5 Human Environment

5.7 Other Human Activities

5.7.1 Baseline Information

Introduction

5.7.1.1 This chapter describes the Other Human Activities (with marine components) occurring within or in the vicinity of the modified offshore transmission infrastructure (OfTI) associated with the consented Telford, Stevenson and MacColl offshore wind farms, which incorporates the export cable corridor and offshore substation platforms (OSPs). Activities include offshore wind, wave and tidal energy projects and plans, carbon capture and storage plans, military activity, oil and gas activity and infrastructure, marine dredging and disposal, subsea cables and pipelines, telecommunications, unexploded ordnance and aviation. This chapter presents an assessment of the likely significant effects of the construction, operation and decommissioning of the modified OfTI on Other Human Activities (with marine components) in the Moray Firth, along with proposed mitigation measures, where considered necessary.

5.7.1.2 The description of baseline conditions that follows is based upon desktop reviews of publicly available information and the results of consultation with 'Other Human Activity' stakeholders with interests in the modified OfTI study area.

5.7.1.3 Note that the following chapters describe other marine activities:

- Chapter 5.1 – Commercial Fisheries;
- Chapter 5.2 – Shipping and Navigation; and
- Chapter 5.5 – Socio-economics.

Consultations

5.7.1.4 As part of the Environmental Impact Assessment (EIA) process for the Moray Offshore Renewables Limited (MORL) Environmental Statement (ES), consultation was undertaken with key stakeholders to gather information on the Other Human Activities that occur within the vicinity of the Telford, Stevenson and MacColl offshore wind farms and original transmission infrastructure. Table 5.7-1 below summarises the issues that were highlighted during consultation for the MORL ES which are also relevant to the modified OfTI; consultation responses are presented in full in the MORL ES (MORL, 2012 – ES Chapter 5.8 Other Human Activities). Where more recent consultation has been undertaken, the outcomes of that are also presented in Table 5.7-1.

Table 5.7-1 Summary of Consultation Responses Relevant to Other Human Activities

Organisation	Consultation Response	MORL Approach
Marine Scotland	Marine Scotland noted that the Moray Firth Round 3 zone lies close to the Beatrice Offshore Wind Farm within Scottish Territorial Waters of the Moray Firth, and that they welcome and encourage collaborative working between the developers in the area.	MORL is committed to ongoing collaboration as a member of the Moray Firth Offshore Wind Developers Group (MFOWDG) and adherence to the MFOWDG Cumulative Impact Assessment Discussion Document, which has involved joint gathering / sharing of baseline data and adherence to standardised impact assessment approaches.
Marine Scotland – Modified OfTI Scoping Opinion	The ES must include what measures are proposed to be in place to do a pre-sweep for Unexploded Ordnance ("UXO's"). If discovered, the time it takes to remove such an object may have detrimental effects on the project timelines. This is of particular importance as the cable route passes through a firing practice area. MS LOT recommend that MORL engage with the Ministry of Defence on this matter.	MORL commissioned a desk-based study to identify the risk posed to the MORL Project by unexploded ordnance (UXO) and to identify potential measures by which any risks may be reduced to an acceptable level. This study is discussed in this chapter.
Ministry of Defence (MoD) – Military Practice and Exercise	In response to the proforma submitted by MORL to the MoD at the Project scoping stage, the MoD stated that it would object to the Project unless mitigation measures are agreed that would minimise impacts upon danger area D807, which overlapped with parts of the wind farm sites and original transmission infrastructure. In March 2012, the D807 ceased to exist and subsequently the MoD has confirmed that they will not object to the Project on these grounds. During consent determination, the MoD objected to the MORL Project citing concerns about hazards to MoD nautical and aeronautical activities in the area. Following further discussions between MORL and the MoD, in 2014 the MoD removed their objection subject to conditions being applied to the consent. MORL will adhere to all conditions of consent. In relation to concerns about hazards to MoD nautical activities, a condition of consent requires that MORL submit a Lighting and Marking Plan (LMP) to Marine Scotland for their approval, with such approval to only be granted following consultation with advisors, including the DIO, prior to construction commencing. MoD consultation responses relevant to 'aeronautical activities' are presented below.	MORL will adhere to all conditions of consent.
Joint Radio Company (JRC) Limited	The JRC stated that they do not foresee the proposed developments resulting in any interference to scanning telemetry systems. MORL confirmed this position in April 2012.	No action required.

Organisation	Consultation Response	MORL Approach
Atkins Limited	Atkins stated that they do not foresee the proposed developments resulting in any interference to scanning telemetry systems. MORL confirmed this position in April 2012.	No action required.
Office of Communications (OFCOM)	OFCOM do not foresee the proposed developments resulting in any interference to civil microwave fixed links. MORL confirmed this position in April 2012.	No action required.
Health and Safety Executive (HSE)	During Project EIA consultation the HSE confirmed that no safety zones are present around the four abandoned well heads within the wind farm sites.	No action required.
SHE-T	Consultation ongoing.	Ongoing consultation to take place.
Faroese Telecom	Faroese Telecom is aware of the MORL modified OfTI. Further consultation is planned to determine SHEFA-2 cable crossing agreements, if required.	Ongoing consultation with Faroese Telecom to determine cable crossing agreements.
Suncor	Suncor have advised MORL on their proposed future exploration activity in Licence Block 12/27.	Ongoing consultation with Suncor to take place.
Civil Aviation Authority (CAA)	The CAA was consulted during MORL Project EIA and during MORL Project consent determination. They have raised no objection to the MORL Project. Conditions have been placed on the MORL Project consent to ensure the 'as built' wind farm is marked and lit as per MoD and CAA requirements, and communicated to the UK Hydrographic Office (UKHO) for aviation and maritime charting.	Any consent granted for the modified OfTI will include such conditions in relation to the marking, lighting and charting of the OSPs. MORL will adhere to all conditions of consent.
NATS En-Route Limited (NERL)	NATS objected to the MORL Project because of potential impacts on the Allanshill radar and associated air traffic operations. Following discussions between MORL and NATS, an agreement has been entered into between the two parties for the design and implementation of an identified and defined mitigation solution in relation to the Project. Consequently, NATS have withdrawn their objection. By default, the mitigation solution will encompass the OSPs that will sit within wind farm boundaries.	Implementation of mitigation solution.
NERL Safeguarding ("NATS") – Modified OfTI Scoping Opinion	NATS anticipates no impact from the Modified Transmission Infrastructure for the Moray Firth wind farms. As such NATS has no comments to make on the Scoping Report.	No action required.

Organisation	Consultation Response	MORL Approach
MoD - Aviation	The MoD initially objected to the MORL Project citing concerns with the Air Traffic Control radar at RAF Lossiemouth and the Air Defence Radar at RAF Buchan. Following discussions with the MoD, and further consideration of the mitigation proposals submitted by MORL, the MoD confirmed that it was prepared to withdraw their objection subject to conditions being attached to any consent. MORL Project consent conditions require MORL to, prior to the erection of any wind turbine generators (WTGs) on the site, submit an Air Traffic Control Radar Mitigation Scheme (ATC Scheme), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the MoD. By default, the ATC Scheme will encompass the OSPs that will sit within wind farm boundaries.	MORL will adhere to all conditions of consent.
Offshore Helicopter Operators and Platform Operators	Consultation has been undertaken with CHC Scotia, Bond Offshore, Bristow, Ithaca, Wood Group, and Talisman. No objections to the MORL Project have been raised.	No action required.
British Telecom (Radio Network Protection Team) – Modified OfTI Scoping Opinion	BT Radio Network Protection do not have any comments to make.	No action required.
Highlands and Islands Airports Ltd – Modified OfTI Scoping Opinion	This development falls outside the safeguarded areas for Inverness Airport, therefore HIAL do not object to the modified Transmission Infrastructure.	No action required.

Desktop Studies

5.7.1.5 Other Human Activities have been described through desk-based study of available data and information gathered during the consultation process (see Section 1.1.2 above). The following data sources have been used to inform this chapter:

- Offshore Wind
  - Blue Seas – Green Energy, A Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters (Part A, The Plan) (Marine Scotland, 2011);
  - The Crown Estate leasing information (The Crown Estate, 2014);
  - Offshore Wind Energy in Scottish Waters - Draft Regional Locational Guidance (Marine Scotland, 2012);
  - Offshore Wind Initial Plan Framework (Draft Plan Options) (Marine Scotland, 2013);
  - Potential Scottish Test Sites for Deep Water Floating Wind Technologies - Draft Regional Locational Guidance (Marine Scotland, 2014); and
  - Proposed project Scoping reports and Environmental Statements.

- Wave and Tidal
  - The Crown Estate wave and tidal information (The Crown Estate, 2014);
  - Wave and Tidal Regional Locational Guidance (Marine Scotland, 2012);
  - Wave and Tidal Initial Plan Framework (Draft Plan Options) (Marine Scotland, 2013); and
  - Proposed project Scoping reports and Environmental Statements.
- Carbon Capture and Storage
  - Carbon Capture and Storage – A Roadmap for Scotland (Scottish Government and Scottish Enterprise, 2012);
  - Scottish Carbon Capture and Storage (SCCS) website (SCCS, 2014); and
  - CO2 Stored website (British Geological Survey and The Crown Estate, 2014).
- Military Activity
  - Datasets from SeaZone Solutions.
- Oil and Gas Activity
  - Department of Energy and Climate Change (DECC) licensing rounds information (DECC, 2014);
  - UK Oil and Gas Data website (CDA, 2014); and
  - Operator websites and reports.
- Marine Dredging and Disposal
  - Datasets from Marine Scotland.
- Subsea Cables and Pipelines
  - Kingfisher Information Service - Offshore Renewable & Cable Awareness project (KIS-ORCA) website (Kingfisher Information Service, 2014); and
  - Datasets from SeaZone Solutions and UK DEAL.
- Telecommunications
  - SHEFA website (Faroese Telecom, 2014).
- Unexploded Ordnance
  - Moray Offshore Renewables Limited (MORL)-commissioned desk study (6-Alpha Associates, 2011).
- Aviation
  - Technical reports and assessments prepared in support of the MORL Project consent application (MORL, 2012).

5.7.1.6 In addition to the data sources listed above, reference was also made to DECC Strategic Environmental Assessment (SEA) outputs (e.g. DTI, 2004) and the Marine Scotland online National Marine Plan Interactive tool (Marine Scotland, 2014).

Legislative and Planning Framework

5.7.1.7 Scotland's Draft National Marine Plan (Marine Scotland, 2013) sets out strategic policies for the sustainable use of Scotland's marine resources out to 200 nautical miles (nm). The Draft Plan emphasises that development proposals which enable multiple uses of marine space are encouraged (Planning Policy Principle GEN 5) and it also provides sector-specific marine planning policies which variously support the economic growth of sectors, manage conflicts between marine users or manage

environmental impacts. Sectors included in the Draft Plan include Oil and Gas (Chapter 9), Carbon Capture and Storage (Chapter 10), Renewables (Chapter 11), Telecommunications (Chapter 14) and Defence (Chapter 15). Specifically in relation to Renewables, a Draft Plan Policy states that 'Developers bringing forward proposals for new developments must actively engage at an early stage with existing users of the area to which the proposal relates; and of adjoining areas which may be affected' (Marine Scotland, 2013, page 94). In line with this draft policy, MORL has engaged with 'Other Human Activities' stakeholders throughout the consenting of the Project and subsequently in relation to applying for a Marine Licence for the modified OfTI (see Section 5.7.1.2 above).

5.7.1.8 In sectoral plans relevant to the future of offshore wind in Scottish Territorial Waters (Marine Scotland, 2011, 2012a), it is noted that in the planning and licensing of future offshore wind farm developments, key issues that will need to be addressed in the Moray Firth region relate to potential interactions with 'aviation and radar', and 'defence activities' (Marine Scotland, 2012). MORL has considered these interactions within both the MORL ES and the modified OfTI EIA.

5.7.1.9 The assessment of impacts on Other Human Activities has been undertaken in line with guidance presented in the Draft Marine Renewables Licensing Manual (Marine Scotland, 2012). The Draft Manual states that EIA should take account of the following 'other sea users (... oil and gas; subsea pipelines; dredging and marine aggregate extraction; tourism and recreation; aviation; military activity; munitions etc)' (page 58). These topics have all been considered within this chapter, with the exception of tourism and recreation, which is considered in Chapter 5.5 – Socio-economics.

5.7.1.10 The impact assessment has also been undertaken with reference to the following guidance documents:

- Subsea Cables UK Guideline No 6 – The Proximity of Offshore Renewable Energy Installations & Submarine Cable Infrastructure in UK waters (Subsea Cables UK [SCUK], 2012);
- International Cable Protection Committee (ICPC) series of recommendations for marine cables. Recommendations 2 (ICPC, 2007a), 3 (ICPC, 2007b) and 13 (ICPC, 2010);
- 28th Seaward Licensing Round - Other Regulatory Issues (DECC, 2014); and
- The Crown Estate (TCE) Position Paper: Round 3 Offshore Wind and Oil & Gas – A Critical Interface (TCE, 2010).

Baseline Characteristics

Offshore Wind

5.7.1.11 The Beatrice Wind Farm Demonstrator Project is one of two operational offshore wind farms in Scottish waters and is located adjacent to the Beatrice oil field, immediately to the west of the Moray Firth Round 3 Zone. It is comprised of two 5 MW wind turbines and was developed in 2007 by Scottish and Southern Energy (SSE) and Talisman Energy. The Project has a proposed lifespan of five years and all electricity generated is fed to a nearby Beatrice oil platform.

5.7.1.12 In 2014 MORL was granted consent by the Scottish Ministers under Section 36 of the Electricity Act 1989 to construct and operate the Telford, Stevenson and MacColl offshore wind farms and OfTI within the Eastern Development Area (EDA) of the Moray Firth Round 3 Zone. The three offshore wind farms will have a maximum generating capacity of up to 1,116 MW. It is envisaged that turbine foundation installation will commence in 2017, with turbine installation and final commissioning running through to 2021. MORL are yet to confirm plans for project development within the Western Development Area (WDA) of the Round 3 Zone.

5.7.1.13 In 2014 Beatrice Offshore Windfarm Limited (BOWL) (a partnership of SSE Renewables and Repsol Nuevas Energias) was granted consent by the Scottish Ministers under Section 36 of the Electricity Act 1989 to construct and operate the Beatrice offshore wind farm, with a maximum generating capacity of up to 750 MW. Construction is expected to commence in 2016 and the Project will be operational by 2020.

5.7.1.14 The MORL and BOWL lease areas lie adjacent to one another. MORL proposes a buffer equivalent to five WTG rotor diameters along the MORL / BOWL boundary. There is potential for the MORL and BOWL construction schedules to overlap by up to four years.

5.7.1.15 In order to minimise conflict and encourage collaboration and in light of the potential for cumulative impacts to arise, MORL and BOWL have formed the Moray Firth Offshore Wind Developers Group (MFOWDG) in association with The Crown Estate (TCE). Via MFOWDG, MORL and BOWL have undertaken joint consultation and agreed upon standardised approaches to the EIA. It is envisaged that collaboration will continue through construction and into wind farm operation and potentially decommissioning.

5.7.1.16 The Hywind Scotland Pilot Park Project, located 25 km east of Peterhead and being developed by Statoil Wind Limited, is currently at the scoping stage. The proposal comprises up to five wind turbines, each with a maximum capacity of 6 MW, and each mounted on a floating structure which is then held in place by a mooring system on the sea bed. As there is no indication of an overlap in activity (spatially or temporally) between the proposed Hywind project and the modified OfTI, potential interactions have not been considered within this impact assessment.

5.7.1.17 Marine Scotland has published an Initial Plan Framework for Offshore Wind Energy in Scottish Waters (Marine Scotland, 2013). The Framework details the draft Plan Options for future commercial scale offshore wind developments on a regional basis around the Scottish coastline. In the North East region, within which the Moray Firth in located, there are two draft Plan Option areas for offshore wind development, referred to as 'OWNE1' and 'OWNE2'. OWNE2 is located closest to the three MORL consented wind farms and modified OfTI, lying to the east, off Rattray Head. The Plan areas are earmarked as medium to long term development options and there is unlikely to be any activity in these locations whilst the MORL and BOWL offshore wind farms are under construction. As such, and as these are draft Plan Options rather than defined projects, potential effects of the modified OfTI on Plan areas have not been considered further within this impact assessment.

Wave and Tidal Energy

5.7.1.18 Wave and tidal energy project development activity in Scottish waters is focused in Pentland Firth and Orkney waters to the north of the Moray Firth and along the west coast of Scotland (Marine Scotland, 2012, 2013).

5.7.1.19 Development activity within or immediately adjacent to the Moray Firth is limited. Within the Moray Firth, AWS Ocean Energy Limited holds an Agreement for Lease for a potential wave energy project off Burghead. The project is described as 'in planning'; no detailed project information is currently available.

5.7.1.20 To the north, in the area of the Pentland Firth closest to the modified OfTI, there are two existing tidal energy sites with Agreement for Lease. These are the Inner Sound Tidal Energy Project, being developed by MeyGen Limited and with a maximum generation capacity of 86 MW (MeyGen, 2014) and the Ness of Duncansby tidal energy site, being developed by ScottishPower Renewables with a maximum generation capacity of 95 MW (ScottishPower Renewables, 2014). The Inner Sound Tidal Energy Project was awarded consent by the Scottish Ministers in 2013. The construction start date and programme is currently unknown however the consent specifies that construction must commence within 5 years of the issue of consent.

Construction will therefore need to commence by 2018, and therefore has the potential to overlap with the construction of the modified OfTI (2017 – 2021). However there will be no spatial overlap between the projects. The Ness of Duncansby tidal energy site remains in the early stages of planning.

5.7.1.21 As a result of there being no data to indicate an overlap in activity (spatially and/or temporally) between wave and tidal lease sites and the modified OfTI, potential interactions have not been considered within this impact assessment.

Carbon Capture and Storage

5.7.1.22 The Scottish Government has a clear policy to decarbonise electricity generation by 2030 and it is intended that carbon capture and storage (CSS) will support this. A CCS demonstration project is being developed by SSE and Shell at Peterhead gas power plant, where carbon dioxide (CO_2) will be captured and transported via existing pipelines for offshore storage in Shell's Goldeneye depleted gas field. It is hoped that the demonstration project will be operational by 2017 (Scottish Carbon Capture and Storage website, 2014). Further potential offshore storage hubs for CO_2 in Scottish waters have been identified (Marine Scotland, 2013b), including a site within the Moray Firth, referred to as 'Mains'. In light of anticipated CCS project development timelines, it is unlikely that any offshore storage opportunities in the Moray Firth will be investigated prior to or during the installation of the MORL modified OfTI. On this basis, potential interactions between the modified OfTI and CCS activity have not been considered within this impact assessment.

Military

5.7.1.23 Practice and Exercise Areas (PEXA) are used for various military practice activities by the Royal Navy, the Army, the Royal Air Force (RAF) and the Ministry of Defence (MoD). Portions of the modified OfTI, within which OSPs may be located, lie within offshore Danger Area D809(South), which is used by the RAF for a variety of practice flying and firing exercises (see Figure 5.7-1).

5.7.1.24 The modified OfTI export cable corridor passes through offshore Danger Area D807, which has been used by the RAF for live firing, bombing and sonobuoy training. However, since 1st March 2012, D807 has been permanently and completely withdrawn (Notice to Airmen No. B0238 /12).

5.7.1.25 A portion of the modified OfTI lies within the large Air Force Department Area D712D, which is used for combat and training exercises and supersonic flight at an altitude of 22,000 to 25,000 feet.

5.7.1.26 The closest coastal Danger Area to the modified OfTI landfall is located approximately 35 km to the west at the Binn Hill Firing Range between Buckie and Lossiemouth.

Oil and Gas

5.7.1.27 There are three producing oil fields in the inner Moray Firth; two are located within / immediately adjacent to the Moray Firth Round 3 Zone and referred to as the 'Beatrice' and 'Jacky' fields (see Figure 5.7-2).

5.7.1.28 The Beatrice oil field (Block 11/30a) commenced production in 1981 and the Jacky oil field (Block 12/21c) commenced production in 2009. Infrastructure within the fields comprises the Beatrice Alpha, Bravo and Charlie platforms, the Jacky platform, and seabed cables and pipelines linking the platforms. Beatrice Alpha, Bravo and Charlie are owned by Talisman Energy and operated by Ithaca Energy. Production forecasts predict that 2014 will be the last year of production from the Beatrice field (Energy Voice website, 2014). The Jacky platform is owned and operated by Ithaca Energy. These fields and their associated infrastructure do not overlap with the proposed modified OfTI boundaries.

5.7.1.29 There are five plugged and abandoned wells within the modified OfTI boundary. Correspondence with the HSE has confirmed that there are no mandatory safety zones associated with the wellheads.

5.7.1.30 In terms of the potential for future exploration and production, the modified OfTI boundaries overlap with currently active, but as yet un-exploited, licence blocks. A licence for Block 12/21b is held by Sendero and Suncor holds licences for Blocks 12/26b and 12/27. On the basis of consultation with Suncor, MORL understands that the focus of any future exploration activity will be in Block 12/27, where a 'Significant Discovery' is located (DECC, 2014). In meetings with MORL, Suncor have stated their intentions to undertake geophysical survey within Block 12/27 in 2014, and available information indicates that a well will be installed by 2015 depending upon the outcome of survey (Noreco website, 2014).

5.7.1.31 The 28th oil and gas licensing round is ongoing, with licence applications submitted in April 2014. Several of the blocks on offer overlap with the modified OfTI (blocks 12/22, 12/23, 12/28, 18/2, 18/7 and 18/8). Potential awards are not expected to be made prior to MORL's application for a licence for the modified OfTI.

Marine Dredging and Disposal

5.7.1.32 Dredging and disposal activity within the Moray Firth is sporadic and associated with port and harbour maintenance and development and coastal marine disposal sites (see Figure 5.8-1). Where the proposed offshore export cable makes landfall, it will travel within several kilometres of the existing 'MacDuff' marine disposal site, which historically has received small volumes of dredge arisings, though at no point will overlap with it (DTI, 2001).

5.7.1.33 It is considered unlikely that the modified OfTI will result in any impacts upon dredging and disposal activity or marine disposal sites and as such these activities have not been considered further within the impact assessment.

Subsea Cables and Pipelines

5.7.1.34 There is one existing subsea cable in proximity to the modified OfTI corridor (Figure 5.8-1). This is the SHEFA-2 fibre-optic telecommunications cable, owned by Faroese Telecom, which links the Faroe Islands to mainland Scotland via the Northern Isles. It runs south from the Orkney Islands to the Scottish mainland at Inverboyndie (Seafish, 2013) and is buried under the seabed surface as it transits the Moray Firth and makes landfall. The modified OfTI export cables could potentially share a landfall point with the SHEFA-2 cable and may need to cross it. Discussions with SHEFA in relation to this are ongoing. Within 12 nm of the coast, SHEFA has specific seabed rights granted to them as part of their seabed lease with The Crown Estate. In particular, permission must be granted by the cable owner for any works planned to be undertaken within 250 m either side of the cable. Where works are within 1 km of the cable, the operator must be notified prior to any works being undertaken.

5.7.1.35 Scottish Hydro Electric Transmission plc (SHE Transmission [SHE-T]) is the licensed electricity Transmission Owner in the north of Scotland and they are committed to supporting the connection of renewables projects to the National Grid. SHE-T have proposed the Caithness – Moray Link, which will be a subsea High Voltage Direct Current (HVDC) reinforcement of the transmission network between Caithness and Moray with two onshore converter stations to allow for future connection to Shetland and offshore generation, along with upgrade of the onshore network in Caithness (SHE-T, 2014). The HVDC subsea cable would be installed by 2018 and cross the modified OfTI corridor. Consultation on the 'Needs Case' for the SHE-T proposal closed in May 2014 and a decision is awaited.

5.7.1.36 BOWL's proposed export cable will travel approximately 65 km from the BOWL wind farm, through the MORL WDA and make landfall at Portgordon, to the west of the modified OfTI landfall (BOWL, 2012). BOWL cable installation is scheduled to take place in 2016/2017, which may temporally overlap with MORL modified OfTI installation by up to one year. The modified OfTI does not spatially overlap at any point with the BOWL export cable. However MORL has objected to the BOWL export cable route on the basis that it passes through the WDA. MORL and BOWL will seek to meet mutual agreement on BOWL's cable routing and in the event of a failure to agree, The Crown Estate will determine a solution.

5.7.1.37 There are no pipelines within the modified OfTI footprint. Pipelines are located to the north and east of the modified OfTI footprint (see Figure 5.7-2).

Telecommunications

5.7.1.38 An initial screening exercise of the potential impacts of the development of the Moray Firth Round 3 Zone on telecommunications was undertaken in 2009 (Pager Power, 2009). The study stated that development in the EDA would not interfere with existing microwave links, scanning telemetry or non-aviation radar and would not cause TV or radio interference. Stakeholders requested that MORL sought re-confirmation of this position prior to consent application for the Project being made because the use of the spectrum is dynamic and the use of the band changes on an ongoing basis. Further consultation in April 2012 confirmed the development of the Telford, Stevenson and MacColl wind farms is not expected to result in any interference to existing telecommunications systems.

5.7.1.39 Telecommunications used by the Beatrice and Jacky oil platforms are set up via satellite and will therefore not be affected by wind farm development.

5.7.1.40 During MORL ES consent determination the Highland Council raised a concern that the Project could cause an impact upon television reception in the area around Helmsdale. The Scottish Ministers have therefore included a condition within the MORL consent which sets out the mitigation measures that would be taken to investigate and rectify any complaint made regarding television reception that is attributable to the MORL Project.

5.7.1.41 On the basis of consultation feedback to date and Project consent condition requirements that will be fulfilled by MORL, it is considered highly unlikely that the above-surface modified OfTI infrastructure, comprising two OSPs, would result in any adverse impacts upon telecommunications systems. Potential effects upon telecommunications have not been considered any further within this impact assessment.

Unexploded Ordnance

5.7.1.42 MORL commissioned a desk-based study (6 Alpha Associates Ltd, 2011) to identify the risk posed to the MORL Project by unexploded ordnance (UXO) and to identify potential measures by which any risks may be reduced to an acceptable level. The study identified potential UXO sources based on analysis of a variety of data and presented the results of a UXO risk assessment, which considered the hazards associated with the potential UXO sources. The study also recommended measures to be taken to minimise the risk posed by potential sources of UXO.

5.7.1.43 UXO threat within the Moray Firth offshore area is potentially the result of munitions and weaponry employed during World War I and World War II: sea-dumped munitions / explosives, shipwrecks carrying munitions / explosives, and sea mines represent the main sources of UXO within the region.

5.7.1.44 The probability of UXO encounter within the Moray Firth Round 3 Zone has been mapped on the basis of desk study findings. The majority of the MORL EDA, within which the OSPs will be located, is considered to have a background residual UXO threat resulting from general wartime and subsequent military training activities in

the region. Within the easternmost extent of the proposed Telford and MacColl wind farm sites, the probability of encountering UXO is slightly higher as a result of present military practice activity in danger area D809 South. In the southwest portion of the consented MacColl Wind Farm site, UXO encounter probability is defined as 'highly likely'. This is driven by the presence of historical 'live' bombing ranges.

5.7.1.45 UXO encounter is 'almost certain' on the wreck of the *HMS Lynx*, a steamer destroyer sunk in 1915, which lies outside of and to the south of the MacColl Wind Farm boundary and on the eastern boundary of the modified export cable corridor. *HMS Lynx* sank after striking a sea mine; she was armed with guns and torpedo tubes, though the volume of munitions being carried by the vessel at the time of sinking is unknown (6 Alpha Associates Ltd, 2011).

Aviation

5.7.1.46 The MORL ES presents baseline information relevant to the assessment of the potential effects of the Project on military and civil aviation receptors (MORL, 2012; ES Chapter 5.3 – Military and Civil Aviation). The EIA considered the effects of the WTGs, OSPs and offshore export cable on civil and military radar systems, Helicopter Main Routes (HMRs) and aviation operations.

5.7.1.47 Baseline information and impact assessment are not repeated within this modified OfTI ES on the basis that the previous assessment concluded that the original TI would not result in any significant effects upon aviation (MORL, 2012; ES Chapter 11.3 – Military and Civil Aviation). Potential effects upon aviation have not been considered any further within this impact assessment.

5.7.2 Impact Assessment

Summary of Effects and Mitigation

5.7.2.1 The assessment of effects has been focused on establishing potential for overlaps and therefore conflict between activities and operators in both a geographical and temporal context. The potential for the modified OfTI to disrupt activity associated with other proposed offshore wind farms and military practice areas is not expected to be significant.

5.7.2.2 Whilst there is no existing oil and gas infrastructure within the proposed modified OfTI footprint, two operators hold licences to explore the potential of licence blocks which overlap with the modified OfTI footprint. Taking a precautionary approach, the impact assessment assumes that licence holders may wish to explore the licence areas (e.g. undertake seismic survey) during modified OfTI construction, operation and decommissioning. During operation, the physical presence of modified OfTI infrastructure may exclude exploration activities from particular locations and the effect is judged to be of minor adverse significance. MORL is committed to ongoing consultation, aiming for co–existence where achievable.

5.7.2.3 There is potential for damage to subsea cables during modified OfTI construction activities, including where cable crossings are required. This has been assessed to be of moderate adverse significance during construction and minor adverse significance during operation. Implementation of industry standard measures such as crossing agreements will ensure that the residual effect will be of minor adverse significance during construction and not significant during operation.

5.7.2.4 There is a potential for unexploded ordnance (UXO) to be encountered on the seabed within the modified OfTI footprint. Construction activities have the potential to disturb UXO and any unplanned detonation may impact upon human health and safety, as well as infrastructure and equipment. Without mitigation, the consequences of such an effect will be of major adverse significance. MORL are committed to a suite of standard industry measures to minimise risk from UXO,

including a pre–construction UXO seabed survey, and therefore the residual effect will be of minor adverse significance during construction.

5.7.2.5 A summary of the impact assessment is shown in Table 5.7-2 below.

Table 5.7 -2 Other Human Activities Impact Assessment Summary

Effect	Receptor	Pre-mitigation Effect	Mitigation	Post-mitigation Effect
Construction & Decommissioning				
Effects on offshore wind farm projects	Beatrice Offshore Wind Farm	Not significant	None	Not significant
Effects on military activity	D809 military practice and exercise area and regional military activity	Not significant	None	Not significant
Effects on oil and gas activity and infrastructure	Licence holders for oil and gas blocks 12/21b, 12/26b and 12/27	Not significant	Ongoing consultation with licence holders to remain informed of their exploration plans	Not significant
Damage to subsea cables	SHEFA-2 telecommunications cable	Moderate adverse	Cable burial protection measures Cable crossing / proximity agreements Adherence to appropriate guidance	Minor adverse
Health and safety risk associated with unexploded ordnance	Offshore construction workers	Major adverse	Pre-construction UXO survey UXO Safety Plan	Minor adverse
Operation				
Effects on offshore wind farm projects	Beatrice Offshore Wind Farm	Not significant	None	Not significant
Effects on military activity	D809 military practice and exercise area and regional military activity	Not significant	In relation to OSPs, adherence to any consent conditions on the lighting, marking and charting of infrastructure	Not significant
Effects on oil and gas activity and infrastructure	Licence holders for oil and gas blocks 12/21b, 12/26b and 12/27	Minor adverse	Ongoing consultation with licence holders to remain informed of their exploration plans Adherence to appropriate guidance to resolve conflicts of interest	Minor adverse

Effect	Receptor	Pre-mitigation Effect	Mitigation	Post-mitigation Effect
Damage to subsea cables	SHEFA-2 telecommunications cable	Minor adverse	Adherence to appropriate guidance	Not significant
Health and safety risk associated with unexploded ordnance	Offshore operation and maintenance workers	Not significant	As per Construction/ Decommissioning mitigation measures, as required, where intrusive works are planned	Not significant

Introduction to Impact Assessment

5.7.2.6 The construction, operation and decommissioning of the modified OfTI has the potential to disrupt Other Human Activities, damage existing infrastructure or disturb UXO.

Details of Impact Assessment

5.7.2.7 This section of the chapter presents the results of the impact assessment, which has considered the potential for the modified OfTI to impact upon:

- Offshore wind farm projects and plans;
- Military activity;
- Oil and gas activity and infrastructure;
- Subsea cables; and
- Unexploded ordnance.

5.7.2.8 Potential cumulative effects upon Other Human Activities may arise where other existing or proposed projects and activities interact with the modified OfTI. The results of cumulative impact assessment are presented in Section 5.7.3.

5.7.2.9 The following Other Human Activities, which have been described in the baseline section above, are not considered within impact assessment: wave and tidal energy projects and plans; carbon capture and storage plans; marine dredging and disposal activity; telecommunications; and aviation. This is as a result of there being no physical and/or temporal overlap between the modified OfTI and the particular activity (i.e. wave and tidal projects, CCS, dredging and disposal), or where the MORL ES (MORL, 2012) demonstrated that the original OfTI would have no significant effect upon an activity and the results are applicable to the modified OfTI (i.e. telecommunications and aviation).

5.7.2.10 Likely significant effects upon commercial fisheries, shipping and navigation and socio-economics, tourism and recreation are discussed in the following ES chapters:

- Chapter 5.1 – Commercial Fisheries;
- Chapter 5.2 – Shipping and Navigation; and
- Chapter 5.5 – Socio-economics.

Rochdale Envelope Parameters Considered in the Assessment

5.7.2.11 For the purposes of the Other Human Activities impact assessment, a realistic worst case scenario has been defined and is presented in Table 5.7-3 below. In summary, it assumed a maximum infrastructure footprint (i.e. maximum number of OSPs, their maximum dimensions, and the maximum number of export cables of maximum

length) and a maximum construction window. The scenario defined below is also applied in the assessment of cumulative effects.

Table 5.7-3 Rochdale Envelope Parameters Relevant to the Other Human Activities Impact Assessment

Potential Effect	Rochdale Envelope Scenario Assessed
Construction & Decommissioning	
Damage / Disturbance / Disruption of Other Human Activities	Maximum footprint = 1.76 km² based on: • Length of cable corridor from boundary of the three consented wind farm sites to the landfall site = 52 km (not including micro-siting allowance); • No. of cable trenches = 4; • Width of trench affected area = 6 m; • Length of modified OfTI cable within three consented wind farms (including inter-platform cabling) = 70 km; • Area of seabed prepared for each OSP = 7,536 m²; • Maximum no. AC OSPs = 2 (installed at least one year apart); • Vessel anchors = 36,000 m²; and • Jack-up vessel footprint of 420 m² per installation. In addition, rolling safety zones / advisory exclusion zones may be applied for / recommended, extending 500 m around active installation works. Maximum construction activity: • Cable and OSPs likely to be installed in two phases: o Phase 1 (indicative timescales Q2 2017 – Q4 2018): installation of two cables and 1 OSP; o Phase 2 (indicative timescales 2020 – 2021): installation of two cables and 1 OSP. • 255 working days at sea to install 2 x OSPs and 4 x export cables • 72 vessel movements to install 2 x OSPs and 4 x export cables Maximum decommissioning activity: • Construction window, working days and vessel movements as per maximum construction activity above
Health and Safety Risk Associated with UXO	• Maximum construction footprint as defined above • Maximum construction activity as defined above • Maximum decommissioning activity as defined above

Potential Effect	Rochdale Envelope Scenario Assessed
Operation	
Damage / Disturbance / Disruption of Other Human Activities	Maximum operational footprint 0.09 km² based on: • Area per OSP foundation and scour material = 5,026 m²; • Cable protection (assuming protection is required to a distance of 100 m from the foundation to a width of 10 m and up to 20 "J" tubes (or cable connections) per OSP = 20,000 m²; • No. AC OSPs = 2; • Nominal area of cable protection material required along each export cable = 11,000 m2; • No. of export cables = 4; and • Use of rock cutting equipment in water depths < 10 m. In addition, rolling safety zones / advisory exclusion zones may be applied for/recommended, extending 500 m around major maintenance works. Maximum operational lifetime 25 years. Most frequent maintenance schedule.

EIA Methodology

5.7.2.12 The assessment has considered the likely significant effects of the modified OfTI as described in Chapter 2.2 (Project Description) on Other Human Activities. The scope of the assessment has been defined through a process of data gathering and consultation with the operators responsible for other activities and infrastructure within and in the vicinity of the study area, which covers the wider Moray Firth but is focused on activities and infrastructure that have the potential to overlap or be influenced by the modified OfTI.

5.7.2.13 In the absence of published guidelines regarding the assessment of effects of wind farm developments upon Other Human Activities, the following assessment criteria have been applied, as per the MORL ES (MORL, 2012).

5.7.2.14 In determining the magnitude of any given effect, the following have been considered:

- Spatial extent of the effect;
- Duration of the effect; and
- Frequency of the effect.

5.7.2.15 Sensitivity is also defined where appropriate, taking into consideration the:

- Vulnerability of the receptor;
- Recoverability of the receptor; and
- Value / importance of the receptor.

5.7.2.16 The significance of an effect has been assessed by combining the evaluations of the impact magnitude and the sensitivity of the receptor, as indicated in Table 5.7-4 and as defined in Chapter 1.3 (Environmental Impact Assessment).

Table 5.7-4 Significance of Effect Matrix

		Sensitivity of Receptor		
		Low	**Medium**	**High**
Magnitude of Effect	**Low**	Not significant	Minor	Minor / Moderate
	Medium	Minor	Moderate	Moderate / Major
	High	Minor / Moderate	Moderate / Major	Major

5.7.2.17 Effects were rated from 'not significant' where no effect is foreseen or where the effect will be indistinguishable from background variation, to 'major significance' where interaction between the MORL modified OfTI and Other Human Activities is likely to result in a measurable effect that exceeds acceptable limits or standards. The combination of receptor sensitivity and impact magnitude has been used to define the level of significance of an impact, as defined in Chapter 1.3 (Environmental Impact Assessment). For the purposes of this assessment, effects of moderate significance and greater are deemed to be significant in EIA terms. Where likely significant adverse effects are identified, mitigation measures are proposed to reduce the level of significance.

5.7.2.18 MORL has developed a draft Decommissioning Programme (Technical Appendix 1.3 E to MORL, 2012) but is yet to finalise its approach to project decommissioning. At the time of ES preparation it is considered likely that decommissioning will involve the removal of structures above the seabed, whilst subsea cabling is likely to be left in situ at the end of the modified OfTI's lifetime. Decommissioning activities are likely to have effects on Other Human Activities but for the purposes of this EIA they have been regarded as being comparable to those that occur as a result of construction activities. As a result, the effects of construction and decommissioning activities on Other Human Activities are considered together.

Impact Assessment

Construction / Decommissioning

Effects on Offshore Wind Farm Projects

5.7.2.19 The modified OfTI will not overlap with either the existing Beatrice Demonstrator Project WTGs or the consented BOWL wind farm and its offshore transmission infrastructure. BOWL and MORL developers have to date worked cooperatively (e.g. undertaking joint EIA studies) and would continue to do so during wind farm and transmission infrastructure installation, looking for opportunities to work together efficiently.

5.7.2.20 Project programmes indicate that it is possible that the BOWL and MORL Projects would be constructed concurrently, with temporal overlap by up to four years. BOWL and MORL developers will continue to share information on planned project activities and in line with the conditions of their project consents, will submit construction plans and method statements to Marine Scotland for approval. These standard practices would limit the potential for interaction between the sites and it is considered unlikely that one developer would hinder the other during construction. **No significant effect** is predicted.

5.7.2.21 Effects on other offshore wind farm projects associated with increased vessel traffic during the installation of the MORL modified OfTI are addressed in Chapter 5.2 (Shipping and Navigation).

Effects on Military Activity

5.7.2.22 The area within which OSPs may be located overlaps with D809, used by the Royal Air Force (RAF) for a wide variety of air flying, gunnery and subsurface exercises at altitudes up to 55,000 feet. The MoD also uses the wider Moray Firth, within which the modified OfTI is located, during surface and sub-surface naval activity and exercises. There is potential that the physical presence of vessels involved in the construction of the modified OfTI infrastructure could lead to temporary disruption or exclusion of military activity within D809 and across the wider Moray Firth or pose a hazard to ongoing military activity. However, the MoD has not highlighted any concerns regarding the potential effects of construction activity offshore and therefore, with a low sensitivity and magnitude, **no significant effect** is predicted.

Effects on Oil and Gas Activity and Infrastructure

5.7.2.23 Activities such as geophysical surveys will be spatially restricted over a relatively small area by the installation of the modified OfTI OSPs and export cabling. It is assumed for the purposes of this assessment that there is a degree of flexibility in terms of when a survey is undertaken and that a variety of survey techniques may be employed. Drilling and the placement of infrastructure would also be restricted by the presence of construction activities.

5.7.2.24 There is no existing oil and gas infrastructure within the modified OfTI footprint. There are five wells within the footprint, though all are plugged and abandoned and have no safety zone associated with them.

5.7.2.25 The modified OfTI does overlap with currently licensed oil and gas blocks held by operators Suncor and Sendero. These operators are yet to explore the potential of their licence blocks. Sendero's exploration plans are currently unknown. Consultation with Suncor has indicated that they intend to undertake geophysical survey within Block 12/27, which overlaps with the northern extent of the export cable corridor and a portion of the area within which OSPs may be located, in 2014. It is understood that dependent upon the outcome of survey, they would intend to install a well in Block 12/27 in 2015. MORL are not aware of any plans to install infrastructure within the licensed blocks that overlap with the modified OfTI.

5.7.2.26 At present, there is no indication that modified OfTI construction, which would not commence until 2017, would interfere with operators currently known plans. On the basis that the modified OfTI occupies only a proportion of the licenced blocks, and not the entire blocks, and due to the potential for directional drilling and ongoing consultation between MORL and the licence holders, the magnitude has been assessed as low and the sensitivity low, therefore the potential effect is deemed to be **minor significance**.

Damage to Subsea Cables

5.7.2.27 The modified OfTI export cables may need to cross the existing SHEFA-2 telecommunications cable. It is yet to be confirmed whether a crossing will be required but in line with precautionary principles, the impact assessment has assumed the MORL export cables will cross SHEFA-2.

5.7.2.28 As part of the modified OfTI export cable installation process, the following activities could impact upon the SHEFA cable:

- Cable installation and protection activity (via trenching, jetting, ploughing, etc.);
- Vessel anchoring; and
- Debris clearance operations.

5.7.2.29 Damage to subsea cables is expensive to repair and can cause disruption to international telecommunications. As a result, the sensitivity of the receptor is considered to be high. The magnitude of the effect will be medium assuming that

the SHEFA cable will have to be crossed. The unmitigated effect is therefore considered to be of **moderate adverse significance**. Following the application of the mitigation measures detailed in Section 5.7.2.43 below, the residual effect is predicted to be of **minor adverse** significance.

5.7.2.30 If the proposed SHE-T HVDC reinforcement gains approval, it is possible that installation of the modified OfTI export cable and SHE-T cable will run concurrently, although it is considered that this would be highly unlikely. As per the text immediately above, the modified OfTI export cable installation process could impact upon the SHE-T cable and the unmitigated effect would be of **moderate adverse significance**. Following the application of the mitigation measures detailed in Section 5.7.2.43 below, the residual effect is predicted to be of **minor adverse** significance.

Health and Safety Risk Associated with Unexploded Ordnance

5.7.2.31 There is potential for UXO associated with historic and current military activity to be encountered on the seabed in the area of the modified OfTI. During construction, activities which will have contact with the seabed, either directly (e.g. jack–up vessel, cable laying) or via the placement of material (e.g. foundations or cable protection), run the risk of disturbing UXO with potentially damaging and dangerous effects to both employees and equipment.

5.7.2.32 As human life is at risk, receptor sensitivity is considered to be high. Effect magnitude is considered to be medium and the effect is of potentially **major adverse significance**. Following the application of the mitigation measures detailed in Section 5.7.2.43 below, the residual effect is predicted to be of **minor adverse** significance.

Operation

Effects on Offshore Wind Farm Projects

5.7.2.33 Activity associated with the operation of the modified OfTI will be significantly reduced relative to the construction / decommissioning phases. Monitoring and maintenance vessels will require access, with any exceptional maintenance activity likely to have a temporary 500 m exclusion zone imposed around the relevant structure. It is theoretically possible for there to be a temporal overlap between temporary exclusion zones associated with exceptional maintenance activities for the modified OfTI and other offshore wind farm projects. However the potential for two such exceptional maintenance events occurring concurrently is considered to be unlikely and in light of established and ongoing coordination of works by MORL and BOWL, **no significant effect** is predicted.

Effects on Military Activity

5.7.2.34 The MoD has raised no concerns specifically in relation to the modified OfTI.

5.7.2.35 As a result of consultation with the MoD prior to and throughout consent determination for the MORL ES, a series of consent conditions were put in place for the Telford, Stevenson and MacColl offshore wind farms that addressed the MoDs concerns regarding the effects of the Project (primarily the WTGs) on military nautical and aeronautical activities. These conditions include the requirement for MORL to submit a Project Lighting and Marking Scheme and Air Traffic Control Radar Mitigation Scheme prior to construction commencing, for approval by the MoD and other relevant stakeholders. The OSPs will be captured within these Schemes and therefore the operation of the modified OfTI will have no significant effect on MoD interests.

Effects on Oil and Gas Activity and Infrastructure

5.7.2.36 As detailed above, the intentions of current oil and gas block licence holders beyond 2015 are currently not known by MORL.

5.7.2.37 Should licence holders seek to commence block exploration once the modified OfTI is operational, it is expected that activities such as geophysical survey will be spatially restricted over a relatively small area by the presence of OSPs and export cabling. It is assumed for the purposes of this assessment that there is a degree of flexibility in terms of when a survey is undertaken and that a variety of survey techniques may be employed.

5.7.2.38 Drilling and the placement of infrastructure would also be restricted by the presence of infrastructure. Should operators wish to drill or install infrastructure in close proximity to the operational modified OfTI, it is expected that MORL and any such operator would enter discussions and be steered by advice from relevant authorities, including DECC and Marine Scotland, as to how oil and gas operations could safely proceed in the vicinity of MORL operational infrastructure. On the basis that the modified OfTI occupies only a proportion of the licenced blocks, and not the entire blocks, and due to the potential for directional drilling and ongoing consultation between MORL and the licence holders, the magnitude has been assessed as medium and the sensitivity low, therefore the potential effect is deemed to be of **minor adverse significance**.

5.7.2.39 Effects associated with vessel access to existing oil and gas infrastructure are addressed in Chapter 5.2 (Shipping and Navigation).

Damage to Subsea Cables

5.7.2.40 During the operational phase, there is the potential for disturbance to subsea cables from maintenance activities, such as OSP foundation and cable repair work which could entail the use of jack–up vessels and the deployment of anchors. It is expected that any such activity will be subject to the same principles and agreements as established under construction.

5.7.2.41 The likelihood for damage to existing cables during such maintenance work is therefore remote and consequently the magnitude of effect is considered to be low. Damage to submarine cables is expensive to repair and can cause disruption to telecommunications and therefore, the value and sensitivity will be high. As a result the potential effect will be of a **minor adverse significance**. Following the application of the mitigation measures detailed in Section 5.7.2.43 below, the residual effect is predicted to be **not significant**.

Health and Safety Risk Associated with Unexploded Ordnance

5.7.2.42 The natural processes of the sea, including tidal action, seabed conditions, movement of sand waves, wave action and bad weather all contribute to the movement of objects on the seabed. Human activities such as seabed trawling will also contribute to the movement of objects, and as such, there is a risk of UXO moving into the modified OfTI corridor over time. This will have implications for maintenance and repair activities of foundations, cables and scour protection but the risk is expected to be limited as UXO will have previously been identified during pre–construction surveys. Therefore, **no significant effect** is predicted.

Proposed Monitoring and Mitigation

5.7.2.43 MORL will continue to engage with developers and operators with interests in the vicinity of the modified OfTI in order to share plans and programmes before, during and after the installation of the OSPs and export cable. This engagement will continue throughout the operational life of the modified OfTI and into decommissioning. Such engagement will limit any conflicts of interest and achieve co–existence where possible.

Construction / Decommissioning

Effects on Oil and Gas Activity and Infrastructure

5.7.2.44 MORL has been actively engaged in ongoing discussions at industry level with RenewableUK, Oil and Gas UK and the Department of Energy and Climate Change (DECC), aiming to develop a protocol by which any conflicts of interest between the offshore wind, oil and gas industries may be amicably resolved. MORL note that DECC, as of June 2014, have published a detailed framework that would be used to satisfactorily resolve any conflicts of interest between offshore wind developers and oil and gas operators (RenewableUK, 2014).

Damage to Subsea Cables

5.7.2.45 There are a number of mitigation measures that will be implemented as part of standard industry best practice that will serve to lower the risk of any impact on subsea cables. Where necessary, cable protection will be used to ensure future cable integrity and to separate sections of cable from potential risks (e.g. the risk of anchor penetration in areas where cable burial depth is restricted by geology).

5.7.2.46 Consultation has been undertaken with Faroese Telecom (the operator of the SHEFA–2 cable) and they have not raised an objection to the MORL Project. Further discussions will result in cable crossing / proximity agreements being secured which will include detailed crossing conditions and methodology. Faroese Telecom will also be notified of any MORL works within 1,000 m of the SHEFA–2 cable.

5.7.2.47 MORL, as part of the Connections Infrastructure Options Note (CION) process in 2013, and later as part of an ongoing initiative with SHE-T and National Grid, meets with both entities on a monthly basis in order to progress the grid connection and OFTO infrastructure. Since signature of the connection agreement at New Deer, SHE-T and National Grid have been informed on a monthly basis of the progress which is being made associated with the modified OfTI. This engagement will continue through to the construction phase for both MORL and SHE-T TI assets.

Health and Safety Risk Associated with Unexploded Ordnance

5.7.2.48 Although the Health & Safety at Work Act 1974 and the Construction (Design and Management) Regulations 2007 do not specifically require a dedicated UXO assessment, there is an obligation on those responsible for intrusive works to ensure that a comprehensive threat assessment is undertaken and risk mitigation measures are implemented with regard to all hazards on site. MORL will ensure that all practicable mitigation measures to minimise the risk of health and safety incidents associated with UXO are fully developed prior to construction. A UXO site survey will be undertaken prior to construction, where it is considered to be likely that UXO will be encountered, and site safety instructions will be prepared in the event that an item of UXO is located. All contractors' staff will be given munitions awareness briefings prior to and during the construction work. Should suspected items of UXO be discovered, their location will be accurately mapped and recorded for future assessment and possible removal / disposal or remediation in situ by a specialist contractor. The MoD and emergency services will also be consulted as appropriate.

Operation

Effects on Military Activity

5.7.2.49 In adhering to the conditions attached to any consent for the modified OfTI in relation to the lighting, marking and charting of infrastructure, MORL will ensure that the operational OfTI (specifically the OSPs) does not interfere with military activity.

Effects on Oil and Gas Activity and Infrastructure

5.7.2.50 As per mitigation during construction and decommissioning phases, MORL will continue to engage with oil and gas operators to achieve co–existence where possible and adhere to standard industry guidance in resolving any conflicts of interest.

Damage to Subsea Cables

5.7.2.51 The future arrangements made in any cable crossing agreement with Faroese Telecom, SHE-T and any other operators will serve to reduce the likelihood for effect.

Health and Safety Risk Associated with Unexploded Ordnance

5.7.2.52 As per mitigation during construction and decommissioning phases, MORL will implement the best practice measures described above where intrusive maintenance works are required.

Residual Effects

5.7.2.53 The significance of post-mitigation residual effects is presented in summary Table 5.7-2 above.

5.7.3 Cumulative Impact Assessment

Summary

5.7.3.1 The cumulative impact assessment has been focused on establishing potential for overlaps and therefore conflict between activities and operators in both a geographical and temporal context. The assessment firstly considers the cumulative effects associated with the construction/decommissioning and operation of the modified OfTI together with the Telford, Stevenson and MacColl consented wind farms, before assessing the whole project (modified OfTI and the Telford, Stevenson and MacColl consented wind farms) in relation to other relevant projects/plans.

5.7.3.2 The potential for the modified OfTI together with the Telford, Stevenson and MacColl consented wind farms, and for the whole project together with other projects and activities considered in the cumulative impact assessment, to disrupt activity associated with other proposed offshore wind farms and military practice areas is not expected to be significant.

5.7.3.3 Cumulative effects of minor adverse significance have been assessed for effects on oil and gas activity and infrastructure, in the event that the modified OfTI, Telford, Stevenson and MacColl consented wind farms and the BOWL project are built out together. This assumes that ongoing consultation will take place between Moray Firth operators.

5.7.3.4 Cumulative effects of minor adverse significance have been predicted during the construction phase in relation to subsea cables and UXO risk, and during the operational phase in relation to subsea cables (when considering all other projects and activities considered in the cumulative impact assessment), assuming implementation of industry standard practice by all proposed projects. No significant cumulative effect is predicted for UXO risk during operation. This also assumes implementation of industry standard practice by all proposed projects and that in most cases, buried cables / other buried structures will remain in-situ when projects are decommissioned.

5.7.3.5 A summary of the cumulative impact assessment is shown in Table 5.7-5.

Table 5.7-5 Cumulative Impact Summary

Effect/Receptor	Residual significance level for modified OfTI	Whole project assessment: Modified OfTI + Stevenson, Telford and MacColl	Mitigation Method
Construction / Decommissioning			
Effects on Offshore Wind Farm Projects	Not significant	Not significant	None
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Not significant		
Effects on Military Activity	Not significant	Not significant	None
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Not significant		
Effects on Oil and Gas Activity and Infrastructure	Not significant	Minor adverse	Assumes ongoing consultation amongst Moray Firth operators
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Minor adverse, assuming ongoing consultation amongst Moray Firth operators.		
Damage to Subsea Cables	Minor adverse	Minor adverse	Assumes implementation of industry standard practice by all proposed projects (note: also assumes that in most cases, buried cables / other buried structures will remain in-situ when projects are decommissioned).
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Minor adverse, assuming implementation of industry standard practice by all proposed projects (note: also assumes that in most cases, buried cables / other buried structures will remain in-situ when projects are decommissioned).		
Health and Safety Risk Associated with Unexploded Ordnance	Minor adverse	Minor adverse	Assumes implementation of industry standard practice by all proposed projects (note: also assumes that in most cases, buried cables / other buried structures will remain in-situ when projects are decommissioned).

Effect/Receptor	Residual significance level for modified OfTI	Whole project assessment: Modified OfTI + Stevenson, Telford and MacColl	Mitigation Method
Total Cumulative Impact Assessment (Whole project plus those developments listed in section section sections 5.7.3.7 and 5.7.3.8 below)	Minor adverse, assuming implementation of industry standard practice by all proposed projects (note: also assumes that in most cases, buried cables / other buried structures will remain in-situ when projects are decommissioned)		
Operation			
Effects on Offshore Wind Farm Projects	Not significant	Not significant	None
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Not significant		
Effects on Military Activity	Not significant	Not significant	None
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Not significant		
Effects on Oil and Gas Activity and Infrastructure	Minor adverse	Minor adverse	Assumes ongoing consultation amongst Moray Firth operators
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Minor adverse, assuming ongoing consultation amongst Moray Firth operators		
Damage to Subsea Cables	Not significant	Not significant	Assumes implementation of industry standard practice by all proposed projects
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Minor adverse, assuming implementation of industry standard practice by all proposed projects		
Health and Safety Risk Associated with Unexploded Ordnance	Not significant	Not significant	Assumes implementation of industry standard practice by all proposed projects

Effect/Receptor	Residual significance level for modified OfTI	Whole project assessment: Modified OfTI + Stevenson, Telford and MacColl	Mitigation Method
Total Cumulative Impact Assessment (Whole project plus those developments listed in sections 5.7.3.7 and 5.7.3.8 below)	Not significant, assuming implementation of industry standard practice by all proposed projects		

Assessment of Cumulative Effects

5.7.3.6 MORL's approach to the assessment of cumulative effects is described in Chapter 1.3 (Environmental Impact Assessment). The spatial context within which the cumulative assessment is set is based upon the range over which the proposed modified OfTI may overlap and / or interact with Other Human Activities in the Moray Firth.

5.7.3.7 The modified OfTI is firstly assessed cumulatively against the following developments to represent a whole project assessment:

- Consented MORL Telford, Stevenson and MacColl offshore wind farms.
- The whole project is then assessed together with the following other developments and activities:
- Consented BOWL Beatrice offshore wind farm and transmission infrastructure;
- Operational Beatrice Demonstrator Project turbines;
- Operational SHEFA-2 telecommunications cable;
- Operational Beatrice and Jacky oil platforms and their associated cable and pipeline infrastructure; and
- MORL Western Development Area (WDA) of the Moray Firth Round 3 Zone.

5.7.3.8 In addition, the following developments and activities have been identified which may have cumulative effects over the lifetime of the modified OfTI but there is currently insufficient information available on which to base a detailed assessment of effects:

- Licensed oil and gas blocks (intent of operators beyond the short-term plans of Suncor is unknown); and
- Proposed SHE-T HVDC offshore reinforcement (approximate route and completion data available).

Methodology

5.7.3.9 The assessment methodology has followed that outlined in the Moray Firth Offshore Wind Developers Group Discussion Document (ERM, 2011).

5.7.3.10 To inform the assessment, project parameters for the consented MORL and BOWL projects have been extracted from their respective ESs and publicly available consent documentation (See Table 5.7-6 and Table 5.7-7 below). MORL has provided parameters for the WDA of the Round 3 Zone (see Table 5.7-8 below). In each case these parameters represent a 'worst case' development scenario (i.e. maximum development footprint, maximum construction duration, etc.).

5.7.3.11 The connection between the WDA and the three consented wind farms necessitates a slightly different approach to assessment, as the effects arising from the "worst case" for the consented EDA cannot simply be added to the "worst case" scenario for the WDA. The potential capacity of the WDA (500 MW) when added to the consented capacity of the EDA (1,166 MW) exceeds the overall target capacity of the MORL Zone (1500 MW). It is not proposed that the target capacity for the MORL Zone will be exceeded. 500 MW represents the maximum development on the WDA, but in the event that MORL successfully constructs in excess of 1,000 MW in the three consented wind farm sites then the development in the WDA will be restricted accordingly to ensure the MORL Zone capacity is not exceeded.

5.7.3.12 Scenarios have not been supplied for the Beatrice Demonstrator Project, the SHEFA telecommunications cable or the existing oil and gas infrastructure in the Moray Firth. These developments are all operational and have known parameters.

5.7.3.13 The cumulative impact assessment firstly considers the cumulative effects associated with the construction/decommissioning and operation of the modified OfTI together with the Telford, Stevenson and MacColl consented wind farms, before assessing the whole project (modified OfTI and the three consented wind farms) in relation to other relevant projects/plans.

Table 5.7-6 Summary of MORL Telford, Stevenson and MacColl offshore wind farm Worst Case Parameters

Worst Case Parameters	Scenario Assessed
Up to 62 wind turbines per wind farm	
Gravity Base Structure or jacket foundations	Total footprint of three wind farm sites 5.99 km^2
Maximum 5 year construction window	Construction activities ongoing for five year period
Maximum operational lifetime of 25 years	Wind farm structures in place for 25 years
Maximum operation and maintenance schedule	

Table 5.7-7 Summary of BOWL Project Worst Case Parameters

Worst Case Parameters	Scenario Assessed
Up to 140 wind turbines, plus two AC OSPs and one AC/DC substation	
Foundations (either pin piles, suction piles or gravity bases)	
Gravity base and scour protection with combined permanent footprint of 11,690m^2 per foundation	Total footprint of 3.52 km^2
65 km export cable route	Construction activities ongoing for five year period
325 km inter-array cables with trench width of 3 m	Wind farm structures in place for 25 years
Maximum 5 year construction window	
Maximum operational lifetime of 25 years	
Maximum operation and maintenance schedule	

Table 5.7-8 Summary of MORL WDA Worst Case Parameters

Worst Case Parameters	Scenario Assessed
Installation of 100 turbines and one AC OSP with gravity base foundations and associated scour protection 130 km inter-array cables with trench width of 3 m Cable protection required up to 50 m distance from turbine Maximum 2 year construction window Operational lifetime of 25 years Maximum operation and maintenance schedule	Total footprint 1.20 km^2 Construction activities ongoing for two year period Wind farm structures in place for 25 years

Other Developments

5.7.3.14 In relation to other remaining projects and activities (i.e. the SHE-T HVDC reinforcement and possible exploration of licensed oil and gas blocks), parameters remain unconfirmed and the cumulative assessment has therefore taken a more qualitative approach in defining potential effects based on available information.

Cumulative Assessment

Construction / Decommissioning

Effects on Offshore Wind Farm Projects

5.7.3.15 The modified OfTI is an essential component of the Telford, Stevenson and MacColl consented wind farms. As such the projects are complimentary and there will be **no significant cumulative effect**.

5.7.3.16 The modified OfTI and the Telford, Stevenson and MacColl consented wind farms, together with the other offshore projects proposed within the Moray Firth are seen to be complimentary rather than conflicting and all are proposed in order to meet renewable energy targets in Scotland and the wider UK. Relationships and communication between all offshore developers are considered to be good. Continued sharing of plans with regard to construction schedules and methodologies will ensure all construction works, including those for the whole project are undertaken safely and as a result **no significant cumulative effect** is predicted.

Effects on Military Activity

5.7.3.17 The modified OfTI will be constructed concurrently with the Telford, Stevenson and MacColl consented wind farms, with construction scheduled to take place from 2017 – 2021. Construction activity has the potential to disrupt and interfere with military practice and exercise area (PEXA) activities. The MoD considers proposals on a case-by-case basis and to date has no outstanding objections to the consented Telford, Stevenson and MacColl offshore wind farms. Consultation responses to date indicate that there will be **no significant cumulative effect** on PEXA in the Moray Firth.

5.7.3.18 There is potential for the construction of the whole project (modified OfTI and the Telford, Stevenson and MacColl consented wind farms), BOWL projects and the SHE-T HVDC cable, to run concurrently. Construction activity has the potential to disrupt and interfere with military practice and exercise area (PEXA) activities. Whilst MORL, BOWL and SHE-T projects overlap in particular locations with military PEXA, the MoD considers proposals on a case-by-case basis and to date has no outstanding objections to the consented MORL Telford, Stevenson and MacColl offshore wind farms or the BOWL Project. MORL is unaware of the outcome of any consultation with the MoD undertaken by SHE-T. Consultation responses to date indicate that there will be **no significant cumulative effect** on PEXA in the Moray Firth. The WDA does not overlap with any PEXA.

Effects on Oil and Gas Activity and Infrastructure

5.7.3.19 The modified OfTI and the Telford, Stevenson and MacColl consented wind farms overlap with the licenced blocks 12/21b, 12/26b and 12/27 (see Table 5.7-9). The operators of these blocks have yet to explore the potential of the licence blocks and their exploration plans (beyond those communicated verbally to MORL by Suncor relating to planned activity in 2014 and 2015 in Block 12/27) are currently unknown. Construction of the modified OfTI and the three consented wind farms (2017 – 2021) will take place after the planned activity by Suncor in 2014 and 2015. However, if licence holders undertake exploratory surveys within their licence blocks during the construction of the modified OfTI and the three consented wind farms, survey activity would be excluded from the construction locations (and the associated safety zones). It is assumed for the purposes of this assessment that there is a degree of flexibility in terms of when a survey is undertaken and that a variety of survey techniques may be employed. Drilling and the placement of infrastructure would also be restricted by construction activities. On the basis that the modified OfTI and the three consented wind farm projects occupy only a proportion of the licenced blocks, and not the entire blocks, and due to the potential for directional drilling and ongoing consultation between MORL and the licence holders, the magnitude has been assessed as medium and the sensitivity low. The cumulative effect will therefore be of **minor adverse significance.**

5.7.3.20 Oil and gas licence blocks overlapping with the whole project (modified OfTI and the Telford, Stevenson and MacColl consented wind farms) and a number of other projects / activities are shown in Table 5.7-9 below.

Table 5.7-9 Oil and Gas Licence Blocks and Overlapping Projects and Activities

Operator (Licence Blocks)	Overlapping Projects and Activities
Sendero (12/21b)	Modified OfTI MORL Telford, Stevenson and MacColl offshore wind farms MORL WDA
Suncor (12/26b and 12/27)	Modified OfTI MORL Telford, Stevenson and MacColl offshore wind farms MORL WDA SHEFA-2 telecommunications cable Proposed SHE-T HVDC cable

5.7.3.21 As described above, it is possible that the licence holders may wish to undertake exploratory surveys within their licence blocks; if this is the case, survey activity would be excluded from the construction locations (and the associated safety zones) of the proposed projects in the Moray Firth. It is assumed for the purposes of this assessment that there is a degree of flexibility in terms of when a survey is undertaken and that a variety of survey techniques may be employed. Drilling and the placement of infrastructure would also be restricted by construction activities. On the basis that the whole MORL project and the other projects occupy only a proportion of the licenced blocks, and not the entire blocks, and due to the potential for directional drilling and assumed ongoing consultation between the developers and the licence holders, the magnitude has been assessed as medium and the sensitivity low, therefore the potential effect is deemed to be of **minor adverse significance**.

Damage to Subsea Cables

5.7.3.22 The modified OfTI export cables may need to cross the existing SHEFA-2 telecommunications cable and the proposed SHE-T cable. There are no cable crossings required within the sites of the Telford, Stevenson and MacColl consented wind farms (Figure 5.7-1), therefore the cumulative effect will remain as already assessed for the modified OfTI alone, **minor adverse significance**.

5.7.3.23 As shown in Figure 5.7-1, the BOWL export cable corridor overlaps with the landfall end of the proposed SHE-T cable. Therefore, the proposed SHE-T cable may need to cross/be crossed by both the modified OfTI export cable and the BOWL export cable. The BOWL export cable corridor also transits through the WDA. The unmitigated cumulative effect will be of moderate adverse significance and following the implementation of standard mitigation measures as described earlier in the chapter, the residual effect will be of **minor adverse significance**.

Health and Safety Risk Associated with Unexploded Ordnance

5.7.3.24 There is potential for UXO associated with historic and current military activity to be encountered on the seabed in the area of all proposed offshore projects in the Moray Firth. During construction, activities which will have contact with the seabed, either directly (e.g. jack-up vessel) or via the placement of material (e.g. foundations or scour protection), run the risk of disturbing UXO with potentially damaging and dangerous effects to both employees and equipment. However, there is an obligation on those responsible for intrusive works to ensure that a comprehensive threat assessment is undertaken and risk mitigation measures are implemented with regard to all hazards on site.

5.7.3.25 It is assumed that MORL will adhere to this obligation during the construction of the modified OfTI project and the Telford, Stevenson and MacColl consented wind farms. The cumulative effect will therefore be of **minor adverse significance**.

5.7.3.26 It is also assumed that MORL, BOWL and SHETL will adhere to this obligation and as such any cumulative effect will be of **minor adverse significance.**

Operation

Effects on Offshore Wind Farm Projects

5.7.3.27 Activity associated with the operation of the modified OfTI and the Telford, Stevenson and MacColl consented wind farms will be significantly reduced relative to the construction/decommissioning phases. Monitoring and maintenance vessels will require access, with any exceptional maintenance activity likely to require a temporary 500 m exclusion zone around the structure undergoing maintenance. As the modified OfTI is an essential component of the three consented wind farm projects, it is assumed that maintenance works for both would be coordinated and mutually beneficial. The cumulative effect of maintenance works carried out on these projects will therefore be **not significant**.

5.7.3.28 Activity associated with the operation of the whole MORL project, BOWL wind farm sites and other potential developments that may be installed within a similar timeframe (i.e. the SHE-T cable) will be significantly reduced relative to the construction / decommissioning phases. Monitoring and maintenance vessels will require access, with any exceptional maintenance activity likely to have a temporary 500 m exclusion zone imposed around the relevant structure. It is theoretically possible for there to be a temporal overlap between temporary exclusion zones associated with the wind farm sites and cables. The potential for two or more exceptional maintenance events occurring concurrently is considered to be unlikely and in light of established and ongoing coordination of works by MORL, BOWL and SHE-T, **no significant cumulative effect** is predicted.

Effects on Military Activity

5.7.3.29 As per the text above relating to 'construction / decommissioning' effects, consultation responses to date indicate that there will be **no significant cumulative effect** on PEXA in the Moray Firth.

Effects on Oil and Gas Activity and Infrastructure

5.7.3.30 As detailed above, the longer term intentions of oil and gas block licence holders are currently unknown.

5.7.3.31 Should licence holders seek to commence block exploration once the modified OfTI and the Telford, Stevenson and MacColl consented wind farms are operational, it is expected that activities such as seismic survey will be spatially restricted by the presence of turbines and platforms and any associated safety zones. Drilling and the placement of infrastructure would also be restricted by the presence of wind farm and modified OfTI infrastructure. Due to the greater footprint of the three consented wind farms, the greatest effect arises from the construction of the three consented wind farms rather than the modified OfTI. On the basis that the modified OfTI and the three consented wind farms infrastructure occupy only a proportion of the licenced blocks, and not the entire blocks, and due to the potential for directional drilling and ongoing consultation between MORL and the licence holders, the magnitude has been assessed as medium and the sensitivity low. The cumulative effect will be of **minor adverse significance**.

5.7.3.32 Should licence holders seek to commence block exploration once the whole MORL project, BOWL project, and potentially the SHE-T cable, are operational, it is expected that activities such as seismic survey will be spatially restricted by the presence of turbines and platforms and any associated safety zones. Drilling and the placement of infrastructure would also be restricted by the presence of the wind farms and their associated transmission infrastructure. On the basis that the whole project and the other offshore wind farm projects occupy only a proportion of the licenced blocks, and not the entire blocks, and due to the potential for directional drilling and assumed ongoing consultation between the developers and the licence holders, the magnitude has been assessed as medium and the sensitivity low. The cumulative effect will be of **minor adverse significance**.

Damage to Subsea Cables

5.7.3.33 The modified OfTI export cables may need to cross the existing SHEFA-2 telecommunications cable and the proposed SHE-T cable. As there are no cable crossings required within the sites of the three consented wind farms (Figure 5.7-1), the cumulative effect will be **not significant**, as assessed for the modified OfTI project alone.

5.7.3.34 During the operational phase of the whole MORL project and BOWL project, there is the potential for disturbance to subsea cables from maintenance activities, such as foundation and cable repair work which could entail the use of jack-up vessels and the deployment of anchors. It is expected that any such activity will be subject to the same principles and agreements as established under construction.

5.7.3.35 The likelihood for damage to existing cables during such maintenance work is therefore remote and consequently the magnitude of effect is considered to be low. Damage to submarine cables is expensive to repair and can cause disruption to telecommunications and therefore, the value and sensitivity will be high. As a result the likely cumulative effect will be of a **minor adverse significance**.

Health and Safety Risk Associated with Unexploded Ordnance

5.7.3.36 Any seabed UXO will have previously been identified and the risk mitigated prior to the construction of the modified OfTI and the Telford, Stevenson and MacColl consented wind farms, and the other offshore wind farm projects and their offshore

transmission infrastructure. The potential for UXO encounter during operation and maintenance activities would be managed by adherence to the good practice measures described earlier in this chapter. Cumulative effects will **not be significant** during operation.

5.7.4 References

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