

CHAPTER 21

Conclusions and Next Steps



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21. CONCLUSIONS AND NEXT STEPS

21.1 Introduction

This chapter of the report summarises the key conclusions of the Irish Sea Zone (ISZ) ZAP and provides an overview of CERl's strategy going forward into the statutory project EIA phases of development.

As outlined in Chapter 1 there were four key objectives for the ISZ ZAP. These were:

- Key objective 1: the identification of areas of the ISZ within which no development is likely to be feasible;
- Key objective 2: the identification of key constraints in areas where development is likely to be possible;
- Key objective 3: the identification of likely areas for individual projects; and
- Key objective 4: the early identification of issues for consideration under the relevant habitats regulations.

These objectives have helped frame the ISZ ZAP so that the development capacity of the ISZ is not unnecessarily limited through unanticipated constraints identified as part of subsequent EIAs. This approach also affords stakeholder buy-in to the process as issues are identified and addressed.

The subsequent sections summarise how each key objective has been met or addressed.

21.2 Key objective 1: the identification of areas of the ISZ within which no development is likely to be feasible

This objective is considered in detail in Chapter 5 of the ZAP report. The purpose of this objective was to identify areas within the ISZ that are not currently feasible for development. These areas were identified after a number of hard constraints were applied following the collection of zone wide baseline data. Hard constraints identified were:

- Ground conditions;
- Water depth; and
- Shipping and navigation considerations.

Water depth and ground conditions are one of the main influences when establishing the technical viability of installing foundations and other infrastructure such as intra array cables. Following the collection of detailed water depth and ground condition data there were clear areas within the ISZ that were either too deep, or had unsuitable ground conditions or both. Section 5.3 provides more detail on these constraints.

The other major hard constraint that influenced the areas within the ISZ where development was not feasible was the provision of corridors for the safe passage of vessels. The potential impact of development of the ISZ on the ability of a ship's master to select a safe or viable route during adverse weather was a clear concern. This became apparent from an initial examination of shipping data collected as well as a key concern raised by local and national maritime stakeholders. Areas within the ISZ were therefore selected to provide for these corridors. Section 5.3 provides more detail on this constraint.

Once these hard constraints were taken into consideration areas within the ISZ where development was more feasible were identified. These areas, termed Potential Development Areas, are shown in Figure 21.1.

It was considered necessary to acknowledge the areas where development was and was not considered feasible early on in the ZAP process to provide focus on remaining constraints. Three Potential Development Areas were thus identified representing 56% of the ISZ area. The areas identified are shown in Figure 21.1 and comprise:

- North East Potential Development Area (359 km²);
- South East Potential Development Area (617 km²); and
- South West Potential Development Area (266 km²).

These areas were then taken forward and assessed against other constraints.

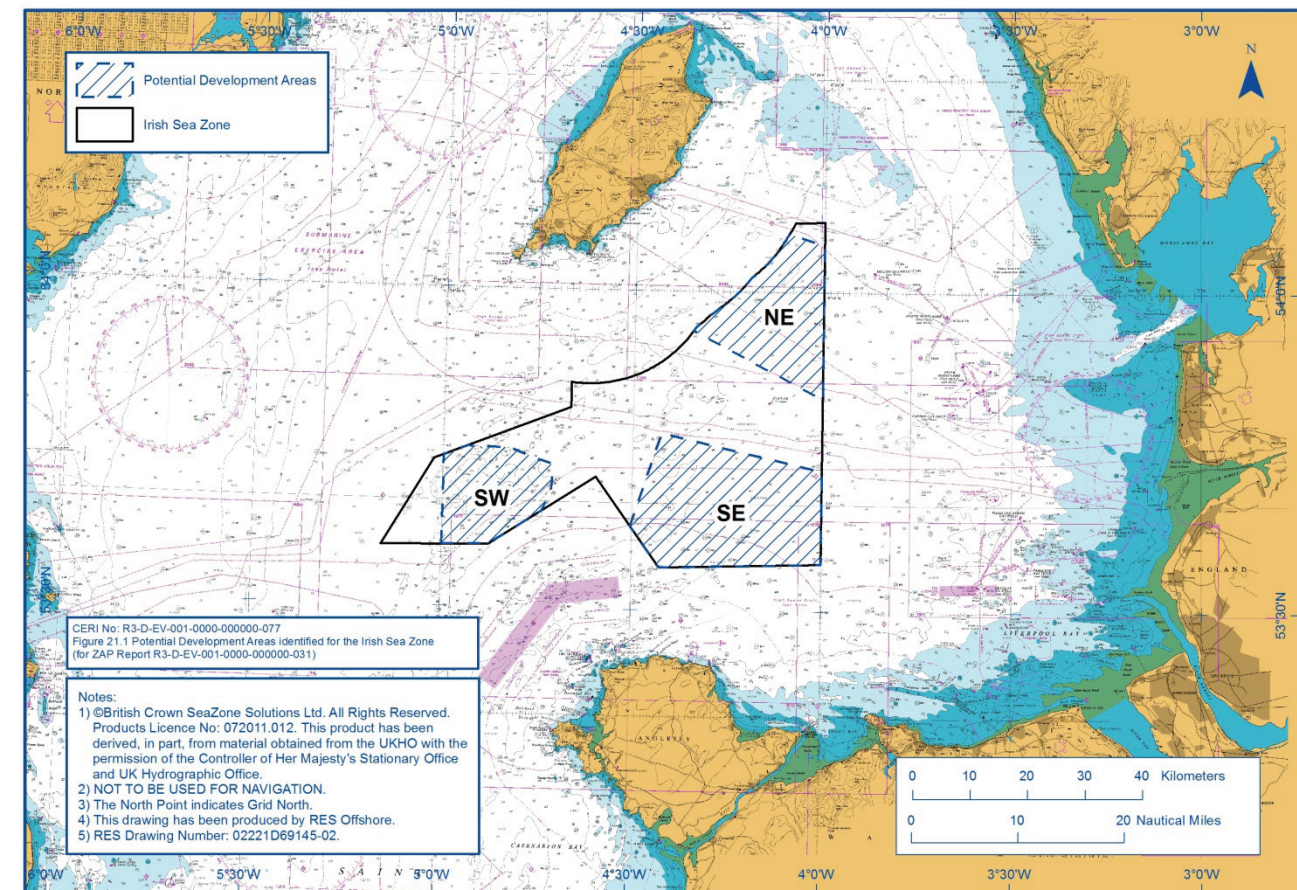


Figure 21.1 Potential Development Areas identified for the Irish Sea Zone

21.3 Key objective 2: the identification of key constraints in areas where development is likely to be possible

This key objective is considered in Chapters 7-20. Baseline data collection has been undertaken across the ISZ to better understand constraints in relation to the physical, ecological and human environment. The following provides an overview of the key constraints and the conclusions of the impact assessments.

21.3.1 Physical processes

The physical environment of the ISZ was characterised using data captured as part of a dedicated metocean and geophysical survey campaign. Other sources of data used to inform the baseline included established datasets such as water levels, regional historic wave data, CTD profiles, and sediment grabs for Particle Size Analysis (PSA). The full list of datasets which were used to establish the physical processes baseline is provided in Section 8.2.

To better understand the influence of developing Potential Development Areas on the physical environment, the following assessment scenario was undertaken:

- The operational impact of 5MW turbines installed on concrete gravity foundations assuming full development of each Potential Development Area.

Further information on the assessment scenario is provided in Section 8.7.

Impacts associated with construction will be more appropriately considered as part of future EIAs when project-specific information is available. Section 8.8 provides the results of the zonal assessment for physical processes.

A regional scale assessment was carried out to establish the extent and magnitude of changes to the hydrodynamic regimes, in response to the combined effect of three Potential Development Areas within the ISZ. The outputs from the assessment were used to determine the effects on physical processes receptors, namely the coast, sediment transport and frontal systems. In addition to the combined effects of the Potential Development Areas, the assessment also considered the potential for cumulative effects with other wind farms in the eastern Irish Sea and in-combination effects with other developments (such as aggregate dredging).

Key conclusions from the physical processes assessment were:

Impact assessment of combined Potential Development Areas

- No anticipated large-scale changes to regional water levels, flow speeds or directions;
- No anticipated changes to gross tidal residual circulation or vertical mixing patterns;
- No anticipated changes to regional wave climate;
- No anticipated changes to coastlines;
- No anticipated changes in frontal formation;
- No change in the magnitude or direction of sand transport or seabed mobility;

Cumulative and in-combination assessment

- No large scale cumulative or in-combination impacts predicted; and
- Potential interaction in wave climate with proposed Walney extension from south-south-west and west waves (assessed as minor significance).

In common with previous assessments for Round 1 and Round 2 wind farm developments, the results of the regional scale numerical modelling and associated desk based analyses demonstrate that for the most part changes to the hydrodynamic regime are confined to within the ISZ and particularly within the Potential Development Areas.

Section 21.6 provides an overview of the 'next steps' for Physical Processes.

21.3.2 Marine ecology

The marine ecological environment of the ISZ was characterised through dedicated surveys of the fish communities associated with the seabed and the seabed communities themselves. This data was supplemented with existing data sets acquired from JNCC, CCW, Cefas and other sources. The full list of data sets which were used to characterise these communities is provided in Section 11.2.

To better understand the potential impact of developing Potential Development Areas on the marine ecological environment, the following assessment scenario was undertaken:

- The operational impact of 5MW turbines installed on concrete gravity foundations

The assessment was restricted to the direct loss of potential Annex 1 seabed habitats (EU Habitats Directive 92/43/EEC). Potential impacts associated with the operation and, indeed, construction on other seabed communities (i.e. non-Annex 1 habitats) and natural fisheries EIAs were scoped out of the ZAP assessment for the following reasons:

- The absence or limited number of sensitive receptors being present in the zone-specific fish and seabed community surveys commissioned by CERL;
- The availability of mitigation e.g. micro-siting of wind farm infrastructure around sensitive features; and
- The low probability of these receptors influencing strategic placement of wind farms in the ISZ.

However, this receptor group will be re-considered as part of project specific EIAs when more definition on construction methodologies and working windows will be better understood. Issues such as 'fish spawning' will therefore be considered more appropriately at EIA. Section 11.8 provides the results of the zonal assessment.

Key conclusions from the marine ecological (Annex 1 habitats) assessment include:

Impact assessment of combined Potential Development Areas

- Minor adverse impact on potential Annex I rocky reefs;
- Minor adverse impact on potential Annex I *Sabellaria* reefs; and
- No significant impact on potential Annex I *Modiolus* reefs.

Cumulative and in-combination assessment

No cumulative or in-combination impacts are predicted on Annex I features.

Within the ISZ, Annex I stony reef is only found within the South East Potential Development Area. It is predicted that 0.33% of the stony reef mapped in the ISZ will be lost under the footprint of the foundations. It is predicted that this loss will result in a minor adverse impact on the ecological functioning of the reef within the ISZ. Similarly minor or no impacts are also predicted for *Modiolus* and *Sabellaria* Annex I reefs. Although natural fisheries were scoped out of the ZAP assessment a good baseline has been established which could provide the basis of project level EIAs.

Section 21.6 provides an overview of the 'next steps' for marine ecology.

21.3.3 Marine mammals and basking shark

Information on marine mammals was collected as part of a monthly two year boat based survey using a combination of visual sightings and data collected from Passive Acoustic Monitoring (PAM) equipment. Sightings of basking sharks were also recorded during these surveys with information

supplemented from tagging sources and previous aerial survey campaigns. Information was also supplemented using data collected from a number of other sources all of which are detailed in Section 12.2.

To better understand the potential impact of developing Potential Development Areas on marine mammals and basking shark, the following assessment scenario was undertaken:

- The impacts from construction noise of driving jacket piles at nominal locations within each Potential Development Area and a number of planned or consented wind farms in the Irish Sea.

Impacts associated with operation will be more appropriately considered as part of future EIAs. Further information on the justification for the assessment scenario is provided in Section 12.7.

Published data has identified a total of 20 cetacean and two pinniped species in the Irish Sea – although only five species of cetacean, one pinniped and a single basking shark individual was sampled as part of the dedicated ISZ survey programme. Harbour porpoise was by far the most numerically dominant cetacean species and grey seal the most numerically dominant pinniped. As such it was agreed with stakeholders that the ZAP assessment would focus on the two species as a proxy for the other species sampled within the ISZ.

Key conclusions from the marine mammal assessment include:

Impact assessment of combined Potential Development Areas

Minor adverse impacts on grey seals and harbour porpoise were predicted against the risk of physiological impacts, such as hearing loss from piling noise, and from potential impacts on prey species due to piling noise. A Major adverse impact was predicted for both species from the potential behavioural/disturbance effects from piling noise.

A minor adverse impact was predicted for basking shark resulting from the risk of changes to the western frontal system, a habitat of likely to be important to these sharks.

The ‘Next Steps’ section of this chapter (Section 21.6) discusses our approach to addressing the issues raised above.

21.3.4 Ornithology

Information on bird numbers within the ISZ was collected as part of a monthly two year boat based survey. Information was also supplemented using data collected from a number of other sources, all of which are detailed in Section 13.2.

To better understand the potential impact of developing Potential Development Areas on birds, the following assessment scenario was undertaken:

- The operational impact of 5MW turbines installed on jacket foundations

Impacts associated with construction will be more appropriately considered as part of future EIAs. Further information on the assessment scenario is provided in Chapter 13.

The results of these surveys have shown that 12 species occur in regional, national and international important numbers within the ISZ. Of these species, Manx Shearwater was shown to be the most sensitive receptor as a result of its occurrence in internationally important numbers in the ISZ. The tendency of Manx Shearwater to mirror the distribution patterns of other species and vice-versa also

meant that Manx Shearwater operated as a useful ‘umbrella’ under which to frame potential impacts upon several important species. Consideration of spatial distribution clearly demonstrated that Manx Shearwater was biased towards particular parts of the ISZ, particularly the southwest and parts of the southeast of the ISZ, which correlated well with aerial survey data collected previously. Other sensitive species included a number of gull species (Great Black-backed Gull, Lesser Black-backed Gull, Herring Gull and Kittiwake) and Gannet.

Manx Shearwater was identified as at risk of displacement, whilst the gulls and Gannet were identified at risk of collision.

Key conclusions from the ornithology assessment include:

Impact assessment of combined Potential Development Areas

In the absence of an industry standard to assess displacement, a risk-based approach examining for evidence of impact upon greater than 1% of a specified population was undertaken, in which the potential for displacement was assessed against resultant prospective mortality.

The result of the assessment was that there was no obvious impact on Manx Shearwater at a national scale or for the combination of breeding colonies that are in range of the ISZ, for any Potential Development Area or all areas combined through either displacement or collision.

The same risk-based approach examining for evidence of impact upon greater than 1% of a specified population was undertaken for the potential collision of gulls and Gannets. For most species there was a negligible risk of an impact at the national population scale apart from the national wintering population of Great Black-backed Gull where the potential collision risk of all three Potential Development Areas exceeded 1% under a scenario of 5MW wind turbines.

Cumulative and in-combination assessment

Cumulative and in-combination assessments for birds have not been undertaken at this stage due to several key projects for which there is scope for cumulative impacts still collecting data and undertaking assessments. However, the need to consider the potential cumulative impact on key species such as Manx Shearwater and the Great Black-Backed Gull has been recognised and will be considered further under the project level EIAs with other developers and in consultation with key stakeholders.

The ‘Next Steps’ section of this chapter (Section 21.6) discusses our approach to addressing the issues raised above.

21.3.5 Shipping and navigation

Information on shipping traffic in the ISZ was collected as part of a six month geophysical survey between March and August 2010. This information was supplemented by a network of coastal Automatic Identification System (AIS) receivers which have monitored shipping movements since February 2011. Information on commercial fisheries and recreational users was also collected. This data was also used to help inform the location and size of the Potential Development Areas – as described in Chapter 5.

The full list of datasets which were used to establish the shipping and navigation baseline is provided in Section 14.2.

The RWCS for shipping was agreed with statutory stakeholders to be smaller more numerous turbines (i.e. 5MW) on jacket foundations. This will be the scenario that will be assessed at EIA to assess vessel to structure risks. For the purposes of ZAP, in keeping with standard practice, vessel to vessel

risk does not take into account the Engineering Envelope but rather assumes that all main commercial shipping traffic through the Potential Development Areas would be displaced. This scenario does not represent or pre-empt future shipping trends as a result of future projects identified within the ISZ. No assumptions on the displacement of recreational vessels were made for the purposes of ZAP and further study will be made at EIA level when more details will be available. It has been assumed that fishing vessels have not been displaced for the purposes of ZAP and further consideration will be made at the project EIA level.

By nature of its assessment, cumulative and in-combination considerations are inherent when calculating risk and therefore have been considered collectively in the overall assessment.

Assessment of the data has been limited to vessel to vessel collision risks and the estimation of displacement caused by the worst case scenario, described above. Other areas will be assessed further at EIA as part of a formal Navigational Risk Assessment when more information on project specifics will be available.

Key conclusions from the shipping and navigation assessment include:

- Vessel to vessel collision risk is predicted to increase by 6% (1 every 133 years) for base case with wind farm and an increase of 9% (1 every 121 years) for future case with the Potential Development Areas. When compared with other areas of the UK, these values are considered within the lower regions assessed for this type of impact. For example current vessel to vessel collision risks within the approaches to the Humber Estuary are 1 every 4.48 years (Anatec, 2001); and
- Based on the worst case scenario provided, the largest deviations are 3.6 nm (2.8% of the route) and 3.25 nm (4.5% of the route). These deviations presented are a worst case only. What can be accommodated will be dependent on a number of factors, all of which will be consulted and analysed at a project level.

Following consultation with the Department for Transport, Trinity House and the Maritime and Coastguard Agency (MCA) it was agreed to provide a 5 nautical mile (nm) buffer from the entry/ exit locations of the Off Anglesey and Liverpool Bay Traffic Separation Scheme (TSS). In addition a 1 nm buffer was also provided from the vessel route between the two TSSs. This was in response to potential safety concerns raised by the regulators and is in line with the requirements and principles of Marine Guidance Note 371. By increasing the distance of any future projects from the TSS traffic the risk of vessel to vessel collision and vessel to structure collision in the area is reduced.

Section 21.6 provides an overview of the 'next steps' for shipping and navigation.

21.3.6 Cultural heritage and archaeology

The cultural heritage and archaeological resource of the ISZ was characterised from geophysical data collected across the ISZ. This data was supplemented with available desk based information. The full list of datasets which were used to establish the baseline is provided in Section 15.2.

Archaeological remains in the Irish Sea zone are predominantly shipwrecks and aircraft crash sites. Initial findings from the geophysical and geotechnical investigations confirm the potential for prehistoric archaeological landscapes, sites and materials preserved in seabed sediments.

Overall, numerous anomalies of possible archaeological potential, identified both on the seabed and by the sub-bottom data, were identified within the 12 investigated corridors obtained from the geophysical survey. So far, however, no areas have been identified that contain a high enough density of features to preclude development of the ISZ.

Archaeology and Cultural Heritage receptors were therefore scoped out of the zonal assessment on the basis that development will not be restricted with appropriate mitigation strategies in place. However archaeology and cultural heritage receptors will be scoped back into project specific EIAs where appropriate mitigation measures will be identified and the baseline environment further understood through analysis of geophysical and geotechnical data at the project level.

Section 21.6 provides an overview of the 'next steps' for cultural heritage and archaeology.

21.3.7 Landscape and seascape

Taking into account the strategic level of this assessment and the aim to focus on significant effects, a 35 km radius study area was adopted, with the cumulative assessment extending to include wind developments within a 60 km radius study area. Key landscape receptors which lie outside the 35 km study area have also been considered due to their national importance, elevated height and potential sensitivity to change.

The ZAP Seascape, Landscape and Visual Impact Assessment (SLVIA) was a strategic level study to identify which seascape, landscape and visual receptors will be subject to the most significant effects arising from the locations of the three Potential Development Areas within the Irish Sea Zone. The effects upon landscape character, designated landscapes, seascape character and viewpoints were assessed using the following assessment scenario:

- The operational impacts of 7MW turbine arrays

The effects can be summarised as follows:

Effects on Landscape Character Types - The assessment established that the scale and extent of the Potential Development Areas has the potential to indirectly, but not directly, affect landscape character areas/types due to changes in the visual characteristics of the landscape receptors.

Effects on Designated Landscapes - There are a number of nationally designated landscapes surrounding the Irish Sea including the National Parks of Snowdonia and the Lake District, the Areas of Outstanding Natural Beauty (AONBs) of Anglesey and the Clwydian Range and the Heritage Coasts on Anglesey, Great Orme and St Bees Head. These all have high sensitivity to the type of development proposed. The effects on the Lake District National Park, Snowdonia National Park, and Clwydian Range AONB are judged to be *Negligible*. The effects on the Great Orme Heritage Coast and Anglesey AONB are judged to be *Moderate*.

Effects on Seascape Character - The scale and extent of the Potential Development Areas could in principle directly and indirectly affect Regional Seascape Units, depending on their location and relationship to the ISZ. There will be a range of effects incurred upon the character of the various regional seascape units, the greatest being upon the Point Lynas to Carmel Head Regional Seascape Unit off the North Anglesey Coast.

Effects on viewpoints – The effects of the ISZ on visual receptors has been assessed for 16 representative viewpoints located around or within proximity to the Cumbrian Coast, North Wales, the Anglesey Coast and the Isle of Man. All the receptors have a high sensitivity to the type of development proposed and the results of the assessment are explained in more detail in Section 16.8.5. There will be a range of effects upon onshore visual receptors, but these will be moderated by the distance of the Potential Development Areas from the coast and the visibility characteristics associated with Anglesey and the Isle of Man.

Potential visual effects from sensitive receptors outwith the 35 km radius study area around the Irish Sea Zone have been investigated but found to all be *negligible* in their significance.

Cumulative effects were also assessed, but in-combination effects will be more appropriately assessed at the Project EIA stage.

Section 21.6 provides an overview of the 'next steps' for landscape and visual.

21.3.8 Commercial fisheries

The commercial fisheries industry within the ISZ was characterised using data from various statutory and non-statutory sources such as the Marine Management Organisation (MMO), the Republic of Ireland Sea Fisheries Protection Agency (SFPA), The Isle of Man Department of Environment, Food and Agriculture (DEFA) and Vlaamse Overheid Fisheries Department (Belgium). Additional information was also collected from the fishing industry by means of questionnaires and meetings. The full list of datasets which were used to establish the commercial fisheries baseline is provided in Section 17.2.

The ISZ records moderate levels of fishing activity compared to grounds elsewhere in the Irish Sea, and relatively moderate levels of activity on a national scale. Parts of the ISZ support high levels of scallop dredging activity, and to a lesser extent, grounds which are beam trawled for sole.

Similar to the shipping assessment the commercial fisheries assessment did not take into account turbine / foundation types and sizes. Rather a generic operational assessment based simply on the presence of turbines in each Potential Development Area was undertaken.

Impacts associated with construction will be more appropriately considered at the project EIA level. One of the main assumptions considered for ZAP is that fishing activity will not be excluded from wind farms once operational.

Key conclusions from the commercial fisheries assessment include:

Impact Assessment of combined Potential Development Areas

- Complete loss or restricted access to traditional fishing Grounds; and
 - Moderate significant impact on local vessels targeting king scallops;
 - Minor significant impact on nomadic vessels targeting king scallops and sole; and
 - No significant impact on vessels targeting queen scallops, nephrops, whelks, crab, lobsters and herring.
- Displacement of Fishing Vessels into other Areas.
 - Moderate significant impact on vessels targeting queen scallops outwith the ISZ;
 - Minor significant impact on vessels targeting king scallops and herring outwith the ISZ; and
 - No significant impact on vessels targeting sole, nephrops, whelks, crab and lobster outwith the ISZ.

Impacts on local vessels targeting King Scallop, in terms of complete loss or restricted access, were assessed as of moderate significance. This is due to the limited operational range of these vessels. In addition, an impact of moderate significance was established for vessels targeting queen scallops which is due to the restricted range of this fishery. These impacts are predominately associated with the North East Potential Development Area. Although the majority of scallop dredging vessels are

nomadic and can therefore target other grounds in addition to those in the Irish Sea, there are a number of local vessels based at home ports in the regional area which could be affected by potential development of this area as a result of their limited operational range. These impacts will be addressed at the project EIA level.

Section 17.9 provides more information on the assessment conclusions.

Cumulative and in-combination assessment

Cumulative and in-combination impacts upon the fishing industry are difficult to quantify on a zonal level, as such, a more detailed assessment will be undertaken at the project EIA level once project details are available. However the assessment has identified the key issues from a cumulative perspective. The assessment has identified that the cumulative impact upon the scallop fishery is dependent upon the productivity of grounds impacted and the scale of impact, which will depend upon construction schedules of individual developments and the ability of vessels to regain access to grounds once the sites are operational.

These issues will be further explored at the project EIA level.

Section 21.6.8 provides an overview of the 'next steps' for commercial fisheries.

21.3.9 Aviation and radar

The main method of establishing the baseline environment and assessing the potential impact upon military and civilian aviation and radar is to consult with those who own and operate the potentially affected systems and infrastructure. To address this issue CERI consulted widely at the ZAP level to identify all organisations which could be affected by development with the ISZ.

The ZAP process has identified that the following infrastructure/operations could potentially be affected by development within the ISZ:

- ATC radar at RAF Valley;
- NERL radars at Lowther Hill and St Annes;
- ATC radar at Isle of Man Airport; and
- Helicopter operators in the Irish Sea, such as Bond Helicopters and oil and gas stakeholders.

A number of work streams and consultations to understand the level of risk and identify suitable mitigations are ongoing in parallel with ZAP and CERI is consulting with the Defence Infrastructure Organisation (DIO), NERL, Isle of Man Airport and helicopter stakeholders to identify the potential level of impact, if any, on their respective infrastructure and operations.

It is anticipated that any mitigation measures required will be implemented at the project, rather than the zonal level, and CERI will therefore seek to mitigate this issue on a project specific basis.

Section 21.6 provides an overview of the 'next steps' for aviation and radar.

21.3.10 Socio-economics

Limitations on the amount of information available at the ZAP level on project detail, cable routes and supply chain mean that the baseline has been carried out at a strategic level. The baseline describes the population demographics, employment and unemployment levels, income and skills of the region, which is broken down by five regions or nations (North West England, Wales, Isle of Man, Northern

Ireland and Republic of Ireland). Further refinement of the regions that will be affected is not possible at the ZAP stage.

The potential employment impacts were explored by comparing industry assumptions of employment. Shipping and commercial fishing impacts were described and generally relate to the potential diversion, displacement of safety related costs, as more details become available at the project level these impacts will be assessed further. A discussion of tourism, recreation and visual amenity impacts were assessed qualitatively and can be assessed further once more project information is available (in particular more details of the onshore works).

Assigning significance to the socio-economic findings at a ZAP level has been constrained by the nature of a high level assessment. Key conclusions from Chapter 20 include:

- Based on the assumptions presented in Chapter 20 an average offshore wind farm could create between 6 and 18 jobs per MW during construction and manufacturing and between 0.33 and 0.5 jobs per MW during operation. The location of these jobs is not known at present and will be considered as part of future EIA studies;
- There is no evidence to suggest a link between offshore wind farms and changes to tourism patterns. Further consideration will be made at project level; and
- Further assessment relating to shipping and commercial fishing will be required.

Section 21.6 provides an overview of the 'next steps' for socio-economics.

21.3.11 Conclusions of constraints analysis and assessment

Following the constraints analysis and subsequent impact assessment the significance of the consultation responses and impact statements was considered in view of potentially revising the Potential Development Area boundaries. The most significant constraints identified as a result of consultation and subsequent impact assessments are shown in Figure 21.2.

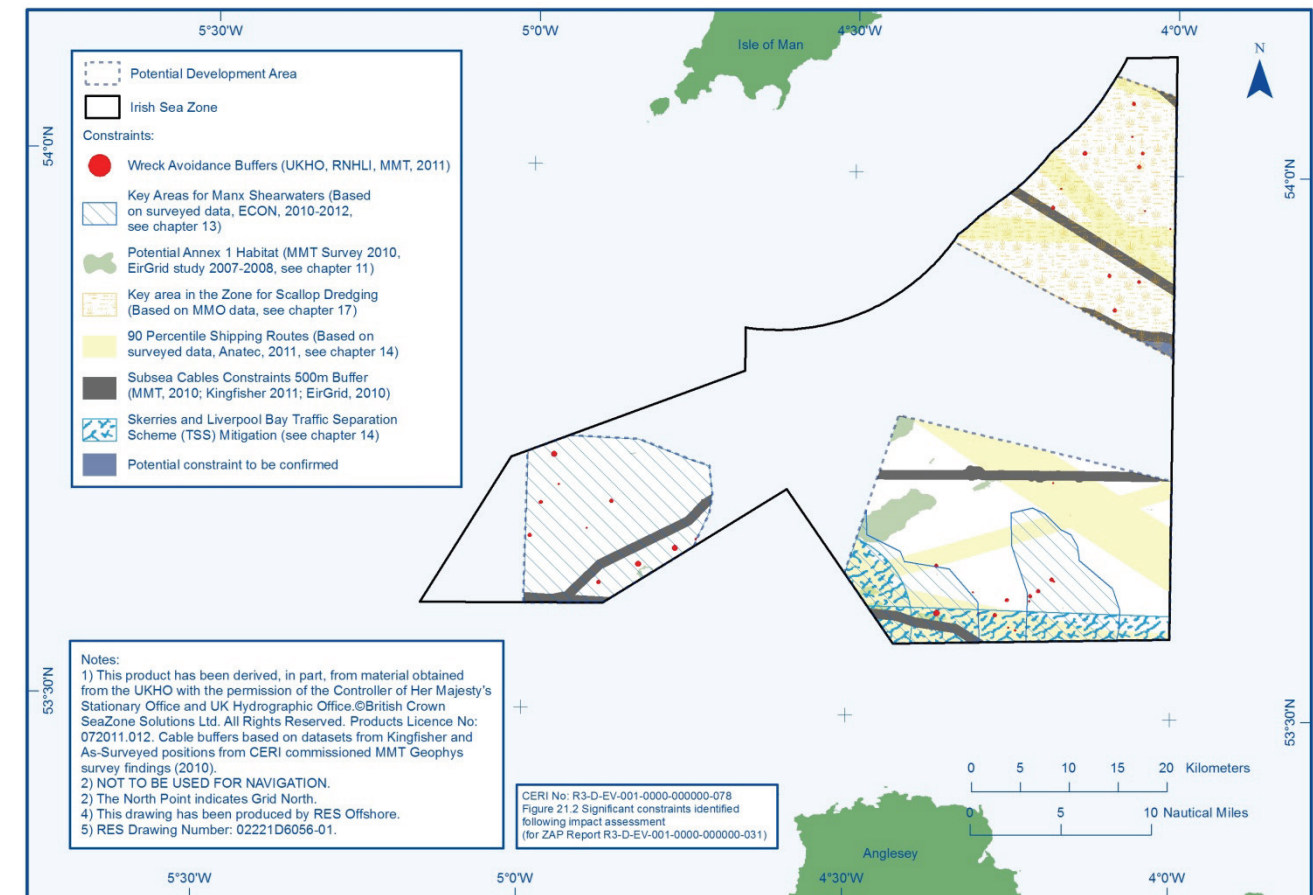
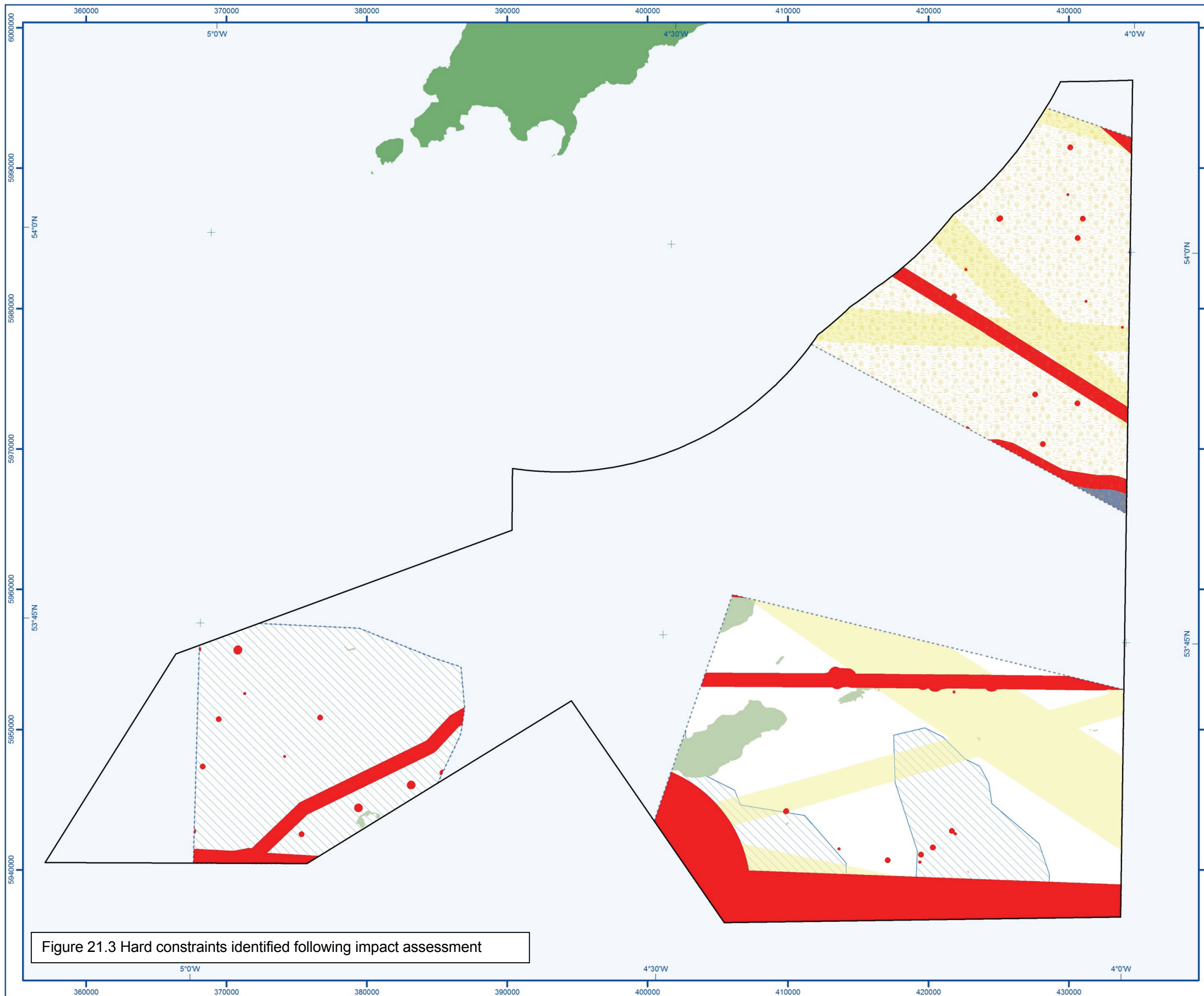


Figure 21.2 Significant constraints identified following impact assessment

The constraints shown on the figure are as follows:

- Provision of a 5nm buffer from the entry/exit locations of the TSS;
- Provision of a 1nm buffer along the vessel route between the two TSS';
- Provision of a 500 metre buffer either side of telecommunication and power cables;
- Provision of exclusion buffers from known wrecks;
- Main commercial shipping routes;
- Annex I stony and biological reef;
- Areas supporting high concentrations of Manx shearwater;
- Key collision risk areas for gulls; and
- Key scallop fishing areas.

Of the constraints listed above, 'hard constraints' which are very likely to affect the boundaries or wind farms and location of turbines within a wind farm, were identified as those relating to safety of navigation concerns or existing 'fixed' obstructions. For this reason the provision of the TSS buffers and the exclusion of cable and wreck buffer areas were deemed to be hard constraints as shown in Figure 21.3.



Potential Development Area

Irish Sea Zone

Hard Constraints:

- Wreck Avoidance Buffers (UKHO, RNHLI, MMT, 2011)
- Skerries and Liverpool Bay Traffic Separation Scheme (TSS) Mitigation and Subsea Cables Constraints 500m Buffer

Other Constraints:

- Key Areas for Manx Shearwaters (Based on surveyed data, ECON, 2010-2012, see chapter 13)
- Key area in the Zone for Scallop Dredging (Based on MMO data, see chapter 17)
- 90 Percentile Shipping Routes (Based on surveyed data, Anatec, 2011, see chapter 14)
- Potential Annex 1 Habitat (MMT Survey 2010, EirGrid study 2007-2008, see chapter 11)
- Potential constraint to be confirmed

Note: Where a hard constraint is present overlapping other constraints, other constraints are not depicted.



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ROUND 3: IRISH SEA ZONE

ZONAL APPRAISAL AND PLANNING (ZAP)

Hard constraints identified following impact assessment (A3)

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Figure 21.3 Hard constraints identified following impact assessment

The influence of the remaining constraints listed above may change spatially with time, and therefore, are highlighted now as potentially significant constraints that warrant further consideration.

Furthermore, it was considered that the influence of the other constraints should be assessed at the project EIA level and through ongoing consultation with key stakeholders and users of the ISZ. These constraints have potentially 'negotiable' areas or factors which will have an overall carrying capacity e.g. although a wide area could potentially support turbines, when a certain number of turbines are reached there may be a detrimental environmental effect to a particular parameter (e.g. birds or marine mammals). The influence of main commercial shipping routes should also be tested through EIA as routes can sometimes change (e.g. the recent closure of some Heysham routes in 2011).

It was therefore concluded from the results of the impact assessment that hard constraints should be avoided from the outset and that the influence of the other constraints should not necessarily limit the Potential Development Areas at this stage.

21.4 Key objective 3: identification of likely areas for individual projects

This objective is concerned with the identification of likely areas for individual projects within the Potential Development Areas shown in Figure 21.1. It is within these areas that projects will be located and assessed as part of the statutory planning phase.

The results of the ZAP assessment have identified a number of issues that will clearly need to be addressed through ongoing consultation, additional studies and assessment. Therefore it is uncertain where exactly individual projects may be situated until much of this work has been completed.

However, to illustrate how CERi will approach the identification of project areas the results of the constraints analysis has been applied to the South East Potential Development Area. Hard constraints identified as a result of the ZAP assessment were removed to produce the revised boundary shown in Figure 21.4.

In terms of the other constraints identified in Figure 21.2, at this stage, CERi does not consider it necessary to further reduce the Potential Development Areas in size. However, it is recognised that further consultation and engagement with key stakeholders will be necessary to inform proposed mitigation once the location and size of wind farms within the Potential Development Areas is known at the EIA stage. Given the zonal nature of the assessment, cumulative and in-combination impacts have been identified and will be considered for each project as they are brought forward as part of the formal planning stage.

The area shown in Figure 21.4 represents the *maximum* area within which projects could be located within the South East Potential Development Area. *Actual* project boundaries that will be subject to EIA will be dependent on a number of factors including:

- Layout design and energy yield / wake loss assessments;
- Foundation concept design study;
- Electrical system infrastructure options study;
- Geotechnical investigations; and
- Ongoing consultation with key users of the ISZ (e.g. fisherman and shipping operators).

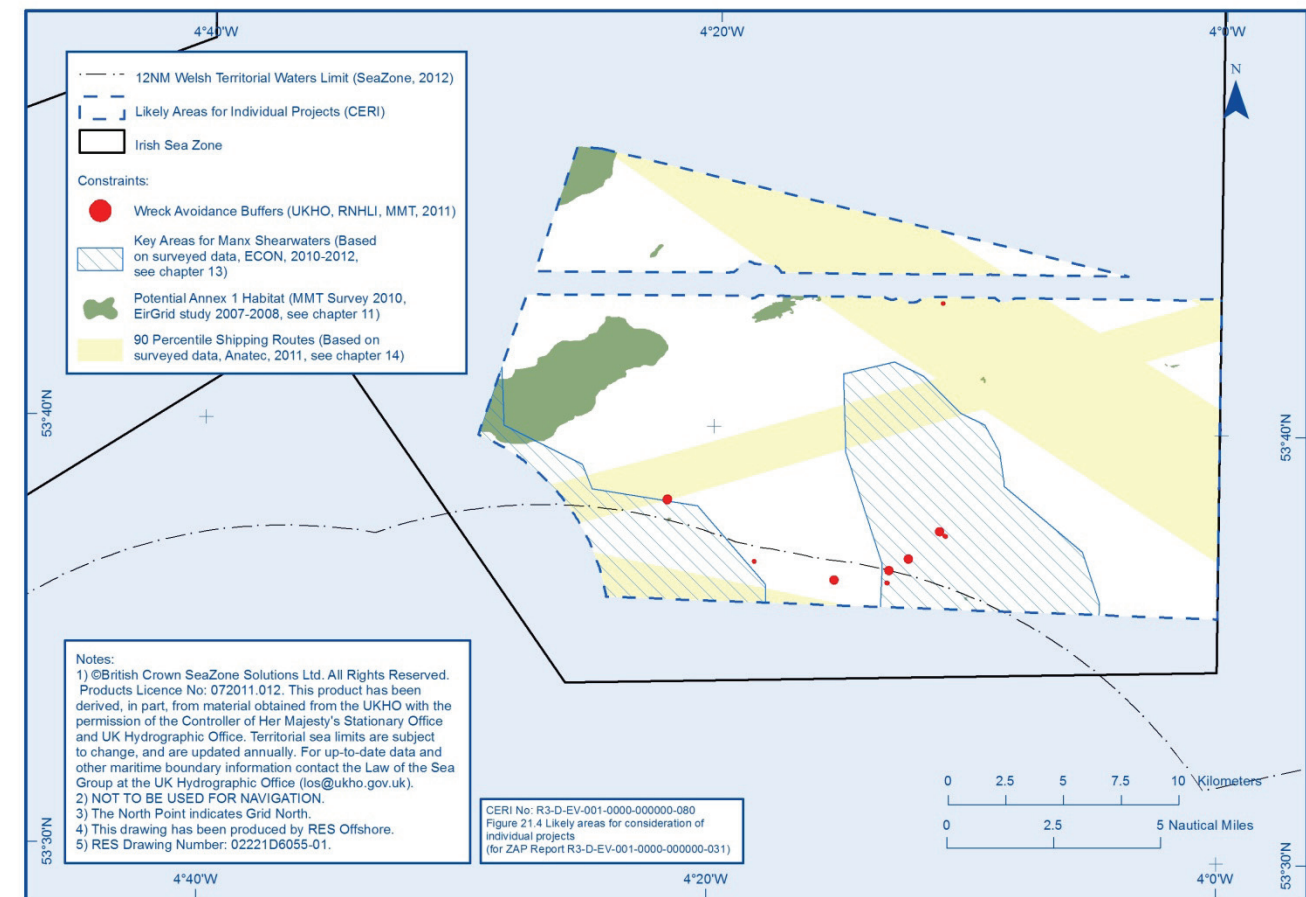


Figure 21.4 Revised boundary of South East Potential Development Area

Ultimately, the location of an individual wind farm is the result of a progressive 'narrowing down' of alternative options for wind farm locations throughout this process. This in part will be driven by the data and conclusions drawn from ZAP and any new data that will be collected as part of project level EIAs.

The selection of project boundaries should therefore be viewed as the culmination of a broader site selection process.

Section 21.6 (Next steps) provides an overview on how the issues identified as part of ZAP will be addressed going forward into the statutory EIA phase.

21.5 Key objective 4: the early identification of issues for consideration under the relevant habitats regulations

21.5.1 Introduction

This section presents an overview of the likely HRA issues identified as part of ZAP that will form the focus of future ongoing studies.

The Habitats Regulation Assessment (HRA) is the stepwise process that helps determine likely significant effect (LSE) and where appropriate, assess the negative impacts on the integrity of European sites (IPC 2011). In order to assess the likely requirements for HRA, it is necessary to establish if bird or marine mammal species encountered in the zone are likely to originate from Special

Protection Areas (SPAs) or Special Areas of Conservation (SACs) respectively. This section presents an overview of the likely HRA issues identified as part of ZAP

21.5.2 Marine mammals

The data provided in Chapter 12 suggests that screening for a Habitats Regulation Assessment (HRA) may be required in respect of grey seals associated with a number of SACs, most notably from the Lley Peninsula and the Sarnau SAC. Individuals from this site are likely to be found within the ISZ. The modelling carried out for this assessment suggest that these individuals may be affected by piling noise although the number of individuals affected and the biological significance of such impacts cannot be assessed at this time. Further study may be required in this respect and HRA scoping will assist with this process.

It is not anticipated that HRA will be required in respect of the Harbour Porpoise. Although individuals that frequent the locality of SACs in Cardigan Bay and Pembrokeshire may visit the ISZ the species is categorised by the JNCC in respect of those SACs as "non-qualifying features (non-significant presence)". Potential impacts on the porpoise population of the wider Irish Sea area will be considered as part of the EIA process, following consultation with CCW and JNCC.

21.5.3 Ornithology

The data and assessment results provided in Chapter 13 suggest that a key species for which a HRA may be required are Manx Shearwater associated with a number of SPAs most notably from the Skokholm and Skomer SPA. Whilst the impact assessment does not predict a significant impact at a national scale or for the combination of breeding colonies that are in range of the ISZ, the analysis to date does not discount the possibility of impacts upon particular colonies and it is expected that this will be rigorously explored at the EIA level for individual projects.

21.6 Next steps

The conclusions and issues identified as part of ZAP will be carried forward into future project level EIAs. As ZAP has focussed on the development of all three Potential Development Areas, the potential cumulative and in-combination impacts between these areas are better understood and will form a useful basis going forward for zone-wide issues such as shipping and navigation. In addition, the complete lifecycle of offshore wind farm development from construction, operation and maintenance to decommissioning will be assessed under each EIA.

Based on an initial desktop assessment the target capacity of the ISZ was estimated by CERI to be 4.2GW. Following the ZAP process this estimate is still considered to be achievable.

Stakeholder consultation will continue into the statutory EIA phase and there will be further opportunity to provide input into this process. However, If you have any comments relating to the ZAP document, please address these to ceri@centrica.com no later than 30th April 2012. As the ZAP process is non-statutory, CERI may not respond to all correspondence, however, rest assured that all comments will be considered by CERI going forward into the statutory EIA phase.

Table 21.1 provides an overview of the next steps for each assessment issue.

Table 21.1 Next steps

Physical processes
<p>The regional scale, zonal assessment has focussed solely on the combined operational effects of the Potential Development Areas. Consequently, it will be necessary for each project scale EIA to consider a number of site-specific and construction related impacts, including, for example, local scale effects of wind farm development on tidal currents and waves and the potential effects of wind farm construction on suspended sediment concentration and transport within the ISZ.</p> <p>Consultation with MMO, CCW, Cefas and other key stakeholders will continue into the project level EIA to establish the scope of further studies and assessment.</p>
Marine ecology
<p>For any proposed offshore wind farm developments more detailed description of seabed communities in the relevant development areas and export cable routes will be required, and this will be especially important with respect to <i>Modiolus</i> and Annex 1 rocky reef, although the potential for <i>Sabellaria</i> reefs will also need to be considered</p> <p>It is anticipated that any requirements for further studies will build on the existing and extensive data set collected to characterise the fish and seabed communities of the ISZ. These studies will therefore focus on specific issues, such as the extent and quality of geogenic (rocky) and biogenic (living) reefs and risk to spawning fish through targeted sampling techniques developed in consultation with key stakeholders.</p>
Marine mammals
<p>Engagement with industry and stakeholder led processes to improve the understanding of the impacts of piling noise on marine mammals is required in order to address a number of areas of uncertainty identified in this report.</p> <p>Noise impacts on marine mammals may be significantly reduced by mitigation methods currently being trialled in Europe and elsewhere and stakeholders are likely to require information on engineering mitigation to be included in project Environmental Statements and as part of any European Protected Species licence.</p> <p>This will be best achieved through supporting the industry-led Underwater Noise Forum. However, it is likely that there will be a requirement for further modelling and assessment building on the modelling undertaken in this report and applying more detailed project-specific information in consultation with our stakeholders.</p>
Ornithology
<p>Manx Shearwater will continue to provide an ornithological focus to the project level EIAs in addition to a number of other key species. It will be important to learn from experience as development occurs. A number of potential studies requiring discussion with key stakeholders are identified that include individual based tracking of Manx Shearwater from key colonies to demonstrate the relative importance of the ISZ and its development areas in relation to the wider Irish Sea. In addition to this, it will be necessary to continue to collect data over the wide area of the zone to better assess patterns and scale of any displacement.</p> <p>Finally, it will be necessary to better understand the cumulative risk to species such as Manx Shearwater as has been highlighted in this document. Strategies to answer these questions will need</p>

to be developed in consultation with key stakeholders and in partnership with the industry through groups such as the Strategic Ornithological Support Service.

Shipping and navigation

Further assessment will be made at a project level in line with a formal Navigational Risk Assessment (NRA).

Collision risk modelling will be performed at the project level as part of an NRA once details are known for turbine layouts and the locations of ancillary structures are known. This will include consideration of vessels not under control (e.g. loss of power).

The snagging of anchors and fishing gear on cables and structures will be formally assessed once more information is known on cable locations and more is known on turbine layouts.

Other factors, including adverse weather routing, emergency response planning and effects on communications and navigational equipment will be formally assessed at the project level.

Consultation with shipping operators and port authorities as well as the statutory authorities will continue into the project EIA phase. During the compilation of the ZAP, feedback from stakeholders has indicated that further workshops and meetings with regular ferry and freight operators in the Irish Sea would be helpful to ensure the concerns and views of operators are understood.

Cultural heritage and archaeology

Although cultural heritage and archaeology was scoped out of the zonal assessment, its consideration will be a requirement at the project level EIAs where several mitigation strategies are a standard practice.

As a result of the work undertaken to characterise the archaeology and cultural heritage of the ISZ, a number of activities will be necessary at the project level EIAs including further analysis of geophysical and geotechnical data within smaller project areas to ascertain the full extent of archaeological features.

Consultation with English Heritage, Cadw and The Royal Commission on Ancient and Historical Monuments in Wales (RCAHMW) will continue into the statutory EIA phase to agree on issues and scope of future studies.

Landscape and seascape

The strategic level ZAP SLVIA provides a sound basis for further project development. Having identified the most vulnerable seascape, landscape and visual receptors the more detailed EIA stage will explore and consider potential opportunities for mitigation where there is a concern that the significance of effects might be unacceptable. This approach, which will be undertaken in consultation with key stakeholders, will entail a consideration of appropriate and meaningful opportunities where improvements can be made without threatening the viability of project development.

Commercial fisheries

The ZAP assessment identified a number of stakeholders which may be impacted by the Potential Development Areas including local and nomadic dredge vessels targeting king scallops, dredge vessels targeting queen scallops and mid water trawlers targeting herring. Further consultation with these groups, the Fishing Industry Representatives and Working Group established through this process.

In particular, it will be necessary to discuss the project-level details and identify the potential impacts associated with each stage of a wind farms lifecycle. As part of the EIA process, realistic and feasible mitigation options will be sought and discussed with stakeholders where applicable.

It is recognised that fishing patterns can change over time and therefore there will be an ongoing acquisition of data and monitoring of future fisheries legislation.

Aviation and radar

The influence of the Potential Development Areas on aviation and radar has not been assessed as part of ZAP process, but there has been an on-going and productive dialogue with key stakeholders. CERI has been engaging with the Defence Infrastructure Organisation (DIO), NERL, Isle of Man Airport and helicopter stakeholders, in particular, to identify the level of impact, if any, on their respective infrastructure/operations. However, many of the further studies required will be addressed at the project level.

Socio-economics

Data collection at a project level will build on what has been performed for ZAP. Further consultation with relevant authorities and local communities will be done to understand potential negative and positive impacts. The location of cable routes to shore and onshore infrastructure will be examined in more detail at project level and the full life cycle of a project will be given more consideration. Assessment will be made of the potential to impact economic activities such as shipping, fishing, tourism and recreation. Consideration of mitigation such as Coastal Communities Fund, administered by the Big Lottery Fund will be included. The impact on community cohesion, wellbeing and the local economy will be considered, as well as in combination and cumulative effects.

Other users

The 'next steps' relating to the majority of users and stakeholders of the ISZ are discussed above. The remaining users are the Ministry of Defence, cable and pipeline stakeholders, oil and gas companies and other renewable energy developers. The consultation that has been undertaken to date with these users was described in Chapter 19. This consultation will continue into the project level EIAs to ensure that other user's interests are fully considered.

Wind regime

To provide site-specific information on the wind regime of the ISZ, CERI plans to erect a meteorological tower in the south east of the ISZ. Subject to permission, construction of this tower will be undertaken in spring 2013.

Onshore activities

Onshore activities relating to the development of wind farms within the ISZ will be undertaken at the project level and have not been considered as part of ZAP.

CERI is in discussion with National Grid about potential connection points so that electricity from any offshore wind farms can be brought ashore. There are currently no plans for power connection or onshore infrastructure development, to accommodate the ISZ on the Isle of Man. CERI has accepted an initial grid offer for up to 1GW of offshore wind farm generating capacity. It is anticipated that this connection will be in Anglesey.

21.7 References

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www.centrica.com/renewables

Alternatively, you can contact: Round 3 Development Manager,
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