FOREWIND

DOGGER BANK
TEESSIDE A & B

March
2014

Environmental Statement Chapter 24 Appendix C Site Waste Management Plan Report

Application Reference: 6.24.3

Cover photograph: Indicative image showing installation of meteorological mast within the Dogger Bank Zone

Dogger Bank Teesside A & B Site Waste Management Plan Report

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1 BACKGROUND

1.1 Project details

1.1.1 Dogger Bank Teesside is Forewind's[1] second stage of development of the Dogger Bank Zone. This report regards Dogger Bank Teesside A & B only. Dogger Bank Teesside A & B will each have a maximum installed capacity of 12 GW.

1.1.2 The onshore element comprises (refer to **Figure 1.1**) all infrastructure landward of the Mean High Water Mark including the onshore joint transition bays, buried cable systems, Horizontal Direct Drilling (HDD) sections, and two converter stations. Forewind currently expects that at least two of these wind farms will connect to the existing National Grid Electricity Transmission (NGET) Lackenby substation, which is near Eston in Redcar and Cleveland and will convert the electricity exported as High Voltage Direct Current (HVDC) back to High Voltage Alternating Current (HVAC) prior to connection into the National Grid substation.

1.1.3 The cable route will come onshore to the north of Marske-by-the-Sea, where it will cross under the railway line and Redcar Road, south of the Markse Sewage Treatment Works. The route will then head south to the A174, and at this location large construction compounds will be sited. The cable route will then cross agricultural fields south of Grewgrass Farm and north of Fell Briggs Farm, Thrushwood Farm and the village of Yearby until it reaches the Wilton complex, where the converter stations and associated infrastructure will be located. The HVDC will be converted to HVAC at the converter stations and connect into the existing NGET substation at Lackenby to the west of the A1053 via an HVAC cable. HDD techniques will be used to cross significant obstacles such as watercourses, railway lines and major roads where trenching cannot be achieved. During HDD tunnels are bored under the structure and the cables pulled through the underlying geology.

Purpose

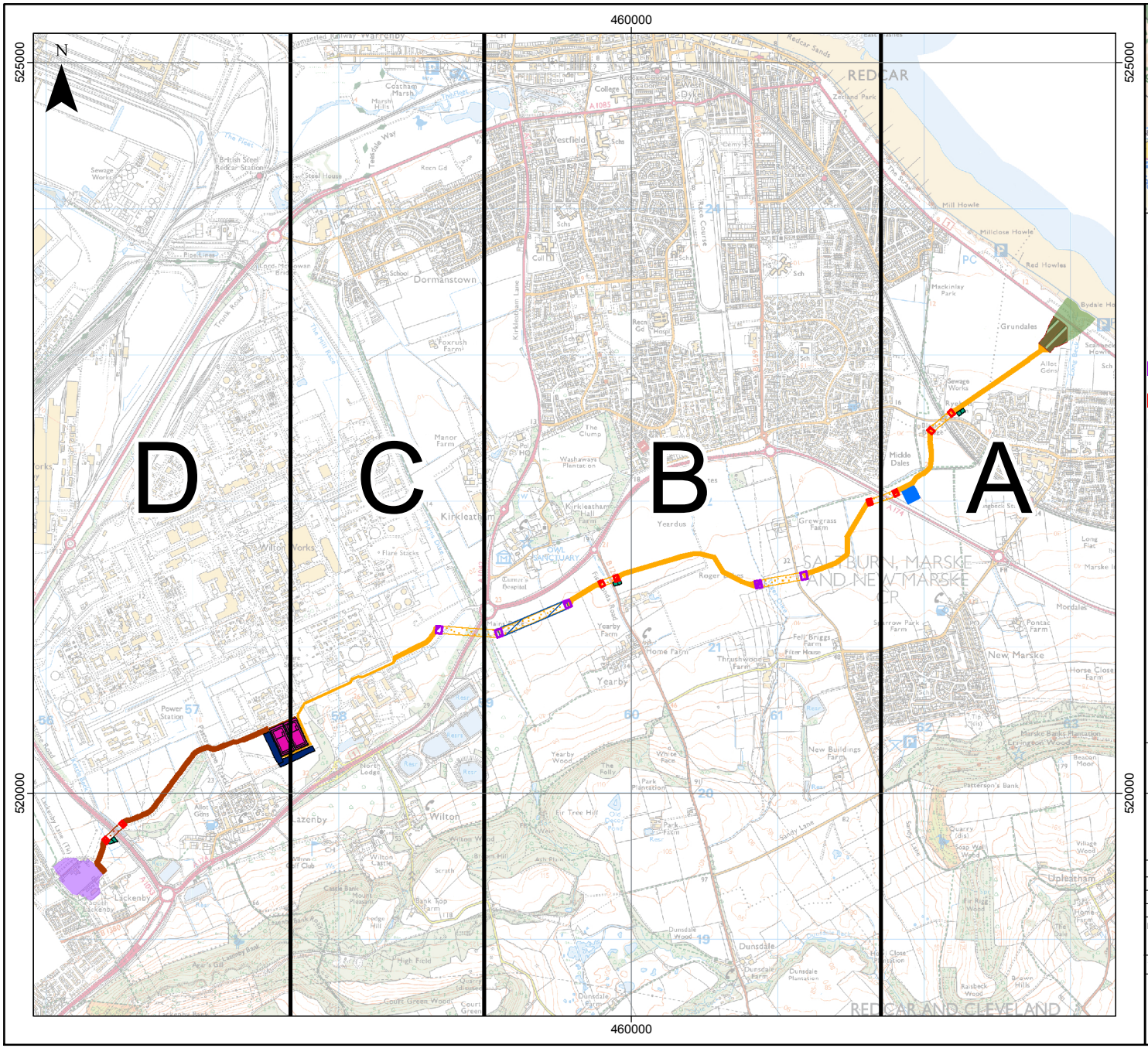
1.1.4 This document and the associated Excel spreadsheet tool (**Appendix 1** provides a copy of active sheets from Excel SWMP Tool), provides the predicted waste arisings as a result of the onshore works for Dogger Bank Teesside A & B, in accordance with the requirements that were provided in the Site Waste Management Plan Regulations 2008[2] SI 2008 No. 314 ('SWMP Regs').

1.1.5 The total volumes/mass of excavated materials and other waste arisings associated with Dogger Bank Teesside A & B contained within this SWMP are equally applicable whether Dogger Bank Teesside A & B are built separately with a gap of up to five years or if they are built at the same time. If they are built separately with a gap in between construction, separate SWMPs will be required, one for each of Dogger Bank Teesside A and for Teesside B. The programmed consent award date for Dogger Bank Teesside A & B is August 2015.

[1] Forewind is a consortium comprising four leading international energy companies; SSE, RWE, npower renewables (a RWE Innogy company) Statoil and Statkraft.

[2] The SWMP Regs were revoked by The Environmental Noise, Site Waste Management Plans and Spreadable Fats etc. (Revocations and Amendments) Regulations 2013 SI 2013 No. 2854 on 1 December 2013. So, it is no longer a legal requirement for English construction projects to have a SWMP. However, they are good practice, and some are required, or will be required, by the Planning Authority as part of the planning conditions. A SWMP was part of the scope of works for this project.

1.1.6 The SWMP is a live document and during the preparation stage (i.e. before construction starts) is subject to change according to the design requirements. The final selection of components for Dogger Bank Teesside A & B will be subject to the outcome of the final design process and a separate procurement process.



LEGEND

- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation

0 1

Kilometres

Data Source:
Ordnance Survey data © Crown copyright and database right, 2014

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 1: Indicative Onshore Cable Route

VER	DATE	REMARKS	Drawn	Checked
3	26/07/2013	Final Issue	SW	DW
4	11/02/2014	Pre-DCO Submission review	GC	DW

DRAWING NUMBER:

T-SOC-0076-02

SCALE	1:40,000	PLOT SIZE	A4	DATUM	OSGB36	PROJECTION	BNG

FOREWIND

2 SWMP PROCEDURES

2.1 SWMP Procedures

2.1.1 There are two main phases for a SWMP: the preparation stage, which is the responsibility of the client prior to construction; and the construction stage, which is the responsibility of the principal contractor from when construction begins.

2.1.2 An Excel SWMP tool has been developed Royal HaskoningDHV on behalf of Forewind to record the following details (**Appendix 1** provides a copy of active sheets from Excel SWMP Tool):

- Details of the key personnel, where known, who will be involved in the project and the person who drafted the SWMP.
- A description of the work proposed, including the location of the site and the estimated cost of the project.
- A record of any decision given to materials resource efficiency in designing and planning the works. The SWMP will record any decisions on the nature of the project; its design; the construction method or materials employed, that were taken before the SWMP was drafted, where these decisions influence, the quantity of waste produced on site This includes cost-saving elements in design.
- Each waste that is expected to be produced in the project will be recorded using the appropriate European Waste Catalogue (EWC) code and waste description for each waste type.
- An estimate of the approximate quantity of each waste type and the proposed waste management option for each waste produced, (re-use, recycling, recovery or disposal on- or off-site).
- A declaration that the client and the principal contractor will take all reasonable steps to ensure that all waste from the site will be dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991[3]. This declaration will also state that materials will be handled efficiently and waste managed appropriately. Note: The declaration must be signed and dated by both parties.

2.1.3 The steps described in section 4 of this document refer to the Excel tool which should be read in conjunction with this document. This report and the Excel tool together form the SWMP (**Appendix 1** provides a copy of active sheets from Excel SWMP Tool). Section 4 of this report provides the justification for the estimated waste arisings given in the SWMP. It also describes the procedures necessary for the principal contractor to complete the SWMP with the actual quantity of each waste type produced; and the details of the waste contractors used to handle each waste type during the construction phase.

[3] (Note: this declaration is a transcript of the SWMP Regs. However, since the implementation of the SWMP Regs, the 1991 Duty of Care Regulations were revoked and the duty of care provisions are now contained in the Waste (England & Wales) Regulations 2011 SI 2011 No. 988).

3 ROLES AND RESPONSIBILITIES

3.1.1 The applicant has responsibility for preparing the SWMP prior to construction, but this role can be delegated. The principal contractor (to be appointed) will be responsible for updating the SWMP during and after construction, up to project closure. The key roles and responsibilities for specific individuals should be identified in the SWMP; this includes the client's representative, the principal contractor and the persons who drafted the SWMP and updated the SWMP during construction. The key roles during construction are considered to be the following:

- Principal Contractor/Contract Manager;
- Site Manager;
- Client Project Manager;
- Waste Management Champion; and
- Sub-contractor's Environmental Representative.

3.1.2 The declaration box at the end of the Admin 1 tab in the SWMP Excel tool must be signed by a representative from both the client (Forewind) and the principal contractor before construction works start.

3.2 Principal Contractor / Contract Manager

3.2.1 The Contract Manager will have responsibility for the delivery of the project in terms of health, safety, environmental quality and waste management during the construction period. The Contract Manager will ensure that appropriate resources are available, and any necessary environmental controls or mitigation measures are implemented.

3.3 Site Manager

3.3.1 The Site Manager will have the overall day to day responsibility for the delivery of the project and will oversee all operational aspects of the construction programmes. The Site Manager is likely to report to the Contract Manager.

3.4 Client Project Manager

3.4.1 The Client Project Manager will have responsibility for managing the project within the agreed environmental constraints and in conjunction with all other management duties. They will be responsible for monitoring the performance of the project against the statutory requirements and agreed environmental standards. Duties of the Client Project Manager will include:

- Review of the SWMP, procedures, and identification of areas for improvement.
- Monitoring the performance of the project against statutory requirements and any agreed environmental standards and key performance indicators, where implemented.
- Ensuring that all contractor Organisations working on the project can demonstrate environmental competence.
- Reviewing contractor method statements for environmental aspects of work.

- Monitoring of construction activities to ensure the identified control measures are effective and in compliance with environmental requirements, including the SWMP.
- Acting as the main point of contact between all parties.

3.5 Waste Management Champion

3.5.1 A representative of the principal contractor is responsible for updating the SWMP at regular intervals during construction to ensure that all waste movements are recorded. Royal HaskoningDHV recommend that the principal contractor appoints a Waste Management Champion during the construction stage. The Waste Management Champion has an overseeing role covering waste handling on site, including the reuse or recycling of wastes that are to be retained on site; and coordinating the off-site disposal or recovery of wastes. The Waste Management Champion will be responsible for the upkeep of the SWMP and will promote good or best waste management practices during the construction phase. This role will be assigned to the relevant person who shall be responsible for:

- Signing waste transfer notes/ hazardous waste consignment notes.
- Establishing and maintaining records and record keeping systems in order that the movement of all waste streams and materials can be tracked and monitored.
- Championing and promoting the cause of recycling and waste management.
- Communicating relevant information and promoting local schemes and wider strategies in relation to waste management and recycling.
- Supplying and making available these records for audit and inspection upon request by stakeholders or other relevant enforcement agencies.
- Implementation and monitoring of waste minimisation, segregation and safe disposal measures in accordance with the KPIs identified in the SWMP.
- Dissemination of waste reduction and waste management procedures to all relevant personnel on site.

3.6 Sub-contractor's Environmental Representative

3.6.1 Each sub-contractor, appointed by the principal contractor, should appoint an Environmental Representative who will be responsible for:

- Ensuring that environmental considerations are included in risk assessments, method statements and work instructions.
- Carrying out environmental inspections of the site.
- Ensuring all environmental consents are in place.
- Liaising with the environmental regulators and specialist stakeholders who have an interest in the construction programme, e.g. archaeologists.
- Act as the main point of contact between the Sub-contractor and Contract Manager or Waste Management Champion on environmental issues.

3.6.2 There are a number of potential overlaps between the Environmental Representative and the Waste Management Champion, so, if there is only one contractor working on site, this role could be combined.

4 UPDATING THE SWMP

4.1 Step 1 - Administration and Planning

4.1.1 The Excel SWMP tool 'Admin 1' tab provides the basic details for the project. The details of the contractor personnel responsible for the SWMP should be entered when known. The total project value (i.e. the whole project costs for the onshore cable works, not just consultant costs) is required, an arbitrary value of *£2 billion* is included in the SWMP, this will be amended when more accurate value of the project is available.

Action:

1. **Mandatory – the full details of the principal contractor are required to be entered into the Excel SWMP tool.**

2. Optional – the contractor should enter the details of their nominated waste management representatives on the Excel SWMP tool.

4.1.2 It is a legal requirement that both the client and the principal contractor sign a declaration to ensure that:

(a) All waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991; and

(b) Materials will be handled efficiently and waste managed appropriately

4.1.3 The Declaration is provided on the Excel SWMP tool 'Admin 1' tab:

Action:

3. **Mandatory – the client and principal contractor representatives must sign the Declaration before construction starts.**

4.2 Step 2 - Action Logs

4.2.1 The Excel SWMP tool provides the 'Log 2' tab as a means to record the actions and outcomes of any project meetings where waste management is discussed; both prior to construction and after construction begins. This is not a legal requirement, however it is considered good practice to record the following information:

- Date of meeting;
- Attendees; and
- List of actions and who is assigned responsibility for carrying them out and by when.

4.2.2 This part of the Excel tool can also be used to record any toolbox talks on the SWMP and any other waste issues that were resolved by discussion between relevant parties.

Action:

4. **Optional – the contractor's nominated representative for compiling the SWMP during the construction should update the Action Log table with meeting outcomes and training records.**

4.3 Step 3 - Key Performance Indicators (KPIs) and Targets

4.3.1 KPIs are provided in the Excel spreadsheet tool tab 'KPI 3'. It is considered good practice to implement them, so the construction programme can be measured against set targets. The following common KPIs have been included in the Excel tool. They can be deleted or added to as required by the client or principal contractor: The excel tool updates the KPIs automatically.

Waste generation

By known waste volume
- m^3/£100,000 project value
- m^3/m cable trench

By known waste tonnage
- Tonnes/£100,000 project value
- Tonnes/m cable trench

Reuse, recycling and recovery rates

By volume (m^3)
- Percentage of the volume of waste reused on site
- Percentage of the volume of waste recycled off site total

By tonnes
- Percentage of the mass of waste reused on site
- Percentage of the mass of waste recycled off site total

Diversion of waste from landfill and other disposal options

By volume (m^3)
- Percentage of total volume of waste diverted from landfill and other disposal options

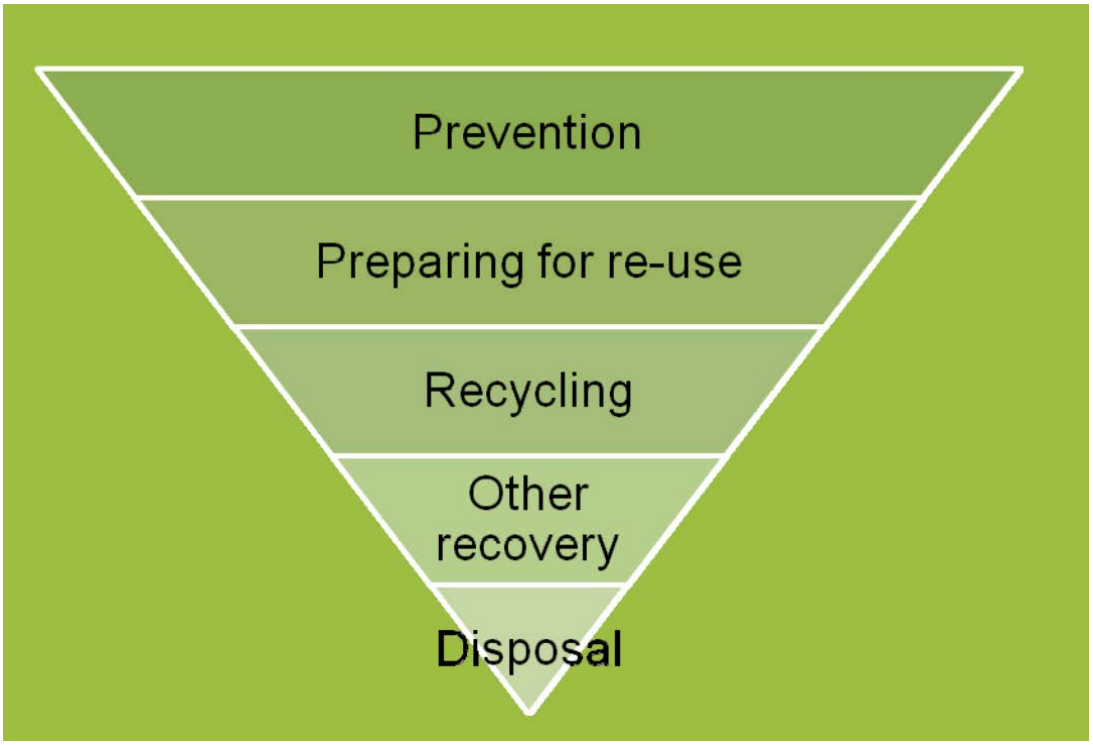
By tonnes
- Percentage of total mass of waste diverted from landfill and other disposal options

Cost of waste
- Waste cost/project value
- Waste cost/£100,000 project value
- Waste cost/m cable trench

4.4 Step 4 - Cost Saving Design Measures

4.4.1 The client should record details of every design feature that will potentially have an impact on waste prevention, reduction or re-use within the SWMP during the preparation stage. These details have been recorded in the 'Design 4' tab of the Excel SWMP tool.

4.4.2 The Waste Framework Directive (2008/98/EC) ('rWFD') sets out five steps for dealing with waste in priority order. This is called the 'waste hierarchy' (see **Figure 4.1**). This shows the order of priority that must be applied when making decisions about the reuse, recycling, recovery or disposal of each type of waste generated during the construction programme. The waste hierarchy is a legal requirement set out in The Waste Regulations 2011.



Source: Guidance on applying waste heirarchy – DEFRA, June 2011.
Figure 4.1 Waste hierarchy

4.4.3 The SWMP outlines a number of waste prevention or reduction measures, which Royal HaskoningDHV anticipate will be incorporated into the construction programme. The primary waste stream identified is non-hazardous soil and stones that will need to be excavated to create the cable trench; prepare access haul roads and to prepare for the Converter stations.

4.4.4 Royal HaskoningDHV anticipate that a significant proportion of the excavated materials will be re-used to backfill the cable trenches and joint transition bay; or be reused for landscaping. Any remaining excavated material that cannot go back into the trenches or be reused is expected to be transferred to an off-site facility for possible re-use or recycling elsewhere in accordance with the waste hierarchy.

4.4.5 The cost estimate data that has been entered into the Excel tool in this tab provides a high-level estimate of the cost of disposal of all excavated material to landfill assuming that none of it will be put back into the trench. This provides the benchmark to measure cost-savings of any waste prevention/reduction/reuse measures that are implemented. These can be subjected to refinement where necessary, however, the most important aspect of this part of the plan is to record the design features that influence waste arisings and reuse on site.

4.5 Step 5 - Responsibility for waste management

4.5.1 The principal contractor is responsible for recording the waste arisings during the construction phase. However, the responsibility of various activities or waste streams could be allocated to sub-contractors or other individuals. The Excel SWMP allows for this to be identified in the 'Responsibility 5' tab. Currently, this tab is set at the default regulatory requirement and identifies that the principal contractor is wholly responsible but it can be amended where appropriate.

Action:

5. Optional – the principal contractor should update the Excel SWMP to identify who is responsible for specific waste streams or activities during the construction phase.

4.6 Step 6 - Planning Reuse and Recycling

4.6.1 The forecast of waste streams according to material type and activity that generates the waste is recorded in the Excel tool 'Reuse and Recycling 6' tab prior to construction. This involves identifying the processes that are most likely to produce waste; the quantity of each type of waste and the specific waste code (EWC code) for each waste; whether the waste is classified as hazardous or non-hazardous; and a further identification of the non-hazardous arisings that may be considered inert. The reuse and recycling options for the waste can then be proposed as primary and secondary options.

4.6.2 An outline cost is provided based on the estimated the cost of disposal of a particular waste according to the designated waste management option. Note that these costs are rough estimates of the gate fees charged by off-site waste management facilities. They will change according to fluctuations in the waste market and as such do not replace accurate costs according to the disposal costs negotiated by the Principal Contractor during the construction phase. Accurate disposal costs must always be obtained from waste management contractors. Where wastes are reused within the site development, these costs will not be realised because there is no off-site disposal fee.

4.6.3 The conversion factors used to convert from cubic metres to tonnes are derived from the Waste Resources Action Programme (WRAP) published conversion factors[4], which are derived from Environment Agency data.

[4] http://www.wrap.org.uk/sites/files/wrap/Conversion%20factor%20guide%20for%20WRAP%20Tools.pdf

Construction works

4.6.4 The construction works section of the 'Reuse and Recycling 6' tab involves:

- The excavation of two separate approximately 6km long trenches (Dogger Bank Teesside A & B) to encompass the onshore buried cables (the HVDC) from landfall to converter stations;
- The excavation of two separate approximately 2km long trenches (Dogger Bank Teesside A & B) to encompass HVAC buried cables from converter stations to the existing NGET substation at Lackenby;
- A joint transition bay;
- HDD; and
- Two converter stations of 1.2GW each.

Joint transition bay

4.6.5 A joint transition bay will be excavated at the landfall and the waste material arising is assumed to be a non-hazardous mixture of soil and stones. At the joint transition bays, there will be a requirement for the cable system to be surrounded by thermally resistive cement bound sand, so it will not be possible to replace all of the excavated material back into the jointing bay. The SWMP has been programmed to estimate that 60% of the waste from the joint transition bay will be re-used on site, i.e. replaced back into the trench on top of the cement-bound sand, and 40% will be sent for off-site waste management in accordance with the waste hierarchy. It has also been programmed to estimate that 90% of the soil and stones sent off-site will be able to be recycled; with the remainder going for landfill disposal because it may not be in a suitable condition for recycling (for example excavation from unexpected hotspots of contamination). These data can be refined where necessary as the design progresses and/or more information is known about the ground conditions and potential contamination.

Excavation of open cut trench

4.6.6 One of the main components of onshore construction works is excavation of an open cut trench of approximately 6km length to bury the HVDC cable from the joint transition bay to the onshore converter stations; and an approximate 2km trench to bury the HVAC cable from the converter stations to National Grid Substation. **Figure 4.2** illustrates a typical cross section of the cable route.

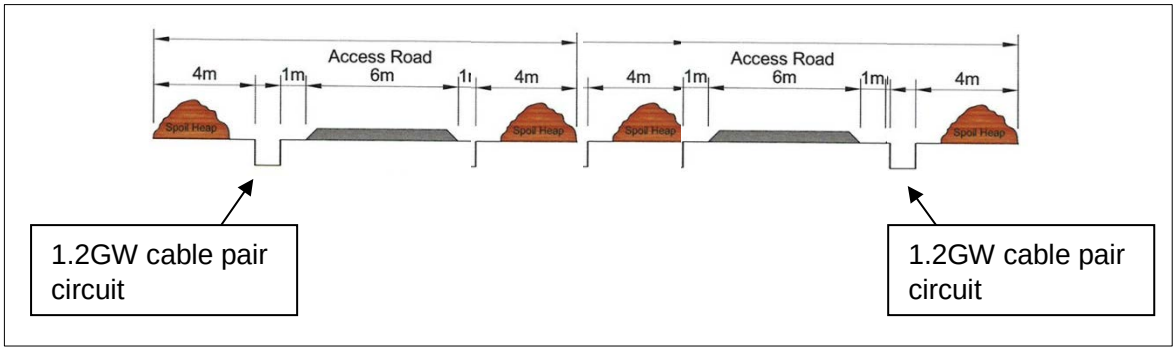


Figure 4.2 Typical cross section of cable route (HVDC and HVAC) for Dogger Bank Teesside A & B

4.6.7 The HVDC cable route crosses arable and horticultural land with small pockets of improved and rough grassland; the HVAC cable route crosses the industrial estate on the bottom edge of the former Wilton Chemical work's site and agricultural land. The expected width of each trench is 1.5m; and the proposed depth of each trench is up to 1.5m. The profile of each trench is likely to comprise a layer of top soil (for the purpose of calculations this has been estimated as 15cm deep); and a lower layer of sub soil comprising of soil and stones (1.35m). It is likely that the topsoil layer will be uncontaminated along the majority of the cable works and. This will be reinstated on site.

4.6.8 The lower layer of soil and stones ('subsoil') that will be excavated from the trench is anticipated to be non-hazardous based on the information available at the current time. However, there are unexpected areas of contamination associated with historic landfill sites and other potential sources of pollution (for example Wilton perimeter mounds) may be encountered. A list of potential sources of contamination is provided in the Teesside Onshore Land Quality Desk Study. The lower 0.5 m of excavated material will be removed off-site because the cables need to be surrounded by stabilised material (i.e. cement bound sand) to ensure thermal resistivity around the cables.

4.6.9 Royal HaskoningDHV estimate that 90% of the removed 0.5m layer of excavated material is likely to be appropriate to be recycled off-site; and 10% may sent to landfill for disposal. The remaining 0.85m layer of excavated subsoil will be reinstated into each trench.

4.6.10 The estimated percentages can be refined where necessary as the design progresses and/or if more information is known about the ground conditions and potential contamination.

HDD

4.6.11 HDD has become an accepted method of installing cables in areas that cannot be open cut. HDD involves drilling a hole through the ground between two points between which the cable will be installed. These are usually referred to as entry and exit points, with the drilling rig being set up on the entry side of the crossing.

4.6.12 There are number of routing constraints in the proposed cable route from the landfall to the substation via the two onshore converter stations. As a minimum, HDD will be employed to bypass the following infrastructure:

- Roads: A1085, Green Lane, Redcar Road, A174, Grewgrass Lane, A1053 (Greystone Road), B1269 (Fishponds Road);
- Redcar east to Longbeck railway line;
- Water courses: Roger Dike; Mains Dike and
- Made ground.

4.6.13 It is common for Bentonite fluid to be used as a lubricant during the drilling process of HDD. This produces non-hazardous HDD sludge and displaced soil and stones etc. This material will require disposal off site.

Other non-hazardous wastes

4.6.14 Other non-hazardous wastes produced during the construction programme will include general waste (e.g. food, drinks, cans and general rubbish); biodegradable waste from the clearing of vegetation; and toilet waste from each contractor's site compound. Royal HaskoningDHV recommend that the site compound is set up to maximise recycling opportunities by segregating the dry recyclable waste generated for the duration of the works where possible. The level of recycling/separate collection will be dependent on the amount of space at the site compound and availability of different types of container. All the toilet waste produced will be sent for off-site treatment. It is anticipated that the biodegradable waste will be suitable for recycling off-site at a composting facility.

Hazardous wastes

4.6.15 The precise nature of material used for the Wilton perimeter mounds; and other landfill sites is not known. This made ground may contain a number of contaminants depending on the materials used to fill these sites. This means that some of the excavated subsoil from these areas could have high levels of contamination; and some could be classified as hazardous waste; and / or be considered unsuitable for reuse on site (either for landscaping or backfilling the trench). The material with suspected contamination will need to be assessed by following a thorough site investigation and the data analysed to identify:

1. Whether it is suitable for use; and
2. What the appropriate waste classification (hazardous or non-hazardous - this must be done before re-use or removal to any off-site facility.

Other Hazardous wastes produced during construction programme will include empty oil drums and contaminated absorbents used for clean-up spillages.

4.6.16 Note that if material is not suitable for reuse on-site; or for recovery or recycling off site in accordance with the waste hierarchy (after undergoing waste options by following the waste hierarchy), then landfill may be the only suitable option. If this is the case, further testing on the material may be required to identify whether the material is suitable for a particular class of landfill according to the Waste Acceptance Criteria (WAC). Chemical WAC testing will be required for ALL wastes destined for hazardous class of landfill; or inert class of landfill.

Converter stations site

4.6.17 Excavation of the foundations for the new converter stations and associated infrastructure, including access roads, will produce waste topsoil and sub-soil. It is recommended that as much of this excavated material as possible is reused on site for landscaping or low grade engineering fill material where it has been assessed as suitable for use[5]. The SWMP has been programmed to estimate that 90% of the material will be reused on site and the remaining will be sent for off-site waste management in accordance with the waste hierarchy.

[5] This will be in accordance with the principles of the CL:AIRE Definition of Waste: Development Industry Code of Practice
http://www.claire.co.uk/index.php?option=com_phocadownload&view=file&id=212:initiatives&Itemid=82

Grid Connection

The HVAC cable system is approximately 2km long and passes through the Wilton Complex from new converter station to the existing NGET substation at Lackenby located to the west of the A1053, where the connection to the grid will be achieved. There are minimal excavation works anticipated at the National Grid substation. This is likely to comprise non-hazardous concrete pavement, sub-base and made ground with a lower layer of soil and stones. The SWMP has been programmed to estimate that 60% of excavated material will be re-used on site and 40% removed for off-site waste management in accordance with the waste hierarchy. It has also been estimated that 90% of the material removed off-site will be recycled and 10% will be sent to landfill for disposal. Mixed concrete waste generated from this activity will be sent off site for recycling and 100% of this will be recycled off site.

4.6.18 The estimated percentages can be refined where necessary as the design progresses and/or if more information is known about the ground conditions and potential contamination.

4.7 Step 7 - Register of Licences & Permits

4.7.1 It is mandatory for the contractor to update the SWMP with details of all of the waste carriers used to transport waste away from site; and provide the details of the waste management facilities which will receive the waste after it has been removed. This is part of the waste Duty of Care and is required by the Environmental Protection Act (1990). The Excel tool provides the 'Licenses & Permits 7' tab to record this information.

4.7.2 This tab allows for a register to be compiled of names of organisations used to transport the waste material to waste facilities, a record of their carrier's registration number; and the name and environmental permit number (or appropriate waste exemption registration number) for each facility that will receive waste from the site.

4.7.3 This section should be continually updated when new carriers or waste management facilities are used.

Action:

6. Mandatory – the contractor is required to add the details of each waste carrier used to remove waste from the site.

7. Mandatory – the contractor is required to provide the details of each waste management facility site that will receive waste from the site. This includes recycling and recovery sites as well as disposal sites.

4.8 Step 8 - Enabling Waste Register

4.8.1 All of the anticipated waste arisings are recorded as construction wastes rather than enabling wastes. Therefore, the 'Enabling register 8' tab is deliberately left blank and no action is required. The rows for the enabling wastes in tab 6 have been hidden. [Note that the tab has not been deleted to ensure that the macro behind the SWMP Excel tool is not affected].

4.9 Step 9 - Construction Waste Register

4.9.1 All projects over £500,000 are required to maintain a register of every waste movement during construction; including the types and quantities of waste removed from site; or the materials that are re-used or recycled on site. The Excel tool 'Construction register 9' tab provides a framework for recording the actual waste arisings during the construction phase. This should be completed in two phases – first, before any actual arisings are input, the forecast data needs to be imported (see 4.9.2 below). Secondly the actual waste data during construction is entered onto the sheet as it is created and removed from site or reused, using the data from the amounts recorded on waste transfer notes and hazardous waste consignment notes. The spreadsheet tool then compares actual totals with forecast arisings provided during the SWMP Preparation stage.

4.9.2 The 'Construction register 9' provides an 'UPLOAD FORECAST DATA' button:

4.9.3 The contractor's representative should click on this button once, before the construction works begin. When this is clicked, the 'Construction register 9' the leftmost columns (up to column E) will be populated with the details from the 'Reuse and recycling 6' tab.

4.9.4 If there is any need to change these details the contractor can amend the 'Revised forecast' details in columns F and G.

4.9.5 The details of each waste movement are recorded from column H onwards. For each movement, the contractor should use the drop down choices to select the waste carrier and waste management site – the latter two drop downs are based on the details in 'Licenses and Permits 7' tab. If the current carrier or waste management site is not available, these should be entered before the waste transfer details. The date of movement and actual cost sections are free text.

4.9.6 For each waste movement in column H onwards, the contractor should identify the quantity of each waste according to the EWC code that has been populated in column C.

4.9.7 The Contractor can amend the details in row 8 to record the waste transfer note reference number or hazardous waste consignment note number if required.

Action:

8. Mandatory – prior to the first waste movement being made during construction, the contractor should upload the construction works forecast data by clicking on the red outlined button in the Excel tool. This action must only be performed once.

9. Mandatory – the contractor should add the details of every collection of waste associated with the construction phase.

4.10 Step 10 - Summary

4.10.1 The Excel tool 'Summary 10' tab provides a summary of the waste forecast and actual waste data recorded, to ensure projects are being monitored and going to plan. This allows comparisons between predicted and actual arisings, and to determine cost savings achieved by completing and implementing the SWMP. For projects over £500,000 this is mandatory and the principal contractor is required to record the progress of the project against the SWMP at least every six months.

4.10.2 The Excel tool updates this table automatically, so no action is required. The contractor can choose the most appropriate units (tonnes or m^3) for recording the actual data.

4.11 Step 11 - Overall Recycled Content

4.11.1 The Excel tool 'Recycled 11' tab is used to record where sustainable products that have a recycled content are used in the project. It can also be used to identify reuse of material generated on site.

4.11.2 It is not a legal requirement to complete this section, however, it is good practice and it can be used to feed into a KPI on the total recycled material used in the construction.

Action:

10. Optional – the contractor should record the value and total recycled content of any material used in the construction phase.

4.12 Step 12 - Implementation

4.12.1 A checklist is provided in Excel tool 'Implem. 12' tab to ensure that the necessary arrangements have been made by both the client and the principal contractor to facilitate the effective implementation of the SWMP on site. The check list includes additional duties to ensure the effective operation, monitoring and reporting of the SWMP. The 'Implem. 12' tab identifies duties that are legally required and also those that are recommended as good practice.

Action:

11. Mandatory - Each time the SWMP is updated, the checklist should be signed off by the client and principal contractor.

4.13 Step 13 - Declarations

4.13.1 Tthe principal contractor must record the progress of the project against the SWMP at least every six months. The Excel tool 'Declarations 13' tab allows the contractor to confirm that the plan has been monitored.

4.13.2 This step provides a framework for declaring the outcomes of the project once it is completed. The SWMP should be audited within three months of the completion of the work, with all outcomes noted and explanations provided for deviations from the project plan. The 'Declarations 13' tab allows for any deviations to the plan to be recorded; and any lessons that can be learnt from the whole process; and provides a summary of the KPIs.

4.13.3 The contractor is required to keep a copy of the SWMP for two years.

Action:

12. Mandatory – The principal contractor is required to review the plan every 6 months.

13. Mandatory – within 3 months of the end of the project, the principal contractor should review the SWMP with the client and record where deviations occurred and any lesson that can be learnt for future projects.

14. Mandatory - The principal contractor is required to keep a copy of the SWMP for two years after the completion of the project at the principal contractor's principal place of business or at the site of the project.

Graphs

4.13.4 The graphs in this section are automatically generated through completing the final worksheet in the template. The graphs illustrate the movement of materials off site over time. The material movements are split into the eight waste destination categories. The graphs are useful in assessing to what extent at different stages of the project waste is being recovered or going to landfill.

5 SUMMARY

5.1.1 This report forms part of the SWMP for the onshore elements of Dogger Bank Teesside A & B. The other part of the SWMP uses a Microsoft Excel tool to provide the predicted waste arisings and monitor waste production during construction stage (**Appendix 1** provides a copy of active sheets from Excel SWMP Tool). Both should be used in conjunction with one another to form the complete SWMP.

5.1.2 There are two main phases for a SWMP, the preparation stage, which is the responsibility of the client; and the construction stage, which is the responsibility of the principal contractor. This document explains in detail how to use the Excel tool at various stages of the project and informs the responsibilities of the client and the principal contractor.

5.1.3 The Excel tool captures the following details during the preparation stage:

- The key personnel who will be involved in the project, including details of the person who drafted the SWMP;
- The proposed works, including the location of the site and the estimated cost of the project;
- A record of any decision given to materials resource efficiency in designing and planning the works that were made before the SWMP was drafted;
- The quantity of each waste type expected to be produced; including the appropriate European Waste Catalogue (EWC) code and waste description;
- The proposed waste management option(s), including re-use, recycling, recovery or disposal, for each waste type produced.

5.1.4 The SWMP is required to contain a declaration that the client and the principal contractor will take all reasonable steps to ensure that all waste from the site is dealt with in accordance with waste duty of care as stipulated in section 34 of the Environmental Protection Act 1990 and the Waste (England and Wales) Regulations 2011.

5.1.5 This declaration also requires that materials will be handled efficiently and waste managed appropriately. The declaration must be signed and dated by both parties prior to construction.

5.1.6 The principal contractor is required to update the SWMP when construction begins.

Appendix 1 Copy of active sheets from Excel SWMP Tool

STEP 1: ADMINISTRATION AND PLANNING

Project Title: Dogger Bank Teesside A and B - onshore connection

Client	Forewind	
Principal contractor	tbc	
Owner of document	Forewind	
Project title	Dogger Bank Teesside A and B	
Project reference	9W7904	
Project location	Dogger Bank Offshore Wind Farm	
	Town	Teeside
	Postcode	TS11 6AR
Project value (£)	£2,000,000,000	

Sector	Civil Engineering

Start date	tbc	*dd/mm/yy*
Completion date	tbc	*dd/mm/yy*

Type of construction	The proposed onshore connection works for Dogger Bank Teesside A and B are: • Onshore joint transition bay; • Buried High voltage direct current (HVDC) cable (6km) from onshore joint transition bay to converter station; • Cable joining bays; • Buried High voltage alternate current (HVAC) cable (2km) from onshore converter station to National Grid Electricity Transmission (NGET) substation at Teesside; • Two onshore converter stations.

Footprint (m^2): structure		Carriageway or pipeline length (m) (if appropriate)	8,000
Footprint (m^2): site (if different)		Gross Internal Floor Area	

Persons legally required to be identified (SWMP Regulations 2008 Section 6 (1))		
Position	**Name**	**Contact Details**
Client	Forewind	Mark Thomas
Principal Contractor	TBC	
Site Waste Management Plan Drafter	Raghu Narayanam Royal HaskoningDHV	Tel: 01733373609 raghu.narayanam@rhdhv.com
Others (not legally required)		
Client WM Representative (if applicable)	TBC	
Project Manager	TBC	
Waste Broker		
Waste Management Coordinator/Champion		
Design Coordinator		
Document Controller / Secretary		

Document control

Version	Date	Person responsible for the SWMP	Company and position	Project Stage
1.1	11/03/2013	Raghu Narayanam	Royal HaskoningDHV, Waste consultant	Pre-construction phase
1.2	10/05/2013	Raghu Narayanam	Royal HaskoningDHV, Waste consultant	Pre-construction phase
1.3 (Jan 2014 update)	16/01/2014	Gary Bower	Royal HaskoningDHV, Principal Waste consultant	Pre-construction phase

Declaration

The person in charge of the project and the principal contractor will take all reasonable steps to ensure that - **(a) all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991; and** **(b) materials will be handled efficiently and waste managed appropriately**	
Person in charge of project (Client)	
Signed by:	
Print Name:	
Organisation:	
Position:	
Date:	
Principal contractor	
Signed by:	
Print Name:	
Organisation:	
Position:	
Date:	

STEP 2: ACTION LOG

Project Title: Dogger Bank Teesside A and B - onshore connection

Date	Organiser	Attendance Record (name & company)	Notes taken by	List of Actions

Page Number:
(Expand as required)

STEP 3: KPIs AND TARGETS

Project Title: Dogger Bank Teesside A and B - onshore connection

Waste to Landfill Headline Metrics	Base Estimate	Actual
tonnes of waste	199,499	0
tonnes of waste to landfill	1,544	0

KPI	Applicability	KPIs		Target
(Remove suggested KPIs if not appropriate)		Base Estimate	Actual *	
Waste Generation By Known Waste Volume				
m^3/£100,000 project value	All projects	0.000080	0.000000	
m^3/m carriageway or pipeline length	Transport and utilites projects	20.0398	0.0000	
By Known Waste Tonnage				
Tonnes/£100,000 project value	All projects	0.000100	0.00000000	
Tonnes/m carriageway or pipeline length	Transport and utilites projects	24.9374	0.0000	
Reuse, Recycling and Recovery rates By Volume (m^3)				
Percentage waste reused on site	All projects	58.49%	#DIV/0!	
Percentage waste reused off site (to other sites)	All projects	1.52%	#DIV/0!	
Percentage waste recycled off site	All projects	38.56%	#DIV/0!	
Total reused and recycled	**All Projects**	**98.58%**	**#DIV/0!**	
By Tonnes				
Percentage waste reused on site	All projects	58.75%	#DIV/0!	
Percentage waste reused off site (to other sites)	All projects	1.41%	#DIV/0!	
Percentage waste recycled off site	All projects	38.48%	#DIV/0!	
Totals	**All projects**	**98.63%**	**#DIV/0!**	
Diversion of waste from landfill and other Disposal Options By Volume (m^3)				
Percentage of total waste diverted from landfill and other disposal options	All projects	99.18%	#DIV/0!	
By Tonnes				
Percentage of total waste diverted from landfill and other disposal options	All projects	99.23%	#DIV/0!	
Cost of waste				
Waste cost/project value as a percentage	All projects	0.09%	0.00%	
Waste cost/£100,000 project value	All projects	£92.14	£0.00	
Waste cost/ m carriageway or pipeline length	Transport and utilites projects	£230.35	£0.00	
Use of reused and recycled materials within the construction				
Total recycled content by material value	All projects	#DIV/0!		
Other KPIs				
To be inserted by the user as appropriate				

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*#DIV/0! message due to actual values yet to be inserted

STEP 4: DESIGN MEASURES

Project Title: Dogger Bank Teesside A and B - onshore connection

Note: To Convert between Tonnes and Cubic Metres please use a conversion table (Example at http://www.wrap.org.uk/sites/files/wrap/Conversion%20factor%20guide%20for%20WRAP%20Tools.pdf) or request data from the supplier

Site Activity / Sub-Contractor Workplace	Primary Waste Stream	Opportunities for waste reduction by design	Quantified reductions in waste (m^3)	Quantified reductions in waste (tonnes)	Commercial Rate for disposal/ recycling (£/m^3)	Commercial Rate for disposal/ recycling (£/t)	Cost Saving by design
Design							
Excavation of cable trenches (8,000m x 1.5m x 1m), jointing bays and joint transition bay - Teesside A	Topsoil and subsoil. Soil and stones 170504 (assumed non-hazardous, possible mixture of inert and non-hazardous material)	1. Reinstate excavated topsoil 2. Reinstate top layer of excavated subsoil 3. Identify potential re-use or recycling options off-site for suitable clean material, which fails thermal resistivity requirements (note this material will be considered waste when removed from the site)	12649.60	15812.00	£25	£20.00	£316,240
Excavation of cable trenches (8,000m x 1.5m x 1m) jointing bays and joint transition bay- Teesside B	Topsoil and subsoil. Soil and stones 170504 (assumed non-hazardous, possible mixture of inert and non-hazardous material)	1. Reinstate excavated topsoil 2. Reinstate top layer of excavated subsoil 3. Identify potential re-use or recycling options off-site for suitable clean material, which fails thermal resistivity requirements (note this material will be considered waste when removed from the site)	12649.60	15812.00	£25	£20.00	£316,240
Site access tracks - trench works Stripping of (approx) 15cm topsoil, for creation of access track along 8km cable trench. - Teesside A	Topsoil and subsoil excavation. Soil and stones 170504 (assumed non-hazardous)	Re-instate all topsoil. Use of uncontaminated sub-soil material as landscaping where required and where material is proven suitable for use.	22200.00	27750.00	£25	£20.00	£555,000
Site access tracks - trench works Stripping of (approx) 15cm topsoil, for creation access track along 8km cable trench. - Teesside B	Topsoil and subsoil excavation. Soil and stones 170504 (assumed non-hazardous)	Re-instate all topsoil. Use of uncontaminated sub-soil material as landscaping where required and where material is proven suitable for use.	22200.00	27750.00	£25	£20.00	£555,000
Material used for construction of temporary haul road of depth 35cm for 6m wide access track along 8km cable trench - Teesside A	Mixture of concrete pavement, sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	Following completion of works, all the material is expected to be removed and sent for reuse/recycling off site.	16800.00	21000.00	£15	£12.00	£252,000

Material used for construction of temporary haul road of depth 35cm for 6m wide access track along 8km cable trench - Teesside B	Mixture of concrete pavement, sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	Following completion of works, all the material is expected to be removed and sent for reuse/recycling off site.	16800.00	21000.00	£15	£12.00	£252,000
Joint Transition bay (12m x 4m x 2m)	Mixture of concrete pavement, sub-base and made ground Lower layer - Soil and stones 170504 (assumed non-hazardous)	1. Reinstate part of the excavated material (60% = approx 0.9m) back into the transition pit on top of the cement bound sand.; and 2. Source potential re-use or recycling options off-site for remaining material (40% = 0.6m), which cannot be backfilled into pit due to volume taken by cement bound sand Some waste may have to be landfilled if no suitable recycling option can be found	115.00	143.75	£25	£20.00	£2,875
Top soil of 15cm stripped off from construction compounds for Teesside A (1 primary, 3 Intermediate and 11 HDD compunds)	Topsoil . Soil and stones 170504 (assumed non-hazardous, possible mixture of inert and non-hazardous material)	1. Reinstate excavated topsoil	2065.20	2581.50	£25	£20.00	£51,630
Top soil of 15cm stripped off from construction compounds for Teesside B (1 primary, 3 Intermediate and 11 HDD compunds)	Topsoil . Soil and stones 170504 (assumed non-hazardous, possible mixture of inert and non-hazardous material)	1. Reinstate excavated topsoil	2065.20	2581.50	£25	£20.00	£51,630
							£0
							£0
							£0
							£0
							£0
							£0
							£0
							£0
							£0
							£0
Totals:			**107,545**	**134,431**			£2,352,615

STEP 5: RESPONSIBILITY FOR WASTE MANAGEMENT

Project Title: **Dogger Bank Teesside A and B - onshore connection**

Royal HaskoningDHV
Enhancing Society Together

Site Activity / Sub-Contractor Workplace	Primary Waste Stream	Applicable EWC Codes	Waste Management Responsibility	Relevant Specification/Contract Clauses for Waste Management
Construction works	All waste		Principal Contractor	To be specified

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STEP 6: PLANNING REUSE AND RECYCLING

Project Title: **Dogger Bank Teesside A and B - onshore connection**

SUMMARY	ENABLING WORKS		CONSTRUCTION WORKS	
Destination	**volume (m^3)**	**tonnes**	**volume (m^3)**	**tonnes**
Re-used On Site	0.00	0.00	93,770.20	117,212.75
Re-Used Off Site	0.00	0.00	2,440.50	2,803.00
Recycled On Site	0.00	0.00	0.00	0.00
Recycled Off Site	0.00	0.00	61,823.63	76,759.90
Other Recovery off Site	0.00	0.00	0.00	0.00
Other Recovery on Site	0.00	0.00	0.00	0.00
Sent to Landfill for Disposal	0.00	0.00	1,317.28	1,543.60
Otherwise Disposed of	0.00	0.00	966.96	1,180.00
TOTAL	0.00	0.00	160,318.56	199,499.25

Waste Category & Type	EWC Code	Estimated Quantity prior to management		Cost of waste disposal			Forecast provided by	Work packages likely to produce waste	Primary waste destination	Estimated Quantity		Secondary waste destination	Estimated Quantity		Management options	Legal requirements	Person responsible
Construction Works																	
Insert line Delete line **Inert Waste**		(m^3)	(tonnes)	£/m^3	£/tonnes	Cost forecast			Use Drop downs	(m^3)	(tonnes)	Use Drop downs	(m^3)	(tonnes)			
Temporary Haul Road - Material used for construction of haul road will be removed following completion of works. This material will be sent to off site recycling facility - Teesside A	17 05 04	16,800.00	21,000	£15.00	£12.00	£252,000	R Narayanam Royal HaskoningDHV	Removal of temporary haul road at the end of works. 100% recycle off site.	Recycled Off Site	16,800	21,000				Excavated material from temporary haul road will be sent offsite for re-use or recycling.		Principal Contractor
Temporary Haul Road - Material used for construction of haul road will be removed following completion of works. This material will be sent to off site recycling facility - Teesside B	17 05 04	16,800.00	21,000	£15.00	£12.00	£252,000	R Narayanam Royal HaskoningDHV	Removal of temporary haul road at the end of works. 100% recycle off site.	Recycled Off Site	16,800	21,000				Excavated material from temporary haul road will be sent offsite for re-use or recycling.		Principal Contractor
Connection at substation - Mixture of concrete pavement, sub-base and made ground - Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	20.00	25	£15.00	£12.00	£300	R Narayanam Royal HaskoningDHV	Connection at substation 100% reuse on site	Recycled Off Site	20	25				Waste generated by this activity will be sent to off site recycling facility.		Principal Contractor
Connection at **National Grid substation** - sub-base and made ground Lower layers - Soil and stones 170504 (non-hazardous waste only)	17 05 04	20.00	25	£25.00	£20.00	£500	R Narayanam Royal HaskoningDHV	Connection at National Grid substation 80% reuse on site	Recycled Off Site	16	20	Recycled Off Site	4	5	Waste generated by this activity will be sent to off site recycling facility.		Principal Contractor
Connection at **National Grid substation** - Mixed of construction and demolition waste - Concrete, bricks and rubble generated from national grid connection works.	17 05 04	10.00	13	£15.00	£12.00	£150	R Narayanam Royal HaskoningDHV	Connection at National Grid substation 100% recycle on site	Recycled Off Site	10	13				Waste generated by this activity will be sent to off site recycling facility.		Principal Contractor
						£0											
						£0											
Sub TOTAL		**33650.00**	**42062.50**			**£504,950.00**				**33646.00**	**42057.50**		**4.00**	**5.00**			

Insert line / Delete line Non-hazardous waste		(m^3)	(tonnes)	£/m^3	£/tonnes	Cost forecast			Use Drop downs	(m^3)	(tonnes)	Use Drop downs	(m^3)	(tonnes)			
Top soil stripped off to build haul road along the cable route from landfall to converter station for Teesside A	17 05 04	16,200	20,250	£25.00	£20.00	£405,000	R Narayanam Royal HaskoningDHV	Stripping of top soil from cable trench working corridor for haul road.	Re-used On Site	16,200.00	20,250.00					Not considered waste unless exported off site.	Principal Contractor
Top soil stripped off to build haul road along the cable route from landfall to converter station for Teesside B	17 05 04	16,200	20,250	£25.00	£20.00	£405,000	R Narayanam Royal HaskoningDHV	Stripping of top soil from cable trench working corridor for access track.	Re-used On Site	16,200.00	20,250.00					Not considered waste unless exported off site.	Principal Contractor
Top soil stripped off to build haul road along the cable route from converter station to sub station for Teesside A	17 05 04	6,000	7,500	£25.00	£20.00	£150,000	R Narayanam Royal HaskoningDHV	Stripping of top soil from cable trench working corridor for access track.	Re-used On Site	6,000.00	7,500.00					Not considered waste unless exported off site.	Principal Contractor
Top soil stripped off to build haul road along the cable route from converter station to substation for Teesside B	17 05 04	6,000	7,500	£25.00	£20.00	£150,000	R Narayanam Royal HaskoningDHV	Stripping of top soil from cable trench working corridor for access track.	Re-used On Site	6,000.00	7,500.00					Not considered waste unless exported off site.	Principal Contractor
Top soil stripped to construct access road for converter station	17 05 04	1,050	1,313	£25.00	£20.00	£26,250	R Narayanam Royal HaskoningDHV	Stripping of top soil and subsoil for preparation of substation works	Re-used On Site	1,050.00	1,312.50					Topsoil not considered waste unless exported off site.	Principal Contractor
Bio-degradable waste from Teesside A	20 02 01	13	5	£9.50	£25.00	£125	R Narayanam Royal HaskoningDHV	Vegetation clearance (e.g. hedges, trees and other bushes) along the cable trench route and at the converter station site	Recycled Off Site	13.16	5.00				Recycling at a facility operating techniques such as Composting windrows or In Vessel Composting	Composting site requires environmental permit	Principal Contractor
Bio-degradable waste from Teesside B	20 02 01	13	5	£9.50	£25.00	£125	R Narayanam Royal HaskoningDHV	Vegetation clearance (e.g. hedges, trees and other bushes) along the cable trench route and at the converter station site	Recycled Off Site	13.16	5.00				Recycling at a facility operating techniques such as Composting windrows or In Vessel Composting	Composting site requires environmental permit	Principal Contractor
Trench waste from landfall to converter station for Teesside A waste topsoil from the trench - material to be retained on site	17 05 04	1,350	1,688	£25.00	£20.00	£33,750	R Narayanam Royal HaskoningDHV	Digging the cable trench - 100% reinstatement of topsoil of 0.15m layer.	Re-used On Site	1,350	1,688					Not considered waste unless exported offsite.	Principal Contractor
Trench waste from landfall to converter station for Teesside B waste topsoil from the trench - material to be retained on site	17 05 04	1,350	1,688	£25.00	£20.00	£33,750	R Narayanam Royal HaskoningDHV	Digging the cable trench - 100% reinstatement of topsoil of 0.15m layer.	Re-used On Site	1,350	1,688					Not considered waste unless exported offsite.	Principal Contractor
Trench waste from Converter station to National Grid substation Teesside A waste topsoil from the trench - material to be retained on site	17 05 04	450	563	£25.00	£20.00	£11,250	R Narayanam Royal HaskoningDHV	Digging the cable trench - 100% reinstatement of topsoil of 0.15m layer.	Re-used On Site	450	563					Not considered waste unless exported offsite.	Principal Contractor
Trench waste from Converter station to National Grid substation for Teesside B waste topsoil from the trench - material to be retained on site	17 05 04	450	563	£25.00	£20.00	£11,250	R Narayanam Royal HaskoningDHV	Digging the cable trench - 100% reinstatement of topsoil of 0.15m layer.	Re-used On Site	450	563					Not considered waste unless exported offsite.	Principal Contractor
Converter station Excavation of Top soil for foundations for converter station, other ancillary buildings and access roads for Teesside A	17 05 04	3,024	3,780	£25.00	£20.00	£75,600	R Narayanam Royal HaskoningDHV	Existing top soil stripped of from converter station and ancillary works and internal roads for Teesside A. 100% reused on site.	Re-used On Site	3,024	3,780					Not considered waste unless exported offsite.	Principal Contractor
Converter station Excavation of Top soil for foundations for converter station, other ancillary buildings and access roads for Teesside B	17 05 04	3,024	3,780	£25.00	£20.00	£75,600	R Narayanam Royal HaskoningDHV	Existing top soil stripped of from converter station and ancillary works and internal roads for Teesside B. 100% reused on site.	Re-used On Site	3,024	3,780					Not considered waste unless exported offsite.	Principal Contractor
Converter station infrastructure excavated material - ON SITE - Teesside A sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	4,463	5,578	£25.00	£20.00	£111,563	R Narayanam Royal HaskoningDHV	Subsoil excavated from converter station and ancillary works and internal roads for Teesside A. 100% reused on site.	Re-used On Site	4,463	5,578				Subsoil requires proof that it is not waste by following principles outlined in CL:AIRE code of practice.		Principal Contractor
Converter station infrastructure excavated material - ON SITE - Teesside B sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	4,463	5,578	£25.00	£20.00	£111,563	R Narayanam Royal HaskoningDHV	Subsoil excavated from converter station and ancillary works and internal roads for Teesside B. 100% reused on site.	Re-used On Site	4,463	5,578				Subsoil requires proof that it is not waste by following principles outlined in CL:AIRE code of practice.		Principal Contractor

Joint Transition bay excavated material - ON SITE - Teesside A sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	58	72	£ 125.00	£100.00	£7,200	R Narayanam Royal HaskoningDHV	Transition bay 60% reuse on site; remainder is displaced volume taken by cement bound sand	Re-used On Site	58	72					Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Principal Contractor
Joint Transition bay excavated material - OFF SITE - Teesside A sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	38	48	£ 125.00	£100.00	£4,800	R Narayanam Royal HaskoningDHV	Transition bay 40% sent off site Assumed 90% of this is recycled, remainder landfilled off site	Recycled Off Site	35	43	Sent to Landfill for Disposal	4	5	Excess material that is not going to be reinstated in the trench will be sent offsite for re-use or recycling.		Principal Contractor
Joint Transition bay excavated material - ON SITE - Teesside B sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	58	72	£ 125.00	£100.00	£7,200	R Narayanam Royal HaskoningDHV	Transition bay 60% reuse on site; remainder is displaced volume taken by cement bound sand	Re-used On Site	58	72					Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Principal Contractor
Joint Transition bay excavated material - OFF SITE - Teesside B sub-base Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	38	48	£ 125.00	£100.00	£4,800	R Narayanam Royal HaskoningDHV	Transition bay 40% sent off site Assumed 90% is recycled, remainder landfilled off site	Recycled Off Site	35	43	Sent to Landfill for Disposal	4	5	Excess material that is not going to be reinstated in the trench will be sent offsite for re-use or recycling.		Principal Contractor
Trench waste from landfall to converter station - Teesside A waste subsoil from the trench - ON SITE re use	17 05 04	7,650	9,563	£ 125.00	£100.00	£956,250	R Narayanam Royal HaskoningDHV	Digging the cable trench - On site re use of 0.85m.	Re-used On Site	7,650	9,563					Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive	Principal Contractor
Trench waste from landfall to converter station - Teesside A waste subsoil from the trench - material to be sent to off site facility	17 05 04	4,500	5,625	£ 125.00	£100.00	£562,500	R Narayanam Royal HaskoningDHV	Digging the cable trench - material from 0.5m of trench which is replaced by Cement Bound Sand. 90% recycled and 10% landfilled.	Recycled Off Site	4,050	5,063	Sent to Landfill for Disposal	450	563	Excess material that is not going to be reinstated in the trench will be sent offsite for re-use or recycling.		Principal Contractor
Trench waste from landfall to converter station - Teesside B waste subsoil from the trench - ON SITE re use	17 05 04	7,650	9,563	£ 125.00	£100.00	£956,250	R Narayanam Royal HaskoningDHV	Digging the cable trench - On site re use of 0.85m.	Re-used On Site	7,650	9,563					Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Principal Contractor
Trench waste from landfall to converter station - Teesside B waste subsoil from the trench - material to be sent to off site facility	17 05 04	4,500	5,625	£ 125.00	£100.00	£562,500	R Narayanam Royal HaskoningDHV	Digging the cable trench - material from 0.5m of trench which is replaced by Cement Bound Sand. 90% recycled and 10% landfilled.	Recycled Off Site	4,050	5,063	Sent to Landfill for Disposal	450	563	Excess material that is not going to be reinstated in the trench will be sent offsite for re-use or recycling.		Principal Contractor
HDD sludge produced from Horizontal Direct Drilling at landfall to bring the HVDC cables from off shore to onshore - Teesside A	17 05 04	20	25	£ 125.00	£100.00	£2,500	R Narayanam Royal HaskoningDHV	Bentonite sludge mixed with mud from horizontal directional drilling activities at land fall	Otherwise Disposed of	20	25				The waste will require dewatering in a small lagoon. The dewatered material could be sent to an offsite facility.		Principal Contractor
HDD sludge produced from Horizontal Direct Drilling at landfall to bring the HVDC cables from off shore to onshore - Teesside B	17 05 04	20	25	£ 125.00	£100.00	£2,500	R Narayanam Royal HaskoningDHV	Bentonite sludge mixed with mud from horizontal directional drilling activities at land fall	Otherwise Disposed of	20	25				The waste will require dewatering in a small lagoon. The dewatered material could be sent to an offsite facility.		Principal Contractor

HDD sludge produced from road crossings etc. along the cable route from landfall to Converter station for Teesside A	17 05 04	360	450	£ 125.00	£100.00	£45,000	R Narayanam Royal HaskoningDHV	Bentonite sludge mixed with mud from horizontal directional drilling activities	Otherwise Disposed of	360	450				The waste will require dewatering in a small lagoon. The dewatered material could be sent to an offsite facility.		Principal Contractor
HDD sludge produced from road crossings etc. along the cable route from landfall to Converter station for Teesside B	17 05 04	360	450	£ 125.00	£100.00	£45,000	R Narayanam Royal HaskoningDHV	Bentonite sludge mixed with mud from horizontal directional drilling activities	Otherwise Disposed of	360	450				The waste will require dewatering in a small lagoon. The dewatered material could be sent to an offsite facility.		Principal Contractor
HDD sludge produced from road crossings etc. along the cable route from Converter station to substation for Teesside A	17 05 04	60	75	£ 125.00	£100.00	£7,500	R Narayanam Royal HaskoningDHV	Bentonite sludge mixed with mud from horizontal directional drilling activities	Otherwise Disposed of	60	75				The waste will require dewatering in a small lagoon. The dewatered material could be sent to an offsite facility.		Principal Contractor
HDD sludge produced from road crossings etc. along the cable route from Converter station to substation for Teesside B	17 05 04	60	75	£ 125.00	£100.00	£7,500	R Narayanam Royal HaskoningDHV	Bentonite sludge mixed with mud from horizontal directional drilling activities	Otherwise Disposed of	60	75				The waste will require dewatering in a small lagoon. The dewatered material could be sent to an offsite facility.		Principal Contractor
Waste excavated material from approximately 7 cable joint bays of size 9mx4mx2m - ON SITE - Teesside A	17 05 04	384	480	£ 125.00	£100.00	£48,000	R Narayanam Royal HaskoningDHV	Earthworks for the cable joint bays - reuse on site	Re-used On Site	384	480				90% of the total excavated material may be suitable for re-instatement. The lower part of the bay will require use of thermally resistant sand.	Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Principal Contractor
Waste excavated material from approximately 7 cable joint bays of size 9mx4mx2m - OFF SITE - Teesside A	17 05 04	48	60	£ 125.00	£100.00	£6,000	R Narayanam Royal HaskoningDHV	Earthworks for the cable joint bays - sent for off-site management. Assumed 90% is recycled, remainder landfilled off site	Re-Used Off Site	43	54	Sent to Landfill for Disposal	5	6	Excess material that is not going to be re-used on site will be sent offsite for re-use or recycling. Subject to meeting the criteria.		Principal Contractor
Waste excavated material from approximately 7 cable joint bays of size 9mx4mx2m - ON SITE - Teesside B	17 05 04	384	480	£ 125.00	£100.00	£48,000	R Narayanam Royal HaskoningDHV	Earthworks for the cable joint bays - reuse on site	Re-used On Site	384	480				90% of the total excavated material may be suitable for re-instatement. The lower part of the bay will require use of thermally resistant sand.	Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Principal Contractor
Waste excavated material from approximately 7 cable joint bays of size 9mx4mx2m - OFF SITE - Teesside B	17 05 04	48	60	£ 125.00	£100.00	£6,000	R Narayanam Royal HaskoningDHV	Earthworks for the cable joint bays - sent for off-site management. Assumed 90% is recycled, remainder landfilled off site	Re-Used Off Site	43	54	Sent to Landfill for Disposal	5	6	Excess material that is not going to be re-used on site will be sent offsite for re-use or recycling. Subject to meeting the criteria.		Principal Contractor
Trench waste from Converter station to National Grid substation waste subsoil from the trench - ON SITE re use - Teesside A	17 05 04	2,550	3,188	£ 125.00	£100.00	£318,750	R Narayanam Royal HaskoningDHV	Digging the cable trench - On site re use of 0.85m.	Re-used On Site	2,550	3,188					Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Principal Contractor
Trench waste from Converter station to National Grid substation waste subsoil from the trench - OFF Site - Teesside A	17 05 04	1,500	1,875	£ 125.00	£100.00	£187,500	R Narayanam Royal HaskoningDHV	Digging the cable trench - material from 0.5m of trench which is replaced by Cement Bound Sand. 90% recycled and 10% landfilled.	Recycled Off Site	1,350	1,688	Sent to Landfill for Disposal	150	188	Excess material that is not going to be re-used on site will be sent offsite for re-use or recycling. Subject to meeting the criteria.		Principal Contractor

Trench waste from Converter station to National Grid substation waste subsoil from the trench - ON SITE re use - Teesside B	17 05 04	2,550	3,188	£ 125.00	£100.00	£318,750	R Narayanam Royal HaskoningDHV	Digging the cable trench - On site re use of 0.85m.	Re-used On Site	2,550	3,188					Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Principal Contractor
Trench waste from Converter station to National Grid substation waste subsoil from the trench - OFF Site - Teesside B	17 05 04	1,500	1,875	£ 125.00	£100.00	£187,500	R Narayanam Royal HaskoningDHV	Digging the cable trench - material from 0.5m of trench which is replaced by Cement Bound Sand. 90% recycled and 10% landfilled.	Recycled Off Site	1,350	1,688	Sent to Landfill for Disposal	150	188	Excess material that is not going to be re-used on site will be sent offsite for re-use or recycling. Subject to meeting the criteria.		Principal Contractor
Mixed municipal waste from site compound - Teesside A	20 03 01	190	40	£ 21.00	£ 100.00	£4,000	R Narayanam Royal HaskoningDHV	General waste from contractors compound	Recycled Off Site	143	30	Sent to Landfill for Disposal	48	10	Could go to a MRF for recycling/recovery if paper& card and metals and glass are segregated at the site compound		Principal Contractor
Mixed Packaging from site compound - Teesside A	15 01 06	190	40	£ 5.25	£ 25.00	£1,000	R Narayanam Royal HaskoningDHV	Packaging associated with products delivered to site	Re-Used Off Site	95	20	Recycled Off Site	95	20	Priority should be to return this material to the supplier. Secondary option is to go to MFR for recycling/recovery not landfill		Principal Contractor
Toilet waste from site compound - Teesside A	16 10 01	43	40	£ 46.00	£ 50.00	£2,000	R Narayanam Royal HaskoningDHV	Chemical toilet wastes from site compound and other chemical toilets along the cable route	Otherwise Disposed of	43	40				Requires waste to be treated at a physico-chemical or biological treatment facility.		Principal Contractor
Mixed municipal waste from site compound - Teesside B	20 03 01	190	40	£ 21.00	£ 100.00	£4,000	R Narayanam Royal HaskoningDHV	General waste from contractors compound	Recycled Off Site	143	30	Sent to Landfill for Disposal	48	10	Could go to a MRF for recycling/recovery if paper& card and metals and glass are segregated at the site compound		Principal Contractor
Mixed Packaging from site compound - Teesside B	15 01 06	190	40	£ 5.25	£ 25.00	£1,000	R Narayanam Royal HaskoningDHV	Packaging associated with products delivered to site	Re-Used Off Site	95	20	Recycled Off Site	95	20	Priority should be to return this material to the supplier. Secondary option is to go to MFR for recycling/recovery not landfill		Principal Contractor
Toilet waste from site compound - Teesside B	20 03 04	43	40	£ 46.00	£ 50.00	£2,000	R Narayanam Royal HaskoningDHV	Chemical toilet wastes from site compound and other chemical toilets along the cable route	Otherwise Disposed of	43	40	Other Recovery Off Site	0	0	Requires waste to be treated at a physico-chemical or biological treatment facility.		Principal Contractor
Converter station - excavation works for foundations of converter stations and other ancillary works - Teesside A Sub-base and Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	5,290	6,613	£ 125.00	£100.00	£661,250	R Narayanam Royal HaskoningDHV	Converter station works 80% reuse on site for construction and landscaping purposes;	Re-used On Site	4,232	5,290	Re-Used Off Site	1,058	1,323	Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Excess material that is not going to be re-used on site will be sent offsite for re-use or recycling.	Principal Contractor
Converter station - excavation works for foundations of converter stations and other ancillary works - Teesside B Sub-base and Lower layer - Soil and stones 170504 (assumed non-hazardous)	17 05 04	5,290	6,613	£ 125.00	£100.00	£661,250	R Narayanam Royal HaskoningDHV	Converter station works 80% reuse on site for construction and landscaping purposes;	Re-used On Site	4,232	5,290	Re-Used Off Site	1,058	1,323	Naturally occurring uncontaminated material going back into the trench is not considered as waste according to the Waste Framework Directive (Article 2)	Excess material that is not going to be re-used on site will be sent offsite for re-use or recycling.	Principal Contractor
Converter station - Fencing - Assumed a small quantity of Off cuts of palisade fencing will required to be sent to off-site facility for recycling.	17 04 05	2	1	£ 12.50	£10.00	£25	R Narayanam Royal HaskoningDHV	Converter station - Off cuts of fencing etc.	Recycled Off Site	2	1				Could go to a wood recycling facility.		Principal Contractor
						£0											
						£0											
Sub TOTAL		**109,816.18**	**136,424.75**			**£1,336,525.00**				**106197.18**	**132198.15**		**3618.99**	**4226.60**			
Insert line Delete line		**(m^3)**	**(tonnes)**	**£/m^3**	**£/tonnes**	**Cost forecast**			**Use Drop downs**	**(m^3)**	**(tonnes)**	**Use Drop downs**	**(m^3)**	**(tonnes)**			
Empty fuel oil drums and other contaminated containers - Teesside A	13 07 01*	24	5	£21.00	£100.00	£500	R Narayanam Royal HaskoningDHV	Empty fuel oil drums and other contaminated containers	Re-Used Off Site	24	5						Principal Contractor

Contaminated absorbent used to clean up spillages - Teesside A	15 02 02*	2	1	£63.00	£150.00	£150	R Narayanam Royal HaskoningDHV	Clean-up of spillages on site, either at the trench on at the sub-station development	Sent to Landfill for Disposal	2	1						Principal Contractor
Empty fuel oil drums and other contaminated containers - Teesside B	13 07 01*	24	5	£21.00	£100.00	£500	R Narayanam Royal HaskoningDHV	Redundant oil drums and other contaminated packaging, e.g. sealant	Re-Used Off Site	24	5						Principal Contractor
Contaminated absorbent used to clean up spillages - Teesside B	15 02 02*	2	1	£63.00	£150.00	£150	R Narayanam Royal HaskoningDHV	Clean-up of spillages on site, either at the trench on at the sub-station development	Sent to Landfill for Disposal	2	1						Principal Contractor
Waste excavated material from contaminated hot spot areas - Teesside A (historical landfill sites, other filled pits) Sub soil and lower layers from the cable trench, the jointing bays that is classified as Hazardous waste	17 05 03*	0	0	£ 187.50	£150.00	£0	R Narayanam Royal HaskoningDHV	Excavated material from contaminated hotspot areas (historical landfill sites, other filled pits).	Re-used On Site	0	0				Subsoil requires proof that it is not waste by following principles outlined in CL:AIRE code of practice.	The material that is unsuitable to reuse on site or recycle off site will be sent to landfill.	Principal Contractor
Waste excavated material from contaminated hot spot areas - Teesside B (historical landfill sites, other filled pits) Sub soil and lower layers from the cable trench, the jointing bays that is classified as Hazardous waste	17 05 03*	0	0	£ 187.50	£150.00	£0	R Narayanam Royal HaskoningDHV	Excavated material from contaminated hotspot areas (historical landfill sites, other filled pits).	Re-used On Site	0	0				Subsoil requires proof that it is not waste by following principles outlined in CL:AIRE code of practice.	The material that is unsuitable to reuse on site or recycle off site will be sent to landfill.	Principal Contractor
Sub TOTAL		**52.4**	**12.0**			**£1,300**				**52.4**	**12.0**		**0.0**	**0.0**			
TOTAL		**143,518.6**	**178,499.3**			**£1,842,775**				**139,895.6**	**174,267.7**		**3,623.0**	**4,231.6**			

STEP 10: WASTAGE SUMMARY

Project Title: Dogger Bank Teesside A and B - onshore connection

Royal HaskoningDHV
Enhancing Society Together

Base Forecast

SUMMARY	ENABLING WORKS		CONSTRUCTION WORKS		COMBINED	
Destination	volume (m^3)	tonnes	volume (m^3)	tonnes	volume (m^3)	tonnes
Re-used On Site	0	0	93,770	117,213	93,770	117,213
Re-Used Off Site	0	0	2,440	2,803	2,440	2,803
Recycled On Site	0	0	0	0	0	0
Recycled Off Site	0	0	61,824	76,760	61,824	76,760
Other Recovery on Site	0	0	0	0	0	0
Other Recovery Off Site	0	0	0	0	0	0
Sent to Landfill for Disposal	0	0	1,317	1,544	1,317	1,544
Otherwise Disposed of	0	0	967	1,180	967	1,180
TOTAL	0	0	160,319	199,499	160,318.56	199,499
Cost Forecast	£0		£1,842,775		£1,842,775	
Revised forecast totals	0	0	0	0	0	0

Actual data

SUMMARY	ENABLING WORKS		CONSTRUCTION WORKS		COMBINED	
Destination	m^3 or t		m^3 or t			
Select a unit	tonnes					
Re-used On Site	0	tonnes	0	tonnes	0	tonnes
Re-Used Off Site	0	tonnes	0	tonnes	0	tonnes
Recycled On Site	0	tonnes	0	tonnes	0	tonnes
Recycled Off Site	0	tonnes	0	tonnes	0	tonnes
Other Recovery on Site	0	tonnes	0	tonnes	0	tonnes
Other Recovery Off Site	0	tonnes	0	tonnes	0	tonnes
Sent to Landfill for Disposal	0	tonnes	0	tonnes	0	tonnes
Otherwise Disposed of	0	tonnes	0	tonnes	0	tonnes
TOTAL	0	tonnes	0	tonnes	0	tonnes
Actual Costs	£0		£0		£0	

STEP 13: DECLARATION

Project Title: **Dogger Bank Teesside A and B - onshore connection**

Confirmation that the plan has been monitored on a regular basis to ensure that work is progressing according to the plan and that the plan was updated in accordance with this regulation Required for all projects	
Signed by:	
Organisation:	
Position:	
Date:	

Explanation of any deviation from the plan. Required for all projects	
1	
2	
3	
4	
5	
6	
7	

Where relevant, drawing on any lessons learnt, an action plan to address these for the next project (Required for projects over £500,000)	
1	
2	
3	
4	
5	
6	
7	

	Base Estimate	Actual *	Current Target
Waste Generation **By Known Waste Volume**			
m^3/£100,000 project value	0.000080	0.000000	0.00
m^3/m carriageway or pipeline length	20.039820	0.000000	0.00
By Known Waste Tonnage			
Tonnes/£100,000 project value	0.000100	0.000000	0.00
Tonnes/m carriageway or pipeline length	24.937406	0.000000	0.00
Reuse, Recycling and Recovery rates **By Volume (m^3)**			
Percentage waste reused on site	58.49%	#DIV/0!	0.00%
Percentage waste reused off site (to other sites)	1.52%	#DIV/0!	0.00%
Percentage waste recycled off site	38.56%	#DIV/0!	0.00%
Total resued and recycled	**98.58%**	**#DIV/0!**	**0.00%**
By Tonnes			
Percentage waste reused on site	58.75%	#DIV/0!	0.00%
Percentage waste reused off site (to other sites)	1.41%	#DIV/0!	0.00%
Percentage waste recycled off site	38.48%	#DIV/0!	0.00%
Totals	**98.63%**	**#DIV/0!**	**0.00%**
Diversion of waste from landfill and other Disposal Options **By Volume (m^3)**			
Percentage of total waste diverted from landfill and other disposal options	99.18%	#DIV/0!	0.00%
By Tonnes			
Percentage of total waste diverted from landfill and other disposal options	99.23%	#DIV/0!	0.00%
Cost of waste			
Waste cost/project value as a percentage	0.092%	0.00	0.00
Waste cost/£100,000 project value	92.14	0.00	0.00
Waste cost/ m carriageway or pipeline length	£230.35	£0.00	0.00
Use of reused and recycled materials within the construction			
Total recycled content by material value	#DIV/0!	0.00	0.00
Other KPIs			
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00

*#DIV/0! message due to actual values yet to be inserted