

Hornsea Offshore Wind Farm

Project Two

Environmental Statement
Volume 4 – Introduction Annexes

Annex 4.3.3 Site Waste Management Plan

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smartwind.co.uk

SMart Wind Limited

**Hornsea Offshore Wind Farm
Project Two –Environmental Statement**

Volume 4 – Introduction Annexes
Annex 4.3.3 – Site Waste Management Plan

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Table of Contents

1	Introduction	1
1.1	Background	1
1.2	Structure and Scope of the SWMP	1
2	Regulatory Framework.....	3
2.1	Definition of Waste	3
2.2	Legislation and Guidance.....	3
2.3	Key Obligations	4
3	Waste Arisings	5
3.1	Waste Forecasting	5
3.2	Waste Types	5
3.3	Estimated Waste Arisings	6
4	Manangement of wastes from Hornsea Project Two	8
4.1	Waste Hierarchy.....	8
4.2	Storage of Waste	9
4.3	Registered Carriers	9
4.4	Waste Management Facilities	9
5	Implementation of the SWMP	11
5.1	Roles and Responsibilities	11
5.2	Training	11
6	Audit, monitor and review	12
6.1	Site Inspection.....	12
6.2	Monitoring of the SWMP	12
	References	13
	Appendix A SWMP Declaration.....	14
	Appendix B Key Waste Forecasts.....	15
	Appendix C Waste Estimates data sheet (to be completed pre construction).....	17
	Appendix D Waste Management Data Sheets (To be completed each time waste is removed off site/re-used on site	18

Table of Tables

Table 3.1	Design measures to reduce waste.....	5
Table 3.2	List of waste categories for construction wastes.....	5
Table 4.1	Operational landfill sites within 50 km of North Killingholme.....	10
Table 4.2	Operational recycling facilities within 50km of North Killingholme.....	10

Table of Figures

Figure 4.1	Waste Hierarchy.....	8
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Glossary

Term	Definition
BREEAM	BREEAM was first launched in 1990 and is the most widely used environmental assessment method for buildings. BREEAM New Construction Manual (2011) is a performance based assessment method and certification scheme for new buildings. Its primary aim is to mitigate the life cycle impacts of new buildings on the environment in a robust and cost effective manner. This is achieved through measuring and evaluating the performance of a building against best practice using a number of criteria across a range of environmental issues. Performance is quantified using a credit system according to the measures implemented, which is ultimately expressed as a single certified BREEAM rating. Construction waste and resource efficiency are two of those issues.
Comminuted	Reducing the size of food waste by crushing, grinding or other processes.
Garbage management plan	Regulation 9(2) of Annex V of MARPOL 73/78 requires that a garbage management plan is prepared and implemented for every ship of 400 gross tonnage (or above), and every ship certified to carry more than 15 persons. The garbage management plan sets out written procedures for collecting, storing, processing and disposing of garbage, including the use of equipment on board the ship.
Piling	Process of driving a foundation into the seabed or onshore by pushing, hammering or vibrating the pile.
Scour	Erosion holes around the foundations of offshore wind turbines created by tidal currents.
Scour protection	Protection against erosion of the seabed which can take a variety of forms, including rock dumping, gravel, artificial fronds or seaweed, concrete 'mattresses', bags filled with gravel, grout or other concrete.
Site Waste Management Plan	A plan which encourages the effective management of materials and ensures construction waste is considered from design through to completion.

Acronyms

Acronym	Full term
BREEAM	Building Research Establishment Environmental Assessment Methodology
CL:AIRE	Contaminated Land: Applications in Real Environments
CoP	Code of Practice
Defra	Department for Environment Food and Rural Affairs
EA	Environment Agency
MMO	Marine Management Organisation
O&M	Operation and Maintenance
SWMP	Site Waste Management Plan
WFD	Waste Framework Directive
WRAP	Waste Resources Action Programme
WTG	Wind Turbine Generator

1 INTRODUCTION

1.1 Background

Purpose of the Site Waste Management Plan

- 1.1.1 This document comprises a Site Waste Management Plan (SWMP) for the construction of the proposed Project Two development.
- 1.1.2 The purpose of the SWMP is to meet the requirements of the Overarching National Policy Statement for Energy (NPS EN-1). The SWMP was originally prepared to comply with the Site Waste Management Plan Regulations 2008, however the regulations were repealed on 1 October 2013 in response to the Government's Red Tape Challenge regulatory review. Despite the repeal of the regulations in England, SWMPs are considered to be a best practice tool in achieving better waste management on construction projects.
- 1.1.3 According to EN-1, applications for proposed development must consider the types and quantities of waste that would be generated in all phases of a development and identify how the waste would be managed. EN-1 requires developers to prepare a SWMP that identifies the waste management arrangements for all types of waste and provide information on the proposed systems that would be used. The application must demonstrate that the waste hierarchy has been applied and identify ways that the volume of waste generated and the volume of waste sent for disposal would be minimised, except where that is the best overall environmental outcome (see Section 4 of the SWMP for further details).
- 1.1.4 It is also intended that the SWMP will provide statutory and non-statutory consultees with sufficient information to understand the types and volumes of wastes likely to be generated from the construction of the proposed Project Two.
- 1.1.5 The SWMP has been prepared to accompany the DCO application and is based on the information currently available. The SWMP will be updated post-consent as detailed design progresses and will be regularly updated during the construction phase. The Principal Contractor will be responsible for updating the SWMP as explained in Section 5.

Project Description

- 1.1.6 The SWMP relates to the proposed onshore and offshore infrastructure of Project Two within the Hornsea Round 3 Zone. With a maximum capacity of 1.8 gigawatt (GW), Project Two is the second wind farm project proposed within the Hornsea Zone.
- 1.1.7 The key components of Project Two are:

Offshore

- Wind turbine generators;

- Turbine foundations;
- Cabling (comprising inter-array and export cables);
- Accommodation platforms;
- HVDC converter stations;
- HVAC collector substations; and
- HVAC reactive compensation substations.

Onshore

- Underground cabling; and
- HVDC converter station/HVAC substation.

- 1.1.8 These components are described in further detail in Volume 1, Chapter 3: Project Description.

1.2 Structure and Scope of the SWMP

- 1.2.1 The scope of the report is in accordance with NPS EN-1 and the SWMP Regulations 2008, now repealed. It considers the type and volume of waste that is likely to be generated from the proposed development of the offshore and onshore elements of Project Two. In particular, this Plan sets out:
- The waste regulation framework;
 - The types of waste that will be generated;
 - How the waste will be managed – i.e. will it be reduced, re-used or recycled?;
 - The waste management facilities available; and
 - The methods used to measure and record the quantity of waste generated from the project.
- 1.2.2 The SWMP focuses on waste generated during the construction of Project Two as required by NPS EN-1.
- 1.2.3 During the operation of Hornsea Project Two, wastes will be generated from operation and maintenance (O&M) activities as described in Volume 1, Chapter 3: Project Description. These activities include preventative and corrective maintenance operations for the Wind Turbine Generators (WTGs), foundations and offshore structures as well as maintenance visits to the onshore HVDC converter/HVAC substation. Waste will also be generated from the offshore accommodation, the service and supply vessels and from the onshore O&M base which will monitor and administer the day to day activities of the wind farm.
- 1.2.4 The type of wastes generated from these activities will include general office and kitchen waste from the O&M base and accommodation platforms together with the wastes summarised in Section 3.4 of the Project Description (Volume 1, Chapter 3).

The volume of wastes generated during the operation of Hornsea Project Two will not be significant.

- 1.2.5 Any waste generated as a result of O&M activities will be managed in accordance with the principles in this SWMP and will be transported by a registered waste carrier to an appropriately licensed waste management facility.

2 REGULATORY FRAMEWORK

2.1 Definition of Waste

- 2.1.1 For the purpose of this document the definition of “waste” is taken from Article 3(1) of the revised European Waste Framework Directive (WFD) (2008/98/EC), which states that waste is *‘any substance or object which the holder discards or intends or is required to discard’*.
- 2.1.2 “Discard” includes the recovery and recycling of a subject or object as well as its disposal. The decision on whether something is discarded must take account of all the circumstances (for example, the nature of the material, how it was produced and how it will be used) and have regard to the aims of the WFD, which is *‘the protection of human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste’*.
- 2.1.3 Guidance on the interpretation of the WFD definition of waste is taken from Defra’s recently published *‘Guidance on the legal definition of waste and its application’*, which provides a practical guide to help organisations make decisions about whether a material is a waste or not.
- 2.1.4 The document also takes into account CL:AIRE’s Definition of Waste: Development Industry Code of Practice (CoP) (CL:AIRE, 2011). The CoP sets out good practice for the development industry to use when:
- *‘Assessing on a site specific basis whether excavated materials are classified as waste or not; and*
 - *Determining on a site specific basis when treated excavated waste can cease to be waste for a particular use’.*
- 2.1.5 The CoP will be taken into account by the Environment Agency (EA) in deciding whether to regulate materials as waste. If materials are dealt with in accordance with the CoP, the EA considers that those materials are unlikely to be waste if they are used for the purpose of *‘land development’*.
- 2.1.6 The scope of the CoP relates to ‘excavated materials’ which include:
- *Soil, both topsoil and subsoil, parent material and underlying geology;*
 - *Soil and mineral based dredgings;*
 - *Ground based infrastructure that is capable of reuse within earthworks projects (e.g. road base, concrete floors);*
 - *Made ground; and*
 - *Stockpiled excavated materials that include the above.*

2.2 Legislation and Guidance

- 2.2.1 The legislative framework for the management of construction wastes comprises the following:
- Environmental Protection Act 1990;
 - Environment Act 1995;
 - Hazardous Waste (England and Wales) Regulations 2005 (as amended);
 - Revised Waste Framework Directive (2008/98/EC);
 - Landfill Directive (1999/31/EC)
 - Environmental Permitting (England and Wales) Regulations 2010;
 - Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008 ;
 - Waste Management (England and Wales) Regulations 2006;
 - Waste (England and Wales) Regulations 2011 (as amended);
 - Waste Management The Duty of Care Code of Practice (HMSO 1996) (currently being revised); and
 - Lincolnshire County Council Waste Local Plan (adopted May 2006).
- 2.2.2 The key driver for waste management legislation in the UK is the WFD. The Directive is transposed into UK legislation by the Waste (England and Wales) Regulations 2011 (as amended). These regulations require all businesses and organisations that produce waste to take all reasonable measures to prevent waste, to apply the waste hierarchy (refer to Section 4.1) when transferring waste using the definitions in Article 3 of Directive 2008/98/EC, and include a declaration on their waste transfer notes or consignment notes to that effect. Standard Industry Classification (SIC) Codes 2007 (Office for National Statistics 2009)) of the waste producer must also be provided in the waste transfer note.
- 2.2.3 In terms of offshore waste, the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) Annex V (as amended) is the main legislative driver. Under the Convention, the North Sea is designated as a Special Area where the disposal of any waste (except food waste) offshore is prohibited. The Convention is transposed into UK legislation by the Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008, which places a number of obligations on vessels in terms of managing waste (see Section 2.3).
- 2.2.4 Hazardous Waste (England and Wales) Regulations 2005 (as amended) set out the requirements for controlling and tracking the movement of hazardous waste and bans the mixing of different types of waste. Under the Regulations “mixing” includes mixing of different categories of hazardous waste, non-hazardous wastes or any other

substance or material. Businesses or organisations generating 500 kg of hazardous waste a year must register with the EA as a hazardous waste producer.

2.3 Key Obligations

Duty of Care

2.3.1 A key requirement of section 34 of the Environmental Protection Act 1990 is that the waste producer is responsible for ensuring that their waste is collected by an appropriately licensed waste carrier and managed at a suitably licensed facility. These requirements are set out in the 'Waste Management The Duty of Care Code of Practice'. To meet these requirements, waste materials arising from the construction of Project Two will only be transported by waste carriers and hazardous waste carriers currently registered with the Environment Agency. Each consignment of waste removed from the construction site will be accompanied by a waste transfer note (or hazardous waste consignment note as appropriate), which correctly describes the waste using the European Waste Catalogue code, identifies the waste carrier and where the waste will be transported to. Requirements for transferring waste and registered waste carriers are set out in Part 8 and 9 of the Waste (England and Wales) Regulations 2011 (as amended). The waste will only be transferred to facilities that have the benefit of a registered waste exemption, or an environmental permit. Periodic audits should be undertaken of these facilities. Prior to construction commencing, the Developer and Principal Contractor will sign the declaration in Appendix A to confirm that waste from the development of Project Two will be managed in accordance with duty of care requirements.

Pre-treatment of Wastes

2.3.2 Inert, non-hazardous and hazardous wastes destined to be landfilled will be pre-treated prior to disposal in accordance with the EU Landfill Directive (1999/31/EC). Treatment can comprise physical, thermal, chemical or biological processes providing that they change the characteristics of the waste in order to reduce its volume or hazardous nature or to facilitate its handling or recovery.

Management of Offshore Wastes

2.3.3 In accordance with MARPOL (73/78) Annex V (as amended) every ship (certified to carry 15 persons or more), and vessels (of 400 gross tonnage and above) involved in the construction of Project Two will have a garbage management plan. The plan will include procedures for the collection, storage, processing and disposal of all waste, and will designate an individual responsible for implementing the plan. Waste types and volumes generated by the vessel/installation will be recorded in a garbage record book. Once the waste is brought onshore it will be managed in accordance with the duty of care legislation (see paragraph 2.3.1). Information from the garbage record book will be used to complete the relevant waste transfer notes.

2.3.4 Food waste from accommodation platforms and vessels will be ground or comminuted to the required size in accordance with the Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008 prior to disposal at sea. Accommodation platforms and some vessels will have sewage treatment facilities, which will treat the sewage prior to discharging to the sea. Where treatment facilities are not available, sewage will be brought ashore for treatment.

3 WASTE ARISING

3.1 Waste Forecasting

Design Stages

3.1.1 The SWMP Regulations 2008 stipulate that decisions taken at the design stage to minimise waste must be recorded. Table 3.1 below illustrates the design measures taken to reduce the volume of waste generated. This table will be updated as the detailed design stage develops.

Table 3.1 Design measures to reduce waste.

Construction Element	Primary Waste Stream	Opportunities for waste reduction	Implemented (if not, why?)	Quantified reductions in m ³
Onshore cable route	Subsoil	Reducing depth of stabilised backfill	No – 0.65 m backfill required to provide bed material and cover for the three foil cable formation.	
Onshore cable route	Subsoil	Reducing number of jointing bays constructed (and therefore reducing the volume of subsoil excavated) by using the longest possible cable length (i.e. 2500 m).	Implemented where feasible.	

3.2 Waste Types

3.2.1 At a strategic level the key waste streams produced on site can be classified as:

- **INERT** – wastes that will not cause adverse effects to the environment when disposed of, or do not decompose and they have no potentially hazardous content when placed in a landfill. Examples of inert wastes are rocks, concrete, mortar, glass, uncontaminated soils and aggregates.
- **NON HAZARDOUS** – wastes that will decompose when buried resulting in the production of methane and carbon dioxide. Examples of non-hazardous wastes include timber, paper and cardboard.

- **HAZARDOUS** – wastes that are harmful to human health or the environment (for example, pollution of watercourses) if they are incorrectly contained, treated or disposed of. Hazardous wastes may have one or more of the following properties: explosive, corrosive, flammable, highly flammable, infectious, oxidising or sensitising.

3.2.2 Table 3.2 contains the general List of Waste Categories for construction wastes. The waste codes for each waste type will be provided on each waste transfer note that will accompany every movement of waste from the site.

Table 3.2 List of waste categories for construction wastes.

17 Construction and demolition wastes (including excavated soil from contaminated sites – it should be noted that wastes types generated may not be restricted to this list)
17 01 Concrete, bricks, tiles and ceramics
17 01 01 Concrete
17 01 02 Bricks
17 01 03 Tiles and ceramics
17 01 06* Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances
17 01 07 Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02 Wood, glass and plastic
17 02 01 Wood
17 02 02 Glass
17 02 03 Plastic
17 02 04* Glass, plastic and wood containing or contaminated with dangerous substances
17 03 Bituminous mixtures, coal tar and tarred products
17 03 01* Bituminous mixtures containing coal tar
17 03 02 Bituminous mixtures other than those mentioned in 17 03 01
17 03 03* Coal tar and tarred products
17 04 Metals (including their alloys)
17 04 01 Copper, bronze, brass
17 04 02 Aluminium
17 04 03 Lead
17 04 04 Zinc
17 04 05 Iron and steel

17 Construction and demolition wastes (including excavated soil from contaminated sites – it should be noted that wastes types generated may not be restricted to this list)
17 04 06 Tin
17 04 07 Mixed metals
17 04 09* Metal waste contaminated with dangerous substances
17 04 10* Cables containing oil, coal tar and other dangerous substances
17 04 11 Cables other than those mentioned in 17 04 10
17 05 Soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 03* Soil and stones containing dangerous substances
17 05 04 Soil and stones other than those mentioned in 17 05 03
17 05 05* Dredging spoil containing dangerous substances
17 05 06 Dredging spoil other than those mentioned in 17 05 05
17 05 07* Track ballast containing dangerous substances
17 05 08 Track ballast other than those mentioned in 17 05 07
17 06 Insulation materials and asbestos-containing construction materials
17 06 01* Insulation materials containing asbestos
17 06 03* Other insulation materials consisting of or containing dangerous substances
17 06 04 Insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05* Construction materials containing asbestos
17 08 Gypsum-based construction material
17 08 01* Gypsum-based construction materials contaminated with dangerous substances
17 08 02 Gypsum-based construction materials other than those mentioned in 17 08 01
17 09 Other construction and demolition wastes
17 09 01* Construction and demolition wastes containing mercury
17 09 02* Construction and demolition wastes containing PCB (for example PCB-containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazing units, PCB-containing capacitors)
17 09 03* Other construction and demolition wastes (including mixed wastes) containing dangerous substances
17 09 04 Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03

* Denotes hazardous waste entry

3.3 Estimated Waste Arisings

Waste Types

3.3.1 The groupings of inert, non-hazardous and hazardous have been split into the key waste types based on the available design information. Where appropriate, the wastes are described according to the general List of Waste Categories for construction wastes. The list of wastes given in Appendix B is not exhaustive and may be extended as the detailed design and construction philosophy develops after consent.

Completing SWMP Data Sheets

3.3.2 The indicative types of waste to be generated from the construction of the offshore and onshore elements of Project Two are identified in Appendix B. The forecast is a useful planning tool to record the types of waste that will be generated. Targets can then be set for different waste types and entered into a Waste Estimates Data Sheet (see Appendix C). This identifies how the waste types will be managed during the project (i.e. re-used on site, recycled off site etc).

3.3.3 Once construction is underway, the Principal Contractor will complete the Waste Management Data Sheet (see Appendix D). These sheets will be updated every time waste is removed from the site and will record:

- The types and quantities of waste produced;
- The types and quantities of waste that have been re-used/ recycled/ recovered/ landfilled or otherwise disposed of on or off site;
- The identity of the person removing the waste;
- The registration number of the waste carrier;
- A copy of or reference to the written description of the waste; and
- Details of the site where the waste is taken to and whether it holds a permit or is exempt.

3.3.4 These details will form part of a review of this SWMP to be undertaken every six months (as a minimum) during the construction period by the Principal Contractors. Where necessary, a further plan will be produced to accommodate any changes in order to reflect the progress of the project and meeting the SWMP targets.

3.3.5 On completion of construction, a comparison of the estimated waste arisings (Appendix C) and the actual waste management data (Appendix D) will be undertaken.

Setting Targets to Divert Waste from Landfill

3.3.6 Targets will be set to reuse or recycle construction waste to allow the performance of the SWMP to be monitored and evaluated at the end of the construction period. A target to reuse, recycle or recover 70% of construction waste generated by Project Two will be set. This target is in line with the target in the Waste (England and Wales)

Regulations 2011 (as amended) and the WFD. This target is also in line with the good practice target set in the Building Research Establishment Environmental Assessment Methodology BREEAM New Construction Manual (BRE Global Ltd, 2011).

- 3.3.7 Targets will also be set to reduce, reuse or recycle key waste materials (for example, topsoil and stone) on and/or off the construction areas where applicable. Preliminary material targets are included in Appendix B. These targets will be re-visited and further targets will be added as the detailed design and the construction philosophy progress, typically post consent.
- 3.3.8 A target benchmark for resource efficiency will be set for the construction of the HVDC converter/HVAC substation. This would follow the construction resource efficiency benchmark set in the BREEAM New Construction Manual (BRE Global Ltd, 2011), which is 13.3 m³ (or 11.1 tonnes) of non-hazardous construction waste generated per 100 m² (gross internal floor area).
- 3.3.9 The agreed targets will be incorporated into the contract specifications with the Principal Contractor post-consent.

4 MANANAGEMENT OF WASTES FROM HORNSEA PROJECT TWO

4.1 Waste Hierarchy

- 4.1.1 Construction waste generated from the development of Project Two will be managed according to the principles of the waste hierarchy. The waste hierarchy ranks waste management options according to what is best for the environment. It gives top place to waste prevention. When waste has been generated, priority is given to preparing it for re-use, then recycling, then recovery, and last of all disposal (for example, landfill). The waste hierarchy is a key element of sustainable waste management and is a legal requirement of the revised EU Waste Framework Directive and the Waste (England and Wales) Regulations 2011.
- 4.1.2 Defra has published guidance on how the waste hierarchy should be applied to a range of common wastes (Defra, 2011). It summarises the findings of current scientific research on the environmental impacts of various waste management options for a range of materials and products. The guidance states that for most materials the waste hierarchy ranking applies. However, the evidence suggests that for some materials, the preferred waste management option (i.e. with the lowest environmental impact) does not follow the waste hierarchy order. This is true for lower grades of wood, where energy recovery options are more suitable than recycling.

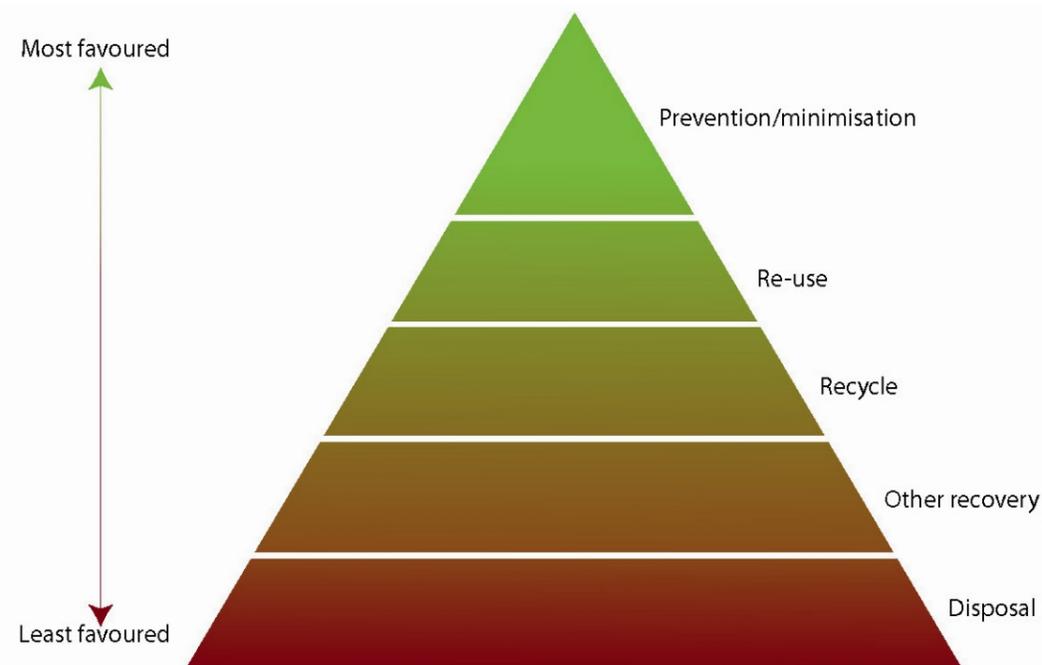


Figure 4.1 Waste Hierarchy

Prevention

- 4.1.3 Waste can be minimised during the design stage and during construction. Decisions already taken in the design concept stage have been highlighted in Table 3.1. The following design measures will also be implemented:
- Using pre-fabricated materials for on-site assembly;
 - Buildings/structures designed to standard dimensions of blocks or frames to avoid off-cuts; and
 - Internal materials and fittings will be pre-cut to reduce the need for site cutting.
- 4.1.4 Given the harsh environmental conditions associated with the location of the offshore elements and some of the onshore elements, external building materials will be galvanised rather than painted. This and similar measures will be adopted to provide extra durability and extend the maintenance intervals.
- 4.1.5 Waste will also be minimised by improving wastage rates when ordering materials. Waste allowances are generally included within material orders to take into account design waste and construction process waste. These waste allowances are often generic and not project specific and therefore, run the risk of being inaccurate. This can lead to a surplus of materials, which typically ends up being discarded (i.e. waste). A system will be put in place to enable the accurate estimates of material requirements at the start of the project. Clear estimates and targets of waste that will be generated will be agreed at the detailed design stage.
- 4.1.6 On appointment of the construction team, the Buyer will discuss the purchasing requirements with the Site Manager to identify priorities and review the quotations received. Materials will be checked against the material specifications as part of the quality control system. Opportunities to reduce packaging or implement take-back schemes for packaging and unused materials will be discussed with the suppliers. Where possible, hazardous materials will be substituted for less hazardous alternatives.
- 4.1.7 Waste minimisation measures will be implemented by the Principal Contractor and Site Manager during construction in order to achieve the waste allowance targets. These measures include:
- A logistic system which allows 'just-in-time' deliveries to minimise the length of time materials are stored on site and co-ordinate with other trades;
 - Providing suitable and secure storage for materials where 'just-in-time' deliveries cannot be set up;
 - Mechanical systems and machinery will be considered for moving materials to reduce the risk of damage;

- Programming and monitoring construction activities to avoid overlap of incompatible trades working in the same area and to reduce the potential for waste to be generated from replacing damaged work.

Preparing for Re-Use

- 4.1.8 The installation of the onshore cables will require the construction of a temporary haul road and temporary access track. The haul road will be constructed of on average 0.3 m of permeable gravel aggregate with a geotextile underlay or other type of protective matting or temporary metal road. On completion of the cable installation works, the haul roads will be dismantled. Landowners will be given the option of re-using the stone on their land for maintaining farm tracks or similar construction purposes. This activity will be registered with the EA as an exempt activity (i.e. not requiring an environmental permit) where appropriate. Where possible, durable geotextile underlay/protective matting will be selected to allow its re-use on other projects.
- 4.1.9 Other opportunities to re-use materials will be investigated as the detailed design and construction philosophy progresses.

Recycling

- 4.1.10 Wastes generated during the construction process will be segregated into waste types to facilitate off-site recycling (for example, metals, wood, plastic). Layout of the compounds and the HVDC converter/HVAC substation site will be designed to allow sufficient space for separate containers of key waste materials to be stored. These containers will be clearly labelled and construction staff will be given training on waste segregation.
- 4.1.11 The Principal Contractor will consider the use of recycled materials where possible, subject to client approval, cost and availability (for example, recycled aggregate and secondary aggregates).
- 4.1.12 Offshore waste will be segregated at source where possible to facilitate recycling when the waste is brought ashore.

Disposal

- 4.1.13 All waste that cannot be reused, recycled or recovered will be collected by the licensed waste management contractor and disposed of at a permitted site suitable for the type of waste. Burning of surplus material or material arising from the site will not be permitted. With the exception of ground food waste (from the accommodation platforms and vessels) and dredged spoil, waste generated from offshore activities will be brought onshore for recycling or disposal. Ground food waste will be disposed of at sea in accordance with the Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008. Dredgings will be disposed of at a designated site in accordance with the conditions of the deemed Marine Licences contained in the DCO.

4.2 Storage of Waste

- 4.2.1 Waste will be stored in dedicated areas of the construction site. Each skip/container will be clearly marked to indicate the intended contents and will be suitable for the storage of the specified contents. All skips will be covered to prevent the escape of waste by windblow or vandalism. If liquid waste is being stored, an appropriate bund and drip pans will be in place.
- 4.2.2 Storage areas will be located away from potential contaminant pathways such as soakaways and drains, trial pits, excavations and trenches.
- 4.2.3 Waste generated offshore (with the exception of food waste) will be stored in appropriate containers and will be brought onshore before being taken to an appropriate facility for disposal/recycling.
- 4.2.4 Any hazardous waste (offshore and onshore) will be stored in suitable containers in a secure designated area away from non-hazardous and inert wastes and labelled accordingly. Written instructions will be displayed for the storage and disposal of the hazardous wastes and the containers will be regularly checked for leaks or deterioration. Subject to the type and quantity of hazardous material generated, the EA will be notified and the appropriate requirements will be met.

4.3 Registered Carriers

- 4.3.1 Construction waste generated by Project Two will only be transported by companies registered with the EA and with valid waste carrier licences as required by the 'Waste Management The Duty of Care: A Code of Practice' and legislation (i.e. Environmental Protection Act section 34 and the Waste (England and Wales) Regulations 2011).
- 4.3.2 Offshore waste will be stored in appropriate containers and brought ashore by licensed carriers. Waste will typically be brought ashore in vessels, but on occasion may have to be transported by helicopter. Once ashore, the containers will be transported by a registered waste carrier to a licensed facility. For some liquid wastes, the waste will be discharged from the vessel into a tanker or receiving tank as appropriate.

4.4 Waste Management Facilities

- 4.4.1 The EA was asked to provide records of operational landfill sites and recycling facilities within 50 km of North Killingholme. The results are presented in Table 4.1 and Table 4.2 below.

Table 4.1 Operational landfill sites within 50 km of North Killingholme.

Name of Site	Permit Number	Licence Holder	Type of Landfill
Winerton South Landfill Site	BW1785IH	Integrated Waste Management Ltd	Hazardous Waste
Immingham Landfill Site	PP3830BV	Integrated Waste Management Ltd	Non-hazardous
Winerton North Landfill Site	QP3539XL	Integrated Waste Management Ltd	Non-hazardous (plus cell for asbestos waste)
Roxby Landfill Site	BW2951IM	Biffa Waste Services Ltd	Non-hazardous
Camp Wood Landfill Site	BS9989IJ	Singleton Birch Ltd	Non-hazardous
South Ferriby Works Landfill Site	BV1763IS	Cemex UK Cement Ltd	Non-hazardous

Table 4.2 Operational recycling facilities within 50 km of North Killingholme.

Name of Site	Permit Number	Licence Holder	Type of Facility
Brianplant Recycling Centre	103814	Brianplant (Humberside) Ltd	Inert and excavation waste transfer station/treatment.
Caenby Hall Waste Transfer Station	102152	Fox (Owmbly) Ltd	Inert and excavation waste transfer station/treatment.
Huckers Yard	100673	SJP Trading Ltd	Metal recycling
Elsham Airfield	101272	Stoneledge (Southbank) Ltd	Inert and excavation waste transfer station/treatment.
Manton Quarry	104140	Brianplant (Humberside) Ltd	Treatment of waste to produce soil.
Mineral Quay	100227	Van Dalen UK Ltd	Metal recycling
W Bloy and Son	70884	Bloy Inge Franziska	Metal recycling
Scrapyard	70879	Jonathan Potts Ltd	Metal recycling
Metropes	70892	Metropes (Metals) Ltd	Metal recycling
Sneyd Hill, Stoke on Trent	JP3031LX	Whelan Refining Limited	Waste oil refinery

5 IMPLEMENTATION OF THE SWMP

5.1 Roles and Responsibilities

5.1.1 Although the construction team has not been appointed at the time of writing this plan, the key roles and associated responsibilities with regard to this SWMP are outlined below. The Construction (Design and Management) Regulations 2007 also identify the legal duties, responsibilities and obligations of all the major roles within the construction team.

Client

5.1.2 The client will be responsible for the following:

- Appointing onshore and offshore Principal Contractors for the purpose of the SWMP;
- Ensuring that this SWMP is implemented effectively;
- Giving necessary direction to contractors (for example, setting contractual obligations); and
- Reviewing, revising and refining this SWMP (where necessary) in conjunction with the Principal Contractor.

Principal Contractor

5.1.3 The Principal Contractor is generally appointed by the client and has the overall responsibility for:

- Updating and delivering this SWMP on behalf of the client;
- Ensuring all procedures in this SWMP are followed;
- Ensuring all contractors are suitably qualified and experienced in implementing the measures within this SWMP. These measures will be contained within the terms of contracts to ensure understanding and accountability;
- Ensuring that all legal and contractual requirements relating to this SWMP and the environment are met by ensuring adequate plans/procedures, licences and certificates are in place, and that they can be achieved;
- As a requirement of the SWMP the Principal Contractor will regularly (not less than every six months) review this SWMP to ensure that it accurately reflects the progress of the project and update where necessary;
- Within three months of work being completed, the Principal Contractor must confirm that this SWMP has been monitored (and updated) on a regular basis throughout the project; compare the actual waste quantities against the estimated quantities of each waste type; and provide an explanation of any deviation from this plan. This information will be provided within a Close Out report.

- Establish procedures for the regular review and recording of the quality of the works as part of its Quality Management System; and
- Maintain records relevant to this SWMP.

Contractors/Sub Contractors

5.1.4 Contractors and sub-contractors will be responsible for carrying out the waste management tasks in this SWMP.

5.2 Training

5.2.1 A training regime will be implemented to ensure that all relevant members of the onshore and offshore construction teams, including sub contractors' personnel receive focused SWMP training to ensure their competence in carrying out their duties on the project.

5.2.2 Any SWMP training will be additional to the mandatory training requirements on site Health and Safety.

Environmental Induction

5.2.3 A general site induction will be developed to introduce all site personnel to the environmental issues connected with the SWMP, the project, important environmental controls associated with the day to day operation of the project and effective delivery of the SWMP (for example, waste storage arrangements, appropriate waste segregation). A full register of induction attendance will be maintained on site.

5.2.4 Onshore and offshore construction staff will be briefed on the SWMP and the waste management procedures to be followed.

Toolbox Talks and Method Statement Briefings

5.2.5 Toolbox talks and method statement briefings will be given to offshore and onshore construction teams as work proceeds and will cover the types of wastes produced at each key build stage, and the SWMP controls related to specific activities undertaken during the works (for example, recycling of concrete). A full register of toolbox talk and method statement briefing attendance will be maintained on site.

Training Records

5.2.6 All training records will be maintained and filed on site. The records will include the content of the courses (induction and toolbox training), record of attendance and schedule of review.

6 AUDIT, MONITOR AND REVIEW

6.1 Site Inspection

- 6.1.1 Regular inspections of the onshore and offshore construction works will be undertaken by the Principal Contractors (or appropriately trained member of the construction staff) to ensure the continued compliance of site operations with the provisions of this SWMP and control measures outlined in relevant method statements.

6.2 Monitoring of the SWMP

- 6.2.1 Appropriate Duty of Care paper work for the movements of waste (for example, waste transfer notes) will be retained on site. Volumes (m³ or tonnes) and waste types will be recorded for all wastes sent for reprocessing, recycling or disposal. Records will also be kept of waste re-used/recycled on site.
- 6.2.2 The Principal Contractor will complete the Waste Management Data Sheet as the project progresses.
- 6.2.3 A separate SWMP Close Out Report will be compiled by the Principal Contractor or developer at the end of the construction process that summarises performance of the project against the targets set in the SWMP. The report will identify any deviations from the SMWP and discuss lessons learnt. This will be signed by the Principal Contractor and developer.

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Contaminated Land: Applications in Real Environments (CL:AIRE), (2011). *The Definition of Waste: Development Industry Code of Practice*. London, CL:AIRE.

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Oil and Gas (2011). *Environmental Emissions Monitoring System Annual Report to Industry 2009*.

Xodus Group (2012). *SMart Wind Hornsea Round 3 Project One, Carbon Life Cycle Assessment*. Doc. No. L-30007-S02-REPT-002.

APPENDIX A SWMP DECLARATION.

Name of Developer	
Contact	
Principal Contractor	
SWMP Prepared By	
Date	
Project Details	
Estimated Build Cost of the Project	

Declaration	
All waste from the site will be dealt with in accordance with the duty of care in section 34 of the Environmental Protection Act 1990 and the duty of care provisions in the Waste (England and Wales) Regulations 2011 (formerly the Environmental Protection (Duty of Care) Regulations 1991). Materials will be handled efficiently and waste managed appropriately.	
Signature of the Developer	Signature of Principal Contractor

APPENDIX B KEY WASTE FORECASTS.

Construction Element	Material	Type of Waste	EWC Code	Estimated Quantity	Target for re-use/recycle %	Source of Data
Offshore						
Accommodation Platform	Sewage	Non-hazardous				
	General, non-domestic	Hazardous		25 kg per man per month of waste related to 'normal living.'		Hornsea O&M Project Design Envelopes and Transmission Asset, Dong Energy (2012).
	General, non-domestic	Non-hazardous				
	Domestic waste	Non-hazardous		25 kg of kitchen waste per man per month.		Hornsea O&M Project Design Envelopes and Transmission Asset, Dong Energy (2012).
	Waste oil	Hazardous				
Substations						
Construction Vessel(s) for Turbine Foundations	Sewage (black and grey water)	Non-hazardous		6,830 tonnes of sewage, 20,490 tonnes of grey water per year (based on 200 litres per man on-board per day, 50 litres black water (sewage) and 150 litres grey water).		
	Domestic waste	Non-hazardous				
	General non-domestic waste	Non-hazardous		273.2 tonnes (based on 2 kg per man per day).		
Helicopter(s)	Waste oil	Hazardous		25 litres per main gearbox on a typical Super Puma.		
Dredging and Drilling Activities	Seabed sediment	Non-hazardous		33,900,000 m ³ –based on four cable trenches at 10 m width per cable, running 150 km from shore to wind farm and 450 km of inter array cables in one trench of 10 m width, and 80 km of connecting cables in five trenches of 10 m width (HVDC transmission option only) assuming burial depth of 3m.		SMart Wind Hornsea round 3 Project One Carbon Life Cycle Assessment, Xodus Group (2012).

Construction Element	Material	Type of Waste	EWC Code	Estimated Quantity	Target for re-use/recycle %	Source of Data
Cable Laying Vessel	Sewage (black and grey water)	Non-hazardous		415 tonnes of sewage, 1,245 tonnes of grey water per year (based on 200 litres per man on-board per day, 50 litres black water (sewage) and 150 litres grey water).		
	Waste oils	Hazardous		Up to 28 tonnes per year.		
	General waste (e.g., lubricants, solvents)	Hazardous		Up to 16.6 tonnes per year		
Onshore						
Trenchless Technology Site	Steel shuttering	Non-hazardous	17 04 05	210 m ³ with associated bracings per drilling pit (Thrust Bore)	100%	Annex 6.8.7
	Drilling mud – bentonite sludge mixed with TT sludge	Non-hazardous	17 05 14		0%	Volume 1, Chapter 3: Project Description
Cable Route	Subsoil	Non- hazardous	17 05 04	4,554m ³ per km	100%	Volume 1, Chapter 3: Project Description and Annex 6.8.7
Jointing Pits	Subsoil	Non-hazardous	17 05 04	Total of 64,000 m ³ for four cable circuits	100%	Volume 1, Chapter 3: Project Description
Haul Road	Stone	Non-hazardous	17 05 04 or 03		100%	Volume 1, Chapter 3: Project Description.
HVDC Converter/HVAC Substation	Soil	Non-hazardous	17 05 04		100%	
Construction Compounds	Stone	Non-hazardous	17 05 04 or 03		100%	

APPENDIX C WASTE ESTIMATES DATA SHEET (TO BE COMPLETED PRE CONSTRUCTION).

Waste Category & Type	EWC Code	Source of waste	Re-used on site (m ³)	Re-used off site (m ³)	Recycled on site (m ³)	Recycled off-site (m ³)	Recovered on site - use off site (m ³)	Sent to a Permit exempt site (m ³)	Sent to landfill site for disposal (m ³)
INERT									
Sub TOTAL			0.00	0.00	0.00	0.00	0.00	0.00	0.00
NON-HAZARDOUS									
Sub TOTAL			0.00	0.00	0.00	0.00	0.00	0.00	0.00
HAZARDOUS									
Sub TOTAL			0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL VOLUMES			0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX D WASTE MANAGEMENT DATA SHEETS (TO BE COMPLETED EACH TIME WASTE IS REMOVED OFF SITE/RE-USED ON SITE).

Waste Category & Type	EWC Code	Date	Waste Transfer Note Y/N	Name of person collecting waste	Waste carrier registration number	Name & location of waste site	Permitted or exempt site	Permit number	Re-used on site	Re-used off site	Recycled on site	Recycled off-site	Recovered on site - use off site	Landfill	Load cost	Cost per tonne
									(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)	£	£
INERT																
Sub TOTAL									0.00	0.00	0.00	0.00	0.00	0.00		
NON-HAZARDOUS																
Sub TOTAL									0.00	0.00	0.00	0.00	0.00	0.00		
HAZARDOUS																
Sub TOTAL									0.00	0.00	0.00	0.00	0.00	0.00		
TOTAL VOLUMES									0.00	0.00	0.00	0.00	0.00	0.00		

Total Waste Landfilled	Weight (tonnes)			Cost (£)
Inert				
Non-Hazardous				
Hazardous				
Total	0.00			0.00