FOREWIND

DOGGER BANK
TEESSIDE A & B

March
2014

Environmental Statement
Chapter 34
Conclusions

Application Reference: 6.34

Cover photograph: Installation of turbine foundations in the North Sea

Document Title	Dogger Bank Teesside A & B Environmental Statement – Chapter 34 Conclusions
Forewind Document Reference	F-OFC-CH-034_Issue 4.1
Date	18 March 2014

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Date / initials check		07 March 2014
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Date / initials approval		10 March 2014
Forewind Approval		
Date / Reference approval	Gareth Lewis	17 March 2014

Title: Dogger Bank Teesside A & B Environmental Statement Chapter 34 - Conclusions		Contract No. (if applicable) Onshore ☐ Offshore ☒
Document Number: F-OFC-CH-034	Issue No: 4.1	Issue Date: 18 March 2014
Status: Issued for 1st. Technical Review ☐ Issued for 2nd. Technical Review ☐ Issued for PEI3 ☐ Issued for Application Submission ☒		
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Revision History

Date	Issue No.	Remarks / Reason for Issue	Author	Checked	Approved
20 September2013	1	Issued for 1st review	AP/AH	AL	AL
04 October2013	2	Issued for 2nd review	AP/AH	AL	AL
15 October 2013	3	Issued for PEI3	AP/AH	AL	AL
10 March 2014	4	Pre DCO submission review	AP/AH	BLO	AL
18 March 2014	4.1	DCO submission	AP/AH	BLO	AL

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1.1 Background

1.1.1 This chapter of the Environmental Statement (ES) summarises the assessment of impacts which have been described in **Chapters 8 – 30**, providing an overview of the potential impacts of Dogger Bank Teesside A & B during the construction, operation and decommissioning phases.

1.1.2 As set out in **Chapter 4 EIA Process**, potential impacts identified within the ES as major or moderate can be regarded as significant in terms of the EIA Regulations. Appropriate mitigation measures will be established in conjunction with the Regulatory Authorities and relevant stakeholders where the EIA process has identified a significant adverse impact on a receptor. It is recognised that this 'mitigation by design' approach is an important factor in ensuring that environmental impacts are minimised.

1.1.3 Whilst mitigation for minor and negligible residual impacts is not identified as a matter of course, industry standard or 'embedded' mitigation often applies in these cases (see **Chapter 35 Summary of Mitigation and Monitoring**). It is also recognised that minor and negligible residual impacts could become significant when considered cumulatively with other pressures on a receptor, and in this event, mitigation may be required. The outcome of the Cumulative Impact Assessment (CIA) is summarised in **Chapter 33 Cumulative Impact Assessment**.

1.1.4 The ES chapters used to inform this summary chapter are:

- **Chapter 8 Designated Sites**
- **Chapter 9 Marine Physical Processes**
- **Chapter 10 Marine Water and Sediment Quality**
- **Chapter 11 Marine and Coastal Ornithology**
- **Chapter 12 Marine and Intertidal Ecology**
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2 Project Need

2.1 Project need

2.1.1 Renewable energy has been recognised by the Government as one of the means of reducing the dependence on fossil fuels as well as in meeting the target of delivering 15% of energy from renewable sources from the transport, heat and energy sectors by 2020 (**Chapter 2 Project Need**). The key drivers for moving towards renewable energy sources include: the provision of economic opportunities such as the creation of employment; development of new infrastructure; tackling climate change; and improving energy security. In terms of reducing the risk to energy security and in order to be able to adapt to changes in energy demand in the future, the Government estimates that 59GW net of new energy capacity will be needed by 2025.

2.1.2 Offshore wind power has been recognised as an important source of low carbon energy and at present the UK is one of the world leaders in installed capacity combined with projects in the pipeline. The Dogger Bank Zone is the largest site currently available for leasing by the Crown Estate under Round 3. Forewind's zone appraisal work identified the possibility for up to eight Dogger Bank projects, with a total capacity of more than 9GW, which would provide approximately 10% of the UK's predicted electricity needs and reduce carbon emissions by 13.7 million tonnes per annum. If fully developed, it will be the world's largest offshore wind development. In light of information (such as site survey data) that has been gathered over the course of the last three years, Forewind's current plan is to secure development consent for six projects, which have a total target installed capacity of 7.2 GW. Its focus is on the first four, which together are Dogger Bank Creyke Beck and Dogger Bank Teesside A&B.

2.1.3 Within the Dogger Bank Zone, several specific areas for wind farm development have been identified. Dogger Bank Teesside A & B forms the second stage of development to be taken forward in the zone. Dogger Bank Teesside A & B will have a total generating capacity of up to 2.4GW (enough to power approximately 1.8 million homes or all businesses in the North East). This is a major step forward towards reaching government targets for offshore wind generation.

2.1.4 Dogger Bank Teesside A & B is not only an important contributor to the need for increased energy from renewable sources in the UK but it also has the potential to create employment and diversification opportunities in Redcar and Cleveland; an area where employment is lower than the national average. Here 18.8% of jobs are in the manufacturing industry and Dogger Bank Teesside A & B has the potential to create a considerable number of jobs in this sector as well as the installation sector. The period of licence for a wind farm is 50 years and within this time Dogger Bank Teesside A & B offers considerable opportunities in supporting other sectors such as onshore and offshore engineering as well as

helping the local economy through capacity building. All of these benefits will ultimately enhance the sustainable development of the region.

3 Summary of Potential Impacts

3.1 Onshore assessment

3.1.1 Without mitigation, the onshore aspects of the projects have the potential to result in significant adverse impacts upon the landscape, terrestrial ecology, existing land use (agriculture), traffic and access, noise and vibration and air quality.

3.1.2 Standard best practice measures will be applied with respect to other impacts identified and negligible to minor adverse residual impacts are predicted for tourism and recreation, geology, water resources and land quality, cultural heritage and socio-economics.

3.1.3 Negligible to minor adverse (i.e. non-significant) residual impacts are predicted for the vast majority of impacts that have been identified in relation to the onshore assessment for Dogger Bank Teesside A & B (cumulative impacts are summarised in **Chapter 33**). The potential for moderate adverse residual impacts (identified as significant in line with the assessment methodology set out in **Chapter 4**) has been identified in relation to the landscape character and resources of the converter stations site and immediate surroundings, and also **moderate** impacts on views available to residential receptors within the northeast of Lazenby (approximately 200m).

Landscape and Visual Impact Assessment (LVIA)

3.1.4 Measures to reduce landscape and visual impacts are embedded into the design of the cable route and the restoration proposals.

3.1.5 During the period of construction there will be disturbance to the local landscape arising from construction activity at the landfall, along the HVDC and HVAC cable route towards the existing National Grid Electricity Transmission (NGET) substation at Lackenby, resulting in a limited number of temporary significant impacts and will be short term whilst replacement vegetation becomes established.

3.1.6 During construction of the converter stations (including that of the additional bunding which will help screen them during the latter period of construction) potential impacts will arise as a result of activities and disturbance in the working areas. The construction of the converter stations and additional bunding will give rise to significant visual impacts on residential receptors at the north-eastern extent of Lazenby (represented by Viewpoint 1: Lazenby). From the wider area to the south, west and east, intervening vegetation and buildings within Lazenby will screen views of the works and no significant impacts are predicted.

3.1.7 During operation, significant landscape and visual impacts are likely to be restricted to the site of the converter stations, the agricultural farmland to the south and southwest, and the edge of the settlement of Lazenby. This is largely as a result of the introduction of extended areas of bunding and partial close range views of the converter stations. These will affect the higher sensitivity

residential receptors, who have views available to the north east, and who are located within around 0.8km of the site. The extension of areas of woodland planting in order to screen views more effectively from the upper storeys of properties within Lazenby will reduce these visual impacts over time. At year 10 it is anticipated that there will be no significant residual visual impacts.

3.1.8 Overall, the proposed development will have significant residual effects on landscape and visual receptors, but these will be very localised, and set in the context of a landscape where built development is already characteristic.

3.1.9 Please refer to **Chapter 21** for specific details of the assessment.

Terrestrial ecology

3.1.10 A diverse mix of bird species were found to be breeding along the cable corridor and wintering bird species, including golden plover and lapwing were found to be using the coastal fields close to the landfall during winter.

3.1.11 Mitigation measures to reduce construction impacts include minimising the working area, habitat reinstatement, consultation, sensitive vegetation clearance and working practices. With these measures in place, the impact upon terrestrial ecology is not considered to be significant.

3.1.12 Please refer to **Chapter 25** for specific details of the assessment.

Land use and agriculture

3.1.13 Onshore construction activities will disrupt existing land use and agricultural activities along the length of the cable route and at the converter stations site. Where financial losses are identified, landowners will be compensated until land is reinstated to its previous condition. With these measures in place, the impact upon existing land uses and agriculture is not considered to be significant.

3.1.14 Please refer to **Chapter 26** for specific details of the assessment.

Traffic and access

3.1.15 The construction phase will involve significant numbers of vehicles using the main roads through the area. To reduce the impact upon local communities and sensitive receptors, an access strategy has been developed in consultation with the local authority and the Highway Agency. This makes use of temporary haul roads and positions construction compounds to avoid routing traffic through sensitive locations. In addition, a construction traffic management plan will be developed to ensure that construction traffic is managed throughout the construction period. With these measures in place, the impact of construction traffic is not considered significant.

3.1.16 Please refer to **Chapter 28** for specific details of the assessment.

Air Quality

3.1.17 The sensitivity of the study area to dust emissions is moderate and the dust assessment indicates that either a single project or two projects constructed concurrently have the potential for construction dust emissions to have at worst, a moderate adverse impact at the nearest sensitive human receptor locations without any mitigation measures applied. This impact is associated with the risk

of dust emissions from trackout and from earthworks due to the large volume of material moved. Effective implementation of a Construction and Environmental Management Plan (CEMP) and incorporation of mitigation measures would contribute to reducing the effect of earthworks, construction and trackout emissions to negligible at sensitive human and ecological receptors (for all scenarios).

3.1.18 Please refer to **Chapter 30** for specific details of the assessment.

Noise and vibration

3.1.19 An assessment of operational noise for the converter stations site was made at the nearest sensitive receptors. Some form of noise reduction will be required to ensure operational noise levels are acceptable at the nearest receptors. There is a range of industry standard methods that can be employed to reduce operational noise. With these in place an acceptable low noise level can be achieved.

3.1.20 Please refer to **Chapter 29** for specific details of the assessment.

3.2 Offshore assessment

3.2.1 Negligible to minor adverse (i.e. non-significant) residual impacts are predicted for the vast majority of impacts that have been identified in relation to the offshore assessment for Dogger Bank Teesside A & B (cumulative impacts are summarised in **Chapter 33**). The potential for moderate adverse residual impacts (identified as significant in line with the assessment methodology set out in **Chapter 4**) have been identified in relation to commercial fisheries, and seascape and visual character.

Designated sites

3.2.2 No significant residual impacts have been identified on designated sites (or species) from the development of Dogger Bank Teesside A & B. The assessment of impacts on European sites (i.e. those designated under the Habitats Directive (92/43/EEC) and Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive')) is provided in the **HRA Report**.

3.2.3 Please refer to **Chapter 8** for specific details of the environmental impact assessment on designated sites.

Marine physical processes

3.2.4 Significant effects on waves and tidal currents are not anticipated. An increase in suspended sediment concentration and sediment deposition will be temporary. There will be no effect on sediment transport from construction activity at the landfall or from linear cable protection (if it is required).

3.2.5 Please refer to **Chapter 9** for specific details of the assessment.

Marine water and sediment quality

3.2.6 Impacts during all phases, including an increase in suspended sediments (see above) and the potential re-suspension of contaminants, will be temporary and of low magnitude, leading to no significant residual impacts. The potential for pollution from the accidental spillage of chemicals, fuels or oil during the

development was also considered and identified as low risk. Control measures will be in place to minimise the risk of a spill.

3.2.7 Please refer to **Chapter 10** for specific details of the assessment.

Marine and coastal ornithology

3.2.8 During construction (and decommissioning), the key impacts are disturbance and displacement, and habitat loss and /or alteration. These are predominantly short-term and reversible impacts, which are not considered to be significant. During operation key impacts include: disturbance and displacement; barrier effect; collisions; and habitat loss and/or alteration on breeding seabird populations. In addition, barrier effect and collisions could also arise on migratory wintering or passage bird populations (e.g. migrant terrestrial and waterfowl species). During the operation phase it is predicted that no moderate adverse impacts would arise on the national and biogeographic populations of breeding seabirds, seabirds outside the breeding season, and migratory wintering or passage birds, or on BAP bird species, OSPAR threatened or declining bird species, and designated sites. All impacts range from no impact, negligible impact to minor adverse in significance. However, some impacts are predicted to be moderate in significance when considered cumulatively with other projects (summarised in **Chapter 33**). Mitigation measures to minimise the impacts were incorporated into the design of the proposed development and include: restraining the maximum number of turbines per project to 200 (originally this was up to 300); and having a minimum lower blade tip height of 26m above highest astronomical tide (industry standard is 22m but this has been raised to reduce risks to some species of foraging seabirds).

3.2.9 Please refer to **Chapter 11** for specific details of the assessment.

Marine and intertidal ecology

3.2.10 Temporary disturbance of existing habitats and increases in suspended sediment levels will occur during the construction phase, with some permanent loss of habitat where infrastructure is fixed in place during operation. Impacts are not considered to be significant, since the areas of existing habitats that may be affected represent only a small proportion of similar seabed habitats in the wider region, and the receptors in question are generally of low sensitivity and high recoverability.

3.2.11 Please refer to **Chapter 12** for specific details of the assessment.

Fish and shellfish ecology

3.2.12 As above, fish and shellfish may be affected through temporary physical disturbance during construction and permanent loss of habitat during operation (e.g. from foundations, scour protection and cable protection). Potential impacts relating to noise and electromagnetic fields have also been assessed. No significant residual impacts have been identified for fish and shellfish ecology. The adoption of soft start piling will allow fish to move away from the noise source, whilst the boundaries of Dogger Bank Teesside A & B avoid the highest density areas of the commercially important sandeel.

3.2.13 Please refer to **Chapter 13** for specific details of the assessment.

Marine mammals

3.2.14 The key impacts for marine mammals are the potential for hearing injury and/or behavioural disturbance (such as displacement from a feeding area) during construction. The risk of causing hearing injury will be mitigated through the use of a Marine Mammal Mitigation Protocol, which will aim to reduce the exposure of marine mammals to sources of noise. Behavioural disturbance impacts will not be significant for Dogger Bank Teesside A & B, due to the relatively small proportion of the population of each species that may be affected.

3.2.15 Please refer to **Chapter 14** for specific details of the assessment.

Commercial fisheries

3.2.16 With the exception of the seine net fishery during operation, the impacts on commercial fisheries are no greater than minor adverse, as would be expected from the overall comparatively very low levels of fishing activities that have been recorded within Dogger Bank Teesside A & B and along the Dogger Bank Teesside A & B Export Cable Corridor.

3.2.17 Please refer to **Chapter 15** for specific details of the assessment.

Shipping and navigation

3.2.18 The physical presence of the wind farms may diminish emergency response (including search & rescue and pollution control) capability within the southern North Sea. An independent Emergency Response Study was undertaken by Forewind. This is part of the continued commitment to maintaining and potentially improving emergency response ability at sites within the Dogger Bank Zone, and will reduce all such adverse impacts to within an ALARP region. With respect to collision risk, modelling has shown that there is a low risk of collision, either between vessels or between vessels and the project infrastructure. Mitigation and safety measures will be adopted in consultation with the Maritime Coastguard Agency through which impacts will be reduced to within acceptable limits. In addition, Forewind has proposed layout rules, in consultation with key stakeholders, to ensure that the final project design aids navigational safety.

3.2.19 Please refer to **Chapter 16** for specific details of the assessment.

Other marine users

3.2.20 No significant residual impacts have been identified in relation to other marine users. Consultation is ongoing with a number of potentially affected parties in order to agree the terms of crossing and proximity agreements, particularly in relation to cables and pipelines, oil & gas activity and aggregate extraction.

3.2.21 Please refer to **Chapter 17** for specific details of the assessment.

Marine and coastal archaeology

3.2.22 Direct effects will be avoided by the use of 100m Archaeological Exclusion Zones (AEZs), which will prohibit development within their boundaries, as well as micrositing for certain types of receptors. Any sites which may be found at a later date during construction will be subject to further assessment. Mitigation measures focus on the requirement for possible further assessment in line with a Written Scheme of Investigation, and in discussion with English Heritage.

Unexpected remains discovered during the course of the development will be addressed through the application of the Offshore Renewables Protocol for Archaeological Discoveries (ORPAD). As a result, no significant residual impacts on marine and coastal archaeology are anticipated.

3.2.23 Please refer to **Chapter 18** for specific details of the assessment.

Military activities and civil aviation

3.2.24 There is a potential for aeronautical Search and Rescue (SAR) operations to be affected by the development of Dogger Bank Teesside A & B, as the change in operating environment created by the wind farm may constrain certain elements of SAR activity. However, ongoing discussions with the SAR agencies and the adoption of appropriate mitigation measures will ensure that the overall impact upon SAR activities is reduced to the lowest level possible.

3.2.25 Please refer to **Chapter 19** for specific details of the assessment.

Seascape and visual character

3.2.26 There will be no significant impacts on the seascape character at the landfall, across inshore waters and the Dogger Bank Teesside A & B Export Cable Corridor study areas. There will be no significant impacts on the coastal character of the study area as a result of the construction of the landfall and installation of the offshore export cables. There will also be no significant impacts on these areas as a result of the construction and operation of the offshore development, due to the distance of the wind turbines offshore. Onshore receptors in the Redcar and Cleveland area, including users of the coastal footpaths and beaches, will experience close-range views of the landfall works as well as offshore activity within the Dogger Bank Teesside A & B Export Cable Corridor, however such visual impacts will be for a limited duration. Impacts on the seascape character of the development area are predicted to be moderate adverse, although within the context of the North Sea, these are considered to be minor adverse. The magnitude of visual change will be high, and as a result of the presence of wind turbines there will be a moderate adverse impact within areas up to 15-20km from the development area boundary, in clear weather conditions; however the overall experience of receptors travelling across the North Sea will not be significantly affected and a minor adverse to negligible impact is anticipated.

3.2.27 Please refer to **Chapter 20** for specific details of the assessment.

3.3 Impact assessment summary

3.3.1 A tabulated summary of impacts as assessed within **Chapters 8 – 30** of the ES along with, where relevant, details of the mitigation measures and level of residual impact is presented in **Table 3.1**.

Table 3.1 Summary of impacts and mitigation

Chapter 8 Designated Sites		
Note: where relevant, mitigation for designated sites is dealt with at the receptor level		
Description of impact	**Designation**	**Impact or residual impact**
Construction		
Internationally designated sites	SAC, SPA and Ramsar sites	Refer to **HRA Report**
Nationally designated sites - SSSIs	A number of sites (individually or as components of SACs and SPAs)	Impacts range from **negligible** to **minor adverse**
Nationally designated sites – rMCZs	2 sites	**Minor adverse**
Local Wildlife Sites	Redcar to Saltburn Coast LWS	**Minor adverse**
Ancient Woodland sites	Wilton Wood	**No impact**
BAP habitats	3 habitat types	**Minor adverse**
BAP priority and legally protected species	37 species	Impacts range from **no impact** to **minor adverse**
OSPAR threatened species and habitats	6 species	Impacts range from **negligible** to **minor adverse**
Operation		
Internationally designated sites	SAC, SPA and Ramsar sites	Refer to **HRA Report**
Nationally designated sites - SSSIs	A number of sites (individually or as components of SACs and SPAs)	Impacts range from **negligible** to **minor adverse**
Nationally designated sites – rMCZs	2 sites	**No impact**
Local Wildlife Sites	Redcar to Saltburn Coast LWS	**No impact**
Ancient Woodland sites	Wilton Wood	**No impact**
BAP habitats	3 habitat types	Impacts range from **no impact** to **minor adverse**
BAP priority and legally protected species	37 species	Impacts range from **no impact** to **minor adverse**
OSPAR threatened species and habitats	6 species	Impacts range from **negligible** to **minor adverse**
Decommissioning		
Internationally designated sites	SAC, SPA and Ramsar sites	Refer to **HRA Report**
Nationally designated sites - SSSIs	A number of sites (individually or as components of SACs and SPAs)	Impacts range from **no impact** to **minor adverse**
Nationally designated sites – rMCZs	2 sites	**Negligible impact**

Chapter 8 Designated Sites		
Local Wildlife Sites	Redcar to Saltburn Coast LWS	**Negligible impact**
Ancient Woodland sites	Wilton Wood	**No impact**
BAP habitats	3 habitat types	Impacts range from **negligible** to **minor adverse**
BAP priority and legally protected species	37 species	Impacts range from **no impact** to **minor adverse**
OSPAR threatened species and habitats	6 species	Impacts range from **negligible** to **minor adverse**

Chapter 9 Marine Physical Processes			
NOTE: The assessment methodology adopted to understand potential changes to the physical environment caused by Dogger Bank Teesside A & B is different to those adopted in other chapters of this Environmental Statement. This is because the development may have effects on the hydrodynamic and sedimentary processes, but these effects in themselves are not considered to be impacts. The impacts will manifest upon other receptors such as marine ecology, fish and shellfish ecology, marine water and sediment quality, and the historic environment. Hence, the assessment in this chapter focused on describing the changes/effects against the existing environment, rather than defining the impact. Where an effect has been identified, the assessment considered the magnitude of the degree of change relative to baseline conditions.			
Description of effects	**Metric**	**Value**	**Key distance / notes**
Construction / decommissioning			
Increased suspended sediment concentrations	Maximum suspended sediment concentration	>200mg/l	Up to 11km from source of sediment plume
		2mg/l (baseline)	Up to 40km from source of sediment plume
	Average suspended sediment concentration	50-100mg/l	Up to 9km from source of sediment plume
		2mg/l (baseline)	Up to 32km from source of sediment plume
Sediment deposition from plume	Maximum deposition	10-50mm	Within worst case foundation layout
		<0.5mm	Up to 35km from source of sediment plume
	Average deposition	1-5mm	Up to 10km from source of sediment plume
		0.5mm	Up to 30km from source of sediment plume
Interruption to longshore sediment transport at the landfall	N/A	N/A	Existing longshore sediment transport levels are low (see **Chapter 9** Section 6.5). This means that whilst the 'downdrift' coastline may be affected by the

Chapter 9 Marine Physical Processes			
			works, the magnitude of change is likely to be low and temporary. The presence of cofferdams will not have an effect on natural coastal erosion rates given the short-term nature of the construction programme. The decommissioning phase is generally considered to have a similar or lesser effect than the construction phase.
Operation			
Changes to waves	Wave height	+/-0.04m	At the boundaries of the projects
Changes to tidal currents	Current velocity	+/-0.008m/s	At the boundaries of the projects
Increased suspended sediment concentrations	Maximum suspended sediment concentration	>200mg/l	At the boundaries of the projects
		2mg/l (baseline)	Up to 54km from source of sediment plume (measured from project boundary)
	Average suspended sediment concentration	10-50mg/l	Up to 19km from source of sediment plume (measured from project boundary)
		2mg/l (baseline)	Up to 36km from source of sediment plume (measured from project boundary)
Sediment deposition from plume	Maximum deposition	0.5-5mm	Within the boundaries of the projects
		0.1mm	Up to 35km from source of sediment plume (measured from project boundary)
	Average deposition	0.5-5mm	Between the projects
		0.1mm	Up to 23km from source of sediment plume (measured from project boundary)

Chapter 10 Marine Water and Sediment Quality		
Description of impact	**Mitigation measures**	**Impact or residual impact**
Construction / decommissioning		
Re-suspension of sediments	None identified	**Minor adverse**
Re-suspension of contaminants	None identified	**Negligible**
Re-suspension of sediments (bathing waters)	None identified	**Negligible**
Re-suspension of sediments (landfall)	None identified	**No impact**
Risk of accidental pollution	Control measures in place	**Low Risk**
Operation		
Re-suspension of sediments	None identified	**Negligible**
Risk of accidental pollution	Control measures in place	**Low Risk**

Chapter 11 Marine and Coastal Ornithology (national populations of seabirds and migrant birds only – see Chapter 11 Section 12 for further details)		
Description of impact	**Receptor**	**Residual impact**
Construction		
Disturbance / displacement	Populations of Arctic skua, black-legged kittiwake, great black-backed gull, great skua, lesser black-backed gull, and northern fulmar.	**No impact**
	Populations of little auk and white billed diver.	Short-term **negligible**
	Populations of Atlantic puffin, common guillemot, northern gannet, and razorbill.	Short-term **minor adverse**
Disturbance during landfall activities	Populations of black-headed gull, dunlin, Eurasian oystercatcher, herring gull, and ruddy turnstone.	Short-term and temporary **negligible**
	Populations of northern lapwing, ringed plover, and sanderling.	Short-term and temporary **minor adverse**

Chapter 11 Marine and Coastal Ornithology (national populations of seabirds and migrant birds only – see Chapter 11 Section 12 for further details)		
Habitat loss or alteration	Populations of Arctic skua, black-legged kittiwake, great black-backed gull, great skua, lesser black-backed gull, little auk, northern fulmar, northern gannet, and white-billed diver.	Short-term and temporary **negligible**
	Populations of Atlantic puffin, common guillemot, and razorbill.	Short-term and temporary **minor adverse**
Operation		
Disturbance / displacement	Populations of Arctic skua, black-legged kittiwake, great black-backed gull, great skua, lesser black-backed gull, and northern fulmar.	**No impact**
	Populations of little auk and white billed diver.	Long-term **negligible**
	Populations of Atlantic puffin, common guillemot, northern gannet, and razorbill.	Long-term **minor adverse**
Barrier effect	Populations of Arctic skua, Atlantic puffin, great black-backed gull, great skua, lesser black-backed gull, little auk, and white billed diver.	**No impact**
	Populations of black-legged kittiwake, common guillemot, northern fulmar, northern gannet, and razorbill.	Long-term **minor adverse**
	All migrant birds and their populations.	Long-term **minor adverse**
Collisions	Populations of little auk and white billed diver.	Long-term **negligible**
	Populations of Arctic skua, Atlantic puffin, black-legged kittiwake, common guillemot, great black-backed gull, great skua, lesser black-backed gull, northern fulmar, northern gannet, and razorbill.	Long-term **minor adverse**
	All migrant birds and their populations.	Long-term **negligible** to **minor adverse**
Habitat loss or alteration	Populations of Arctic skua, black-legged kittiwake, great black-backed gull, great skua, lesser black-backed gull, little auk, northern fulmar, northern gannet, and white-billed diver.	Long-term **negligible**
	Populations of Atlantic puffin, common guillemot, and razorbill.	Long-term **minor adverse**

Chapter 11 Marine and Coastal Ornithology (national populations of seabirds and migrant birds only – see Chapter 11 Section 12 for further details)		
Decommissioning		
Disturbance / displacement	Populations of Arctic skua, black-legged kittiwake, great black-backed gull, great skua, lesser black-backed gull, and northern fulmar.	**No impact**
	Populations of little auk and white billed diver.	Short-term and temporary **negligible**
	Populations of Atlantic puffin, common guillemot, northern gannet, and razorbill.	Short-term and temporary **minor adverse**
Habitat loss or alteration	Populations of Arctic skua, black-legged kittiwake, great black-backed gull, great skua, lesser black-backed gull, little auk, northern fulmar, northern gannet, and white-billed diver.	Short-term and temporary **negligible**
	Populations of Atlantic puffin, common guillemot, and razorbill.	Short-term and temporary **minor adverse**

Chapter 12 Marine and Intertidal Ecology		
Description of impact	**Mitigation measures**	**Impact or residual impact**
Construction		
Physical disturbance to habitats and species and temporary habitat loss	None identified	**Negligible** impact on all VERs apart from VER C **Minor adverse** impact on VER C
Increased suspended sediment concentration and sediment deposition	None identified	**Negligible** impact on all VERs apart from VER C **Minor adverse** impact on VER C
Release of sediment contaminants resulting in potential effects on benthic ecology	None identified	**Negligible** impact on VERs A, B and C in wind farm sites (and furthest offshore part of the export cable corridor) **Minor adverse** impact on VERs D to I (export cable corridor VERs)

Chapter 12 Marine and Intertidal Ecology		
Increased suspended sediment concentration leading to impacts on plankton and primary productivity	None identified	**Negligible** impact
Physical disturbance to intertidal habitats and species during landfall works	None identified	**Negligible** impact (VERs H and I)
Potential construction phase impacts on Dogger Bank cSAC	None identified	**Negligible** impact (VERs A and B) **Minor adverse** impact (VER C)
Operation		
Permanent loss of habitat via placement of project infrastructure (foundations, cable protection, scour protection)	None identified	**Negligible** impact on VERs D, E, F, G, H and I **Minor adverse** impact on VERs A, B and C
Temporary impact on benthos due to physical disturbance caused by maintenance activities	None identified	**Negligible** impact
Change in hydrodynamics and inter-related effects on benthos	None identified	**Negligible** impact
Increase in suspended sediment concentration due to scour associated with foundations	None identified	**Negligible** impact for all VERs apart from VER C **Minor adverse** impact for VER C
Increase in sediment deposition following increase in suspended sediment concentration due to scour associated with foundations	None identified	**Negligible** impact
Introduction of new habitat in the form of foundation structures, leading to potential colonisation	None identified	**Negligible** impact
Effect of EMF on benthic communities	Where feasible cables will be buried to at least 1m, as outlined in **Chapter 5**	**Negligible** impact on all VERs

Chapter 12 Marine and Intertidal Ecology		
Potential operational phase impacts on Dogger Bank cSAC	None identified	**Negligible** impact (VERs A and B) **Minor adverse** impact (VER C)
Decommissioning		
Increased suspended sediment concentration and sediment deposition	None identified	**Negligible** impact
Loss of species colonising hard structures	None identified	**Negligible** impact
Temporary disturbance to habitats via removal of cables	None identified	**Negligible** impact on all VERs apart from VER C **Minor adverse** impact on VER C
Potential decommissioning phase impacts on the Dogger Bank cSAC	None identified	**Negligible** impact (VERs A and B) **Minor adverse** impact (VER C)

Chapter 13 Fish and Shellfish Ecology						
Description of impact	**Receptor**	**Mitigation measure**	**Impact or residual impact**			
			Dogger Bank Teesside A	**Dogger Bank Teesside B**	**Dogger Bank Teesside A & B**	**Dogger Bank Teesside A & B Export Cable Corridor**
Construction / decommissioning						
Temporary physical disturbance/ loss of seabed habitat	Eggs and larvae of pelagic fish spawners	None identified	**Negligible**	**Negligible**	**Negligible**	**Negligible**
	Eggs and larvae of demersal fish spawners	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Eggs and larvae of sandeel	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Eggs and larvae of herring	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Eggs and larvae of shellfish	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Adult and juvenile fish	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Sandeel	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Shellfish	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
Increased suspended sediment concentrations and sediment re-deposition	Eggs and larvae (general)	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Herring eggs	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Sandeel eggs	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**

Chapter 13 Fish and Shellfish Ecology						
	Adult and juvenile fish (general)	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Sandeel	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Shellfish	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
Construction noise	Adult and juvenile fish	None identified	**Negligible**	**Negligible**	**Negligible**	**Negligible**
	Larvae	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Negligible**
	Fish in general	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Negligible**
	Herring	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Sandeel	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Diadromous species	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Other fish species	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Minor adverse**
	Fish in general	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Negligible**
	Shellfish	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Negligible**
Operation						
Loss of habitat	Fish and shellfish in general	None identified	**Minor adverse**			
	Sandeel	None identified				

Chapter 13 Fish and Shellfish Ecology						
	Herring	None identified				
Introduction of hard substrate	Fish and shellfish (general)	None identified	**Minor adverse**	**Minor adverse**	**Minor adverse**	**Negligible**
EMF	Elasmobranchs	None identified	**Minor adverse**			
	Salmon and sea trout	None identified				
	European eel	None identified				
	Lamprey	None identified				
	Other fish	None identified				
	Shellfish	None identified				
Operational noise	Fish and shellfish (general)	None identified	**Minor adverse**			**N/A**
Changes to fishing activity	Fish and shellfish (general)	None identified	**Minor adverse**			**N/A**

Chapter 14 Marine Mammals			
Dogger Bank Teesside A or Dogger Bank Teesside B in isolation			
Description of impact	**Receptor**	**Mitigation measure**	**Impact or residual impact**
Construction			
Underwater noise – pile driving	Harbour porpoise Minke whale White-beaked dolphin Grey seal	Soft start; and Commitment to development of an agreed marine mammal mitigation protocol.	**Minor adverse** **Minor adverse** **Minor adverse** **Minor adverse**
Underwater noise – vessel noise	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – hull impacts	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – ducted propellers	Grey seal Harbour seal	None identified	**Negligible** **Minor adverse**
Changes in prey resource	Cetaceans Pinnipeds	None identified	**Minor adverse** **Minor adverse**
Operation			
Underwater noise – wind turbines	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Underwater noise – vessels	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – hull impacts	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – ducted propellers	Grey seal Harbour seal	None identified	**Negligible** **Minor adverse**
EMF	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Physical barrier	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Decommissioning			
Underwater noise – cutting	Cetaceans Pinnipeds	None identified	**Minor adverse** **Minor adverse**

Chapter 14 Marine Mammals			
Dogger Bank Teesside A or Dogger Bank Teesside B in isolation			
Underwater noise – vessels	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – hull impacts	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – ducted propellers	Grey seal Harbour seal	None identified	**Negligible** **Minor adverse**

Chapter 14 Marine Mammals			
Dogger Bank Teesside A & B (sequential or concurrent)			
Description of impact	**Receptor**	**Mitigation measures**	**Impact or residual impact**
Construction			
Underwater noise – pile driving	Harbour porpoise Minke whale White-beaked dolphin Grey seal	Soft start; and Commitment to development of an agreed marine mammal mitigation protocol.	**Minor adverse** **Minor adverse** **Minor adverse** **Minor adverse**
Underwater noise – vessel noise	Cetaceans Pinnipeds	None identified	**Minor adverse** **Minor adverse**
Collision risk – hull impacts	Cetaceans Pinnipeds	None identified	**Minor adverse** **Negligible**
Collision risk – ducted propellers	Grey seal Harbour seal	None identified	**Negligible** **Minor adverse**
Changes in prey resource	Cetaceans Pinnipeds	None identified	**Minor adverse** **Minor adverse**
Operation			
Underwater noise – wind turbines	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Underwater noise – vessels	Cetaceans Pinnipeds	None identified	**Minor adverse** **Minor adverse**
Collision risk – hull impacts	Cetaceans Pinnipeds	None identified	**Minor adverse** **Negligible**

Chapter 14 Marine Mammals			
Dogger Bank Teesside A & B (sequential or concurrent)			
Collision risk – ducted propellers	Grey seal Harbour seal	None identified	**Negligible** **Minor adverse**
EMF	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Physical barrier	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Decommissioning			
Underwater noise – cutting of foundations	Cetaceans Pinnipeds	None identified	**Minor adverse** **Minor adverse**
Underwater noise – vessels	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – hull impacts	Cetaceans Pinnipeds	None identified	**Negligible** **Negligible**
Collision risk – ducted propellers	Grey seal Harbour seal	None identified	**Negligible** **Minor adverse**

Chapter 15 Commercial Fisheries			
Receptor group	**Impact (pre-mitigation)**	**Mitigation measures**	**Residual impact**
Adverse Impacts upon Commercially Exploited Species (Dogger Bank Teesside A & B and Dogger Bank Teesside Export Cable Corridor; construction and operation)			
All Receptors	Not exceeding **minor adverse** as discussed in: **Chapter 13 Fish and Shellfish Ecology**	None identified	Not exceeding **minor adverse**
Complete Loss or Restricted Access to Traditional Fishing Grounds			
Dogger Bank Teesside A Construction and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**

Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside B Construction and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside A & B Construction and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside A & B Export Cable Corridor Installation and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Whitefish Fishery – Under-15m	**Minor adverse**	None identified	**Minor adverse**
Whitefish Fishery – Over-15m	**No discernible impact**	None identified	**No discernible impact**
Nephrops Fishery	**Minor adverse**	None identified	**Minor adverse**
Scallop Fishery	**No discernible impact**	None identified	**No discernible impact**
Pelagic Fishery	**Minor adverse**	None identified	**Minor adverse**
Potting Fishery	**Minor adverse**	None identified	**Minor adverse**
Netting Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside A Operation			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**

Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside B Operation			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside A & B Operation			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Safety Issues for Fishing Vessels (Dogger Bank Teesside A and Dogger Bank Teesside B and Dogger Bank Teesside A & B Export Cable Corridor; construction and operation			
All Receptors	Acceptable, discussed in **Chapter 5 Project Description**	None identified	**Within acceptable limits**
Interference with Fishing Activities			
Construction/Installation and Decommissioning			
Mobile Gear	**No discernible impact**	None identified	**No discernible impact**
Static Gear	**Minor adverse**	None identified	**Minor adverse**
Operation			
Mobile Gear	**No discernible impact**	None identified	**No discernible impact**

Static Gear	**Minor adverse**	None identified	**Minor adverse**
Increased Steaming Times to Fishing Grounds (Dogger Bank Teesside A & B and Dogger Bank Teesside Export Cable Corridor; construction and operation)			
All Receptors	**Within acceptable limits**	None identified	**Within acceptable limits**
Removal of Obstacles on the Seabed Post-Construction (Dogger Bank Teesside A and B and Dogger Bank Teesside Export Cable Corridor; construction and operation)			
All Receptors	**Within acceptable limits**	None identified	**Within acceptable limits**
Displacement of Fishing Activity			
Dogger Bank Teesside A Construction and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside B Construction and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside A and B Construction and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**

Dogger Bank Teesside A & B Export Cable Corridor Installation and Decommissioning			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Whitefish Fishery – Under-15m	**Minor adverse**	None identified	**Minor adverse**
Whitefish Fishery – Over-15m	**No discernible impact**	None identified	**No discernible impact**
Nephrops Fishery	**Minor adverse**	None identified	**Minor adverse**
Scallop Fishery	**No discernible impact**	None identified	**No discernible impact**
Pelagic Fishery	**Minor adverse**	None identified	**Minor adverse**
Potting Fishery	**Minor adverse**	None identified	**Minor adverse**
Netting Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside A Operation			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside B Operation			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**
Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**
Dogger Bank Teesside A & B Operation			
Flatfish Fishery	**Minor adverse**	None identified	**Minor adverse**
Sandeel Fishery	**Minor adverse**	None identified	**Minor adverse**

Seine Net Fishery	**Moderate adverse**	To be explored	**Moderate adverse**
Gillnet Fishery	**Minor adverse**	None identified	**Minor adverse**

Chapter 16 Shipping and Navigation		
Description of impact	**Proposed mitigation to reduce to ALARP**	**Impact**
Construction / decommissioning		
Presence of construction activities: impacts on existing marine vessels transit routes due to deviation and increased journey times	No additional mitigation	**Negligible**
Presence of construction vessels: displacement of existing vessel transit routes leading to increased vessel to vessel collision risk	No additional mitigation	**Minor adverse**
Presence of partially constructed or deconstructed structures: increased vessel to structure allision	No additional mitigation	**Minor adverse**
Presence of partially constructed or deconstructed structures: increased risk of commercial fishing vessel allision	• Advanced promulgation of information; • Safety zones around partially developed structures and vessels engaged in construction and major maintenance activity; • Use of guard vessels (where required) to protect vulnerable areas of construction or decommissioning; • Use of vessels own fenders to protect from low energy impacts; and • Temporary aids to navigation to mark potential hazards to navigation safety.	**Minor adverse**
Presence of construction activities: decrease in emergency response (including SAR and pollution control)	An Emergency Response Study was undertaken by Forewind. This report will form part of the continued commitment to mitigating the potential impact to emergency response. This will reduce all negative impacts to within an ALARP region and of minor significance once plans are in place.	
Presence of construction activities: increase in emergency response (including SAR and pollution control)	An Emergency Response Study was undertaken by Forewind. This report will form part of the continued commitment to maintaining and potentially improving emergency response capability at sites within the Dogger Bank Zone.	
Operation and maintenance		
Physical presence of offshore infrastructure: increase deviations on vessel transit time	No additional mitigation	**Minor adverse**

Chapter 16 Shipping and Navigation		
Physical presence of offshore infrastructure: increase in vessel to vessel collision risk	• Promulgation of information; and • Marine vessel coordination including early warning procedures for vessels transiting in close proximity to the site and designated entry/exit points for the site.	**Minor adverse**
Physical presence of offshore infrastructure: increase in vessel to structure allision risk	• Implementation of Layout Rules; • Consultation on Aids to Navigation during operation; and • Use of vessels own fenders as mitigation for low energy allisions.	**Minor adverse**
Physical presence of offshore infrastructure: increase in interference with navigational position fixing aids (such as radars)	No additional mitigation	**Negligible**
Physical presence of offshore infrastructure: increase collision risk to vessels NUC (including vessels NUC due to mechanical or navigational system errors)	• Marine vessel coordination to monitor and provide information on NUC events; • Vessels own fenders to protect from low energy allisions with structures; • Advanced ERCop; and • Emergency Response Study.	**Minor adverse**
Physical presence of inter-array cables and cable protection(exposed or incorrectly buried): increase in anchor snagging risk	• Offshore cables will be buried or protected appropriately along their length. A detailed cable burial and protection risk assessment will be carried out to identify the most suitable target burial depth and level of protection in each area. Additional or alternative protection measures only applied if necessary; • Implementation of inspection and maintenance regime for installed cables; and • Inter-array cable layout to be widely promulgated.	**Negligible**
Physical presence of export cables and cable burial protection (including exposed or incorrectly buried cables): increase anchor snagging risk	• Offshore cables will be buried or protected appropriately along their length. A detailed cable burial and protection risk assessment will be carried out to identify the most suitable target burial depth and level of protection in each area. Additional or alternative protection measures only applied if necessary; • Implementation of inspection and maintenance regime for installed cables.	**Negligible**
Physical presence of HVDC export cables: increase in electromagnetic interference for vessels using magnetic compasses	No additional mitigation	**Minor adverse**

Chapter 16 Shipping and Navigation		
Manoeuvring within corridors and open sea between OREI: increase in collision (vertical and horizontal) risk for fishing vessels	• Implementation of layout rules; • Advanced promulgation of information; and • Use of vessels own fenders to protect from low energy allisions with structures.	**Minor adverse**
Physical presence of offshore infrastructure: decrease in emergency response (including SAR and pollution control)	An Emergency Response Study was undertaken by Forewind. This report will form part of the continued commitment to mitigating the potential impact to emergency response. This will reduce all negative impacts to within an ALARP region and of minor significance once plans are in place.	
Physical presence of offshore infrastructure: increase in emergency response (including SAR and pollution control	An Emergency Response Study was undertaken by Forewind. This report will form part of the continued commitment to maintaining and potentially improving emergency response capability at sites within the Dogger Bank Zone.	
Export cable (operation)		
Physical presence of export cables and cable protection (including exposed or incorrectly buried cables): increase anchor snagging risk	• Offshore cables will be buried or protected appropriately along their length. A detailed cable burial and protection risk assessment will be carried out to identify the most suitable target burial depth and level of protection in each area. Additional or alternative protection measures will only be applied if necessary; • Implementation of inspection and maintenance regime for installed cables.	**Negligible**

Chapter 17 Other Marine Users		
Description of impact	**Mitigation measures**	**Impact or residual impact**
Construction / decommissioning		
Other renewable projects: - General disruption due to overlapping activities;	None identified	**Negligible**
- Pressure on port services;	None identified	**No impact**
- Navigational safety; and	Addressed in **Chapter 16**	
- Overlap in aviation activity.	Addressed in **Chapter 19**	

Chapter 17 Other Marine Users		
Carbon Capture and Storage: - Disruption due to overlap of construction activities.	Forewind is in discussions with the operator to resolve any issues e.g. separation distances between CO_2 pipeline and HVDC export cables.	**Minor adverse**
Potash mining: - Disruption due to overlap of construction activities (sediment plumes).	None identified	**Minor adverse**
Oil and gas activity: - General disruption;	Consultation and advance notification of activities creating high noise levels i.e. piling.	**Minor adverse**
- Safety of Navigation; and	Addressed in **Chapter 16**	
- Overlap in aviation activity.	Addressed in **Chapter 19**	
Aggregate extraction activity: - Deposition of suspended sediments; and	None identified	**Negligible**
- Increased steaming times and vessel collision risk.	Addressed in **Chapter 16**	
Subsea cables and pipelines: - Potential damage to cables and pipelines from seabed disturbance and cable crossing points.	Early engagement to resolve crossings and proximity agreements; Agreements on separation distances; and Communication of cable and pipeline locations.	**Minor adverse**
Operation		
Other renewable projects: - General disruption due to overlapping activities; and	None identified	**No impact**
- Pressure on port services.	None identified	**No impact**
Carbon capture and storage: - Overlap in structures at landfall.	Discussions with the operator on location of structures to avoid overlap.	**Negligible**

Chapter 17 Other Marine Users		
Oil and Gas activity: - Issues arising from proximity.	Implementation of appropriate buffer zones and liaison with the potentially affected parties.	**Minor adverse**
Aggregate extraction activity: - Deposition of suspended sediments; and	Monitoring of sediment deposition levels.	**Negligible**
- Interaction of inter-array cables and dredging vessels.	Forewind will engage with the operator and take account of latest available guidance.	**See Chapter 16**
Subsea cables and pipelines: - Potential damage due to operation and maintenance activity;	Early engagement to resolve crossings and proximity agreements; Agreements on separation distances; and Communication of cable and pipeline locations.	**Minor adverse**
- Scour processes affecting integrity of cables and pipelines; and	None identified	**No impact**
- Potential restriction of cable and pipeline maintenance activities.	Forewind has established buffer zones to any cable and pipeline and final separation distances will be agreed with the operator on a case by case basis.	**Minor adverse**

Chapter 18 Marine and Coastal Archaeology				
Receptor class	**Receptor**	**Effect**	**Mitigation**	**Residual impact**
Dogger Bank Teesside A				
Submerged Prehistory	Potential in situ prehistoric sites, isolated artefact discoveries and palaeoenvironmental data.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Maritime	2 known (A1) wrecks of high archaeological value (WA70587, WA70590). 2 (A3) records of wrecks high archaeological value (WA70618, WA70620).	Direct	Archaeological Exclusion Zones (A1: 100m around extent of site; A3: 100m around point location).	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	Potential in situ maritime sites and isolated artefact discoveries.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set	**No**

Chapter 18 Marine and Coastal Archaeology				
			out in WSI.	**discernible impact**
	2 (A3) records of modern wrecks of low archaeological value (WA70616, WA70617). 1 (A3) recorded loss (WA70621).	Direct	None required although avoidance recommended.	**No discernible impact**
		Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
Aviation	Potential in situ aviation sites and isolated artefact discoveries.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Additional Anomalies	35 known (A2) anomalies of potential archaeological value.	Direct	Positions to be avoided in design layout	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Dogger Bank Teesside B				
Submerged Prehistory	Potential in situ prehistoric sites, isolated artefact discoveries and palaeoenvironmental data.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Maritime	4 known (A1) wrecks of high archaeological value (WA70636, WA70637, WA70505 and WA70640).	Direct	Archaeological Exclusion Zones (100m around extent of site).	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	Potential in situ maritime sites and isolated artefact discoveries.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	3 (A3) recorded losses/dead wreck (WA70533,	Direct	Measures to deal with unexpected discoveries set out in WSI.	**No**

Chapter 18 Marine and Coastal Archaeology				
	WA70535, and WA70536).			**discernible impact**
Aviation	1 (A3) record of an aircraft of high archaeological value (WA70651).	Direct	Archaeological Exclusion Zones (100m around point location).	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Additional Anomalies	25 known (A2) anomalies of potential archaeological value.	Direct	Positions to be avoided in design layout.	**None**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**None**
Dogger Bank Teesside A & B				
Submerged Prehistory	Potential in situ prehistoric sites, isolated artefact discoveries and palaeoenvironmental data.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Maritime	6 known (A1) wrecks of high archaeological value (WA70587, WA70590, WA70636, WA70637, WA70505 and WA70640); 2 (A3) records of wrecks high archaeological value (WA70618, WA70620).	Direct	Archaeological Exclusion Zones (A1: 100m around extent of site; A3: 100m around point location).	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	Potential in situ maritime sites and isolated artefact discoveries.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	2 (A3) records of modern wrecks of low archaeological value (WA70616, WA70617)	Direct	None required although avoidance recommended.	**No discernible impact**
	4 (A3) recorded losses/dead wreck (WA70621, WA70533, WA70535, and WA70536).	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
Aviation	1 (A3) record of an aircraft (WA70651).	Direct	Archaeological Exclusion Zones (100m around point location).	**No discernible**

Chapter 18 Marine and Coastal Archaeology				
				impact
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	Potential in situ aviation sits and isolated artefact discoveries.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Additional Anomalies	60 known (A2) anomalies of potential archaeological value.	Direct	Positions to be avoided in design layout.	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Dogger Bank Teesside A & B Export Cable Corridor				
Landfall	Potential for buried features and artefacts.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and sediment transport processes as set out in WSI.	**No discernible impact**
Submerged Prehistory	Potential in situ prehistoric sites, isolated artefact discoveries and palaeoenvironmental data.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Maritime	1 known (A1) wrecks of high archaeological value (WA70657).	Direct	Archaeological Exclusion Zones (A1: 100m around extent of site).	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	33 (A3) Fishermen's Fasteners and 4 (A3) wrecks of low archaeological value (WA70855, WA70860, WA70866, WA70853).	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
	Additional records of Fishermen's Fasteners	Direct	Positions to be avoided in design layout.	**No**

Chapter 18 Marine and Coastal Archaeology				
	outside geophysical survey areas. 3 additional records of seabed obstructions outside geophysical survey areas (WA2016, WA2020, WA2018).			**discernible impact**
	Record of modern wreck of low archaeological value outside geophysical survey areas (WA2022).	Direct	None required although avoidance recommended.	**No discernible impact**
	Nine additional records of wrecks of high and medium archaeological value outside geophysical survey areas ((WA2014, WA2017, WA2110, WA2024, WA2092, WA2094, Moorwood WA2095, HMS Ruthin Castle WA2148, Anboto Mendi WA2114, Hartley WA2147, Early Percy WA2126).	Direct	Archaeological Exclusion Zones (100m around point location).	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
	Two wrecks considered absent or inaccurately recorded (Moorwood WA2095, HMS Ruthin Castle WA2148).	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
	Potential in situ maritime sites and isolated artefact discoveries.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Aviation	1 (A3) records of modern aircraft of low archaeological value (WA70834).	Direct	None required although avoidance recommended.	**No discernible Impact**
	Potential in situ aviation sites and isolated artefact discoveries.	Direct	Measures to deal with unexpected discoveries set out in WSI.	**Negligible**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**
Additional Anomalies	177 known (A2) anomalies of potential archaeological value.	Direct	Positions to be avoided in design layout.	**No discernible impact**
		Indirect	Monitoring of scour and changes to physical processes as set out in WSI.	**No discernible impact**

Chapter 19 Military Activities and Civil Aviation		
Description of impact	**Mitigation measures**	**Residual impact**
All phases		
Impact upon aeronautical SAR operations	As arising from consultation with SAR stakeholders (MCA and MOD): • Inclusion of wind farm on aeronautical charts, position of individual wind turbines plotted for use in GPS/radar datasets; • Lighting of wind farm/wind turbines in accordance with requirements of CAA, MOD and marine regulators; • Marking of wind turbines and blades in accordance with requirements to ensure maximum conspicuity; • Ensuring that the wind turbines have a radar 'signature' sufficient to satisfy needs of stakeholders whose helicopters may need to traverse the site in poor visibility; and • Other measures arising from ongoing consultation with the MCA and relevant SAR agencies as the project progresses.	SAR operations can take place safely as long as revised procedures, taking account of the changes caused by the wind farm, are followed.

Chapter 20 Seascape and Visual Character		
Description of impact	**Mitigation measures**	**Impact or residual impact**
Construction / decommissioning		
Landfall and inshore area		
Direct and indirect impacts on seascape character and resources	None proposed, see **Chapter 20**, Section 6.2: Mitigation.	**Minor adverse**
Impacts on historic seascape character	As above	**Negligible**
Visual impacts on specific receptors - landfall and inshore waters		
Bydale Howle, Marske Sands	None proposed, see **Chapter 20**, Section 6.2: Mitigation.	**Moderate adverse** reducing to none post-construction.
Millclose Howle, Redcar Sands		**Moderate adverse** reducing to none post-construction.
Valley Gardens, Marske Sands		**Minor adverse** reducing to none post-construction.
Church Howle, Marske-by-the-Sea		**Minor adverse** reducing to none post-construction.
Windy Hill Farm and Windy Hill Lane, Marske-by-the-Sea		**Minor adverse** reducing to none post-construction.
Saltburn Pier and promenade		**Negligible**
Zetland Park, Redcar Sands		**Minor adverse** reducing to none post-construction.
Warsett Hill		**Negligible**
Sailing vessels		**Minor adverse**
Offshore Dogger Bank Teesside A & B Export Cable Corridor		
All impacts	None proposed, see **Chapter 20**, Section 6.2: Mitigation.	**Negligible**
Dogger Bank Teesside A & B development area		

Chapter 20 Seascape and Visual Character		
Direct and indirect impacts on seascape character	None proposed, see **Chapter 20**, Section 6.2: Mitigation.	**Moderate adverse**
Visual impacts		**Minor adverse**
Historic seascape character		**Minor adverse**
Operation		
Seascape character	Detailed siting, design and detailing of ancillary infrastructure such as lighting and signage, according to such guide as *Siting and Designing Wind Farms in the Landscape* (SNH, 2009).	**Moderate adverse**
Visual impacts		**Minor adverse**
Historic seascape character		**Minor adverse**

Chapter 21 Landscape and Visual		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Impacts on landscape character and resources at the landfall and HVDC Cable Route	Embedded mitigation to reduce impacts on the landscape and views, through the siting and design of the scheme include: • Co-locating cable systems within a single cable route; • Burying the cable systems rather than using over-head power-lines; • Aligning the cable route to to avoid the most sensitive landscape and visual features, such as woodland, scrub and water courses; • The use of HDD technique at the landfall and to bury the joint transition bay, to reduce long term impacts and limit above ground infrastructure present post-construction; and • The use of HDD method of crossing at a number of locations to avoid affecting sensitive landscape features.	**Negligible** impacts on all landscape and visual receptors after restoration works have been completed and once vegetation has regenerated.
Visual impacts on residential, recreational and travelling receptors present at the landfall and HVDC Cable Route		

Chapter 21 Landscape and Visual		
Description of impact	**Mitigation measures**	**Residual impact**
	Construction will follow an agreed CEMP. General mitigation measures and generic best practice working will be employed including: • The retention and protection of identified trees, shrubs and hedges that are considered to be significant in accordance with British Standards Institute (2005): BS 5837:2012 Trees in Relation to Construction; • Employing best practice soil handling procedures, including DEFRA (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites- Recommendations; • The conduction of works during daylight hours where possible, and use of construction lighting designed to not impinge into sensitive views, such as close views from bedroom windows of residential properties; • Appropriate hedge species will be replanted along the line of the existing hedge, and managed so as to restore the existing hedgerow where removal of sections of hedgerows are unavoidable; • The progressive restoration of finished areas where appropriate, and so that stored topsoil can be replaced on graded areas when finished; • The creattion of naturalistic and sympathetically designed landscape profiles once the works are complete; and • The replacing of topsoil, regrading, cultivation and seeding of areas of disturbed earth to blend with the surrounding land form post construction.	

Chapter 21 Landscape and Visual		
Description of impact	**Mitigation measures**	**Residual impact**
Landscape and resources within the vicinity of the converter stations	Embedded mitigation measures are as for the operational phase. General mitigation measures will be implemented as follows: • Temporary hoarding will be erected around the site prior to construction; • Works will be conducted during daylight hours where possible and under normal circumstances, no task lighting will be required during construction; • Naturalistic and sympathetically designed bund profiles will be created and native woodland vegetation planting on the top of the bunds, to tie in with woodland planting on the existing bunds; and • All areas of disturbed earth will be cultivated and seeded with appropriate grasses and wild flora.	**Moderate adverse** impacts on views available to residential receptors within the northeast of Lazenby. **Negligible** impacts on all other visual receptors. **Negligible** impacts on all landscape receptors.
Visual impacts on residential, recreational and travelling receptors present within the vicinity of the converter stations		
Impacts on landscape character and resources within the vicinity of the HVAC Cable Route and the existing NGET substation at Lackenby	Embedded mitigation and generic best practice measures as for the HVDC cable route above.	**Negligible** impacts on all landscape and visual receptors after restoration works have been completed and once vegetation has regenerated.
Visual impacts on residential, recreational and travelling receptors present within the vicinity of the HVAC Cable Route and the existing NGET substation at Lackenby		
Operation		
Landscape and resources within the vicinity of the converter stations site	The key embedded mitigation measures are as follows: • Siting the new buildings and components to avoid designated areas of high amenity, cultural or scientific value, in particular the North York Moors	**Minor adverse** impacts on the landscape of the site. **Minor adverse** impacts on the character of the character unit W1 Wilton Complex within which the

Chapter 21 Landscape and Visual		
Description of impact	**Mitigation measures**	**Residual impact**
	National Park; • Siting the development to avoid areas of local amenity value, important existing habitats and landscape features including ancient woodland, historic hedgerows, surface and ground water sources and nature conservation areas; • The co-location of two converter stations; • Locating the converter stations within the Wilton Complex, to make good use of existing screening afforded by bunds, woodland planting, hedgerows along the A174 to the south in order to reduce visual impacts from Wilton and the A174 to the south and east, from Lazenby to the southwest and from Lackenby and Eston to the west; • Locating the buildings and structures to take advantage of the screening provided by land form and existing features to reduce intrusion into surrounding areas; and • Reducing the height of the converter stations as much as possible, from to 30m proposed within the Scoping Report to a maximum height of 20m. Additional mitigation measures include: • The extension of existing landscaped bunds to the east and north of the edge of the settlement Lazenby, in order to screen views available between the existing bunds, towards the development site; • Native woodland vegetation planting on the top of the new bund, to tie in with woodland planting on the existing bunds, with the aim of providing extra screening from the settlement edge in the long term, and to reduce visual impacts on the wider area; • The design of permanent lighting to minimise glare and light spillage off-site, to the sky and to	site is located. **Negligible** impacts for all other landscape character units.
Visual impacts on residential, recreational and travelling receptors present within the vicinity of the converter stations site		**Moderate adverse** impacts on residential properties at the north-eastern edge of Lazenby. **Minor adverse** impacts on recreational receptors on Pasture Lane and Public Rights of Way (PRoWs) on Lazenby Bank and Eston Nab. **Negligible** impacts for all other visual receptors.

Chapter 21 Landscape and Visual		
Description of impact	**Mitigation measures**	**Residual impact**
	adjacent areas (particularly residential properties close to the site); and • The positioning of perimeter fencing so that it is screened behind the proposed bund and planting.	

Chapter 22 Socio-economics		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Expenditure-Single project	None identified	**Potential beneficial impact**
Expenditure-Two projects	None identified	**Potential beneficial impact**
Direct Employment-Single project	None identified	**Potential beneficial impact**
Direct Employment-Two projects	None identified	**Potential beneficial impact**
Indirect and induced employment-Single project	None identified	**Potential beneficial impact**
Indirect and induced employment-Two projects	None identified	**Potential beneficial impact**
Operation		
Single project	None identified	**Potential beneficial impact**.
Two projects	None identified	**Potential beneficial impact**
Decommissioning		
Direct Employment – Single project	None identified	**Potential beneficial impact**

Chapter 22 Socio-economics		
Description of impact	**Mitigation measures**	**Residual impact**
Direct Employment – Two projects	None identified	**Potential beneficial impact**
Indirect and induced employment-Single project	None identified	**Potential beneficial impact**
Indirect and induced employment-Two projects	None identified	**Potential beneficial impact**

Chapter 23 Tourism and Recreation		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Onshore tourist destinations of high sensitivity (North York Moors National Park)	N/A	**No impact**
Onshore tourist destinations of medium sensitivity – museums and other attractions	• Liaison with the Kirkleatham Museum and Kirkleatham Owl Centre to inform them of the timing and duration of the works and lane closure if required; and • Minimise disruption of the lane closure on the A174 if required.	**Minor adverse**
Onshore tourist destinations of medium sensitivity – towns and villages	N/A	**Minor adverse**
Onshore tourist destinations of low sensitivity – historic sites	N/A	**Negligible**
Onshore recreation receptors of high sensitivity – National Cycle Network 1 and proposed England Coast Path	• Consultation with local community and relevant stakeholders to inform them of the timing of the works; • No storage of equipment, materials or machinery close to either the National Cycle Network Route 1 and proposed England Coast Path; and • Minimisation of working area wherever possible.	**Minor adverse**

Chapter 23 Tourism and Recreation		
Description of impact	**Mitigation measures**	**Residual impact**
Onshore recreation receptors of medium sensitivity – PRoW and Eston Hills	• Liaison with the PRoW Officer to identify suitable temporary diversion routes and/or plan appropriate temporary closures; • Good communication with local community to inform of any PRoW temporary diversions and closures, to avoid inconvenience; • Minimise duration of closures wherever practicable, with consideration to public safety at all times; and • Reinstatement of all features immediately following construction phase.	**Minor adverse**
Onshore receptors of medium sensitivity – local beaches	• Liaison with the PRoW Officer to identify suitable temporary diversion routes and/or plan appropriate temporary beach closure; • Good communication with local community to inform of any PRoW temporary diversions and closures, to avoid inconvenience; • Minimise duration of closures wherever practicable, with consideration to public safety at all times; and • Reinstatement of all features immediately following construction phase.	**Minor adverse**
Onshore recreational receptors of low sensitivity	N/A	**Minor adverse/negligible**
Disruption to inshore and coastal diving	N/A	**Minor adverse**
Disruption to inshore and coastal watersport	N/A	**Minor adverse**
Disruption to inshore and coastal angling	N/A	**Minor adverse**
Disruption to inshore and coastal wildlife tours	N/A	N/A
Disruption to offshore diving	N/A	**Negligible**
Disruption to offshore watersport	N/A	N/A
Disruption to offshore angling	N/A	**Negligible**

Chapter 23 Tourism and Recreation		
Description of impact	**Mitigation measures**	**Residual impact**
Disruption to offshore wildlife tours	N/A	**Negligible**
Operation		
Onshore tourism	N/A	**No impact**
Onshore recreation	N/A	**No impact**
Disruption to inshore and coastal diving (routine operation)	N/A	**No impact**
Disruption to inshore and coastal watersport (routine operation)	N/A	**Negligible**
Disruption to inshore and coastal angling (routine operation)	N/A	**No impact**
Disruption to inshore and coastal wildlife tours (routine operation)	N/A	N/A
Disruption to offshore diving (routine operation)	N/A	**No impact**
Disruption to offshore watersport (routine operation)	N/A	N/A
Disruption to offshore angling (routine operation)	N/A	**No impact**
Disruption to offshore wildlife tours (routine operation)	N/A	**No impact**
Decommissioning		
Onshore (associated with decommissioning of converter station)	As for construction	As for construction
Offshore	As for construction	As for construction

Chapter 24 Geology, Water Resources and Land Quality		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Discharge of contaminants to surface geology, soils and shallow groundwater	• Good operational practices will be adopted in the construction phase; and • Store oils and fuel within designated areas in impervious storage bunds with a minimum of 110% capacity to contain any leakages of spillages.	**Negligible**
Surface run off and sediment or contaminant discharge to watercourses	• Entry into water will be avoided where possible; • A temporary haul road bridge should be constructed if repeated crossings are required; • Straw bales and sandbags will be incorporated to prevent silty runoff entering the watercourse; • Silt traps will be used when required to prevent silt polluting downstream reaches of the watercourses; • Specific consideration of the Water Resources Act 1991 (and associated Land Drainage Byelaws1980) will be required where the cable corridor passes within 8m of a main river; • If cement etc. is likely to be batched on site a suitable area should be designated, located at an appropriate distance from the watercourse; • Adherence to best practices and guidance to ensure the risk of pollution is minimised; • Where earthworks are undertaken, soil and water will be managed with sufficient care to prevent surface water run-off; and • Stockpiles will be designed and positioned in order to minimise erosion, pollution of watercourse or increase flooding.	**Negligible**
Dewatering of groundwater to surface water	• If there is a requirement for dewatering of excavations, water will be pumped out and passed through a settlement tank or lagoon to allow suspended solids to settle out before being	**Negligible**

Chapter 24 Geology, Water Resources and Land Quality		
Description of impact	**Mitigation measures**	**Residual impact**
	discharged to an appropriate location; and • Appropriate treatment methods will be adopted prior to discharge of the water from any land drains uncovered during the construction phase. .	
HDD beneath watercourses	• In accordance with best practice, the HDD will commence at a safe distance from the edge of each watercourse. The distance will be agreed with the EA prior to commencement of the works; • The process of HDD involves the use of bentonite (used as a lubricating agent and grout); in order to reduce the risk of pollution of surface waters and / or break out in the river bed the use of these materials should be carefully controlled; • In order to reduce the likelihood of pollution from bentonite and / or grout when working near rivers, hydrophobic (water repelling) grout and quick setting mixes should be used; • If cement etc. is likely to be batched on site a suitable area should be designated and located at an appropriate distance from the watercourse; and • Adherence to the Construction (Design and Management) (CDM) Regulations where applicable.	**Negligible**
Impacts on construction workers and future site operators	• Construction workers including sub-contractors will follow good site practices and hygiene rules as set out in BS5930 and BS10175:2011; • Appropriate Personal Protective Equipment (PPE) will be worn by construction workers including sub-contractors and health and safety measures undertaken to mitigate any short term	**Negligible**

Chapter 24 Geology, Water Resources and Land Quality		
Description of impact	**Mitigation measures**	**Residual impact**
	risk during construction; • Gas risks will be considered for all construction workers including sub-contractors whenever there is a requirement to enter confined spaces as part of the construction works, this will be managed through the Construction Phase Health and Safety Plan; and • All construction works should be undertaken following best practice and in-line with the CDM Regulations.	
Generation of waste arisings	• The waste hierarchy will be used to determine the most sustainable option for all wastes that are generated on-site; • Suitable local schemes will be identified where possible, as appropriate receiving sites to encourage the off-site reuse of surplus subsoil – this promotes the waste hierarchy and will reduce vehicle emissions caused by longer journeys; • Any hazardous wastes will be stockpiled or stored separately from any non-hazardous stockpiles; • The Contaminated Land: Applications in Real Environments Code of Practice (CL:AIRE CoP) will be followed to demonstrate that excavated material is not waste at the point of reuse. Where the CoP cannot be followed, the use of waste material will be covered by an environmental permit, or appropriate exemption from environmental permitting (e.g. re-use of waste hardcore for temporary roads); and • A Site Waste Management Plan (SWMP) will be prepared to monitor wastes arisings on-site. This will also promote sustainable waste management practices by maximising waste	**Minor Adverse**

Chapter 24 Geology, Water Resources and Land Quality		
Description of impact	**Mitigation measures**	**Residual impact**
	prevention, re-use and recycling for material destined for off-site waste management. This will actively discourage sending waste to landfill.	
Operation		
Contamination impacts on of geology, water resources and human health	• Best site management practices, such as those set out in the Environment Agency's PPG notes, will be adopted during the operational phase to prevent such spillages and leakages.	**Negligible**
Exposure to gas risk at the convertor station	• All buildings / foundations with confined spaces should be designed and built with gas venting / measures as a precautionary measure, in-line with current building regulations where applicable; and • Gas risks will be considered for all maintenance workers whenever there is a requirement to enter confined spaces. This should be managed through health and safety risk assessments.	**Negligible**
Flood Risk	• A suitable drainage system will be developed with sufficient volume to attenuate the 1 in 100 year (plus climate change) volumes. As such, a negligible residual impact is predicted for increased surface water flooding during the operation of Dogger Bank Teesside A & B; • Any impermeable area associated with the National Grid works will in turn require an adequate drainage system to manage the surface water runoff. The form of this mitigation is to be confirmed by National Grid as part of their development proposals for the enabling works; and • The buried cable systems will be fully	**Negligible**

Chapter 24 Geology, Water Resources and Land Quality		
Description of impact	**Mitigation measures**	**Residual impact**
	underground, and crossed watercourses will be fully reinstated; therefore there will be no residual flood risk issues associated with the cable route.	
Decommissioning		
Discharge of contaminants to surface geology and soils (from decommissioning of the converter station)	As per construction phase.	**Negligible**
Surface run off and sediment or contaminant discharge to watercourses (from decommissioning of the converter station)	As per construction phase.	**Minor adverse**
Dewatering of groundwater to surface water (from decommissioning of the converter station)	As per construction phase.	**Minor adverse**
HDD beneath watercourses	As per construction phase.	**Minor adverse**
Impacts on construction workers and future site operators (from decommissioning of the converter station)	As per construction phase.	**Negligible**
Generation of waste arisings (from decommissioning of the converter station)	As per construction phase.	**Minor adverse**

Chapter 25 Terrestrial Ecology		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Redcar to Saltburn Coast LWS	• Construction working areas will be minimised as far as practicable, especially at the foreshore, and will be fenced to ensure there is no encroachment outside of the agreed working areas; • No storage of materials or machinery will be permitted outside the working width and within	**Minor adverse**

Chapter 25 Terrestrial Ecology		
Description of impact	**Mitigation measures**	**Residual impact**
	the boundary of the LWS; • An Ecological Clerk of Works (ECW) will provide toolbox talks to contractors, supervise vegetation clearance prior to construction and oversee key construction activities; • Inform Tees Valley Wildlife Trust in advance of works taking place; • Strict adherence to all mitigation measures outlined for dust in **Chapter 30 Air Quality**, including damping down dusty surfaces, temporary covering of earthworks and the implementation of a 'Dust Management Plan'; and • Reinstatement of habitats affected by the works to their former condition following construction.	
Hedgerow	• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • Ideally, any vegetation clearance shall be undertaken outside the breeding bird season (early March to end of August inclusive, with seasonal variation). If this is not possible, an ecologist will check the area prior to clearance for active nests. Any active nests will be left *in situ* with an appropriate buffer within which no works will be undertaken until the nest is no longer occupied; and • Following construction, the hedgerow will be reinstated as soon as possible. Hedgerows will be re-planted with regionally appropriate, species rich planting. .	**Minor adverse** (short-term)**/ Minor beneficial** (long-term)
Wintering birds	• Construction activities within the coastal fields and at the landfall location, which could potentially directly affect 6% of the fields, will be	**Minor adverse**

Chapter 25 Terrestrial Ecology		
Description of impact	**Mitigation measures**	**Residual impact**
	avoided during the key months of November – December. A combination of the following mitigation measures shall be implemented during the remaining autumn/winter months (October, January – March inclusive) in order to reduce impacts further: ○ Clear fencing of the working area and restriction of personnel movements outside the working area; ○ Installation of hoarding along the edge of the working area to reduce visual disturbance; ○ Strict adherence to all mitigation measures outlined in **Chapter 29 Noise and Vibration**; ○ Noise levels will be kept to a minimum and wherever possible silenced equipment and sound mufflers will be used; ○ Following construction, reinstatement of all land within the working footprint; and ○ Supervision of key stages of the works by an Ecological Clerk of Works (ECW).	
Breeding birds	• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • Ideally, any vegetation clearance will be undertaken outside the breeding bird season (early March to end of August inclusive, with seasonal variation). If this is not possible, an ecologist will check the area prior to clearance for active nests; • Should an active nest be found during construction, works will cease immediately and	**Minor adverse**

Chapter 25 Terrestrial Ecology		
Description of impact	**Mitigation measures**	**Residual impact**
	an exclusion zone of 10m will be set up around the nest until the young have fledged; • If the bird is a Schedule 1 species (not anticipated since none have been recorded during surveys), then work will cease and Natural England consulted with regard to an appropriate course of action to avoid disturbance to the species; • Ensure construction plant and traffic activity is kept to designated access roads to avoid disturbance to ground nesting birds; • Following construction, reinstatement of all habitats to their former condition, including hedgerow re-planting with regionally appropriate, species rich planting; and • At the converter stations site, as part of screening, areas of additional native woodland and copses will be planted. This will improve the existing woodland habitat within the converter stations site and provide further opportunities for breeding birds.	
Bats	• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • For night-time lighting at the converter stations site, cable route construction corridor and for any occasions where task lighting is required, low pressure sodium lamps will be used (instead of mercury or metal halide lamps). The lighting should be directional and spill minimized through the use of hoods, cowls, louvres or shields. Ideally, movement sensors will be used to reduce the overall duration that lighting is on each night;	**Minor adverse**

Chapter 25 Terrestrial Ecology		
Description of impact	**Mitigation measures**	**Residual impact**
	• Following construction, the hedgerow will be reinstated as soon as possible. Hedgerows will be re-planted with regionally appropriate, species rich planting; • Should any trees require removal, a bat visual assessment and surveys (if required) will be undertaken. Mitigation will be designed and a licence (if required) obtained from Natural England prior to works; and • At the converter stations site, as part of screening, areas of additional native woodland and copses will be planted. This will improve the existing woodland habitat within the converter stations site and provide further opportunities for foraging bats.	
Operation		
Bats	• Establish sympathetic lighting; and • Maintain landscape planting.	**Negligible**
Decommissioning		
As per construction phase	As per construction phase	As per construction phase.

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Land taken out of existing use	• Following the completion of the construction stage the majority of the areas will be reinstated to their former condition and land use. The exception to this is the land at the converter station site and very small areas associated with jointing pits, both of which are discussed within the operational impacts section; and	**Minor adverse**

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
	• The construction footprint will be minimised where possible and land reinstated to its former condition as soon as possible following cable installation.	
Loss of areas subject to environmental stewardship agreements	• Full and continued consultation with landowners and occupiers will be undertaken, and advice sought during the site planning and construction phase, to ensure that the potential impacts of construction activities upon land in environmental stewardship are minimised, for example through the phasing of works to allow new environmental stewardship sites to be identified before existing stewardship sites are impacted; and • Landowners and occupiers will be compensated for any resultant losses incurred as a direct consequence of the works.	**Negligible** (single project) **Minor adverse** (two projects)
Degradation of soils	• Soils handled, stored and reinstated by a competent contractor under Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites; • Topsoil will be stripped within all construction areas and stored adjacent to where it is extracted where practical; • The subsoil excavated will be stored separately from the topsoil, with sufficient separation to ensure segregation; • During wet periods, construction methods will be limited where vulnerability to soil compaction is identified; • Heavy plant and vehicles will only be able to use specific routes; • The excavation footprint will be minimised where possible; • In circumstances where construction has resulted in soil compaction, further remediation will be	**Minor adverse**

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
	undertaken, through an agreed remediation strategy; • Detailed pre and post soil condition surveys to a minimum depth of 1.5m will be undertaken to allow mitigation measures to be appropriately deigned and to monitor the success of the soil reinstatement, typically surveys would be undertaken for each landowner; • The surveys will also include soil descriptions to be used to identify the soil's susceptibility to damage through the mechanism of compaction; and • Detailed method statements will be produced and agreed with the relevant regulator, in advance of the works. Contractors will be required to comply with these.	
Loss of soil resource	• Adherence to the MAFF (2000) Good Practice Guide for Handling Soils and Defra (2009) Construction code of practice for the Sustainable Use of Soils on Construction Sites. These include: ○ Only working in appropriate weather conditions where soil type dictates; ○ Appropriate soil storage; ○ Maintaining effective field drainage systems during construction; ○ Ensuring reinstatement of individual fields occurs as soon as practical after construction; and ○ Planting vegetation shortly afterwards. ○ Soils will be reinstated where possible; ○ Installation of pre-construction header drains on the uphill side of the working strip; ○ Post-construction drains installed and	**Minor adverse/ Negligible**

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
	stone backfill if required; and ○ In areas of clay subsoil pre-construction drainage will be installed to maintain existing drainage systems and avoid disruption to the cable installation due to water collecting in the excavated trenches. • If this is not feasible then soils may be re-used on site where a need has been identified within the SWMP, which has been prepared and discusses the disposal options and waste hierarchy in more detail. • .	
Impacts on land drainage systems	• Consultation with landowners and occupiers to establish existing drainage arrangements, location of drains (ideally access to drainage plans where available) and any other information; • Working method statements produced for different drainage systems; • Excavation of soil should only occur in suitable weather conditions, dependent on soil type; • Where necessary the following techniques will be considered: ○ Installation of pre-construction header drains on the uphill side of the working strip; ○ Post-construction drains installed and stone backfill if required; and ○ In areas of clay subsoil pre-construction drainage will be installed to maintain existing drainage systems and avoid disruption to the cable installation due to water collecting in the excavated trenches. • Post construction, drains will be fully re-instated	**Minor adverse**

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
	to their former condition and functioning, where possible; • Minimising the period for which drains are not fully operational; and • Where surface drains and ditches are encountered, and crossed via open-cut installation techniques they will be dammed and a pipe or pump will be installed to ensure water flow is maintained during the cable installation process.	
Biological contamination	Defra (2003) has identified a number of best practice measures to minimise the risk of spreading disease. These measures include but are not limited to: • Agreeing access arrangements with landowners and occupiers in advance of any construction works taking place; • Minimising where possible the movements of people, vehicles or equipment into areas where farm animals are kept; and • Cleaning equipment upon arrival and departure.	**Negligible**
Disturbance and nuisance	• Continued regular liaison with landowners and occupiers will continue throughout the construction phase to ensure concerns are alleviated as soon as possible; • Tool box talks/ training for construction workers on minimising the impact; and • A protocol for issues to be raised, considered and addressed will be established and distributed to all landowners and occupiers and contractors.	**Minor adverse**
Secondary impacts	• A commitment will be made within the private treaty agreement between the future developers and operators of the development and the landowner/occupier to compensate for crop loss incurred as a direct consequence of the construction phase of the project.	**Negligible**

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
Operation		
Land taken out of existing use	• Land take will be minimised to the area absolutely required to site the converter station and associated landscaping; and • Forewind is actively involved in negotiations with the current landowners to secure the permanent land take, and compensation will form part of those private treaty discussions.	**Minor adverse**
Loss of areas subject to environmental stewardship agreements	• Forewind is actively involved in negotiations with the current landowners to secure the permanent land take, and compensation will form part of those private treaty discussions; and • The landscape screening proposed at the converter stations site will provide limited habitats and thus in comparison to an agricultural field it is likely to contribute marginally towards the substantive objectives of the Environmental Stewardship Agreement.	**Negligible**
Land drainage systems altered	• Following construction, field drainage systems and ditches will be fully reinstated where possible in consultation with landowners and occupiers; • Cable system buried at a depth to allow the continuation of current agricultural practices; • Post-construction monitoring and consultation with landowners and occupiers to ensure reinstatement has been successful; and • In the event of any problems during post-construction monitoring further remediation work will be undertaken.	**Minor adverse**
Soil heating	The following measures are dependent upon the electrical design, geology, soil type and characteristics, method of installation, depth of cable, weather conditions and electrical loading: • Increasing horizontal separation of cables;	**Negligible**

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
	• Selecting an optimum cable conduction material and diameter; • Undertaking pre-construction soil thermal resistivity surveys; • Changing the properties of the surrounding material (i.e. Importing bedding/ backfill material); and • Increasing the insulation of cables.	
Restrictions on land use practices	Detailed assessments will be undertaken at the detailed design phase, prior to construction, to inform the design. This will include details of: • Soil type and characteristics; • Types of crops grown; • Depth of field drains; • Likely depth of root growth zone; and • Discussions with landowners regarding potential future land uses and any restrictions on these as part of ongoing discussions.	**Negligible** (single project) **Minor adverse** (two projects)
Secondary impacts	Private treaty negotiations with landowners and occupiers will provide a mechanism for the reimbursement of crop loss incurred as a direct impact of the projects during operation.	**Negligible**
Decommissioning		
Impact on land drainage systems	As per operation phase.	**Minor adverse**
Secondary impacts	As per operation phase.	**Negligible**
Degradation of soils	As per construction phase.	**Minor adverse**
Loss of soil resource	As per construction phase.	**Minor adverse**
Biological contamination	As per construction phase.	**Minor adverse**

Chapter 26 Land use and Agriculture		
Description of impact	**Mitigation measures**	**Residual impact**
Disturbance and nuisance	As per construction phase.	**Minor adverse**

Chapter 27 Terrestrial Archaeology		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
1011273 - Hillfort at Eston Nab and Eston Hills Historic Landscape • Impacts to historical setting and wider historic landscape.	No mitigation is required.	**Neutral**
Kirkleatham Conservation Area • Impact to views, character and importance of the conservation area.	No mitigation is required.	**Minor adverse**
Yearby Conservation Area • Impacts to setting or importance of the conservation area.	No mitigation is required.	**Minor adverse**
Marske Conservation Area • Impact to views, character and importance of the conservation area.	No mitigation is required.	**Neutral**
1139659 - Old Hall farmhouse 1159438 - Stable range 1329623 - Byre barn • Impacts to group value of buildings.	No mitigation is required.	**Minor adverse**
1387500 - Fell Briggs Farm • Impacts to setting.	No mitigation is required.	**Neutral**
1159818 - Turner's Arms Farmhouse • Impacts to views, setting and impacts of noise.	No mitigation is required.	**Minor adverse**
1139618, - Ryehills Farmhouse 1329632, Barnarn 1310671, Wall • Impacts to setting, group value and impacts of noise.	No mitigation is required.	**Minor adverse**

Chapter 27 Terrestrial Archaeology		
Description of impact	**Mitigation measures**	**Residual impact**
Historic Landscape • Impacts to the historic landscape.	No mitigation is required.	**Minor adverse**
HER Asset 4049 - Brickearth Pit • Permanent impacts to Brickearth Pit.	Archaeological evaluation, excavation and reporting.	**Minor adverse**
4044 - Site of Dovecote • Impacts to asset.	The asset is no longer extant and subsurface remains are unlikely to be present. No mitigation is required.	**Neutral**
4950 - WWII Pillbox • Impacts to asset.	Asset will be avoided by design; HDD will be used to avoid asset. No mitigation is required.	**Neutral**
3585 - WWII Gun Emplacement • Impacts to asset.	The asset is located within an area of HVDC cable which will be installed by HDD. The asset will be fenced off during construction to ensure preservation.	**Neutral**
Area 8a - Site identified from geophysical survey. • Impacts to enclosures.	Archaeological evaluation, excavation and reporting.	**Minor adverse**
Area 11 - Site identified from geophysical survey • Impacts to enclosure.	Archaeological evaluation, excavation and reporting.	**Minor adverse**
Area 17 - Site identified from geophysical survey • Impacts to First World War practice trenches.	Archaeological study, evaluation, excavation and reporting.	**Minor adverse**
• Area 3 - Site identified from geophysical survey. Impacts to potential enclosure.	Archaeological evaluation, excavation and reporting.	**Minor adverse**
1139659 - Old Hall Farmhouse, Lackenby • Impacts to setting.	No mitigation is required.	**Minor adverse**
Area 5 - Site identified from geophysical survey • Permanent impacts to potential enclosure.	Archaeological evaluation, excavation and reporting.	**Minor adverse**

Chapter 27 Terrestrial Archaeology		
Description of impact	**Mitigation measures**	**Residual impact**
Operation		
1011273 - Hillfort at Eston Nab • Impacts to setting.	No mitigation is required.	**Neutral**
Eston Hills Historic Landscape • Direct and secondary impacts to the landscape.	No mitigation is required.	**Neutral**
Kirkleatham Conservation Area • Impacts to setting and key views of historical significance.	No mitigation is required.	**Neutral**
Yearby Conservation Area • Impacts to character and importance of conservation area, and listed buildings within conservation area.	No mitigation is required.	**Neutral**
Decommissioning		
1011273 - Hillfort at Eston Nab • Impacts to setting.	No mitigation is required.	**Neutral**
Eston Nab Historic Landscape • Impacts to setting.	No mitigation is required.	**Neutral**

Chapter 28 Traffic and Access		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Pedestrian severance (all scenarios)	N/A – as all mitigation is embedded	**Negligible**
Pedestrian amenity (all scenarios)	N/A – as all mitigation is embedded	**Negligible**
Highway safety (all scenarios)	N/A – as all mitigation is embedded	**Minor adverse**

Chapter 28 Traffic and Access		
Description of impact	**Mitigation measures**	**Residual impact**
Driver delay (all scenarios)	N/A – as all mitigation is embedded	**Negligible**
Operation		
Pedestrian severance	N/A – as all mitigation is embedded	**Negligible**
Pedestrian amenity	N/A – as all mitigation is embedded	**Negligible**
Highway safety	N/A – as all mitigation is embedded	**Negligible**
Driver delay	N/A – as all mitigation is embedded	**Negligible**
Decommissioning		
Pedestrian severance	N/A – as all mitigation is embedded	**Negligible**
Pedestrian amenity	N/A – as all mitigation is embedded	**Negligible**
Highway safety	N/A – as all mitigation is embedded	**Minor adverse**
Driver delay	N/A – as all mitigation is embedded	**Negligible**

Chapter 29 Noise and Vibration		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
On-site construction noise	To reduce potential construction noise impacts at receptors where a medium magnitude of impact is predicted. A solid site boundary hoarding fence, approximately 2.4m in height, will be erected prior to commencement of cable installation and remain in place until the works are complete in the relevant section of the cable route.	**Minor adverse** (for 5 residential properties close to the construction - single build scenario) **Minor adverse** (for 3 residential properties close to the construction - concurrent build scenario) **Negligible** for all other receptors.

Chapter 29 Noise and Vibration		
Description of impact	**Mitigation measures**	**Residual impact**
	A set of generic Best Practice working practices referred to as Best Practicable Means (BPM) will be employed during the construction phase. Examples of typical BPM include: • Locating static noisy plant in use as far away from noise sensitive receptors as is feasible for the particular activity; • Ensuring that plant and equipment covers and hatches are properly secured and there are no loose fixings causing rattling; • Using the most modern equipment available and ensuring such equipment is properly maintained and operated by trained staff; • Using silenced equipment where possible, in particular silenced power generators if night time power generation is required for site security or lighting; • Ensuring that vehicles and mobile plant are well maintained such that loose body fittings or exhausts do not rattle or vibrate; • Ensuring plant machinery is turned off when not in use; • Imposition of vehicle speed limits for heavy goods vehicle traffic travelling on access roads close to receptors and ensuring that vehicles do not park or queue for long periods outside residential properties with engines running unnecessarily; • Ensuring, where practicable, that site access routes are in good condition with no pot-holes or other significant surface irregularities; • Maintaining good public relations with local residents that may be affected by noise from the construction works. Effective communication should be established prior to construction,	

Chapter 29 Noise and Vibration		
Description of impact	**Mitigation measures**	**Residual impact**
	keeping local residents informed of the type and timing of works involved, paying particular attention to potential evening and night time works and activities which may occur in close proximity to receptors. Leaflet drops, posters and public meetings or exhibitions are an effective method of keeping local residents informed; and • Provision of contact details for a site representative in the event that disturbance due to noise or vibration from the construction works occurs; ensuring that any complaints are dealt with promptly and that subsequent resolutions are communicated to the complainant.	
Off-site construction traffic noise	None proposed.	**Negligible**
Operation		
Converter stations	The converter station operational noise levels (at the nearest receptor) will be reduced to below the established indicator of 42dB(A) for residential receptors and 46dB(A) for non-residential receptors. The precise nature of mitigation will be determined during detailed design of the converter station. Typical measures will include: • Selection of quieter equipment; • Installation of acoustic enclosures (a minimum 10dB reduction is required); • Installation of acoustic barriers; • Possibility to screen converter stations further by the construction of a landform/embankment around the site, which will protect against flooding and may also provide up to 10dB attenuation; • Silencing of exhausts/outlets for air handling/cooling units; and	**Negligible** for all residential receptors. **Minor adverse** for some non-residential receptors

Chapter 29 Noise and Vibration		
Description of impact	**Mitigation measures**	**Residual impact**
	• Locating equipment to take advantage of screening inherent in the design, i.e. from the converter hall or control room buildings. These measures are all good practice industry standard approaches to noise reduction.	
Decommissioning		
Decommissioning	Similar to those identified for construction.	As per construction.

Chapter 30 Air Quality		
Description of impact	**Mitigation measures**	**Residual impact**
Construction		
Dust Emissions	Dust mitigation measures included in CEMP.	**Negligible**
Non Road Mobile Machinery	Mitigation measures included in CEMP.	**Negligible**
Vehicle Exhaust Emissions	N/A	**Negligible**
Marine Vessel Exhaust Emissions	N/A	**Negligible**
Operation		
Onshore air quality	N/A	**Negligible**
Offshore air quality	N/A	**Negligible**
Decommissioning		
Onshore	As for construction.	**Negligible**
Offshore	As for construction.	**Negligible**

3.4 Cumulative Impact Assessment (CIA)

3.4.1 **Chapters 8 – 30** of the ES have provided an assessment of the potential cumulative impacts of Dogger Bank Teesside A & B. **Chapter 33** provides a summary of the results of the CIA for each chapter.

3.4.2 The majority of cumulative impacts identified in the offshore assessments have been assessed as **minor adverse** or **negligible**. The exceptions to this include **moderate adverse** cumulative impacts assessed for: designated sites; marine and coastal ornithology; marine mammals; commercial fisheries; and shipping and navigation.

3.4.3 Residual cumulative impacts identified in the onshore assessments have been assessed as **negligible to minor adverse**. The exception to this is a **moderate adverse** cumulative impact assessed for **Chapter 26**, with regards to construction phase impacts on localised soil degradation, if the worst case scenario assessed is realised.

3.4.4 Further details are available in the corresponding assessment chapters.

3.5 Transboundary effects

3.5.1 The potential for transboundary effects in relation to Dogger Bank Teesside A & B has been considered and reported in each of the assessment chapters. **Chapter 32 Transboundary Effects** provides a summary of the transboundary effects assessment. As defined in **Chapter 4**, significant impacts are considered to be those assessed as moderate or major adverse.

3.5.2 Transboundary effects have been considered in terms of the impact on:

- The environment of another European Economic Area (EEA) state which is adjacent or in close proximity to Dogger Bank Teesside A & B; and
- The interests of another EEA state operating within the UK Renewable Energy Zone (REZ).

3.5.3 No significant transboundary effects have been identified, however transboundary impacts are anticipated in relation to certain bird and marine mammal species where they are recognised as features of protected sites within other EEA states. These impacts are assessed in the corresponding chapters of this ES, as well as being the subject of an ongoing Habitats Regulations Assessment process (refer to the **HRA Report**).