

Annex F3 Regional summary (Irish Seas Conservation Zones)

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1 Introduction

F3.1 This annex describes the marine environment and human activities in recommended Marine Conservation Zones (rMCZs) in the Irish Sea Conservation Zones (ISCZ) Project Area prior to the designation of Marine Conservation Zones (MCZs). It also describes how the marine environment and human activities are anticipated to be impacted if rMCZs in the ISCZ Project Area are designated. It also sets out the relevant trends expected over the 20-year period of the Impact Assessment (IA).

2 Environment

2.1 Regional baseline summary

ISCZ rMCZs¹

F3.2 A total of 31 MCZ features (different species and habitats) are evidenced to occur across 30 rMCZs in the ISCZ Project Area (see Annex B for a summary of the features to be protected by rMCZs and the area covered and/or number of occurrences); 11 of the MCZ features (those that are Features of Conservation Importance) have statutory protection as they are included on the OSPAR List (of Threatened and/or Declining Species and Habitats), on the UK List of Priority Species and Habitats (under the UK Biodiversity Action Plan) and/or in Schedule 5 of the Wildlife and Countryside Act 1981. However, none of these features currently have conservation objectives. Any species and habitats already protected by Special Protection Areas (SPAs) or Special Areas of Conservation (SACs) that overlap with an rMCZ are not proposed for MCZ designation.

F3.3 A range of biodiversity is found within ISCZ rMCZs, including key habitats such as complex biogenic habitats (for example horse mussel *Modiolus modiolus* beds, honeycomb worm *Sabellaria alveolata* reefs and seagrass *Zostera* beds). The only known existence of seagrass *Zostera* beds in the ISCZ Project Area is contained within rMCZ Reference Area W. These key habitats support a wide range of species. Commercially important species such as the Dublin Bay prawn Dublin Bay Prawns *Nephrops norvegicus norvegicus* are supported by benthic habitats that are proposed for protection by rMCZs.

F3.4 The rMCZs include areas of additional ecological importance that are beneficial to some highly mobile species such as basking sharks *Cetorhinus maximus*, black guillemots *Cephus grylle* and the common dolphin *Delphinus delphis*. These species rely on areas of high biological productivity that are closely associated with benthic diversity. The underlying benthic habitats range from important geomorphic structures to a variety of sediments. Both support a diverse assemblage of species which, in turn, underpin the trophic layers of the ecosystem.

Description of key issues in the ISCZ Project Area²

F3.5 Much of the ISCZ Project Area is less than 50 metres in depth but does exceed 200 metres in areas. The coastline is mostly rocky in the north of the Project Area, with the exception of Morecambe Bay and the Solway Firth, which are extensive areas of intertidal sediment. Offshore habitats mostly comprise sands, gravels and mud.

¹ The summary of MCZ features is sourced from Irish Sea Conservation Zones (2011).

² This section is summarised from Defra (2010) unless otherwise stated.

F3.6 Freshwater rivers noticeably lower the water salinity along the coastline of the ISCZ Project Area. Evidence suggests that eutrophication is no longer an issue in estuaries in the north-west of England. Due to strict pollution controls, the concentration of hazardous substances in the water has also decreased and is no longer a significant problem in coastal waters.

F3.7 The risk of coastal erosion and flooding is increasing due to rising sea levels and increased incidence of stormier weather. This could adversely affect low-lying areas along the coast, particularly in the north-west of England in the Project Area.

F3.8 Sea surface temperatures vary considerably, ranging from 4 °C in winter to 18 °C in summer. A rise in sea temperature has caused a change in seabed biological communities, particularly in the eastern Irish Sea. This has caused a decline in cold-water species and has contributed to the spread of non-native species.

F3.9 Assessments indicate that commercial fish stocks, including cod and sole, are neither at full reproductive capacity nor being harvested sustainably, with the exception of plaice. However, demersal fish stocks as a whole are improving, as evidenced by increasing abundance, biomass, productivity and size composition. Some larger species, however, such as cod, flounder and angel shark, are not improving. Assessments of coastal and seabed habitats, particularly soft sediments, show that they are adversely affected by bottom trawling. Similarly, rocky coastlines are adversely affected by shellfish collecting.

F3.10 In terms of non-commercial species, harbour seals *Phoca vitulina* are decreasing in number but the cause is not known. Seabird populations are doing well and evidence shows that breeding numbers have increased over the past 21 years. However, the number of water birds, such as waders, has decreased.

F3.11 Protection for birds has encouraged some recovery but this is against a backdrop of historically low populations. Seabird populations in the UK continue to decline (9% in the last decade, which represents a substantial loss of over 600,000 breeding seabirds). Some species have suffered significant declines in the UK over the last decade, including the Arctic skua *Stercorarius parasiticus* (by 14%), European shag *Phalacrocorax aristotelis* (by 33%), black-legged kittiwake *Rissa tridactyla* (by 40%) and herring gull *Larus argentatus* (by 69%). Only the northern gannet *Morus bassanus* and the great skua *Stercorarius skua* have shown a sustained recovery since the 1960s. Further seabird declines are anticipated (Royal Society for the Protection of Birds (RSPB), pers. comm., 2012).

2.2 Regional impact summary

ISCZ rMCZs³

F3.12 The rMCZ network in the ISCZ Project Area consists of 15 rMCZs, a further 14 rMCZs that are rMCZ Reference Areas and 1 Potential Co-location Zone (PCLZ). These sites, combined, cover a total area of 3,958km², which is approximately 23% of the ISCZ Project Area. A range of estuarine, inshore and offshore rMCZs capture the full range of benthic habitats in the Project Area.

³ The summary of MCZ features is sourced from Irish Sea Conservation Zones (2011).

F3.13 The rMCZs in the ISCZ Project Area propose designated protection for 31 different species and habitats. In total, 121 conservation objectives are proposed. This is made up of:

- 57 'reference' conservation objectives across 28 MCZ features;
- 36 'recover' conservation objectives across 16 MCZ features;
- 28 'maintain' conservation objectives across 16 MCZ features.

F3.14 Designation of the rMCZs will result in an ecologically coherent network of sites promoting conservation of marine biodiversity in the ISCZ Project Area. This will contribute to the protection of living, non-living, cultural, and/or historic marine resources. It will provide protection for threatened and/or declining species and habitats as identified by OSPAR.

F3.15 Together, all the features captured within the rMCZs play an important role in ecosystem functioning. Each distinct habitat is replicated in other protected areas. Such replication enables adjacent populations to interact and to be mutually sustaining. The size of the rMCZs promotes the longevity of species, habitats and ecological processes and services. The creation of a network of rMCZs will help to safeguard the rich biodiversity, natural beauty, fisheries and heritage of the ISCZ Project Area.

3 Aggregate extraction

3.1 Regional baseline summary

F3.16 No marine aggregate extraction currently takes place in any of the rMCZs in the ISCZ Project Area or within 1km of them. However, three production licence applications are anticipated to come forward within the 20-year period of the IA analysis for sites within 1km of an rMCZ. This is because The Crown Estate has identified that rMCZ 1 Mud Hole overlaps with a strategic resource area⁴ and that rMCZ Reference Area 1 Mud Hole is in close proximity to a strategic resource area.

3.2 Regional impact summary

Lowest cost scenario

F3.17 It is not anticipated that the sector will incur any additional costs to mitigate the impact of aggregate extraction activities upon MCZ features, compared to if the MCZ was not there. However, it is expected that future licence applications for aggregate extraction within 1km of an rMCZ will incur an additional cost to assess the potential impact of the activity upon rMCZ features.⁵ This will be a one-off cost in each licence application submitted for activities within 1km of an MCZ.

F3.18 In the ISCZ Project Area, one future licence application is expected over the 20-year period of the IA, associated with the strategic resource area that overlaps rMCZ 1 Mud Hole. The average annual cost to the aggregate extraction sector is therefore estimated to be £0.002m/yr and the present value of costs over the IA period is estimated to be £0.024m.

⁴ Areas with potential for marine sand and gravel extraction based on evidence of geological features and depositional processes. These areas are not currently licensed nor extracted from.

⁵ Further details of the additional assessment requirements can be found in Annex H2.

Highest cost scenario

F3.19 Only the impacts of the lowest cost scenario are presented in the regional summary. It is not possible to provide a regional breakdown of the highest cost scenario, as this is assessed for the entire suite of sites.

4 Aquaculture

4.1 Regional summary

F3.20 The only known aquaculture activity located within an rMCZ is an oyster farm within rMCZ 10. No additional cost is anticipated to the operator, as the farm is located away from the sensitive features in the rMCZ. It is anticipated that the farm will be able to continue its existing operations as it would in the absence of the rMCZ (Natural England, pers. comm., 2011).

5 Archaeological heritage

5.1 Regional baseline summary

F3.21 There is currently evidence of archaeological features in 13 of 16 rMCZs (including the PCLZ) and in three of 14 rMCZ Reference Areas in the ISCZ Project Area. In the three rMCZ Reference Areas, the archaeology evidence comprises either ad-hoc reports from fishers of unidentified objects that have caused obstruction to fishing gear, or a log boat (English Heritage, pers. comm., 2012). Peat beds are evident in two rMCZ Reference Areas (K and Z) and a number of Mesolithic and prehistoric finds have been reported in these sites (including human, animal and bird footprints and finds of horse, boar and stag bones). Recommended MCZ Reference Area Z, which is within rMCZ 13, has rare remains of preserved plants and animal fossils of the mid-Holocene period (English Heritage, pers. comm., 2012).

5.2 Regional impact summary

F3.22 Archaeological activities comprise diver trails, recreational and educational visits, surveys (intrusive, including sediment sampling, and non-intrusive), surface recovery of artefacts and full site excavations. Archaeological activities are anticipated to be prohibited (with the exception of diver trails, visits and non-intrusive surveys, which will be allowed) in:

- 14 rMCZ Reference Areas in the ISCZ Project Area;
- 2 rMCZs in the vicinity of exposed peat and clay beds where they have a conservation objective of 'recover to favourable condition'.

F3.23 There is likely to be an increase in the cost of assessing environmental impacts for licence applications in the region of £500 to £1,000 (for a small site); £5,000 (for a medium site); and £10,000 (for a large site) (English Heritage, pers. comm., 2011) in all rMCZs that currently have evidence of archaeology within them (16 of 30 rMCZs in the ISCZ Project Area). However, such additional costs are likely to be an overestimate, as they represent the cost to hire professionally accredited surveyors to survey protected species, which in part is likely to be incurred anyway in the absence of MCZ designation.

F3.24 Four rMCZs in the ISCZ Project Area (rMCZ Reference Areas K and Z and rMCZs 13 and 14) are likely to be of most interest to archaeology excavators and so these rMCZs are likely to

have the greatest impact upon archaeological activities. In the remaining rMCZ Reference Areas there is currently little evidence of archaeology.

F3.25 The prohibition of archaeological activities in rMCZ Reference Areas in the ISCZ Project Area could result in a reduction of archaeological evidence recorded in these sites. Discussions with English Heritage (pers. comm., 2011) have highlighted no specific aspirations to excavate any of the 16 rMCZs listed above. However, the exposed peat and clay beds in rMCZs 13 and 14 (and rMCZ Reference Area Z) may be relevant to English Heritage's National Heritage Protection Plan and so may be of archaeological interest for excavation in the future.

F3.26 The loss of recorded archaeological evidence would impact upon the benefits that society derives from archaeology, including historical and environmental data, interpretation and associated social values.

6 Cables (interconnectors and telecom cables)

6.1 Regional baseline summary

F3.27 There are numerous telecom and power cables that pass through rMCZs in the ISCZ Project Area. Most are operational but some are proposed and not yet consented, including the Western HVDC Interconnector and the Geo & ESB Telecoms cable.

6.2 Regional impact summary

F3.28 It is not anticipated that any existing or operational cables will be impacted upon by rMCZs in the ISCZ Project Area. The IA assumes that only future licence applications for cables could incur an additional cost due to rMCZs. It is not yet known where future cables will be proposed but the best estimate is that one cable will be proposed in the ISCZ Project Area once every five years of the IA 20-year period. It is not anticipated that any future cable proposals will seek to pass through rMCZ Reference Areas in the ISCZ Project Area (United Kingdom Cable Protection Committee, pers. comm., 2012).

F3.29 It is assumed that each proposal will be required to consider its impact upon MCZ features and its conservation objectives. The additional cost per licence application to do this is estimated to be £10,000. The best estimate of the present cost to the sector of rMCZs in the ISCZ Project Area is £0.027m over the 20-year period of the IA. The low and high cost estimate of the present cost to the sector is £0.013m and £0.040m respectively, over the 20-year period of the IA.

7 Coastal development

7.1 Regional baseline summary

F3.30 Recommended MCZ 11 could increase the cost of a new marine landing facility at the new nuclear power station at Sellafield (planned for delivery before 2025). The need for the facility was identified in the 2011 Nuclear National Policy Statement; however, a licence application has not been submitted and is not anticipated for at least five years (Natural England, pers. comm., 2012). As such, no further information is available at this time. A temporary landing facility was recently given planning permission at Sellafield and this avoided significant environmental impacts upon features of conservation importance in the rMCZ (Natural England, pers. comm., 2012).

F3.31 Sellafield also carries out environmental monitoring of the coastline at various sampling points in this rMCZ and also rMCZ Reference Areas I and J. Monitoring is undertaken to assess any impact of discharges from Sellafield nuclear power station upon the local environment. The sampling takes place on land and in the sea. It is anticipated that monitoring frequency and scale could increase during the course of the IA 20-year period (Environment Agency, pers. comm., 2012).

7.2 Regional impact summary

F3.32 Based on the experience of the consented temporary landing facility at Sellafield, rMCZ 11 is unlikely to impact upon the installation of a permanent marine landing facility at the same location (although this does not prejudge a licensing decision). This is because the recently consented temporary landing facility was found not to significantly impact on the features of conservation importance in the site. It is likely that an additional cost will be incurred in the assessment of environmental impact in support of the licence application, and that some micro-siting of vehicle access during construction or operation may be required to avoid the sensitive features, but this is not expected to result in a significant cost (Natural England, pers. comm., 2011).

F3.33 Natural England (pers. comm., 2012) has advised that it is unlikely that Sellafield's monitoring programme would be considered to have an impact on the features in rMCZ 11 and rMCZ Reference Areas I and J. This is because the sample/monitoring area is very small in relation to the area of broad-scale habitat. It is anticipated that monitoring would be allowed to continue in the rMCZ Reference Areas. Due regard is given to the potential impact of the monitoring programme upon features of conservation importance in the absence of the MCZ designation. Therefore, it is not anticipated that additional costs would be incurred to the operator of Sellafield as a result of the designation of any of these rMCZs.

8 Commercial fisheries

F3.34 This section summarises the baseline and impacts of the regional suite of rMCZs on UK and non-UK fishing activity. The section explains the management scenarios, followed by discussion for UK vessels (by gear type) and non-UK vessels.

8.1 Regional baseline summary

F3.35 Bottom trawling for Dublin Bay Prawns *Nephrops norvegicus* is the principal fishery in the ISCZ Project Area. Potting for crabs and lobsters, mid-water trawling for pelagic species and scallop dredging are also important fisheries in the ISCZ Project Area (in terms of total value of landings). Between 2007 and 2010 at least 700 UK commercial fishing vessels were active in the ISCZ Project Area (MMO, 2011a).⁶ Some 38% of these vessels are associated with Northern Irish ports, 25% with English ports, 23% with Scottish ports, 15% with Welsh ports and less than 1% with Manx ports. Approximately 70% of active vessels in the ISCZ Project Area are under 15 metres in length.

⁶ Based on fishing vessels which reported landings from ICES rectangles that overlap with the ISCZ Project Area (38E6, 37E6, 37E5, 37E4, 36E4, 36E5, 36E6, 35E4, 34E4, 33E4, 33E5) between 2007 and 2010; vessels which stated that they fish in the ISCZ Project Area (via FisherMap); and vessels that are known to be active in the ISCZ Project Area from Liaison Officer discussions with fishers associations, producer organisations and regional Marine Management Organisation (MMO) officers.

F3.36 Table 1 provides a summary of the estimated value of landings/yr and gross value added (GVA)/yr by UK vessels from ISCZ rMCZs.

Table 1: UK vessel fishing activity in ISCZ rMCZs

Gear type	Estimated value of landings (£m/yr)	Estimated GVA (£m/yr)
Bottom trawls	4.164	1.665
Pots and traps	0.808	0.391
Mid-water trawls	0.244	0.137
Dredges	0.242	0.115
Collection by hand	0.209	0.089
Nets	0.003	0.001
Hooks and lines	0.000	0.000
Total	5.653	2.397

Source: MCZ Fisheries Model

Note: these figures have been adjusted to remove duplication between rMCZs that overlap.

UK bottom trawls

F3.37 Bottom trawling (mainly otter trawling) for Dublin Bay Prawns *Nephrops norvegicus* is the most valuable fishery in the ISCZ Project Area (in terms of value of landings and number of fishing vessels). 95% of all UK bottom trawl landings from ISCZ rMCZs is from eight rMCZs (rMCZ 1, rMCZ Reference Area A, rMCZ 6, rMCZ Reference Area E, rMCZ 2, rMCZ 7, rMCZ Reference Area G, the PCLZ and part of rMCZ 3) (according to the MCZ Fisheries Model). These rMCZs are located in the mud basins to the east and west of the Isle of Man. It is mostly vessels from Northern Ireland which are active in these rMCZs, predominantly associated with the ports of Kilkeel, Portavogie and Ardglass. However, Cumbrian, Scottish, Fleetwood, Barrow and Welsh vessels also bottom trawl in the rMCZs. These vessels trawl all year but are mostly active from April to September in the east of the Irish Sea and from February to April in the west of the Irish Sea. 239 vessels⁷ are known to use bottom trawls (as their main fishing gear by value of landings) in the ISCZ Project Area (MMO, 2011a).

F3.38 There are fewer than five seine netting vessels still active in the ISCZ Project Area. These are Northern Irish vessels. They are reportedly restricted to very few fishing grounds, targeting plaice, haddock and cod. These grounds are whole or partly located in rMCZ 3, rMCZ 2 and the PCLZ.

F3.39 Small beam trawlers (under 15 metres in length) operate from ports on the north-west coast of England and north-east coast of Wales. They target mainly flatfish and shrimps and stay mostly inshore. The vessels traditionally use lighter gear which is operated by hand.

Key trend information

F3.40 As the Northern Ireland Dublin Bay Prawns *Nephrops norvegicus* fleet is estimated to be the most impacted fleet in the ISCZ Project Area by the designation of MCZs (based on the

⁷ Based on fishing vessels which reported landings from ICES rectangles that overlap with the ISCZ Project Area (38E6, 37E6, 37E5, 37E4, 36E4, 36E5, 36E6, 35E4, 34E4, 33E4, 33E5) between 2007 and 2010; vessels which stated that they fish in the ISCZ Project Area (via FisherMap); and vessels that are known to be active in the ISCZ Project Area from Liaison Officer discussions with fishers associations, producer organisations and regional MMO officers.

number of vessels and value of landings affected), a brief description of baseline trends for this fleet is provided below.

F3.41 In summary, fisheries stocks in the ISCZ Project Area are overfished and stock sizes are small (EC, 2011). However, the Dublin Bay Prawns *Nephrops norvegicus* grounds to the west of the Isle of Man are reportedly sustainably harvested (at maximum sustainable yield); this is yet to be determined for Dublin Bay Prawns *Nephrops norvegicus* grounds to the east of the Isle of Man (Seafish, 2011). Overall, demersal fishing effort has reportedly decreased in the ISCZ Project Area (by 80% between 2003 and 2009) (EC, 2011).

F3.42 Over the last few years, the number of bottom-trawling vessels in the Northern Irish offshore fleet has been relatively stable (ANIFPO, 2011; NIFPO, 2011) compared with the rest of the UK, which has seen a decrease. Also, the number of Northern Irish fishers has decreased at a slower rate compared with the rest of the UK (27% since the 1940s versus 73%) (MMO, 2011). Reportedly, since the mid-2000s, the number of non-UK nationals working as fishers in Northern Ireland has increased, which has contributed to higher productivity and an increase in Dublin Bay Prawns *Nephrops norvegicus* landings over the same period (NIFPO, 2011).

F3.43 Since the mid-1980s, the Dublin Bay Prawns *Nephrops norvegicus* fishery has been the most important to Northern Ireland ports (in terms of volume and value of landings, and number of vessels employed in the fishery). The large-scale switch to the Dublin Bay Prawns *Nephrops norvegicus* fishery in the 1970s and 1980s was largely the result of the European Union's market expansion for whole *Nephrops* and the long-term decline in the whitefish fishery, as well as improved economic opportunities in the Dublin Bay Prawns *Nephrops norvegicus* fishery. However, since the mid-1990s, the number of vessels switching to potting from the Dublin Bay Prawns *Nephrops norvegicus* fishery has increased due to a perceived greater economic opportunity in the inshore lobster and crab fishery (ANIFPO, 2011; NIFPO, 2011). The Northern Irish fleet reportedly has a higher proportion of less efficient, older vessels compared with the rest of the UK (NIFPO, 2011).

F3.44 Since 1988, landings of Dublin Bay Prawns *Nephrops norvegicus* (from area VII) into Northern Ireland by UK vessels has been fairly consistent (between 5,000 and 6,000 tonnes/yr) (MMO, 2011a). However, between 2000 and 2003, landings decreased to around 4,300 tonnes/yr but rose again in 2004, peaking in 2008 at just under 8,000 tonnes/yr. The peak in 2008 was largely due to an increase in labour productivity and quota allocation (NIFPO, 2011). Since then landings have reduced slightly but are still in the region of 7,000 tonnes per year (MMO, 2011a).

F3.45 The good quality Dublin Bay Prawns *Nephrops norvegicus* are sold 'whole' for consumption as langoustines. Continental Europe (especially France and Spain) is the largest market for these. Dublin Bay Prawns *Nephrops norvegicus* sold for the 'whole' market achieve a greater price per tonne (live weight) (£3,000 to £4,000 per tonne) compared with Dublin Bay Prawns *Nephrops norvegicus* sold to the 'tail' market (£1,000 to £1,400 per tonne) (Tingley, 2009). The 'tail' of smaller and lesser quality Dublin Bay Prawns *Nephrops norvegicus* is sold for processing, mostly in the UK for scampi. The future price per tonne (live weight) for Dublin Bay Prawns *Nephrops norvegicus* into Northern Ireland ports is expected to decrease for both the whole and the tail Dublin Bay Prawns *Nephrops norvegicus* markets (Tingley, 2009).

F3.46 Challenging market conditions are restricting the Dublin Bay Prawns *Nephrops norvegicus* fisheries in the Irish Sea. These include an increase in fuel costs, a lack of finance and increased credit controls and insurance premiums, as well as loss of fishing grounds to other industry developments (wind farm, cable and gas storage) (ANIFPO, 2011; NIFPO, 2011; Whitehaven Fishermen's Association & NWIFCA, 2011).

UK pots and traps

F3.47 Approximately 220 vessels⁸ are known to use pots and traps (as their main fishing gear by value of landings) in the ISCZ Project Area (MMO, 2011a). The use of pots and traps in the Project Area is concentrated in fishing grounds off the coast of Anglesey but also along the Cumbrian coast. Key species targeted are crab, lobster and periwinkles. Three of the rMCZs account for 90% of all pot and trap landings from ISCZ rMCZs (rMCZ 1 including rMCZ Reference Area A, rMCZ 8 and rMCZ Reference Area K) but none of these overlap with the main potting grounds (MCZ Fisheries Model). Estimates for rMCZ 1 and rMCZ Reference Areas A and K are likely to be overestimates and due to mapping resolution errors in FisherMap. Discussions with local fishers and the North Western Inshore Fisheries and Conservation Authority (NWIFCA) identify little if any potting in these sites.

F3.48 Some 95% of pot and trap vessels that are active in the ISCZ Project Area are under 15 metres in length (MMO, 2011a). As the majority of vessels are small they have relatively small ranges and generally work in defined areas close to their home ports. Potting effort along the Cumbrian coast reportedly has scope to increase over the 20 years of the IA period (NWIFCA, pers. comm., 2011).

UK mid-water trawls

F3.49 Only 9 vessels⁹ are known to use mid-water trawls (as their main fishing gear by value of landings) in the ISCZ Project Area. The greatest value of landings from mid-water trawling occurs in the rMCZs located in the west of the Project Area. Three rMCZs account for nearly 95% of all mid-water trawl landings from ISCZ rMCZs (rMCZ 3, rMCZ 6 and rMCZ 7) (MCZ Fisheries Model).

UK dredges

F3.50 104 vessels¹⁰ are known to use dredges (as their main fishing gear by value of landings) in the ISCZ Project Area. They primarily target scallops (king and queen). The greatest value of landings from dredging occurs in the rMCZs which overlap with the main scallop fishing grounds in

⁸ Based on fishing vessels which reported landings from ICES rectangles that overlap with the ISCZ Project Area (38E6, 37E6, 37E5, 37E4, 36E4, 36E5, 36E6, 35E4, 34E4, 33E4, 33E5) between 2007 and 2010; vessels which stated that they fish in the ISCZ Project Area (via FisherMap); and vessels that are known to be active in the ISCZ Project Area from Liaison Officer discussions with fishers associations, producer organisations and regional MMO officers.

⁹ Based on fishing vessels which reported landings from ICES rectangles that overlap with the ISCZ Project Area (38E6, 37E6, 37E5, 37E4, 36E4, 36E5, 36E6, 35E4, 34E4, 33E4, 33E5) between 2007 and 2010; vessels which stated that they fish in the ISCZ Project Area (via FisherMap); and vessels that are known to be active in the ISCZ Project Area from Liaison Officer discussions with fishers associations, producer organisations and regional MMO officers.

¹⁰ Based on fishing vessels which reported landings from ICES rectangles that overlap with the ISCZ Project Area (38E6, 37E6, 37E5, 37E4, 36E4, 36E5, 36E6, 35E4, 34E4, 33E4, 33E5) between 2007 and 2010; vessels which stated that they fish in the ISCZ Project Area (via FisherMap); and vessels that are known to be active in the ISCZ Project Area from Liaison Officer discussions with fishers associations, producer organisations and regional MMO officers.

the ISCZ Project Area (rMCZ 8, the PCLZ and rMCZ 2 in the east of the ISCZ Project Area; and rMCZ 6 including rMCZ Reference Area F to the north-west of the Isle of Man).¹¹ Together, these rMCZs account for 70% of all dredge landings from ISCZ rMCZs (MCZ Fisheries Model). The remaining 30% of dredge landings are from 10 other rMCZs, including 6 rMCZ Reference Areas that overlap with these rMCZs.

F3.51 It is worth noting that there are important scallop dredging grounds inside Isle of Man and Welsh territorial waters that adjoin the ISCZ Project Area. Fishing effort by Welsh vessels may reportedly increase in the east of the ISCZ Project Area over the 20-year period of the IA,¹² if proposed restrictions are placed on the scallop fishery in Welsh territorial waters (Welsh fisher, pers. comm., 2011). This could increase dredging effort in rMCZ 3.

UK nets

F3.52 The value of netting fisheries is very low in rMCZs in the ISCZ Project Area (in the region of £500/yr from the most valuable rMCZ). Netting takes place in most of the rMCZs in the ISCZ Project Area but at a very low level. Seven rMCZs account for nearly 95% of all landings from nets in the ISCZ rMCZs (MCZ Fisheries Model). Four of these sites are located offshore. Approximately 40 vessels¹³ are known to use nets (mostly gill nets and drift nets, as their main fishing gear by value of landings) in the ISCZ Project Area. Fishers use a variety of nets in the intertidal areas of the Project Area, including gill nets, push nets, shank nets, fyke nets, fixed nets and drift nets. It is not possible to accurately estimate the value of intertidal fisheries in rMCZs because the harvest value is rarely recorded and is often gathered for personal consumption.

UK hooks and lines

F3.53 The value of hooks and lines fisheries is very low in rMCZs in the ISCZ Project Area (no more than £100/yr in any one rMCZ). The use of hooks and lines takes place in most of the rMCZs in the ISCZ Project Area but at a very low level. Only 7 vessels¹⁴ are known to use hooks and lines (as their main fishing gear by value of landings) in the Project Area. Fishers use hooks and lines in the intertidal areas of the Project Area. It is not possible to accurately estimate the value of intertidal fisheries in rMCZs because the harvest value is rarely recorded and is often gathered for personal consumption.

¹¹ Although dredging in the PCLZ, rMCZ 2 and rMCZ 8 is evidenced to FisherMap and the stated fishing grounds of individual fishers, representatives of local fishers and the NWIFCA are not aware of scallop dredging taking place in these rMCZs.

¹² In the principal fishing grounds that lie outside the rMCZs.

¹³ Based on fishing vessels which reported landings from ICES rectangles that overlap with the ISCZ Project Area (38E6, 37E6, 37E5, 37E4, 36E4, 36E5, 36E6, 35E4, 34E4, 33E4, 33E5) between 2007 and 2010; vessels which stated that they fish in the ISCZ Project Area (via FisherMap); and vessels that are known to be active in the ISCZ Project Area from Liaison Officer discussions with fishers associations, producer organisations and regional MMO officers.

¹⁴ Based on fishing vessels which reported landings from ICES rectangles that overlap with the ISCZ Project Area (38E6, 37E6, 37E5, 37E4, 36E4, 36E5, 36E6, 35E4, 34E4, 33E4, 33E5) between 2007 and 2010; vessels which stated that they fish in the ISCZ Project Area (via FisherMap); and vessels that are known to be active in the ISCZ Project Area from Liaison Officer discussions with fishers associations, producer organisations and regional MMO officers.

UK collection by hand

F3.54 At least 30 intertidal fishers are known to work in the coastal and estuarine rMCZs in the ISCZ Project Area. This is estimated to be one third of regular intertidal fishers in the north-west of England (ISCZ, 2010). The number of fishers will be much greater in years when cockle and mussel beds arise in rMCZs and are opened for harvesting. Intertidal fishers use a variety of hand gear, including different types of nets, dredges, hooks and lines and hand rakes. Target species range from cockles, mussels, winkles, shrimps, razor clams and a variety of fish.

F3.55 It is not possible to accurately estimate the value of intertidal fisheries in rMCZs because the harvest value is rarely recorded and is often gathered for personal consumption. The stated earnings of intertidal fishers is the best available data source; however, this is likely to overestimate the value of intertidal fisheries, as fishers stated their earnings for areas greater in size than the rMCZs. In the north-west of England waters, trends indicate that usually 1 large bed is opened once every 4 or 5 years, obtaining values in the region of £5m to £10m.¹⁵

Non-UK fleets operating within rMCZs

F3.56 Non-UK vessels (Belgian, Irish, French and Spanish) are active in 9 rMCZs in the ISCZ Project Area. Irish vessels principally use dredges and bottom trawls; Belgian vessels principally use a modified beam trawl ('sumwing'); and French and Spanish vessels principally use bottom trawls. Activity is concentrated in the offshore rMCZs, particularly rMCZs 2, 3, 4, 5 and 6 and associated rMCZ Reference Areas. No further information is available regarding these fleets.

F3.57 It has not been possible to quantify the value of landings made by non-UK vessels from rMCZs in the MCZ project area with the exception of the French. It is estimated that French bottom trawlers source in the region of £25,000 worth of landings, and French potters source around £5,000 worth of landings, from rMCZs in the ISCZ Project Area (Direction des Pêches Maritimes et de l' Aquaculture, 2011). While fishing effort for vessels over 15 metres in length was available, landings data for ICES rectangles in the MCZ project area were not available for the Irish, Belgian and Spanish fleets. However, extensive engagement was undertaken with non-UK fleets to establish where their fishing grounds are located.

F3.58 Approximately 8 Belgian beam trawlers visit the ISCZ Project Area but only 3 vessels are active in it at any one time. They fish mostly in the southern part of the ISCZ Project Area in rMCZs 2, 3, 4 and 5. They primarily target Dover sole from September through to May. The Belgian fleet is gradually adopting a new gear type, the 'Sumwing', which is reportedly lighter compared with conventional beam trawlers and impacts the seabed less (by 10% on average) (Polet & Depestele, 2010). No information has been received from other non-UK fleets that are active in the ISCZ Project Area.

8.2 Regional impact summary

Source of costs

F3.59 Management scenarios for individual rMCZs vary depending on the nature of the features being protected and their exposure to commercial fishing activity. In addition, there is insufficient scientific evidence that demersal trawls, dredges, lines, nets, and pots and traps will impact on

¹⁵ Noted from online press articles.

certain benthic features. As a result, there is uncertainty about whether additional management of fisheries will be needed.

F3.60 If additional management of fisheries is needed, there is uncertainty about whether an experimental closure might be required initially (in order to determine the responses of features to the removal of pressures), the number of replicates that would be required and the area of the features to which the closure would apply. If it is identified that additional management will be needed (without an experimental closure or following the closure), there is uncertainty about the area of the features to which the management would apply. In light of this, different management scenarios have been identified for different rMCZs, with some rMCZs having up to four different management scenarios. These include 'recommended' or 'preferred' management scenarios that were identified by the regional MCZ project stakeholder group for some rMCZs.

F3.61 If additional management of fisheries is needed, there is uncertainty about whether an experimental closure might be required initially (in order to determine the responses of features to the removal of pressures), the number of replicates that would be required and the area of the features to which the closure would apply. If it is identified that additional management will be needed (without an experimental closure or following the closure), there is uncertainty about the area of the features to which the management would apply. In light of this, different management scenarios have been identified for different rMCZs. These include 'preferred' management scenarios that were identified by the regional MCZ project stakeholder group for some rMCZs.

F3.62 Up to three scenarios have been developed for each rMCZ in the ISCZ Project Area to cover the range of impact of MCZs upon the fisheries sector. The scenarios range from 'open to all gears' to 'closed to commercial fishing'. Annex I provides more detail of these scenarios for each rMCZ.

F3.63 The summary of impacts of the regional suite of rMCZs provided here focuses on the following by gear type, in order to present the range of potential costs to the sector:

- lowest cost management scenario: this is the management scenario in each rMCZ that results in the lowest cost to the commercial fishing sector (it includes scenarios that suggest no additional management);
- highest cost management scenario: this is the management scenario used in the IA for each rMCZ that results in the highest cost to the commercial fishing sector;
- best estimate of cost: In the absence of better information, the best estimate has been calculated using the following assumptions:
 - mid-point (50%) values between the lowest and highest cost scenarios for gear types that were the primary reason for setting the conservation objectives of the features to 'recover';
 - quartile (25%) values between the lowest and highest cost scenarios for gear types that were not the primary reason for setting the conservation objectives of the features to 'recover'.

F3.64 Under the best estimate of cost, rMCZs will affect approximately 0.3% of total UK vessel GVA.^[3] Over the 20-year timeframe of the IA, the estimated value of landings and GVA affected

^[3] UK GVA data are provided in Annex D.

have a present value of £35.863m and £14.712m, respectively. Further details on the rMCZ-specific management scenarios can be found in Annex I and methodology and maps are provided in Annex H7. A description of anticipated displacement issues as provided by fisheries representatives can be found in Annex J3c. Annex N4 provides a breakdown of all values for each region and for each rMCZ.

F3.65 The extent to which the rMCZs will result in the displacement of affected fishers from the rMCZs, and the extent to which displacement will impact upon landings value from other fishing grounds, is generally unclear. In most instances, fishers and fisheries representatives found it difficult to specify how the rMCZ would affect their future fishing decisions. While examples can be identified for some rMCZs, there is insufficient information to enable any analysis of displacement at the regional level. In the absence of a better understanding of the effect of rMCZs on fishing decisions, it is assumed that the cost impact to the sector is equivalent to the value of landings attributed to the area of rMCZs. This is likely to overestimate the true value of landings affected. This is because a proportion of effort currently expended within rMCZs is likely to be redistributed to areas outside rMCZs as fishers seek to offset the impacts of rMCZ-related fisheries management.

Lowest cost scenario impacts

F3.66 Table 2 sets out the value of landings/yr and the associated GVA/yr that are anticipated to be affected by the lowest cost management scenario for the rMCZs in the ISCZ Project Area. It is estimated that the lowest cost scenario for the rMCZs will affect less than 0.086% of total UK vessel GVA (MMO, 2011c). Over the 20-year timeframe of the IA, the estimated GVA affected has a present value of £3.856m. These cost estimates do not factor in the anticipated impact of displacement.

Table 2: UK vessel fishing activity affected by the lowest cost scenarios in ISCZ rMCZs

Gear Type	Number of rMCZs affecting £0.001m/yr or more of landings	Total value of landings affected (£m/yr)	GVA/yr affected (£m/yr)
Bottom trawls	6	0.432	0.173
Pots and traps	3	0.079	0.038
Collection by hand	6	0.050	0.023
Mid-water trawls	2	0.046	0.025
Dredges	5	0.026	0.012
Nets	0	0.000	0.000
Hooks and lines	0	0.000	0.000
Total	11	0.631	0.271

Source: MCZ Fisheries Model

Note: these figures have been adjusted to remove duplication between rMCZs that overlap.

F3.67 A total of 11 rMCZs, all of which are rMCZ Reference Areas, are expected to affect more than £0.001m/yr of landings by any individual gear type. In value terms the greatest impact is anticipated on landings using bottom trawls, pots and traps, collection by hand and mid-water trawls.

Highest cost scenario impacts

F3.68 Table 3 sets out the value of landings/yr and the associated GVA/yr that will be affected by the rMCZs under the highest cost management scenario. The most significant impacts on value of landings arise for bottom trawling from rMCZ 1, rMCZ 6, rMCZ 2, rMCZ 7 and the PCLZ. The scallop fishery (dredging) is most affected by the PCLZ, rMCZ 6 and rMCZ 2, although very little dredging activity actually takes place in these sites. The highest cost management scenario for rMCZs in the ISCZ Project Area estimates that approximately 0.58% of total UK vessel GVA will be affected (MMO, 2011c). Over the 20 years of the IA, the estimated GVA affected has a present value of £26.258m. These cost estimates do not factor in the anticipated impact of displacement.

Table 3: UK vessel fishing activity affected by the highest cost management scenarios in ISCZ rMCZs

Gear type	Number of rMCZs affecting £0.001m/yr or more of landings	Total value of landings affected (£m/yr)	GVA/yr affected (£m/yr)
Bottom trawls	12	4.042	1.616
Dredges	11	0.152	0.072
Collection by hand	9	0.192	0.089
Pots and traps	6	0.093	0.045
Mid-water trawls	2	0.046	0.025
Nets	0	0.001	0.000
Hooks and lines	0	0.000	0.000
Total	19	4.525	1.848

Source: MCZ Fisheries Model

Note: these figures have been adjusted to account for overlaps between rMCZs.

F3.69 In the highest cost management scenario, the bottom trawl and dredge fleets are most affected by the designation of MCZs due to the closure of parts of fishing grounds. The bottom trawl fleet (in particular the Northern Irish fleet) experiences the highest value of landings affected.

F3.70 Outside 12nm, the most significant impacts are anticipated as a result of rMCZs 1 and 6 and rMCZ Reference Areas A and F. Representatives of the Northern Irish fisheries estimate that up to 20% of the fleet's annual landings into Northern Irish and Cumbrian ports will be lost due to MCZs (assuming all are designated) once displacement of fishing vessels is factored in. The fleet is concerned that newer, more powerful vessels (which have higher overheads) will be impacted the most. These vessels are reportedly the processing industry's best suppliers and so the processing industry in Northern Ireland is anticipated to be significantly impacted.

F3.71 The extent to which the processing industry in Northern Ireland would be able to substitute the reduction in landings with Dublin Bay Prawns *Nephrops norvegicus* from elsewhere is not known. If it is unable to substitute the loss of Dublin Bay Prawns *Nephrops norvegicus* landings, this could impact considerably upon the local economy, in particular the Northern Irish ports of Kilkeel, Ardglass and Portavogie, which are largely dependent on fisheries and the processing sector for employment (NIFPO, 2011; ANIFPO, 2011).

F3.72 Port businesses and associated markets, as well as secondary and ancillary businesses, may be affected by any significant decline in landings. This could impact the Northern Ireland

fishing ports of Kilkeel, Ardglass and Portavogie. It is not anticipated to significantly impact other fishing ports in the ISCZ Project Area.

F3.73 Inside 12nm, potting is anticipated to be most affected by rMCZ 11 and rMCZ Reference Areas K and T. These closures are likely to affect some artisanal and full-time fishers but neither representatives of the various fleets nor the NWIFCA anticipate any significant local impact. There is very little evidence to suggest that other fleets (Cumbrian, Scotland, Isle of Man and Wales) will be significantly impacted upon.

F3.74 In some instances, rMCZs are likely to increase the fuel costs of fishing vessels which travel further to other less preferable fishing grounds in response to an MCZ closure. Bottom trawlers are likely to respond in this way to closures in rMCZs 1, 2, 6 and 7 and the PCLZ; and potters similarly so due to restrictions along the Cumbrian coast. Vessels fishing further from shore due to MCZ restrictions are likely to face increased safety risks. Increases in fuel consumption as a result of increased travel distance will result in increased greenhouse gas emissions.

F3.75 Redistribution of fishing effort may reduce fishing efficiency. This may increase the number of days spent at sea, resulting in fishers being away from their families for longer periods. Less-efficient fishing may also increase time spent fishing and increase the use of fishing gear, for example through an increased number of tows by trawlers. These may have negative environmental impacts, including greater and more concentrated pressures on benthic habitats from fishing gears outside MCZs.

F3.76 Gear conflict between mobile and static fishing gears may increase as a result of displacement of bottom trawl fishing effort from MCZs, although there is no suggestion of this from fisheries representatives in the ISCZ Project Area. This could result in social tensions within local fishing communities as well as increased fishing costs due to lost or damaged fishing gear. Equally, gear conflict could decrease in MCZs where some gear types are restricted or prohibited while other gear types are allowed to continue.

Non-UK fleets operating within rMCZs

F3.77 Nine rMCZs are likely to impact upon non-UK vessels (Belgian, Irish, French and Spanish) which fish in the ISCZ Project Area. Non-UK fishing activity is concentrated in the offshore rMCZs, particularly rMCZs 2, 3, 4, 5 and 6 and associated rMCZ Reference Areas. They all primarily use conventional bottom trawls, apart from the Belgian fleet, which has adopted a lighter beam trawl (the Sumwing).

F3.78 It is estimated that the French bottom trawlers will lose in the region of £25,000 worth of landings, and French potters around £5,000 worth of landings, each year from rMCZs in the ISCZ Project Area (Direction des Pêches Maritimes et de l' Aquaculture, 2011). It has not been possible to quantify the value of landings made by other non-UK vessels from rMCZs in the ISCZ Project Area.

F3.79 It has not been possible to identify potential displacement impacts. The Belgian fleet has provided the only information for impact upon non-UK fleets in the ISCZ Project Area. It states that the proposed restrictions would be a financial 'disaster' for the Belgian fleet and it is anticipated that 8 Belgian vessels that currently fish in the ISCZ Project Area would be forced to leave the fishing industry. Displacement will increase the concentration of vessels into smaller areas, in

particular the Bristol Channel, which will increase competition with UK vessels. The fleet anticipates that if fishing grounds are reduced in area, then fishing quota will also be restricted, with significant financial repercussions for the Belgian fishing fleet (Belgian fisheries representative, pers. comm., 2011).

9 Flood and coastal erosion risk management (coastal defence)

9.1 Regional baseline summary

F3.80 The incidence of flooding and coastal erosion is predicted to increase over the next 20 years, as climate change brings about a rise in sea levels, stormier seas and more frequent rainfall in the UK (Defra, 2012). Shoreline Management Plans have been prepared by the Environment Agency for the entire extent of the English coastline, which covers all 12 of the coastal and estuarine rMCZs in the ISCZ Project Area.¹⁶ These plans are in place to manage the future impact of floods and coastal erosion upon property, infrastructure and human welfare.

F3.81 The policies within rMCZs range from 'no active intervention', which is to allow the natural evolution of the coastline to continue without intervention; 'managed realignment', which is to allow natural processes to continue with minimal intervention (such as moving pathways and car parks etc.); 'hold the line', which is to maintain the current line of defence with intervention (for example maintenance of defence walls or construction of new defences); and 'advance the line', which is to build new defences seaward of existing defences (Environment Agency, pers. comm., 2012).

F3.82 Future flood and coastal erosion risk management (FCERM) licence applications may be impacted upon by two rMCZs in the ISCZ Project Area. These are rMCZ 11 and rMCZ Reference Area T, which are both located on the Cumbrian coast. Network Rail maintains coastal protection structures along extensive parts of the Cumbrian coast, including seaward of the rail line at Cuning Point (rMCZ Reference Area T). Some work has been done in recent years at Cuning Point. There is no obvious requirement for new capital schemes within the 20-year period of the IA at this point in time (Environment Agency, pers. comm., 2012).

F3.83 For rMCZ 11, the number of future capital schemes coming forward over the next 20 years is expected to be low (in the region of five). Estimates for the number of future FCERM schemes are not available (Environment Agency, pers. comm., 2012). For the purpose of the IA it is assumed that at least ten future licence applications will come forward over the next 20 years (five from the local authority and five from Network Rail). These estimates are not definitive and are based on the contents of the local medium-term plan.

9.2 Regional impact summary

F3.84 Natural England and the Environment Agency have identified that rMCZ Reference Area T and rMCZ 11 in the ISCZ Project Area are likely to incur additional costs to FCERM. The extra costs reflect the anticipated additional work needed to assess the impact of the proposed FCERM schemes upon MCZ features and their conservation objectives in future licence applications. An estimate of this cost is not available (Environment Agency, pers. comm., 2012).

¹⁶ www.environment-agency.gov.uk/research/planning/104939.aspx

F3.85 The Environment Agency estimates that at least ten future licence applications (five from the local authority and five from Network Rail) will be submitted over the next 20 years for FCERM schemes in the vicinity of these rMCZs, and that these applications will incur the additional cost. These are estimates only and are not definitive. All anticipated FCERM activities in the north-west of England are expected to be compatible with rMCZs and the additional cost is expected to be a one-off cost in the licence application only (Environment Agency, pers. comm., 2012).

10 National defence

10.1 Regional baseline summary

F3.86 National defence activities are known to take place within 12 rMCZs in the ISCZ Project Area, of which four are rMCZ Reference Areas. The types of activity are numerous, ranging from live firing to submarine exercise. A brief summary of the activities that take place in each rMCZ is provided in Annex I. Detailed information is not available.

10.2 Regional impact summary

F3.87 The Ministry of Defence (MoD) (pers. comm., 2011) has stated that designation of rMCZs is unlikely to have any direct impact upon the current level and type of MoD activity in the ISCZ Project Area. However, should the level of MoD activity increase, there is a possibility that some MCZs could impact upon future military activity. It is assumed that the MoD will mitigate the impact of military activity upon MCZ features through additional planning consideration during operations and training (MoD, pers. comm., 2011). The cost to the MoD to do this is assessed for the suite of MCZs only (see the Evidence Base) and cannot be broken down for the region.

11 Oil and gas related activities

11.1 Regional baseline summary

F3.88 The baseline describes only those aspects of oil and gas exploration and production, gas interconnectors and gas storage activities (hereafter referred to as oil and gas activity) and carbon capture and storage (CCS) that could be impacted upon by MCZs. The IA assumes that only the costs of future oil and gas (including CCS) licence applications could be impacted upon by MCZ designation. Therefore, currently consented developments of oil and gas production are not described in the baseline.

F3.89 In the 26th Seaward Licensing Round, licensed blocks were offered to operators to extract oil and gas from the UK Continental Shelf (UKCS) in October 2010 and December 2011. Within the ISCZ Project Area, five of the 35 blocks that were offered in the 26th Round were later awarded to operators for commercial extraction (in October 2010 and December 2011). In the absence of more detailed information about future oil and gas licence applications, the IA assumes that during the 20-year period one licence application is submitted for each of the 35 blocks offered in the 26th Round.

F3.90 There are currently no existing or planned oil and gas or CCS developments within any of the rMCZ Reference Areas in the ISCZ Project Area. Neither do any of the rMCZ Reference Areas overlap with blocks in the 26th Round with 'significant discoveries' or 'fallow blocks with discoveries' (see Annex H11). However, six rMCZ Reference Areas overlap with blocks on offer in the 27th Round. None of these blocks yet have new discoveries and it is not known if any of these blocks will be of commercial interest. The Department of Energy and Climate Change (DECC) has

stated that it is unlikely that any rMCZ Reference Areas will overlap with future oil and gas (including CCS) infrastructure (DECC, pers. comm., 2012).

F3.91 There is considerable uncertainty regarding the number of CCS applications that are likely to be submitted over the IA 20-year period of analysis and their likely location. For the purposes of the IA, it is assumed that 20 CCS applications will be submitted over the 20-year period (split between the Net Gain and Irish Sea Conservation Zones project areas) (CCSA, pers. comm., 2011). This is likely to be an overestimate as it is based on the CCS capacity that is estimated to be required to decarbonise the electricity sector by 2030 (DECC, pers. comm., 2011) rather than the number of CCS proposals that are likely to be viable.

11.2 Regional impact summary

F3.92 The estimated cost of MCZs to oil and gas (including CCS) operators is comprised solely of the additional costs anticipated in the assessment of environmental impact, which is completed in support of a future licence application. In rMCZs that are not rMCZ Reference Areas, based on the advice of DECC, the Joint Nature Conservation Committee (JNCC) and Natural England it is assumed that no additional costs will be incurred to operators to mitigate impacts upon MCZ features (compared with what is required now in the absence of MCZs). Although the IA assumes that construction of infrastructure and drilling would be prohibited in rMCZs that are rMCZ Reference Areas, DECC (pers. comm., 2012) has advised that it is unlikely that any future oil and gas (including CCS) activity would take place in any of the rMCZ Reference Areas based on where they are located in relation to existing oil and gas infrastructure and potential areas of future extraction and CCS storage.

F3.93 The present value of impact of MCZs on oil and gas (including CCS) operators is estimated to range from £0.406m (low cost estimate) to £0.667m (high cost estimate) over the 20-year period of the IA. The impacts are predominantly associated with rMCZs 1, 2, 3 (including rMCZ Reference Areas B and S), 4 (including rMCZ Reference Area C), 5, 6 (including rMCZ Reference Area F), 7 (including rMCZ Reference Area G), 8, 13 and 16 in the ISCZ Project Area. The best estimate of impact is the midpoint of the low and high cost scenarios, which is a present value of £0.537m and is based on the advice of DECC, Natural England and JNCC. A breakdown of estimated costs is provided at Annex N10.

F3.94 Oil & Gas UK and CCSA are concerned that additional costs could be incurred to operators to mitigate the impact of their activities upon MCZ features. They suggest that additional costs could be incurred if:

- pipelines need to be re-routed around MCZs (only MCZ Reference Areas for the oil and gas sector and all MCZs for the CCS sector);
- horizontal drilling to resources underneath MCZs that are MCZ Reference Areas is not allowed;
- additional mitigation of spills and leakages is required;
- ongoing monitoring of impact upon MCZ features as a licence condition is required.

F3.95 CCSA is concerned about the knock-on impacts that such mitigation, if it was required, could have on the economic viability of developments and on meeting the UK climate change

targets. An industry assessment of the potential cost is provided for the suite of MCZs in the Evidence Base.

12 Ports, harbours, shipping and disposal sites

12.1 Regional baseline summary

F3.96 There are 17 UK cargo ports surrounding the ISCZ Project Area. The ports range in size but the two largest ports, each trading up to 35m tonnes of cargo a year, are Milford Haven (largely associated with oil) and Liverpool (the principal cargo port in the region) (Department for Transport, 2009). In 2008, all 17 ports together transported 19% of all traffic (in and out) of the UK (Department for Transport, 2009). In total, nine ports provide ferry services (cargo and passenger) in the Irish Sea Conservation Zones project area: Heysham, Fleetwood (in summer months only), Liverpool, Holyhead, Fishguard, Douglas, Pembroke Dock, Larne and Ballycastle. Shipping passage through the ISCZ Project Area also supports Dublin Port, ports in the Clyde and the Isle of Man, and European and international ports.

F3.97 Between 1980 and 2008, ten ports around the ISCZ Project Area experienced an annual average increase in tonnage traded above the UK average (two in Wales, four in the north-west and four in Northern Ireland) (Department for Transport, 2009). Barrow experienced the highest annual average increase (13%) due to its association with the oil and gas industry (Department for Transport, 2009). A total of eight ports demonstrated an annual average decrease in tonnage traded over the same period (two in Wales, five in the north-west and one in Northern Ireland) (Department for Transport, 2009). This pattern has been heightened by the recession, which has seen trade concentrated through fewer but larger ports. No information is available for the remaining port, Glasson Dock.

F3.98 Along with five other ports in the UK, Liverpool was granted permission in 2007 to increase capacity by 85%. The resulting project, Liverpool SuperPort, encompasses the ports, the freight facilities and the airport located within the six local authorities in the Liverpool area, plus the port facilities at the mouth of the Manchester Ship Canal (MDS Transmodal, 2009). Investment is also planned for Workington under the Britain's Energy Coast™ plan, which is likely to be an important contributor to the development of offshore wind farms in the Irish Sea Conservation Zones project area¹⁷.

F3.99 Ports carry out regular maintenance dredging of navigation channels as well as maintenance and laying of berths, moorings, anchorages, navigational lights and buoys. In addition, many ports carry out maintenance works to infrastructure, undertake new developments and regulate the movement of vessels and other marine activities.

12.2 Regional impact summary

F3.100 Two scenarios are presented in the IA to estimate the most likely impact of rMCZs upon ports, harbours and shipping. Both are summarised here. The best estimate is the mid-point of the low and high cost in Scenario 2 (see Annex H12 for an explanation). The best estimate of the present value of the cost to the sector from rMCZs in the ISCZ Project Area is estimated to be

¹⁷ <http://www.britainsenergycoast.com> (accessed August 2011)

£0.622m over the 20-year period of the IA. Annex N11 provides a breakdown of all values for each region and for each rMCZ.

Low cost scenario

F3.101 Three rMCZs in the ISCZ Project Area (rMCZs 13, 16 and 17) are anticipated to impact upon ports, harbours and shipping activities in this scenario. The impact is estimated to be an increased cost in future licence applications for navigational dredging and disposal of dredged material that takes place within 1km of an rMCZ. Fleetwood Port (£0.010m/yr) and Liverpool Port (£0.009m/yr) are anticipated to incur the majority of this cost in the Project Area. No additional costs, for example to mitigate any impact of port operations upon MCZ features, are anticipated. The present value of the cost to the sector from rMCZs in the ISCZ Project Area is estimated to be £0.286m over the 20-year period of the IA.

High cost scenario

F3.102 A total of 16 rMCZs in the ISCZ Project Area (rMCZs 6, 8, 10, 11, 13, 14, 15, 16 and 17, the PCLZ and rMCZ Reference Areas H, J, K, T, W and Y) are anticipated to impact upon ports, harbours and shipping activities in this scenario. The impact is estimated to be an increased cost in future licence applications for navigational dredging, disposal of dredge material and port development that takes place within 5km of an rMCZ. Fleetwood Port, Barrow Port and Liverpool Port are expected to incur the majority of this cost in the ISCZ Project Area. Under this scenario, the ports of Heysham, Hoylake, Lancaster, Lytham St Annes, Maryport, Ravenglass, Silloth, Whitehaven and Workington would also incur additional costs if they submit licence applications for port development during the 20-year period of the IA.

F3.103 No additional costs, for example to mitigate any impact of port operations upon MCZ features, are anticipated. The present value of the cost is estimated to be £0.614m to £0.630m over the 20-year period of the IA. Insufficient information was available to identify whether any additional mitigation of impacts on features protected by the MCZ will be needed for proposed future port and harbour developments relative to the mitigation provided in the baseline. This is because it is not yet known in most instances where future port developments will be proposed, what they will comprise and whether they could potentially impact on features protected by MCZs. Unknown potentially significant costs of mitigation could therefore arise which are not quantified in the IA.

Industry assessment of costs

F3.104 Representatives of the ports, harbour and shipping sector are concerned that MCZs could incur greater costs to the sector than those represented by the scenarios. To reflect this uncertainty in the IA, the sector has made its own assumptions about how it could be impacted upon by MCZs. The sector anticipates that further costs could be incurred as a result of future licence conditions, including the requirement to provide additional environmental surveys, additional monitoring of environmental impact and additional mitigation of impact requirements, in particular with regard to sediment dispersal.

F3.105 The assessment is based on assumptions developed from information provided by eight port operators. The assumptions inform a national assessment of impact; however, it is not possible to break this down by region or by rMCZ due to the varying and unknown nature of future

port developments. More information is provided in the Evidence Base, Annex H12, Annex J1d and Annex N11.

13 Recreation

13.1 Regional baseline summary

F3.106 Recreational activities are known to take place in at least 11 of the rMCZs in the ISCZ Project Area (rMCZs 10, 11, 13 and 14 and rMCZ Reference Areas H, I, J, K, T, W and Y).

F3.107 Recreational boating takes place in most of the rMCZs. Sailing routes pass through offshore rMCZs (recreational users, pers. comm., 2011). There are no known designated anchorage sites within rMCZs in the ISCZ Project Area. A charter boat offering wildlife-watching trips reportedly visits rMCZ Reference Areas I and J (recreational users, pers. comm., 2011). Further site-specific information is provided in Annex I.

F3.108 Diving is known to take place in rMCZ Reference Areas I, J, K and T (recreational users, pers. comm., 2011). Divers visit each site reportedly once a month on average for scenic diving. There can be up to 15 people in a group at one time (recreational users, pers. comm., 2011). Further site-specific information is provided in Annex I.

F3.109 Recreational angling and bait digging is known to take place in rMCZ Reference Areas H, I, J, K, T, W and Y from shore and in private boats (recreational users, pers. comm., 2011). They target a range of species including mackerel, cod, whiting and flounder. Further site-specific information is provided in Annex I.

F3.110 Windsurfing is known to take place in rMCZ Reference Areas H, I and K (recreational users, pers. comm., 2011). On average the sites are visited every weekend but are frequented more in the summer months (recreational users, pers. comm., 2011). Kite surfing also reportedly takes place in rMCZ Reference Area Y. Recommended MCZ Reference Areas H and Y appear to be the most popular sites, with up to 50 people visiting on occasions (recreational users, pers. comm., 2011). Further site-specific information is provided in Annex I.

F3.111 Quad biking is reported to take place in rMCZ Reference Area W (ISCZ Liaison Officer, pers. comm., 2011). Further site-specific information is provided in Annex I.

F3.112 The Sefton coast (in rMCZ 13) is popular for beach users (up to 300,000 visitors/yr) (North West Coastal Forum, pers. comm., 2011). Activities include walking, dog walking, kite surfing, horse riding and shore angling. In rMCZ 14, many thousands of tourists walk across each year at low tide to Hilbre Island. Also, horse riders sometimes go across to Hilbre Island. Rock pooling is popular in some parts of the island. Further site-specific information is provided in Annex I.

F3.113 Wildfowling takes place in rMCZ Reference Area Y; rights are also granted to the local farmer to collect flotsam and jetsam. No further information is available.

13.2 Regional impact summary

Source of costs

F3.114 One management scenario applies to each rMCZ that is an rMCZ Reference Area from the following:

- Closure of angling (including bait digging) and anchoring in the entire site.
- Closure of angling and anchoring in the entire site. Prohibition of extraction of species to divers.
- Closure of angling and anchoring in the entire site. Prohibition of quad biking in the site.
- Closure of angling and anchoring in the entire site. Prohibition of wildfowling and kite surfing within the site.
- Closure of angling and anchoring in the entire site.

F3.115 Further details on the specific management scenarios for any individual rMCZ are provided in Annex I.

F3.116 In both rMCZ 13 and rMCZ 14, recreational activities are prohibited in the vicinity of vulnerable features. In rMCZ 13 the vulnerable feature is peat and clay exposures, and in rMCZ 14 the vulnerable features are peat and clay exposures and blue mussel beds. In these two rMCZs, the activities affected are walking, dog walking, kite surfing, horse riding and shore angling.

Management scenario impacts

F3.117 There are no known designated anchorage sites within rMCZs in the ISCZ Project Area. A charter boat offering wildlife-watching trips reportedly visits rMCZ Reference Areas I and J (recreational users, pers. comm., 2011). No evidence of impact is available regarding prohibition of anchoring (despite efforts to gather information from the sector). Therefore, it is assumed that there is likely to be a negligible net impact on this activity and that sailing will be allowed to continue in the rMCZs.

F3.118 Diving is known to take place in rMCZ Reference Areas I, J, K and T (recreational users, pers. comm., 2011). Diving will be allowed to continue in the sites; however, extraction of species or anchoring of vessels will not be permitted. Divers visit each site reportedly once a month on average for scenic diving. There can be up to 15 people in a group (recreational users, pers. comm., 2011). No evidence of impact is available regarding prohibition of extraction of species to divers (despite efforts to gather information from the sector). Therefore, it is assumed that there is likely to be a negligible net impact on this activity. It is not anticipated that limits will be placed on numbers of divers in the site; therefore divers may indeed benefit from the designation of the MCZ (in terms of improvements in biodiversity etc.). However, no evidence is available to support this.

F3.119 Recreational angling and bait digging will be prohibited in (and therefore impacted by) rMCZ Reference Areas H, I, J, K, T, W and Y (recreational users, pers. comm., 2011). These activities will not be permitted to continue in these rMCZs. The only evidence of impact identified by the sector is with regards to rMCZ Reference Area H (despite efforts to gather information from anglers that are known to be active in other affected rMCZs). Closure of angling in the site is estimated to impact upon at least 5 angling boats and at least 40 anglers in rMCZ Reference Area H. This is anticipated to displace angling northwards up the Cumbrian coast and could increase the environmental pressure at other sites (as there would be an increase in bait collection in those sites, causing greater erosion to sand dunes and coastal paths). An angler has reported that this would increase his vessel fuel costs by 15% and decrease fishing time by 15% (angler, pers. comm., 2011).

F3.120 Windsurfing is known to take place in rMCZ Reference Areas H, I and K (recreational users, pers. comm., 2011) and will be allowed to continue. Kite surfing reportedly takes place in rMCZ Reference Area Y and will be prohibited (as it is an intertidal activity in the vicinity of sensitive species). No evidence of impact is available from kite surfers who use the site (despite efforts to gather information from the sector). Therefore, it is assumed that there is likely to be a negligible net impact on this activity.

F3.121 Quad biking is reported to take place in rMCZ Reference Area W and will not be permitted to continue (ISCZ Liaison Officer, pers. comm., 2011). No evidence of impact is available from users of the site. It is assumed that prohibition of the activity in the site is unlikely to impact upon this activity significantly and that, instead, it will relocate to another coastal location.

F3.122 In rMCZ 13, recreational activities are known to take place in the area of the peat and clay exposures. Due to the changeable locations of peat and clay exposures in this site (due to variable sand deposition and tidal range), it will be difficult to enforce prohibition of recreational activities in the area of peat and clay exposures in the site. It is more likely that the impact will be discouragement of activities (through the use of signs) in the area of peat and clay exposures. The net impact is therefore likely to be minimal as it is assumed that activities will take place elsewhere in the site, or along the coast, to avoid unnecessary impact on the peat and clay exposures, with little or negligible impact of the activity itself.

F3.123 In rMCZ 14, recreational activities are not known to take place in the area of the peat and clay exposures or blue mussel beds in the site. The area of peat and clay exposures in this site is fairly contained. However, it may be difficult to enforce prohibition of recreational activities in the area of peat and clay exposures and blue mussel beds in the site. It is more likely that activities will be discouraged (through the use of signs) in the area of the vulnerable features. The net impact is therefore likely to be minimal as it is assumed that very few activities take place on the vulnerable features and that activities will take place elsewhere in the site, or along the coast, to avoid unnecessary impact on the vulnerable features, with little or negligible impact on the activity itself.

F3.124 Wildfowling takes place in rMCZ Reference Area Y and will not be permitted to continue. No evidence of impact is available from Walney Island Wildfowling who use the site (despite efforts to gather information from them).

14 Renewable energy

14.1 Regional baseline summary

F3.125 There is currently existing or planned renewable energy activity in three rMCZs in the ISCZ Project Area. The PCLZ overlaps with 60km² of the proposed Walney Extension wind farm (in pre-planning and not yet consented); 59km² of the West of Duddon Sands wind farm (consented and under construction); 30km² of the Walney wind farm phase 1 (now operational); 43km² of Walney wind farm phase 2 (now operational); and 9km² of the Ormonde wind farm (now operational).

F3.126 Existing or planned wind farm power cable routes fall within the PCLZ (no detail is available for existing or proposed array cables): 0.87km of the Walney (phase 1) wind farm export cable; 14km of the proposed Walney (phase 2) wind farm export cable; 13km of the proposed

export cable routes for the Walney Extension wind farm; and 0.54km of the export cable for the Ormonde wind farm. In addition, 11km and 6.5km of the proposed and not-yet-consented cable route for the Walney Extension wind farm passes through rMCZ 2 and rMCZ 16 respectively.

F3.127 Lastly, rMCZ 3 overlaps with 24km² of the Irish Sea Zone 9 (Round 3) area of search. The Round 3 area of search covers an area of 2,200km². Centrica is currently in the process of identifying which parts of the Round 3 area are suitable wind farm sites. Not all of the area will be suitable. The first potential wind farm sites will be identified in 2013 (Centrica website, 2011).¹⁸ Centrica (pers. comm., 2011) has indicated that the area of Zone 9 within rMCZ 3 is unlikely to be suitable for wind farm development. The National Grid 2011 *Offshore Development Information Statement* indicates that an offshore transmission direct current (DC) cable will be required in the vicinity of rMCZs 3 and rMCZ Reference Area S to connect wind farms in the Irish Sea Zone 9 (Round 3) to the National Electricity Transmission System. However, the routes are yet to be determined as the location of the wind farms is not yet known. This is anticipated to be installed in the 20-year period of the IA but no further information is available.

F3.128 There are proposals for wave and/or tidal energy schemes in all estuaries in the ISCZ Project Area. However, none are anticipated to come to fruition over the 20-year period of the IA. Some offshore rMCZs overlap with areas of potential wave and tidal resource; however, again none of these areas are anticipated to be commercially viable for development within the 20-year period of the IA (DECC, pers. comm., 2012).

14.2 Regional impact summary

F3.129 This section summarises the impact of rMCZs in the ISCZ Project Area upon the renewable energy sector. Two scenarios (Scenarios 1 and 2) have been developed for this sector. Based on the very low likelihood of costs in Scenario 2 being incurred (Natural England and JNCC, pers. comm., 2012), the best estimate of impact is assumed to be 15% of the additional installation costs in Scenario 2 plus 100% of the additional assessment of environmental impact costs in Scenario 2. Annex H14 provides further explanation. For renewable energy developers in the ISCZ Project Area, the best estimate of the present value of the cost is estimated to be £9.722m over the 20-year period of the IA.

Low cost scenario

F3.130 The low cost scenario is based on advice provided by Natural England and JNCC (JNCC and Natural England, 2011). This assumes that additional costs will be incurred in future licence applications only, to assess the impact of the proposed activity upon MCZ features, for renewable energy developments in the vicinity of rMCZs. It assumed that no additional mitigation of impacts will be required (compared with what is required in the absence of MCZs). For renewable energy developers in the ISCZ Project Area, the present value of the cost is estimated to be £0.013m over the 20-year period of the IA. These costs are associated with the potential designation of rMCZs 2, 3, 16, the PCLZ and rMCZ Reference Area S, and in relation to the Irish Sea Zone 9 (Round 3) area of search and the Walney Extension wind farm.

¹⁸ http://www.centrica.com/files/pdf/centrica_energy/english_display_panels.pdf [accessed 17th May 2012]

High cost scenario

F3.131 The high cost scenario is the same as the low cost scenario but also assumes that additional costs could be incurred to: re-route not-yet-consented cables around rMCZs that are rMCZ Reference Areas; and install alternative cable protection on not-yet-consented cables (export and inter-array cables) in rMCZs that are not rMCZ Reference Areas. Annex H14 provides more detail. For renewable energy developers in the ISCZ Project Area, the present value of the cost is estimated to be £64.741m over the 20-year period of the IA.

F3.132 These costs are associated with the potential designation of rMCZs 2, 3, 16, the PCLZ and rMCZ Reference Area S, and in relation to the Irish Sea Zone 9 (Round 3) area and the Walney Extension wind farm. There is a low likelihood of significant additional costs for inter-array cabling in the Walney Extension wind farm in the Potential Co-location Zone which are not quantified in the high cost scenario. This could be a significant unknown cost. However, JNCC and Natural England (pers. comm., 2012) have stated that there is a low likelihood of this cost occurring.

Industry assessment of costs

F3.133 Representatives of the renewable energy sector are concerned that MCZs could incur greater costs to the sector than those represented by the scenarios. To reflect this uncertainty in the IA, the sector has made its own assumptions about how it could be impacted upon by MCZs.

F3.134 The sector anticipates that further costs could be incurred due to MCZs as a result of conditions placed on future licences. These, it anticipates, could include the requirement to undertake additional environmental surveys, additional monitoring of environmental impact and additional mitigation measures, and delays to project delivery. More detail is provided at Annex H14 and Annex N13. A summary of the renewable energy sector's concerns regarding the rMCZs in the ISCZ Project Area is provided at Annex J1c.

F3.135 It is not possible to provide the estimated cost for the Irish Sea Project Area due to the need to protect commercially sensitive information. However, these costs are included in the estimate for the suite of rMCZs in the Evidence Base. These costs are associated with rMCZs 2, 3, the PCLZ and rMCZ Reference Area S; in relation to the Irish Sea Zone 9 (Round 3) area, the Walney Extension, Walney phases 1 and 2 and West of Duddon Sands developments. No industry assessment of cost was provided for the Ormonde wind farm, which is also located within the PCLZ.

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