Scotland England Green Link 2 - English Onshore Scheme

Environmental Statement: Volume 2

Chapter 18: Outline Construction Environmental Management Plan

May 2022

For: National Grid Electricity Transmission

Table of Contents

Figures

Tables

18. Outline Construction Environmental Management Plan

18.1 Introduction

18.1.1 Project Summary

National Grid Electricity Transmission (NGET) owns and operates the high voltage electricity transmission system in England and Wales. NGET has a statutory duty to ensure electricity is transported safely and efficiently from where it is produced to where it is needed. To meet this obligation, in collaboration with Scottish and Southern Energy Networks (SSEN) who own and operate the high-voltage electricity transmission network in northern and western Scotland, NGET is proposing the construction a new High Voltage Direct Current (HVDC) link from Peterhead in Aberdeenshire, Scotland, to Drax in North Yorkshire, England, via a subsea connection. This Outline Construction Environmental Management Plan (CEMP) relates to the English Onshore Scheme only. The English Onshore Scheme comprises the following elements:

- Transition Joint Pit (TJP) which will connect the offshore HVDC cables to the onshore cables, at a landfall located landward of the existing headland at Fraisthorpe, East Yorkshire;
- Approximately 69 km of two underground HVDC cables (and fibre optic cable(s) for performance monitoring) between the TJP and the proposed converter station immediately east of the existing Drax Power Station;
- New converter station buildings and outdoor electrical equipment together with formation of internal roads, erection of security fencing and provision of landscaping as well as the construction of a permanent access road from New Road; and
- Approximately 500 m of six underground HVAC cables connecting the new converter station to the National Electrical Transmission System (NETS) via the existing Drax 400 kilovolt (kV) Substation.

Additionally, to enable construction activities, there will be a requirement for associated temporary construction areas referred to as compounds, laydown and storage areas. These temporary construction areas are typically utilised for the storage of plant and machinery and stockpiling materials, as well as the provision of site management offices, welfare facilities for staff (kitchen facilities, storerooms, toilet facilities), parking, and plant and material storage. A summary of the construction compounds to be established for the English Onshore Scheme is provided below:

- One landfall-specific compound provided for HDD installation across the intertidal area. This area will also accommodate the TJP to join marine and terrestrial cables together;
- Three primary major cable compounds at either end of the scheme and one central location;
- 10 secondary construction compounds; and
- Four tertiary construction compounds.

18.1.2 Purpose of the Construction Environmental Management Plan

This Outline CEMP aims to ensure that any adverse effects of construction on the environment and local communities are minimised. To achieve this, the Outline CEMP establishes a framework within which the appointed Contractor (including any sub-contractors or suppliers involved in the works) will plan, implement and deliver environmental management, mitigation and monitoring requirements during the construction phase of the English Onshore Scheme. The controls and procedures contained within it are the practical means by which the mitigation commitments made in the Environmental Statement (ES) will be implemented. The objectives of these controls and procedures are:

- Provide a mechanism for ensuring that measures to mitigate potentially adverse environmental impacts are implemented;
- Ensure that environmental good practices are adopted throughout the construction of the English Onshore Scheme;

- Ensure a prompt response if any unacceptable adverse impacts are identified, with the provision of appropriate additional mitigation measures as required;
- Provide a means for mitigating impacts that may not be anticipated or become apparent until construction is underway;
- Provide assurance to consultees and other stakeholders that requirements with respect to environmental mitigation are being addressed;
- Provide a mechanism for compliance auditing to ensure mitigation measures are being effectively implemented and maintained through construction;
- Implement a policy of potential reuse of all waste with disposal off site being a last resort (aligned to the waste hierarchy; and
- Enable full compliance to be maintained with all relevant legislation.

It is intended that this Outline CEMP will be finalised by the appointed Contractor prior to the start of construction based on a detailed scheme design and construction programme. The Detailed (or construction issue) CEMP will cover all construction activities, clearly set out roles and responsibilities and provide contact details for key personnel. It is also intended that the Detailed CEMP will be a 'live' document and will be updated as and when there are changes to the project team or when additional information becomes available (for example through detailed civil design or additional data supply or surveys such as pre-construction ecological surveys). Due to the scale of the English Onshore Scheme different Contractors may be appointed to deliver different elements of the scheme, additionally the Contractor(s) are likely to produce separate detailed CEMP for the different elements of the English Onshore Scheme (for example for DC cable installation, and the converter station) to better focus of the specific environmental considerations of each element. The various CEMPs will all include the foundations of the Outline CEMP and the relevant mitigation per component in Section 18.6.

Compliance with the contents of the Detailed CEMP is therefore intended to provide a systematic approach to environmental management so that environmental risks are identified, incorporated in all decision-making and managed appropriately. Detailed construction techniques and supporting Risk Assessment Method Statements (RAMS), which will outline further mitigation requirements based on the measures discussed in the CEMP and any supporting appendices, will be produced by the Contractor.

The Detailed CEMPs will be agreed with ERYC and SDC in advance of the start of construction. As a minimum the Detailed CEMPs should be formally reviewed every six months by the project HSE team and within a week following a high potential environmental incident; and passed to NGET for approval prior to reissue.

18.1.3 Compliance with Project Environmental Management Systems (EMS) and Sustainability

NGET is committed to delivering sustainability and good environmental stewardship. In accordance with this proactive approach to sustainable design and construction, NGET and the appointed Contractor will seek to maximise resource efficiency through reducing the amount of waste generated, minimising water consumption and making the most efficient use of energy.

The carbon footprint of the English Onshore Scheme will be reduced during construction by avoiding CO_2 emissions where possible through, for example, keeping construction vehicle movements to the minimum necessary. The design of the converter station will also incorporate sustainability principals and Building Research Establishment Environmental Assessment Method (BREEAM) certification, which considers energy and water use, the internal environment (health and well-being), pollution, transport, materials, waste, ecology and management processes. The aim is for 'Very Good' with aspiration towards CEEQUAL "Excellent" for a Whole Team Award.

NGET manages and reduces their effects on the environment via an Environmental Management System (EMS). The EMS is accredited to ISO14001:2015 and provides a framework for NGET to deliver continual environmental assessment and improvement and comply with current legislation and environmental commitments. The appointed Contractor will prepare their own Project EMS in accordance with NGET's EMS prior to construction commencing. The Project EMS is expected to be integrated into the Contractor's own EMS arrangements and will address:

- Compliance with the CEMP and any other control and management documents;
- Compliance with environmental consents and permits;
- Overall compliance with environmental legislation, approved codes of practice, British Standards and industry best practice;
- Detailed environmental management procedures to deliver the CEMP and other control and management plans including roles and responsibilities;
- Monitoring and review arrangements;
- Emergency procedures that are defined and adopted; and
- Appropriate training and information for personnel.

18.1.4 Considerate Constructors Scheme (CCS)

The English Onshore Scheme will be registered with the Considerate Constructors Scheme (CCS). CCS is a national initiative through which construction sites and companies (contractors, subcontractors and suppliers) are monitored against a Code of Considerate Practice. The Code is designed to encourage environmental and social best-practice during the construction period beyond statutory requirements.

The main areas of focus are respecting the local community, valuing the workforce and caring for the environment. In light of the size of the English Onshore Scheme, it is envisaged that there will be a minimum of two CCS audit visits.

18.1.5 Structure

This Outline CEMP is split into six sections as detailed below:

- **Section 18.1**: Introduction – provides background information about the English Onshore Scheme and an overview of the contents of this Outline CEMP;
- **Section 18.2**: Project Description – provides an overview of the proposed English Onshore Scheme including a description of construction methods;
- **Section 18.3**: Roles and Responsibilities – Sets out the roles and responsibilities of the parties involved in construction;
- **Section 18.4**: Communications, Reporting and Training – Sets out the requirements for regular communications and reporting as well as staff training;
- **Section 18.5**: Construction Environmental Management – Sets out the general requirements with respect to environmental management during construction; and
- **Section 18.6**: Specific Environmental Requirements – Sets out the specific environmental requirements identified by each topic discipline within the ES, per phase of the English Onshore Scheme.

Appendix 18A presents an indicative list of legislation that is typically applicable to the construction phase of projects, for example those relating to protected species listed under the Wildlife and Countryside Act 1981 (as amended) and invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). The list will need to be reviewed by the Contractor prior to the commencement of construction. Legislation confirmed as applicable to the English Onshore Scheme will form the basis of the legal register.

18.1.6 Other Construction Mitigation Plans

Error! Reference source not found. lists the plans and procedures that could be developed prior to construction to set out in detail the management systems and approach that will be implemented during construction to comply with the Detailed CEMP. These will be produced as part of the development of the Detailed CEMPs where relevant to the applicable component of the English Onshore Scheme (i.e. DC cable and/or the converter station).

Table 18-1: Pre-Construction Plans and Procedures

Plan / Procedure	Description
Stakeholder Communications Plan (SCP)	To be developed by the Contractor post-consent. This plan will include measures for community engagement before and during work on site.
Safety Health and Environment (SHE) Plan	To be developed by the Contractor post-consent. The plan will detail the relevant safety, health and environmental information relating to construction activities.
Site Waste Management Plan (SWMP)	To be developed by the Contractor post-consent based upon the Outline SWMP presented in **Appendix 16A** of this ES. This will set out and identify site-specific measures for the collection, segregation, treatment and disposal of waste.
Construction Traffic Management Plan (CTMP)	To be developed by the Contractor post-consent based upon the Outline CTMP presented in **Appendix 14D** of this ES. This will set out the requirements for the safe movement of project related traffic both within the site and *en route* to and from the site.
Travel Plan	Prior to the commencement of works, the Contractor will prepare a Travel Plan that supports and encourages sustainable travel by workers (public transport, cycling, walking and car-sharing).
Construction Logistics Plan	Prior to the commencement of works, the Contractor will prepare a Construction Logistics Plan to manage the sustainable delivery of goods and materials. This will be a live document and will be reviewed updated throughout the lifetime of the construction works as required.
Traffic Incident Management Plan	Prior to the commencement of works, the Contractor will prepare a Traffic Incident Management Plan. This will set out emergency response measures, including reporting requirements, in the event of a traffic accident either on site, or involving site traffic on the public highway.
Construction Route Hazard Risk Register	Prior to the commencement of works, the Contractor will produce a Construction Route Hazard Risk Register (or similar). This will identify risks and locations along with possible additional mitigation measures to be considered further during detailed design and Detailed CTMP implementation.
Abnormal Indivisible Load Report	Prior to the commencement of works, the Contractor will produce an Abnormal Indivisible Load (AIL) report to assess the transformer delivery to the converter station to demonstrate that a suitable route is available from the port of import to the proposed converter station site.
Road Condition Survey	The Contractor will carry out a Road Condition Survey (also referred to as a dilapidation survey) prior to any enabling works or construction commencing to determine the areas which require remedial works to ensure they are suitable to accommodate construction traffic associated with the English Onshore Scheme.
Soil Management Plan (SMP)	To be developed by the Contractor post-consent based upon the Outline SWMP presented in **Appendix 12B** of this ES. This plan will set out the measures to ensure the protection and sustainable management and reuse of soil resources.
Spill Response Plan	To be developed by the Contractor post-consent. This will set out emergency response measures in the event of accidental spillage or leakage.
Concrete Washout Procedure	To be developed by the Contractor post-consent. This will set out how the project will undertake concrete washout, including details of the emptying of concrete washout skips (if used) and the treatment of high pH washout water.
Incident Response Plan (IRP)	To be developed by the Contractor (in agreement with NGET) post-consent. This will set out how the project will respond to incidents including pollution events, and how these are to be reported (both internally to the project and externally). The IRP will comply with Schedule 3 Annex 2 of National Grid's Contractor Health & Safety Performance Requirements (CHSPR).
Drainage Strategy (Also commonly referred to as a Drainage Management Plan (DMP))	A detailed drainage strategy is to be developed by the Contractor. The Drainage Strategy identifies all known risks to the water environment and identifies appropriate measures to prevent pollution during construction; and to manage runoff rates. The Drainage Strategy will define the installation of pre-construction drainage measures to intercept run-off and ensure that discharge and runoff rates are controlled in quality and volume, in turn causing no degradation to water quality. This may include specific measures to be used in high-risk areas (for example construction along or across steep gradients and water course

Plan / Procedure	Description
	crossings). A phased approach may be taken to the development of the Drainage Strategy to reflect the phasing of the construction programme. The Drainage Strategy will include a Site Drainage Plan.
Surface Water Management Plan (SWaMP)	To be developed by the Contractor post-consent to define surface water management controls to mitigate the potential for watercourse pollution and environmental degradation; and to manage runoff rates. This may include specific measures to be used in high-risk areas (for example construction along or across steep gradients and water course crossings).
Hydrological Risk Assessment (HyRA)	Prior to the commencement of works, the Contractor will prepare a HyRA where the cable route passes through SPZ2 designations. The HyRA will consider potential effects on the groundwater regime as well as potential pollution risk from the construction activities. This will expand upon the preliminary HyRA presented in **Appendix 10C.** The identified mitigation requirements will be incorporated into the detailed CEMP(s).
Dewatering Scheme	If dewatering is required, a detailed dewatering scheme will be developed by the Contractor prior to construction to manage the water arising from dewatering operations and treat the water prior to controlled discharge. It is anticipated that this will form part of the detailed CEMP(s).
Construction Ecological Management Plan (CEcMP)	Prior to the commencement of works, the Contractor will prepare a Construction Ecological Management Plan (CEcMP) to prescribe the required site-specific mitigation in relation to habitats and protected species to ensure compliance with relevant legislation and best practice. It is anticipated that this will be an appendix to the Detailed CEMP(s).
Species Protection Plans (SPP) (or similar)	Prior to the commencement of works, the Contractor will prepare Species Protection Plans (SPP) (or similar) for the sensitive/protected species that may be encountered by the English Onshore Scheme (currently identified as Badger, Bats, Otter, breeding birds and Water Vole), to ensure compliance with relevant legislation and best practice. These will form part of the CEcMP.
Invasive Non-Native Species Method Statement (INNSMS)	Prior to the commencement of works, the Contractor will prepare an Invasive Non-Native Species Method Statement This plan will set out the measures which will be implemented to avoid the spread of invasive non-native species (INNS) during construction and ensure legal compliance.
Environment Agency consent application and accompanying Scheme of Ecological Mitigation and Reinstatement for works at the River Hull SSSI	Prior to construction the Contractor will prepare a consent application and accompanying Scheme of Ecological Mitigation and Reinstatement setting out the mitigation methods to be employed and a methodology for the reinstatement of bank top habitats.
Tree and Hedgerow Protection Strategy	Prior to the commencement of works, the Contractor will prepare a Tree and Hedgerow Protection Strategy. This will include a schedule of all trees and hedgerows to be removed, a schedule of all trees which require pruning coppicing or pollarding, a schedule of all trees and hedgerows to be retained including specification for temporary physical protection, including root protection areas and details of an auditable system of compliance. It will also include details of any hedgerows where a remove/store/replant methodology has been identified as appropriate through landowner consultation.
Ground Gas Risk Assessment (GGRA)	If the pre-commencement ground investigation identifies significant thicknesses of Made Ground (>3m) in the vicinity of manned buildings (i.e. the converter station), the Contractor will prepare a GGRA.
Piling Risk Assessment	Prior to the commencement of works, the Contractor will prepare a Piling Risk Assessment for locations where piled foundations are proposed (e.g., the converter station),
Generic Quantitative Risk Assessment (GQRA) (Contamination)	Prior to the commencement of works, the Contractor will prepare a Generic Quantitative Risk Assessment to identify potential risks to identified human health and groundwater receptors from soil, soil vapour and groundwater contamination. This is particularly pertinent at the proposed converter station where permanent above ground, potentially manned buildings will be present.
Remediation Strategy (Contamination)	Should the GQRA identify any soil, soil vapour or groundwater contamination risks, prior to the commencement of any remediation works the Contractor will

Plan / Procedure	Description
	prepare a Remediation Strategy. This is to be agreed with the regulatory authorities and it is expected that the Strategy would be an appendix to the detailed CEMP(s).
Materials Management Plan (MMP)	To be developed by the Contractor post-consent, where/if required. This will set out how clean excavated materials are to be managed to ensure that the quality of site-won materials is maintained so that they remain suitable for re-use and do not become contaminated; or will detail the correct management of contaminated soil materials to be removed from site.
Flood Management Plan (FMP)	To be developed by the Contractor post-consent, if required. The FMP will include details on the frequency of weather and stream flow observations, how forecasts, alert and actions will be disseminated, signage, roles and responsibilities, and emergency response procedures including detailed evacuation plan and procedures for making safe plant and equipment.
Water Efficiency Management Plan	To be developed by the Contractor post-consent. The Plan will include measures to reduce water consumption by all water-using processes, activities and equipment on site. It will also include details of staff engagement and training for relevant staff as well as setting out monitoring and reporting requirements (as per CEMP) and how these will be implemented.
Archaeological Mitigation Strategy (also known as a Written Scheme of Investigation (WSI) for archaeological mitigation)	To be developed by the Contractor post-consent to fully describe the additional mitigation measures to be implemented to protect buried archaeological features.
Landscape and Ecology Management Plan (LEMP)	Prior to the commencement of works, the Contractor will prepare a Landscape and Ecology Management Plan (LEMP) to ensure that habitats created/ enhanced for biodiversity net gain offsetting will meet the required habitat conditions; and that long-term management requirements are clearly defined.
Landscape Mitigation Plan	To be developed by the Contractor post-consent based upon the Outline Landscape Mitigation Plan presented as Figure 8-5 of the ES. The plan describes the proposed landscape planting and habitat creation/enhancement at the converter station and is also used to inform BNG.
Public Right of Way (PRoW) Management Plan	If required, a PRoW Management Plan will be developed by the Contractor post-consent to set out appropriate measures to ensure that safe accessibility to recreational routes and PRoW, is maintained throughout construction. These measures may instead be directly reported in the detailed CEMP(s).

18.2 Project Location

The English Onshore Scheme comprises the following principal elements, the locations of which are illustrated on **Figure 18-1**. Further detail regarding the description of the English Onshore Scheme including construction details is contained in **Chapter 3: Description of the English Onshore Scheme.**

As noted in 18.1.2, multiple contractors will be appointed to construct/install the different elements of the English Onshore Scheme due to the specialist electrical components required. As such, and to align to the varying risks and receptors likely to be encountered during the works for the elements, different Detailed CEMPs will be prepared as agreed between the Project and the relevant planning authority.

18.2.1.1 Landfall

The subsea cables will connect to onshore cables at a buried transition joint pit (TJP), which is located at Fraisthorpe, East Yorkshire. The TJP will be set back from the coastline, beyond the coastal erosion risk area to avoid future cable exposure and to reduce risk of exacerbating any existing erosion. The TJP is located approximately 150 m inland from the MHWS. The offshore cables will make landfall via horizontal directional drill (HDD) under the intertidal zone.

A temporary compound area (up to approximately 100 m x 100 m) will contain all necessary plant and equipment plus parking and welfare facilities required for the installation activities at the landfall location.

18.2.1.2 Underground DC Cable Route

The English Onshore Scheme comprises two underground DC cables (and fibre optic cables for performance monitoring) laid within a single trench (or where constraints dictate pulled through pre-installed ducts).

The term proposed route is used throughout this report and refers to the DC cables, trench (or installation area) and associated temporary working areas required for cable installation.

The English Onshore Scheme is split into four Route Sections as follows:

18.2.1.2.1 Route Section 1 – Landfall to Bainton

From the TJP the proposed route extends across Carnaby Moor in a westerly direction north of Fraisthorpe Wind Farm, before crossing the A165 and extending southwards across open agricultural land. The route crosses the Earl's Dyke and the Burton Agnes to Paull gas pipeline west of the A165 before continuing in a south-westerly direction.

The proposed route continues in this direction for approximately 6 km, passing the settlement of Gransmoor to the north and between the villages of Great Kelk (south of the route) and Little Kelk (north of the route). The proposed route crosses minor roads, PRoWs, smaller watercourses and unnamed drains until reaching Kelk Beck. After crossing Kelk Beck via HDD, the proposed route continues for approximately 4 km to the village of Wansford.

The proposed route runs approximately 750 m north of the village of Wansford and crosses the B1249, Driffield Canal and the River Hull between Whinhill Lock and Wansford Lock. South of this crossing the proposed route extends further westwards towards the village of Bainton crossing the Driffield to Hull railway line and the A164 whilst bypassing the villages of Skerne and Hutton Cranswick.

18.2.1.2.2 Route Section 2 – Bainton to Market Weighton

From Bainton, the proposed route extends south to Middleton-on-the-Wolds through the Yorkshire Wolds. Between Middleton-on-the-Wolds and Lund the proposed route continues south through areas of open agricultural land. The proposed route continues south to the crossing of the Wilberforce Way Long Distance Walking Route and Local Nature Reserve (LNR) (Etton-Gardham Disused Railway/Kiplingcotes Road Earthworks).

The proposed route then continues for approximately 6 km in a south-westerly direction towards the town of Market Weighton. There are crossings of the Yorkshire Wolds Way and two trunk roads, the A1079 and A1034, as the route passes Market Weighton to the south and extends into Route Section 3.

18.2.1.2.3 Route Section 3 – Market Weighton to River Ouse

Route Section 3 starts to the south of Market Weighton, and the proposed route continues south-westerly for approximately 15 km passing through agricultural land, between Holme upon Spalding Moor (north of the route) and the Tollingham industrial estate (south of the route) towards Howden. Crossings are also required of the Market Weighton Canal, River Foulness and the A614 before reaching Howden.

The proposed route extends north of Howden before extending immediately south across the Selby railway line (ensuring a right-angle crossing) to the west of the settlement. The alignment again continues to the southwest towards Asselby, extending through agricultural and plantation land and crossing the A63. The proposed route crosses Main Street to the west of Asselby village in a largely north-south direction before heading in an easterly direction to the proposed crossing point of the River Ouse and in to Route Section 4.

18.2.1.2.4 Route Section 4 – River Ouse to Drax Substation

The crossing of the River Ouse is to the south of Redhouse Lane, with the proposed route extending to the southwest to cross Main Road (through Drax) to the north of Read School. The proposed route continues west, to the south of Wren Hall, and into the proposed converter station site immediately to the east of the Drax Power Station and existing Drax 400 kV Substation.

18.2.1.3 Associated Temporary Construction Areas

Temporary construction compounds are typically utilised for the storage of plant and machinery and stockpiling materials, as well as the provision of site management offices, welfare facilities for staff (kitchen facilities, storerooms, toilet facilities), parking, and plant and material storage.

Construction of these areas will require vegetation clearance and soil removal as required. It is likely that the working surface will be formed of crushed rolled stone on a geotextile membrane over subsoil (the membrane will prevent mixing of construction materials with the underlying soil resources). The stripped topsoil will be stored on site.

A summary of the proposed temporary construction compounds is provided below:

- Landfall – specific compound (measuring approximately 1 ha (100 m x 100 m)) provided for HDD installation across the intertidal area. This area will also accommodate the Transition Joint Pit (TJP) to join marine and terrestrial cables together.
- Primary (main compound) – major cable compounds at either end of the scheme and one central location. These are approximately 2.25 ha (22,500 m^2). There are three primary compound locations on the proposed route:
  - A165 (Fraisthorpe);
  - A1034 (Market Weighton); and
  - A63 (Newsholme).
- Secondary (strategic location with good access). These are approximately 1.3 ha (13,000 m^2). There are 10 secondary compound locations on the proposed route:
  - B1249 (Wandsford);
  - Driffield Road (Skerne) (1 of 2);
  - Driffield Road (Skerne) (2 of 2);
  - A164 (Hutton) (1 of 2);
  - A164 (Hutton) (2 of 2);
  - Beverley Road (Lund);
  - Skiff Lane (Tollingham);
  - A614 east (Bursea);
  - A614 west (Portington); and
  - Redhouse Lane (Drax).

- Tertiary (satellite compound accessed from the haul road). Sized at approximately 0.5 ha (5,000 m^2) and generally located where there is flat ground and otherwise a large gap between compounds. There are four tertiary compound locations along the DC cable route:
  - Gransmoor Lane (Gransmoor Quarry);
  - Cliffe Lane (North Cliffe);
  - Unnamed road (east of Middleton on the Wolds); and
  - Unnamed road (Kiplingcotes, South Dalton).

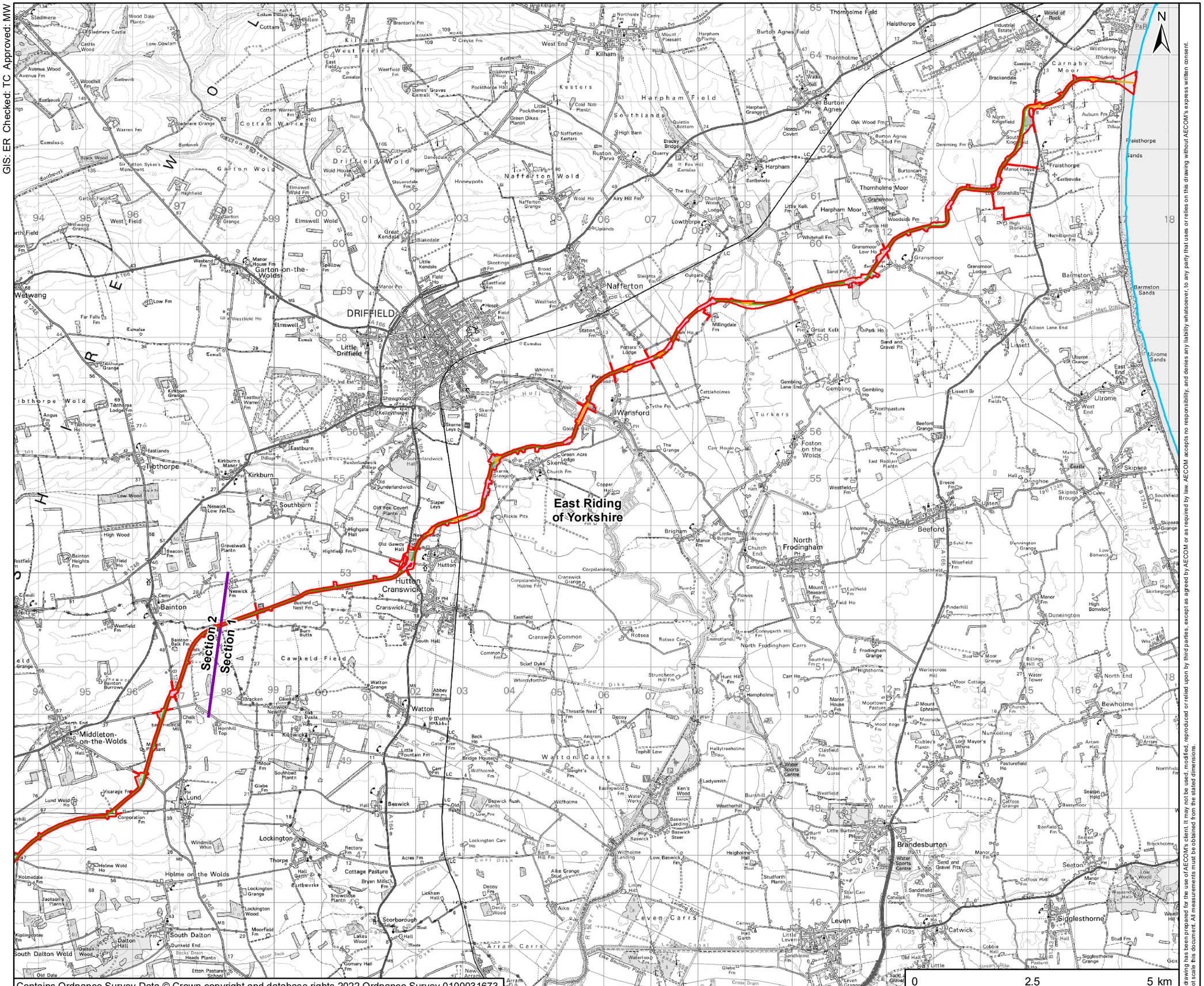
18.2.1.4 Converter Station

The proposed converter station site is located to the immediate east of the existing Drax Power Station, North Yorkshire, within an agricultural field. The site is bounded by New Road to the west, and Wren Hall Lane to the south and east. The permanent converter station will be approximately 5 ha (within the security fence line).

18.2.1.5 Underground AC Cable Route

The underground AC cables will connect the converter station to the existing 400 kV Drax substation. Six underground AC cables (two sets of three cables) will be installed utilising open cut installation methods. The AC connection will be up to 500 m in length from the converter station site, across New Road and into the Drax Substation site.

GIS: ER Checked: TC Approved: MW



Contains Ordnance Survey Data © Crown copyright and database rights 2022 Ordnance Survey 0100031673.
Contains public sector information licensed under the Open Government Licence v3.0.

Coordinate System: British National Grid

Scale @ A3 1:75,000

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

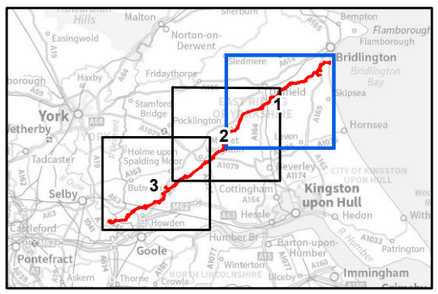
nationalgrid

PROJECT

Scotland England Green Link 2

KEY

- Planning Application Boundary
- Route Section Break
- Mean Low Water Springs
- HDD - Proposed
- HDD - Unless Otherwise Agreed to be Open Cut
- DC Cable Alignment – Open Cut
- DC Cable Route Working Width (40m)
- Temporary Attenuation Pond and Outfall
- Temporary Construction Compound



TITLE

Figure 18-1
English Onshore Scheme Overview

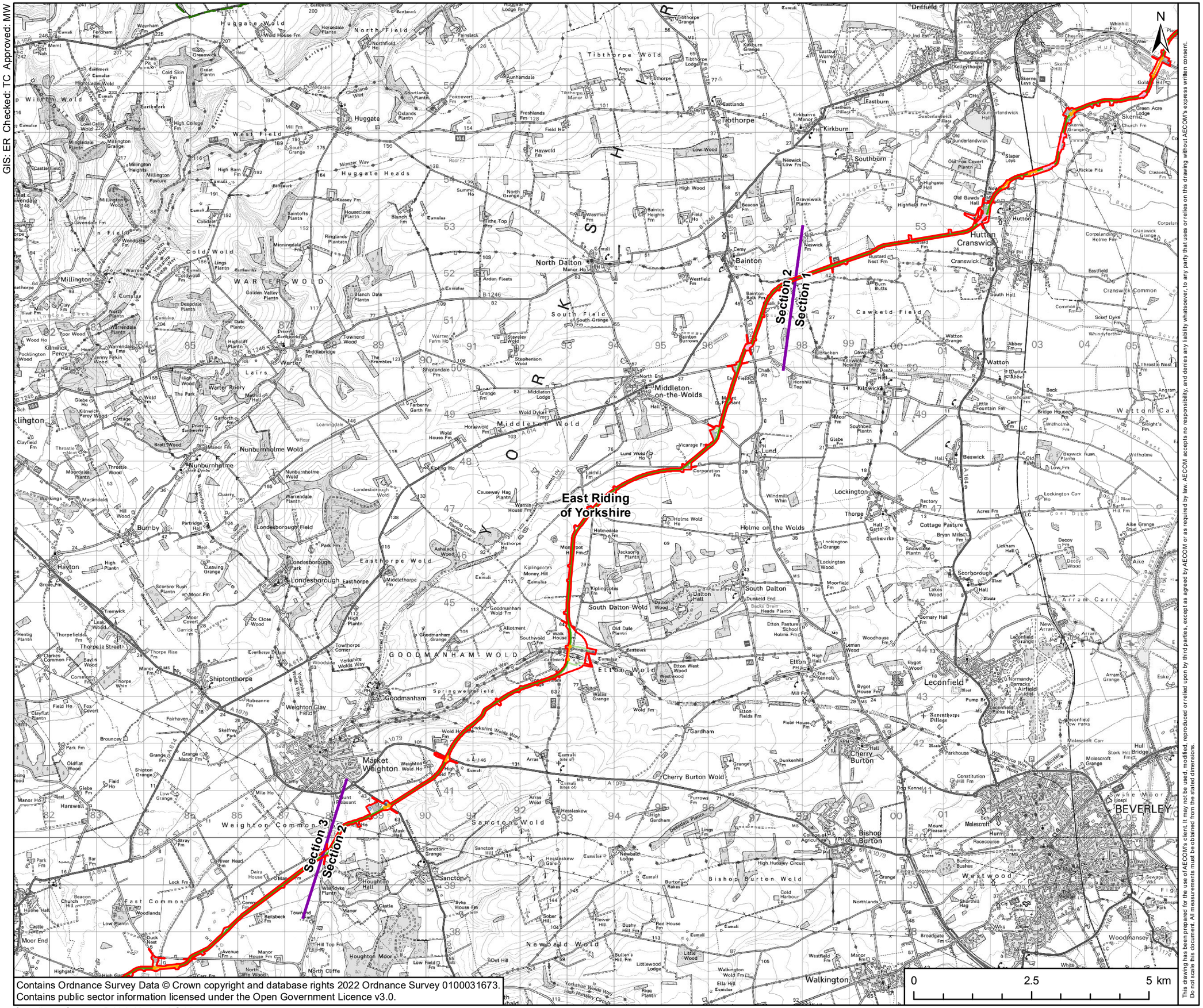
REFERENCE

SEGL2_T_ES_18-1_v1_20220530

SHEET NUMBER: 1 of 3

DATE: 30/05/2022

GIS: ER Checked: TC Approved: MW



Contains Ordnance Survey Data © Crown copyright and database rights 2022 Ordnance Survey 0100031673.
Contains public sector information licensed under the Open Government Licence v3.0.

Coordinate System: British National Grid

Scale @ A3 1:75,000

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

nationalgrid

PROJECT

Scotland England Green Link 2

KEY

- Planning Application Boundary
- Route Section Break
- District Borough Unitary Boundary
- HDD - Proposed
- HDD - Unless Otherwise Agreed to be Open Cut
- DC Cable Alignment – Open Cut
- DC Cable Route Working Width (40m)
- Temporary Attenuation Pond and Outfall
- Temporary Construction Compound

TITLE

Figure 18-1
English Onshore Scheme Overview

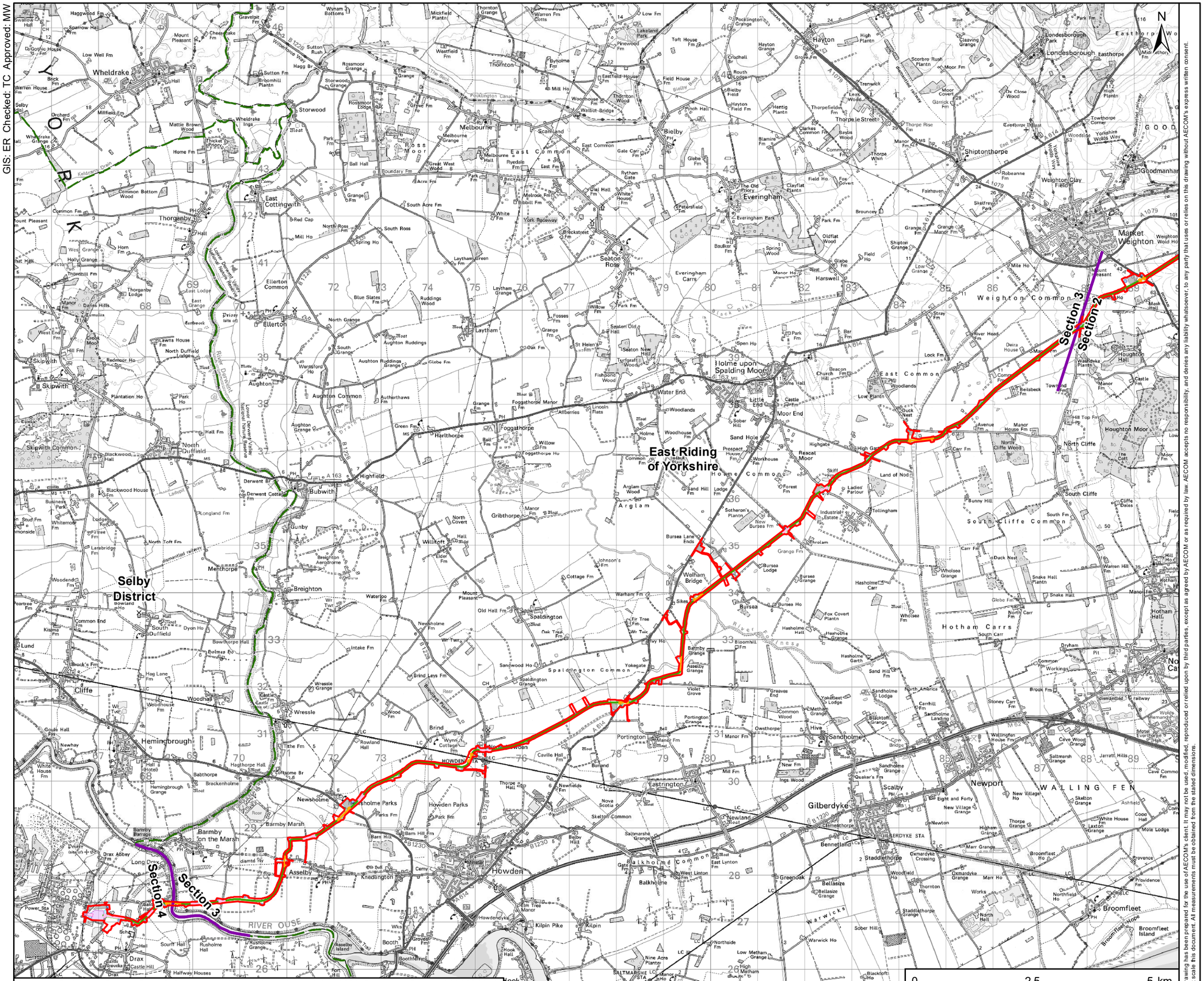
REFERENCE

SEGL2_T_ES_18-1_v1_20220530

SHEET NUMBER: 2 of 3

DATE: 30/05/2022

GIS: ER Checked: TC Approved: MW



Contains Ordnance Survey Data © Crown copyright and database rights 2022 Ordnance Survey 0100031673.
Contains public sector information licensed under the Open Government Licence v3.0.

Coordinate System: British National Grid

Scale @ A3 1:75,000

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

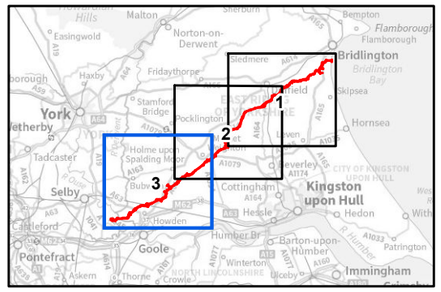
nationalgrid

PROJECT

Scotland England Green Link 2

KEY

- Planning Application Boundary
- Route Section Break
- District Borough Unitary Boundary
- HDD - Proposed
- HDD - Unless Otherwise Agreed to be Open Cut
- DC Cable Alignment – Open Cut
- DC Cable Route Working Width (40m)
- AC Cable Route Working Width (60m)
- Temporary Attenuation Pond and Outfall
- Temporary Construction Compound
- Permanent Attenuation Pond
- Converter Station Area



TITLE

Figure 18-1
English Onshore Scheme Overview

REFERENCE

SEGL2_T_ES_18-1_v1_20220530

SHEET NUMBER: 3 of 3

DATE: 30/05/2022

18.3 Roles and Responsibilities

This section of the Outline CEMP sets out the key roles and responsibilities of parties involved in the construction of the English Onshore Scheme. The detailed CEMP(s) will include contact details for key members of staff.

18.3.1 Key roles

The exact roles and responsibilities will be confirmed prior to construction; however, the following section provides an indication of the roles which are envisaged. Clearly establishing roles and responsibilities is vital to ensure the successful construction of the English Onshore Scheme, including the implementation of the detailed CEMPs.

18.3.1.1 Overall Project Manager

The Project Manager is responsible for:

- Coordinating the delivery of all elements of the English Onshore Scheme including ensuring conformance with the CEMP and other management plans, as well as any incident investigation required;
- Facilitating the dissemination of generic environmental requirements to the project team;
- Oversee the implementation and review of environmental procedures throughout the project;
- Monitoring the environmental performance of the project through maintaining an overview of incidents, inspections and audits;
- Ensuring that environmental considerations form an integral part of design and implementation of the works and to include environmental reviews as part of regular project meetings;
- Review environmental matters with HSE Manager/ Advisor on a regular basis and as per project requirements;
- Liaise with Project HSE Manager on all environmental issues as appropriate;
- Ensure that all environmental incidents are reported to HSE Manager/ Advisor according to agreed procedures; and
- Nominate individual project team members to support NGET in public relations and community liaison activities, including local community meetings.

18.3.1.2 Site Manager/ Engineer

The Site Manager/ Engineer, working with the Project Manager is responsible for:

- Understanding and implementing all environmental procedures as identified in the CEMP, and ensuring that site operations function in compliance;
- Reviewing risk assessments and method statements (RAMS) and/ or environment method statements (EMS) submitted by the Contractor prior to beginning new works activities;
- Reviewing the Safety, Health and Environment (SHE) Plan, prepared and amended by the SHE Manager/ Advisor;
- Reviewing and monitoring the implementation, and accuracy of, the CEMP;
- Conducting incident investigation in the event of an incident or near miss being reported by any worker or member of site management staff during site walkovers or inspections;
- Monitoring of Contractor compliance with plans and procedures;
- Liaising with the emergency services;
- Conducting regular site inspections;
- Reviewing applications for environmental consents and permits in line with the Project Manager; and

- Notify HSE team (and/ or local authority) when a variation in working time may cause impact upon local residents or upon a local authority consent.

18.3.1.3 Safety, Health and Environment Manager/ Advisor

The SHE Manager/ Advisor is responsible for:

- Providing site inductions and toolbox talks on safety, health and environmental matters and sensitivities to the appropriate staff prior to works being undertaken;
- Preparing, reviewing and updating the SHE Plan;
- Assisting the Project Manager and Site Manager/ Engineer in reviewing and approving RAMS and/ or Environmental Method Statements (EMS);
- Ensuring the RAMS/ EMPs are implemented, ensuring compliance with procedures and legislation. Check all documents for Duty of Care requirements;
- Ensuring Duty of Care with respect to all waste generated on Site;
- Preparing site specific mitigation plans in consultation with statutory consultees to ensure works can proceed in accordance with all environmental commitments and legislation;
- Providing technical advice on the implementation of the CEMP including changes to legislative requirements and best practice;
- Undertaking regular site inspections/ walkovers to ensure construction practice is compliant with best working practices and approved RAMS/ EMS. Between the SHE Manager/ Advisor and Environmental or Ecological Clerk of Works (ECoW) environmental inspections will be undertaken daily. The SHE Manager/ Advisor will have the authority to stop work where non-compliant working is observed;
- Reporting any health and/ or safety incidents to Site Management as per a defined reporting procedure (to be defined in the Detaied CEMP and Project SHE Plan);
- Providing health and safety advice to construction managers;
- Attending all construction progress meetings and providing updates on safety, health and environment performance of construction works. Also ensuring regular discourse with project site staff and subcontracted companies on environmental issues;Investigating environmental complaints (in line with the Stakeholder Communications Plan, see section 18.4.2);
- In conjunction with NGET, liaise with government departments, local authorities and other statutory authorities on environmental matters. Obtaining consents and permits, as per project needs; and
- Ensuring that spill kits are checked at least weekly and kept fully stocked and in good repair.

18.3.1.4 Environmental Clerk of Works

An Environmental or Ecological Clerk of Works (ECoW) will be appointed for the duration of the construction. The purpose of this appointment is to ensure that the environmental interests of areas that may be affected by the works are safeguarded. The ECoW will have the appropriate authority to review RAMS, oversee works and recommend action as appropriate, including temporarily stopping works where non-compliant working is observed, for example to safeguard protected species and their habitats, or where any other breaches of environmental legislation are likely to occur.

The ECoW will ensure the implementation of, and compliance with, the provisions of the CEMP and the mitigation contained within the ES as well as licensing or other conditions imposed on the construction.

The ECoW may be a company who provide a general Clerk of Works who can liaise with a team of internal specialists (Technical Specialist Advisors) on specific environmental subjects, for example, ecology, soils, noise, air quality, or pollution where required throughout construction, or a suitably qualified individual.

In summary, the ECoW is responsible for:

- Inspections of the Contractor’s work site to ensure compliance with environmental standardn=s and requirements;

- Weekly routine audits of the Contractor's compliance with the CEMP – site activities and record keeping;
- Monitoring or inspection of site activities in response to incidents, breaches of the CEMP or complaints received from a third party;
- Inspections of works to ensure that environmental mitigation measures incorporated into the design have been implemented;
- Implementation of corrective mitigation measures where proposed mitigation results in effects over and above those within any ES, licenses or planning conditions; and
- Delivering toolbox talks on environmental matters and sensitivities to the appropriate staff prior to works being undertaken.

18.3.1.5 The Land Officer

The Land Officer is responsible for:

- Discussing/ agreeing all conditions relating to access, including fencing, gates, access to severed land, stock relocation, reinstatement, drainage, security and the complaints handling procedure with local land owners;
- Liaison between the Contractor, landowners / tenant farmers, other English Offshore Scheme stakeholders and National Grid Land Officer/Surveyor and/or appointed land officer supplier;
- Being the first point of contact for any individuals, or agents of people, with interest in land and for all land related matters;
- Dealing with all matters relating to compensation claims or losses from those with land interests arising as a result of the English Onshore Scheme; and
- Attending all construction progress meetings.

This role may be supported by an Agricultural Liaison Officer (ALO) (or similar), employed by the Contractor to provide local landowners and those with land-related interests information regarding daily construction activities. The ALO will assist on activities listed above, as well as providing the Land Officer with information regarding the Contractors' use of appropriate access points and relaying information on any inadvertent damage to fences, gates, drains, trees or buildings from construction activities. . The Land Officer/ ALO will work closely with the National Grid Land Officer/Surveyor, with a clear scope agreed to prevent the overlapping of NGET and Contractor Land Officer responsibilities.

18.3.1.6 Traffic Safety and Control Officer

If not undertaken by a named member of the Contractor's SHE team, a Traffic Safety and Control Officer (TSCO) may be appointed for the duration of the construction of the English Offshore Scheme to act as the main point of contact and undertake the following duties in relation to traffic management:

- Ensure that works are being carried out in accordance with the Construction Traffic Management Plan (CTMP);
- Check all Traffic Management drawings for compliance prior to issue;
- Manage applications for any required temporary Traffic Regulation Orders in relation to any required road closures, one-way restrictions or partial blocking of the highway, or implementation of temporary speed limits; applications for the introduction of temporary traffic lights; or other notification to the Local Highways Authority (ERYC and/or SDC)
- Ensure sufficient resource is available to maintain Traffic Management on site; and
- Investigating and managing traffic related complaints (in line with the Stakeholder Communications Plan, see section 18.4.2); and
- Monitor the Traffic Management schemes and layouts to ensure their effectiveness and safety to workers and public.

18.3.1.7 Site Security

Site Security is responsible for:

- Mobilising site emergency contacts in the event of an out of hours incident occurring; and
- Containing the spill if it is safe to do so and have received spill control training.

18.3.1.8 All Other Project Staff

All other project staff will be expected to:

- Understand and implement procedures relevant to their role as laid out in the CEMP;
- Conduct their work with a view to reducing the environmental impact of the English Onshore Scheme and to raise any environmental concerns with Site Engineer/ Manager or SHE Team; and
- Report all environmental incidents to Site Manager or SHE Team as soon as possible.

An environmental incident response team is to be identified. They will be trained and competent to attend environmental incidents and provided with appropriate equipment to deal with any reported incident.

18.4 Communications, Reporting and Training

18.4.1 Communication

To ensure that all parties involved in the construction are aware of the environmental mitigation requirements, controls and reporting requirements as agreed within the detailed CEMPs, the final document will be circulated to:

- the Client (NGET);
- the Contractor (including all subcontractors);
- Local Planning Authorities; and
- statutory and non-statutory consultees, as required.

This document will be maintained within the SHE management system and a hard copy kept within the site office.

Weekly SHE meetings will be held, which the HSE Manager/ Advisor and ECoW will attend. These meetings will communicate, discuss and consult any change in conditions, working practices, health, safety and environmental arrangements, procedures and overall environmental performance. The meetings will include any near misses or hazards that have been identified and any residual risks that have been identified in conjunction with the implemented environmental protection measures. The meetings will be minuted, will include attendance records, and will distributed to all relevant parties for reference.

The weekly SHE meetings will be augmented by additional meetings at intervals dictated by the requirements of the contract or at key stages of the works. Minutes of all such meetings will be produced and held on file for record purposes, with copies supplied to all relevant parties. The Project Manager will ensure that lessons learnt on one element of the English Onshore Scheme (for example the converter station) are communicated to other areas to ensure best practice across the project.

Environmental issues will be further communicated to all relevant parties by means such as the following:

- Environmental Policy Statement (to be displayed on a dedicated Environmental Notices Boardas a minimum);
- Project Environmental Plan,including site specific EMP’s, and associated documents (for example Site Waste and Material Management Plan);
- Key environmental constraints maps, including exclusion zones to be displayed on site notice boards (whilst maintaining confidentiality of sensitive species and/or landowner requirements);

- RAMS (risk assessments and method statements);
- Site Coordination Meetings;
- Management Review Meetings;
- Environmental briefings and Tool Box Talks (including the presentation of a weekly environmental log that includes a look ahead to the activities required in the following week and the specific mitigation required);
- Site induction and training sessions;
- Audits;
- Consultation with Local Authorities and other regulatory bodies;
- Advance notification to residents advising of project works;
- Project Enquiry/Complaints line; and
- KPI reporting to NGET, Contractor and other third parties as required.

It is also anticipated that staff will be provided with project Contact Cards, to pass out if questioned or approached by public. The cards would include relevant project contact information, such as the contact details of key site personnel dealing with the complaints and/ or the complaints helpline (details of which will be confirmed within the detailed CEMPs), and links to sources of information such as the project website.

18.4.2 Public Communications and Liaison

Prior to commencing works on site, the Contractor will develop and implement a Stakeholder Communications Plan that includes community engagement. All public communications will be co-ordinated through and agreed in advance with NGET.

The Contractor will provide details (postal and email address) of the named contacts to which all written complaints should be addressed and will also be responsible for the implementation of an appropriate system for logging and recording any complaints received. This log must be made available to the local authorities (ERYC and SDC) if requested. A 24-hour free telephone complaints helpline and a project website may also be established. The key contact details and the head or regional office contact information of the Contractor/construction company will be visible on boards placed around the perimeter of the construction site(s) in appropriate locations where they would be visible to the public. These details will also be provided to relevant departments of ERYC and SDC.

If members of the public directly approach a member of site staff and raise a concern regarding the site works, the staff member will direct them, via a Contact Card or similar, to the key site personnel dealing with the complaints and/or the complaints helpline as well as recording details. In all cases, staff will inform the Site Manager and Project Manager as soon as possible and always respect landowners' and residents' concerns. If the situation escalates members of staff will leave site until the situation has been resolved, making sure that the working area is left in a safe condition.

Any complaints received will be acknowledged within 24 hours during all hours when works, including deliveries, are taking place. The Contractor will ensure that all complaints receive a written response, including details of any action undertaken (if such action is deemed appropriate). The Contractor will provide NGET with a monthly report that details all complaints, who they were filed by and the actions taken.

Where required, in addition to ensuring that the public is fully informed of the proposed programme of works (including working hours), the Contractor will ensure that procedures are established for notifying the public in advance of planned works. It should also be noted that the agreed period of advanced notification will similarly apply to any alterations in the construction programme or working hours that have been agreed with the Contractor and the relevant departments at ERYC and SDC.

Any environmental complaints received will be investigated, with appropriate action taken and recorded, so that a full audit trail is available should the complainant raise the issue(s) with the appropriate local authority. The complainant would be provided with a response outlining the results of the investigation and any action taken.

18.4.3 Communication with other sites

The Contractor must ensure that regular liaison and coordination meetings are held with developers/ contractors of other projects in the vicinity of the English Onshore Scheme. The meetings should ensure that activities are coordinated, and environmental impacts (for example dust and particulate matter emissions) are reduced as far as possible It is also important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

18.4.4 Inductions and Training

The Contractor will develop an environmental communication and training plan prior to physical works. It will include training requirements for all employees, sub-contractors, suppliers and other visitors to promote environmental awareness throughout the English Onshore Scheme. Details of the proposed training will be provided to NGET prior to commencement of construction works. Additional training/ toolbox talks may be required outside of this based on circumstances such as unforeseen risks, repeated observation of bad practices, perceived lack of awareness, pollution event, etc. A record of all training and attendees will be maintained within the SHE management system.

All construction personnel will be required to hold a current valid Construction Skills Certification Scheme (CSCS) Card or equivalent and to have received a site-specific induction, prior to gaining regular access. Site specific logistics, safety and environmental information will be provided at the induction, so that all personnel including visitors are aware of the potential environmental issues. The induction will also include measures required to be undertaken to respect the local community and to outline any risks and preventative measures associated with their operations.

Information from the site induction will be displayed prominently on noticeboards at suitable locations around the site, such as the site canteen and reception, so that all personnel and visitors are reminded and informed of any changes to the existing systems and informed of any new procedures.

The induction should include the following topics, as a minimum:

- Waste management;
- Concrete management;
- Ecology (including species and/or habitat protection);
- De-watering of excavations;
- Working in or near watercourses;
- Surface water and groundwater pollution and control;
- Spill response;
- Sediment and dust management;
- Noise management (prevention of nuisance);
- Archaeology;
- Soil management including ground stability as well as stripping and storage;
- Environmental incident and emergency response procedures (see below); and
- Reinstatement techniques.

Delivery drivers will also be required to undergo a site induction; however this may be reduced in scope/ detail due to the nature of their works on site.

In addition to the site induction, the Contractor will ensure all personnel are suitably trained on general site good practice and emergency procedures. Training will be provided by a suitably qualified person on a regular basis. Training and awareness raising will include, but will not be limited to:

- Briefing staff on the Plans through presentations;
- Toolbox Talks on site specific issues (further details provided below);

- Method Statements are to include environmental elements including, but not limited to, (as appropriate) surface water management (including appropriate sediment control methods), task specific risk assessments, biosecurity, and reinstatement methods;
- Pollution prevention training to include practical element for site-based staff (including the practical use of spill kits and training on the consideration and selection of appropriate sediment mitigation installation); and
- Emergency training to include fire prevention techniques particularly for land cable operators.

In order to provide on-going reinforcement and awareness training, the topics outlined in the site induction, along with any other environmental issues which arise on site, will be discussed at regular Toolbox Talks, which will be site specific where required. The SHE Manager/ Advisor will maintain a schedule of Toolbox Talks. The proposed schedule - to be considered as a live document - will be coordinated with the programme of works such that relevant training is presented in a manner timely to the risks presented by upcoming (or on-going) operations. Additional Toolbox Talks will be added to the schedule as required based on circumstances such as unforeseen risks, repeated observation of bad practices, perceived lack of awareness, pollution event, etc. Toolbox talks will be provided by the SHE Advisor/ Manager and ECoW (or other relevant specialist such as archaeological clerk of works) throughout construction of the English Onshore Scheme to provide on-going reinforcement and awareness training of environmental sensitivities and issues likely to be encountered.

Appropriate personnel (such as site foremen and machine operators) will also receive additional environmental training in order to ensure project work is carried out with due regard to environmental protection and to minimise on environmental impact of the English Onshore Scheme. For example, specific refuelling training for named refuellers, waste management/ Duty of Care training for any staff with responsibility for waste management.

An environmental risk map, showing all sensitive areas, exclusion zones, wash out areas, watercourses, refuelling locations and waste management facilities will be displayed on the site notice board(s). The map will remain ‘live’ and will be updated throughout the lifetime of the English Onshore Scheme and re-issued as required. As well as being prominently displayed, it will be provided to site staff, for example foremen, as required. It is expected that an electronic version will be accessible to all site staff via a shared project site.

18.4.5 Environmental Monitoring and Reporting

In addition to audits carried out by NGET, the Contractor will implement its own programme of audit and inspections to check that site operations are in compliance with the CEMP, current procedures and legislation; are using Best Practice; and that the mitigation measures are being effectively implemented. Inspections will be undertaken for the duration of construction of the English Onshore Scheme and will provide a measure of performance towards achieving the project objectives and targets. The Incident Response Plan (IRP) will set out how the project will respond to incidents and pollution events, for example silty run off to surface waters, and how these are to be reported (both internally to the project and externally).

18.4.5.1 Pre Construction Audit

Prior to construction a pre-construction audit will be undertaken by the ECoW to ensure that any specific requirements of this CEMP and relevant legislation, licenses and consents have been met. This audit will determine the adequacy of the system set up for management, mitigation and monitoring measures related to waste, pollution and the environment.

18.4.5.2 Daily Site Checks

Daily site checks will be carried out of the construction compounds and other working areas as required, including access roads and cable route working width. Checks will be undertaken by the SHE Manager/ Advisor and/or ECoW, or other suitably qualified staff. Any actions resulting from these checks will be reported at weekly progress meetings.

18.4.5.3 Weekly Site Inspections

A weekly site inspection will be carried out by the SHE Manager/Advisor and/or ECoW to identify any breaches and/or environmental incidents and identify suitable corrective measures. A report will be written for each inspection documenting the findings and any corrective measures suggested to be implemented.

18.4.5.4 Monthly Site Audits

Monthly environmental audits will be undertaken by the SHE Manager or designated auditor. The audit will evaluate compliance with environmental legislation, requirements of the CEMP, best practice and any other NGET or scheme-specific requirements. A report will be written for each audit documenting the findings and any corrective measures suggested to be implemented.

18.4.5.5 Records

The following records will be maintained to demonstrate conformance to the CEMP:

- Induction and training records;
- Site inspection reports;
- Incident Reports;
- Supplier and contractor records;
- Audit reports on 3rd parties;
- Drainage consents;
- Licences/ Permits; and
- Superseded copies of Environmental Plans.

18.4.5.6 Document Control

A document management system will be used by the Contractor to process and manage documents associated with the English Onshore Scheme. The system should process documents throughout their life cycle from inception through creation, review, storage and distribution, archiving or destruction.

18.5 Construction Environmental Management

This chapter of the Outline CEMP describes the general environmental management measures and best practice that will be implemented during the construction of the English Onshore Scheme to maximise ecological and environmental protection. The measures set out in this section are applicable to numerous environmental topics and have been considered within the impact assessment process where pertinent. Receptor specific mitigation that has been identified within **Chapters 7** to **16** of the ES is detailed in Section 18.6.

18.5.1 Health and Safety

NGET are committed to ensuring the health and safety of site personnel and the protection of the environment in accordance with the Construction (Design and Management) Regulations 2015 (CDM) (Ref 18-1) and the principles and philosophy behind these. Therefore, a separate project specific Safety Health and Environment (SHE) Plan is expected to be produced in accordance with relevant legislation.

All staff, site visitors and delivery drivers will receive a relevant HSE induction to ensure they are aware of site hazards and health, safety, and environmental management requirements. Site staff will be briefed daily by the contractors prior to commencing work. Site-specific risk assessments will be carried out to ensure the risk strategy of the frequently changing workplace remains relevant. The contractors will be required to carry out audits and inspections throughout the construction phase.

18.5.2 Working Hours

The majority of works activities would be completed under normal working hours/ restrictions as follows:

- Monday to Friday: 07.00 to19.00;

- Saturday: 07.00 to 17.00; and
- No working on Sundays, or Bank Holidays unless otherwise agreed with ERYC and/or SDC.

The agreed working hours will be set out in the Detailed CEMPs.

18.5.3 Micro-siting

As a result of ongoing environmental surveys, as well as ongoing detailed design of infrastructure, micro-siting of works may be required, particularly in relation to cable installation. When considering the need for micro-siting the best practice principles listed below will be followed. Further detail will be provided in the site-specific RAMS. Key factors which will be considered include:

- Avoid localised topographic constraints (steep slopes etc.);
- Consider the proximity to residential properties;
- Avoid important habitat areas;
- Avoid impact on ancient woodlands;
- Avoid or minimise impact to hedgerows;
- Consider the proximity to mature/semi-mature trees (avoid removal, avoid damage to branches and trunks, prevent undermining of roots, prevent damage to roots by trafficking);
- Minimise watercourse crossings and maximise buffer distances between watercourses and standing water;
- Take account of buffer zones and timing constraints when works are in proximity to known breeding bird areas;
- Identify and avoid other important bird areas;
- Avoid areas (or adopt appropriate mitigation) which have known records of protected species (otter, bats, badger, water vole etc.) - to be confirmed by pre-construction surveys where relevant;
- Identify new records of protected species (from Pre-construction surveys) and adjust route accordingly;
- Avoid, where possible, sites of archaeological interest;
- Avoid areas where potential for works to create silt and pollution of watercourses is increased;
- Identify rights of way, paths and bridleways and ensure appropriate siting to allow mitigation to be undertaken (e.g., crossings, diversions etc.);
- Avoid and/or take account of private water supply locations;
- Any other information identified in the site surveys or RAMS; and
- Mark out access routes avoiding sensitive areas where possible (e.g., flushes, drainage channels, ditches, steep slopes). Ensure that access routes are as short as possible, and avoid the wettest areas of ground.

18.5.4 Lighting

The Contractor will provide and maintain all lighting for the construction works and the site welfare and site security cabins. Task specific lighting will be required for winter working (due to the short-day lengths when lighting will be required at the beginning and end of the day).

Lighting will be directional with care to minimise potential for light spillage beyond the site particularly towards houses, live traffic, and neighbouring habitats especially where there are known populations of sensitive species (e.g., badger setts, bat roosts or foraging areas, etc.) and will be designed with reference to the Institute of Lighting Professionals Guidance Notes (in particular GN-8: Bats and Artificial Lighting (Ref 18-2) which was produced in collaboration with the Bat Conservation Trust, and GN-1: Reduction of Obtrusive Light (Ref 18-3)) in so far as it is reasonably practicable.

Lighting will be used only when required and will comprise lighting of work areas and access and egress with low level directional lighting. Motion sensor lighting will be used in areas of high security risk and access and egress.

The following measures will be applied by the Contractor at all times for any lighting provided at or above ground level:

- Lights installed will be of the minimum brightness and/ or power rating capable of performing the desired function;
- Light fittings will be used that reduce the amount of light emitted above the horizontal (reduce upward lighting);
- Light fittings will be positioned correctly and directed downwards;
- Direction of lights will seek to avoid spillage onto neighbouring properties or habitats;
- Passive Infra-Red (PIR) controlled lights (motion sensors) will be considered for use where appropriate as these may be more acceptable to neighbours than those which are controlled by a time switch or are on all the time. These will be given particular consideration in areas of high security risk and access and egress; and
- Unnecessary lights will be switched off.

18.5.5 Security, Vandalism, Theft and Fly Tipping

The Contractor will be permitted (subject to appropriate planning approvals) to use:

- Perimeter fencing or hoarding for site security and public safety, placed so that Public Rights of Way (PRoW) are maintained or appropriately diverted; and
- Motion sensor lighting in areas of high security risk.

The Contractor will consult with local police on security proposals and review arrangements throughout the period of the contract.

The Contractor will ensure that construction compounds including offices are adequately secured to protect the public and prevent unauthorised entry to or exit from the site; and will ensure that action is taken to securely store project plant and equipment so as not to attract opportunist thieves. Valuable materials, or those that are hazardous or attractive to thieves, will be stored in a secure area, out of sight of the public.

The Contractor will undertake site-specific assessments of the security and trespass risk for each working area (substation, cable routes etc.) and will ensure that suitable security arrangements are implemented to prevent unauthorised access to the sites. Access to the construction compounds will be limited to specified entry points only and personnel entries/exits will be recorded and monitored for both security and health and safety purposes, the gates will be kept secure unless they are being used.

Security units will patrol the construction works.

Vandalism, theft and tipping are common causes of pollution and the project area will be adequately protected by fencing and locked access to discourage unauthorised access. Any occurrence of tipping on the site will be reported to the site management who will then inform the local environmental authority and the police if necessary.

18.5.6 Pollution Prevention

The Contractor will create a programme that includes dates where elements requiring works around watercourses will be constructed.

It is an offence to permit or cause pollution to the hydrological environment (including all surface water, groundwater and wetlands) either accidentally or deliberately (Ref 18-4). Surface water refers to all inland waters (other than groundwater) such as lakes, rivers, drains, estuaries and coastal water. Wetlands refer to particular areas of ground where the ecological, chemical and hydrological characteristics are attributed to frequent inundation or saturation by water.

Any pollutants getting into surface or foul drainage systems may end up polluting the nearest river or groundwater and can be traced back to source and could lead to prosecution of the company or individual by the regulator (ERYC, SDC, relevant Internal Drainage Board (IDB) or the Environment Agency (EA)). Where a discharge to drains/sewers is required this must be under permit from the EA/ ERYC/ SDC. Copies of consent documents must be kept and maintained by the Contractor's Site Manager.

If works within a watercourse is required, then approval from the Lead Local Flood Authority (LLFA), IDB or EA may be required. The Contractor must give the SHE Manager adequate notice (3 to 6 months) of upcoming works around watercourses so that consents can be applied for and specific mitigation measures can be developed. When developing methodologies and mitigation, the Contractor should refer to Pollution Prevention Guidelines for Works and Maintenance in or near Water (PPG5) (Ref 18-8). It is noted that the EA no longer provides 'good practice' guidance (withdrawing PPG5 from their library in 2014) and that consequently these guidelines are not endorsed by the EA as regulatory guidance in England. However, PPG5 is maintained and issued by the Scottish Environment Protection Agency and National Resources Wales and remains a useful source of good practice guidance for the design and mitigation of works within and near watercourses.

Where practicable, the Contractor will make sure the storage of any potentially polluting materials, plant and equipment will be more than ten metres from any water body, including surface water drains. Where works at river crossings are required, the Contractor (in liaison with the SHE Manager) will complete a risk assessment and adopt best practice measures to minimise risk to watercourses.

The Contractor will make available a suitable quantity of pollution control equipment, including consumable items such as absorbent pads and absorbent granules or similar material. These materials will be readily available at the Site always and a regular check during the weekly inspections made to see that they are available. Adequate provision will be made to ensure that absorbent pads, booms and granules are kept dry prior to use. The Contractor will make provisions for access to more sophisticated containment/ clean-up equipment such as absorbent booms, river booms etc, which will be 'boxed' and readily transportable at the construction base/site establishment and available for immediate dispatch to a spillage.

18.5.7 Spill Response and Spill Kits

18.5.7.1 Spill Response

In the event of a pollution incident the Contractor will follow the below processes. These will form that basis of a Spill Response Plan (typically a flow chart diagram to be advertised at site notice boards and high-risk areas such as refuelling areas):

- Spill kits will be available in the event of fuel spillage and personnel will be trained in their use, including which type of spill kit to use on specific types of spill;
- Any liquid waste spillages or leaks (including fuel, oils, chemicals and silty run-off) must be reported to the ECoW or Environmental Manager. Should a serious environmental incident occur this will be reported to the Project Manager for further action;
- In the event of a spill or a leak, the flow of pollution must be stopped and contained *immediately* if it is safe to do using spill kits, earth, sand or polythene to prevent pollution reaching drains and watercourses, or from soaking into the ground. All Method Statements will identify emergency procedures for each operation;
- Spill kits must be replenished following use and spill kit materials used disposed of appropriately;
- Spillages must not be washed into drainage systems or watercourses and detergents must not be used. Biodegradable oils or detergents must not be put into watercourses under any circumstances;
- Used absorbent materials and contaminated spoil must be swept up, or dug out, and contained in an appropriate container and arrangements made with an appropriately licensed waste contractor for disposal according to management procedures;
- The cause of any spill and leak must be investigated to prevent a reoccurrence. The HSE Manager or ECoW will provide advice regarding further appropriate remediation requirements, and will contact the appropriate regulatory body if appropriate: Working practices to be changed (if required) in accordance with the findings of the investigation;

- Details of the investigation and any changes to working practices will be changes communicated to all relevant personnel as appropriate and project documentation updated as required; and
- Reporting requirements will be as per the Incident Response Plan (IRP) to be prepared by the Contractor (in agreement with NGET) prior to construction, which is to conform to Schedule 3 Annex 2 of National Grid's Contractor Health & Safety Performance Requirements (CHSPR).

18.5.7.2 Spill Kits

Spill kit location points should be identified on a drawing (posted on notice/ RAMS boards) and clearly advertised with signage. Spill kit locations and requirements should also be detailed in RAMS. Spill kit points must include and have access to the following equipment and information:

- Absorbent granules, wipes, and socks;
- Drain covers;
- Plastic bags and ties for used spill kit materials;
- Plastic bunds or trays;
- Relevant and up-to-date material safety data sheets and COSHH information for substances used on site; and
- Shovels and brooms.

Spill kits will be made available in the following locations:

- Adjacent to all fuel storage and refuelling areas;
- Watercourse crossings; and
- All mobile plant.

Additionally, as a minimum that all vehicles that access the construction site will carry an "Emergency Grab Pack"/ spill kit for immediate use in the event of a pollution incident.

When work is being undertaken in hydrologically and ecologically sensitive areas identified by the ECoW, spill kits will be available adjacent to the works. The size/ number of spill kits available should reflect the scale of the works and the potential scale of any spillage.

Spill kits must be contained in a suitable, labelled, weather-proof receptacle which can also be used to contain and transport contaminated spoil and absorbent materials (for example plastic bin or sturdy bag). Additional equipment for sensitive locations may include:

- Plugging clay and slab;
- Absorbent cushions; and
- Booms.

The SHE Manager (or named representative) will be responsible for ensuring that spill kits are checked at least weekly and kept fully stocked and in good repair.

18.5.8 Storage of Oil, Fuel and Chemicals

Details on the storage of waste will be provided in a Site Waste Management Plan (SWMP) to be produced by the Contractor prior to construction. Facilities will be provided for the collection, segregation, treatment and disposal of solid and liquid waste.

The following measures will be implemented on site for the storage of materials by the Contractor.

Oil, fuel and chemical storage location points will be identified drawing (posted on notice/ RAMS boards) and clearly advertised with signage. Where required these should also be detailed in the RAMS to be provided by the Contractor. In accordance with the COSHH Regulations, all containers must be clearly marked as to their contents.

On-site storage of oil, fuels and chemicals will be avoided if possible. Where on-site storage is required, the volumes to be stored will be minimised as far as practical through efficient management of resource. The Contractor will appoint nominated refuellers and these personnel will undergo appropriate training.

The transfer of fuel between machines or plant is forbidden. Storage of oil, fuels, and chemicals will be at least 10 m from any watercourse including surface water drains; and at least 50 m from any borehole or well. Storage of oil, fuels, and chemicals will also be away from ecologically sensitive sites such as badger setts.

Oil storage containers include:

- Oil drums and fixed tanks;
- Intermediate bulk containers (IBCs);
- Mobile bowsers - containers designed to store and dispense oil that can be moved between locations but not under their own power; and
- Some types of generator and transformer.

Clearly defined areas for the storage of oil, fuel and chemicals will be identified as part of the site establishment process. Issues to be considered when siting oil storage on site include:

- Suitability of ground conditions e.g., can the area be protected against flood damage/ inundation/ subsidence;
- Proximity to sensitive environmental receptors such as surface waters, surface water drainage systems;
- Ease of access to proposed storage area for oil deliveries/ refuelling;
- Ability to secure proposed oil storage areas (to prevent theft/ vandalism);
- Ensure no fuel stores are sited where they could be hit by moving vehicles and plant; and
- Ensure all site staff are aware of designated fuelling areas and also those areas where fuelling is not permitted.

Storage areas will:

- Have an impermeable base;
- Have control measures in place and have adequate spill kits easily accessible;
- Be adequately signed/ labelled;
- Be secured against damage/ theft/ vandalism; and
- Be located away from areas of vehicle movement to avoid impact and damage; and install protective barriers or fencing where required.

Spill kits and drip trays will be provided for all equipment and at locations where any liquids are stored and dispensed. Spill kits will be located and maintained at all oil storage and refuelling locations (see also Section 18.5.7). Storage tanks must comply with the requirements of Government guidance and the Control of Pollution (Oil Storage) (England) Regulations, 2001) (Ref 18-5) and be:

- In good repair;
- Fit for purpose;
- Appropriate type and capacity for contents; and
- Be appropriately labelled identifying the contents.

Mobile fuel tanks will be double skinned and locked when not in use, be of appropriate type and capacity for the contents and in good condition. They will be appropriately labelled identifying the contents.

All oils, fuels and chemicals must be stored in bunded, or secondary containment, facilities in the compound area or on site. Drip trays and plant nappies do not constitute bunding. Bunding or secondary containment, must:

- Provide, for a single tank, at least 110% of the maximum storage capacity of the tank;
- Provide, for two or more tanks in one secondary containment system, at least 110% of the biggest tank's maximum storage capacity, or 125% of the total maximum storage capacity of all the tanks, whichever is the greatest;

- Be impermeable to water and oil;
- Be intact and without openings or valves for drainage;
- Any draw-off pipes and fill pipes that pass through the containment system must be adequately sealed;
- All valves, filters, sight gauges, vent pipes, and taps must be within the secondary containment, and so that any oil lost will be retained within it;
- Any sight gauge must be supported and fitted with a valve that closes automatically when the gauge is not in use;
- Fill and draw-off pipes must be located or protected so that they cannot be damaged by an impact or collision;
- All taps and valves fixed to the storage tank, through which oil can be discharged to the open, must be fitted with locks and locked shut when not in use;
- Hoses to be fitted with trigger-type handles suspended back within the bund after use;
- Valves and trigger filler handles to be kept padlocked when not in use; and
- Fuel bowsers will be kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism.

All static Plant, such as pumps and generators, will be double skinned (integral drip trays) where possible or as a secondary requirement for external drip trays, that are to be checked and emptied daily in accordance with the SWMP (to be produced by the appointed contractor prior to construction). Spill mitigation (drip trays and plant nappies) must be used for all other static plant for example pumps, generators and compressors. Oil, oil powered pumps and generators must be positioned on spill mitigation and located at least 10m from any watercourse (increasing to 50m where practical). Plant nappies should be used in preference to drip trays. Drip trays must be monitored and emptied regularly with inspections being carried out daily or more frequently during periods of wet weather. Drip trays must not be allowed to overflow. The effluent collected from drip trays and waste plant nappies must be disposed of as hazardous waste and in accordance with the site specific SWMP.

To prevent the risk of spills, runoff, and wind-blown emissions the following measures will be put in place:

- Storage facilities will be provided for solid materials, including waste soils, to prevent deterioration of the materials and their escape (via surface run off or wind blow);
- Storage facilities will be kept secure to prevent acts of vandalism that could result in leaks or spills; and

All containers of any size will be correctly labelled indicating their contents and any hazard warning signs.

18.5.9 Operation and Refuelling of Plant and Equipment

To eliminate the risk of any potential ground, watercourse or drainage contamination from the various liquids and site effluents, the following best practice control measures will be implemented by the Contractor:

- Plant and equipment must be located and used on hard-standing and where practicable, away from any other body of water, including ditches and ponds, or surface water drains unless specifically carrying out works on watercourses;
- Self-bunded plant must be specified and used where possible;
- Plant or equipment must not be stored/ placed/ parked directly over the site drainage system. ‘No Parking’ exclusions will be established;
- All fuel will be safely stored within double skinned fuel bowsers located at predetermined points on site for safe and easy access by plant but away from any drainage access points;
- Wherever possible, refuelling must be undertaken in the compound areas and not at the work sites;

- All refuelling must take place on hard-standing (for large plant) or over plant nappies/ drip trays (small plant and equipment);
- Refuelling areas will have appropriate and replenished spill kits available in case of spillage, which will be cleaned up immediately;
- Refuelling lines will be fitted with automatic shut off devices and must not be locked on. The use of 'Dead Mans' catches on fuel pumps (i.e., that allow fuel pumping without attendance) will be strictly prohibited;
- Any vehicles normally used on public roads will not be refuelled on site;
- Refuelling will only be carried out in designated areas and by those personnel suitably trained; and
- Other items such as hydraulic oils etc. will also be stored in appropriate storage containers, clearly labelled and stored in a secure container or bunded area by the COSHH Co-ordinator. As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in, on or over watercourses.

For fuel bowser refilling, the fill pipe must be situated within the secondary containment system of the bowser, or if not, a drip tray must be used during delivery to the tank. All coupling and discharge points must be checked prior to discharge of a delivery. Deliveries must be supervised at all times.

All drip trays for static Plant refuelling and servicing will be of sufficient size to retain 10% of the total volume of liquids being 'handled'. Interceptor drip trays will only be used for oil-based products; they are ineffective for water soluble products.

For larger items of Plant or mobile Plant such as excavators etc, where the continuous use of drip trays is not practical, the Plant will undergo daily inspections by a competent person to check for defects, such as leaking hoses, interference by others etc. Records of inspections will be maintained and held on file by the Contractor. Where defects are evident the item of Plant will be removed from the Site immediately and serviced or replaced as soon as possible.

18.5.10 Surface, Groundwater and Foul Drainage

The following section outlines the principles for the prevention of pollution to the water environment, including foul drainage systems. It will be the responsibility of the Contractor's Site Manager/ Engineer (or named representative) to ensure that the measures set out below (where relevant to the works being undertaken), are considered and incorporated into the RAMS and implemented on site.

As stated in section 18.5.6 it is an offence to permit or cause pollution to the hydrological environment either accidentally or deliberately (Ref 18-4).

18.5.10.1 Drainage Strategy

A Drainage Strategy incorporating a Site Drainage Plan (SDP) will be prepared prior to the commencement of works. The Drainage Strategy will specify measures to minimise the impact of the construction on existing drainage systems (manmade and natural). This will be developed following detailed drainage investigations (e.g., to identify underground sewers and surface water drains *etc.*) and hydrological assessments, which will determine potential location specific risks in relation to the water and natural environment and identify appropriate control measures to reduce the risks. A phased approach may be taken to the development of the Drainage Strategy to reflect the phasing of the construction programme and the different elements of the English Onshore Scheme.

An SDP will be prepared following detailed design and will be held on site and displayed in a prominent location. Drainage systems will be identified by a colour coding system; blue for surface water and red for foul water, the SDP will be a 'live' document and will be updated with any changes to the network.

All details included in the Drainage Strategy/ SDP will be reviewed and approved by the Contractor's Site Manager and SHE team prior to works being implemented.

18.5.10.2 Pre-construction drainage

To minimise the potential for erosion and sediment laden run-off leaving the construction area and polluting the water environment, the following measures will be undertaken prior to construction:

- Control surface run-off entering and leaving the site effectively and prevent clean catchment flows from entering works areas (this may include the installation of specially designed pre-construction drainage systems to collect and divert water away from the working area). This will reduce the volume of water requiring treatment ensuring that the site mitigation measures do not become overwhelmed following intense or heavy precipitation events;
- Identify areas known to be particularly or potentially prone to erosion prior to the on-ground siting of access roads and earthworks and avoid these areas where practicable;
- Prepare RAMS detailing mitigation measures on how to prevent and control sedimentation and erosion during construction including as a minimum;
- The location of any stockpiles will be located well away from watercourses, ditches and drains. Silt mitigation, including silt fences will be installed around the base of the stockpile. In the event that this is not possible the measures to divert surface water around stockpiles and earthworks and back into drainage paths will be included;
- Minimise storage of excavated material in areas of sensitive habitat and/or shallow groundwater;
- Consider specific activities that require protection and control;
- Use of existing roadside drains and field drains where practical to install measures to treat and contain runoff;
- The installation of supporting sediment collection devices and erosion control works e.g., silt fences, vegetation, sandbags, grips, interceptor ditches and diversion drains;
- All sedimentation and erosion control measures to be implemented during construction;
- Specify conditions under which any sediment and erosion control measure can be decommissioned; and
- The detailed drainage design for any temporary outfalls will be agreed with NGET (and following grant of appropriate permissions/ permits) prior to the commencement of construction.

18.5.10.3 Foul Drainage

Where available, the preference will be to manage foul drainage, by connecting to, and discharging into, the local foul or combined sewer system. Such discharges must be disposed of in accordance with the Water Industries Act 1991 (Ref 18-6), and the Contractor will be required to obtain the necessary approvals prior to discharging into the public sewer.

If discharge via the local foul or combined sewer system is not available or not permitted, foul water and sewage effluents produced by the construction workforce will be contained by temporary foul drainage facilities (such as a septic tank) and disposal off-site by a licensed contractor.

The Environment Agency's approach to groundwater protection guidance document and other relevant guidance will be followed, as appropriate.

18.5.10.4 Site Wastewater

The Contractor will implement the following best practice control measures to manage (non-foul) site effluent or wastewater:

- Any (non-foul) site effluent or wastewater is to be retained on site within an intermediate bulk container (IBC) or holding tank and taken away for disposal by a registered waste carrier. No discharge of wastewater to ground or water will occur;
- All wash down of vehicles and equipment will take place in designated areas;
- Where wheel washes and boot washes are installed adjacent to site accesses or egresses, these will be self-contained, will recycle wash water as much as possible and will not directly discharge to the environment;
- All active drainage points within and adjacent to the site will be clearly identified and where necessary appropriate interceptors to trap silt and accidental pollutants must be installed;

- All site water discharges and wastewater from the site welfare facilities will be contained in an appropriate tank and removed from site by vehicle. No effluent or site water will be allowed to discharge directly onto the ground or water course; and
- A specialist wastewater contractor will be employed to dispose of any hazardous liquid wastes found on site and disposed of in accordance with those regulations.

18.5.10.5 Concrete Management

Wet concrete and concrete block structures are highly alkaline and corrosive and can have a devastating effect on the water environment.

Where practicable concrete mixing and washing down of mixing plant is to be carried out by the suppliers and away from English Onshore Scheme sites.

Where onsite concrete washout is required this will be prohibited within a minimum of 10m of any body of water, including ditches and ponds, or surface water drains, and within 5m of a foul drain. Where practical, this will increase to 50m. Where concreting is required within 10m of a watercourse this will be agreed with NGET in advance of the works. Areas which have been identified with important habitats or species will also be avoided, where possible.

The Contractor will clearly demarcate and signpost designated areas for concrete washout. The use of specialist concrete washout systems should be considered. If skips are to be used for concrete washout, they will be contained within a specially bunded area to prevent any accidental spillage reaching ground. The bund will be lined so as to be impermeable, and sand placed within the bund to make the clean-up of any concrete spillages into the bund easier.

The skips to be used for washout will be inspected on delivery to site, and frequently during the works to ensure they are undamaged. Holed or damaged skips (i.e., where there is a potential for leaks) will not be used for concrete washout and will be removed from site. All concrete washout skips will be fully lined so that all concrete and washout water is retained within the lining.

Prior to any concrete being used on site the Contractor will produce a Concrete Washout Procedure, which will also include details of the emptying of concrete washout skips (if used) and the treatment of high pH washout water.

Control measures include:

- Use only designated areas for concrete washout;
- No concrete contaminated water is permitted to be discharged to the water environment (including groundwater);
- Concrete, bulk and bagged, and concrete additives will be stored a minimum of 10 metres (increasing to 50m where practical) away from watercourses, gullies and drains in properly secured, covered and bunded areas;
- Any surplus concrete must only be discharged to a fully lined skip (or concrete washout system);
- Discharge of wet/ unset concrete onto ground, other than for defined works, is strictly prohibited;
- Concrete washout skips will not be allowed to overflow and should be covered during heavy rainfall to prevent rainwater accumulation / creation of excess high pH wate;.
- Any excess water within concrete washout skips should be pumped to an IBC and the water treated (on or off site) to reduce pH;
- Concrete washout skips should only be tipped out when completely dry (all water evaporated or pumped off) and when the concrete is fully set;
- The integrity of the lining and available capacity of the concrete washout skip will be checked prior to the discharge. If there is damage or insufficient capacity to take the whole discharge the skip cannot be used; and
- All staff will be trained on the risks of working with concrete (both health and safety and environmental risks).

All staff will be instructed to report to the HSE Team immediately if they see any concrete spillages or concrete washout likely to cause pollution, and start the following control measures:

- stop the action which is causing pollution immediately;
- take immediate remedial action – block the spill, place booms and absorbent materials to help soak up the spill;
- monitor effects of spill; and
- learn from the experience and plan site works to avoid pollution happening again.

18.5.10.6 Dewatering of Excavations

If dewatering is required, the Contractor will develop a detailed dewatering scheme prior to construction to manage the water arising from dewatering operations and treat the water prior to controlled discharge. This may include the construction of raised lagoons for the storage of water and to allow the settlement of any sediment prior to discharge. Consideration will be given to the potential effects of dewatering on adjacent water features and groundwater abstraction points, both from drawdown during dewatering and subsequent discharge, and mitigation applied, such as use of cessation rings around HDD launch pits etc.

As the need for dewatering of excavations is likely to be required for longer than three months, any activity involving pumping of water from excavations will require consideration under the Environmental Permitting (England and Wales) Regulations. A Permit to Pump system will be implemented by the Contractor. The Contractor's SHE team will be consulted on the best working methods and an approved Permit to Pump will be required for all pumping operations (before dewatering or discharges commence). Water will never be pumped directly to a watercourse or be allowed to directly enter a watercourse or be discharged to ground.

It is anticipated that the detailed dewatering scheme will from part of the detailed CEMPs/ the minimum requirements likely to be adopted include:

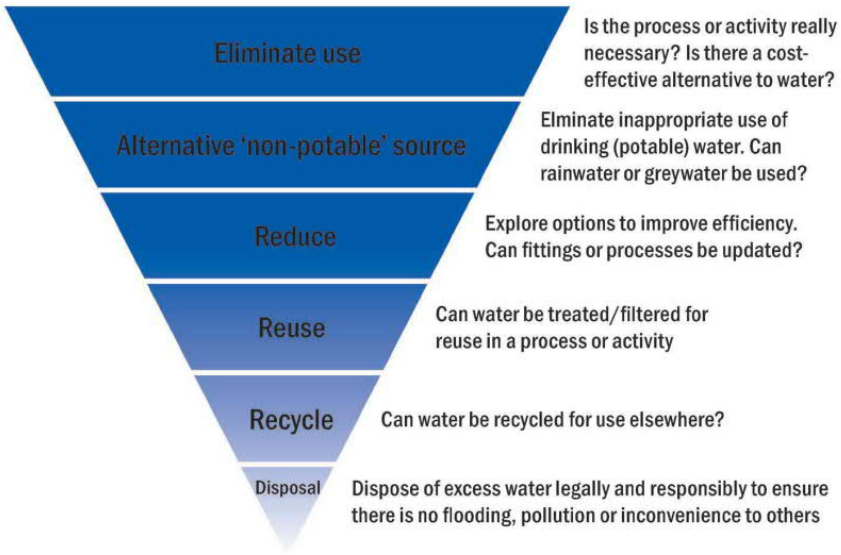
- All discharge waters to be passed through suitably sized settlement systems in order to remove suspended solids.
- The subsequent discharge outputs to be regularly monitored by the person in charge of the activity for evidence of suspended solids, unusual smells and oils. If necessary, pumping will cease and the SHE team consulted.
- Inspection of the pump by a competent person if is to be operating for a long period.
- The SHE team to monitor any pumping activities and record any findings.
- Where silty or oily water is noted to be entering/discharging from the pump the following measures will be taken:
  - Stop pumping.
  - Investigate source of pollution
  - Take action to reduce pollution.
  - Where none of the above is applicable then the water can be disposed of by tanker to an appropriate treatment works with relevant waste documentation.

18.5.10.7 Water Efficiency

The Contractor will implement working methods that reduce water consumption and measures that improve water-use efficiency on site.

The Contractor will develop and adopt water conservation measures based on the water hierarchy shown in **Figure 18-2**.

Figure 18-2: Water Hierarchy



In addition, the Contractor will:

- Undertake water audits that identify all water-using processes, activities and equipment on Site (these will be updated periodically to reflect any significant changes in site activities through the project life cycle);
- Develop an action plan, including staff engagement and training for relevant staff, to reduce water consumption by all water-using processes, activities and equipment on site;
- Undertake monitoring regime to assess the effectiveness of water conservation measures in the plan; and
- Establish a reporting regime to advise on the effectiveness of the plan (which will be completed at a minimum of annually).

18.5.11 Working near agriculture

The Contractor will follow best practice principles to minimise any disruption to agricultural activities. This will include:

- Access to agricultural lands will be maintained throughout the construction process;
- Damage to the agricultural capability of soils will be avoided by the use of best practice in soil stripping, handling and storage of soil materials (see also Section 8.6.6, and Outline Soil Management Plan (SMP) provided in **Appendix 12B**);
- Existing field drainage systems will be re-instated to ensure that land capability is maintained and drainage related to flooding issues will not be worsened;
- Access to water supplies for all fields and areas of fields will be maintained where possible;
- Where a pre-existing problem with pests or diseases is identified tests will be taken before entry and the analysis results sent to NGET/landowner prior to entry;
- Where required pests and diseases tests will be carried out on any imported topsoil before it comes on Site and the analysis results sent to NGET/ landowner; and
- The Contractor will not permit under any circumstances poaching, or dogs in any working areas.

18.5.12 Vehicles and Plant

Vehicles and plant provided for use on the Site will be in good working order to ensure optimum fuel efficiency and are free from leaks. This will also reduce emissions to air (fume/smoke) and noise and vibration. Plant which cannot comply with these requirements will be removed from site. Plant with

integral bunding will be specified and plant nappies will be placed below static mechanical plant. Additionally, the operation and use of vehicles and plant can be a major source of dust and particulate emissions and therefore measures to minimise impacts to air quality will also be implemented.

The Contractor will ensure:

- All vehicles switch off engines when stationary – no idling vehicles;
- Plant containing oils will be inspected daily and maintained to both prevent and identify leaks. Plant operators will conduct daily and weekly inspections of plant giving consideration to leaks or drips and arranging for immediate repairs as and where necessary;
- Where practicable, the use of diesel or petrol powered generators will be avoided and use mains electricity or battery powered equipment used in preference;
- All vehicles entering and leaving the site are covered (sheeted) to prevent escape of materials during transport;
- Vehicles carrying wet material likely to leak from the vehicles will be provided with tailgate seals;
- Vehicles and plant will be regularly maintained to ensure that they are working at optimum efficiency and are promptly repaired when not in good working order. Wherever possible, plant maintenance will be scheduled with plant hire exchanges (removing the need to undertake onsite maintenance and limiting the opportunity for spills or discharge of fuels or oils at site);
- Where onsite maintenance becomes necessary, or emergency maintenance is required this will be undertaken, whenever possible, on an impermeable surface in the main construction compounds and satellite compounds. Any drips or leakage of fuel or oil will be cleaned up immediately;
- The plant hire companies will present their maintenance environmental risk assessment and method statement for review by the SHE Manager/ ECoW before any work is sanctioned;
- Operators are appropriately trained before using plant and machinery; and will conduct daily and weekly inspections of plant giving consideration to issues such as leaks or drips, or excessive fume or noise generation and arranging for immediate repairs as and where necessary;
- As a minimum that all vehicles that access the construction site will carry an "Emergency Grab Pack"/ spill kit) for immediate use in the event of a pollution incident. The Contractor will make provisions for access to more sophisticated containment/clean-up equipment see section 18.5.7.
- Any hired vehicles and plant will be checked on delivery and not accepted if they are not in good working order for example leaking, excessive fumes, excessive noise and/ or smoke;
- The Contractor will use silenced or low noise level plant in noise sensitive locations. Where practicable and available, such plant will also be utilised in other areas of the English Onshore Scheme in preference;
- All compressors and generators should be “sound reduced” models fitted with properly lined and sealed acoustic covers, which should be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools should be fitted with mufflers or suppressers of the type recommended by the manufacturers and should be kept in a good state of repair;
- Vehicles and mechanical plant will be fitted with effective exhaust silencers and will be maintained in good working order and operated in a manner to minimise noise;
- Vehicles and plant will not park near or over drains;
- Employee- owned vehicles will not be driven or parked in construction areas unless authorised to do so;
- Fuel/ oil refilling of vehicles and plant will be carried out on hardstanding using drip trays (or plant nappies) and not over or near drains, or, where this is not reasonably practicable, drip trays and/ or drain covers will be used to reduce the risk of spills;
- Vehicles and plant will not be overfilled with fuel;
- Vehicles leaving or entering the site will be checked to ensure that their loads are secure. This does not relieve the driver of a vehicle of his legal and contractual responsibility to ensure that the load is secure;

- All vehicles on site will reverse park;
- The Contractor will discourage the use of hands-free kits whilst driving; and
- The Contractor will maintain a schedule of equipment and maintenance records.

18.5.13 Housekeeping

The Contractor will ensure high levels of housekeeping are maintained to control nuisance through windblown litter and potential health effects through the attraction of vermin. Housekeeping will be included at induction and as part of scheduled Toolbox Talks. Levels of housekeeping will be monitored daily by the SHE Team. Litter picking will be undertaken when necessary, both within and outside of the site should this become necessary. The Contractor will ensure that there are adequate waste bins/ skips on site and that, where practicable, these are located as close as possible to working areas to promote use. Where possible waste segregation at source should be promoted.

18.5.14 Air Quality

The Contractor will ensure that appropriate measures to mitigate any air quality impacts due to the construction of the English Onshore Scheme are implemented. The measures outlined below reflect commitments made by NGET at the scoping stage of the English Onshore Scheme and are therefore to be considered 'standard' measures which must be employed where required. This does not preclude the use of additional air quality management measures where the need arises.

Commitments related to communications, site management, and the use of vehicles and plant are already included at Sections 18.4.2, 18.4.3 and 18.5.12.

These mitigation measures are designed to protect human health, avoid dust nuisance, and mitigate impacts to surrounding ecological habitats and species for instance by preventing the smothering of vegetation and limiting the deposition of dust that may be re-animated beyond the site boundary or become mixed with run off (creation of silty water). Exhaust gases contain oxides of nitrogen which can also alter the nutrient status of surrounding habitats when deposited in sufficient quantities.

18.5.14.1 Monitoring

The Contractor will appoint a nominated person(s) to undertake daily on-site and off-site inspections, where receptors (including access roads and public highways) are nearby, to monitor dust. The inspection should also include all haul routes within the site. All inspection results will be recorded in a log, which will be made available to the local authority when requested. Any exceptional incidents that cause dust and/or emissions, either on- or off-site and the action taken to resolve the situation will also be recorded in the log.

18.5.14.2 Vehicles, Plant, Travel and Logistics

The operation and use of vehicles and plant can be a major source of dust and particulate emissions and therefore measures to minimise impacts to air quality will be implemented as described in Section 18.5.12. Further to these measures the Contractor will:

- Produce a Construction Logistics Plan to manage sustainable delivery of goods and materials.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Implement a Travel Plan that supports and encourages sustainable travel by workers (public transport, cycling, walking and car-sharing).

Further information on vehicle movements and logistics planning is also contained in Section 18.5.15.

18.5.14.3 Preparing and maintaining site

The Contractor will plan the site layout so that machinery and dust causing activities are located away from receptors, as far as possible. Access gates are to be located at least 10m from receptors where possible.

Solid screens or barriers will be erected around dusty activities or, if required, at the planning application boundary. These will be at least as high as any stockpiles on-site. Where there is high potential for dust production for an extensive period the working area or the specific dust generating operations will be fully enclosed. All site fencing, barriers and scaffolding will be kept clean using wet methods to prevent resuspension of dust.

Stockpiles will be covered, seeded or fenced to prevent wind-whipping (generation of airborne dust through erosion), see also section 18.6.6. Materials that have a potential to produce dust will be removed from site as soon as possible, unless being re-used on-site. These measures will also help mitigate rainfall infiltration, leachate generation and surface runoff.

As further described in section 18.5.10, the creation of site runoff of water or mud (silty runoff) will be avoided as, when dried, this can become a source of wind-blown dusts.

All site haul routes are to be inspected for integrity and necessary repairs to the surface undertaken as soon as reasonably practicable; and hard surfaced haul routes should be installed wherever possible (this will also minimise vehicle generated noise and vibration). All haul roads are to be regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.

A wheel washing system will be implemented, (fitted with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). The Contractor will ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permit, to minimise the risk of trackout of debris to the public highway. Equipment washing facilities will also be provided where required.

Road sweeping (including and water jet vacuums) will be undertaken as necessary to remove any material tracked out of the site from local public and site roads. This may require the sweeper being continuously in use. This will reduce the risk of silt being washed into surface water gullies and watercourses and reduce the risk of dust generation. The risk of dust generation will be further minimised by avoiding the dry sweeping of large areas.

18.5.14.4 Operational controls of construction activities

To minimise the generation of air emissions during construction works for the English Onshore Scheme, the Contractor will ensure that:

- All cutting, grinding or sawing equipment is fitted, or used in conjunction, with suitable dust suppression techniques such as water sprays or local extraction e.g. suitable local exhaust ventilation systems;
- There is an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation. Non-potable water should be used where possible and appropriate;
- All chutes and conveyors are enclosed, and skips covered;
- Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment are minimised and fine water sprays are used on such equipment wherever appropriate;
- There is equipment readily available on site to clean any dry spillages. All spillages will be cleaned as soon as reasonably practicable after the event, using wet cleaning methods;
- Earthworks and exposed areas/ soil stockpiles are revegetated to stabilise surfaces as soon as practicable;
- Hessian, mulches or trackifiers are only to be used where it is not possible to re-vegetate, as soon as practicable; and
- Soils are to be stripped progressively so as to minimise the area of bare land and stockpiles soils as far as is practicable (see also Section 8.6.6 and **Appendix 12B**).

The use of bonfires and burning of waste materials will be strictly prohibited.

18.5.15 Energy Use and Efficiency

The production of energy is closely linked to greenhouse gas (GHG) emission and climate change, which requires construction projects to identify and implement wherever practicable measures to increase energy efficiency.

Energy consumption during the construction phases can be attributed to a variety of operations. These operations are identified below, with the measures that can be taken to reduce the energy consumption.

18.5.15.1 Construction Plant and Site Vehicles

Measures to ensure the energy efficiency of construction plant and site vehicles are described in Section 18.5.12

18.5.15.2 Reuse of materials

Reduce the number of vehicle movements around and off the site by maximising the volume of site won material that can be incorporated into the design (i.e., resulting from an optimised cut fill balance during design).

18.5.15.3 Deliveries and Logistics

Prior to commencement of construction the Contractor will prepare a CTMP based upon the Outline CTMP presented as **Appendix 14D** of this ES.

As stated in Section 18.5.14.2, prior to the commencement of construction the Contractor will also produce a Construction Logistics Plan to manage sustainable delivery of goods and materials.

The Contractor will take account of the following in its delivery and logistics planning:

- Identify local road restrictions, including height, width and weight and used only the Access Points identified in **Chapter 14: Traffic and Transport**;
- Times of the day to avoid deliveries to and removal of waste from the site, for example, peak commute times, start and end of the school day ('the school run'), level crossing closures;
- Most efficient routes to and from the site to avoid unnecessary fuel usage (and carbon emissions);
- Engagement of national logistics that provide telemetry services to assist in planning deliveries more effectively and give real time data that can also be helpful in arranging back haul routes for surplus materials and waste removal;
- Manage movements of on-site vehicles to reduce time idling waiting for a space to be cleared for the products to be off loaded; and
- Reduce the potential for complaints from local residents due to nuisance caused by vehicles parked around the planning application boundary, by ensuring adequate on-site parking where feasible. Where practicable measures such as adopting a car sharing policy, promoting the use of public transport, and provision of works mini-buses should also be implemented.

18.5.15.4 Site Accommodation and Facilities

The Contractor will seek to procure site accommodation (including canteens and changing rooms) that is energy efficient, thereby reducing energy consumption through better insulation, glazing, lighting (e.g., motion sensors), heating and electricity (e.g., meters and master switch off).

As part of the site induction, encourage site-based staff to adopt more energy behaviour and adopt 'switch off' schemes.

18.5.15.5 Grid Connection

The Contractor will establish a connection to the electricity distribution network as soon as practicable. The Contractor will also investigate opportunities to utilise small scale renewable energy sources, including photovoltaic panels, hydrogen fuel cells, or wind turbines to provide energy for the site; with diesel generators to be considered the least desirable option for power provision.

18.5.16 Carbon Reduction

The English Onshore Scheme should identify and implement wherever practicable measures to reduce GHG emissions and contributing to minimise the impacts from projected climate change.

There are a variety of measures to take into account in terms of carbon reduction during construction as detailed below:

- Specify materials and construction products with a lower embodied carbon where practicable;
- Consider materials and construction products with higher recycled and secondary content, e.g., Ground Granulated Blast furnace Slag (GGBS) or pulverised fuel ash (PFA) as cement substitute in concrete;
- Procure materials and construction products from local suppliers to minimise carbon emissions associated with transport;
- Where practicable transport materials and construction products to site via lower carbon modes for example rail opposed to road; and
- Reduce volume of materials used and incorporate site won materials, i.e., excavated materials generated through earthworks.

18.5.17 Biosecurity

During large-scale projects, there is the potential for disease and pathogen transfer between different areas of agricultural land (i.e. a biosecurity risk). The loss of soil resource is considered as the main cause of disease and pathogen transfer, due to the transfer of soil from infected to uninfected areas.

To minimise the biosecurity risk, including the potential transfer of disease, pathogens and weeds, the Contractor will adhere to good practice soil management measures as set out in the Detailed SMP (see also section 18.6.6, and the Outline SMP presented as **Appendix 12B)**, to minimise soil loss and soil movement through erosion, excess trafficking on plant wheels, or unauthorised export.

In addition, appropriate cleaning and/or disinfection of machinery between holdings to mitigate against any potential disease outbreak or transfer of weeds between holdings will be undertaken as required and as agreed with landowners. This will be particularly important should the English Onshore Scheme pass through or close to intensive pig and poultry units, land grazed cattle and any land with organic designations.

Soil stockpiles anticipated to be in place for longer than six-months should be seeded with appropriate low maintenance grass/clover mixture (for example EG22c Emorsgate Seed, or similar: to be agreed with landowner and subject to the conditions/restrictions within the contract). Along with protecting the soil against erosion and nutrient loss, this will also help prevent colonisation of the stockpile by nuisance weeds that could spread seed onto adjacent land. Stockpiles will be monitored for the presence of undesirable weed species and the stockpile vegetation cover will be managed (by spraying, mowing or stripping as appropriate and as defined in location-specific construction method statements, or similar), to prevent the spread of seeds from the stockpile onto adjacent land.

The Contractor will check the UK Government's website (Ref 18-7) advertising current occurrences and imposed restrictions with regards to animal and plant diseases (such as avian flu), both pre-construction and at regular intervals throughout construction. The Contractor will also subscribe to the Animal Disease Alert Subscription Service (Ref 18-7). All restrictions will be adhered to and may include additional biosecurity measures being implemented such as restricted movements within prevention zones and additional measures around the disinfection of plant and equipment (including boots and manual tools).

18.6 Specific Environmental Requirements

This section sets out any discipline specific mitigation beyond the general construction good practice measures set out in section 18.5, as identified by each topic discipline within the ES. These measures may include both mitigation by design/embedded mitigation and specific bespoke measures. Discipline appropriate general measures are signposted where required.

18.6.1 Ecology and Nature Conservation

The implementation of the general measures and industry good practice set out in section 18.5, such as measures to prevent surface and ground water pollution, fugitive dust management, prevention of light pollution, and noise prevention or amelioration will all enhance the protection of ecological and nature conservation assets. Section 18.6.6 and the Outline Soil Management Plan (at **Appendix 12B**) consider good practice measures to be implemented to ensure the sustainable management of soil resources, which will in turn ensure the quality of the restored habitats/ agricultural land uses they support.

It is noted that prior to construction, based upon pre-construction ecological surveys (see below) as well as the surveys undertaken to inform the ES, the Contractor will prepare a Construction Ecological Management Plan (CEcMP) incorporating Species Protection Plans (SPP) (or similar) for the sensitive/protected species that may be encountered by the English Onshore Scheme, as required, to prescribe the required site-specific mitigation. It is anticipated that the CEcMP would be an appendix to the detailed CEMPs. General principles for ecological mitigation on the English Onshore Scheme are described in the sections below and include both embedded and bespoke mitigation measures as described in **Chapter 7: Ecology and Nature Conservation**.

18.6.1.1 Pre-construction Surveys

The Contractor will ensure that all required pre-construction ecological surveys are undertaken, in line with prescribed survey seasons, to allow necessary ecological mitigation to be detailed in the site-specific RAMS, allow CEcMP and SPP to be prepared, and confirm mitigation /licencing requirements. All ecological surveys will be undertaken by suitable experienced surveyors supported by the ECoW/ SHE Manager.

A requirement for updated pre-construction surveys for (badger, water vole, otter and bats) and confirmation of mitigation /licencing requirements has already been identified within the ES (see section 18.6.1.3). To identify the need for any further species-specific surveys a Phase 1 Habitat survey will first be undertaken. The survey will update the surveys undertaken to inform the ES and will identify areas where additional species-specific surveys are required. This survey will follow standard Phase 1 survey protocol (Ref 18-8). The standard Phase 1 Habitat Survey will be 'extended' to search for and record, signs of legally protected or other notable species (for example badger and schedule 1 bird species) and assess the potential for the habitats to support such species. The survey will also record the presence of any non-native invasive species. This extended area will include a buffer of 250m for protected species.

As stated in section **Error! Reference source not found.**, the Contractor will also use the pre-construction survey data to identify the need for additional micrositing.

The Contractor will also ensure the ECoW (or relevant Technical Specialist Advisor) is present on site during the construction phase to undertake pre-works surveys/checks and/or toolbox talks at specific sensitive locations for example the River Hull Headwaters SSSI. Other specific sensitive locations are to be further identified in the detailed CEMPs.

18.6.1.2 Habitats

Reinstatement

All habitats crossed by open cut methods by the English Onshore Scheme, and all temporary construction compounds, laydown areas and accesses will be fully reinstated to their previous use as soon as practically possible. This includes all areas of arable land and pasture (which will be reseeded with an appropriate grass seed mix as approved by the landowner), and hedgerows (which will be reinstated with an appropriate canopy mix to match or enhance that previously present). Following consultations with landowners, in addition to new planting, hedgerow reinstatement may also include measures remove, store and replant more mature hedgerow planting if appropriate.

The Contractor will prepare a Tree and Hedgerow Protection Strategy to include a schedule of all trees and hedgerows to be removed, a schedule of all trees which require pruning coppicing or pollarding, a schedule of all trees and hedgerows to be retained including specification for temporary physical protection, including root protection areas and details of an auditable system of compliance. The Tree

and Hedgerow Protection Strategy will also include details of any hedgerows where a remove/store/replant methodology has been identified as appropriate through the landowner consultation process. Species rich hedgerows will be reinstated with an appropriate canopy mix to match that impacted, however the like-for-like replacement of tree species may not be possible due to planting restrictions over cables (need to protect the integrity of the cables which may be compromised by deep roots). As part of Biodiversity Net Gain (BNG) commitments (section18.6.1.4), across the cable route species poor/defunct hedgerows will be reinstated and enhanced to become species-rich native hedgerows. Impacts to trees and hedgerows will be minimised be retaining as much of the existing vegetation as possible *in situ.*

The design and species composition of any tree or shrub planting associated with the English Onshore Scheme must be agreed in advance with NGET. This is due to the potential for planting near or beneath Overhead Lines and/or near or over the top of buried cables to have implications for the operation and integrity of this infrastructure (for example deep rooted trees may interfere with or damage buried cables). The Contractor will therefore ensure that all planting is conducted in line with guidance documents such as National Grid's Design Guidelines for Development Near High Voltage Overhead Lines (Ref 18-10), and the National Joint Utilities Group's Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Ref 18-11). The specific planting restrictions in relation to the English Onshore Scheme are to be agreed with NGET at detailed design and will be included in the Detailed CEMPs.

For ecologically important areas/habitats (including hedgerows) the Contractor will adopt an approach where topsoil is stripped and stored separately from the surrounding soils (e.g. arable soils) and replaced at the location it was stripped from to ensure the reinstatement and maintenance of the seedbank (soil handling and reinstatement is further discussed in section 18.6.6 and **Appendix 12B**). Where feasible the Contractor will ensure that bankside watercourse habitats temporarily disturbed by the trench cable installation and/or haul route construction are reinstated and enhanced by supplementary planting to ensure they are reinstated to their previous condition or better.

The River Hull Headwaters SSSI

The River Hull Headwaters SSSI will be crossed at two locations by the English Onshore Scheme; at The River Hull at Wansford and at Kelk Beck near the village of Kelk, both in Section 1. The Contractor will ensure that both crossings are by trenchless cable installation methods (i.e. HDD) to best avoid or minimise direct impacts to the designated features of the SSSI. The trenchless drilling will span entirely beneath the watercourses.

The Contractor will ensure that the working areas and associated construction activities for the cable drilling are entirely set back from the SSSI boundary and sited within arable habitats to either side of the River Hull and Kelk Beck. The working areas for the non-open cut crossings will retain a minimum of a 15 m buffer zone (to the river bank therefore a stand off from the boundary of the SSSI boundary) which will be adopted throughout the construction phase (excluding the temporary construction access at Kelk Beck). Working areas will be fenced and signage employed to prevent encroachment by vehicles, machinery and construction personnel onto adjacent habitat.

The Contractor will ensure that all necessary consents are obtained from the Environment Agency (EA) and works will be carried out in accordance with method statements and conditions applied to those consents. Pre-construction ecological surveys will be undertaken in advance of any works being undertaken to reaffirm the status of the site and construction working areas (at the detailed design stage) and inform the details of the EA consent application. The ECoW (or Technical Specialist Advisor) is to be present on site during the construction phase to undertake pre-works checks and deliver Toolbox Talks where required.

Bank top habitats will be reinstated following construction which will be set out as part of the EA consent application and accompanying Scheme of Ecological Mitigation and Reinstatement.

Due to the lack of suitable alternative access options there is a requirement to construct a temporary haul road across Kelk Beck to allow construction access along the construction corridor. A temporary bridge will need to remain *in-situ* during the construction phase of the works (or until no longer needed). The exact design and layout of the temporary bridge will be finalised by the appointed Contractor but, along with the pollution prevention measures set out in section 18.5, will be based upon the following design principles in order to reduce the impacts upon the SSSI:

- Clean span bridge with no piers or foundations to be located within the channel or within 8 m of the channel and riparian zone;
- Width of temporary bridge to be kept to a minimum; estimated as up to 6 m wide;
- Water channel and riparian zone remain entirely unobstructed to allow passage of aquatic species including fish, invertebrates, riparian mammals and birds.
- Construction access routes to avoid habitats within 8 m of the river channel and remain entirely outside of the SSSI boundary and adjoining priority grassland habitat on south-west side of River Hull at Wansford;
- The detailed design of the temporary bridge will be submitted for approval to Natural England; and
- During the construction a buffer zone of a minimum of 2 m will be retained to avoid direct effects upon bank side habitat and the SSSI designated river channel habitats.

The implementation of the general measures and industry good practice set out in section 18.5, such as measures to, fugitive dust emissions (smothering of vegetation), spillages of oils and chemicals, and light pollution; and pollution prevention measures will mitigate against potential indirect effects upon the SSSI.

Disturbance of faunal and breeding bird species associated with the SSSI

To reduce the effect of construction noise and human disturbance on breeding birds, site clearance and construction activities will begin before the breeding bird season (typically March-August for most bird species) commences. This will avoid contravention of the Wildlife and Countryside Act 1981 (as amended) by preventing disturbance to any established nests (Schedule 1 species such as barn owl, red kite or quail). It is assumed that any ground nesting species which establish territories and nests adjacent to the works after the onset of the construction phase will be tolerant of construction activities and human presence, however the working areas set up at the onset of construction should be strictly adhered to in order to prevent additional disturbance to breeding birds.

Any works that occur during the bird breeding season will comply with the Wildlife and Countryside Act 1981 (as amended). An Ecological Clerk of Works (ECoW)/Technical Specialist Advisor will be appointed to monitor construction operations during the breeding bird season. If Schedule 1 species are found breeding within the working area, works will stop immediately and Natural England advised. An assessment will then be undertaken to determine if the continuation of works warrants the requirement for a Schedule 1 disturbance licence.

Pollution of the watercourse

The Contractor will employ pollution control measures as set out in Section 18.5.6, with reference to PPG5, in order to avoid and minimise adverse effects on the water quality of aquatic habitats including those minor watercourses and drains which may link to the River Hull. Measures to prevent sediment laden runoff entering watercourses (section 18.5 and 18.6.5) will also be undertaken to prevent water pollution.

Non-statutory Designated Nature Conservation Sites

Three Local Wildlife Sites (LWS) lie within 100 m of, but are not crossed by, the planning application boundary these are all located in Section 2 of the underground DC cable route:

- Spring Dale cLWS - approximately 20 m east of the cable route;
- Kiplingcotes Road Earthworks LWS - approximately 30 m east of the cable route; and
- Etton Wold, West of Crossroads LWS - approximately 50 m east of the cable route.

The Contractor will ensure that the extent of the planning application boundary is clearly demarcated (with fencing and signage) and that protection buffers are put in place in order to ensure that direct disturbance of these LWSs is entirely avoided.

It is noted that Spring Dale is classed as a Candidate or potential LWS (cLWS). These are sites of known biodiversity value which have not yet been assessed against the LWS criteria and formally

designated. Spring Dale may or may not be designated by the time of construction, however the Contractor will ensue that it is afforded the same level of mitigation as a designated LWS.

Additionally, (also within Section 2) the planning application boundary crosses:

- Hudson's Way Local Nature Reserve LNR site

This LNR also includes two LWS sites:

- Etton to Gardham Disused Railway LWS; and
- Granny's Attic LWS.

The Contractor will ensure that direct impacts to these sites are avoided by the adoption of non-open cut construction methods. Furthermore, the Contractor will ensure that access and haul routes avoid direct impacts upon habitats within LWS boundaries (the haul route to be located to the east of the cable route following the existing access route and avoiding direct loss/disturbance to the LWS/LNR habitats). The Contractor will also adopt measures to ensure that there will be no encroachment of any construction activities into the LWS and LNR habitats, including demarcation of LWS/LNR boundaries by protective fencing and signage. This will include where the proposed haul road is proposed to cross the Etton-Gardham Disused Railway.

For all the above sites, the implementation of the general measures and industry good practice set out in section 18.5, such as measures to prevent silty run off, fugitive dust emissions (smothering of vegetation), spillages of oils and chemicals, and light pollution will mitigate against potential indirect effects upon these LNR/LWS. As stated previously, topsoil and subsoil will be stored separately to maintain specialist seedbanks. Soils will not be stored within the boundary of the LNR/LWS).

Woodland Buffer and Mature Tree Retention. – Converter Station

The Contractor will respect the minimum 8 m undeveloped buffer incorporated into the converter station site layout and associated construction compound, to ensure that the woodland edge habitat to the north of the site, the drain located alongside it, and the mature trees with potential to support roosting bats within the arable field and along Wren Hall Lane are not subject to physical disturbance/ damage or lighting impacts.

The line of mature broadleaved trees located immediately north of the converter station site will be retained and protected during construction.

An Outline Landscape Mitigation Plan describing the proposed landscape planting and ecological enhancements at the converter station is presented as **Figure 8.5** of the ES. These are detailed in section 18.6.2.1. The Contractor will prepare a Detailed Landscape Mitigation Plan prior to construction, and it is anticipated that this will be an appendix to the Detailed CEMPs. This will be prepared in collaboration with a suitably qualified ecologist to ensure that the required BNG units can also be delivered (see 18.6.1.4).

Watercourse buffers

With the exception of where watercourses will be crossed or where drainage outfalls are required, the Contractor will adopt a 15 m buffer between working areas within the planning application boundary and watercourses (taken to be watercourse bank top). This will minimise indirect potential effects upon riparian and aquatic habitats and also avoid direct effects upon species present within the watercourse channel including water vole.

18.6.1.3 Protected or Invasive Species

Some species are protected by law and other species have been identified to be of principal importance for biodiversity conservation in England as required under Section 41 of the Natural Environment and Rural Communities Act, 2006. Therefore, prior to construction, the Contractor will develop SPP for the sensitive/protected species that may be encountered by the English Onshore Scheme.

The SPPs will be prepared using information from the environmental appraisal, good practice, statutory authority guidance and the approval of and conditions of any relevant consents. Site-specific mitigation exists for a number of species where they are likely to be encountered within or near to construction works.

Badgers

Badgers are protected under The Badger Protection Act 1991. As set out in section 18.6.1.1 the preconstruction Phase 1 habitat surveys will identify the locations of active setts. Wherever possible, the Contractor will use micro-siting (section 18.5.3) to ensure that the working width is located at least 30 m from all active badger setts to prevent disturbance of a badger sett whilst occupied; and that setts are located outside of the fenced working width.

For setts within 30 m of construction work, additional pre-construction surveys will be required to ascertain the level of usage by badger. Where direct effects upon badger setts cannot be entirely avoided, monitoring may be required to fully determine the status of the sett (if it is not apparent). Where a sett is deemed to be active and cannot be avoided, a Natural England derogation license will be obtained to fully or partially close the sett before works are undertaken. In the event that a temporary partial or full closure of an active badger sett is required, it is considered that there would be sufficient alternative habitat and alternative existing setts available for the displaced badgers to utilise in the local area to the planning application boundary. As such the provision of an artificial replacement sett would not be warranted.

Badgers are a relatively widespread and common mammal, and it is possible that populations of badgers are present in the wider local area and using habitats impacted by the English Onshore Scheme for foraging/ dispersal. The Contractor will therefore ensure that, in addition to the general measures set out in section 18.5 such as preventing artificial lighting impacts (section 18.5.4) and safe storage of chemicals (section 18.5.8), the following mitigation measures will be undertaken during construction works to minimise effects of habitat/territorial severance and disturbance to badger which may have territories which extend across the planning application boundary:

- providing a means of escape (battered slope or escape ramp) from any trenches left open overnight to prevent badgers (and other wildlife) from becoming trapped. This is of particular importance within areas of known badger activity;
- allowing continued access along badger paths, where practical. For example, in arable areas the working width will only be fenced with demarcation fencing (rope and stakes), therefore badger will be able to easily move around in such areas whilst works are not occurring; and
- daylight working hours only (except at certain crossings and for certain operations where 24 hours working may be required).
- ensuring there are no direct effects (damage/destruction) upon an active badger sett (and killing/injury of badgers).

Bats (roosting)

The Contractor will retain mature trees including those with bat roost potential located within the planning application boundary as far as is practicable. If mature trees with bat roost potential are identified as requiring removal, or substantial pruning, the Contractor will adopt the following measures at the pre-construction phase (to be detailed in the CEcMP and SPP (or similar)):

- Completion of a pre-construction bat survey (May – September within year prior to first construction year) of each tree within bat roost potential which requires removal/pruning to be undertaken in accordance with current survey guidelines to re-affirm species and type of roost present as well as exact location of roost site;
- Subject to the outcome of the pre-construction surveys the requirement for a Natural England European Protected Species Mitigation (EPSM) licence (bat licence) will be determined and a licence application and method statement prepared;
- Replacement or alternative roost sites will be provided within the planning application boundary close to the roost tree to be removed but outside of the working area in the form of bat boxes. These will be installed prior to exclusion and removal of the known roost to act as receptor locations for excluded bats;
- Exclusion measures to be undertaken by licensed ecologist in accordance with licence method statement during appropriate times of the year (generally must be undertaken within bat active period between May and end September subject to weather conditions) where the roost site could not be entirely avoided;

- Only once licensed exclusion has been undertaken in accordance with licence conditions, would trees be pruned/lopped/felled. This would be undertaken under the supervision of a licensed bat worker; and.
- Where required, additional replacement bat roost boxes would be placed on adjacent suitable trees within the planning application boundary where required i.e. as part of licensed bat works or where temporary or permanent exclusions may be required.

Low bat roost potential trees which may require removal or pruning should be subject to soft-felling methods under an ecological watching brief or felling under Natural England EPSM licence (where bat roosts are confirmed). This will be detailed in the CEcMP and SPP (or similar).

Where mature trees require removal, a detailed log will be kept by the contractors on the decision-making process (including the reason for felling, the alternatives considered and why avoidance was not possible), as well as the arboricultural condition of the tree(s) and confirmation of the status in terms of bat roost potential (and where bat roost potential was identified, the outcome of any further surveys or inspections for bats).

Bats (foraging/commuting)

Site clearance and construction, particularly the removal of hedgerows could cause temporary disturbance of bat flight lines and reduce the amount of feeding habitat in the short term, until replacement planting has matured. The Contractor will therefore ensure that the area of hedgerow removed is minimised, and that all hedgerows are reinstatement as soon as possible after completion of construction (in the planting season following construction). All trees 'at risk' of removal will be surveyed by a bat specialist.

Otter

Direct effects upon otter holts/couch sites

At watercourse crossings where otter have been identified previously or potential for otter to be present (**Appendix 7C**) the Contractor will ensure that pre-construction otter surveys are undertaken to inform detailed design to avoid habitat suitable to support otter holt sites. This will be undertaken to re-affirm the absence of any otter holt or potential holt sites located within the vicinity of the works.

Where practicable mature trees located on the banks of watercourses will be avoided by careful routeing of the cable corridor and the area of riparian habitat that will be temporarily disturbed to install the cables and/or haul road will be kept to a minimum. The sections to be affected will be fenced to delineate the working area and to prevent damage to the surrounding banks.

Temporary loss of riparian otter habitat

To minimise the effect of the loss of riparian otter habitat, the working width at open cut watercourse crossings which are confirmed to support otter will be kept to the minimum required for safe working practice and will be clearly marked to prevent encroachment.

On completion of the works, the bank side habitat will be reinstated, using the soils (and seedbank) originally taken from the area. Areas of grassland will be reseeded with an appropriate grass mix (to be agreed with the ECoW and landowner via the lands team), whilst the marginal zone will be left to colonise naturally.

For crossings which are confirmed to support otter where the cable installation will be trenchless but where construction haul roads are to be installed (for example River Foulness and Kelk Beck), the area of bank habitat disturbed by the works will be kept to the minimum practicable for safe working. Once works are complete the construction access will be removed, and the habitat will be reinstated and enhanced where specific additional measures are agreed i.e. at River Hull Headwater SSSI (see section 18.6.1.2).

Temporary Disturbance

As otter are mainly nocturnal, mitigation measures will focus on restriction of night-time working in proximity to main otter watercourses along the cable corridor, to avoid disturbance to otter moving throughout their territory and the maintenance of barrier free movement. Where night-time working is required at river crossings where non-open cut techniques are used, the works will be positioned as far

away from watercourses as is practical to do so. The working area for the trenchless cable installation methods will be located more than 8 m from the river bank in areas of known otter habitat.

Lighting, where required on site, will be directed away from known otter habitats i.e. watercourses (section 18.5.4); and screening measures will be adopted where required at main rivers to provide a visual barrier between the working areas and the river particularly where longer term works are planned.

Site compounds and storage or waste storage facilities will be located away from watercourses and night working would be avoided where reasonably practicable in areas where otters are active (including at dawn and dusk).

Effects on food source for otter

The Contractor will ensure that appropriate pollution prevention measures are in place throughout construction (sections 18.5.6, 18.5.10 and 0). These measures will maintain the quality of the watercourse thereby minimising effects on fish - the otters' main food supply.

Water Vole

The Contractor will adopt mitigation measures to address the effects upon water vole as set out below.

Temporary disturbance of water vole whilst occupying a burrow.

Pre-construction surveys will be carried out to re-assess and determine status of water vole on all watercourses previously identified as being suitable to support water vole and which are crossed/intersected by the planning application boundary or construction access routes. Where possible the Contractor will ensure the detailed design of the cable corridor is specifically mico-sited (section 18.5.3) to cross the watercourse at locations where there is lower quality water vole habitat and absence of burrows as informed by the pre-construction survey.

Where this is not possible, and temporary construction access is required, mitigation measures will be implemented as detailed below which involve the completion of relocation by displacement.

Burrows within the affected area would be removed following habitat manipulation and a destructive search. The displacement area would include the area to be directly affected by the works as well as an appropriate buffer to ensure that burrows adjacent to the works are not incidentally damaged. The retained habitat adjacent to the working area will be clearly demarcated and signage erected to prevent encroachment by people or vehicles. Works would be completed in as short a time as possible to minimise the period of activity in the area. As detailed in **Chapter 3: Description of the English Onshore Scheme** and detailed in Crossing Schedule (**Appendix 3A**), a number of watercourses will be crossed by the cable or by a haul road (or both) using open cut techniques. The following project specific mitigation measures will be implemented at these open cut crossings to address the potential effects on water vole.

Avoidance of death or injury to water vole and loss of water vole burrows.

At watercourses known to support water vole (or have been assigned as suitable to support water vole as detailed in **Appendix 7C**) and which cannot be avoided by the cable or construction activities, the area of bank habitat disturbed by the works will be kept to the minimum practicable for safe working (maximum section of 13 m per watercourse to accommodate access, pipeline installation and drainage outfalls). As only a short section of habitat and small numbers of water vole would be affected by the works, it is considered appropriate to move water vole from the working area using relocation by displacement methods. This involves habitat manipulation to encourage water vole to vacate a section of watercourse, moving into adjacent unaffected habitat, followed by a careful destructive search.

Water voles would be displaced using the methodology outlined in the Water Vole Conservation Handbook (Ref 18-9). The mitigation strategy for water vole will be agreed through consultation with Natural England and the Environment Agency.

Subject to weather conditions, displacement measures can be undertaken between late February and early April when this method is likely to be most successful. Vegetation on the banks within this period will be kept to a minimum to discourage water vole from colonising the banks. Where possible works will proceed immediately following a period of strimming followed by a destructive search. Where there may be delays between initial strimming and the completion of crossing work, strimming and inspections

will be repeated periodically until works are commenced. Destructive searches (as described in Box 9:C of the Water Vole Conservation Handbook) will only be undertaken as the very last stage of mitigation and involve a close inspection of bank habitat following a programme of strimming, and ideally following the exclusion of water from the affected section of watercourse. The search includes careful excavation of (non-active) burrows using hand tools, and removal of habitat. Where this is not possible and works will be carried out several weeks after the destructive search, the area will be maintained free of water vole by regularly strimming the affected area, or the area will be enclosed using water vole proof fencing, with regular monitoring and inspections to ensure that water vole is still absent.

Affected areas would be re-instated on completion of the crossing works which would provide suitable habitat for water vole to burrow into.

Temporary loss of bank side and marginal/aquatic habitat.

The working area at watercourses known to support water vole will be kept to the minimum necessary to allow plant and vehicles safe operation and access; which will be approximately 13 m wide. The affected habitat within the working width will be re-instated as soon as possible following construction to minimise the time that the habitat is not available to water vole. Bank side habitat will be re-instated with removed bank side topsoil (and seedbank) and appropriate seed mix (to be agreed with the ECoW) to aid re-vegetation immediately following completion of the works.

Temporary severance of water vole habitat.

At watercourses known to support water vole, crossing works will be undertaken as soon as possible after the destructive search has been completed and the section of ditch/watercourse has been successfully excluded. Areas will be promptly re-instated following construction, allowing water vole to access to the affected area. The working period at each crossing will be kept to a minimum but as described in **Chapter 3: English Onshore Scheme Description**, however, will be dependent on the crossing method used.

Temporary disturbance of water vole habitat during construction in adjacent areas.

Where works are within the vicinity of a watercourse known to support water vole and suitable water vole habitat, but will not cross the watercourse, a 15 m (minimum) buffer zone will be maintained along the watercourse and the working area (including the storage of topsoil or trench spoil). The area will be clearly demarcated to prevent encroachment onto water vole habitat. A minimum of 5 m will be maintained between the watercourse and any deep excavations.

Invasive Non-Native Species (INNS)

These species are listed on Schedule 9 of The Wildlife and Countryside Act 1981 (as amended) as a non-native species that is already established in the wild, but which continues to pose a conservation threat to native biodiversity and habitats. It is an offence to plant, spread or otherwise cause these species to grow in the wild and therefore although these species do not hold value in an ecological sense, they will be considered during the construction phase due to the legal implications. During the surveys to inform the ES, five species of INNS were incidentally recorded within or within proximity to the planning application boundary:

- New Zealand pygmyweed (Crassula helmslii);
- Japanese knotweed (Reynoutria japonica);
- Japanese rose (Rosa rugosa);
- Rhododendron (Rhododendron ponticum);
- Himalayan balsam (Impatiens glandulifera) – recorded at multiple locations along the cable route including along tidal drains east of Drax which flow into the River Ouse; and
- Cotoneaster (Cotoneaster sp.), recorded within several discreet locations within the Survey Area.

Further details of the locations of where these INNS were recorded are provided in **Appendix 7A**. The majority of the incidences are not specifically within the planning application boundary, however given the ability of some INNS to spread rapidly over time, INNS could be present within the planning application boundary during the construction phase. The pre-construction extended Phase 1 Habitat Survey (section 18.6.1.1) will therefore record the presence of INNS.

Prior to construction the Contractor will prepare an Invasive Non-Native Species Method Statement containing the location of identified INNS and measures to address the legal requirements for INNS.

18.6.1.4 Landscape and Habitat Management and Biodiversity Net Gain

As set out in the Biodiversity Net Gain (BNG) and **Chapter 7: Ecology and Nature Conservation**, whilst not mandatory, the English Onshore Scheme has committed to a 10% biodiversity net gain in relation to the current biodiversity levels within the Planning Boundary. As all the land associated with the cable installation will be returned to landowners on completion, there are limited opportunities for on-site enhancement. However, the following habitat reinstatement and enhancement measures are committed to and will be adopted by the Contractor:

- Avoidance of high distinctiveness habitats (as defined by the BNG metric) including very small areas of lowland calcareous grassland at Hudson Way LNR/ Etton - Gardham Disused Railway LWS (see section 18.6.2.1) and lowland mixed deciduous woodland located alongside the boundary of the temporary construction routes and drainage areas;
- The reinstatement and enhancement of species poor/defunct hedgerows and field boundaries to species-rich native hedgerows across the cable route (to be described in the Tree and Hedgerow Management Plan); and
- The reinstatement of a percentage of ditches crossed by the cable route which are currently classed as being in poor condition, to a moderate condition. It is acknowledged that this will be difficult to implement across the Proposed Development due to NGET not having ownership of the land, but 50% target is considered to be achievable. Further details are to be provided in the detailed CEMPs.

To reach NGET's 10% objective, there may also be a requirement for off-site delivery of BNG. Potential options for delivering biodiversity units off-site (offsetting) include the following and will be further investigated during the detailed design phase:

- creation/enhancement of habitats on land in current NGET ownership;
- purchasing land (i.e. freehold acquisition) to put into habitat creation/enhancement;
- creation/enhancement of habitats on nearby land through agreement with the landowner or in partnership with local stakeholders such as the Local Planning Authority or Local Wildlife Trust;
- purchasing bespoke biodiversity 'credits' from a broker, such as the Environment Bank, who will match the biodiversity unit requirement with a habitat restoration or creation scheme; or
- purchasing 'off-the-shelf' biodiversity credits from a 'habitat bank', a habitat creation/ enhancement scheme that has already been established.

Off-site areas designated for offsetting will require an ecological baseline survey, habitat condition assessment and subsequent biodiversity unit calculation assessment, to establish the baseline biodiversity units within the offsetting site. Currently, opportunities within four LWS near to the English Onshore Scheme are being investigated:

- Houghton Moor LWS;
- Gardham Disused Railway LWS;
- Garden Covert LWS; and
- Barn Hill LWS.

Any habitat creation or enhancement required offsite, within land not owned by NGET, would need to be secured through legal agreement with the landowner. Details of the off-site enhancement, if required, will be presented in the detailed CEMP.

Based upon the BNG Assessment Report and considering the findings of the pre-construction surveys, prior to construction the Contractor will prepare a Landscape and Ecology Management Plan (LEMP) to set out the habitat enhancement, creation and management required to deliver the agreed biodiversity net gain. This document will ensure that habitats created/ enhanced for biodiversity net gain offsetting are of the type and quality required to deliver the area-based units. It is anticipated that the LEMP will be an appendix to the detailed CEMP.

Although not required for the CEMP, it is noted that the LEMP will also describe the long-term management requirements (assumed to be 30-years to reflect the requirements of the Environment Act 2021) to ensure that these habitats are appropriately managed for the benefit of nature conservation, as well providing their necessary landscape/ screening functions. This will include post-construction habitat management for the permanent and associated temporary construction areas at the converter station designed to maximise biodiversity opportunities where possible.

18.6.2 Landscape and Visual Amenity

General measures to mitigate impacts to Landscape and Visual Amenity through sensitive lighting design, prevention of fly-tipping and good housekeeping are considered at sections 18.5.4, 18.5.5 and 18.5.13 respectively.

Through sensitive siting and routeing the current design has sought to:

- avoid more sensitive landscape features such as woodland, including protected trees (e.g. Ancient Woodland) and mature tree specimens;
- limit the proximity of the cable corridor to settlement and residential properties; and
- avoid the areas of highest quality landscape in the Yorkshire Wolds Important Landscape Area (ILA).

The Contractor will bring these design requirements through into the detailed design.

Measures described in sections 18.6.1 and 18.6.6 around protecting and minimising impacts to vegetation and the appropriate management and reinstatement of soil resources will also mitigate against landscape and visual amenity impacts.

The Contractor will also minimise impacts to landscape and visual amenity during construction through the adoption of measures such as:

- Adoption of a maximum working width of up to 40 m for construction of the DC cable route and up to 60 m for the AC cable route, sufficient to excavate the trench, store topsoil and subsoil separately and facilitate machinery and vehicle access (but avoiding additional land take);
- Ensuring reinstatement to original ground profiles and minimising the time cable trenches are open as far as is practicable (typically 1 km of cable will be installed with the original land profiles reinstated within 9 months, subject to installation methods and complexity);
- Ensuring reinstatement of other disturbed areas as soon as possible after completion of construction of each section/area of works;
- Placement of topsoil to one side of the trench and subsoil to the other, where practicable, with the additional height of the subsoil storage used on whichever side requires greater screening benefit;
- Positioning temporary construction compounds in less visually conspicuous locations along the route, as far as practicable, without compromising efficient working;
- Reinstatement of hedgerows/field boundaries to reduce or mitigate effects on landscape character and the visual awareness of the cable route within and across the landscape in the short to medium term; and
- Reinstatement of agricultural land such that there is no long-term change in land use along the cable route (see also section 18.6.6 and Appendix 12B).

18.6.2.1 Converter station

An Outline Landscape Mitigation Plan has specifically been prepared for the converter station site which provides a collaborative approach to delivering landscape and biodiversity mitigation as well as Biodiversity Net Gain (BNG). The Outline Landscape Mitigation Plan is provided as **Figure 8.5** of the ES and has been developed in recognition of the Leeds City Region Green and Blue Infrastructure Plan (Ref 18-12), in particular priority action areas 1 and 5, as well as being consistent with the targets of the Government's 25 Year Environment Plan (Ref 18-13). The Outline Landscape Mitigation Plan seeks to:

- Respond to both the immediate landscape pattern of the site as well as the wider landscape character;

- Protect existing vegetation wherever possible along the boundaries of the site with the erection of tree protection measures in accordance with British Standard BS 5837:2012 prior to commencement of ground works. Where this isn't possible where the cable crosses Wren Hall Lane the Contractor will limit the corridor of vegetation removal as far as reasonably practicable (up to 15 m in width as per the ES) and locate the corridor of vegetation removal to the area of least established and lowest value trees (refer to **Appendix 8C**: Arboricultural Survey Report);
- Strengthen the (low level) screening benefit provided by the existing pattern of planting along Wren Hall Lane and along the northern boundary of the site with additional native woodland planting;
- Provide an integrated drainage solution with attenuation ponds and swales, planted with marginal wetland species set within a wider context of species rich grassland and native scrub planting to improve the biodiversity value within the site;
- Monitoring and maintenance of new planting and seeding to ensure successful establishment; and
- Limiting permanent site access from New Road to retain the surrounding landscape structure and boundary planting immediately around the converter station site.

The Outline Landscape Mitigation Plan (**Figure 8-5**) therefore contains the following key elements:

- *Retention of boundary planting:* existing tree and hedgerow planting to the north of the site and along Wren Hall Lane shall be retained other than where the cable corridor and haul road require a 15 m easement. This will retain the partial screening benefit that this existing planting provides in views from the east;
- *Woodland planting*: native woodland planting along the eastern boundary of the site adjacent to Wren Hall Lane (excluding the cable easement) will strengthen the existing boundary planting helping to reduce the overall scale and mass of the building facades particularly in views from the east;
- *Hedgerow planting*: native hedgerow planting using species typical of the local area and existing landscape will be planted along the northern, western and parts of the southern boundary of the site to provide visual mitigation around the periphery of the site and habitat connectivity;
- *Replacement planting:* native shallow-rooting hedgerow species typical of the local area and existing landscape will be planted within the cable easement along Wren Hall Lane. To prevent future root damage to cables, no trees will be planted within the cable easement;
- *Species rich grassland and scrub planting*: all areas which are not occupied by hard standing or buildings will be planted with species rich grassland and pockets of shrub planting. This will enhance biodiversity, provide habitat connectivity and soften the setting of the converter station site from immediate views to the west; and
- *Attenuation ponds and swales*: an integrated drainage solution with attenuation ponds and swales will be planted with marginal wetland species to improve biodiversity value within the site.

The Contractor will prepare a Detailed Landscape Mitigation Plan prior to construction, and it is anticipated that this will be an appendix to the Detailed CEMP. This will be based on the Outline Landscape Mitigation Plan (**Figure 8-5**) and be prepared in collaboration with a suitably qualified ecologist to ensure that the required BNG units can also be delivered (see 18.6.1.4). The Plan will also reference Leeds City Region Green and Blue Infrastructure Plan (Ref 18-12) and the Government's 25 Year Environment Plan (Ref 18-13).

Project specific mitigation measures, such as minimising the height of structures, careful selection of material and colours and sensitive lighting design will be considered as part of the detailed design stage and discussed in the detailed CEMP where appropriate.

18.6.3 Archaeology and Cultural Heritage

Visual intrusion (impacts to the settings of heritage assets) during the construction phase will be minimised by ensuring the working areas are kept tidy and in good order, preventing light spillage, and the minimising noise and dust emissions within construction compounds and working areas, as described in section 18.5. Other standard mitigation includes raising the awareness of construction workers and operatives of any control and reporting procedures to be followed, should archaeological

deposits be encountered during the works, for example through inductions, toolbox talks and regular briefings as described in section 18.4.

The following embedded mitigation measures are described with the purpose of minimising effects on cultural heritage. These measures will be adopted by the Contractor and include:

- Careful routeing of the proposed cable trench to avoid designated heritage assets and, where possible, non-designated assets;
- Limiting land take within the planning application boundary to only that required to construct, operate and maintain the English Onshore Scheme – to minimise disturbance to buried archaeology;
- Limiting stripping for construction compounds, haul roads, and other associated works in areas where archaeology is recorded to avoid disturbance, and instead using geotextile and stone over topsoil, or trackways;
- Siting the proposed converter station adjacent to the existing Drax Power Station to help the site integrate with the existing industrial landscape. Visually, whilst locating the converter station adjacent to existing development results in a concentration of this type of development in one place, it also focuses impacts in that one place. This limits the potential for new impacts through change to the setting of heritage assets in the local area that may currently be unaffected by the existing power station development;
- Planting (once established) to visually screen elements of the English Onshore Scheme, for example the converter station, to reduce adverse effects on the setting of heritage assets (see sections 18.6.1 and 18.6.2);
- Using HDD technology (or other trenchless technology) to avoid physical impacts on heritage assets. This includes possible remains of medieval settlement activity and ridge and furrow in Field 238 (MHU8066 - Great Kelk shrunken medieval village);
- The protection of built heritage assets and archaeological sites through the demarcation of buffer zones around such interests with fencing and signage; and
- The controlled removal, storage and reinstatement of any historic street furniture which lies within the planning application boundary.

In addition to the measures above, prior to construction, the Contractor will engage a suitably experienced archaeologist(s) to prepare a proportionate Archaeological Mitigation Strategy (also known as a Written Scheme of Investigation (WSI) for archaeological mitigation) to fully describe any additional mitigation measures to be implemented. The Archaeological Mitigation Strategy will be prepared and agreed (in writing) with the Humber Archaeology Partnership (HAP) Planning Archaeologist, the NYCC Planning Archaeologist, and, where required, Historic England. The Archaeological Mitigation Strategy will form part of the detailed CEMP and no works will commence until an agreed Strategy is in place. Considering the form and significance of archaeological remains or other heritage assets that would be impacted by the English Onshore Scheme, the principal techniques to be used within the Archaeological Mitigation Strategy are:

- Full excavation in areas where significant archaeological remains have been recorded/identified;
- Archaeological Strip, Map, and Sample;
- Focused archaeological monitoring/watching brief;
- Topographic survey of ridge and furrow earthworks to allow reinstatement works post construction;
- Geoarchaeological assessment; and
- Preservation of archaeological remains (i.e. fencing).

Based on current knowledge (from detailed desk study, site walkover and visual appraisal of accessible areas), an outline programme of mitigation has been set out which focuses on areas of known archaeology, and areas where the surveys undertaken to date have not recorded any evidence of buried remains. These are detailed in sections 18.6.3.1 and 18.6.3.2. below, and will be built upon within the Archaeological Mitigation Strategy. The detailed Archaeological Mitigation Strategy will be developed in

consultation with key stakeholders and will contain the requirement for archaeological mitigation at each site, as well as a generic scope of works for the different techniques required.

The basic principle of the Archaeological Mitigation Strategy is to mitigate impacts on archaeological sites identified within the planning application boundary. Rather than taking a blanket approach of strip, map and record, it is envisaged that excavations will instead be targeted upon those sites that would maximise knowledge gain in order to answer English Onshore Scheme and site-specific research questions that will be developed as part of the Archaeological Mitigation Strategy. For sites that do not fit this criteria, additional work would not be undertaken. Other sites, although within the planning application boundary, would be fenced off during construction to ensure they are preserved where the cable installation activities can be routed around the site/feature.

18.6.3.1 Areas of known buried archaeological remains

In relation to known buried archaeological remains, the full scope of mitigation required to record and evaluate known archaeological assets during construction will be developed by the and finalised post-submission in the Archaeological Mitigation Strategy. However, based on current information, it is envisaged that sites will initially be subject to a phase of limited archaeological evaluation trenching to help characterise remains and determine depth of deposits. The results of this will then be used to confirm which sites will be subject to full archaeological excavation and recording prior to construction commencing, and which sites may be subject to strip, map, and sample.

Based on current knowledge, a number of sites have been identified that require archaeological mitigation:

- MHU8066: Great Kelk shrunken medieval village (Field 238);
- MHU4112: Iron Age to Roman rectilinear enclosure, ditches, trackway, and possible settlement (Fields 39 to 42*);*
- MHU8124: Ring ditch (Field 92);
- MHU6567: Iron Age/Roman enclosures, ring ditches, and field systems (Field 122);
- *MHU10895: Ladder settlement and square barrows (Field 129);*
- *MHU63, MHU7347, MHU10864 and AECOM032: Roman road and multiphase settlement site with field system (Fields 142 to 145);*
- *MHU1128 and MHU1161: Enclosures, field systems, iron working, and pottery production site (Fields 158, 159, 161, 162);*
- *MHU3198/AECOM026: Iron Age and Roman rectangular enclosure and settlement (Fields 178 and 180);*
- *, AECOM006: Geophysical survey site AAA12 – possible round barrow (Field 130);*
- *AECOM007: Roman roadside settlement and Roman road (MHU4164) (Fields 135 and 136);*
- *AECOM058: Geophysical Survey Site AAA130 – small enclosure and ditch (Field 130); and*
- *AECOM016: Geophysical anomaly (Field 214).*

The Contractor will ensure that for areas where ridge and furrow survives as earthworks, earthworks will be subject to a topographical survey, with a metal detector sweep undertaken prior to stripping if the field was not surveyed as part of the pre-submission works. Stripping should be undertaken by a 360˚ excavator under an archaeological watching brief (by a suitably experienced archaeologist), with the earthworks reinstated post construction. These measures were agreed through consultation with HAP.

The Contractor will also liaise with the Ministry of Defence (MOD) in relation to the disturbance of the Halifax aircraft crash site located within Field 120 (AECOM057). Under the 1986 Protection of Military Remains Act, a licence is required to disturb any aircraft remains (014), and the crash site of the Halifax is thought to be located within the planning application boundary in Field 120. This is supported by fragments of aircraft wreckage recovered as part of the metal detector survey, although these remains may represent a wreckage spread rather than a ‘point of impact’. As a result, discussion should be

undertaken with the Joint Casualty and Compassionate Centre (JCCC) of the MOD to determine if a licence is required before any additional mitigation (such as excavation) is undertaken.

18.6.3.2 Areas where buried archaeological remains have not been recorded

In areas where buried archaeological remains have not been recorded to date, the Contractor will adopt a phased approach to inform the Archaeological Mitigation Strategy. The phased approach will initially consist of completing the geophysical survey and metal detector survey of areas not surveyed as part of the pre-submission works. This will be followed by evaluation trenching at a sample agreed with the County Archaeologists, but assumed to be in the region of 4-5%. The results of this work will then determine if any further archaeological works are required.

18.6.3.3 Setting of heritage assets

Consideration will be given to the appropriate use and appearance of construction compounds located in the vicinity of heritage assets, with a view to minimising identified impacts. This includes the secondary construction compounds at the B1249 Wansford, the A164 (Hutton) 1 and 2, and the A614 east (Bursea) which are considered to be in sensitive locations as their presence contributes to significant temporary adverse effects that have been identified during construction (**Chapter 9: Archaeology and Cultural Heritage**).

It has been identified (**Chapter 9: Archaeology and Cultural Heritage**) that through detailed design it may be possible to minimise impacts at these locations through the use of hoarding around the boundary of the compounds for screening, by restricting the height of elements within the compounds to for example, a single storey of site cabins and a height limit of approximately 2.5 m being placed on materials stockpiles. The Contractor will therefore take these measures into account during the detailed design stage. It is noted that whilst these measures will minimise the impact to heritage assets, it is not considered that they would reduce the reported magnitudes of impact resulting from the presence of the construction compounds. As such these measures do not have the capacity to lower the identified construction effects to non-significant levels and the effects remain as reported at construction.

18.6.4 Geology and Hydrogeology (including Contaminated Land)

The potential impacts to geology and hydrogeology are primarily associated with spillages and leaks of fuel/oil associated with plant/machinery, disturbance of contaminated land and potential degradation of soil quality during handling and movement of soil or tracking of heavy plant, as well as the potential for dewatering to locally affect groundwater levels.

The inductions and training set out in section 18.4, such as refuelling, emergency procedures and the use of spill kits will ensure good levels of environmental management. The appointment of a SHE Manager/ Advisor and ECoW and their regular monitoring, auditing and reporting (section 18.3) will ensure effective implementation of mitigation measures and environmental performance.

General good practice measures to prevent the contamination of ground or water are presented in section 8.5. These include, but are not limited to, measures to prevent vandalism and fly-tipping, pollution prevention measures and provision of spill materials, oil and fuel storage, refuelling, dust prevention measures (avoidance of wind-blow of contaminated materials), management of site waste water, and details of environmental management in relation to plant and machinery.

Section 18.6.6 and the Outline Soils Management Plan (**Appendix 12B**) consider good practice measures to be implemented to ensure the sustainable management of soil resources.

Ground investigation data, including geological, hydrogeological and contamination data are not currently available for the English Onshore Scheme. These will be obtained by the Contractor prior to commencement of construction to inform the design of the proposed converter station and cable route, and to identify appropriate mitigation measures which will be incorporated into the detailed CEMP.

18.6.4.1 Groundwater

Ground investigation surveys will be undertaken to inform the design of the proposed converter station and cable route. During surveys, groundwater levels will be monitored to allow groundwater profiles to be derived. From this, the requirements for dewatering (if any) will be identified.

Section 18.5.10.6 provides details of mitigation in relation to the dewatering of excavations. Should ground water dewatering (localised reduction in the groundwater table to create a dry working area) be required, the Contractor will prepare detailed dewatering scheme including Method Statements (or similar) and Risk Assessments, and appropriate permissions/ Environmental Permitting will be sought.

In addition, prior to construction the Contractor will undertake a hydrological risk assessment (HyRA) where the cable route passes through SPZ2 designations. The HyRA will consider potential effects on the groundwater regime (levels, flow regime and supply to abstractions) as well as potential pollution risk from the construction activities. This will expand upon the preliminary HyRA presented **in Appendix 10C** and will be informed by the results of the ground investigation and final Contractor design. Mitigation measures will be implemented to reduce the potential risk to acceptable levels. The identified mitigation requirements will be incorporated into the detailed CEMP.

Measures specific to water storage and flood risk are discussed in Section 18.6.5 and **Chapter 11: Hydrology and Land Drainage**.

18.6.4.2 Ground contamination

In addition to the standard mitigation measures described in sections 18.3, 18.4 and 18.5 and as summarised above, additional project specific measures to mitigate soil, ground and groundwater contamination may be required where the ground investigation indicates significant potential for contamination exists.

Following completion of the desk study work an appropriate intrusive ground investigation will be undertaken in accordance with all relevant guidance and legislation including BS 10175:2011 and Land Contamination Risk Management (LCRM) guidance (Ref 18-16). The ground investigation will be undertaken to achieve the following objectives:

- Determine the ground conditions to allow design of foundations and structures;
- Assess the nature, extent and magnitude of any soil and groundwater contamination present;
- Assess the risks (if any) from potential contaminants to human health and Controlled Waters; and
- Assess the ground gas regime.

The findings of the ground investigation may result in additional measures being required which may include:

- Ground Gas Risk Assessment (GGRA): If the ground investigation identifies significant thicknesses of Made Ground (>3m) in the vicinity of manned buildings (i.e. the converter station), a GGRA will be undertaken in accordance with CIRIA guidance document ‘Assessing Risks Posed by Hazardous Ground Gases to Buildings’ (C665), to further assess potential risks from ground gas;
- Piling Risk Assessment: Where piled foundations are proposed (i.e. the converter station), they will be designed in accordance with the Environment Agency guidance document ‘Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention’ (Ref 18-15) to prevent piles acting as preferential pathways for vertical migration of contaminants to groundwater;
- Generic Quantitative Risk Assessment (GQRA): A GQRA will be undertaken in line with Land Contamination Risk Management (LCRM) guidance (Ref 18-16) to identify potential risks to identified human health and groundwater receptors from soil, soil vapour and groundwater contamination. It is assumed that the GQRA will be undertaken in line with LCRM guidance (Ref 18-16), this is particularly pertinent at the proposed converter station where permanent above ground, potentially manned buildings will be present. If contamination risk is identified, a Remediation Strategy will be devised and agreed with the regulatory authorities prior to any remedial works, if required It is expected that this would be an appendix to the detailed CEMP;

- Additional assessment may also be required in relation to handling of potentially significant volumes of potentially contaminated spoil, for example at the HDD launch pit in the vicinity of heaps of spoil at the River Foulness crossing in Section 3. Depending on the findings of such an assessment, this may also entail the preparation of Materials Management Plan (MMP). The MMP would include specific methodology for the handling of this material including additional measures to reduce the potential risk to construction workers and groundwater (e.g. segregation of materials, validation testing and appropriate personal protective equipment (PPE)), over and above the standard 'best practice' measures summarised below and detailed elsewhere in this outline CEMP. It is expected that the MMP would be separated to the detailed CEMP. If handling of contaminated soils is required, the Contractor will ensure that risk assessments are in place in accordance with the Health and Safety at Work Act to restrict exposure to potentially harmful substances to a safe level for construction workers.

There is also the potential for unexpected contaminated land to be encountered during construction of the EOS, and a precautionary watching brief for contamination will be maintained during construction works. It is expected that this would be undertaken by the foreman or nominated operative during all intrusive works. The Contractor will implement the following control measures and procedures in the event of encountering unexpected contaminated land on site:

- The potential for contaminants to be present should be addressed in the SHE Plan and communicated to all site staff (for example at induction and at Toolbox Talks);
- All operatives must be provided with appropriate PPE;
- If any of the following are encountered, work must be stopped immediately, and the area evacuated and demarcated appropriately. The Site Manager and HSE Team must be alerted immediately to advise on next steps. If required a suitably qualified Geo-Environmental Engineer may also be contacted for further advice:
    - Discoloured or oily soil (chemical or oil residues);
    - The soil has a fibrous texture (asbestos);
    - Presence of foreign objects (chemical/oil containers);
    - Evidence of underground structures and tanks;
    - Existence of waste pits;
    - Animal burial sites; and
    - Old drain runs and potential contamination within building, tanks and flues.
- Should contamination be encountered, soil samples should be collected and sent to an approved laboratory for analysis to confirm suitable options for excavated materials (waste) management (including suitability for recycling).
- The Contractor will segregate obviously contaminated materials and stockpile these separately from materials that are uncontaminated and/ or suspected of being uncontaminated until verification testing has been undertaken.
- The Contractor will stockpile materials displaying obvious signs of contamination on an impermeable surface and prevent leaching of contaminants to ground and water; and
- Following the receipt of the soil sample analysis results, a specific method statement and risk assessment must be prepared to dispose of the material and remediate the area.

The Contractor will ensure that site cabins/ offices will be suitably ventilated and/ or have a suitable void beneath in accordance with BRE FB41 'Radon in the Workplace, A guide for building owners and managers' (Ref 18-17), in order to prevent exposure to radon above workplace limits.

Any material imported to site, such stone access roads/ foundations will be natural quarried stone or, if recycled, the material will undergo chemical testing. The suite of contaminants and site use criteria will be agreed with regulatory authorities, in order to demonstrate that the material is suitable for use on site and does not pose a risk to construction workers or the environment.

Should any contaminated material be identified it will be treated and/or disposed of appropriately. Material to be disposed offsite will be analysed to determine the appropriate waste classification and disposal location.

Waste management is discussed in more detail in section 18.6.11 and **Chapter 16: Waste and Materials.**

18.6.5 Hydrology and Land Drainage

18.6.5.1 General construction

General good practice measures to prevent the contamination of surface water and drainage are presented in Section 8.5. These include, but are not limited to, measures to prevent vandalism and fly-tipping, pollution prevention measures and provision of spill materials, oil and fuel storage, provision of Drainage Management Plans, preconstruction drainage, measures for managing foul drainage, wastewater, dewatering of excavations and concrete washout, and details of environmental management in relation to plant and machinery.

An outline drainage design is included with this submission and will be used as the basis of the Contractor's detailed drainage design. Once the detailed drainage design is complete, and prior to any works commencing on site, the Contractor will prepare a Drainage Strategy and Surface Water Management Plan (SWaMP) which are likely to be appendices to the detailed CEMP. These willl ensure that all drainage is consistent with CIRIA guidance (C532) (Ref 18-18) and developed so as to promote effective management of water resources and reduce potential for impacts to the external water environment. A phased approach may be taken to the development of these documents to reflect the phasing of the construction programme and the different elements of the English Onshore Scheme. The Drainage Strategy will define the installation of pre-construction drainage measures to intercept run-off and ensure that discharge and runoff rates are controlled in quality and volume, in turn causing no degradation to water quality; and the SWaMP will provide measures for managing surface runoff volume and treating sediment and pollutant laden surface water (see section 18.5.10). This may include the use of settling tanks or ponds to remove sediment, temporary interceptors or a hydraulic brake. Construction design will include measures for treatment and disposal of water used and captured from the construction site and compounds, ensuring waters controlled in quality and volume, in turn causing no degradation to water quality. These will be described in the Drainage Strategy and SWaMP. Areas with prevalent run-off will be identified and drainage actively managed, e.g., through bunding and/or temporary drainage. The Drainage Strategy and SWaMP may include specific measures to be used in high-risk areas (for example construction along or across steep gradients and water course crossings).

The detailed CEMP will also make reference to appropriate CIRIA construction guidance where relevant These include CIRIA C532 - Control of Water Pollution from Construction Sites (Ref 18-18), C648 - Control of water pollution from linear construction projects (Ref 18-19), and CIRIA 786F - Culvert, Screen and outfall manual (Ref 18-20). Although withdrawn in 2015, the Environment Agency's Pollution Prevention Guidelines (Ref 18-21) provide environmental good practice guidance and will also be considered in the creation of the detailed CEMP.

The Incident Response Plan (IRP) will set out how the project will respond to incidents and pollution events, for example silty run off to surface waters, and how these are to be reported (both internally to the project and externally).

Other general construction measures relating to Hydrology and Land Drainage which will be followed by the Contractor include:

- Management of construction works to comply with the necessary standards and consent conditions as identified by the Environment Agency;
- Disturbance to areas close to watercourses reduced to the minimum necessary for the work. A minimum 15 m separation will be maintained from watercourses unless where crossed or discharged into;
- During installation of the cable (over land) drainage measures and provision for water management is included within the planning application boundary;

- Stockpiles will have measures in place to prevent erosion, and thus mitigate potential for sediment laden runoff (see section 18.6.6. and **Appendix 12B**);
- All discharges to be attenuated to at most greenfield runoff rates unless otherwise agreed with the relevant regulatory stakeholder;
- Temporary diversions during works may be required where under-drainage infrastructure is directly encountered. These diversions would be short term and only for the duration of the works at that particular location unless otherwise agreed. The most appropriate method is to be proposed for each field and any works will be undertaken in agreement with the appropriate stakeholder;
- The English Onshore Scheme, where possible, has been located in areas at low risk of flooding so as to avoid flood risk where possible, the Contractor will seek to ensure this is followed at detailed design;
- All dewatering operations, including both well-point dewatering (ground water) and the removal of rainwater from excavations will be considered in relation to the Environmental Permitting (England and Wales) Regulations; and appropriate Permits of exemptions obtained in advance of the works. A Permit to Pump system will be implemented by the Contractor (section 18.5.10.6).
- Where the risk of sediment reaching watercourses remains, investigate further methods to protect watercourses, such as installing silt fences along riverbanks or straw bales next to discharge pipes;
- Placement of excavated material in such a way as to avoid any disturbance of areas near to the banks of watercourses and any spillage into the watercourses;
- The site accesses at the landfall, temporary construction compounds and construction corridor will comprise crushed stone over a permeable geotextile to mitigate the impacts of run off;
- Should water abstraction be required necessary permits will be obtained in agreement with appropriate regulator in accordance with the Catchment Abstraction Management Strategy;
- Where the construction site access road crosses existing underground services such as mains water or sewerage pipes the use of temporary metal roadway sections or other suitable measures may be employed to distribute heavy loads and protect the underlying services;
- Wherever practicable, earthworks in areas that are saturated (either through heavy rainfall or flooding) will be avoided until those areas have dried/ drained; and
- Sign-up to early flood warning systems, where available, ensuring access and egress to all works areas via proposed construction haul roads is achievable at all times in regard to flood risk. If required, a Flood Management Plan, to include details on the frequency of weather and stream flow observations, how forecasts, alert and actions will be disseminated, signage, roles and responsibilities, and emergency response procedures including detailed evacuation plan and procedures for making safe plant and equipment, will be prepared and contained as an appendix to the detailed CEMP.

It is also recognised that maintenance of the drainage systems will ensure the systems remain effective for the life of the English Onshore Scheme, however discussion of these Operational Phase measures is beyond the remit of the CEMP.

18.6.5.2 HDD crossings below watercourses

The Contractor will adopt the following measures with respect to HDD crossings below watercourses:

- All temporary construction compounds (launch and retrieval pits) associated with trenchless techniques will be dammed and on-site water management protocols would be incorporated to manage off site flows/runoff (e.g., mud filters or sediment/pollutant capture mechanism to nearby attenuation ponds). Discharge will be pumped/gravity fed to local watercourse utilising a flow control device or via soakaway into the ground. Thus, ensures all discharge is controlled in terms of quality and volume. Where discharges to watercourse do not meet the requirements of the Environment Agency's regulatory position statement, or do not qualify for an exemption, or for all discharges to ground, appropriate Environmental Permits will be obtained;

- Surface water abstraction may be required for mixing/cable installation at HDD sites. Where abstraction is necessary, permits will be obtained in agreement with the appropriate regulator in accordance with the Catchment Abstraction Management Strategy and be for less than 28-day duration per water body;
- Depth between hard channel bed level and top of trench/cable bore is to be agreed on a case-by-case basis with the relevant regulatory stakeholders (Environment Agency/Internal Drainage Board (IDB)/Local Lead Flood Authority (LLFA) and will therefore avoid any potential for obstruction to flow or risk of damage from any typical in-channel maintenance activities;
- There may be a potential need for dewatering operations to be undertaken at HDD locations and trenches in areas identified as being at flood risk from groundwater. Groundwater, if encountered, will be managed through pumping, storage, treatment and then discharged at a controlled rate which is to be agreed with the relevant regulator (see also section 18.5.10.6).

18.6.5.3 Open cut across watercourses

The Contractor will adopt the following measures with respect to open cut watercourses:

- Open cut trenches will be dammed (assuming a complete channel width barrier) and entire flow from the watercourse over-pumped around the trench. Where required, over-pumping capacity will be determined on a case-by-case basis by the temporary works designer in consultation with the relevant stakeholder as part of the detailed design ensuring flow rates are sufficient to ensure no upstream hydrological regime changes and using fish friendly pumps as needed. On-site water management protocols would be incorporated to manage off site flows/runoff (e.g. mud filter or sediment/pollutant capture mechanism to nearby attenuation ponds) from within the working area. Discharge will be pumped/gravity fed via attenuation ponds to remove sediment and potential contaminants before discharging (to local watercourse or infiltration) at a controlled rate which is to be agreed with the relevant regulator. This ensures discharge is controlled in terms of quality and volume;
- Groundwater encountered while excavating trenches will be managed through suitable pumping arrangements, storage, pollution control measures and a controlled discharge which is to be agreed with the relevant regulator (section 18.5.10.6). Temporary dams would also be provided to limit below ground flows via the trench;
- Surface water abstraction may be required at watercourses for mixing/cable installation. Where abstraction is necessary, permits will be obtained in agreement with the appropriate regulator in accordance with the Catchment Abstraction Management Strategy and be for less than a 28-day duration per water body;
- Depth between hard channel bed level and top of cable trench is to be agreed on a case-by-case basis with the relevant regulatory stakeholders (Environment Agency/IDB/LLFA) and will therefore avoid any potential for obstruction to flow or risk of damage from any in-channel maintenance activities post works.

18.6.5.4 Open cut direct lay or ducting on land (near watercourse/flow path/floodplain)

The Contractor will adopt the following measures:

- Open cut trenches will be dammed and any water within pumped/gravity fed via attenuation ponds to remove sediment and potential contaminants before discharging at a pre-agreed controlled rate (to local watercourse or infiltration). This ensures discharge is controlled in terms of quality and volume. The Contractor will ensure that appropriate Environmental Permitting is in place.

18.6.5.5 Construction compounds

The Contractor will adopt the following measures:

- Construction compounds and access tracks will increase the impermeable area. An appropriate temporary drainage system would be incorporated to manage off site flow/runoff, ensuring waters are controlled in quality and volume. This will comprise attenuation ponds and/or subbase storage beneath compounds where possible Discharge will be pumped/gravity fed to local watercourse or via soakaway at a controlled rate which is to be agreed with the relevant regulator;

- There will be an independently managed foul drainage system at the construction compounds with the foul water contained on site, regularly pumped, emptied, and transported off site. Therefore, there is no requirement for any formal piped foul drainage on site or any offsite connection;
- Construction compounds will include bunded/sump areas with proprietary treatment for re-fuelling, wheel washing and oil separator areas to prevent runoff of these liquids into surface waters. Any site discharge will be pumped/gravity fed via attenuation ponds to remove sediment and potential contaminants before discharging (to local watercourse or infiltration) at a controlled rate which is to be agreed with the relevant regulator; and
- Construction compounds will be placed in area at lowest risk of flooding, were practicable.

18.6.5.6 Haul road and water crossings

The Contractor will adopt the following measures:

- An appropriate drainage system will be incorporated to manage surface water and sediment runoff. This will include header and filter drains, use of sandbags either side of the haul road at watercourse crossings and ensure runoff is directed into attenuation ponds to remove sediment and potential contaminants before discharging (to local watercourse or infiltration) at a controlled rate which is to be agreed with the relevant regulator;
- In general, the haul road will comprise a circa 0.5 m deep layer of unbound granular material with the potential for geogrid layers to be used for stabilisation. Where the haul road will be built up, pipes will be installed to ensure natural drainage pathways are maintained across the haul road;
- Some temporary accesses will be constructed over a pre-installed culvert pipe in the watercourse. The culvert will be appropriately designed and the pipe will be of suitable size to accommodate the natural water regime (volumes and flows), in accordance with DMRB standards. For the majority of watercourses, the temporary culvert will be sat at hard bed level and orientated with flows to limit obstruction and potential for scour. These will allow free passage for fish and eels and be sited to avoid spawning habitat/morphological bar and riffle features. In some cases, temporary culverts may be above hard bed level, however this is limited to channels which are balanced systems with little flow and no concern for fish and eel passage. These will be determined on a case-by-case basis with the relevant stakeholder;
- All temporary accesses will be removed at the end of the construction programme at the latest or sooner if they are no longer required;
- All hard banks and bed added during construction will be temporary and the bankside will be returned to its original stabilised state after construction, including re-grading where required and re-vegetating/seeding (see section 18.6.1);
- Some temporary accesses to cross larger or ecologically sensitive watercourses will be via a temporary bridge (for example Kelk Beck, section 18.6.1.2), thereby avoiding impacts associated with culverting. Temporary bridges will be clear span, with no bed or bank reinforcements, and foundations set well back from the bank edge. The soffits will be >0.6m higher than bank tops with no change to surrounding ground level profiles surrounding the crossing. They will be sited to avoid tree/root loss and cross at straight reaches, perpendicular to flow where practicably possible.

18.6.5.7 Outfall and headwall installations

The Contractor will adopt the following measures:

- Headwall installations will occur at nearest watercourses. Details of individual outfalls and headwall construction will take into account localised catchments and upstream conditions. Precise locations will be determined at detailed design but will in general include:
  - No part of the outfall structure will protrude significantly beyond the existing line of the bank. This includes headwalls, wingwalls and protection aprons. This will help to reduce turbulence and localised scour;
  - Discharge will be with the direction of flow, ideally the outfall pipe should be angled at 45° to the direction of flow; and
  - Sited to avoid tree loss or banks experiencing significant scour.

- All hard banks and bed added during construction will be temporary and the bankside will be returned to its original state after construction;
- Design details for outfalls into watercourses will need to be reviewed and confirmed through consultation with the respective regulating authority.

18.6.5.8 Converter station

The converter station will be provided with permanent surface water drainage designs consistent with local and national regulatory requirements. An outline drainage design has been produced which includes partial sub-base storage and attenuation pond for flood storage and treatment of site runoff. The outline design will form the basis of the detailed drainage design to be prepared prior to construction. The detailed drainage design will ensure waters are controlled in quality and volume during construction and at operational stage. Discharge will be pumped/gravity fed to a local watercourse at a controlled rate which is to be agreed with the relevant regulator with details provided in the detailed CEMP.

The Contractor will ensure that the ground level at the converter station in Section 4 are raised to ensure that the Finished Floor Level (FFLs) are at a level of 6.18 mAOD, which is the maximum modelled flood level in the 0.1% + 50% Climate Change uplift Annual Exceedance Probability (AEP) event. This is to ensure that the structure remains outside the modelled flood extents and depths from nearby watercourses to the 1% + 39% Climate Change AEP event, as required by the Environment Agency.

Although this has potential to displace flood water into other areas (which can result in an increase in local flood depths, hazards and time of inundation) hydraulic modelling (**Appendix 11C**) has shown this to be negligible, and as such it expected that floodplain compensation will not be required for this scheme. This would need to be reviewed by the Contactor if there are design changes to the FFLs.

18.6.6 Agriculture and Soils

Measures to minimise the potential for impacts related to the contamination of soils through spillages of oils and chemicals are outlined in Section 18.5. These include, but are not limited to, measures to prevent vandalism and fly-tipping, pollution prevention measures and provision of spill materials, oil and fuel storage, and details of environmental management in relation to plant and machinery.

Good practice principles to minimise any disruption to agricultural activities during construction are described at18.5.11.

This section specifically relates to the measures required to ensure the sustainable management of soil resources and the quality of land restoration. The good practice soil management measures are based upon industry guidance such as Defra's Code of Practice (Ref 18-22) and the Institute of Quarrying's Good Practice Guide (Ref 18-23) and will ensure that impacts to the structure and function of the soils are minimised so that soil quality is maintained. Maintaining soil quality also enables reinstated/restored soil profiles to deliver the same level of ecosystem services (for example supporting biodiversity and plant growth, as a filter and store for water and as a store for carbon) hence enabling temporarily disturbed agricultural land to be restored to the same Agricultural Land Classification (ALC) grading (measure of land quality) as prior to development. These measures are summarised below and are described in greater detail in the Outline Soil Management Plan (SMP) at **Appendix 12B**. The detailed SMP will be an appendix to the detailed CEMP.

To inform the detailed SMP (to be prepared by the Contractor prior to construction) detailed pre-construction soil and Agricultural Land Classification (ALC) surveys for areas of temporary development (e.g., cable routes, compounds and temporary accesses) will be undertaken when the precise routing and placement of infrastructure are known, ensuring the surveys are targeted to areas directly impacted by the English Onshore Scheme. The surveys will be undertaken by experienced soil scientists in line with Natural England guidelines (Ref 18-24). Detailed survey of the converter station site has already been undertaken, as described in **Chapter 12: Agriculture and Soils**.

The Contractor will engage a specialist soil scientist to prepare the detailed SMP based upon the Outline SMP (**Appendix 12B**) and incorporating the detailed survey data. No works will be undertaken until the Detailed SMP is in place.

The detailed ALC surveys will also serve as a baseline against which restoration success, in terms of the agricultural quality of the restored land, can be measured to ensure that the commitment of reinstatement of land to the same quality or better has been met.

The general good practice measures which will be applied by the Contractor during construction will include, but not be restricted to, the following:

- Construction traffic/plant movements will be restricted to operating on the designated access roads and not on unprotected soils;
- No materials storage (including soil storage) to occur outside designated areas;
- No trafficking/driving of vehicles/plant on reinstated soil (topsoil or subsoil);
- Topsoil stripping will be restricted to the extent of the permanent and temporary elements of the English Onshore Scheme (where required);
- Appropriate geotextile membranes, wooden matting (bog mats) or aluminium trackways will be used over particularly sensitive areas;
- Topsoil, subsoil and different superficial deposits will be stored separately to prevent mixing and will be reinstated in reverse order of excavation;
- Soils should only be moved under the driest practicable conditions, and this must take account of prevailing weather conditions;
- Soil stabilising methods will be undertaken to reduce the risk of erosion, the creation of leachate and potential water quality issues;
- Early re-seeding of the reinstated ground will be undertaken to help re-establish and stabilise the structure of the topsoil;
- As stated in section 18.6.5., a minimum 15 m separation will be maintained from watercourses unless where crossed or discharged into, this includes storage of soil. For surface water features which are crossed by the works, soils will not be stockpiled 5 m unless a greater distance of separation is required to respect ecological buffers (for example standoffs for water vole mitigation (section 18.6.1.3).
- Stockpiled soils will be protected by appropriate measures, for example, membranes, spraying or seeding to reduce the risk of windblown dust, surface water run-off and to reduce the risk of overland migration of silt and sediment to surface waters;
- Any potentially contaminated soils will be stored separately on an appropriate impermeable surface material and covered prior to testing and removal from site via a suitable licenced contractor (if required);
- A buffer strip will be left along watercourse/ ditch banks to prevent the sediment yield generated by the works to enter the water environment. Silt and sediment control and trapping measures would be used as appropriate;
- Construction will not be undertaken during extreme wet weather where it may lead to erosion of sediments or could increase the risk of flooding.
- Only direct movement of soil from donor to receptor areas (no triple handling and/or ad hoc storage);
- No soil handling to be carried out when the soil moisture content is above the lower plastic limit;
- No mixing of topsoil with subsoil, or of soil with other materials;
- Stockpiles which are to be in place for longer than six-months will be seeded with appropriate low maintenance grass/clover mixture (to be agreed with landowner and subject to the conditions/restrictions within the contract). This will protect the soil against erosion, minimise soil nutrient loss, maintain soil biological activity, and help prevent colonisation of the stockpile by nuisance weeds that could spread seed onto adjacent land;
- Any soil found to be contaminated will not be used for reinstatement, and will be disposed of in accordance with procedures set out in the detailed CEMP (see also section **Error! Reference source not found.**);

- The soil surface will be decompacted and cultivated as required prior to replacement of soils to prevent the creation of an impermeable or slowly permeable layer. Such a layer would lead to impeded drainage and waterlogging;
- Stripped soil will be reinstated as close to where it was removed as possible. This will help to maintain a local seed base and the local geological/hydrological characteristics;
- Ecologically important soils, for example hedgerow soils or soils from the SSSI will be stripped and stored separately and reinstated at the point of origin to maintain the seed bank and ensure the restoration of pre-development habitats;
- Plant and machinery only work when ground or soil surface conditions enable their maximum operating efficiency;
- Daily records of operations undertaken, and site and soil conditions should be maintained; and
- Low ground pressure (LGP models) or tracked vehicles should be used where possible.

Detailed methodologies for the removal stripping and reinstatement of soils are provided in upon the Outline SMP (**Appendix 12B**).

Currently, the majority of soils within the boundary of the English Onshore Scheme are identified as being at very small to small risk of erosion meaning that they can be protected by the application of standard good practice measures such as those set out in Defra's Code of Practice (Ref 18-22) and the Institute of Quarrying's Good Practice Guide (Ref 18-23), and as summarised above.

Soils at moderate, high and very high risk of erosion requiring a greater level of mitigation (bespoke mitigation) in addition to these standard measures, have also been identified within the boundary of the English Onshore Scheme. These have been identified from the Soil Survey of England and Wales' 1:250,000 scale strategic mapping and include:

- Section 1: Moderate risk soils of the Wick 1 and Bishophampton associations;
- Section 2: Moderate risk soils of the Andover association, high risk soils of the Everingham association, and very high risk soils of the Newport 1 association;
- Section 3: Moderate risk soils of the Holme Moor association, high risk soils of the Everingham association, and very high risk soils of the Newport 1 association; and
- Section 4: Moderate risk soils of the Wick 1 association.

The targeted pre-construction soil surveys would accurately define the presence and geographical extent of these soils (or other soils requiring bespoke mitigation) within the areas to be directly disturbed by the English Onshore Scheme. The data would then be used to identify specific field scale mitigation measures which will be defined in the detailed SMP. These bespoke measures may include but are not limited to:

- Suitable location of stockpile on a flat area of ground away from areas where there may be high runoff or water ponding;
- Covering of the soil stockpiles in a suitable geotextile to stabilise soils and reduce the chance of erosion from water and wind until the vegetation cover becomes effective;
- The use of specialist surface run-off control systems;
- Erection of wind barriers; and
- Stand-off procedures for adverse weather conditions (for example prevention of soil handling on windy days for soils with a high risk of wind erosion).

The importation of topsoils and/or subsoils to the English Onshore Scheme is not expected to be required. Should soil importation be required, a certificate of suitability (compliance with British Standards and soils being of an appropriate type for the desired end use) will be obtained by the Contractor. This will be reviewed by the ECoW and/or Technical Specialist Advisor and be sent to NGET and the landowner for acceptance at least one week prior to the planned delivery date. Soils will only be imported to site with the agreement of NGET and the landowner. Should excess clean soil be generated, for example at the converter station a range of potential options for sustainable reuse have been identified and are further described at section 18.6.10.

18.6.7 Noise and Vibration

No major vibration sources are envisaged to be introduced as part of the English Onshore Scheme and as such no measures beyond the standard good practice in section 18.5 are proposed to mitigate vibration effects.

Measures to mitigate noise will be implemented during the construction phase of the English Onshore Scheme in order to minimise impacts at local noise sensitive receptors (NSRs) and ecological receptors, particularly with respect to any activities which may be required to take place outside of normal working hours (such activities would need to be agreed in advance with ERYC and SDC). Mitigation measures covered in this CEMP represent the adoption of best practicable means (BPM), as defined in Section 72 of The Control of Pollution Act 1974 (CoPA).

The assessment presented in Chapter 13: Noise and Vibration suggested a potential for Moderate adverse construction noise to be received at receptors Rec23 (Route Section 1), and Rec60 and Rec62 (Route Section 4) due to airborne construction noise effects during Phase 1 of construction. As this Phase of works is the establishment of access roads and site compounds, effects will therefore be temporary and of a short duration whilst the works are established. These effects will require bespoke mitigation through further detailed assessment and monitoring once the contractor is appointed and further design details are known, and good communication with residents (see below). Prior to the commencement of works, the Contractor will complete a noise and vibration risk assessment to assess the requirement for any noise and vibration monitoring during the construction period. The Contractor will agree the scope and detail of any noise and vibration monitoring required with ERYC and SDC in advance.

Noise/vibration monitoring would allow periods where elevated levels arise to be identified and allow works to be halted or alternative working practices to be explored. If required, additional baseline monitoring will be undertaken by the Contractor to establish the existing levels of noise and/ or vibration prior to the commencement of the construction works, however it is not expected that this will be required.

The need for monitoring of noise levels during construction will be determined through the detailed assessment undertaken by the Contractor prior to works commencing and will be the subject of discussion between the Contractor, ERYC and/or SDC, as the local planning authority. Noise monitoring would allow periods where elevated noise levels arise be identified and allow works to be halted or alternative working practices to be explored. The Contractor will need to adhere to any site-specific noise monitoring related conditions imposed by ERYC/SDC. Any incidents of noise limits being exceeded will be reported by the Contractor to the Applicant to forward to ERYC/SDC as soon as is practical.

There is also potential for significant noise effects if work were to take place at the same intensity during evenings/ night-time and/ or other weekend periods (i.e., outside of the normal working hours set out in section18.5.2). Such activities would therefore need to be agreed in advance with ERYC/SDC, however it is intended to avoid construction works and especially noisier activities outside of normal working hours as far as is practicable, limiting them to those which are unavoidable e.g. HDD or jointing which require continuous working. Measures would be put in place to control or restrict activities during evenings/ night-time so as not to exceed the SOAEL. By timing construction works and avoiding noisier activities being undertaken outside core hours, significant adverse effects can be avoided.

The effect of noise and vibration at nearby sensitive receptors can be minimised through a good communication strategy. As described in section 18.4, the Contractor will develop and implement a Stakeholder Communications Plan to make sure that the public, residents and nearby businesses are kept fully informed over the scale and nature of the works, when they are to take place, and who to contact if they are disturbed. Effective liaison prior to works being undertaken, providing information on the construction works and advance notice of when high noise generating activities are taking place can reduce adverse effects.

The preferred approach for controlling construction noise and vibration is to reduce levels at source, where reasonably practicable. Sometimes a greater noise or vibration level may be acceptable if the overall construction time, and therefore length of disruption, is reduced. The embedded mitigation measures which will reduce the impacts of noise and vibration are taken from the relevant British

Standard (Ref 18-25). Many of these measures are covered by the general mitigation measures set out in section 18.5. These include, but are not limited to, the choice, use and maintenance of vehicles and plant (Section 18.5.13), minimising drop heights, and the maintenance of haul routes and imposition of site speed limits to minimise noise and vibration from site traffic (Section 18.5.15). In addition to these the Contractor will also:

- Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as possible;
- Avoid the unnecessary revving of engines and equipment will be switched off when not in use;
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas;
- Use rubber linings in, for example, chutes and dumpers reduce impact noise where required;
- Stipulate that plant and vehicles will be sequentially started up rather than all together;
- Ensure care is taken when erecting or striking scaffolds to avoid impact noise from banging steel;
- Use pre-fabricated components where practicable;
- Use mobile acoustic barriers located close to any noisy works during night-time;
- Minimise the duration of night-time activities by undertaking preparations during daytime or evening periods, when higher noise levels may be tolerated; and
- As described in section 18.4, the Contractor will ensure that noise management is communicated to all staff and operatives via induction training, toolbox talks etc.

The measures listed above will be implemented and supplemented as necessary with further bespoke measures identified through further detailed assessment as part of the detailed CEMP.

The Contractor will adhere to any site-specific noise and/or vibration monitoring related Conditions imposed by ERYC/SDC.

The Contractor will report any exceedances of agreed noise limits or vibration levels to NGET and ERYC/SDC as soon as is practicable, adhering to any reporting requirements or timescales set out in Conditions or other agreements. Reporting requirements will be detailed in the Incident Response Plan (IRP) to be prepared by the Contractor (in agreement with NGET) prior to construction.

18.6.8 Traffic and Transportation

General measures related to the prevention of traffic generated dust, debris and fumes; road cleaning; and vehicle maintenance are described in section 18.5.

The Contractor will undertake a Road Condition Survey (also referred to as a dilapidation survey) prior to any enabling works or construction commencing. The results of this survey will determine the areas which require remedial works to ensure they are suitable to accommodate construction traffic associated with the English Onshore Scheme whilst maintaining accessibility and safety for existing road users. Furthermore, the current condition of the highway network will be documented that will allow a 'Wear and Tear Agreement' to be made with the Local Highways Authority (LHA) to ensure that the condition of the highway network is kept to a similar level pre and post construction.

Construction traffic will be managed according to the Detailed Construction Traffic Management Plan (CTMP) to be prepared by the Contractor prior to the commencement of traffic movements associated with the English Onshore Scheme. The Detailed CTMP will be developed in consultation with ERYC., SDC, National Highways (as necessary), North Yorkshire Police, Humberside Police, and other stakeholders (if required) following award of consent. The structure of the detailed document will expand upon the information included in the Outline CTMP presented at **Appendix 14E**.

As well as setting out traffic routing and general traffic management measures for the English Onshore Scheme (including details of communications, inspection/monitoring and reporting; speed limits; temporary traffic management; and assigning roles and responsibilities), the Detailed CTMP will also clearly define any traffic restrictions as identified and agreed with Local Highways Authority in advance

of construction (if required). Examples of restrictions on the movement of construction traffic on routes directly passing or passing close to sensitive areas include, but are not limited to, avoidance of school drop-off and pick-up periods due to the potential for children to be on the road and congestion caused by waiting vehicles, avoidance of loading times at named commercial premises to minimise disruption and congestion; and in relation to any local special events (for example cycle races) which may be organised during the construction period.

The Contractor will produce a Construction Route Hazard Risk Register (or similar) as part of the process of finalising the construction routes for the English Onshore Scheme. This will identify risks and locations along with possible additional mitigation measures to be considered further during detailed design and Detailed CTMP implementation.

The Detailed CTMP will also detail the hours for which movements of construction traffic/ deliveries, can take place. At present, this is assumed to be 08:00 – 18:00 Monday to Saturday with no construction taking place on Sundays, however this is yet to be confirmed and is subject to an agreement between all relevant parties before construction commences. Should (other) construction work be required to take place on a Sunday, approval from would be required from the LHA prior to any work taking place. Additionally, where practicable and desirable, night deliveries will be undertaken where required, to minimise disruption and maintain safety on the local road network.

Prior to works commencing, the Contractor will also produce a detailed Construction Logistics Plan to manage the sustainable delivery of goods and materials, and a Travel Plan that supports and encourages sustainable travel by workers (public transport, cycling, walking and car-sharing), along with the CTMP these documents will form part of the detailed CEMP. Through the Travel Plan, the detailed CTMP will include measures that will seek to reduce single occupancy trips by stipulating the need for minibus or coach style services to and from accommodation areas and promoting car sharing when travelling outside of the planning application boundary. A Code of Good Practice in relation to transport and traffic movements will also be prepared.

The Contractor will commission/produce an Abnormal Indivisible Load (AIL) report to assess the transformer delivery to the converter station. This will demonstrate that a suitable route is available from the Port of import to the proposed converter station site and will be agreed with key highway authorities. AIL deliveries will not be allowed to occur until such agreements are in place. However, given the location of the converter station, adjacent to the existing Drax Power Station, means it is considered that the local highway network will be able to accommodate AIL movements.

The Contractor will ensure that all access points that require the creation of a junction bellmouth are designed based on the relevant standard from DMRB CD 123 Geometric Design of at grade priority and signal-controlled junctions and in consultation with the Local Highways Authority thereby negating any potential safety impact associated with the construction activity associated with the English Onshore Scheme and the existing road safety.

The monitoring and enforcement of the English Onshore Scheme's CTMP will be a key responsibility of the Contractor to ensure that any negative impacts associated with construction traffic are quickly addressed and that suitable action is taken. Details of the English Onshore Scheme's Stakeholder Communications Plan are given in section 18.4.2, this will ensure effective communication between the English Onshore Scheme and the public.

Mitigation measures in relation to Traffic and Transport are discussed in more detail in the Outline CTMP presented at **Appendix 14E,** but some key points are summarised below:

- Where reasonable and practicable, construction vehicles (including AIL) will avoid travelling in convoys on public roads;
- Where required, suitably qualified personnel will be present at key locations during construction to guide traffic, the public and to enhance safety;
- Where reasonable and practicable, AIL deliveries will be programmed to cause minimal disruption i.e., at night or during off-peak hours. All AIL deliveries will be accompanied by escort vehicles with suitable signage and warning beacons;

- Where required, Temporary Traffic Management methods will be used to enhance safety conditions on the road network and where physical mitigation measures are impractical or cannot be accommodated during the construction phase of the English Onshore Scheme;
- Only pre-agreed traffic routes and site Access Points will be used;
- Winter maintenance (including de-icing and snow clearing) will be carried out on public roads which will be used by construction traffic to maintain road user safety. These works may be undertaken by the Contractor, or a contribution agreement may be reached with LHA (to be described in the Detailed CTMP);
- Through the implementation of the Travel Plan, the Contractor will encourage staff to utilise public transport and to car share to reduce the number of vehicle movements;
- There will be no parking of English Onshore Scheme related vehicles (including private vehicles used for commuting) on public roads within a two-mile radius of the Site (unless within the limits of an English Onshore Scheme traffic management scheme;
- The Contractor will provide adequate on-site parking close to the place of work, where feasible, or implement 'park and ride' measures to ensure compliance with the above statement;
- The Contractor will use clear signage to show construction traffic routes and Access Points;
- A consistent arrangement of signage will be in place at and/ or near to each Access Point during its use in order to provide relevant warnings and information to other road users (including pedestrians) of the likely presence of high volumes of construction traffic (HGV) in the area. Further information related to the type and location of any road signs will be provided in the detailed CTMP and agreed with the LHA; and
- All construction traffic will abide by the posted speed limits (or any temporary speed limits which may be in place) for the roads travelled, or by any advisory speed limit as defined by the Contractor in the Detailed CTMP.

18.6.9 Socio-economic, Recreation and Tourism

Impacts to Socio-economic, Recreation and Tourism receptors are largely mitigated through the measures described in section 18.5 and also in the discipline specific measures described to minimise impacts in relation to landscape and visual amenity (section **Error! Reference source not found.**), agriculture and soils (section **Error! Reference source not found.**) noise and vibration (section **Error! Reference source not found.**) and traffic and transportation (section **Error! Reference source not found.**).

Direct impacts to land use will be managed through on-going negotiations and communications via the NGET English Onshore Scheme Lands Team with stakeholders including landowners and owners of businesses to mitigate impacts.

The Contractor will implement the measures to minimise impacts on users of Public Rights of Way (PRoW) during the construction as set out in the PRoW Management Plan. A detailed PRoW Management Plan is to be prepared prior to construction, based upon the Indicative PRoW Management Plan included as **Appendix 15A** of this ES. The PRoW Management Plan sets out appropriate measures to ensure accessibility to recreational routes and PRoW is maintained throughout construction, with temporary crossings and minor managed diversions to routes provided where required where routes cross the proposed cable corridor to ensure routes remain accessible and operational throughout.

18.6.9.1 Recreational Routes and Public Rights of Way (PRoW)

Appropriate measures will be implemented to ensure accessibility to recreational routes and PRoWs, community facilities, private assets and development land in the study area is maintained. This will be achieved through the use of best practice measures, regard to phasing of works and if necessary, providing diversions for users. Temporary diversions will be supported by clear signs and, where possible, will be planned and programmed to minimise disruption to users.

Through careful siting of the construction compounds and laydown areas, and careful planning of construction activities through consultation with landowners, severance of recreational routes and

PRoWs has been limited as far as reasonably practicable. Where temporary disruption to PRoWs, National Cycle Network or other recreational routes during construction is unavoidable, suitable diversions would be agreed with ERYC and SDC and implemented where temporary diversions are required, to ensure routes remain accessible and operational throughout construction. Where applicable, PRoW diversions will "dog-leg" the original route before a perpendicular crossing of the corridor. The management of recreational routes and PRoWs will be further described within the detailed CEMP (potentially reported as an appended Public Rights of Way Management Plan, if required).

18.6.10 Materials and Waste

18.6.10.1 Materials

To minimise the need for the importation of (virgin or recycled) fill materials to site and to reduce the volume of waste generated, the Contractor will maximise the reuse of site-won materials, where suitable, as far practicable. To aid this, the Contractor will prepare a Materials Management Plan (MMP) setting out how excavated materials are to be managed in accordance with CL:AIRE: Code of Practice (Ref 18-26). This will ensure that the quality of site-won soil resources is maintained during construction so that they remain suitable for re-use, do not become contaminated, and ultimately do not become waste.

Opportunities to reduce the amount of imported material required for temporary works (for e.g. haul roads) through the use of alternative construction methods will be considered by the appointed Contractor. Where construction materials are imported to site the Contractor will take the following measures into account during procurement, delivery, storage and handling.

18.6.10.1.1 Procurement

- A procurement strategy that takes into account the environmental lifecycle of materials will be developed;
- Locally sourced materials and suppliers will be identified and used where practicable;
- The use of hazardous materials will be minimised as far as is practicable;
- Where site-won material is not available or suitable for reuse, the use of secondary or recycled materials and products will be prioritised, where available and practicable. Such materials will undergo chemical testing (as detailed in the detailed CEMP), in order to demonstrate that the material is suitable for use on site and does pose a risk to construction workers or the environment;
- Packaging materials that will assist in effective and secure storage and movement of materials on site will be selected, where available and practicable;
- Take-back schemes for surplus materials will be arranged with suppliers where possible;
- Use sustainably sourced materials from local sources and local suppliers, where available and practicable; and
- Pre-cast elements will be used where practicable to ensure efficient use of materials and avoid the generation of waste arisings from off-cuts.

18.6.10.1.2 Managing Deliveries

- Prior to delivery an appropriate storage location will be identified;
- Where practicable, materials will be delivered on an 'as required' basis to avoid damage or contamination (and therefore also limit the likelihood of waste);
- Appropriate plant will be used to upload materials to avoid damage;
- Deliveries will be received by appropriately trained staff who will undertake a quality inspection and check delivery paperwork is correct before unloading; and
- Deliveries will be scheduled to minimise impact to local residents and the local road network, where practicable (see section 18.6.8 and **Appendix 14E**).

18.6.10.1.3 Storage

Measures regarding the storage of potentially polluting oils and chemicals and measures to deter theft of materials are presented in sections 18.5.8. and 18.5.5. Additionally:

- Suppliers' instructions will be followed to prevent spoilage and waste;
- Storage areas will be planned and set out so that frequently used items are easy to access;
- Materials will be stored away from waste storage containers and from vehicle movements that could cause accidental damage. Protective fencing or barriers will be installed where required;
- Lightweight materials will be secured to protect them from wind damage or loss;
- A 'first in first out' rule for the storage and use of perishable items (e.g., bags of cement) will be implemented;
- Potentially polluting materials (such as cement) will be stored away from watercourses and drains to avoid potential pollution from spillages;
- Depending on how long materials are to be stockpiled, measures to prevent dust pollution may be required (see **Section 8.5**).

18.6.10.1.4 Handling

- The handling of materials will be minimised wherever practicable to reduce the risk of damage, spillage, or injury to site-based staff; and
- Materials will only be handled using appropriate plant apparatus including cranes, trucks, fork lifts and manual handling.

18.6.10.2 Waste

Measures regarding the identification and management of contaminated land/ contaminated excavated materials are described in section **Error! Reference source not found.**. These will be stored separately and securely and sent for either treatment, where appropriate, or disposal at appropriately permitted facilities

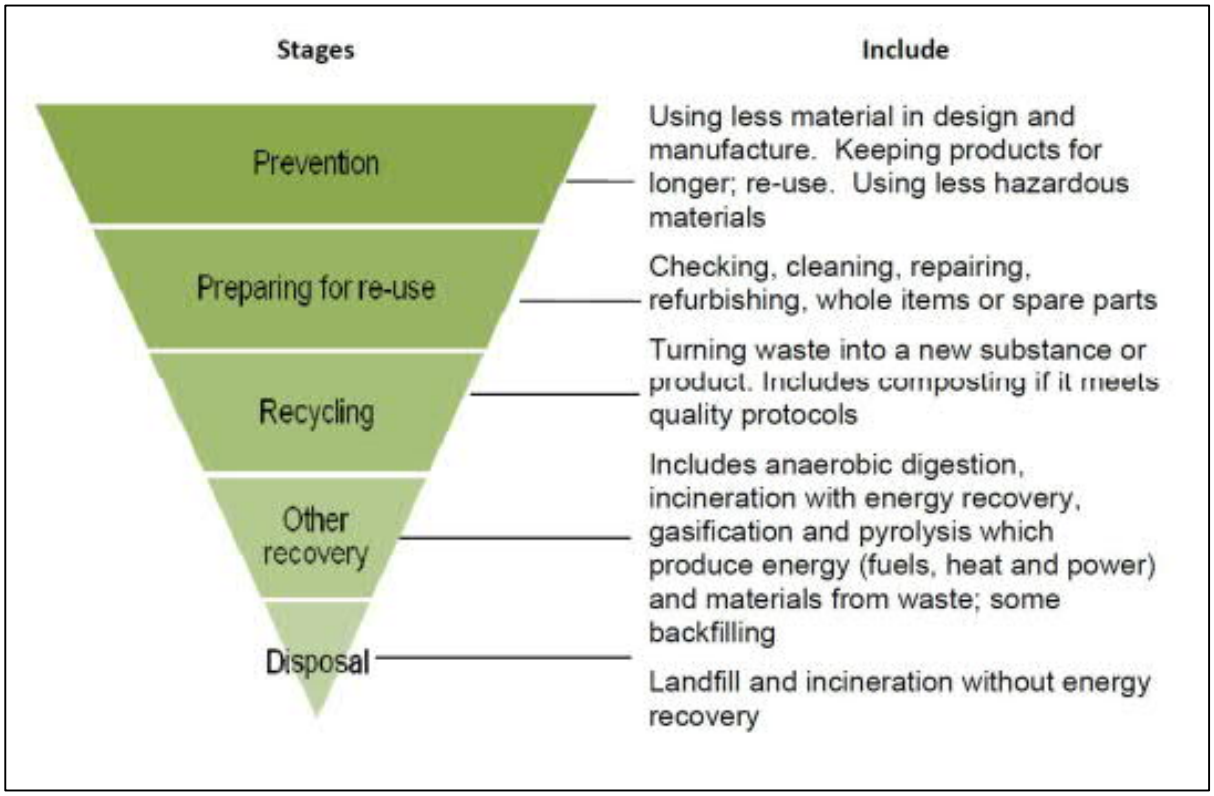
In line with best practice, the Contractor will develop and implement a Site Waste Management Plan (SWMP) to ensure that waste is managed in accordance with the waste hierarchy and other relevant legislative requirements. The SWMP will be agreed with ERYC and/or SDC in advance of construction.

The SWMP will detail information on the waste carriers and waste management facilities and include an audit programme to be undertaken by the Contractor to demonstrate compliance with statutory requirements, including Duty of Care. The SWMP will be kept as an active document and updated throughout the period of construction.

Typical measures that will be incorporated within the SWMP include, but are not limited to:

- Implementing the principles of the waste hierarchy (Figure 18.3),
- Provide information on how the construction waste is managed, stored and disposed of in an appropriate manner, by approved contractors, in accordance with the waste hierarchy and all relevant legislation.
- The management of the volume and types of hazardous waste generated.

Figure 18-3: Waste hierarchy



The sustainable management of topsoil and subsoil materials (i.e., the upper layers of soil where plant root growth occurs, maximum depth of 1.2 m, but often shallower) is described in Section **Error! Reference source not found.** and described in greater detail in the Outline Soil Management Plan (SMP) at **Appendix 12B.** This will ensure that the quality of soil resources, won from the site, is maintained during construction so that they remain suitable for reuse, do not become contaminated and ultimately do not become waste. This outline SMP will be developed into a full SMP by the Contractor.

The preparation of detailed versions of the SWMP, and SMP will ensure that any adverse effects associated with material resource use and waste generation are managed.

The Contractor will also adhere to the following waste management procedures during the construction phase:

- The waste hierarchy will be implemented throughout the construction to minimise disposal and maximise re-use and recycling of waste arisings. Opportunities for re-use and recycling of waste include (but are not limited to):
  - Re-using excavated soils for back filling the cable trench and reinstating temporary accesses (where excavation is necessary).
  - Options for use of surplus excavated soil that may be generated in the converter station site include:
    - Visual bunds;
    - Retain soil for reuse elsewhere within the English Onshore Scheme if additional soil is required for restoration (see section 18.8.8 regarding landowner agreements and suitability);
    - Increase topsoil depths (<5cm assuming topsoil depths will not become much greater than 30 cm) in the converter station site or nearby fields of the English Onshore Scheme (in agreement with the landowner)

    - A wider search locally to identify potential areas requiring restoration – where the soil could be sustainably re-used off-site; and
    - Soil could be bunded in a suitable fashion for storage over the medium term for resale and re-use on another project (pending testing and certification, and where required permitting). This would facilitate storing and selling in batches as and when there is a demand, subject to the topsoil being managed by a local topsoil trader.
  - Recycling of inert material by crushing, blending and subsequent re-use, as an aggregate.

- Temporary stockpiling of fill materials prior to incorporation into the English Onshore Scheme will be avoided where possible, to ensure double handling and damage are minimised, therefore avoiding waste. However, where required, materials will be stockpiled in accordance with best practice and managed appropriately to limit the likelihood of damage or contamination.
- Pre-cast elements will be used where practicable to ensure efficient use of materials and avoid the generation of waste arisings from off-cuts.
- Re-use/ recycle of all aggregates that have been used for temporary construction works.
- Where waste must be taken to a recycling or disposal site, the appointed Contractor will ensure that the sites have the appropriate permits. In addition, the suitable facility will be located as close to the works as possible to minimise the impacts of transportation, in particular the release of carbon emissions. The appointed contractor will identify the closest and relevant treatment and disposal sites. A non-exhaustive list of waste infrastructure sites within 10 km of the English Onshore Scheme is provided in **Table 18-2**. The ability for waste arisings to be deposited at these sites will be dependent on the conditions imposed on the sites by the relevant licence or permit. There may be other facilities in the vicinity of the English Onshore Scheme that may be used.
- Skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, during times when waste is not being deposited into them. They will also be covered to prevent the escape of waste whilst in transit and loaded (but not overloaded) for maximum payload efficiency;
- Skips and storage receptacles will be inspected on arrival to make sure they are fit for purpose. Those identified as not being fit for purpose should be immediately rejected and not brought on site;
- Disposal of wastes will be by licensed waste carriers, to licensed sites and handled in accordance with the Waste Duty of Care Code of Practice (Ref-18-27);
- All documentation including copies of certificates, Hazardous Waste Consignment Notes (HWCNs) and Waste Transfer Notes (WTNs) will be held on site and retained in accordance with the Waste Duty of Care Code of Practice (Ref-18-27);
- Site supervision staff will have asbestos awareness training. Asbestos awareness will also be included in site inductions and toolbox talks; and
- If asbestos is encountered during the works, the Contractor will engage an asbestos specialist to manage the removal.

Table 18-2: Permitted Waste Sites in 10 km of the English Onshore Scheme

Site Name	Treatment Facility Type	Distance from central point (km)
Permitted waste operation sites within 10km (Section 1 – Landfall to Bainton)		
Lowthorpe Quarry	SR/12: Treatment of waste to produce soil <75,000 tpy	3.16
Gransmoor Quarry (site B)	SR/12: Treatment of waste to produce soil <75,000 tpy	5.14
Gransmoor Quarry	A05: Landfill taking Non-biodegradable Wastes	5.29
Unit 2 Danes Grave Industrial Estate	A11: Household, Commercial & Industrial Waste T Stn	6.49
Permitted waste operation sites within 10km (Section 2 – Bainton to Market Weighton)		
D J Cleaning Limited	S0809: Asbestos Waste Transfer Station	6.87

Site Name	Treatment Facility Type	Distance from central point (km)
Middleton Quarry	SR/12: Treatment of waste to produce soil <75,000 tpy	7.04
Station Road Site	A25: Deposit of waste to land as a recovery operation	7.06
R N H Skiphire	S0803: HCI Waste TS + treatment	7.61
Gallymoor Landfill Site	A04: Household, Commercial & Industrial Waste Landfill	8.97
Beechwood Services	A20: Metal Recycling Site (mixed MRS's)	9.68
Permitted waste operation sites within 10km (Section 3 – Market Weighton to River Ouse)		
Bursea Lane Farm	S1506: 75kte household, commercial and industrial waste transfer station with treatment	0.83
Allensway Recycling Ltd	A23: Biological Treatment Facility	2.52
Chrispin's	SR/21: 75kte metal recycling site (existing permits)	3.59
Mallard Grange	S1506: 75kte household, commercial and industrial waste transfer station with treatment	5.25
Changing Waste	A16: Physical Treatment Facility	5.43
Beechwood Services	A20: Metal Recycling Site (mixed MRS's)	6.12
Gilberdyke Landfill Site	A06: Landfill taking other wastes	6.22
Gallymoor Landfill Site	A04: Household, Commercial & Industrial Waste Landfill	6.82
Breighton Airfield	SR/12: Treatment of waste to produce soil <75,000 tpy	6.89
Breighton Airfield	A22: Composting Facility	7.25
Breighton Airfield	A16: Physical Treatment Facility	7.31
G B P Skips & Waste Ltd	S1506: 75kte household, commercial and industrial waste transfer station with treatment	7.53
North Cave Wetlands	A25: Deposit of waste to land as a recovery operation	8.68
North Cave Quarry	S0908: Management of inert or extractive waste at mine	8.76
Ryedale Farm Organics Recycling Facility	A22: Composting Facility	8.89
North Cave Fame Plant	A17: Physico-Chemical Treatment Facility	9.03
R N H Skiphire	S0803: HCI Waste TS + treatment	9.12
Anytime Waste Transfer Station	S0803: HCI Waste TS + treatment	9.53
Permitted waste operation sites within 10km (Section 4 – River Ouse to Drax Substation)		
Lightweight Aggregate Manufacturing Plant	A15: Material Recycling Treatment Facility	1.62
Catcon UK	A16: Physical Treatment Facility	6.51
Goole Transfer Station	S0803: HCI Waste TS + treatment	6.71
Station Road Business Centre	SR21: 75kte metal recycling site (existing permits)	7.38
Taperell Environmental	A11: Household, Commercial & Industrial Waste T Stn	7.43
Commons Farm	A22: Composting Facility	7.86
Van Werven UK Ltd	A11: Household, Commercial & Industrial Waste T Stn	7.92
Whitemoor Business Park	A11: Household, Commercial & Industrial Waste T Stn	7.97
Strong Skips Waste Recycling Ltd	S1506: 75kte household, commercial and industrial waste transfer station with treatment	8.13
Changing Waste	A16: Physical Treatment Facility	8.17
Goole Recycling Facility	A09: Special Waste Transfer Station	8.21
Breighton Airfield	A16: Physical Treatment Facility	8.46
Anytime Waste Transfer Station	S0803: HCI Waste TS + treatment	8.47
Breighton Airfield	SR/12: Treatment of waste to produce soil <75,000 tpy	8.70

Site Name	Treatment Facility Type	Distance from central point (km)
Breighton Airfield	A22: Composting Facility	8.71
Park Lodge Shooting School	A25: Deposit of waste to land as a recovery operation	9.58
Hensall Quarry	A05: Landfill taking Non-Biodegradeable Wastes	9.96
Lightweight Aggregate Manufacturing Plant	A15: Material Recycling Treatment Facility	1.62

18.7 Summary

Provided the measures detailed within this Outline CEMP are developed into the Detailed CEMPs by the appointed Contractor, ahead of and/or during construction, environmental impacts associated with the English Onshore Scheme will be avoided or reduced.

18.8 References

Ref 18-1 The Construction (Design and Management) Regulations (2015). Available at https://www.legislation.gov.uk/uksi/2015/51/contents/made

Ref 18-2 Institute of Lighting Professionals (2018). Guidance Note 8: Bats and Artificial Lighting. Available at: https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/

Ref 18-3 Institute of Lighting Professionals (2021) Guidance Note 1: The Reduction of Obtrusive Light (GN01:2011). Available at: https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/

Ref 18-4 Environmental Permitting (England and Wales) Regulations (2010). Available at: https://www.legislation.gov.uk/ukdsi/2010/9780111491423/contents

Ref 18-5 Control of Pollution (Oil Storage) (England) Regulations, (2001). Available at: https://www.legislation.gov.uk/uksi/2001/2954/contents/made

Ref 18-6 Water Industries Act (1991). Available at: https://www.legislation.gov.uk/ukpga/1991/56/contents

Ref 18-7 Defra's animal and Plant Health Agency website. Available at https://www.gov.uk/government/organisations/animal-and-plant-health-agencyRef 18-8 Joint Nature Conservation Committee (JNCC) (2010). Handbook for Phase 1 habitat survey - a technique for environmental audit. Available at: https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf

Ref 18-8 Pollution Prevention Guidelines for Works and maintenance in or near water (PPG5) (2018). Available at: https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf

Ref 18-9 Dean, M., Strachan, R., Gow, D., Andrews, R., Mathews, F. and Chanin, P. (2016) The Water Vole Mitigation Handbook. The Mammal Society, London. Available at : https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/filer_public/1e/30/1e3072bf-0ffe-4df2-8ee2-e1af6f66755e/d93_-_water_vole_mitigation_handbook81824175_1.pdf

Ref 18-10 National Grid. Design Guidelines for Development Near High Voltage Overhead Lines. Available at: https://www.nationalgrid.com/sites/default/files/documents/Sense%20of%20Place%20-%20National%20Grid%20Guidance.pdf

Ref 18-11 National Joint Utilities Group (2007). Volume 4: Guidelines for The Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. Available at: http://streetworks.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf

Ref 18-12 West Yorkshire Combined Authority (2018) Leeds City Region Green and Blue Infrastructure Plan. Available at: https://www.westyorks-ca.gov.uk/media/2432/leeds-city-region-green-and-blue-infrastructure-4-page-final.pdf

Ref 18-13 Defra (2021). The 25-Year Environment Plan. Available at https://www.gov.uk/government/publications/25-year-environment-plan

Ref 18-14 H M Government, Legislation - Protection of Military Remains Act. Available at : https://www.legislation.gov.uk/ukpga/1986/35/contents.

Ref 18-15 Environment Agency, (2001). Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention, REP NC/99/73.

Ref 18-16 Environment Agency. Land Contamination Risk Management (LCRM). Available at: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm

Ref 18-17 BRE (2011). FB41 Radon in the Workplace, A guide for building owners and managers.

Ref 18-18 CIRIA. CIRIA C532 Control of Water Pollution from Construction Sites 2001. Available at: https://www.ciria.org/ProductExcerpts/C532.aspx

Ref 18-19 CIRIA. CIRIA C648 Control of water pollution from linear construction projects. Available at: https://www.ciria.org/ProductExcerpts/C648.aspx

Ref 18-20 CIRIA. CIRIA C786F Culvert, Screen and outfall manual. Available at: https://www.ciria.org/ItemDetail?iProductCode=C786F&Category=FREEPUBS

Ref 18-21 Environment Agency, 2007 (withdrawn 2015). Pollution Prevention Guidelines. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485199/pmho1107bnkg-e-e.pdf

Ref 18-22 Defra (2009). Code of practice for the sustainable use of soils on construction sites. Available at: https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites

Ref 18-23 Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings. Available at: https://www.quarrying.org/soils-guidance**Ref 12-24** Natural England (2021) Guide to assessing development proposals on agricultural land/. Available at: https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land

Ref 18-24 MAFF (1988) 'Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land'. Available at: http://publications.naturalengland.org.uk/publication/6257050620264448

Ref 18-25 British Standard 5228-1: Code of practice for noise and vibration control on construction and open sites. Available at: https://www.warrington.gov.uk/sites/default/files/2020-08/cf53_bs_5228_pt1-2009a1-2014.pdf

Ref 18-26 CL:AIRE: Code of Practice. Available at: https://www.claire.co.uk/component/content/article/42-initiatives/144-definition-of-waste?showall=1&Itemid=146

Ref 18-27 Waste Duty of Care Code of Practice. Available at: https://www.gov.uk/government/publications/waste-duty-of-care-code-of-practice