FOREWIND

DOGGER BANK
TEESSIDE A & B

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Environmental Report in Support of Proposed Re-alignment of HVDC and HVAC Buried Cable Routes through Wilton International

Document Title	Dogger Bank Teesside A&B Environmental Report in Support of Proposed Re-alignment of HVAC and HVDC buried Cable Routes through Wilton International
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Contents

1. Introduction

1.1. Purpose of this document

1.1.1. Dogger Bank Teesside A & B was granted development consent (Dogger Bank Teesside A & B Order 2015) on 5th August 2015 under the Planning Act 2008 (the "2008 Act"). An Environmental Statement (ES) was prepared pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 to support that application. The ES can be viewed on the Planning Inspectorate website: http://infrastructure.planninginspectorate.gov.uk/projects/yorkshire-and-the-humber/dogger-bank-teesside-ab/?ipcsection=docs&stage=app&filter=Environmental+Statement.

1.1.2. Part of the consented onshore buried cable route passes through land to the south of the Wilton industrial complex at Redcar. It has been identified through consultation with Sembcorp that they have concerns regarding the risk of the consented scheme sterilising land within the Wilton industrial complex. Therefore, Forewind has proposed two amendments to the consented Dogger Bank Teesside A & B onshore buried cable route. One amendment is to the high voltage direct current (HVDC) cable route and the other to the high voltage alternating current (HVAC) cable route. The realigned routes will continue to pass through the Wilton industrial complex.

1.1.3. These proposed amendments fall outside of the scope of the Development Consent Order (DCO) and Forewind intends to secure consent for these separately through an application under the Town and Country Planning Act 1990 (the "1990 Act").

1.1.4. This Environmental Report provides environmental information necessary to demonstrate that the proposed changes do not result in any changes to the predicted environmental effects identified within the original application or give rise to any new likely significant effects.

2. Proposed Changes

2.1. Introduction

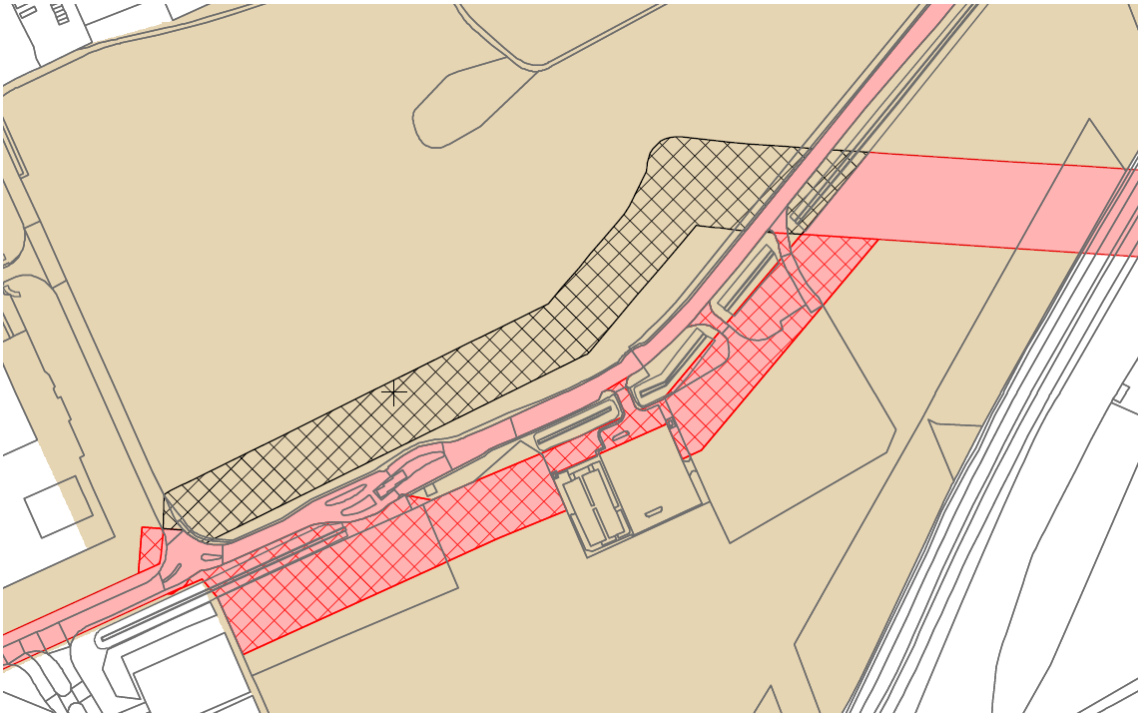
2.1.1. A detailed description of the proposed changes is provided in Application Statement submitted in support of the application.

2.1.2. For the purposes of this Environmental Report the proposed amendments do not change the development description presented in either Chapter 5 Project Description of the submitted ES, or the scope of the associated permitted development described in the Development Consent Order (DCO). As a result, the description of the overall construction methodology, construction techniques and construction timings as documented in relevant chapters of the ES remain valid and are not repeated here.

2.1.3. The proposed amended routes are shown on **Figures T-DES-0208-01** and **T-DES-0209-01** and details of the proposed changes, with specific reference to onshore environmental topics, are provided in Sections 2.2 and 2.3.

2.2. Description of proposed changes (HVDC)

2.2.1. The drawing extract below highlights the new area required for the proposed route amendment (red hatching) relative to the part of the consented order limits that is no longer required (black hatching) for the proposed HVDC buried cable route amendment.



2.2.2. The proposed realignment results in an approximately 500m length of the HVDC cable route being moved approximately 75m south of the original route. The realignment will now be located to the south of the main access into the Wilton complex (Southway) rather than being located to the north of Southway. This will result in the cable route crossing the existing drain that runs adjacent to Southway, approximately 420m further to the west than the consented crossing location.

2.2.3. The key construction parameters are given below in **Table 1**, which includes a comparison of the equivalent values from the consented route.

Table 1 Key differences between construction parameters associated with the HVDC route amendment (comparing consented route and proposed route amendment)

Construction parameter	Consented route (DCO)	Proposed amendment
Assumed length of each cable system to be trenched (one project)	420m*	600m**
Approximate length of cable route trenching (two projects)	840m	1,200m
Maximum cable corridor width (one project)	18m	18m
Maximum cable corridor width (two projects)	36m	36m
Approximate quantity of cable trench spoil to be disposed of (two projects)	630m^3	950m^3
Approximate total HGV movements (two projects)	1,300	1,800
Proposed technique for crossing the drain in this location	HDD	HDD, open trench, culvert or bridge

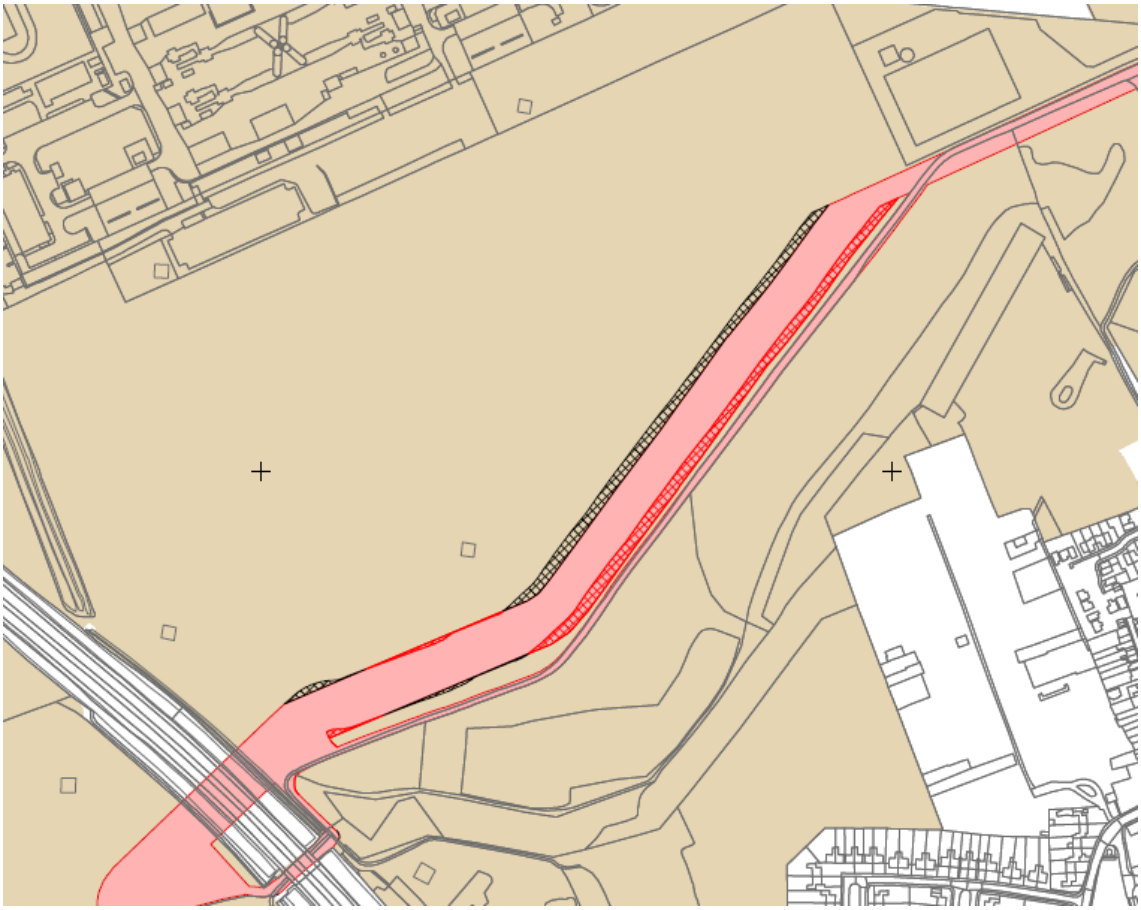
* Value lower than 500m corridor length due to presence of HDD at the eastern end of the original consented route

** Value larger than 500m corridor length as a result of worst case routing of cabling within the corridor

2.2.4. Beyond the changes outlined in **Table 1**, the construction methodology for HDD and open cut trenching, and the construction timings of the proposed amendment remain the same as those detailed within Chapter 5 of the originally submitted ES and are not repeated here.

2.3. Description of proposed changes (HVAC)

2.3.1. The drawing extract below highlights the new area required for the proposed route amendment (red hatching) relative to the part of the consented order limits that is no longer required (black hatching) for the proposed HVAC buried cable route amendment.



2.3.2. The proposed realignment results in an approximately 700m length of the HVAC cable route being moved approximately 10m southeast of the original alignment. The realignment remains wholly within the same arable field and results in the cable route being closer to the edge of that field (and closer to the existing tree lined footpath in this location). Relocating the route in this way frees up approximately 4,000m^2 of arable land that would otherwise become isolated during the construction.

2.3.3. The key construction parameters are given below in **Table 2**, which includes a comparison of the equivalent values from the consented route.

Table 2 Key differences between construction parameters associated with the HVDC route amendment (comparing consented route and proposed route amendment)

Construction parameter	Consented route	Proposed amendment
Assumed length of each cable system to be trenched (one project)	700m	No change
Approximate length of cable route trenching (two projects)	1,400m	No change
Maximum cable corridor width (one project)	18m	No change
Maximum cable corridor width (two projects)	36m	No change
Approximate quantity of cable trench spoil to be disposed of (two projects)	1,100m^3	No change
Proximity to existing tree lined permissive pathway	13m	3m

2.3.4. The overall construction methodology, construction techniques and construction timings of the proposed amendment remain the same as those detailed within Chapter 5 of the originally submitted ES and are not repeated here.

3. Screening of onshore environmental topics

3.1. Introduction and scope

3.1.1. This section considers the proposed amendments against the previously submitted ES to identify whether the proposed realignments have the potential to generate additional likely significant effects over and above those previously identified.

3.1.2. This review is based on the assessment methodology and findings used in the original ES. The effects of the proposed changes are considered qualitatively (unless otherwise stated) and compared to the findings reported in the ES.

3.1.3. At the outset, it is necessary to screen each of the onshore topics, identifying the environmental topics that required detailed consideration. The results of this screening exercise are presented in **Table 3** (HVDC amendment) and **Table 4** (HVAC amendment).

3.1.4. Where no changes to the potential effects presented in the ES are identified, that topic is not considered any further. For topics where changes to the potential effects are identified they are considered further.

3.1.5. The proposed realignments are located wholly within the study areas identified within the original ES. The baseline information to inform the assessments therefore has already been collated, and as a result the existing environment has already been characterised for the areas of the proposed re-alignments and is presented within the previously submitted ES. A site walkover of both realignments was undertaken during April 2015 to confirm existing land uses and habitats, i.e. to confirm the validity of the baseline presented within the existing ES.

3.1.6. The consideration of the construction scenarios (i.e. the manner in which Dogger Bank Teesside A & B will be built out) will remain the same as that presented within the original ES (Chapter 5).

Table 3 Screening of onshore topics as a result of potential HVDC cable route realignment

Onshore environmental topics assessed in the ES	Comments	Taken forward for further assessment?
Landscape and Visual Impact	The option to introduce a bridge or culvert for the ditch crossing will result in a permanent above ground structure in this location. However, these types of crossing features are already present elsewhere along this ditch. Further to this the Wilton Complex is a heavily industrialised landscape with no public access or public viewpoints. As such, the introduction of a low level feature such as this will not be visible to any of the landscape and visual receptors identified within the previously submitted ES. No additional likely significant effects identified.	No
Socio-economics	The proposed change will not alter the predicted construction costs or employment levels. No additional likely significant effects identified.	No
Tourism and Recreation	The proposed route amendment is not located within an area accessible to the general public. No additional likely significant effects identified.	No
Geology, Water Resources and Land Quality	The realignment passes through areas of made ground associated with the parking areas of the Wilton International Visitor Centre that were not present along the original consented route. Potential impacts associated with potentially contaminated land will be considered further within this document. The proposed method of crossing the ditch now includes the flexibility for either HDD, open cut trenching, a culvert, or bridging solutions. Open cut trenching, culverting and bridging would represent techniques with the potential to temporarily impound water within the ditch. The associated flood risk and Water Framework Directive (WFD) impacts will be considered further within this document. The changes will result in additional waste (up to approximately 320m^3 of excavated spoil for both projects combined) being generated in this location as a result increasing the length of open cut trenching compared to using HDD with the original consented route alignment. Potential impacts associated with waste generation will be considered further within this document.	Yes
Terrestrial Ecology	The proposed realignment moves a 500m length of the consented cable route from an area of arable land (north of the main access road into the Wilton Complex) to an area that is predominantly associated with the Wilton International Visitor Centre (car parking, amenity grassland). Both areas fall within the study areas identified within the previously submitted ES and do not support anything identified to be of ecological value. No additional likely significant effects are identified for terrestrial ecology.	No

Onshore environmental topics assessed in the ES	Comments	Taken forward for further assessment?
Land Use and Agriculture	The proposed realignment moves a 500m length of the consented cable corridor from an area of arable land (north of the main access road into the Wilton Complex) to an area that is predominantly associated with the Wilton International Visitor Centre (car parking, amenity grassland). As such, potential impacts to agriculture will reduce. For the purposes of this assessment no additional likely significant effects are identified for land use and agriculture.	No
Terrestrial Archaeology	There are no designated or significant heritage assets within this area or in proximity. It is concluded that there are no changes in the assessment findings presented in the ES from the proposed route realignment. No additional likely significant effects identified.	No
Traffic and Access	The proposed amendment will result in an increase of 500 HGV movements during construction compared to the consented route alignment. The changes relate to the increased length of open cut trench, the associated additional length of haul road and the generation of additional waste soils. The realigned route will also require temporary part-closure of the access to the Wilton International Visitor Centre. Potential impacts associated with traffic will be considered further within this document.	Yes
Noise and Vibration	No noise sensitive properties (residential areas) are located in proximity to this area. The closest noise sensitive property is Sir William Turner's Hospital, Kirkleatham, which is approximately 600m east of the proposed realignment. The proposed realignment will not result in any construction works located closer to the hospital than the already consented route. It is concluded that there are no changes in the assessment findings presented in the ES from the proposed route realignment. No additional likely significant effects identified.	No
Air Quality	The closest dust sensitive receptor is Sir William Turner's Hospital, Kirkleatham, which is approximately 600m east of the proposed realignment. The proposed realignment will not result in any construction works located closer to this dust sensitive receptor than that already assessed. It is concluded that there are no changes in the assessment findings presented in the ES from the proposed route realignment. No additional likely significant effects identified.	No

Table 4 Screening of onshore topics as a result of potential HVAC cable route realignment

Onshore environmental topics assessed in the ES	Comments	Taken forward for further assessment?
Landscape and Visual Impact	The proposed amendment is very minor and effectively the same location as the consented route from a landscape perspective, i.e. no closer to any identified landscape or visual receptors. The existing line of trees will also be retained during the works. No additional likely significant effects identified.	No
Socio-economics	The proposed change will not alter the predicted construction costs or employment levels. No additional likely significant effects identified.	No
Tourism and Recreation	The proposed amendment is very minor and effectively the same location as the consented route; with no changes to construction methodology or construction timing. The existing permissive pathway will continue to be required for construction access; however, potential disruption to users of this permissive pathway will not alter from that described in the previously submitted ES. No additional likely significant effects	No
Geology, Water Resources and Land Quality	The proposed amendment is very minor and effectively the same location as the consented route; with no changes to construction methodology or construction timing. No additional likely significant effects identified.	No
Terrestrial Ecology	The proposed realignment positions the cable corridor 10m closer to an existing tree lined permissive pathway (within approximately 3m of the line of trees). This part of the ecological study area, presented within the previously submitted ES, does not support anything identified to be of ecological value. However, there is the potential for impacts to trees lining the permissive pathway due to the proximity of the works and this will be considered further within this report.	Yes
Land Use and Agriculture	The proposed realignment will avoid up to 4,000m^2 of arable land becoming isolated and unavailable to farm during construction. As such, any potential impacts to agriculture are expected to marginally reduce compared to the consented route. However, for the purposes of this assessment no additional likely significant effects have been identified.	No
Terrestrial Archaeology	There are no designated or significant heritage assets within this area or in close proximity. It is concluded that there are no changes in the assessment findings presented in the ES from the proposed route realignment. No additional likely significant effects identified.	No
Traffic and Access	The proposed amendment does not result in any changes to construction methodology or construction timings. HGV numbers remain as described within the original ES. No additional likely significant effects identified.	No
Noise and Vibration	The proposed amendment is very minor and effectively the same location as the consented route; with no changes to construction methodology or construction timing. No additional likely significant effects identified.	No

Onshore environmental topics assessed in the ES	Comments	Taken forward for further assessment?
Air Quality	The proposed amendment is very minor and effectively the same location as the consented route; with no changes to construction methodology or construction timing. No additional likely significant effects identified.	No

4. Onshore topic assessments

4.1. Introduction and scope

4.1.1. The screening exercise presented within Tables 3 and 4 has identified the following onshore topic areas that require further consideration as a result of the proposed HVDC and HVAC realignments of the onshore cable route. These are:

HVDC

- Geology, Water Resources and Land Quality
  - Potentially contaminated land;
  - Waste;
  - Flood risk; and
  - WFD.
- Traffic and access.

HVAC

- Terrestrial ecology (proximity of amended cable route to existing trees).

4.1. Potentially contaminated land (HVDC)

4.1.1. The proposed realigned route passes through the same geology as the consented route at this location (low permeability till overlying Redcar Mudstone). The realigned route will pass partially through a lorry park and car park associated with the access/administration buildings for the Wilton International Visitor Centre. This area is likely to be underlain by made ground; however, potential sources of contamination as a result of its land use are considered to be limited as cars and lorries are parked here only transiently.

4.1.2. The route will continue through an area to the west of the Visitor Centre that was historically used as a 'weathering station' to monitor the performance of manufactured outdoor coatings during weathering. It is understood that no wet application of coatings was undertaken in this location (pre-coated products were brought to the site and left for a prolonged period). It is therefore considered unlikely that this area would have any contamination related to this activity. The route will pass, for a short distance along the boundary of a small industrial area containing a number of works buildings. However, the consented route already passes adjacent to this small industrial area.

4.1.3. The cable route amendment connects back to the consented route, as it crosses to the north of the existing access road. In this area both the consented route and the route amendment are located within an area identified as having potential historic contamination (The Wilton Complex). The original cable route was also planned to pass through this potential source via open trenching and the risks associated with this location were assessed and presented within the ES, with mitigation recommended to manage the potential risks. As such, the risk of potentially contaminated materials being present within the construction footprint remains unchanged compared to the consented route.

4.1.4. The original consented cable route passed beneath the Wilton Complex access road (Southway) and drainage ditch via HDD. However, the proposed realignment may cross this drainage ditch by one of four crossing techniques: HDD, open cut trench, culvert or bridge. All four crossing techniques associated with the proposed realignment have a requirement for excavation within a potentially contaminated site. This therefore remains the same risk as that identified within the previously submitted ES. The mitigation identified within the ES remains valid and will be applied to whichever crossing technique is adopted.

4.1.5. Given the location of the proposed realignment within the Wilton Complex, there is the potential for construction workers to be exposed to potentially contaminated soil or waste. It could impact upon the health of construction workers via direct contact, ingestion or physical contact with contaminants that are present at or near the surface or inhalation of airborne particles, ground gases and vapours which may be present on site. However, the risk of construction workers encountering potentially contaminated material remains no greater than that identified within the original ES (negligible impact) and therefore **no additional likely significant effect has been identified**.

4.1.6. The mitigation presented within the previous ES remains appropriate and will be adopted for the proposed HVDC route amendment. For completeness the mitigation measures identified within the previously submitted ES are provided below:

4.1.7. In order to mitigate the potential effects [on construction workers] associated with the excavation of potentially contaminative soil or waste:

- Gas risks will be considered and mitigated 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;
- If any visual or olfactory evidence of contamination is identified during the construction phase, work will stop immediately, the contaminated materials will be stockpiled separately and a qualified Environmental Consultant contacted; and

- Special care will be taken in areas identified as possible landfills and areas adjacent to roads, drains etc. where embankments are present or point source contamination may have occurred (e.g. run-off from roads).

4.1.8. Mitigation measures in relation to soil quality (general construction activity impacts):

- In order to reduce the risk of impacts from general site activities including spill and leakages to soil a Construction Method Statement will be produced by the contractor and a Construction Environmental Management Plan (CEMP), drafted in accordance with the principles set out in the CoCP, will be developed in consultation with the contractor and the Environment Agency. The CEMP will include measures for avoiding the likelihood of spills and leakages, such as:
  - Store oils and fuel within designated areas above ground and in impervious storage bunds with a minimum of 110% capacity to contain any leakages or spillages, in addition storage areas will be regularly inspected to identify any leak or spills;
  - Limit refuelling activities to designated, impermeable surfaced areas and use drip traps where possible;
  - Check and maintain equipment regularly to ensure that leakages do not occur;
  - Have spill kits available on site at all times; and
  - Ensure site inductions for all staff, to include the above procedures and the locations of spill kits.

4.1.9. Mitigation measures in relation to 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 Byelaws 1980) 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.

4.2. Waste (HVDC)

4.2.1. The proposed HVDC route amendment will result in an additional 320m^3 of excavated spoil being generated that requires offsite re-use or disposal (for both projects combined). This is as a direct result of increasing the length of open cut trenching compared to using a longer HDD as part of the original consented route alignment. The original consented scheme (both projects) was predicted to generate 11,260m^3 of waste soils for disposal for cable trenching (Table 6.7 within Chapter 24 of the original ES). 320m^3 represents an increase of approximately 3% based on the already consented project. This is considered to be a negligible increase in overall waste generation and **no additional likely significant effect has been identified**.

4.2.2. The mitigation presented within the previous ES remains appropriate and will be adopted for the proposed HVDC route amendment. For completeness the mitigation measures identified within the previously submitted ES are provided below:

- The waste hierarchy will be used to determine the most sustainable option for all wastes that are generated on-site;
- Topsoil will be stored separately from subsoil. The stockpile dimensions will be designed such that they do not result in erosion, pollution of watercourses or increased flooding In order to reduce the impact to the topsoil and subsoil through stockpiling;
- Sustainable procurement methods, e.g. just in time delivery and just enough quantity of raw materials, will be used to minimise the amount required to be stored on-site; thereby lowering the risk of potential waste arisings from out of specification or excess materials;
- Waste packaging will be returned to suppliers where possible;
- All topsoil will be reinstated wherever possible;
- Waste subsoil that will be sent off-site will be segregated from subsoil suitable for reinstatement onsite;
- 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;

- All other wastes for off-site waste management will be stored in skips or other impermeable containers, preferably with lids (all waste liquid containers must have a lid);
- Plastic, paper and card, metal and other dry residual wastes will be segregated in different containers in the contractor's compound to maximise dry-recyclable collection where possible;
- Any hazardous wastes will be stockpiled or stored separately from any non-hazardous stockpiles;
- Stockpiles of soil will be covered or stored in bunded areas or up-gradient from drains and control waters or stored in impermeable containers (e.g. Skips), to prevent pollution from run-off;
- The CL:AIRE Code of Practice 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);
- Stockpiles of excavated soil will not be stored for more than 12 months; and
- A SWMP will be prepared to monitor wastes arisings on-site. This will also promote sustainable waste management practices by maximising waste prevention, re-use and recycling for material destined for off-site waste management. This will actively discourage sending waste to landfill.

4.3. Flood risk (HVDC)

4.3.1. A full flood risk assessment (FRA) was produced as part of the main application accounting for both the converter stations site and the cable route. Within this FRA a cable route screening exercise was undertaken to assess each point at which the proposed cable route crossed an existing watercourse. These crossing locations and crossing techniques were assessed for their potential impact on flood risk. All watercourse crossing points were located within Flood Zone 1[1].

4.3.2. All proposed HDD crossings were identified as having no direct impact on the watercourse being crossed, and no direct impact to flood risk in the vicinity. Therefore, if HDD is chosen as the preferred crossing technique for this proposed HVDC route amendment then the assessment made in the previously submitted FRA remains valid.

4.3.3. If the proposed crossing technique is via open trench, culvert or bridge; this is a change from the previous crossing methodology of the Southway surface water drain.

[1] Flood zone 1 - low probability of flooding. This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

Open cut trenching

4.3.4. This method will require the watercourse to be temporarily dammed and over-pumped whilst construction takes place. This has the potential to impound water if a high flow event occurs during construction.

4.3.5. As the proposed crossing is in Flood zone 1, there is no risk of exacerbating existing flood risk, however in the event of water impoundment behind the works localised flood risk in the immediate upstream vicinity of the crossing may occur. However, this risk remains low given the short low flood risk nature of the area and the short period that damming and over-pumping will be undertaken. **No additional likely significant effect has been identified**.

4.3.6. Best practice mitigation will be employed to ensure that the low risk of localised flooding is further reduced. This will include the provision of suitable capacity pumps, presence of back-up pumps during the works, and also ensuring the works are undertaken at the time of year when the watercourse is less likely to experience high flows.

Culvert/bridge

4.3.7. If either crossing method is to be undertaken it would result in a permanent feature positioned within the existing channel. A bridge or culvert crossing can potentially introduce constriction to the watercourse. However it is recognised that there are a number of existing road crossings of this drain. The drain itself has significant capacity and it is understood that there has been no historic flooding issue as a result of these existing crossings. Any bridge or culvert will be suitably sized and inkeeping with existing structures that are already present along this watercourse, and will be designed to maintain the existing capacity of the channel and to avoid impounding water. **No additional likely significant effect has been identified**.

4.4. WFD (HVDC)

4.4.1. The proposed works will be undertaken within the Tees Estuary (South Bank) water body (GB103025072320). According to the latest information published on the Environment Agency's online Catchment Data Explorer (accessed August 2015), this river water body is not designated as artificial or heavily modified. However, the channel is concrete lined and artificial in nature (refer to **Plate 1**). It is at Moderate Ecological Status due to pressures on invertebrate populations, including hydromorphological modifications and high concentrations of copper, triclosan and zinc. The water body also fails to reach Good Chemical Status, as a result of high concentrations of several priority hazardous substances (cadmium and its compounds, di(2-ethylhexyl)phthalate, nonylphenol and tributyltin compounds).

Horizontal Directional Drilling

4.4.2. Using this technique, the cables and associated housing would be installed beneath the active bed of the watercourse. The watercourse would not, therefore, be impacted by this activity. This crossing technique was already assessed as part of the consented cable route alignment for this site and its use within the proposed realignment would not therefore have any implications for WFD compliance.

Plate 1 Looking north east along existing concrete lined drainage channel. Main access into Wilton complex (Southway) to the left of shot.

Open cut trenching

4.4.3. The watercourse would be temporarily dammed to allow the cable and housing to be installed beneath the channel in a dry open trench. Flow in the watercourse would be maintained during construction by over-pumping, and the bed and banks would be reinstated following cable installation.

4.4.4. Open cut trenching has the potential to cause localised changes in flow conveyance, sediment transport and to the morphology of the bed and banks during construction. However, any changes are likely to be limited given the artificial nature of the channel. Further to this any changes will be temporary and naturally reversed once construction has been completed. As such, open cut trenching will not result in deterioration in water body status and **no additional likely significant effect has been identified**.

Culverting

4.4.5. The installation of a culvert across the watercourse has the potential to alter flow and sediment dynamics, (e.g. by impounding flows and increasing sedimentation upstream, disrupting the downstream transport of bed sediments and increasing scour downstream), remove natural bed and bank habitats for macrophytes, aquatic invertebrates and fish, and prevent the free passage of fish. The magnitude of impacts and the likelihood of deterioration in water body status are, however, dependent upon the baseline conditions of the watercourse and the design of the culvert.

4.4.6. The potential for adverse impacts on WFD quality elements will be minimised by adopting the following:

- Ensuring that the culvert is suitably sized to prevent impoundment.
- Ensuring that the invert level of the culvert is set below the natural bed level of the watercourse, maintaining bedload transport processes and allowing natural substrates to develop within the culvert.
- Minimising the length of the culvert to reduce the extent of direct habitat loss and allow natural light penetration as far as possible.

4.4.7. It should also be noted that the watercourse is already extensively modified and culverted along much of its length. Given that these measures would minimise the potential for adverse impacts on the WFD quality elements supported in the watercourse, the installation of an additional culvert is considered unlikely to cause deterioration in water body status. **No additional likely significant effect has been identified**.

Bridging

4.4.8. The impacts associated with the construction of a low level utilities bridge across the watercourse could vary considerably depending upon the design of the structure. For example, a structure with supports set back from the watercourse is likely to have fewer impacts that one with supports directly on the banks, and a clear span structure is likely to have fewer impacts than a structure with supports within the channel.

4.4.9. Given the small size of the watercourse, it is assumed that the structure will consist of a clear span bridge with supports that are sufficiently close to the banks to directly impact upon them. The installation of this type of structure would result in the direct loss of bed and bank habitats for macrophytes, aquatic invertebrates and fish. However, this would be confined to the parts of the channel that directly accommodate the structure and would be unlikely to be sufficient to cause deterioration in the status of the biological quality elements. Furthermore, the spatially constrained nature of physical changes and the lack of a bridge support in the main channel would mean that hydromorphology is unlikely to be affected. This means that a bridge is considered unlikely to cause deterioration in water body status. **No additional likely significant effect has been identified**.

4.5. Traffic and access (HVDC)

4.5.1. The proposed route amendment will result in an increase of 500 HGV two-way movements (both Teesside A and B projects) during construction compared to the consented route alignment. The changes relate to the increased length of open cut trench and the associated additional length of haul road to construct and the generation of additional waste soils. The shortest buildout timescale for this proposed route amendment (both projects together) is four weeks, which represents a worst case increase in daily construction traffic of 25 HGV two-way movements per day. It is expected that construction (for both projects together) will actually take 12 weeks, which would represent daily increase of 8 two-way movements.

4.5.2. Within the original assessment it was identified that there will be worst case increase in 482 total daily HGVs on the A174 to the south of Wilton of which represented an increase of 34.5% on the existing HGVs using that road. This increase was identified as exceeding the GEART[2] screening threshold for HGVs (refer to Table 6.2 of Chapter 28 of the original ES). The proposed amendment raises this from 482 to 507 (34.5% to 36.2%). Where GEART is exceeded further examination of potential highway safety is required.

4.5.3. Collision analysis was undertaken as part of the original assessment. This identified that the accident clusters along the A174 are not statistically significant and the originally reported daily HGV increases (34.5% increase) would have a negligible effect on highway safety in on the A174 south of Wilton (refer to Section 6.4.3 of Chapter 28 of the original ES). A further increase of 1.7% (a total of 36.2%) will similarly have no more than a negligible effect on highway safety. **No additional likely significant effect has been identified**.

4.5.4. The realigned route will also require temporary part-closure of the entrances to both the lorry park and the car park associated with Wilton International Visitor Centre. The Visitor Centre is an administrative building that processes visitors ahead of them passing through the main security gates into the Wilton Complex. Neither lorries nor cars are parked for any length of time and typically no-one uses these car parks overnight or on weekends. The Wilton International Visitor Centre is private property off the public highway and as such these part closures will not impact the public highway network or any people using the public highway network. However, the timings of these part closures will be agreed with Sembcorp to minimise any disruption to the Wilton Complex. This is expected to consist of commitment to undertake the works during weekends, when the car parks are not in use, and to ensure that both car parks are not closed at the same time. **No additional likely significant effect has been identified**.

[2] Guidelines for the Environmental Assessment of Road Traffic (1993)

4.6. Terrestrial Ecology (HVAC)

4.6.1. The proposed realignment is located at the edge of an arable field. The realignment positions the cable corridor 10m closer to an existing tree lined permissive pathway (the consented alignment is approximately 13m from the line of trees, and the proposed route amendment is located within approximately 3m of the line of trees). Refer to **Plate 2**.

Plate 2 **Looking south west from the northern most point of the proposed HVAC realignment. Left hand edge of the proposed corridor route amendment approximately aligns with the left hand edge of the cropped area. Line of trees to left of shot.**

4.6.2. The habitats present along the proposed realignment are of relatively low ecological interest (arable land and young hedgerow tree species lining a permissive pathway). The line of trees is predominantly comprised of hawthorn with occasional birch and oak. There was no evidence of legally protected species; however the area continues to offer suitable breeding bird and foraging bat habitat – as previously reported within the original ES. However, the trees are relatively young (trunks with diameter of 10cm to 20cm) and do not include features that would support roosting bats.

4.6.3. None of the trees will be removed as part of the works; however, the proximity of the works has the potential to damage the root mass of the trees.

4.6.4. The edge of the proposed realignment will be located along the edge of the arable crop area. This new alignment leaves approximately 3m clearance to the line of trees. The canopy of the trees does not extend over the new alignment, which can be seen on **Plate 2**. Root protection areas are often defined to determine the area that should be avoided to prevent damaging a protected tree. Whilst this line of trees is not protected, it does provide a useful indication whether there is the potential for impacts to the root mass of any trees. The root protection area is calculated as 12 times the diameter of the tree trunk, 1.5m off the ground. Based on these trees this would translate to a root protection area of 1.2m to 2.4m, with works proposed beyond these distances, i.e. no closer than 3m.

4.6.5. Given that the trees are mainly hedgerow species (hawthorn) and relatively young specimens, it is not expected that the roots of these trees will extend beyond the 3m of separation to the edge of the proposed HVAC route alignment. In addition the works closest to this line of trees will actually be used for spoil storage and any excavation will be further inside the overall corridor, giving further separation between the trees and any intrusive works.

4.6.6. Overall, **no additional likely significant effect** has been identified for this line of trees or protected species potentially associated with this line of trees.

5. Summary

5.1. Summary

5.1.1. Forewind has proposed two amendments to the consented Dogger Bank Teesside A & B onshore buried cable route. One amendment is to the high voltage direct current (HVDC) cable route and the other to the high voltage alternating current (HVAC) cable route. The realigned routes will continue to pass through the Wilton industrial complex.

5.1.2. The proposed HVDC realignment results in an approximately 500m length of the HVDC cable route being moved approximately 75m south of the original route. The realignment will now be located to the south of the main access into the Wilton complex (Southway) rather than being located to the north of Southway. This will result in the cable route crossing the existing drain that runs adjacent to Southway, approximately 420m further to the west than the consented crossing location.

5.1.3. The proposed HVAC realignment results in an approximately 700m length of the HVAC cable route being moved approximately 10m southeast of the original alignment. The realignment remains wholly within the same arable field and results in the cable route being closer to the edge of that field (and closer to the existing tree lined footpath in this location). Relocating the route in this way frees up approximately 4,000m^2 of arable land that would otherwise become isolated during the construction.

5.1.4. An environmental screening exercise was undertaken against the baseline conditions identified within the previously submitted ES. This identified the following onshore topic areas that required further consideration as a result of the proposed HVDC and HVAC realignments of the onshore cable route.

- Potentially contaminated land (HVDC);
- Waste (HVDC);
- Flood risk (HVDC);
- WFD (HVDC);
- Traffic and access (HVDC); and
- Terrestrial ecology (proximity of amended cable route to existing trees) (HVAC).

Potentially contaminated land (HVDC)

5.1.5. Given the location of the proposed realignment within the Wilton Complex, there is the potential for construction workers to be exposed to potentially contaminated soil or waste. However, the risk of construction workers encountering potentially contaminated material remains no greater than that identified within the original ES (negligible impact) and therefore **no additional likely significant effect has been identified**. The mitigation presented within the previous ES remains appropriate and will be adopted for the proposed HVDC route amendment.

Waste (HVDC)

5.1.6. The proposed HVDC route amendment will result in an additional 320m^3 of excavated spoil being generated that requires offsite re-use or disposal (for both projects combined). This represents an increase of approximately 3% based on the already consented project. This is considered to be a negligible increase in overall waste generation and **no additional likely significant effect has been identified**. The mitigation presented within the previous ES remains appropriate and will be adopted for the proposed HVDC route amendment.

Flood risk (HVDC)

5.1.7. If the proposed crossing technique of the existing drain is via open trench, culvert or bridge; this is a change from the previous crossing methodology of the Southway surface water drain. However, this risk remains low given the short low flood risk nature of the area. **No additional likely significant effect has been identified**. Best practice mitigation will be employed to ensure that the low risk of localised flooding is further reduced.

WFD (HVDC)

5.1.8. The existing drain to be crossed is already extensively modified and culverted along much of its length. As such, the installation of an additional culvert or bridging structure is considered unlikely to cause deterioration in water body status. Any effects associated with open cut trenching will be temporary and naturally reversed once construction has been completed. As such, none of the proposed crossing techniques will result in deterioration in water body status and **no additional likely significant effect has been identified**.

Traffic (HVDC)

5.1.9. The realigned route will require temporary part-closure of the entrances to both the lorry park and the car park associated with Wilton International Visitor Centre. However, the timings of these part closures will be agreed with the Wilton Complex. This is expected to consist of commitment to undertake the works during weekends, when the car parks are not in use, and to ensure that both car parks are not closed at the same time. **No additional likely significant effect has been identified**

Terrestrial ecology (HVAC)

5.1.10. The realignment positions the cable corridor within approximately 3m of the line of trees. Given that the trees are mainly hedgerow species (hawthorn) and relatively young specimens, it is not expected that the roots of these trees will extend beyond the 3m of separation to the edge of the proposed HVAC route alignment. In addition the works closest to this line of trees will actually be used for spoil storage and any excavation will be further inside the overall corridor, giving further separation between the trees and any intrusive works. Overall, **no additional likely significant effect** has been identified.

Overall

5.1.11. Overall no additional likely significant effect has been identified for any of the topics identified within the screening exercise. Where mitigation was identified within the original ES this has been confirmed as remaining appropriate and will be adopted for the proposed route amendments.

6. Figures

