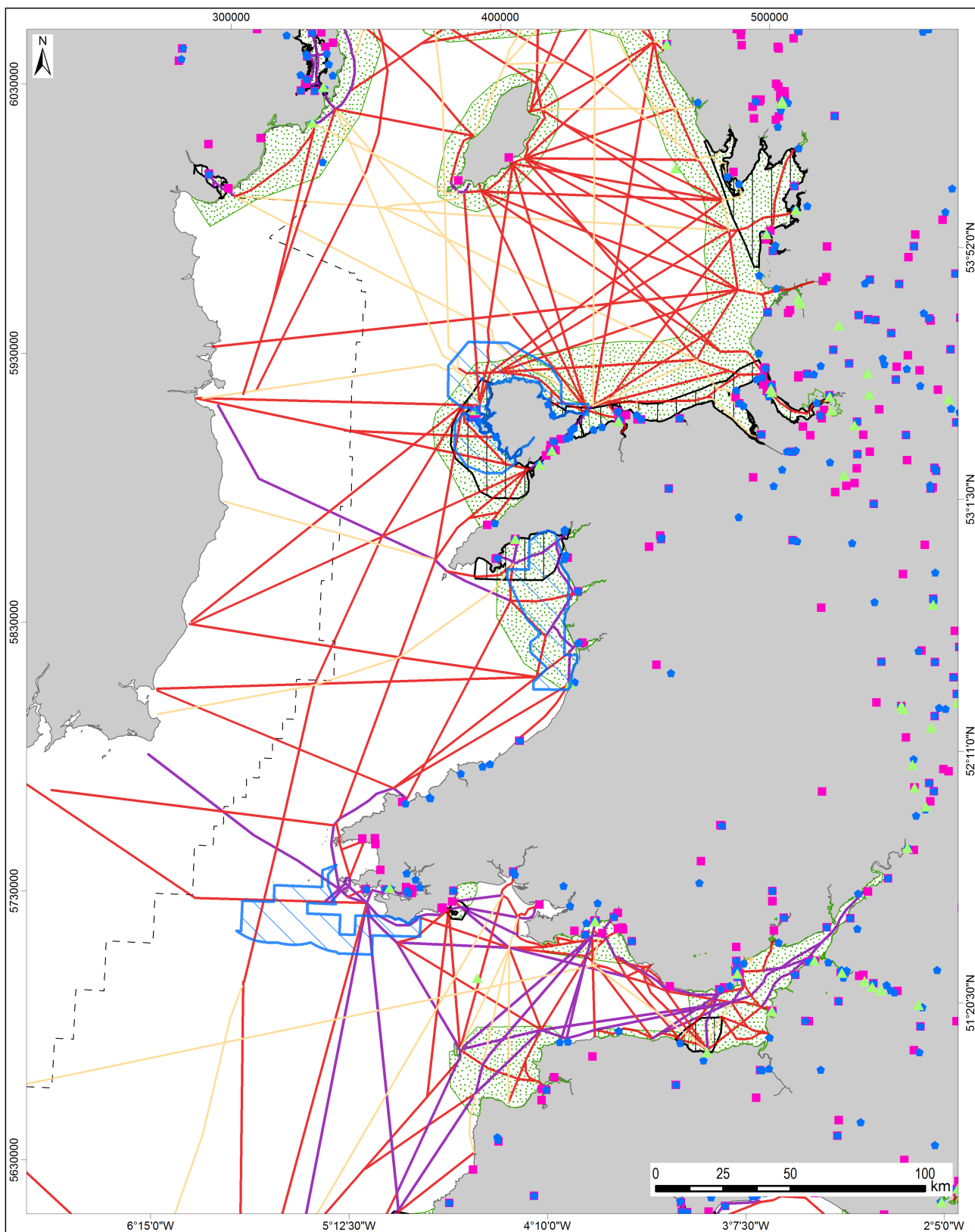
UK Leisure. 2012. Superyacht & Small Commercial Marine Industry, BMF KPI's.

United Kingdom Marine Monitoring and Assessment Strategy (UKMMAS), 2010. Charting Progress 2 Feeder Report Productive Seas. Department for Environment Food and Rural Affairs on behalf of UKMMAS (Eds. Saunders, J. and McKie, J.) 472pp Available [Online] <http://chartingprogress.defra.gov.uk/> Accessed 22/04/2015

Wales Directory 2013 Map of Marinas in Wales. Available [Online] <http://www.attractions.walesdirectory.co.uk/Marinas.htm> Accessed 22/04/2015.

Watersports Participation Survey, 2012. Arkenford.

WYA. 2013. Welsh Yachting Association. Available [Online] <http://welshsailing.co.uk/>. Accessed 22/04/2015.





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