



# Inch Cape Onshore Transmission Works

New Energy for Scotland

Summary of the Onshore  
and Offshore Environmental  
Impact Assessment

2018

**SDIC**   
**Red Rock Power Limited**

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## Glossary

Application Site	The area within the red line Planning Boundary comprising the Onshore Transmission Works (OnTW), as defined.
Consented Offshore Transmission Works (OfTW)	Offshore substation platforms and their foundations and substructures, interconnector cables and offshore export cables, as consented by the Scottish Ministers on 10 October 2014.
Consented Offshore Wind Farm	Wind turbine generators and their foundations and substructures, and inter-array cables, as consented by the Scottish Ministers on 10 October 2014.
Construction Compound	An indicative area within the Application Site used to accommodate the temporary work site including; construction parking, construction welfare facilities, construction meeting room, construction laydown and storage area, construction security facilities (fenced area/gate and security access) and construction security lighting.
Development Area	The area which includes proposed Wind Turbine Generators (WTGs), inter-array cables, Offshore Substation Platforms (OSP's), the initial part of the Offshore Export Cable and any other associated works. This area is the same for the Consented Offshore Wind Farm (as defined) and the Revised Offshore Wind Farm (as defined).
EIA Report	Report presenting the findings of the Environmental Impact Assessment (EIA).
ICOL's Offshore Transmission Works (OfTW)	Offshore substation platforms (OSPs) and their foundations and substructures, interconnector cables and Offshore Export Cables. This refers to either the Consented OfTW or Revised OfTW, as defined.
ICOL's Offshore Wind Farm	This includes proposed wind turbine generators, foundations and substructures and inter-array cables. This refers to either the Consented Offshore Wind Farm or Revised Offshore Wind Farm, as defined.
Judicial Review	Court proceeding in which a judge reviews the lawfulness of a decision or action made by a public body.
Landfall	Point where up to two Offshore Export Cables from ICOL's Offshore Wind Farm will be brought ashore.
Offshore Export Cable	The subsea, buried or protected electricity cables running from ICOL's Offshore Wind Farm offshore substation to the Landfall.
Onshore Export Cables	Electricity cables from the Onshore Substation to the grid connection point.
Onshore Export Cable Corridor	The area within the Application Site where the proposed Onshore Export Cables will be laid.
Onshore Substation	The electrical substation comprising of all the equipment and associate infrastructure required to enable connection to the electrical transmission grid.
Onshore Substation Site/Substation Site	The indicative area within the Application Site where the Onshore Substation and screening will be located.
Onshore Transmission Works (OnTW)	All proposed works within the Application Site, typically including the Onshore Substation, cables transition pits, cable jointing pits, underground electricity transmission cables connecting to the Onshore Substation and further underground cables required to facilitate connection to the national grid. This includes all permanent and temporary works required. See <i>Chapter 5: Description of Development</i> for full details.

Original Application Site	The red line planning boundary in which the Original OnTW was to be located in accordance with planning permission in principle with East Lothian Council (ELC) reference 14/00456/PPM.
Original Onshore Substation	The electrical substation comprising of all the equipment and associate infrastructure required to enable connection to the electrical transmission grid as was granted planning permission in principle in September 2014, under ELC reference 14/00456/PPM.
Original OnTW	The OnTW, as was granted planning permission in principle in September 2014, under ELC reference 14/00456/PPM.
Original OnTW EIA	The Environmental Impact Assessment (EIA) that was prepared to support the planning application for the Original OnTW and reported in the Original OnTW ES, as defined.
Original OnTW ES	The Environmental Statement (ES) that was submitted to support the application for the Original OnTW in 2014.
Planning Boundary	The red line application boundary containing the Onshore Transmission Works (OnTW), as defined.
Revised Offshore Transmission Works (OfTW)	Offshore substation platforms and their foundations and substructures, interconnector cables and Offshore Export Cables, as per the scoping report submitted to Marine Scotland Licensing Operations Team on behalf of the Scottish Ministers in April 2017.
Revised Offshore Wind Farm	Wind turbine generators and their foundations and substructures, and inter-array cables, as per the scoping report submitted to Marine Scotland Licensing Operations Team on behalf of the Scottish Ministers in April 2017.
Scoping Opinion	The Scoping Opinion adopted by ELC as to the scope and information to be provided in support of an application for the OnTW, as defined.
Scoping Report	Report prepared as the first stage of the EIA process in support of a request for a Scoping Opinion from ELC, under Regulation 17 of the EIA Regulations. The Report was submitted in July 2017.



## Abbreviations and Acronyms

<b>EIA</b>	Environmental Impact Assessment
<b>EIA Report</b>	Environmental Impact Assessment Report
<b>ELC</b>	East Lothian Council
<b>ES</b>	Environmental Statement
<b>ICOL</b>	Inch Cape Offshore Limited
<b>MLWS</b>	Mean Low Water Springs
<b>NETS</b>	National Electricity Transmission System
<b>OfGEM</b>	Office of Gas and Electricity Markets
<b>OfTW</b>	Offshore Transmission Works
<b>OnTW</b>	Onshore Transmission Works
<b>PAC</b>	Pre-Application Consultation
<b>PAN</b>	Proposal of Application Notice
<b>PPP</b>	Planning Permission in Principle
<b>RRPL</b>	Red Rock Power Limited
<b>RSPB</b>	Royal Society for Protection of Birds
<b>SSE</b>	Scottish and Southern Energy Plc.
<b>WTG</b>	Wind Turbine Generator

# Summary of the Onshore and Offshore Environmental Impact Assessment

## 1.1 Introduction

- 1 This document has been prepared to provide a summary of effects for the Environmental Impact Assessment (EIA) carried out for Onshore Transmission Works (OnTW) and a summary of effects for the Consented Offshore Wind Farm and Offshore Transmission Works (OfTW) that was submitted to Marine Scotland Licensing and Operations Team (MS-LOT) in 2013 and consented in 2014.
- 2 This summary has been written to provide an overview of the likely impacts for all the elements of the ICOL project as a whole. It draws upon the assessment outcomes from the OnTW EIA Report, which this document supports, and upon the assessment of effects completed for the Consented Offshore Wind Farm and OfTW as presented in the Inch Cape Offshore Limited: Offshore Environmental Statement (ES) (ICOL, 2013)<sup>1</sup>.
- 3 A summary of the 2013 impacts has been provided for each topic assessed, and for each, professional experts in each field have provided commentary on the continuing validity of the assessment and outcomes for the purposes of providing East Lothian Council (ELC) an overview of the likely significant environmental effects.
- 4 This document has been prepared in response to the Scoping Opinion received from ELC on 5 September 2017 (included as *Appendix 3A* of the EIA Report).

### 1.1.1 OnTW Application

- 5 ICOL is applying to ELC for Planning Permission in Principle (PPP) under the Town and Country Planning (Scotland) Act 1997 (as amended) for an Onshore Substation, electricity cables and associated infrastructure, collectively known as the Onshore Transmission Works (OnTW), which are required to connect ICOL's Offshore Wind Farm to the National Electricity Transmission System (NETS). This document provides a summary of the effects associated with the OnTW, full details of the assessment and predicted impacts can be found in the EIA Report.

### 1.1.2 Offshore Consents

- 6 In 2014 ICOL gained offshore consents (Section 36 and Marine Licence) for the construction and operation of the Consented Offshore Wind Farm and OfTW, situated in the Outer Firth of Tay off the east coast of Scotland.
- 7 The determination of the offshore consents by the Scottish Ministers followed almost five years of project development, including environmental surveys, engineering design studies and wide-ranging stakeholder engagement.
- 8 In line with the applicable EIA regulations and legislation, ICOL submitted a complete and competent ES. The outcomes of this EIA, presented in the Offshore ES were accepted as the basis for the determination of the offshore consents by the Scottish Ministers. Subsequently

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<sup>1</sup> <http://www.inchcapewind.com/publications/environmental-statement/introduction>

the consents were subject to legal challenge and in November 2017 the Supreme Court rejected the appeal by the RSPB to hear the challenge and thus the original consent decision remains valid.

### **1.1.3 Revised Offshore Application**

- 9 In April 2017 ICOL submitted a Scoping Report (and received a Scoping Opinion) for a Revised Offshore Wind Farm and OfTW, the design of which falls outwith the design envelope for which consent is currently in place. ICOL may submit new applications for these elements of the project.
- 10 The location of the Revised Offshore Wind Farm and OfTW is the same as for the Consented Offshore Wind Farm and OfTW with the only modification to the Offshore Export Cable Corridor being the removal of the landfall at Seton Sands.
- 11 These applications are being developed to, potentially, take advantage of advancements in offshore wind technology to achieve ICOL's twin objectives of improving project efficiency while reducing associated environmental effects. The EIA Report for the Revised Offshore Wind Farm and OfTW, would also assess the OnTW, as assessed for this application, cumulatively and in-combination in accordance with requirements and best practice, ELC will be a consultee to any revised offshore application submitted. Any changes to the cumulative or in-combination impacts with the OnTW resulting from the design changes in the Revised Offshore Wind Farm and OfTW, from the 2014 consents, would be considered as part of that submission.
- 12 The Scoping Report and Scoping Opinion for the Revised Offshore Wind Farm and OfTW can be read here: <http://www.gov.scot/Topics/marine/Licensing/marine/scoping/ICOLRevised-2017>
- 13 The EIA Report, when submitted, will be available from MS LOT's website and will also be submitted to ELC as a consultee.
- 14 In the collation of this document, professionals in each field have utilised the information gathered to inform the Revised Offshore EIA to provide input in their summary for the offshore impact assessments.

## **1.2 Summary of Developments**

### **1.2.1 Onshore Elements**

- 15 The OnTW comprises of the following primary elements full details of which can be found in *Chapter 5: Description of Development*, in the Onshore EIA Report:
- Landfall where two Offshore Export Cables from the ICOL's Offshore Wind Farm will be brought ashore and will run underground to the Cable Transition Pits;
  - Cable Transition Pits where two Offshore Export Cables interface with two sets of Onshore Export Cables;

- Onshore Export Cables, laid in two trenches running between the Onshore Substation to the grid connection point;
  - If the Onshore Export Cables are installed in sections, jointing pits will be required to join the sections together;
  - Onshore Substation which is required to process the electricity from ICOL's Offshore Wind Farm and to comply with the requirements of the NETS;
  - Onshore Substation screening measures including walls and earth mounding parts of which will be planted with a mix of mainly native tree and shrub species;
  - Security fencing will be erected around the perimeter of the Onshore Substation;
  - Onshore Export Cables from the Onshore Substation to the grid connection point, laid in trenches and/or ducts for running the underground Onshore Export Cables between the Onshore Substation and the grid connection point;
  - Construction compound to accommodate a temporary work site;
  - Application Site Access will be via an existing access from the B1348; and
  - Remedial/enabling work will be required prior to any project works commencing which will include the raising of the Onshore Substation construction elevation above the ground water table to overcome risk of flooding.
- 16 The OnTW will also comprise of other elements including mitigation measures. This includes all embedded mitigation and specific mitigation assumed to be in place during the relevant phases of construction, operation and decommissioning of the OnTW. Embedded mitigation is that which has been recognised as having benefits in reducing impact significance, and is generally regarded as industry standard or best practice. Specific mitigation is included in each technical chapter of the Onshore EIA Report.

### 1.2.2 Offshore Elements

- 17 The assessment for the Consented Offshore Wind Farm and OfTW comprised of the following design parameters:
- Up to 213 WTGs, in a 'grid' or 'offset grid' configuration and up to 215 m to tip;
  - Foundations and substructures for the WTGs;
  - OSPs (up to 6 platforms); Inter-array cables (353 km connecting all the WTGs to the OSPs);
  - Export Cables (up to 6 individual cables. 83.3 km in length to the landfall); and
  - Operations and maintenance for all elements.
- 18 It should be noted that the consents granted by the Scottish Ministers was for 110 WTG's up to 215 m to tip height, all other infrastructure was consented as per the application.

For further information on the offshore elements please refer to Chapter 7 of the 2013  
 Offshore Environmental Statement

([http://www.inchcapewind.com/files/Environmental\\_Statement\\_Structure/Chapter7/Chapter7.pdf](http://www.inchcapewind.com/files/Environmental_Statement_Structure/Chapter7/Chapter7.pdf))

### **1.3 Summary of the Impact Assessment**

#### **1.3.1 Onshore**

##### **Ecology**

19 Based on the findings of the desk study and field surveys the potential impacts resulting from construction, operation and decommissioning of the OnTW are considered to include, disturbance and contamination of habitats (particularly coast habitats associated with the Firth of Forth Special Protection Area (SPA), Ramsar Site and Site of Special Scientific Interest (SSSI) and Outer Firth of Forth and St. Andrews Bay Complex Proposed Special Protection Area (pSPA)) and disturbance of intertidal and near-shore waterbirds.

20 The assessment of impacts considers embedded mitigation designed to avoid or minimise these potential impacts. These include:

- A Construction Environmental Management Plan (CEMP) setting out procedures to ensure all activities with potential to affect the environment are appropriately managed;
- A pre-construction protected species survey will be undertaken to re-establish baseline conditions in respect to protected species;
- Best Practise Measures in relation to locally occurring terrestrial mammals will be undertaken; and
- Best Practise Measures in relation to breeding birds will be undertaken.

21 Consequently, during the construction phase the effects of these potential impacts are expected to be of no more than Minor significance. During the operational phase, impacts are expected to be limited, occasional and temporary, the effects of which are predicted to be no more than Minor. During the decommissioning phases effects are expected to be equivalent to, and potentially lower than, those predicted for the construction phase.

##### **Hydrology, Geology and Hydrogeology**

22 Potential impacts considered in the hydrology, geology and hydrogeology assessment included changes to runoff and flooding, groundwater infiltration, changes to the hydrogeological regime, water quality impacts due to construction materials/machinery, disturbance of mine shafts/shallow mineral workings, and disturbance of potentially contaminated soils.

23 Embedded Mitigation to remove or minimise these potential impacts includes the implementation of a Construction Environmental Monitoring Plan (CEMP), site investigation to inform the detailed site design and use of construction drainage systems, and a Sustainable Drainage System (SuDS).

24 As a consequence of the site design and embedded mitigation no significant impacts during construction or operation of the OnTW have been identified.

### **Landscape and Visual**

- 25 During the operation of the OnTW, the Onshore Export Cables will be underground, as such there will be no impact on landscape or visual amenity resulting from the OnTW.
- 26 Implementation of the mitigation at the commencement of the construction phase will minimise effects on landscape character and visual amenity during the operation of the OnTW. Significant effects will be limited to the immediate vicinity occurring within 2 km to the west and south of the Onshore Substation, with significant effects on visual amenity on residents at Whin Park, Cockenzie, users of the John Muir Way, users of Core Paths 145, 146 and 284, users of Preston Links and users of the B1348. These will reduce with maturation of the tree planting proposed as part of the mitigation measures.

### **Cultural Heritage**

- 27 For all but Cockenzie Harbour, no direct or indirect impacts upon cultural heritage assets arising from the OnTW for either Construction, Operation and Maintenance or Decommissioning have been identified.
- 28 With regards to Cockenzie Harbour a Minor adverse effect upon the receptors setting has been identified, and therefore for the purpose of this assessment no significant effects on setting would be induced by the Onshore Substation.

### **Noise and Vibration**

- 29 The noise and vibration assessment has indicated that the potential construction, operational and decommissioning effects associated with the OnTW are considered to be not significant.
- 30 Embedded mitigation, in the form of a landscape mitigation plan (see *Chapter 8: Landscape and Visual*), has been incorporated into the assessment of noise effects. In addition, some components of the Onshore Substation will be enclosed, namely the transformer tanks and shunt reactor tanks, providing noise attenuation in relation to these sources. Existing topography within the Study Area has also been incorporated.
- 31 With respect to construction noise and vibration, the assessment has been based on the guidance of BS5228:2009+A1:2014, and has concluded that noise associated with the construction phase would not exceed adopted daytime and night-time noise limits. With regards to vibration, it is unlikely that the proposed construction methods would give rise to significant vibration impacts and levels are expected to be below the threshold limits within BS5228-2:2009+A1:2014 for vibration impact.
- 32 An assessment of additional vehicles associated with the construction phase of the OnTW has been undertaken based on the results of the transport assessment and with reference to the *Design Manual for Roads and Bridges* (DMRB). The predicted increase in total traffic would be below 25 per cent, resulting in changes to existing noise levels of less than 1 dB.
- 33 The predicted operational noise levels are no more than 5 dB above the measured background noise levels, and within daytime and night-time limits as set by the World Health Organisation.

Potential impacts associated with the decommissioning phase of the Onshore Substation would be similar to, and no worse than, those presented for the overall construction phase.

### **Traffic and Transport**

- 34 The assessment of significant effects resulting from the construction vehicles generated by the OnTW has been undertaken along the access route, consisting of the A1, A198, B6371 and B1348 Edinburgh Road. The assessment identified that receptors that were considered sensitive to changes in traffic flow were only present within the built-up area of Cockenzie on the B6371 East Lorimer Place and the B1348 Edinburgh Road. All other locations were considered to have receptors that were not sensitive to changes in traffic flow. The assessment considered the change in traffic flows along the access route as a result of the construction of the OnTW and the severance, driver delay, pedestrian delay, pedestrian amenity, accidents and safety and hazardous loads effects were all deemed to be Negligible / Minor.

### **Socio-Economics, Tourism, Land-Use and Recreation**

- 35 The Socio-Economic, Tourism, Land Use and Recreation assessment indicates that the greatest impact of the OnTW on employment and economic activity will arise during the construction period when it would support around 40 Full Time Equivalent jobs for a period of approximately 16 to 18 months. Indirectly, the OnTW may also create further employment opportunities down the supply chain for those companies providing services to the contractors during construction. Although this will have a positive effect upon the local employment and the economy, it is not predicted that it will be significant.
- 36 Once constructed, the OnTW would be compatible with other future energy generation and transmission land uses or other users of the site and surrounding area. As such, it is predicted that there would be no potential for significant adverse effects on land use.
- 37 Where public access along the John Muir Way will be temporarily disrupted a suitable diversion that minimises the length of path affected will be put in place by ICOL along with signage at each end of the route where the route is diverted. As such, no significant effects are predicted upon this or any other public access routes as a result of the OnTW.
- 38 The construction phase of the OnTW has the potential to directly disrupt tourists using the Golf Coast Road. However, a local traffic management plan will be put in place to minimise any potential disruption to anyone using this route during construction. As such, no significant effects are predicted to occur. No potential for significant effects upon other tourism resources are identified during construction, operation and decommissioning of the OnTW.

### **Air Quality**

- 39 The air quality assessment indicates that the potential effects associated with the release of dust during construction and vehicular emissions during both construction and operation of the OnTW are considered to be not significant with the adoption of good practice mitigation measures. Typical measures include:

- Provision of adequate water supply for use as dust suppression as necessary;
- Imposition of a speed limit on site;
- Minimisation of double handling of materials;
- Rapid re-vegetation of earthworks and bunds; and
- Cleaning of haul roads and vehicle wheels exiting site to minimise trackout.

### 1.3.2 Offshore

40 The following summarises the impacts from the Consented Offshore Wind Farm and OfTW impact assessment. Commentary is provided on the continuing validity of this assessment, focussing on consideration of anything that could materially change the overall outcome of the assessment (or increase the significance of effects).

#### **Metocean and coastal process**

41 Overall, the metocean and coastal processes assessment identified no significant direct or indirect impacts from the offshore elements on the identified receptors – either in isolation or cumulatively, in the near- or far-fields, or in the short or long term.

42 There will be no interaction between the onshore and offshore elements of the project, therefore, impacts on metocean and coastal processes will not lead to any significant cumulative effects between the onshore and offshore works. These conclusions are considered appropriate for the purposes of this document. Further to this it has been agreed by MS LOT and their advisors that an updated assessment is not required for the Revised Offshore Application.

#### **Benthic Ecology**

43 The assessment on benthic ecology noted that some long term but spatially restricted effects e.g. loss of original habitat. Other effects are of a large scale, such as an increase in Suspended Sediment Concentrations (SSC), but are localised and short term. Of the potential effects that have been assessed as occurring at the Consented Offshore Wind Farm and OfTW, even for the most sensitive habitats, impacts were not considered significant.

44 For the Revised Offshore Wind Farm EIA Report, MS LOT and their advisors have agreed that an updated assessment is not required. Therefore, these conclusions are still considered appropriate and as there would be little interaction between the onshore and offshore elements of the project, impacts on benthic ecology will therefore not lead to any significant cumulative effects between the onshore and offshore works.

#### **Natural Fish and Shellfish**

45 The impact assessment in 2013 concluded that there would be no significant effects on fish and shellfish receptors, either alone or cumulatively with other offshore projects.



- 46 Piling noise during construction activities was considered as a potential impact on hearing specialists such as herring, sprat and cod, and their spawning aggregations. However, site specific herring larvae data demonstrated that spawning activity of herring is concentrated in the northern part of the Buchan spawning grounds (north of the Development Area) and also the southern spawning ground associated with the Banks component (south of the Development Area). Cod and sprat spawning occurs over much of the North Sea and any avoidance of the noise contour areas was not considered to result in exclusion of individuals from the wider available spawning locations.
- 47 Indirect disturbance as a result of increased SSC during construction, was not predicted to significantly impact any of the receptor groups due to the short duration and localised nature of the effect. Deposition of sediment was predicted to most likely impact those species with a close association with the benthos such as sandeel. Habitats within the Development Area and Offshore Export Cable Corridor were assessed during a site specific study and sediment deposition as able to affect areas of habitat defined as “suitable” for sandeel. However, very few sandeel were reported during site specific surveys or from historical data on the area. It was predicted that sediment deposition was unlikely to alter the characteristics of the sediment in terms of particle size and was not predicted to lead to significant changes in the sandeel population in the area as there were much more extensive areas of sub-prime and prime sandeel habitat available in the wider region.
- 48 Direct temporary disturbance of seabed habitats during construction, and long term loss of habitat during operation were considered to be small in the context of similar habitat beyond the Development Area and Offshore Export Cable Corridor. Most receptor groups had wide geographic ranges and broad diets and any changes to the species composition or availability of prey were not predicted to cause any significant effects to fish or shellfish populations in the area. Species with greater site fidelity (e.g. sandeel, shellfish and demersal spawners) were most likely to be affected by habitat disturbance and loss. Any effects during construction however, will be relatively localised and intermittent and the receptors were expected to exhibit high recoverability.
- 49 Effects of EMF associated with inter-array cabling and the Offshore Export Cable during operation was considered to be of Negligible magnitude for electro-sensitive elasmobranchs. Small numbers of these species were captured during the baseline surveys and data on nursery areas indicated low intensity areas of wide ranging species in the vicinity of the Development Area. Additionally, due to the small areas around the cables where avoidance behaviours may be elicited in some individuals, the interaction between sensitive species and EMF was predicted to be limited.
- 50 The receptor group, Special Area of Conservation (SAC) qualifying species, were assigned high sensitivity due to their conservation importance. Whilst uncertainty relating to movements during the marine phase of migratory SAC species was acknowledged, at most Moderate impacts were identified for these species as no barriers to migration would be created through either construction or operation of the project alone or with other projects. Furthermore, impacts relating to habitat loss or disturbance were considered Minor/Moderate in relation to their wider migratory ranges.

- 51 It is not considered that activities relating to operational maintenance or decommissioning would result in any impacts on natural fish and shellfish receptors beyond those of the construction phase.
- 52 In relation to the assessment being undertaken for the Revised Offshore Wind Farm, it was deemed that the conclusions of the above described impact assessment remain valid for all receptors and impacts except for the impacts of underwater noise from piling (which is being reassessed due to an increase in piling requirements associated with the WTGs greater than that was not assessed in 2013) on hearing specialist fish species.
- 53 It is the opinion of the expert professional that the changes noted above do not materially alter the residual effects and conclusions reached in the 2013 ES for the purposes of determining the onshore application. Therefore, on the basis of the existing offshore consent remaining valid and the impacts on Natural fish and Shellfish presented this information can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

#### **Marine Mammals**

- 54 It is predicted that the greatest impact on marine mammals from the Consented Wind Farm and OfTW will occur during the construction phase, due to underwater noise from impact piling. The impacts arising from this activity are considered to be medium term (during piling) and significant effects. Potential impacts to marine mammals from piling include potential Permanent Threshold Shift (PTS); change in the threshold of audibility and behavioural displacement.
- 55 The impact and population modelling undertaken indicates that impacts from piling activity will be Minor in the long term for all marine mammal species modelled. In the medium term (during piling activities), the impact of potential onset of PTS is considered to be up to Moderate for seal species and Minor for cetaceans and minke whale. During the period of piling, potential displacement due to avoidance is predicted to be of Major impact to harbour and grey seals, Moderate impact to bottlenose dolphin and Minor impact to other cetaceans and minke whale. During construction periods when no impact piling is occurring, marine mammals may react to other sources of noise such as cable installation (trenching), rock placement, cable laying, dredging and vessel noise. The impact of increased underwater noise from non-piling construction activities on all marine mammals is considered to be Minor.
- 56 Other potential impacts on marine mammals from construction activities include collision with vessels, barrier effect due to avoidance of vessels, accidental pollution incidents and changes in prey availability. The impacts from these construction activities are all considered to be Minor.
- 57 Potential impacts on marine mammals in the operation and maintenance phase of the Consented Offshore Wind Farm and OfTW include behavioural disturbance as a consequence of operational noise, habitat loss due to the long-term presence of the WTGs and cable protection, disturbance from EMF, toxic contamination, changes in prey availability, accidental

- pollution events and collision with maintenance vessels. These impacts are all considered to be Minor.
- 58 Cumulative impacts of the Consented Offshore Wind Farm and OfTW have been assessed. The key potential cumulative impacts on marine mammals that have been identified are noise from non-piling and piling related activities, collision risk from, and avoidance of, associated vessels and changes in prey availability. Through impact and population modelling, the long-term significance impact of all of these effects has been determined to be Minor.
- 59 There is the potential for impact interactions associated with the construction of the Consented Offshore Wind Farm and OfTW. These potential interactions have been identified as in-direct changes in prey availability, total increased collision risk (vessel movement and ducted propellers) and total increased underwater noise from construction activities such as piling, vessel movements and cable installation activities. However, it is likely that during the construction phase marine mammals will spend an increased proportion of time foraging outwith the Development Area (due to the direct impacts of increased underwater noise and disturbance), and therefore be at reduced collision risk and unaffected by changes in prey availability within the Development Area and Offshore Export Cable Corridor. As a consequence, impact interactions are assessed as of Minor impact.
- 60 Cumulative impacts of the Consented Offshore Wind Farm and OfTW and other marine projects with potentially over-lapping effects were also considered. These projects include other proposed offshore wind farms as well as non-wind farm projects. As for the project assessment, the impacts arising from the noise produced during piling is considered to have the potential to cause significant effects. Impact and population modelling undertaken indicates that cumulative impacts from piling activity will be minor in the long term for all marine mammal species. The impact of increased underwater noise from non-piling construction activities, in-direct effect of habitat loss and change in prey availability and increased collision risk from vessels on all marine mammals is considered to be Minor.
- 61 Whilst the assessment identified potentially significant behavioural responses from marine mammals from piling activities the assessment carried out at the time used a highly conservative approach and model. Since the time of the assessment more sophisticated modelling has been developed and a better understanding of behavioural responses to underwater noise gained.
- 62 In relation to the assessment being undertaken for the Revised Offshore Wind Farm, it was deemed that the conclusions of the above remained valid for all receptors except for the impacts of underwater noise from piling on marine mammals. The impact assessment for the Revised Offshore Wind Farm will be restricted to the Development Area only (where piling activity will occur). The assessment carried out for the Revised Offshore Wind Farm, using contemporary modelling, is resulting in reduced predicted effects on marine mammals from piling activities.
- 63 It is therefore the opinion of the expert professionals that the changes noted above do not materially alter the residual effects and conclusions reached in the 2013 ES for the purposes

of determining the onshore application. Therefore, on the basis of the existing offshore consent remaining valid and the impacts on marine mammals presented above, this information can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

### **Offshore Ornithology**

- 64 The impact assessment carried out in 2013 predicted that during the construction phase the largest impact on birds from the Development Area works will occur through indirect disturbance via prey impacts from impact piling during the breeding season, when there could be Minor/Moderate effects on Arctic tern and common tern and Minor effects on razorbill. The Scoping Opinion for the Revised Offshore Wind farm and OfTW has scoped out these impacts, highlighting that consultees are content with the impacts predicted in this assessment.
- 65 During construction periods, ornithological receptors may react to sources of direct disturbance such as vessel movements. The impacts of increased disturbance from non-piling construction activities on all receptors is considered to be Negligible. These impacts have also been scoped out of the assessment for the Revised Offshore Wind Farm following the advice received in Scoping Opinion.
- 66 It is predicted that during the operational phase the largest impact on birds from the Consented Offshore Wind Farm will occur through displacement, barrier effects and collision risk. Population modelling was undertaken for four species (kittiwake, guillemot, razorbill and puffin) to support the impact assessment. Minor displacement impacts during the breeding season were predicted for kittiwake, guillemot, razorbill and puffin. Impacts from collision were predicted to be Minor for kittiwake and gannet. Effects for all other receptors and all other seasons were considered to be Negligible.
- 67 Potential impacts of decommissioning on ornithological receptors are predicted to be no greater than those concluded for the construction phase.
- 68 The key potential impacts on ornithological receptors associated with the works in the Offshore Export Cable Corridor are predicted to be direct disturbance and indirect impacts through changes in availability of prey species. At most, these impacts are considered to be Negligible. With the exception of where the Offshore Export Cable Corridor passes through the Firth of Forth and St Andrews Bay Complex pSPA, these impacts have also been scoped out of the assessment for the Revised Offshore Wind Farm following the advice received in Scoping Opinion.
- 69 The assessment considered all cumulative impacts of the project (the Consented Offshore Wind Farm and OfTW) during construction, operation and decommissioning. The significance of all of these has been determined as Negligible.
- 70 Cumulative impacts of the project with other projects during the construction phase were considered for all receptors. The key impact was identified to be indirect disturbance via prey

availability. Effects on receptors during the breeding season were determined as Moderate for Arctic tern and common tern, and as Minor for kittiwake and razorbill. Effects for all other receptors and all other seasons were considered to be Negligible. However, as stated above, these impacts have been scoped out of the assessment for the Revised Offshore Wind Farm following the advice received in the Scoping Opinion.

- 71 The cumulative assessment for the project with other projects predicted a Major impact on the regional breeding kittiwake population through collision risk. No other significant impacts were predicted for any Valued Ornithological Receptor (VOR).
- 72 In relation to the assessment being undertaken for the Revised Offshore Wind Farm, it was deemed that the conclusions of the above remained valid (and in some cases would not be required to be assessed - e.g. indirect disturbance via prey impacts from impact piling). The impact assessment for the Revised Offshore Wind Farm will be largely restricted to the Development Area, but also with consideration of potential impacts from the Offshore Export Cable Corridor where it passes through the Firth of Forth and St Andrews Bay Complex pSPA.
- 73 It is the opinion of the expert professional that the changes noted above do not materially alter the residual effects and conclusions reached in the 2013 ES for the purposes of determining the onshore application. Therefore, on the basis of the existing offshore consent remaining valid and the impacts on offshore ornithology presented this information can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

#### **Seascape, Landscape and Visual Impact Assessment**

- 74 The SLVIA carried out in 2013 recognised that commercial wind energy developments are likely to give rise to some significant effects on seascape, landscape or visual amenity. The Development Area will consist of a large number of tall WTGs, occupying an extensive sea area, but located at distances of over 15.4 km from the nearest point on the shore.
- 75 Significant effects on seascape areas are predicted for SA4: Montrose Bay; SA5 Long Craig; SA6 Lunan Bay; SA7 Lang Craig to The Deil's Heid; SA8 Arbroath to Monifieth; and SA12 St Andrews to Fife Ness. These would be the closest seascape character areas to the Development Area.
- 76 There would be, at most, Moderate effects on any of the Landscape Character areas in the SLVIA Study Area.
- 77 Significant effects are predicted on the St Andrews to Fife Ness Local Landscape Areas (LLA), some locations in Cambo Garden and Designed Landscape (GDL) and the Isle of May, one of the Forth Islands LLAs.
- 78 For visual amenity receptors, significant effects are predicted for properties in coastal settlements which have open and unobstructed seaward views in Aberdeenshire including Inverbervie, St Cyrus, Gourdon and Johnshaven; in Angus including, Braehead of Lunan, Auchmithie, Carnoustie and Arbroath; in Fife from, St Andrews, and parts of Crail. Parts of

inland settlements in Fife which are close to the coastline such as Kingsbarns may experience significant effects.

- 79 Significant effects are predicted for road users on sections of the A92, and for recreational users of the Fife Coastal Path and National Cycle Network (NCN) Route 1 mainly between Arbroath, Montrose and Carnoustie and between Inverbervie and Montrose. For passengers on the main rail line between Edinburgh and Aberdeen significant effects are predicted for short sections of the route between Carnoustie and Arbroath. Significant effects are predicted for recreational users of coastal facilities at distances of up to approximately 20 km distance from the Development Area and potentially up to 35 km distance for locations with open sea views towards the Inch Cape WTGs and OSPs.
- 80 The cumulative assessment considered the effects of the Inch Cape WTGs and OSPs, in addition to 33 onshore wind energy developments (including 11 existing or consented projects) and the two other offshore wind energy developments in the Forth and Tay, NnG and FoF Phase 1. The effects have been assessed in respect of seascape and landscape character areas; landscape designations including GDLs, LLAs, and Areas of Great Landscape Value (AGLVs); and visual amenity receptors including residents, recreational users of footpaths and cycle routes and other facilities and road users.
- 81 Significant cumulative effects are predicted for the same receptors as identified above and additionally on the seascape character area of SA11 St Andrews Bay; St Andrews Links LLA; Tentsmuir Coast LLA and St Andrews Links GDL.
- 82 In relation to the assessment for the Revised Offshore Wind Farm, a reassessment has been carried out due to the changes in WTGs height proposed. During this assessment, whilst it has been noted that there have been some changes to the baseline landscape and setting none of these changes would materially alter the conclusions from the 2013 assessment. There have been some changes to the cumulative context, mainly several of the application stage developments identified in the 2013 EIA having been refused or withdrawn and no longer being in the planning system. However, the main residual effects and conclusions reached in the 2013 EIA can be used for the purposes of determining the onshore application in the context of the Consented Offshore Wind Farm. Therefore, on the basis of the existing offshore consent remaining valid, the impacts on the seascape, landscape and visual amenity presented in the 2013 EIA, can be used to inform an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

### **Archaeology and Cultural Heritage**

- 83 The potential for submerged prehistoric landscapes was considered. Based on the evidence, including analysis and interpretation of marine geophysical data, the probability for any such material to exist within the Development Area and Offshore Export Cable Corridor was considered to be Low to Negligible.
- 84 The potential for impacts on known and unknown maritime, aviation and intertidal heritage assets were assessed and considered to be not significant with the implementation of embedded mitigation.

- 85 The potential for impacts upon the setting of selected cultural heritage assets from the WTGs and OSPs was considered in line with Historic Scotland's (now Historic Environment Scotland) setting guidance with specific regard to the cultural heritage sensitivity of the receptors (a separate but related assessment on aesthetic impacts has been made as part of Chapter 16. The WTGs will be visible on the horizon from parts of the coastline during the operational phase of the project.
- 86 Cultural heritage assets were selected in consultation with Historic Scotland and local council archaeology services and consisted of a number of Scheduled Monuments and listed buildings. The identified assets were assessed through site visits, wirelines and visualisations. In all of these cases the impacts to their setting arising is considered not to be significant.
- 87 In relation to the assessment being undertaken for the Revised Offshore Wind Farm, it was deemed that the conclusions from the 2013 assessment remained valid. The Revised Offshore Wind Farm EIA Report will only reassess impacts on the setting of important cultural heritage receptors, as viewed from the Development Area and direct physical impacts to potential (unknown) seabed prehistory within the Offshore Export Cable Corridor. With the implementation of consent conditions, it is the opinion of the expert professional that the main residual effects and conclusions reached in the 2013 EIA can be used for the purposes of determining the onshore application in the context of the Consented Offshore Wind Farm.
- 88 Therefore, on the basis of the existing offshore consent remaining valid and the impacts on archaeology and cultural heritage presented this information can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

### **Commercial Fisheries**

- 89 During construction and operation of the Consented Offshore Wind Farm and OfTW (within the Development Area), fishing activity is expected to be excluded from certain areas, or access restricted during discrete periods. Moderate impacts on the scallop fishery are predicted due to potential loss of fishing ground and displacement of fishing activity during both the construction and operation phases; it is however recognised that a number of skippers of scallop dredge vessels may be reluctant to fish within the operational site due to the safety implications associated with scallop dredge gear and snagging risks and therefore a Moderate/Major significance of loss of fishing area on these vessels.
- 90 The impact of loss of grounds and displacement on the squid and crab and lobster fisheries is assessed as Low/Moderate.
- 91 During construction in the Development Area, a Low/Moderate impact is predicted on the crab and lobster fishery that uses static gear due to interference with fishing activities arising from navigational conflict. The impact on the scallop, squid and *nephrops* fisheries that use mobile gear is assessed as low. For all fisheries the impacts relating to interference with fishing activities during the operation phase of the Consented Offshore Wind Farm and OfTW are reduced to Negligible/Low.

- 92 During the construction phase of the works in the Offshore Export Cable Corridor, Moderate impacts have been identified on the *nephrops* and crab and lobster fisheries as a result of temporary loss or restricted access to traditional fishing grounds and displacement of fishing activity into other areas. The impact on the scallop and squid fisheries is assessed as Low/Moderate. This impact drops to Negligible/Low for the operational period.
- 93 There are potential safety risks to fishing vessels arising during the construction of inter-array and Offshore Export Cables which will be removed by the application of safety/exclusion zones during construction and completion of post construction mitigation such as a protocol for removal of seabed obstacles post construction.
- 94 Increases in steaming times to traditional fishing grounds during the construction and operation of both the Consented Offshore Wind Farm and OfTW have been assessed as Negligible/Low for all fisheries.
- 95 It is predicted that the Consented Offshore Wind Farm and OfTW do not result in an increase in significance of impacts when considered cumulatively for:
- Impacts on the scallop fishery as a result of loss of or restricted access to traditional fishing grounds and displacement of fishing activity;
  - Impacts on the crab and lobster fishery as a result of loss or restricted access to fishing grounds, displacement and interference with fishing activities; and
  - Safety, displacement and interference with fishing vessels.
- 96 This is because there are generally different fisheries targeted in each distinct geographical area considered in isolation, which result in a limited incremental impact when considered cumulatively.
- 97 Although it is recognised that the project will result in an increase in potential effects when considered cumulatively with other offshore developments in the Forth and Tay area, the incremental impact has not been considered as more significant than the project in isolation. This conclusion applies to all fisheries in all phases of the projects.
- 98 The wide operational range of certain scallop dredging vessels (in some instances all around the United Kingdom (UK)) may result in their being affected by additional marine development around the UK. The cumulative effect upon the nomadic scallop fishery is dependent upon the productivity of grounds affected and the scale of effect identified for each project.
- 99 In relation to the assessment being undertaken for the Revised Offshore Wind Farm the baseline and commercial fisheries assessment will be updated to ensure that the latest trends in fishing activity are considered as part of the Revised Offshore Wind Farm. However, it is the opinion of the expert professional that any changes in commercial fishery baseline would not materially alter the residual effects and conclusions reached in the 2013 ES for the purposes of determining the onshore application.



100 Therefore, on the basis of the existing offshore consent remaining valid and the impacts on commercial fisheries presented this information can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

### **Shipping and Navigation**

101 The summary for shipping and navigation draws on the work carried out for the Revised Offshore Wind Farm EIA, to validate the 2013 EIA. For the assessment of effects of the Development Area and Offshore Export Cable Corridor during the operation and maintenance phase, the shipping and navigation impacts considered to potentially lead to a significant effect (and therefore considered necessary to assess within the Revised Offshore Wind Farm EIA Report) were as follows:

- Increased vessel to vessel collision risk for commercial vessels, commercial fishing vessels and recreational vessels within the Development Area;
- Creation of vessel to structure allision risk for commercial vessels, commercial fishing vessels and recreational vessels within the Development Area;
- Effects on anchoring operations for commercial vessels and recreational vessels within the Offshore Export Cable Corridor; and
- Fishing gear snagging risk (navigational safety risk) for commercial fishing vessels within the Offshore Export Cable Corridor.

102 Each of these impacts was assessed to be of Negligible/Minor or Minor residual effect, and therefore not significant for the purposes of the assessment, which represents no change from the 2013 EIA.

103 For the assessment of cumulative effects of the Development Area and Offshore Export Cable Corridor during the operation and maintenance phase, the shipping and navigation impacts considered to potentially lead to a significant effect (and therefore considered necessary to assess within the Revised Offshore Wind Farm EIA Report) were as follows:

- Increased transit times and distances for commercial vessels;
- Increased vessel to vessel collision risk for commercial vessels;
- Creation of vessel to structure allision risk for commercial vessels, commercial fishing vessels and recreational vessels;
- Increased visual confusion when navigating for commercial vessels; and
- Deviations to avoid the wind farm areas for commercial fishing vessels.

104 Those impacts listed above associated with commercial vessels were assessed to be of Moderate residual effect (which is not considered significant for the purposes of this assessment), which represents no change from the 2013 EIA. Those impacts listed above associated with commercial fishing vessels and recreational vessels were not considered significant for the purposes of the assessment, which represents no change from the 2013 EIA.

- 105 A baseline validation report undertaken as part of the Revised Offshore Wind Farm EIA concluded that vessel traffic levels observed from a survey period in 2016 were not materially different from the vessel traffic levels observed in the 2013 Navigational Risk Assessment. Also, the embedded mitigation measures in place at the time of the 2013 EIA Report will still be proposed for any Revised Application.
- 106 Consequently, those impacts which were assessed not to lead to a significant effect in the 2013 EIA Report were considered not necessary to assess within the 2018 EIA Report. This includes all impacts associated with the Development Area and Offshore Cable Corridor during construction and decommissioning phases.
- 107 It is the opinion of the expert professional that the changes noted above do not materially alter the residual effects and conclusions reached in the 2013 ES for the purposes of determining the onshore application. Therefore, on the basis of the existing offshore consent remaining valid and the impacts on shipping and navigation presented this information can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

#### **Aviation**

- 108 As the entire OfTW infrastructure located in the Offshore Export Cable Corridor is below sea level, it will not have an impact on aviation interests and therefore was not assessed.
- 109 The direct, permanent effect of clutter as generated by the Consented Offshore Wind Farm may hamper the radar operator's ability to distinguish actual aircraft returns from those created by the WTGs, and therefore degrade the safety and efficiency of the air traffic services being provided.
- 110 Once construction commences and WTGs are capable of rotation an area of radar clutter is likely to be produced on the radar displays leading to a permanent operational effect. Clutter likely to be generated by the Consented Offshore Wind Farm could obscure aircraft under control. The clutter could also hide genuine, conflicting aircraft targets. The employment of appropriate additional mitigation measures is under discussion with the MOD and will be implemented prior to construction commencing.
- 111 During decommissioning activities, the static nature of the infrastructure is such that it will not be processed and presented onto control displays by the radar, and as such the WTG decommissioning processes will have no significant effect on the effected radar systems; however the implemented mitigation measures will continue to operate whilst any WTGs remain operational and are capable of rotation.
- 112 To assess the potential for a cumulative effect, a previous radar line of sight analysis was completed on the location of the Neart na Gaoithe (NnG) and the Firth of Forth (FoF) Phase 1 projects and it is expected the results of the analysis would not change. Results indicated that there was likely to be a cumulative impact to the Leuchars and Buchan radar systems from the Project with NnG and the FoF Phase 1 projects. All three projects are potentially detectable by

the Leuchars ATC PSR and both the Consented Offshore Wind Farm and FoF Phase 1 projects are potentially detectable to the Buchan ADR. The application of appropriate mitigation measures are under discussion with the MOD and a collaborative approach to mitigation by Forth and Tay Offshore Wind Developers Group (FTOWDG) will be sought where possible.

- 113 For mitigation relating to the Buchan ADR, additional information will be provided to the MOD on layout and WTG height options within the Development Area, to allow the MOD to further refine an impact assessment. This may reduce potential impact on the Buchan ADR to an acceptable level and remove the requirement for any technical mitigation. If not viable, then implementation and integration of a technical mitigation solution will be agreed as per the process set out by the MOD. Technical mitigation, if required, will most likely be in the form of modifications to the Buchan ADR, or other mitigation in agreement with the MOD.
- 114 Implementation and integration of technical mitigation solution for Leuchars ATC PSR will be agreed as per the process set out by the MOD. This assumes that the MOD requirements as stipulated in the User Requirements Document can be met.
- 115 There has been no change to baseline conditions assessed and the impact assessment would remain valid, therefore the residual effects and conclusions reached in this ES remain valid. There will be no interaction on aviation interests between the wind turbines and the OnTW. Therefore, on this basis, the impacts on aviation presented can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

### **Other Human Uses**

#### **Marine Recreational Activities**

- 116 From the 2013 EIA, a significant but short term impact on recreational sailing was predicted during the construction phase of the Offshore Export Cable. This effect would be particularly experienced by those undertaking informal sailing and generally for inshore waters and would be limited to the busiest periods of construction. Similarly, a significant short term cumulative impact is predicted on recreational sailors when the effects of construction of the Consented Offshore Wind Farm and OfTW are assessed cumulatively, and if construction of the proposed NnG offshore wind farm takes place at the same time as the project.
- 117 No significant Development impacts, cumulative impacts with other projects, or impact interactions are predicted on other marine or coastal recreational activities from the construction of the Consented Offshore Wind farm and OfTW.
- 118 The landfall for the Offshore Export Cable will have a short term effect on other recreational uses of the coastline (regardless of the option selected) however, with mitigation through effective communications with recreational interests, short term impacts are predicted to be Minor although they will increase for limited periods of time in the immediate vicinity of the Export Cable landfall as cable laying works will temporarily preclude recreation and access to the affected part of the beach.

### **Military Practice and Exercise Areas**

- 119 The assessment carried out in 2013 considered the effects of the project on areas identified in the Firth of Forth as Military Practice and Exercise Areas (PEXAs). One of these PEXAs, used by the MOD for naval (submarine) exercises, is crossed by the Offshore Export Cable Corridor. The Development Area has no interactions with any PEXAs.
- 120 Whilst there would be some short term disruption to any military exercises ongoing in a part of the PEXA during Offshore Export Cable laying construction works, co-ordination of the work with the MOD and the regular issue of Notices to Mariners will be undertaken. It is not predicted that works would have a significant impact on the operation of the PEXA. In the longer term no significant impacts from operation, maintenance or decommissioning of the Consented Offshore Wind Farm, or OfTW on PEXAs are predicted.
- 121 No significant impact interactions have been predicted on PEXAs from the project and no significant cumulative impacts with other offshore or onshore projects are predicted.

### **Subsea Cables and Pipelines**

- 122 A high pressure submarine gas pipeline in the Firth of Forth is crossed by the Offshore Export Cable Corridor. The crossing point lies to the north-west of North Berwick and would not be affected by the approach to both landfall locations for the Offshore Export Cable. The Development Area has no interactions with any subsea cables or pipelines.
- 123 The operation of the pipeline is not anticipated to be significantly affected by construction of the Offshore Export Cables which would be designed and constructed in accordance with a crossing agreement, which would be agreed in advance, with the pipeline operator. The predicted residual impact on the pipeline from construction of the Offshore Export Cable (and decommissioning if required) and the predicted impact for operation and maintenance of the Offshore Export Cable on the pipeline is not considered significant.
- 124 No significant impact interactions have been predicted on the gas pipeline from the project and no significant cumulative impacts with other offshore or onshore projects are predicted.

### **Unexploded Ordnance**

- 125 During construction, activities which will have contact with the seabed, either directly or via the placement of material, are at risk of disturbing unexploded ordnance with potentially damaging and dangerous effects. A number of mitigation measures have been identified to offset the risk of impacts. These focus on detailed geophysical surveys in advance of all intrusive works to locate and avoid positions of identified ordnance within the Development Area and Offshore Cable Export Corridor. These measures will seek to ensure that all risk is reduced to as low as reasonably practicable and the residual impact of all construction (and decommissioning) work is predicted to be Minor.

- 126 With the implementation of committed mitigation (embedded and additional) the residual effect of operation and maintenance of the Consented Offshore Wind Farm and OfTW works on unexploded ordnance is predicted to be Minor.
- 127 No significant impact interactions have been predicted on unexploded ordnance from the proposals and no significant cumulative impacts with other offshore or onshore developments are predicted.
- 128 The conclusions on 'other human uses' remain valid and with the implementation of mitigations noted the residual effects and conclusions reached in the 2013 ES can be used to provide an overview of the likely impacts of the project as a whole in support of the approval of the onshore application.

#### **Socio-economic and Tourism**

- 129 Due to the increase in employment associated with the construction (and decommissioning) of the project, the 2013 ES noted positive effects on the labour market.
- 130 Given the construction period would be temporary and the nature of the skills required would include both specialist and general labour capabilities, this would likely require the up-skilling and re-training of available local labour and the attraction of additional labour into each of these areas, resulting in the benefit of new and additional expenditure on local goods and services.
- 131 The permanent operation and maintenance jobs estimated for the project would have a Low and positive effect.
- 132 In tourism and recreation terms the Landscape and Visual Impact presented in Chapter 16 of the 2013 ES identifies a number of receptors as likely to experience significant Major and Moderate effects on visual amenity from the project. However, benchmark Scottish Government research demonstrates that the vast majority of those engaged in outdoor recreational activities and who have seen an onshore wind farm would be unaffected. Similarly, *Public Perceptions of Offshore Wind Farms*, a study undertaken by Plymouth Marine Laboratory and published by The Crown Estate in 2015 on the impacts of offshore wind farms on individual wellbeing and the wider opinions of members of the public found that within their sample, the proportion of respondents who had deliberately visited an area where an offshore wind farm is visible was higher than those who had deliberately avoided an area where an offshore wind farm is visible, suggesting offshore wind farms have limited impact on tourism.
- 133 For the Revised Offshore Wind Farm EIA Report, MS LOT and their advisors have agreed that an updated assessment is not required on tourism. Whilst there may be some change to the economic baseline overall, any changes, will not materially alter the outcomes of the 2013 ES (e.g. there would still be positive economic outcomes). Therefore, the conclusions reached in the 2013 ES can be used in support of the approval of the onshore application on the basis of the existing offshore consent remaining valid.

## **1.4 Overall Conclusions**

134 Taking the above into account this document provides an overview of the impact assessments for both the onshore and offshore elements. It therefore allows the impacts to be clearly understood in so far as it relates to the determination of the OnTW application. A summary of the likely significant effects for each topic, the interaction between the onshore and offshore elements and the overall significance of effect is provided below in Table 1.

**Table 1: Summary of Assessment and Impacts**

Topic	OnTW	Wind Farm and OfTW	Summary of Interaction	Overall Effect
Ecology	<p>Potential impacts including, disturbance and contamination of habitats (particularly coast habitats associated with the Firth of Forth Special Protection Area (SPA), Ramsar Site and Site of Special Scientific Interest (SSSI) and Outer Firth of Forth and St. Andrews Bay Complex Proposed Special Protection Area (pSPA)) and disturbance of intertidal and near-shore waterbirds.</p> <p>Application of embedded mitigation means potential impacts are expected to be no more than Minor significance.</p>	N/A	<p>There is limited interaction between the onshore and offshore elements of the project. The installation of the offshore export cable would result in the only possible interaction.</p>	No likely significant effect
Hydrology, Geology and Hydrogeology	<p>Site design and embedded mitigation mean no significant effects are predicted during construction, operation and decommissioning of the OnTW have been identified.</p>	N/A	<p>There would be limited interaction between the onshore and offshore elements of the projects. This is because the only overlap in receptors is the coastal water environment. Consideration of effects including increases to Suspended Sediment Concentrations (SSC) during</p>	No likely significant effect

Topic	OnTW	Wind Farm and OfTW	Summary of Interaction	Overall Effect
Landscape and Visual Impact	No impacts from the Landfall or Onshore Export Cable Corridor. Significant effects from the Onshore Substation will be limited to the immediate vicinity occurring within 2 km to the west and south of the Onshore Substation. Beyond this there would be no significant effects anticipated.	<p>OfTW: Significant effects during construction at the landfall only.</p> <p>Wind farm: Significant effects from seascape characters closest to the Development Area. Significant effects on St Andrews to Fife Ness Local Landscape Areas (LLA), some locations in Cambo Garden and Designed Landscape (GDL) and the Isle of May LLA.</p> <p>Visual amenity receptors including from settlements, recreational and road users.</p>	There would be no visibility of the Wind Farm from the coastal edge surrounding the OnTW due to the intervening distance, and accordingly there will not be cumulative effects on seascape, landscape or visual amenity arising from the OnTW and the offshore elements of the project.	<p>Landfall and Onshore Export Cable- no impacts</p> <p>Onshore substation- significant at 2 km. Beyond this no likely significant effect.</p> <p>As there is no interaction between the OnTW and the Wind Farm the impacts assessed for the Wind Farm and OfTW remain valid.</p>
Cultural Heritage	For all but Cockenzie Harbour, no direct or indirect impacts upon cultural heritage assets arising from the OnTW.	N/A	There is limited interaction between the onshore and offshore elements of the project. The installation of the Offshore Export Cable	Moderate impacts on setting from the installation of the Offshore Export Cable.



Topic	OnTW	Wind Farm and OfTW	Summary of Interaction	Overall Effect
	<p>For Cockenzie Harbour a Minor adverse effect upon setting has been identified, but in EIA terms this is not considered to be significant.</p>		<p>would result in possible interaction. Following the implementation of the mitigation measures there would be Moderate impacts. The impacts on setting associated with the wind turbines and the operation of the Onshore Substation would have no interaction.</p>	<p>Minor Impact on setting of Cockenzie Harbour from OnTW.  No likely significant effect.</p>
Noise and Vibration	<p>No significant impacts identified. Please see the Marine Mammal section of this document on why there would be no significant effects on marine mammals associated with noise from the OnTW.</p>	N/A	<p>There would be no interaction between the onshore and offshore elements of the projects.</p>	No likely significant effect.
Traffic and Transport	<p>The assessment considered the change in traffic flows along the access route as a result of the construction of the OnTW and the severance, driver delay, pedestrian delay, pedestrian amenity, accidents and safety and hazardous loads effects were all deemed to be Negligible / Minor.</p>	N/A	<p>There would be no interaction between the onshore and offshore elements of the projects.</p>	No likely significant effect.

Topic	OnTW	Wind Farm and OfTW	Summary of Interaction	Overall Effect
Socio-Economics, Tourism, Land-Use and Recreation	<p>Once constructed, the OnTW would be compatible with other future energy generation and transmission land uses or other users of the site and surrounding area. No significant adverse effects.</p> <p>No significant effects, temporary disruption to public access to John Muir Way.</p> <p>Traffic management plan in place to minimize disruption to tourists on the Golf Coast Road. No significant effects.</p>	<p>Positive effects on the labour market.</p> <p>The permanent operation and maintenance jobs estimated for the project would have a low and positive effect.</p> <p>Number of receptors as likely to experience significant Major and Moderate effects on visual amenity from the project. However, research demonstrates that the vast majority of those engaged in outdoor recreational activities and who have seen an onshore wind farm would be unaffected.</p>	<p>Overall the impacts on Socioeconomics, Tourism, Land Use and Recreation have been shown to have no significant effects.</p>	<p>No likely significant effects</p>
Air Quality	<p>The air quality assessment indicates that the potential effects associated with the release of dust during construction and vehicular emissions during both construction and operation of the OnTW are considered to be 'not significant' with the adoption of good practice mitigation measures.</p>	N/A	<p>There would be no interaction between the onshore and offshore elements of the projects.</p>	<p>No likely significant effect with the adoption of good practice mitigation measures.</p>

Topic	OnTW	Wind Farm and OfTW	Summary of Interaction	Overall Effect
Metocean and Coastal Processes	N/A	Identified no significant direct or indirect impacts from the offshore elements on the identified receptors.	There would be no interaction between the onshore and offshore elements of the projects.	No likely significant effect
Benthic Ecology	N/A	No likely significant effect	There would be limited interaction between the onshore and offshore elements of the projects.	No likely significant effect
Natural Fish and Shellfish	N/A	No likely significant effect	There would be no interaction between the onshore and offshore elements of the projects.	No likely significant effect
Marine Mammals	N/A	Significant effects on behavioural avoidance in the medium term for certain marine mammal species assessed associated with piling noise. No other significant effects. As noted and more sophisticated modelling as now been developed and should the assessment be carried out now it is likely that these would result in lesser impacts.	There would be no interaction between the onshore and offshore elements of the projects.	No likely significant effect on all impacts other than behavioural avoidance by harbour and grey seals.

Topic	OnTW	Wind Farm and OfTW	Summary of Interaction	Overall Effect
Ornithology	N/A	The cumulative assessment for the project with other projects predicted a Major impact on the regional breeding kittiwake population through collision risk. No other significant impacts were predicted for any Valued Ornithological Receptor (VOR).	There would be limited interaction between the onshore and offshore elements of the projects and therefore the impact associated with the Wind Farm and OfTW remain valid.	The cumulative assessment for the project with other projects predicted a Major impact on the regional breeding kittiwake population through collision risk. No other significant impacts were predicted for any Valued Ornithological Receptor (VOR).
Commercial Fisheries	N/A	No likely significant effect	There would be limited interaction between the onshore and offshore elements of the projects.	No likely significant effect
Shipping and Navigation	N/A	No likely significant effect with the implementation of mitigation	There would be no interaction between the onshore and offshore elements of the projects.	No likely significant effect
Aviation	N/A	No likely significant effect with the implementation of mitigation	There would be no interaction between the onshore and offshore elements of the projects.	No likely significant effect
Other Human Uses	N/A	No likely significant effect with the implementation of mitigation	There would be limited interaction between the onshore and offshore elements of the projects.	No likely significant effect

## References

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