

VikingLink

nationalgrid

UK Onshore Scheme

**Outline Construction
Environmental Management Plan –
Proposed DC Cable Route**

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Glossary & Abbreviations

Glossary of Terms	
Term	Meaning
base scheme design	The design of the UK Onshore Scheme for the purposes of the planning application.
connection point	This is the point on the GB electricity transmission system (Bicker Fen 400 kV Substation) where Viking Link connects to the network.
the Contractor	Party or parties responsible for the detailed design and construction UK Onshore Scheme.
converter station	Facility containing specialist equipment (some indoors and some potentially outdoors) for the purposes of converting electricity from AC to DC or DC to AC.
converter station site	The proposed site occupying approx. 30 ha containing the converter station and associated landscaping, drainage as well as land required for construction.
converter station zone	The proposed zone occupying approx. 8 ha containing the converter station buildings, outdoor electrical equipment and hardstandings within a security fence.
detailed scheme design	The design of the Scheme developed by the Contractor within the Limits of Deviation (AC and DC cables) and Rochdale Envelope (converter station).
Direct Current (DC)	Electric power transmission in which the voltage is continuous. This is most commonly used for long distance point to point transmission.
DC cable route	The proposed route comprising DC and fibre optic cables from the landfall to the converter station.
ducts	Pipes (typically plastic) which are pre-installed and through which underground cables are then pulled through.
joint bay	Buried concrete pit where adjacent sections of onshore cables are physically jointed together.
landfall	The area between Mean Low Water Springs and Mean High Water Springs where the Onshore and Offshore Schemes meet.
Limits of Deviation	These define the maximum extents of the corridor for which planning permission is sought and within which proposed DC and AC cable routes may be installed.
Open cut methods	Cable installation methods which require the excavation of a trench into which ducts or cables can be directly laid.
the Project	Viking Link, from the connection point at Revsing Substation in Denmark to the connection Bicker Fen Substation in Great Britain).
Rochdale Envelope	This defines the parameters of the proposed converter station for which planning permission is sought including its location, layout and dimensions.

Glossary of Terms

Term	Meaning
route corridor	Approximately 1 kilometre wide corridor developed in routeing studies in which onshore DC cable route will be finalised.
refined route corridor	Approximately 200 metre wide corridor in which onshore DC cable route will be finalised.
the Scheme	UK Onshore Scheme from MLWS to the connection point comprising underground AC and DC cables, converter station and access road.
Temporary Construction Compound	Compound used by the Contractor for siting of offices, welfare facilities, storage and laydown.
Temporary Construction Facilities	All areas used for temporary construction requirements including compounds, working areas.
Temporary Works Area	Larger working area located on or adjacent to the working width used where construction activities requires a larger area for example at trenchless crossings.
Transition Joint Pit	Buried concrete pit where onshore and submarine cables are physically jointed together.
trenchless methods	Cable installation methods used to cross obstacles such as roads or watercourses and ensure less disturbance at the ground surface.
working width (DC cables)	The 30 m wide working corridor required for the installation of underground DC cables.

List of Abbreviation

Abbreviation	Meaning
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
BBC	Boston Borough Council
CBS	Cement Bound Sand
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
DC	Direct Current
DTS	Distributed Temperature Sensing
EIA	Environmental Impact Assessment
ELDC	East Lindsey District Council
ES	Environmental Statement
GW	Gigawatt
ha	Hectare
HDD	Horizontal Directional Drilling

List of Abbreviation	
Abbreviation	Meaning
HGV	Heavy Goods Vehicle
HVDC	High Voltage Direct Current
km	kilometre
km ²	square kilometre
kV	kilovolt
LoD	Limits of Deviation
LPA	Local Planning Authority
LWS	Local Wildlife Site
m	metres
MLWS	Mean Low Water Springs
MHWS	Mean High Water Springs
MSA	Mineral Safeguarding Area
MW	megawatt
NGVL	National Grid Viking Link
NKDC	North Kesteven District Council
RIGS	Regionally Important Geological Site
SHSP	Soil Handling and Storage Protocol
SHDC	South Holland District Council
SNCI	Site of Nature Conservation Interest
TCC	Temporary Construction Compound
TCF	Temporary Construction Facilities
TCPA	Town and Country Planning Act
TJP	Transition Joint Pit
TPO	Tree Preservation Order
TWA	Temporary Working Area
UGC	Underground Cable
UK	United Kingdom

Note

The purpose of this Plan is to set out how the mitigation commitments described within the Environmental Statement will be delivered during construction. The exact roles and responsibilities described in the Plan are subject to the appointment of a Contractor and may change. The Plan will be finalised by the Contractor prior to the commencement of construction taking into account a detailed scheme design and more precise information about construction methods and phasing.

1 Introduction

1.1 Introduction

1.1.1 This outline Construction Environmental Management Plan (CEMP) has been prepared for the proposed DC cable route. This CEMP establishes a framework within which the Contractor will plan, implement and deliver environmental management, mitigation and monitoring requirements during the construction. It is the practical means by which the mitigation commitments made in the Environmental Statement (ES) will be implemented.

1.1.2 Some sections of the CEMP have been left blank where they relate to details which will not be known until a Contractor is appointed. It is intended that the CEMP will be finalised by the Contractor prior to the start of construction based on a detailed scheme design and details of construction activities and programme.

1.2 Objective of the CEMP

1.2.1 The aims of the Project EMP are to:

- 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 proposed DC cable route.
- 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.

1.3 Structure of the CEMP

1.3.1 An overview of the content of this document is provided in Table 1.1.

Table 1.1 Structure of this Document		
Section	Title	Description of Content
1	Introduction	Provides background information about this document and its content.

Table 1.1 Structure of this Document		
Section	Title	Description of Content
2	Project Description	Provides details of the proposed DC cable route including a description of construction methods and facilities.
3	Roles and Responsibilities	Sets out the roles and responsibilities of the parties involved in construction.
4	Communications, Reporting and Training	Sets out the requirements for regular communications and reporting as well as staff training.
5	General Environmental Management Requirements	Sets out the general requirements with respect to environmental management during construction.
6	Specific Environmental Requirements	Sets out the environmental requirements identified within the Register of Mitigation in the ES.

2 Project Description

2.1 The UK Onshore Scheme

Overview

- 2.1.1 Viking Link (also referred to as ‘the Project’) is a proposed 1400 megawatt (MW) high voltage DC electricity link or interconnector between the British and Danish electricity transmission networks. The Project will enable Great Britain and Denmark to trade energy as a commodity within the European Energy Market. This will strengthen Great Britain’s and Denmark’s economies, improve the security of their electricity supplies and reduce wholesale electricity prices providing British and Danish consumers with access to more affordable low carbon energy. It comprises approximately 762 kilometres (km) of DC onshore and submarine electricity transmission cables between new converter stations which are in turn connected to the high voltage electricity transmission networks at existing substations at Revsing, Jutland in Denmark and at Bicker Fen, Lincolnshire in Great Britain.
- 2.1.2 The sub-sections below relate to the proposed DC cable route as applicable to this CEMP. Details of the proposed converter station are provided within the converter station CEMP.

Proposed DC cable Route

- 2.1.3 It begins at Mean Low Water Springs (MLWS) at Boygrift in East Lindsey where it overlaps with the Offshore Scheme. As noted above a buried TJP (where the submarine cable is connected to the land cable) will be installed on the west side of the existing flood defences. From the TJP the proposed DC route heads in a generally western direction for approximately 9 km through a predominantly low lying coastal area until it reaches the A1104. At this location the proposed DC route bears mainly south west or south for approximately 20 km through more elevated land including crossing the Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB) and continuing south west until it reaches the A16. From here the proposed DC route crosses the low lying fens in a mainly south western or southern direction for 37 km. At South Forty Foot Drain it turns east to cross it before continuing south / south east entering the proposed converter station site at its south western corner.
- 2.1.4 The proposed DC cable route has been split into four Route Sections. These are described from the proposed landfall to the proposed converter station as follows:
- Route Section 1 Proposed landfall to Well High Lane (approximately 13.04 km, entirely within ELDC). This Route Section extends from the proposed landfall site where the UK Offshore Scheme comes ashore at Boygrift, to Well High Lane between South Thoresby and Rigsby. It passes through predominantly flat, low-lying agricultural land.

- Route Section 2 Well High Lane to A16/Keal Road (approximately 16.85 km, entirely within ELDC). This Route Section extends down to Keal Road immediately to the west of East Keal. It extends through the Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB) and is in an area of more undulating topography with some steeper slopes present.
- Route Section 3 A16/Keal Road to the River Witham (approximately 22.06 km, within ELDC and BBC). This Route Section extends from East Keal to the west of the River Witham northwest of Boston at Langrick. It extends through flat agricultural land crossing a large number of drains, including West Fen Drain.
- Route Section 4 River Witham to the proposed converter station (approximately 15.21 km, within BBC, NKDC and SHDC). This Route Section extends from west of the River Witham and enters the proposed converter station site at its south west corner. It passes through an area of low lying agricultural land and requires numerous drain crossings.

2.1.5 Table 2.1 provides a summary of the key characteristics of the proposed DC route. The exact configuration of the proposed DC cable route is subject to detailed design following appointment of a Contractor, however, the general characteristics below have informed the identification of the base scheme design on which the EIA is based.

Table 2.1 Proposed DC Underground Cable – Key Characteristics	
Characteristic	Description
Operating voltage	525 kV
Route length	Approximately 67.16 km
Working width	Typically 30 m (apart from at TWAs)
Permanent easement	Typically 15 m (apart from at crossings)
No. of cables	Two high voltage DC cables and up to three fibre optic cables
DC cable diameter	Approximately 150 mm
No. of trenches	One trench containing two DC cables and up to three fibre optic cables
Trench width	Typically 1.5 m
Trench depth	Typically 1.5 m (subject to local ground conditions and obstacles present)
Minimum depth of cover	Agricultural land – typically 0.9 m (900 mm) Watercourses – typically 2.0 m (2000 mm) Roads – typically 0.75 m (750 mm) Railways – typically 5 m (5000 mm) Footpaths and non-agricultural verges – typically 0.6 m (600 mm)
Backfill material	Soil and cement bound sand (CBS) or other thermally suitable material
Cable section length	Typically 800 m to 1.5 km (subject to detailed design)
Cable joints	Buried concrete base or pad (up to 84 required)

2.2 Construction Details

Proposed DC Cable Route Construction Activities

- 2.2.1 The proposed DC cable route will be installed by a combination of open cut and trenchless methods. Open cut methods will be utilised in open agricultural land and trenchless methods typically utilised where the proposed DC cable route crosses obstacles; for example roads, railway lines, buried utilities and watercourses or in areas where ground conditions or environmental sensitivities are required to be avoided.
- 2.2.2 In sections installed by open a duct could be laid into the trench after which the cables will be then pulled through the pre-laid duct. In sections installed using trenchless methods a duct or ducts will be installed through which the cables will be then pulled.
- 2.2.3 The cable will be installed in sections between 800 m and 1.5 km long. The sections of cable are pulled off the cable drums into the trenches (and/or pulled through ducts) and adjacent sections are joined together at joint bays. These are buried concrete pads, the exact sizes of which are subject to detailed design.
- 2.2.4 Cable jointing requires to be undertaken in a clean controlled environment. The joint bay provides a clean base over which temporary cabins or enclosures are installed for the duration of the jointing process. These require a power supply, air conditioning and temporary lighting. Due to the precise nature of jointing operations it may require continuous 24 hour working for short periods.

Temporary Construction Facilities

- 2.2.5 To enable construction activities additional space is required for compounds, laydown and storage areas, water management as well as areas for land drainage (temporary and permanent). These areas, collectively referred to as TCF, have been defined as follows:
- TCCs: These are typically larger areas 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, store rooms, toilet facilities), parking, and plant and material storage. There are two types of TCC proposed; primary and secondary. The function of the two is the same however there are minor variances in the size and potential duration of operation. Primary TCCs will be larger in size (approximately 1.5 ha) and will be in place for the duration of cable construction. Secondary TCCs will be approximately 1.1 ha and will likely be in place for the majority of construction, but not the full duration.
 - TWAs: These are required at various locations along the proposed DC cable route. These are typically located at areas where works require a larger area than the typical working width such as at locations where trenchless construction methods are proposed. These are smaller than the TCCs and will cover an area of approximately 0.43 ha. They will be utilised for laydown of construction plant and equipment and storage whilst works are being undertaken

in the vicinity. It is therefore unlikely that the TWAs will be in place for the construction programme.

Working Hours

- 2.2.6 Construction activities will in general be undertaken during daytime periods. There will be some periods during which out of hours working and/or 24 hour working will be required such as delivery of abnormal loads, installation of trenchless crossings or jointing operations. Any period or activity requiring out of hours working that may be disruptive to the local community will be discussed with the relevant local planning authority in advance of the works.

Construction Programme

- 2.2.7 Cable installation does not require to be undertaken sequentially; as a result installation could occur in multiple sections along the length of the proposed DC cable route in parallel. This will limit the extent and duration of construction activity at any given location including the length of time that land remains disturbed for. Prior to the commencement of construction the Contractor will provide detailed construction programme.

3 Roles and Responsibilities

3.1 Overview

3.1.1 This section of the CEMP will set out the key roles and responsibilities of parties involved in the construction of the Scheme including providing contact details for key members of staff.

3.2 Key Roles

3.2.1 The exact roles and responsibilities will be confirmed prior to construction but as a minimum the Contractor will have identified members of staff responsible for environmental management. The following section provides an indication of the roles which are envisaged.

Site Manager

3.2.2 The Site Manager is responsible for:

- Coordinating the delivery of the proposed converter station, permanent access road and proposed AC cable route including ensuring conformance with the CEMP and other management plans, as well as any incident investigation required.

Site Engineer

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

- Reviewing risk assessments and method statements (RAMS) submitted by the Contractor prior to beginning new works activities.
- Reviewing of the Safety, Health and Environment (SHE) Plan, prepared and amended by the SHE Advisor.
- Reviewing and monitoring the implementation of, 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 Site Manager.

Environmental Clerk of Works

- 3.2.4 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 if required, for example to safeguard protected species and their habitats, or where any other breaches of environmental legislation are likely to occur.
- 3.2.5 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.
- 3.2.6 The ECoW may be a company who provide a general Clerk of Works who can liaise with a team of internal specialists on specific environmental subjects, for example, ecology, noise, air quality, or pollution where required throughout construction, or a suitably qualified individual.
- 3.2.7 In summary, the ECoW is responsible for:
- Inspections of the Contractor's work site, on a daily basis.
 - 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.

Safety, Health & Environment Advisor

- 3.2.8 The SHE 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 Site Manager and Site Engineer in reviewing and approving RAMS.
 - Undertaking regular site inspections/ walkovers to ensure construction practice is compliant with best working practices and approved RAMS. The SHE 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 the defined reporting procedure within the SHE Plan and the CEMP.
 - 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.

The Land Officer

3.2.9 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.
- 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 proposed converter station, permanent access road and proposed AC cable route.
- Attending all construction progress meetings.

3.2.10 This role may be supported by an Agricultural Liaison Officer (or similar), employed by the Contractor to provide local landowners and those with land-related interests information regarding daily construction activities. The Agricultural Liaison Officer will assist on activities listed above, as well as providing the Land Officer 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.

4 Communications, Reporting and Training

4.1 Communication

Communication of the CEMP

- 4.1.1 To ensure that all parties involved in the construction are aware of the environmental mitigation requirements, controls and reporting requirements as agreed within this CEMP, this document will be circulated to:
- The Client (NGVL).
 - The Contractor.
 - ECoW.
 - All sub-contractors.
 - Local Planning Authorities.
 - Statutory and non-statutory consultees as required.
- 4.1.2 This document will be maintained within the SHE management system and a copy kept within the site office.
- 4.1.3 Weekly SHE meetings will be held, which the ECoW will attend. These meetings will be minuted and distributed to all relevant parties for reference.

Public Communications and Liaison

- 4.1.4 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 will be made available to the ECoW and the relevant consultees. Any complaints received will be acknowledged within 24 hours during all hours when works, including deliveries, are taking place.
- 4.1.5 The Contractor shall ensure that all complaints receive a written response, including details of any action undertaken (if such action is deemed appropriate). The Contractor shall provide NGVL with a monthly report that details all complaints, who they were filed by and the actions taken.
- 4.1.6 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 of the Local Planning Authority (LPA).

4.2 Inductions and Training

Inductions

- 4.2.1 The Contractor will ensure all employees, sub-contractors, suppliers, and other visitors to the site undertake site specific induction training. The induction will include a summary of environmental risks associated with the proposed converter station, permanent access road and proposed AC cable route, specifically those relevant to the inductee. Topics that will be addressed will include any areas of environmental sensitivity, such as ecological, archaeological, hydrological or geological sensitive areas, in addition to pollution prevention and protection of the water environment, ground stability and waste management.

Training in Environmental Requirements

- 4.2.2 The Contractor will ensure all personnel are suitably trained on general site good practice emergency procedures including the use of spill kits, silt mitigation and concrete washing out for example. To ensure all staff are suitably trained on such procedures, training will be provided by a suitably qualified person on a regular basis. Details of the proposed training will be provided to the NGVL prior to commencement of construction works.
- 4.2.3 Toolbox talks will be provided by the ECoW (or other relevant specialist such as archaeological clerk of works) throughout construction of the proposed converter station, permanent access road and proposed AC cable route to provide on-going reinforcement and awareness training of environmental sensitivities and issues on site. Prior to works starting on site the programme of talks to be undertaken will be agreed by the appointed Contractor. Additional 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 toolbox talks and attendees will be maintained within the SHE management system.

4.3 Environmental Monitoring and Reporting

Environmental Incidents and Near Miss Reporting

- 4.3.1 All incidents and near misses will be reported as soon as they occur. The Emergency Response Plan (ERP) will be prepared by the appointed Contractor detailing the response to be taken in the event of an incident or near miss, detailing the individuals to be informed and the reporting process. The ERP will also include the appropriate measures that should be undertaken to prevent, reduce, contain, clean and prevent further incidents from occurring as necessary.

- 4.3.2 A register of all environmental incidents and near misses will be maintained to detail the time, date and nature of incident as well as any corrective actions taken, correspondence with regulators and lessons learnt.

Environmental Management Reporting

- 4.3.3 Regular monitoring, auditing and reporting of the environmental management of the site will be undertaken for the duration of construction of the proposed converter station, permanent access road and the proposed AC cable route. The reporting requirements during construction of have been established to ensure effective implementation of mitigation measures and provide a framework for ongoing monitoring of environmental performance during construction.

Pre-construction audit

- 4.3.4 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.

Daily Site Checks

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

Weekly Site Inspections

- 4.3.6 A weekly site inspection will be carried out by the Site Environmental Manager/ECoW to identify any breaches and/or environmental incidents and identify suitable corrective measures.

Monthly Site Audits

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

5 General Environmental Requirements

5.1 Introduction

5.1.1 This section provides a description of the general environmental management measures to be implemented during the construction of the proposed DC cable route.

5.2 Site Management and Housekeeping

5.2.1 The layout of temporary construction facilities will be finalised by the Contractor. Infrastructure inherent with site construction compounds such as access points, roads, lighting, location of generators and welfare facilities for example will be located so as to minimise impacts of dust, noise and lighting for example on both the environment and local sensitive receptors such as residential dwellings.

5.2.2 The construction compound and areas for the storage of all materials, including paints, sealants or other chemicals, will be located at least 25 m away from surface water bodies (where possible) in a secure container within impermeable areas within the temporary site construction compound. All construction materials will be stored in accordance with the appropriate regulatory requirements, including the Control of Substances Hazardous to Health Regulations 1994.

5.2.3 The temporary site compound(s) and laydown areas will require daily inspection and maintenance including appropriate storage of materials, litter picks and general housekeeping to ensure health and safety risks as well as environmental considerations are appropriately managed.

5.2.4 Wheel wash facilities will be provided at the exits from the construction compound and work site where appropriate, including, where reasonably practicable, mechanical wheel spinners, adequate provision for drainage via settlement tanks and regular maintenance of settlement tanks, or other appropriate facility, during the specified working hours.

5.3 Staff Facilities

5.3.1 Appropriate welfare facilities will be provided. These will be located at an appropriate distance from sensitive receptors such as watercourses or residential properties. Prior to construction, the Contractor will prepare the arrangements for welfare provision and will be responsible for the maintenance of the facilities throughout the construction phase of the proposed converter station, permanent access road and proposed AC cable route. Facilities will include:

- Toilets.
- Washing Facilities.
- Drinking Water.

- Changing Rooms & Lockers.
- Mess rooms.

5.4 Site Security

- 5.4.1 Appropriate security fencing will be established around the construction site including compounds, works areas and areas used for the storage of plant and machinery, hazardous substances. Appropriate fencing will be erected along the length of the proposed AC cable route and permanent access road. The condition and effectiveness of these boundaries will be subject to daily inspection.
- 5.4.2 Where determined necessary by the Contractor Closed Circuit Television (CCTV) will be installed within construction areas.
- 5.4.3 Access to working areas will be restricted to approved personnel only, with security on site to monitor and manage traffic and site visitors.
- 5.4.4 Lighting of Temporary Construction Compounds (TCCs) and Temporary Working Areas (TWAs) will be implemented for the safety of staff. Lighting will be directional and will be designed to prevent light pollution as much as possible.

5.5 Bio-security Measures

- 5.5.1 The Contractor will ensure that appropriate bio-security measures including those required for dealing with invasive species are provided. This includes preparation of a Bio-security Method Statement and briefing of all staff in the form of Toolbox Talks or similar.

6 Specific Environmental Requirements

6.1 Introduction

6.1.1 The following sections set out the mitigation identified within the Environmental Statement. Prior to the start of construction these measures will be reviewed and as appropriate additional detail will be provided on their implementation.

6.2 Intertidal Zones

Table 6.1 Mitigation Requirements (Intertidal Zone)	
Reference	Description of Mitigation Measure
INT01	The Transition Joint Pit (TJP), to join the offshore and onshore components together will be located on the landward side of the existing sea defences, with the cable installed underneath the sea defences using trenchless installation techniques to protect the integrity of the defences.
INT02	The detailed design will avoid the deposition of cable protection material within the intertidal area.
INT03	The installation of the DC and fibre optic cables through the intertidal zone will be through trenchless techniques (Horizontal Directional Drilling (HDD) or similar).
INT04	A Construction Environmental Management Plan (CEMP) including an Emergency Spill Response Plan (ESRP) will be developed and implemented for the installation phase.
INT05	<p>During trenchless works in the intertidal zone, the following measures will be taken:</p> <ul style="list-style-type: none"> · Drilling fluid use will be monitored at the surface to ensure that there is no significant release into the marine and intertidal environment. · The drilling fluid and cuttings will be transported to an appropriate licensed waste disposal site. Only licensed waste carriers will be used for transportation of any drilling fluids. · Drilling fluid breakouts that may occur in the intertidal zone will be contained within a small bunded pit. The drilling fluid/mud will then be pumped back to the holding tank or collected by vacuum tanker and transported to an appropriate terrestrial licensed waste disposal site. · Filled sandbags will be on site to help contain breakouts/spills.
INT06	Final depths of ducts installed via trenchless techniques within the intertidal zone will be determined following detailed site investigation and in close liaison with the Environment Agency (EA).

Table 6.1 Mitigation Requirements (Intertidal Zone)

Reference	Description of Mitigation Measure
INT07	Deployment of anchors/anchor chains on the seabed will be kept to a minimum in order to reduce disturbance to the seabed.
INT08	Material removed/cast aside during the excavation of the exit pits and cable trenches in the intertidal zone will be backfilled.
INT09	The Project will liaise closely with EA prior to commencement of installation activities at the landfall to communicate the timing of works.
INT10	Project vessels will be equipped with waste disposal facilities (sewage treatment or waste storage) to International Maritime Organisation (IMO) International Convention for the Prevention of Pollution from Ships (MARPOL) Annex IV Prevention of Pollution from Ships standards.
INT11	Ballast water discharges from Project vessels will be managed under the International Convention for the Control and Management of Ships' Ballast Water and Sediments standard.
INT12	Construction vehicle movement on beaches will be kept to a minimum.
INT13	The Project will adopt an avoidance strategy for the geophysical anomalies interpreted as A2 anomalies – uncertain origin of possible archaeological interest (A2s). Further work may be necessary to ascertain the precise nature and archaeological potential of individual features should avoidance prove unfeasible, with the potential need to establish Archaeological Exclusion Zones (AEZs).
INT14	A formal programme of archaeological monitoring in the form of a watching brief will be conducted in the inter-tidal zone during intrusive ground works with attendance by a suitably qualified archaeologist or geoarchaeologist. Watching brief activities will be conducted in accordance with the standards outlined in the Chartered Institute for Archaeologists (CIfA) Standard Guidance for an archaeological watching brief and the Model Clauses for Archaeological Written Schemes of Investigation. The watching brief programme requirements will be set out in a scheme-specific Written Scheme of Investigation (WSI) and method statement.
INT15	A specific WSI will be prepared in consultation with Historic England. This will set out when, how and why archaeological mitigation measures recommended are to be implemented and will be prepared in line with the Model Clauses for Archaeological Written Schemes of Investigation.
INT16	A Protocol for Archaeological Discoveries will be implemented for the Project. This will detail the reporting and recording protocols (including consultation with appropriate stakeholders) to be followed during construction for unexpected or incidental finds relating to the historic environment. Where construction activity encounters a find that is considered to indicate the presence of a site of archaeological interest, a temporary AEZ may be implemented until more data is available.

6.3 Geology & Hydrogeology

Table 6.2 Mitigation Requirements (Geology & Hydrogeology)	
Reference	Description of Mitigation Measure
GEO01	<p>The detailed design of the proposed DC cable route will be subject to further ground investigation to determine:</p> <ul style="list-style-type: none"> · the exact route, · the depth of proposed crossings, · the extent of excavation support required (if necessary), and · the level of dewatering necessary.
GEO02	<p>Pre-construction surveys to identify land drains will be carried out to inform the detailed design, which will seek to avoid or re-instate any land drains affected.</p>
GEO03	<p>A CEMP will be developed that will contain measures to ensure compliance with relevant standards and legislation.</p>
GEO04	<p>Measures contained within the CEMP will include measures to limit the potential for dispersal and accidental releases of potential contaminants, soil derived dusts and uncontrolled run-off to occur during construction. Measures may include:</p> <ul style="list-style-type: none"> · Details of how material is to be excavated and stockpiled to minimise the potential for run-off, soil degradation or wind dispersal of dusts. · The covering of long-term stockpiles with sheeting, or the binding of the surface through temporary grass seeding, together with dampening procedures during dry weather. · The setting out of soil storage and handling areas prior to construction commencing.
GEO05	<p>The CEMP and the Contractor's Risk Assessment and Method Statements (RAMS) will also include measures required to ensure that the extent and impact of any such releases are contained and ultimately remediated in the event of uncontrolled releases occurring.</p>
GEO06	<p>A Pollution Response Plan will be in place prior to the commencement of construction works. The plan will outline key pollution mitigation measures to be adopted including a Control of Substances Hazardous to Health (COSHH)/fuel inventory and key contacts to be notified in the event of a significant pollution incident, which may subsequently lead to the contamination of controlled waters or soils. All bulk fuel and COSHH items will be stored in accordance with the relevant EA Pollution Prevention Guidance notes (withdrawn but widely considered good practice) and storage regulations. Tanks and dispensing pumps will be locked when not in use to prevent unauthorised access.</p>

Table 6.2 Mitigation Requirements (Geology & Hydrogeology)

Reference	Description of Mitigation Measure
GEO07	Any hazardous materials will be stored in designated locations with specific measures to prevent leakage and the release of their contents. This will include a requirement to position storage areas at least 10 m away from surface water features/drains and take into consideration the positions of groundwater abstraction wells), on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain at least 110 % of the contents. Valves and trigger guns will be protected from vandalism and kept locked when not in use.
GEO08	Only well maintained plant will be used during construction to minimise the potential for accidental pollution from leaking machinery or damaged equipment. Static machinery and plant are expected to be stored in hard standing areas when not in use and, where necessary, to make use of drip trays beneath oil tanks/engines/gearboxes/hydraulics. Spill response kits containing equipment that is appropriate to the types and quantities of materials being used and stored during construction will be maintained on site for the duration of the works.
GEO09	The CEMP will include procedures for dealing with unexpected soil or groundwater contamination that may be encountered. This will typically require affected works to stop to enable appropriate people to be notified, and further characterisation and risk assessment to be undertaken, before remediation or mitigation proposals are agreed with all required stakeholders.
GEO10	<ul style="list-style-type: none"> · Excavated Materials Management · Prior to construction, a strategy will be prepared (as part of detailed design), which will set out how the earthworks stage of the construction phase will be undertaken. Where necessary the strategy will consider what excavated materials can be reused, or are required within the development of the proposed DC cable route, and what materials are surplus and require either disposal or onward management to ensure appropriate re-use. The strategy will also define whether any geotechnical improvement may be required, prior to re-use or disposal.
GEO11	To minimise the effects on soil resources during any earthworks, high standards of soil handling and management will be employed with a view to minimising where possible the double handling of soils and the extent to which exposed soils will be left vulnerable to erosional processes. These details will be included within a Soil Handling and Storage Protocol (SHSP).

Table 6.2 Mitigation Requirements (Geology & Hydrogeology)

Reference	Description of Mitigation Measure
GEO12	The re-use of excavated materials during construction will be governed by either a Materials Management Plan developed in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice, an environmental permit or a relevant exemption. The CL:AIRE Code of Practice is a voluntary framework for excavated materials management and re-use. Following this framework results in a level of information being generated that is sufficient to demonstrate to any regulator that excavated material has been re-used appropriately and is suitable for its intended use. It demonstrates that waste material has not been used in the development. The Materials Management Plan details the procedures and measures that will be taken to classify, track, store, reuse and dispose of all excavated materials that will be encountered during the development works.
GEO13	The disposal of soil waste, contaminated or otherwise to landfill sites will be best mitigated by minimisation of the overall quantities of waste generated during construction, and by ensuring that excavated material consigned to landfill cannot, as an alternative, be put to use either on site or on other sites.
GEO14	Where there is a requirement to dispose of surplus excavated materials off site as waste, the material will be characterised to determine firstly whether it is Hazardous or Non-Hazardous waste in accordance with the EA's Technical Guidance WM3 and then once this is established, the appropriate disposal facility will be determined through Waste Acceptance Criteria (WAC) analysis, as required.
GEO15	Groundwater and Dewatering Where the volume of groundwater requiring dewatering exceeds 20 cubic metres a day (m ³ /day) then an abstraction permit will be obtained from the EA. Consents will also be obtained where discharging to watercourses including Internal Drainage Board (IDB) managed water courses or public sewer.
GEO16	The adopted dewatering techniques will be appropriate to the type of excavation and hydrogeological conditions. The hydraulic conductivity of the ground within each excavation or trench section will be considered to establish the required abstraction volume to achieve the necessary drawdown of groundwater levels. The type of dewatering undertaken may include the use of cut off walls, sump dewatering and potentially well point dewatering with some provision for attenuation capacity to allow for water treatment and/or settlement prior to final discharge.
GEO17	The inclusion of attenuating capacity for dewatering will ensure that discharge rates are controlled and will effectively mitigate against the capacity of the receiving surface water environment being exceeded.

Table 6.2 Mitigation Requirements (Geology & Hydrogeology)

Reference	Description of Mitigation Measure
GEO18	<p>Further detailed hydrogeological assessment will be undertaken to design temporary works and dewatering particularly in areas identified as having a potential shallow groundwater table, highly permeability deposits or where dewatering is required and there are groundwater abstractions located nearby (as determined by the desk study). Examples include: the buried channels confirmed by the ground investigation in Route Section 3; areas and known groundwater abstractions across the Lincolnshire Wolds in Route Section 2; and localised areas of river and Glaciofluvial Deposits in Route Sections 3 and 4.</p> <p>Further hydrogeological assessment may include targeted ground investigation and permeability testing, groundwater level monitoring, or pumping tests whereby water from a test well is pumped at a controlled rate whilst the flow rate from the well, and the drawdown in an array of observation wells at varying distances from the test well, is observed. The information from these tests will be used to construct a hydrogeological model to predict the potential transmissivity and drawdown effects of dewatering.</p>
GEO19	<p>Routeing within the Limit of Deviation (LoD) will seek to be at least 50 m away from any groundwater abstractions. During dewatering operations and where abstractions are identified that could be impacted upon, a monitoring programme will be implemented during the cable installation and dewatering to monitor actual impact on the water level in the surrounding area. Monitoring will also identify whether there is a potential for temporary derogation of the well supply at any given abstraction point and the possible need for the provision of an alternative supply to affected parties.</p>
GEO20	<p>Due to the requirement to protect controlled waters (groundwater and surface water), further risk assessments will be undertaken at all trenchless crossing locations to ensure that the ground model is understood and potential risks quantified prior to construction. Detailed design will seek to control the potential for ground or surface water contamination to occur, for example, through specifying vertical alignments that minimise the potential for "break out" of drilling fluids, or other fluids used in construction, therefore reducing potential impacts on ground and surface water quality. This is particularly relevant where designing works within granular materials, e.g. around the River Witham or in particularly sensitive groundwater environments.</p>
GEO21	<p>Land Drains</p> <p>Temporary drainage will be installed to maintain the integrity of the existing land drainage systems and to manage drainage and ground conditions during construction. Drainage will be re-instated post construction. This mitigation applies across all route sections where a moderate adverse significance of impact was identified.</p>

Table 6.2 Mitigation Requirements (Geology & Hydrogeology)	
Reference	Description of Mitigation Measure
GEO22	<p>Unexploded Ordnance (UXO)</p> <p>Detailed UXO desk study and risk assessment will be undertaken prior to construction. Where a potential UXO hazard is identified by this detailed assessment, a UXO Risk Mitigation Management Plan will be provided summarising the mitigation measures and common working practices required in accordance with good practice and Health and Safety legislation. The assessment will also define the need for on-site UXO clearance to take place in the high risk area defined in Route Section 3.</p>
GEO23	<p>Route Section 1 Proposed Landfall to Well High Lane</p> <p>Further detailed hydrogeological modelling will be undertaken around the shallow groundwater abstraction that lies adjacent to the LoD, which will allow the potential impact on this abstraction well to be evaluated further in line with the dewatering strategy for Route Section 1. This will determine the extent of groundwater monitoring required during construction and whether an alternative water supply needs to be provided temporarily.</p>
GEO24	<p>Within this route section, construction work will avoid interacting with the Chalk aquifer which is confined by up to 20 m of superficial predominantly Till (Boulder Clay).</p>
GEO25	<p>Route Section 2 Well High Lane to A16 (Keal Road)</p> <p>Further detailed hydrogeological modelling will be undertaken as part of the detailed design stage for this section of the proposed DC cable route due to the potential impact on the Principal aquifer and Source Protection Zone (SPZ) Zone 3 that the route passes through. The additional modelling will allow the significance of potential dewatering activities to be quantified, which will inform the dewatering strategy in this location so that impact on water levels is minimised and/or controlled. This further assessment will also define the extent of any groundwater monitoring programme required during the construction phase.</p>
GEO26	<p>Route Section 3 A16 (Keal Road) to River Witham</p> <p>A high risk of UXO potential has been identified in the eastern extent of Route Section 3 associated with a former military airfield (RAF East Kirkby). Further detailed risk assessment will be undertaken prior to construction, and any measures in the UXO Risk Mitigation Management Plan will be followed. The additional assessment will also define the need for UXO clearance to be undertaken prior to construction.</p>
GEO27	<p>Within this route section, the LoD pass close to the southern margins of a Mineral Safeguarding Area (MSA). The proposed DC cable route will be positioned within the proposed LoD so as to avoid the MSA.</p>

6.4 Water Resources & Hydrology

Table 6.3 Mitigation Requirements (Water Resources & Hydrology)	
Reference	Description of Mitigation Measure

Table 6.3 Mitigation Requirements (Water Resources & Hydrology)	
Reference	Description of Mitigation Measure
WAT01	Cable trenching and construction site access road widening across surface water courses will be designed to ensure that the water quality and flow rates are unaffected either directly or indirectly.
WAT02	The cable route corridor and the construction site access roads will be designed to minimise land take and to avoid, where possible, impacts on existing drainage networks and features.
WAT03	A Construction Method Statement (CMS) will be submitted for approval by the responsible authority prior to the commencement of construction works.
WAT04	All construction work will be undertaken in accordance with a CEMP, and good practice guidance including, but not limited to: <ul style="list-style-type: none"> · EA, Pollution Prevention Guidance Note 6 (PPG6): Pollution Prevention Guidelines – Working at Construction and Demolition Sites (EA, 2012); · EA, Pollution Prevention Guidance Note 5 (PPG5):– Working in, near or liable to affect watercourses (EA, 2007); · Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors CIRIA (C650); and · CIRIA – Sustainable Drainage System (SuDS) Manual (CIRIA, 2015).
WAT05	The landfall and coastal features (flood defences) will be crossed utilising a trenchless technique which will not directly impact on flood defences and therefore will not affect flood risk.
WAT06	The trenchless technique excavation on the landward site will be undertaken during low tide, with the works sealed before the next high tide. The structure will be designed in consultation with the regulators (including the Lead Local Flood Authority (LLFA), IDB's and EA).
WAT07	Following installation of the ducts they will be sealed with an appropriate water proofing material to maintain the integrity of the sea defences and to mitigate flood risk. The ducts will always be capped to prevent sea water passing through them at high tide. The only exception will be when the cables are being pulled into the ducts and the caps must be removed.
WAT08	Where the proposed DC cable route crosses land drains and smaller watercourse crossings, the temporary construction site access road will be installed over a pre-installed culvert of suitable size to accommodate the water volumes and flows necessary or a temporary bridge will be installed through agreement with the landowner, LLFA, relevant IDB or EA. The construction site access road will be removed at the end of the construction programme. Where the construction site access road crosses existing underground services the use of temporary metal roadway sections or other suitable measures may be employed to distribute heavy loads and protect the underlying services.

Table 6.3 Mitigation Requirements (Water Resources & Hydrology)	
Reference	Description of Mitigation Measure
WAT09	Temporary drainage mitigation techniques including, but not limited to, run-off interceptor channels will be installed prior to the construction of any compounds used for trenchless techniques, ensuring discharge from the Scheme are controlled in quality and volume.
WAT10	Surface water flowing into the trenches during the construction period will be pumped via settling tanks or ponds to remove sediment and potential contaminants, before being discharged into local ditches or drains (if possible) via temporary interceptor drains.
WAT11	All construction compounds will be bunded or otherwise protected/isolated in order for any increase in turbid surface water runoff to be mitigated. The construction works will be undertaken in accordance with a methodology for the crossing of watercourses agreed with the EA, LLFA and IDB's.
WAT12	Where gradients on site are significant, cable trenches can include a hydraulic brake (such as bentonite or natural clay seals) to reduce flow along trenches and hence reduce local erosion.
WAT13	Any field drainage intercepted during the cable installation will either be reinstated following the installation of the cable or diverted to a secondary channel. Any works undertaken will be in agreement with the appropriate stakeholders.
WAT14	Individual flood defence and watercourse crossing engineering techniques will be agreed with the relevant stakeholders prior to works commencing. In the case of the construction site access crossings, existing field accesses, tracks and roads will be used where appropriate with new temporary crossings over water courses provided where necessary. However, where accesses are not robust enough for construction traffic, the construction site access crossings will be upgraded or widened, with details to be supplied to relevant stakeholders prior to works commencing under appropriate consenting regimes. Construction site access roads may require widening up to 5 m to accommodate machinery.
WAT15	Pollution Prevention Measures Refuelling of machinery will be undertaken within designated areas where spillages can be easily contained. Machinery will be routinely checked to ensure it is in good working condition and operating correctly.
WAT16	Any tanks and associated pipe work containing oils and fuels will be double skinned and be provided with intermediate leak detection equipment.

Table 6.3 Mitigation Requirements (Water Resources & Hydrology)

Reference	Description of Mitigation Measure
WAT17	<p>The following specific mitigation measures for the protection of surface water during construction activities will be implemented:</p> <ul style="list-style-type: none"> • Management of construction works to comply with the necessary standards and consent conditions as identified by the EA; • A briefing highlighting the importance of water quality, the location of watercourses and pollution prevention included within the site induction; • Areas with prevalent run-off to be identified and drainage actively managed, e.g. through bunding and/or temporary drainage; • Areas at risk of spillage, such as vehicle maintenance areas and hazardous substance stores (including fuel, oils and chemicals) to be bunded and carefully sited to minimise the risk of hazardous substances entering the drainage system or the local watercourses. • Additionally the bunded areas will have impermeable bases to limit the potential for migration of contaminants into groundwater following any leakage/spillage. Bunds used to store fuel, oil etc. to have a 110% capacity; • Disturbance to areas close to watercourses reduced to the minimum necessary for the work; • Excavated material to be placed in such a way as to avoid any disturbance of areas near to the banks of watercourses and any spillage into the watercourses; and • All plant machinery and vehicles to be maintained in a good condition to reduce the risk of fuel leaks.
WAT18	<ul style="list-style-type: none"> • Consultation with the EA to be ongoing throughout the construction period to promote best practice and to implement proposed mitigation measures. • Prevent surface water being affected during earthwork operations. No discharge to surface watercourses will occur without permission from the EA; • Drainage works to be constructed to relevant statutory guidance and approved via the LLFA prior to the commencement of construction; • Wheel washers and dust suppression measures to be used as appropriate to prevent the migration of pollutants; and • Regular cleaning of roads of any construction waste and dirt to be carried out.
WAT19	<p>Mitigation measures associated with trenchless and open cut crossing techniques vary according to the size of the watercourse.</p>
WAT20	<p>Operational or repair practices to incorporate measures to prevent pollution and increased flood risk, will include, but not be limited to, the provision of emergency spill response procedures and the clean up and remediation of contaminated water run-off.</p>

6.5 Agriculture & Soils

Table 6.4 Mitigation Requirements (Agriculture & Soils)	
Reference	Description of Mitigation Measure
AGR01	Detailed design will route the DC cable alignment along field boundaries and field margins where possible, to minimise land severance.
AGR02	Good practice soil storage, handling and reinstatement methods will be used as standard for all construction operations to minimise damage to, and loss of, soil resources; and ensure that agricultural land is restored to the same quality (Agricultural Land Classification (ALC) grade) as prior to construction and to a level where Agri-Environment Scheme (AES) eligibility is reinstated. These measures are set out in the outline SHSP, based upon guidance such as Defra’s Construction Code of Practice and Ministry of Agriculture, Fisheries and Food (MAFF) Good Practice Guide for Handling Soils.
AGR03	<p>Measures included within the SHSP will include, but not be limited to:</p> <ul style="list-style-type: none"> · Limiting the number of machine movements within the working width to minimise compaction and damage to soil structure; · Avoiding or limiting construction after periods of heavy rainfall or during periods when soils are waterlogged to minimise compaction and damage to soil structure; · The establishment of grassland, through seeding areas with bare soil surface once construction is complete to maintain soil structure and prevent soil loss through erosion. For arable land, areas of bare soil should be seeded with grass or a green manure crop. For pasture land, areas of bare soil should be seeded with grass crop. This will be informed through ongoing discussion between National Grid Viking Link Ltd (NGVL) and landowners/tenant farmers; · Ensuring the separate handling and storage of topsoils and subsoils (and distinct sub-horizons therein). Soil removed/excavated is stored near to its original location so it can be replaced/reinstated in a similar location; and. · The reduction of soil compaction through the use of Low Ground Pressure (LGP) tracked or wheeled tyres to spread the weight of vehicles, limiting the height of soil stockpile mounds, restricting construction traffic to specific areas on the construction working width and tilling the area afterwards using recognised practices and equipment to remove any compaction; and · Seeding of soil stockpiles if soil resources are stored for longer than six months to prevent irreversible damage to soil resource quality through factors such as erosion, and enable effective and quick restoration.
AGR04	The damage to soil resource will be further minimised through the use of carefully designed haul roads to mitigate soil compaction, the installation of land drainage to intercept and divert clean water away from the working area; and managing the restored soils sympathetically.

Table 6.4 Mitigation Requirements (Agriculture & Soils)	
Reference	Description of Mitigation Measure
AGR05	As an absolute minimum, the 0.9 m minimum depth of cover will be achieved over the cable infrastructure.
AGR06	The reinstated topsoil over the DC cable route will be cultivated using agricultural equipment and a crop established at the earliest opportunity. The early cropping of the restored land will assist with the recovery of the soil structure through crop rooting whilst also minimising the risk of erosion.
AGR07	<p>The SHSP will also set out good practice measures to minimise the potential transfer of disease and pathogens, following Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. This embedded mitigation will include, but not be limited to:</p> <ul style="list-style-type: none"> · Avoiding soil movement from one farm to another via heavy plant movement as far as is practicable in normal working operations, with additional tailored mitigation such as disinfectant spraying being employed should specific pathogens or diseases and excavated soils are replaced <i>in situ</i> be identified (e.g. Foot and Mouth); and · Continued management of the displaced soil (soil storage mounds) with suitable ongoing weed management programme in both the top- and sub-soil so as to avoid the increased growth of weeds (e.g. black grass, thistles, ragwort) following soil replacement. Note that, where applicable, the use of herbicide will be tailored to ensure that the certification of organic land is not adversely affected.
AGR08	Prior to construction, Defra's Animal and Plant Health Agency should be consulted on the presence of animal burial pits, disease controls in place and the presence of notifiable plant disease.
AGR09	<p>To ensure organically managed land (as identified by land parcels currently enrolled in an organic Entry Level Stewardship Scheme (ELS) or Organic Entry plus Higher Level Stewardship Scheme (EHLS)) retain organic status following construction, it is essential to implement mitigation beyond standard measures. These measures will be detailed in the SHSP. This embedded mitigation will include, but not be limited to:</p> <ul style="list-style-type: none"> · Avoiding soil movement from one farm to another (e.g. via heavy plant movement and soil replacement, as described above). · Continued management of the displaced soil (soil storage mounds). The use of herbicide will be tailored to ensure that the certification of organic land is not affected.
AGR10	Where possible cable installation will be undertaken in a phased manner so that the period of temporary storage of excavated soils in any given Section of the proposed DC cable route will not exceed 2 years; so as to minimise the storage impacts.

Table 6.4 Mitigation Requirements (Agriculture & Soils)

Reference	Description of Mitigation Measure
AGR11	<p>The soils identified within the Zone of Influence (Zol) include three erosion prone soils (i.e. Andover 1, Cuckney 2 and Swaffam Prior soils) which are considered to be sensitive to damage and susceptible to loss. Therefore, additional bespoke mitigation is required to be tailored to the precise locations of these susceptible soils to ensure that they are protected from erosion. Bespoke mitigation measures could include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> • The use of specialist surface run-off control systems, • The protection of stored soil from erosion using wind barriers, and • The protection of in-situ, bare soil from erosion using covers.
AGR12	<p>Periodic stockpile inspections will be carried out along the DC cable route during construction activities to assess the condition of the stockpile, and identify the requirement for weed control and or erosion mitigation measures. This is discussed in further in detail in the Route Section specific sections and outlined in the SHSP.</p>
AGR13	<p>Andover 1, an erosion prone soil, covers 3.2% of the proposed DC cable working width and 3.1% of the Zol to the south of Route Section 1 and 3.2% of the Temporary Construction Compound (TCC) and Temporary Construction Areas (TCAs). Prior to construction activity detailed soil survey data collated will be interrogated to define the extent of these soils at the field level. Bespoke mitigation measures will likely include but not necessarily be limited to:</p> <ul style="list-style-type: none"> • The use of specialist surface run-off control systems, • The protection of stored soil from erosion using wind barriers, and • The protection of in-situ, bare soil from erosion using covers.
AGR14	<p>Andover 1, Cuckney 2 and Swaffam Prior soil erosions prone soils cover 69.7% of the proposed DC cable working width and 69.8% of the Zol and 69.7% of the TCCs and TCAs within Route Section 2. Prior to construction activity detailed soil survey data collated will be interrogated to define the extent of these soils at the field level. Bespoke mitigation measures will likely include but not necessarily be limited to:</p> <ul style="list-style-type: none"> • The use of specialist surface run-off control systems, • The protection of stored soil from erosion using wind barriers, and • The protection of in-situ, bare soil from erosion using covers.
AGR15	<p>One land parcel in Route Section 3 is currently enrolled in an organic AES. Bespoke mitigation measures at this location (and any other organically managed land) will likely include continued organic-specific management, such as the use of herbicide will be tailored to ensure that the certification of organic land is not affected.</p>

6.6 Ecology

Table 6.5 Mitigation Requirements (Ecology)	
Reference	Description of Mitigation Measure
ECO01	A range of measures to ensure legal compliance will be implemented for the duration of the construction phase, which will be delivered through the implementation of a CEMP. The measures relating to ecological features and which ensure compliance with relevant wildlife legislation and good practice are discussed below.
ECO02	<p>The CEMP is the delivery document for all ecological mitigation; it describes measures applicable to all construction activities:</p> <ul style="list-style-type: none"> • Pre-construction surveys will be carried out to ensure baseline data remains up to date; • An appropriately qualified Ecological Clerk of Works (EcCOW) will be appointed. The role of the EcCOW is set out in the CEMP and the appointed person(s) would be a member of the Chartered Institute of Ecology and Environmental Management or hold equivalent accreditation; • There will be a demarcation of the working areas (including storage areas and accesses), using appropriate fencing, to protect retained habitats and features; • Traps or wildlife exclusion fencing will be installed (and maintained), as required by protected species licences; • Clearance of trees, hedges, grassland and other habitats will take place under supervision and at the appropriate time of year, as appropriate to the site/species in question; and • There will be prompt reinstatement of habitats to their former condition, including any measures to enhance species diversity.
ECO03	<p>The CEMP will include:</p> <ul style="list-style-type: none"> • Procedures for designated sites affected by the Proposed Development; • General Method Statements for habitat protection; • Species-specific Method Statements, addressing protected and priority species; and • Provisions within the High Level Tree Assessment (including felling, pruning, pollarding, replacement tree and hedgerow planting, and use of protective fencing and root protection zones in accordance with BS5837:2012); and • The approach to post-construction monitoring relating to reinstatement and mitigation activity including triggers for and details of appropriate remedial action.

Table 6.5 Mitigation Requirements (Ecology)

Reference	Description of Mitigation Measure
ECO04	<p>Habitats impacted during construction will be reinstated in-situ to their former condition, where practicably possible. This will be delivered by the CEMP.</p> <p>Seed mixes for grassland replacement will be determined in consultation with the landowners to seek to replicate current conditions. Where non-statutory designated sites are affected, reinstatement will also be discussed and agreed with Lincolnshire Wildlife Trust (LWT).</p> <p>Replacement hedgerow planting will follow the existing landscape pattern. Hedgerow planting will include five locally appropriate native species (40% hawthorn and 15% each of field maple, hazel, blackthorn and dog rose). Livestock fencing will be provided to safeguard planted specimens. Where 'Important' hedgerows are crossed, reinstatement planting will ensure that the species diversity of the hedgerow is maintained including the planting of additional species if required.</p> <p>Where open-cut crossings of watercourses/drains are undertaken, they will be backfilled and the natural channel form reinstated. It is intended that the banks will be allowed to re-colonise naturally, in agreement with stakeholders. If bank and soil stabilisation is required, this will be provided by the use of geotextile or coir matting.</p> <p>Management will be provided over a 5 year period to ensure reinstatement planting takes place and habitats establish as intended.</p>
ECO05	<p>Pollution Prevention</p> <p>The CEMP will include measures to ensure that site run-off and potential pollution events will be prevented from entering the surrounding drainage network in line with EA Pollution Prevention Guidance notes and a range of good practice working methods. This will be achieved through the use of bunds to catch and divert runoff, drip trays to prevent any oil and fuel spillages spreading and the avoidance of storage of any materials in close proximity. Windblown dust will be minimised by using wheel washing and damping down, while net fencing will catch windblown rubbish. To address the risk of singular accidental events, mitigation measures include provision of spill kits and emergency response procedures. These measures will be effective upon commencement of construction.</p>
ECO06	<p>Tree Protection</p> <p>Appropriate tree protection measures will be implemented where required when works are in close proximity to woodland, hedgerows and trees and will be included in an Arboricultural Method Statement appended to the CEMP. These measures will accord with current standards (BS5837:2012 Trees in relation to design, demolition and construction – Recommendations). All tree and hedgerow works will comply with BS3998:2010 'Tree Work – Recommendations'. These measures will minimise incidental damage and disturbance to the habitats and the species they support.</p>
ECO07	<p>To restrict spread of tree pathogens, all equipment and machinery and vehicles used for tree, hedge and shrub removal will be cleaned, disinfected and used in accordance with current Forestry Commission biosecurity guidance and the EcCOW will advise on whether each working area requires 'red' or 'amber' level biosecurity precautions.</p>

Table 6.5 Mitigation Requirements (Ecology)

Reference	Description of Mitigation Measure
ECO08	<p>Reptile Legal Compliance</p> <p>As there is the potential for reptiles to be present within some areas of the base scheme design, Reasonable Avoidance Measures (RAMs) will be implemented during site clearance works to ensure no killing or injury to individuals. RAMs will be delivered through the production of a Method Statement appended to the CEMP and will comprise staged vegetation removal. Initial strimming of vegetation to 300 mm followed by a later second cut to 150 mm and with both cuts proceeding in one direction will allow not only reptiles, but also amphibians and small mammals, such as hedgehog, to vacate the affected area. The areas will be left for a period of 24 hours (hrs) after the first and second cuts, after each of which the EcCOW will undertake a hand search to confirm the absence of reptiles. Following the second cut and hand search, vegetation will be strimmed to ground level, at which point full site clearance and levelling will then be undertaken. Any animals found during hand searching will be removed to alternative suitable habitat by the EcCOW. Site clearance affecting suitable reptile hibernation features (identified by the EcCOW) will avoid the hibernation period (November to early March inclusive).</p>
ECO09	<p>In order to prevent reptiles using subsoil and topsoil piles for refuge or hibernation, the surfaces of the piles will be tamped down and consolidated to ensure individuals cannot access them. In addition, stored materials which could be used for refuge or hibernation by reptiles will be stored off the ground on pallets to prevent their access.</p>
ECO10	<p>The measures put in place will also serve to prevent killing or injury to other fauna, in particular amphibians and hedgehogs. These RAMs can therefore provide a multiple function and be implemented for this wider range of fauna.</p>
ECO11	<p>Great Crested Newt (GCN) (and Amphibian) Legal Compliance</p> <p>GCN traditional and eDNA surveys identified two waterbodies within the base scheme design and surrounding land with confirmed GCN presence; Ditch 3 in Route Section 1, where a positive eDNA result was obtained but no GCN were recorded during traditional surveys and Ditch 83 in Route Section 4 where one GCN was recorded during torch surveys. These watercourses are not crossed by the proposed DC cable route but do link with others which are crossed. Records for GCN were for Route Section 3 and Route Section 4 within 1 km of the proposed DC cable route base scheme design. Overall GCN are present at a very low density within the base scheme design.</p>
ECO12	<p>Due to the temporary nature of the potential impacts on GCN, the predominance of low quality habitats along the proposed DC cable route and trenchless crossings of the majority of watercourses it is probable that the risks of killing or injury of GCN are low. RAMs will be implemented during site clearance works to ensure no killing or injury to individuals and will follow the same method as set out in the Reptile Legal Compliance section above. Similarly, methods stated in the Reptile Legal Compliance section with respect to covering of trenches and storage of topsoil and subsoil piles and other materials will also apply to GCN.</p>

Table 6.5 Mitigation Requirements (Ecology)

Reference	Description of Mitigation Measure
ECO13	In addition clearance of vegetation providing potential hibernation habitat within or adjacent to ditches (such as dense scrub or tall ruderal vegetation) being carried out during the GCN breeding season (mid-April to June inclusive) when GCN are likely to be in waterbodies. These works would be undertaken using RAMs and an EcCOW will confirm the absence of amphibians prior to clearance.
ECO14	Smaller excavations within the base scheme design will be covered overnight to prevent entrapment of any reptiles. If any open excavations are left uncovered these will be inspected by the EcCOW at the start of each working day to ensure no individuals are present, and to remove any that are trapped to a safe location, before works commence.
ECO15	Should dewatering be required prior to the installation of temporary culverts, rescue of GCN and other amphibians will be undertaken at the same time as fish rescue implementation (see Fish Legal Compliance) during the latter stages of dewatering. Any animals found during the rescue will be removed to alternative suitable habitat by the EcCOW.
ECO16	Bat Legal Compliance As a precaution, prior to site clearance, pre-construction surveys (tree climbing inspections and if necessary nocturnal surveys at the appropriate time of year) of all trees requiring works and identified to have moderate or high bat roost potential will be undertaken. This will be carried out in advance of each phase of the works throughout the duration of the project, allowing sufficient time for Natural England (NE) licences to be secured should roosts be identified in trees that require felling. If any additional roosts are identified, the proposed works will be reviewed to see if any adjustments can be made (the licencing process requires consideration as to whether there are any satisfactory alternatives), or whether compensation via the provision of bat boxes will be required.
ECO17	The need for construction phase lighting is minimal. However, where necessary, lighting will be directed away from trees, hedgerows, woodland and watercourses to avoid the possibility of deterring bat activity. Lights will be installed at an appropriate height, with directional hoods fitted to minimise spillage.
ECO18	Losses of bat important foraging and commuting habitat across the base scheme area are relatively small. Exceptions include hedge removal which may have a temporary fragmentation effect on bats. As detailed in the embedded habitat mitigation text, replacement hedgerow planting will be undertaken in the first planting season following completion of construction and general ground reinstatement. Fragmentation effects, i.e. potential abandonment of a commuting route, can occur when gaps in excess of 10 m are present in a formerly intact feature for common bat species. Therefore, where hedgerow removal exceeds 12 m, temporary fencing will be installed during reinstatement to provide continuity of the feature until hedgerow planting is established (approximately 3 to 5 years).

Table 6.5 Mitigation Requirements (Ecology)	
Reference	Description of Mitigation Measure
ECO19	<p>Water Vole & Otter Legal Compliance</p> <p>Water vole home ranges expand and contract within and between years and otter home ranges are very large and may use watercourses at a low level (on passage) without obvious field signs and therefore their distribution may change before construction activities commence. Therefore a pre-commencement water vole and otter survey will be carried out at all watercourses/drains to be crossed, to update the existing baseline. Surveys will be sufficiently advanced of works to allow any mitigation or licensing requirements to be implemented. If either species has colonised the site and avoidance of impacts is not possible, NE will be contacted to agree a way forward in line with guidance current at the time.</p>
ECO20	<p>Where no water vole burrows are identified during the pre-commencement survey, vegetation control will be undertaken to dissuade water voles from colonising the working area prior to commencement. Vegetation within the ditch and on both banks will be strimmed to bare ground, to at least to the top of the bank, and where tall vegetation extends beyond this point, up to 5 m from the top of the bank. Within the ditch, strimming will extend 5 m up and downstream from the working area. Arisings will be removed from the cleared area and stored more than 5 m from the top of the ditch banks.</p>
ECO21	<p>Vegetation within the working area will be regularly strimmed to ensure that water voles are dissuaded from colonising the working area.</p>
ECO22	<p>Where water voles are identified within the watercourse, displacement methods will be implemented immediately prior to the DC cable installation process to ensure water voles are moved out of the area. The Water Vole Mitigation Handbook 2016 considers that displacement and vegetation management is appropriate for distances of up to 50 m. This is because water voles show high fidelity to their territories and therefore only small area sections of habitat are suitable for displacement. In order to be effective displacement methods must be implemented between late February and early April to ensure that animals are moved prior to young being born, after which moving animals using this method is unlikely to be effective.</p>
ECO23	<p>Prior to any displacement being undertaken, an assessment of adjoining habitat will be undertaken by an ecologist in order to ensure the suitability of the adjacent habitat to support displaced water vole. This will include consideration of water quality, existing water vole population and presence of predatory species. If adjacent vegetation is not considered to be suitable, vegetation management will be required to create suitable conditions.</p>
ECO24	<p>An ecologist will then mark the presence of all water vole burrows within the working and 5 m in each direction along the watercourse.</p>

Table 6.5 Mitigation Requirements (Ecology)	
Reference	Description of Mitigation Measure
ECO25	The working area and buffer will then be strimmed to bare ground, with vegetation being cut to the top of the bank, or where longer vegetation is present, 5 m from the top of the bank. Arisings will be removed from the strimmed area. Immediately following vegetation strimming the marked burrows will be inspected by an ecologist to ensure that burrows have not been blocked during vegetation cutting. Daily monitoring of the burrows will be undertaken for, a minimum of three days, until such a time that no evidence of water vole presence has been identified.
ECO26	Burrows will then be removed using destructive searching methods. Burrows will be excavated using hand tools, either by an ecologist or under the supervision of an ecologist. Any animals captured will be transferred to adjacent suitable habitats or allowed to disperse. Following burrow destruction, any remaining vegetation will be stripped using a machine, under the supervision of an ecologist. Any water voles disturbed during this process will be captured and moved to adjacent habitats. The cleared area will be monitored for 2-4 hours for any further animal movements. Any water voles identified during this period will be captured and transferred to suitable adjacent habitats.
ECO27	Following completion of the destructive search, installation works should be undertaken as soon as possible, or where this is not possible, water voles will continue to be excluded from the area through regular repeat vegetation control, or through installation of water vole proof fencing, where conditions allow.
ECO28	There is potential for water voles to be impacted during removal of culverts and bridges used for haul road crossings and therefore a repeat of the displacement methods will be undertaken for 5 m each side of the crossing prior to removal.
ECO29	Any excavations adjacent to watercourses that cannot be boarded or fenced overnight will have ramps installed to allow any otter that may become trapped to escape.
ECO30	Badger Legal Compliance Fifteen setts fall within either the proposed DC cable route, LoD, access roads, compounds or within the 30 m buffer. Construction elements associated with these setts will be carried out under a NE licence to ensure no detrimental impact on the local badger clans. This includes both the closure of five setts (S146, S10, S56, S79 & S135) and supervision of works within 10-30m buffer of six setts (S64, S66, S87, S112, S144 & S145). Additional site supervision will be required associated with the temporary drainage works in proximity of two setts (S9 & S59).
ECO31	Pre-construction surveys will be undertaken to determine the presence of any setts that may have been constructed and any changes in extent or level of use during the interim period since surveys were completed. If site conditions change and avoidance is not possible the NE licence will be updated to include these changes with appropriate mitigation applied.

Table 6.5 Mitigation Requirements (Ecology)

Reference	Description of Mitigation Measure
ECO32	The acceptable working distance from a badger sett can only be assessed on a case-by-case basis and is dependent on the extent and type of the proposed works, but is generally considered to be 30 m. Destruction of a badger sett will only be undertaken as a last resort. In most cases the badger sett will be protected from disturbance and potential damage by an exclusion zone marked out in advance of construction works commencing.
ECO33	On the basis of current evidence, no main sett will be permanently or temporarily lost as a result of the development and therefore no artificial sett construction is proposed. However, in the unlikely event that a replacement sett is required, the construction of an artificial sett would be completed six months prior to the start of works to close the existing main sett.
ECO34	Current proposals indicate the need for closure of six setts and reasonable avoidance measures to include supervision during excavation in the 10-30 m zone at eight setts. Disturbance to a badger sett will only be permitted under licence from 1 st July – 30 th November inclusive, this is to avoid the period between December to June when badgers are likely to be breeding and therefore more susceptible to disturbance.
ECO35	To exclude badgers from the affected setts, badger gates will be installed over each entrance and the sett. An establishment period of up to 7 days during which the gates will permit exit and entry will allow badgers to acclimatise to the gates. If appropriate, wire mesh will be installed across the sett area in conjunction with the gates to prevent alternative entrances being dug. The gates will then be set to exclude badgers and the sett will be then subject to a 21 day exclusion period. If at any point during the 21 day exclusion period a breach is apparent, repairs to the exclusion measures will be made and the 21 day monitoring period re-initiated. Once it is confirmed no badgers are present within a sett, the sett will be carefully excavated under the supervision of the licence holder. Destruction will be undertaken with a JCB or similar, commencing at approximately 30 m from the outer sett entrances and working towards the centre of the setts, cutting 0.5 m slices in a trench to a depth of 2 m. This will be carried out in such a manner to ensure that top soil and sub soil are not mixed. Exposed tunnels will be checked for recent badger activity. The sett will be destroyed from several directions, in the above manner, until only the central core of the sett remains. Once it is ensured that no badgers remain, the core will also be destroyed and the entire area back-filled and made safe. Sett excavations should be concluded within one working day, as badgers may re-enter exposed tunnels and entrances.
ECO36	Trenches or excavations near badger setts will not be left open overnight and will either be boarded or fenced off at the end of each day or egress ramps will be provided.
ECO37	Excavated soil will be stored in an area agreed with the EcCOW and will not obstruct existing badger paths or interfere with any active setts by preventing access or egress.

Table 6.5 Mitigation Requirements (Ecology)

Reference	Description of Mitigation Measure
ECO38	Two-way badger gates will be installed within the stock proof fencing used to demarcate the DC cable route at main badger path crossing points and at other suitable intervals, to allow movement of badgers across the landscape.
ECO39	<p>Breeding Bird Legal Compliance</p> <p>Any tree and scrub vegetation removal, or tall ruderal vegetation removal or any works affecting tall marginal vegetation of watercourses will take place outside the bird nesting season (avoiding the period March to August inclusive). Where these measures are not possible and works need to be carried out during the bird breeding season, all areas to be affected will be checked for evidence of nesting birds a maximum of 24 hrs prior to the vegetation removal/tree felling works taking place. If any active bird nests are discovered these will be given a minimum standoff of 5 m (this may increase depending on species/proposed works and location) where no potentially disturbing works would take place until the young have fledged and the nest vacated. A second nesting bird check will then be undertaken to ensure the tree/vegetation does not contain any further active nests prior to felling/removal works taking place.</p>
ECO40	Retained trees and scrub adjacent to working areas will be protected from encroaching traffic using fencing following (BS5837:2012), this will minimise disturbance to nesting birds in retained habitat.
ECO41	Any works affecting previously undisturbed areas of open fields (including any storage of materials, clearance of vegetation, or groundworks) carried out during the breeding bird season (March to August inclusive) will require a nesting bird check immediately prior to the works to ensure that there are no ground nesting birds present in the affected area. If active bird nests are located, the nest will be marked and all potentially disturbing works within at least 20 m of the nest location would be stopped until the active nest had been vacated. Prior to works in the area commencing a further nesting bird survey will be required to establish that no active bird nests were present within the area.
ECO42	Impacts on birds nesting opportunistically in working areas will be minimised through an ecologist checking any sections of bare ground of more than 0.5 ha for active bird nests if these areas have been left undisturbed (more than 50 m from an active working area) for more than 1 week during the breeding season. If nesting birds are found, measures appropriate to the species, location and proposed works will be implemented as advised by the ecologist to ensure nests are not destroyed or disturbed while active.

Table 6.5 Mitigation Requirements (Ecology)

Reference	Description of Mitigation Measure
ECO43	<p>Fish Legal Compliance</p> <p>Where de-watering is undertaken at watercourse crossings, e.g. for the installation of temporary culverts, dams either side of the de-watered working area (sandbags, piling or other material) will be carefully installed under supervision of the EcCOW to avoid killing or injury of any fish that might be present. Fish rescue (netting) will be carried out as deemed appropriate by the EcCOW, in the latter stages of de-watering during installation/removal of water crossings. The rescue will be undertaken by specialists who are accredited under the ‘Performing Section 30 Fish Health Checks Accreditation Scheme’ (to meet the requirements of the EA under Section 30 of the Salmon & Freshwater Fisheries Act 1975), and all data collated and submitted to the EA. Fish will be released into the adjacent channel (up or downstream release to be determined by the EcCOW on a case by case basis depending on the connectivity of the watercourse/tributary and the time of year).</p>
ECO44	<p>Wintering Birds</p> <p>In order to prevent significant temporary disturbance to wintering birds during construction, particularly those which are also qualifying features of The Wash Special Protection Area (SPA)/Ramsar and/or the Humber Estuary SPA/Ramsar, visual and acoustic screening will be erected in key locations along the proposed DC cable route. Specific details are described in the relevant Route Section.</p>
ECO45	<p>Brown Hare</p> <p>As there is the potential for brown hare leverets to be present within the proposed DC cable route, RAMs will be produced and implemented during site clearance works to ensure no killing or injury to individuals. A walkover of the construction areas by a suitably qualified ecologist, prior to initial site clearance, will enable leverets to be located and flushed out of the area. Any adult hares within the site would also disperse due to the presence of human activity. This will apply to all Route Sections.</p>
ECO46	<p>In order to prevent significant disturbance to wintering birds, visual and acoustic screening will be installed at the southern edge of the works area to the north of Huttoft Bank Pit LWT Reserve to provide a barrier between the works and this nature reserve and surrounding land. The screening will be a minimum of 2m in height, and will likely consist of heras fencing with an acoustic quilt attached, such as SOUNDEX C1/1 or a suitable equivalent.</p>
ECO47	<p>In order to prevent significant disturbance to wintering birds, if works are carried out within 200 m of the River Witham during the winter period (October to March), visual and acoustic screening will be installed between the works and the River Witham. The screening will be installed as close to the works as possible and will be of sufficient length to screen all of the works carried out. If the works move closer to the river, the screening will be moved with the works. The screening will be a minimum of 2m in height, and will likely consist of heras fencing with an acoustic quilt attached, such as SOUNDEX C1/1 or a suitable equivalent.</p>

Table 6.5 Mitigation Requirements (Ecology)

Reference	Description of Mitigation Measure
ECO48	In order to prevent significant disturbance to wintering birds, if works are carried out within 200 m of the South Forty Foot Drain during the winter period (October to March), visual and acoustic screening will be installed between the works and this watercourse. The screening will be installed as close to the works as possible and will be of sufficient length to screen all of the works carried out. As the works move alongside the river, the screening will be moved with the works, ensuring that all active works with 200m of the watercourse are sufficiently screened at all times during the period October to March. The screening will be a minimum of 2m in height, and will likely consist of heras fencing with an acoustic quilt attached, such as SOUNDEX C1/1 or a suitable equivalent.

6.7 Landscape & Visual Amenity

Table 6.6 Mitigation Requirements (Landscape & Visual Amenity)

Reference	Description of Mitigation Measure
LV01	<p>The base scheme design of the proposed DC cable route incorporates measures to help reduce the potential for significant adverse effects on the landscape and visual resource. Landscape and visual design mitigation proposals include the following:</p> <ul style="list-style-type: none"> · Hedgerows temporarily removed to facilitate construction of the DC cable route would be reinstated with a native hedgerow mix; · Where appropriate to the local landscape character, and where technically feasible, specimen and hedgerow trees and woodland planting would be incorporated as part of landscape mitigation and reinstatement. These would consist of a variety of native species, typical of those found within the local area; and · Other vegetation along the DC cable route and in areas temporarily disturbed by construction would also be reinstated. Most of these areas are expected to be returned to arable farming during the first available planting season following completion of construction. In addition, pasture, road verges and other areas temporarily affected will be seeded with a species rich wildflower or grass seed mix.
LV02	The proposed landscape mitigation planting includes a range of plant and seed mixes, with hedgerows, trees and wildflower grass mixes proposed to reinstate those areas temporarily affected during construction and also to provide additional landscape, biodiversity and habitat enhancement.

Table 6.6 Mitigation Requirements (Landscape & Visual Amenity)

Reference	Description of Mitigation Measure
LV03	Mitigation opportunities during the construction phase of works will primarily relate to the restrictions imposed on the working areas and measures identified in the outline CEMP. The outline CEMP seeks to stipulate measures to avoid, reduce or offset environmental effects of the construction works, including those related to the landscape and visual resource. Measures relevant to the landscape and visual resource may include the minimisation of the removal of vegetation, particularly trees and hedgerows, and reinstatement of landscape features at the earliest suitable opportunity.
LV04	Proposed landscape reinstatement and mitigation measures within this Route Section 1 include: <ul style="list-style-type: none"> · Returning the majority of the areas affected by construction back to arable agricultural use; · Reseeding roadside verges with a species rich grassland mix; · Replanting hedgerows with a native hedgerow mix typical the area, and incorporating hedgerow trees where appropriate; and · Encouraging natural regeneration of vegetation, such as along the disused railway south west of Ailby.
LV05	Proposed landscape reinstatement and mitigation measures within this Route Section 2 include: <ul style="list-style-type: none"> · Returning the majority of the areas affected by construction back to arable agricultural use; · Reseeding grassland/pasture and roadside verges with a species rich grassland mix; · Replanting hedgerows with a native hedgerow mix typical the area, and incorporating hedgerow trees where appropriate; · Planting of woodland edge mix consisting of shallower rooting species where technical constraints allow woodland reinstatement; and · Encouraging natural regeneration of vegetation along drains and waterways.

Table 6.6 Mitigation Requirements (Landscape & Visual Amenity)

Reference	Description of Mitigation Measure
LV06	<p>Proposed landscape reinstatement and mitigation measures within this Route Section 3 include:</p> <ul style="list-style-type: none"> · Returning the majority of the areas affected by construction back to arable agricultural use; · Reseeding roadside verges with a species rich grassland mix; · Replanting hedgerows with a native hedgerow mix typical the area, and incorporating hedgerow trees where appropriate; · Planting of woodland edge mix consisting of shallower rooting species where technical constraints allow woodland reinstatement; · Reinstatement of specimen tree planting where technical constraints allow; and · Encouraging natural regeneration of vegetation along drains and waterways.
LV07	<p>Proposed landscape reinstatement and mitigation measures within this Route Section 4 include:</p> <ul style="list-style-type: none"> · Returning the majority of the areas affected by construction back to arable agricultural use; · Reseeding roadside verges with a species rich grassland mix; · Replanting hedgerows with a native hedgerow mix typical the area, and incorporating hedgerow trees where appropriate; · Planting of woodland edge mix consisting of shallower rooting species where technical constraints allow woodland reinstatement; · Reinstatement of specimen tree planting where technical constraints allow; and · Encouraging natural regeneration of vegetation along drains and waterways.

6.8 Archaeology & Cultural Heritage

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH01	Visual intrusion of installation works within the working width will be minimised by keeping the proposed DC cable route working width to a minimum in all areas and ensuring the area is kept tidy and in good order during the construction phase.
ARCH02	Increased traffic resulting in visual and noise intrusion, and potential pollution increase, on heritage landscapes and receptors will be mitigated by the control of routes for traffic travelling to and from the working width for all traffic associated with the proposed DC cable route works.

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH03	Dust impacts will be mitigated through measures such as the use of appropriate materials which will not break down and produce dust as easily, and through techniques such as 'damping down' both along highways and within the working width and construction areas.
ARCH04	<p>A levelled approach will be taken to construction mitigation measures for the proposed DC cable route. This approach will comprise three levels of mitigation:</p> <ul style="list-style-type: none"> · Archaeological Watching Brief. · Strip, Map and Sample. · Detailed Archaeological Excavation. <p>All records produced during this mitigation will be used to produce a series of reports and site archives which will be deposited with the appropriate local repository, in consultation with the archaeological advisor to the Local Planning Authority (LPA).</p>
ARCH05	Should it be necessary for the detailed design of the DC cable route to pass through the 100m buffer around the military aircraft crash site (409) the construction mitigation will require full archaeological excavation. Any excavations which encounter remains within the 100m buffer, or clearly relating to the wreckage of the aircraft should a buffer fail to be established, will require application for a licence for excavation from the Ministry of Defence (MoD).
ARCH06	<p>Prehistoric Period (30,000 BC – AD 43)</p> <p>Impacts to the potential features associated with the circular mound and linear features at Furzehill (300) could be mitigated through strip, map, and sample.</p>
ARCH07	<p>Medieval Period (AD 1066 – 1540)</p> <p>The Sea Bank at Huttoft (160) will be mitigated during construction by use of Horizontal Directional Drilling (HDD) (or similar 'trenchless' technique) construction methods.</p>
ARCH08	Mitigation for the earthwork enclosure and field boundary at Huttoft (159) will be informed through the geophysical survey and archaeological trial trenching results. However, mitigation is likely to include either the strip, map and sample approach or full excavation of the section of the receptor where it lies within the LoD based on discussions with the archaeological advisor to the LPA. It is likely this receptor will be removed wholly or in part due to construction activities within the LoD and therefore mitigation will be via preservation by record.
ARCH09	The former field boundary and ridge and furrow to the north of Wold View Farm (261) could be mitigated by archaeological recording within the proposed DC cable working width with an aim to revealing any remains and preserving these by record. The mitigation could take the form of a watching brief for this receptor.
ARCH10	Impacts to the wide ridging at Markby (299) could be mitigated through a watching brief.

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)	
Reference	Description of Mitigation Measure
ARCH11	The shrunken Medieval village of Saleby (103) and its moated site (104) only enters the planning application boundary for a small percent of their total area. However, there is potential for associated features outside the monuments to be present within the planning application boundary. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of archaeological features, if any, relating to the shrunken Medieval village within the planning application boundary. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH12	An area of ridge and furrow (261) to the north of Wold View Farm could be mitigated through a watching brief.
ARCH13	<p>Post Medieval Period (AD 1540 – 1914)</p> <ul style="list-style-type: none"> · The tramway between Sutton on Sea and Alford (117) could be mitigated through archaeological recording with an aim to revealing any remains of the tramway and preserving these by record. The mitigation could take the form of a watching brief for this receptor. · The linear hollow to the west of Sea Bank Farm (295) could be mitigated through a watching brief to ascertain the nature of the below ground archaeological remains. · The ridge and furrow to the north-east of Yarlsgate Farm (296) could be mitigated through a watching brief to ascertain the nature of the below ground archaeological remains. · Impacts to the disused railway to the west of Yarlsgate Farm (411) could be mitigated through a watching brief to ascertain the nature of the below ground archaeological remains. · The former field divisions at Wold View Farm (298) could be mitigated through a watching brief to ascertain the nature of the below ground archaeological remains. · The field boundaries and wide ridging to the west of Ailby House Farm (302) could be mitigated through a watching brief to ascertain the nature of the below ground archaeological remains.

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH14	<p>Unknown Date</p> <ul style="list-style-type: none"> · Impacts to the areas surrounding the watercourse to the west of Yarlsgate Farm (297) could be mitigated through a watching brief. · The potential pits to the west of Ailby House Farm (407) and the potential plough damaged ditch to the north-west of Rigsby (408) are both located within the planning application boundary as such the mitigation for this receptor would be a watching brief. · Impacts to the field boundaries including ridge and furrow and a strip field (255) at Ailby would be mitigated through a watching brief. · Impacts to the former field divisions, wide ridging, and possible pond/quarry pit at Ailby House Farm (301) would be mitigated through a watching brief.
ARCH15	<p>Prehistoric Period (30,000 BC – AD 43)</p> <p>The cropmarks and geophysical anomalies which have been identified within this route section to be permanently impacted by the proposed DC cable route to the south-east of Driby (124 and 125), at Dalby (120, 397), at West Keal (123) and at Dalby (230 and 146) could have the impacts mitigated against prior to the construction phase. A primary phase of mitigation will take the form of trial trenching to establish the extent and density of Prehistoric activity within the planning application boundary, relating to these receptors. Should significant archaeological remains be discovered, a secondary phase of mitigation would occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.</p>
ARCH16	<p>Impacts to the potential barrow to the south of Fulletby (119) could be mitigated through a primary phase of trial trenching to establish the extent, to which the barrow lies within the planning application boundary, and the receptor's rate of survival. Should significant archaeological remains be discovered, a secondary phase of mitigation would occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.</p>
ARCH17	<p>Impacts to the findspot on Langton Hill (266) could be mitigated through a watching brief to ascertain whether there is any previously unrecorded below ground archaeological remains associated with it.</p>
ARCH18	<p>Construction mitigation is proposed for the cropmarks of enclosures and boundaries to the north-west of Langton Hill (144). A primary phase of mitigation could take the form of trial trenching to establish the extent and density of activity within the planning application boundary, relating to the enclosure and boundary cropmarks. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.</p>

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH19	Further construction mitigation is proposed to mitigate impacts to the potential below ground archaeological remains which relate to the Prehistoric find scatter recorded at East Keal (115, 76, 80), the Bronze Age flint scatter (98), the Neolithic stone axe findspot to the south-west of Dalby (90) and the findspots of barbed and tanged arrowheads (99) at Langton by Spilsby. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of Prehistoric activity within the planning application boundary. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH20	Roman Period (AD43 - 410) Impacts to the cropmarks of field boundaries and enclosures (385) at Langton Grange Farm could be mitigated during the construction phase through strip, map, and sample. This would help to gain an understanding of the nature and extent of the receptor.
ARCH21	Impacts to the enclosures, field boundaries and trackway to the north-east of Skirbeck Plantation (386 and 145) could be mitigated through a phased approach. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of Prehistoric and Roman activity within the planning application boundary. Should significant archaeological remains be discovered, a secondary phase of mitigation might occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH22	The enclosure and field boundaries to the north of Raithby Cross Roads (315) could have their impacts mitigated through a phased approach. A primary phase of mitigation will take the form of trial trenching to establish the extent and density of Roman activity within the planning application boundary. Should significant archaeological remains be discovered, a secondary phase of mitigation would occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH23	Impacts to the cropmarks of enclosures, field boundaries and pits (387 and 137) at East Farm Partney could be mitigated through a strip, map, and sample. This would help to gain an understanding of the nature and extent of the receptor within the planning application boundary.

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)	
Reference	Description of Mitigation Measure
ARCH24	<p>Early Medieval Period (AD 410 - 1066)</p> <p>The impacted Early/Middle Saxon site at East Keal (108) will be subject to construction mitigation which could take phased approach. A primary phase of mitigation will take the form of trial trenching to establish the extent and density of Early Medieval activity within the planning application boundary. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.</p>
ARCH25	<p>Medieval Period (AD 1066-1540)</p> <p>Impacts to the old field boundary/drain that is recorded to the north-west of Dalby Bar (311) could be mitigated through a watching brief. This would help to ascertain the nature and extent of the receptor.</p>
ARCH26	<p>Impacts to the ridge and furrow which were identified during geophysical survey to the south of Dalby Bar (398) could be mitigated during the construction phase through a watching brief. This would help to ascertain the nature of the underlying archaeological record.</p>
ARCH27	<p>Impacts to the two areas of ridge and furrow at Dalby (149, 388) could be mitigated during the construction phase through a watching brief. This would help to ascertain the nature of the underlying archaeological record.</p>
ARCH28	<p>Impacts to the Medieval Chapel of Well (92) will be mitigated through a watching brief to identify and record the below ground archaeological remains.</p>
ARCH29	<p>Areas of ridge and furrow at Raithby (130, 132) and part of a Medieval trackway (129) have been identified as being clipped by the planning application boundary. Impact to these receptors from the project will be negligible and mitigation is therefore not required.</p>
ARCH30	<p>Construction mitigation is proposed for the potential below ground remains which relate to the pottery finds assemblage at East Keal (107). This mitigation could be part of the same phased approach, as receptors 115, 76 and 80, located in the same area and provides the potential for the site to be multi-period.</p>
ARCH31	<p>It has been identified that East Keal Park (168) will be permanently impacted by the proposed DC cable route. These impacts could be mitigated by the same phased approach as receptors 115, 76, 80 and 107.</p>
ARCH32	<p>Post-Medieval Period (AD 1540-1914)</p> <p>Impacts to the disused railway that is recorded to the north-west of Alford (412) could be mitigated through an archaeological watching brief to ascertain the nature and extent of the below ground archaeological remains.</p>
ARCH33	<p>Impacts to chalk pits south-west of Deersleap (264) could be mitigated through an archaeological watching brief to identify and record the nature and extent of the below ground archaeological remains.</p>

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)	
Reference	Description of Mitigation Measure
ARCH34	Impacts to East Keal Park (168) could be mitigated through an archaeological watching brief to ascertain the nature and extent of the below ground archaeological remains relating to park activity.
ARCH35	<p>Modern Period (AD 1914- Present)</p> <p>It was identified above that the crash site of the military aircraft at Ulceby Cross (409) is likely to be permanently impacted by the construction of the proposed DC cable route. Design mitigation aims to avoid the crash site and be at least 100 m away from it, however this is reliant upon successfully locating of it. Once the location of the crash site is confirmed (following proposed further survey) and if the crash site is within 100 m of the proposed DC cable route, a MoD licence will be required and full archaeological excavation could be required.</p>
ARCH36	<p>Unknown</p> <p>As it was highlighted above the undated enclosure and trackway cropmarks to the north-west of Ulceby Cross (126) will be impacted in part by the construction of the proposed DC cable route. A primary phase of mitigation could take the form of trial trenching to establish the extent, date and density of activity within the planning application boundary, relating to the enclosure and trackway cropmarks. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.</p>
ARCH37	Impacts to the two cropmarks at Langton by Spilsby (142, 143) could be mitigated through a strip, map, and sample to establish the nature, extent and date of the potential underlying archaeological remains.
ARCH38	Impacts to the early trackway site which is also at Langton by Spilsby (94) could be mitigated through a watching brief.
ARCH39	Construction mitigation will be applied to the potential impacts to the cropmarks that are located to the east of Dalby (147). A primary phase of mitigation could take the form of trial trenching to establish the extent and density of activity within the planning application boundary, with the high potential for Prehistoric material to present, due to the location of Ring Holt Bowl Barrow (SM3) to the north of the cropmarks. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH40	Impacts to the two banks that are located to the south of Partney Road (319, 320) could be mitigated during the construction phase through a watching brief to ascertain the nature, extent, and date of the receptors.
ARCH41	Impacts to the settlement to the east of Sausthorpe (137) could be mitigated at the construction phase though either a watching brief or strip, map, and sample.

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH42	The sand-pit to the south-east of Sausthorpe (114) will be impacted by the construction of the proposed DC cable route, this will be mitigated at the construction stage with a watching brief.
ARCH43	Impacts to the curvilinear hollow to the south-west of Sausthorpe (314) will be mitigated through a watching brief to ascertain the nature and date of the below ground archaeological remains.
ARCH44	The permanent impact of the construction of the proposed DC cable route on the undated pits recorded 1.2 km to the south-west of Sausthorpe (66) could be mitigated prior to the construction phase. Mitigation could take the same phased approach as (315) and could be targeted during the same trial trenching phase. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH45	The permanent impacts to the undated cropmark trackway to the north-north-west of Raithby (131) could be mitigated during the construction stage. The nature, extent and date of the underlying archaeological record could be investigated through strip, map, and sample.
ARCH46	Permanent impacts to the enclosures and ditches (399, 400) which were identified through geophysical survey could be mitigated through a strip, map, and sample. Mitigation for the potential ditch (403) at Mardon Hill could consist of a watching brief.
ARCH47	The permanent impacts to Ridge and Furrow (401) at Glebe Farm would be mitigated by archaeological watching brief.
ARCH48	<p>Prehistoric Period (30,000 BC – AD 43)</p> <p>The Prehistoric find spots at Stickford (83, 86, 87) demonstrate that there is potential for settlement activity within the area between the two findspots. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of activity within the planning application boundary, with the high potential for Prehistoric material to present, due to the location of Ring Holt Bowl Barrow (SM3) to the north of the cropmarks. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.</p>
ARCH49	<p>Roman Period (AD 43 – 410)</p> <p>The scatter of Roman pottery and quern fragments (201) could be mitigated through archaeological watching for the potential for further Roman activity. This could be combined with the watching brief for Medieval ridge and furrow (171) at the same location.</p>

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH50	<p>Medieval Period (AD 1066 – 1540)</p> <p>The ridge and furrow recorded at Keal Cotes and Stickford (405, 171) could be mitigated through a watching brief.</p> <p>Ridge and furrow located at East Keal (172) is slightly clipped by the planning application boundary. Therefore, impact will be negligible and no mitigation is suggested.</p>
ARCH51	<p>Post Medieval Period (AD 1540 – 1914)</p> <ul style="list-style-type: none"> · Impacts to the former field divisions at Keal Cotes (323) could be mitigated through a watching brief to ascertain the nature and extent of the receptor. · Impacts to the former field boundary and wide spaced ridging to the west of Limes Farm (326) could be mitigated through a watching brief. · The impacts to the potential dylings at Hagnaby Lock (329) could be mitigated through a watching brief. · Impacts to the partially extant farmstead at West Fen (190) and the demolished farmstead at Sibsey (194) could be mitigated during the construction phase with an archaeological watching brief to ascertain the nature of the below ground archaeological remains. · Impacts to the disused railway that is recorded to the east of the River Witham (413) could be mitigated during the construction phase with an archaeological watching brief.
ARCH52	<p>Modern Period (AD 1914 – Present)</p> <p>Impacts to the Pillbox at Short’s Corner (116) could be mitigated through a first preference of preservation in situ, by avoiding any impact the planning application boundary may have on the receptor. Should impacts to the structure become clear, then an appropriate building record should be captured to preserve the receptor by record.</p>

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH53	<p>Unknown Date</p> <ul style="list-style-type: none"> · Impacts to the former field divisions (321), linear geophysical anomalies (404) and the linear hollow (330) will be mitigated through a watching brief. · Impacts to the former field divisions and the rectangular enclosure to the south-west of Mager Farm (327) will be mitigated through strip, map, and sample to ascertain the nature and extent of the underlying archaeology. · Impacts to the linear hollow to the north-west of Hagnaby Lock (330) will be mitigated through a watching brief to ascertain the nature and extent of the below ground archaeological remains. · Impacts to the areas surrounding the 12 roddons (331, 332, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344) within this route section could be mitigated through a phased approach. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of human interactions with the receptors. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA. · The relict field boundary at Castle Dike Farm (244) could be mitigated through a watching brief. · The impacts to the former artificial channel of the River Witham (346) would be mitigated at the construction phase. This mitigation would comprise a watching brief to help ascertain the nature of the receptor.
ARCH54	<p>Roman Period (AD 43 – 410)</p> <p>Impacts to the Romano-British field boundaries at Swineshead Bridge (354) could be mitigated through strip, map, sample. This would help to ascertain the nature and extent of the receptor.</p>
ARCH55	<p>The impacts to the cropmarks of an enclosure, field boundaries, trackway, and sinuous watercourse to the east of Old Sixteen Foot Drain (358) and to the west of Holt Hills (359) could be mitigated during the construction phase. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of Romano-British activity. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.</p>

Table 6.7 Mitigation Requirements (Archaeology & Cultural Heritage)

Reference	Description of Mitigation Measure
ARCH56	Impacts to the field boundaries and sinuous roddon to the south-west of Eau End Farm (366) could be mitigated prior to the construction phase. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of human activity. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH57	It was highlighted above that the proposed DC cable route will have a permanent impact upon the Prehistoric/Roman cropmarks at North Ing Drove (21). Trial trenching has established the significant remains of a second to fourth century Romano-British settlement. These impacts could be mitigated through a combined approach of strip, map, and sample and open area excavation.
ARCH58	Post Medieval Period (AD1540-1914) The permanent impact which was highlighted above to the demolished unnamed farmsteads at Holland Fen with Brothertoft (55) and Little Hale (52) could be mitigated through the construction stage by a watching brief.
ARCH59	Impacts to the South Forty Foot Drain (456) could be mitigated through a construction technique. HDD would occur at the point the proposed DC cable route reaches the receptor, resulting in the DC route, bypassing the receptor under the ground and consequently preserving the receptor in situ.
ARCH60	Unknown Date Impacts to the immediate areas surrounding the 15 roddon systems (347, 348, 349, 350, 351, 353, 355, 356, 357, 360, 361, 362, 363, 364, 367) within this route section could be mitigated by a two-phase approach. A primary phase of mitigation could take the form of trial trenching to establish the extent and density of human interactions with the receptors. Should significant archaeological remains be discovered, a secondary phase of mitigation could occur in the form of either open area excavation, strip, map, and sample or archaeological watching brief, following discussions with the archaeological advisor to the LPA.
ARCH61	Impacts to the field boundaries and trackway to the north-west of Laburnum House (345) would be mitigated at the construction phase. This mitigation would comprise a watching brief to ascertain the nature of the receptor.

6.9 Socio-economics & Tourism

Table 6.8 Mitigation Requirements (Socio-economics & Tourism)

Reference	Description of Mitigation Measure
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Table 6.8 Mitigation Requirements (Socio-economics & Tourism)

Reference	Description of Mitigation Measure
SOC01	A CEMP will be completed prior to the start of construction and will specify how environmental management will be achieved during the construction phase. For example, good practice measures will be adopted during construction in order to minimise impacts on the amenity of local residents by virtue of visual impact, noise, dust, or construction traffic as much as practicable.
SOC02	Access to Public Rights of Way (PRoW) is likely to be disrupted during construction. Where this is the case, NGVL will work to ensure that disruption is minimised, and that appropriate signage is used to clearly identify any temporary diversions that may be necessary and/or temporary closures that may be required. An Outline Access Management Strategy summarising this information will be submitted with the planning application.

6.10 Traffic & Transport

Table 6.9 Mitigation Requirements (Traffic & Transport)

Reference	Description of Mitigation Measure
TRA01	In order to facilitate access for Heavy Goods Vehicles (HGVs) and Abnormal Indivisible Loads (AILs) to temporary construction areas, it is necessary to design improvements to relevant highway access roads and junctions. These improvements will be incorporated into the design of the scheme. These improvements are summarised as:
	<ul style="list-style-type: none"> TCA (T1) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals. T1 access is via the proposed DC cable route working width and road access is via S1.
	<ul style="list-style-type: none"> TCC (S1) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T2) - Major/minor junction design including adequate bell-mouth, controlled under temporary traffic signals. Sections of Crawcroft Lane would be widened to accommodate carriageway passing bays.
	<ul style="list-style-type: none"> TCA (T3) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCC (P1) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals. An additional major/minor junction into the TCC would also be provided.
	<ul style="list-style-type: none"> TCA (T4) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T5) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.

Table 6.9 Mitigation Requirements (Traffic & Transport)

Reference	Description of Mitigation Measure
	<ul style="list-style-type: none"> TCA (T6) - Major/minor junction design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T7) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCC (S2) - Major/minor junction design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T8) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T9) - Major/minor junction design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCC (P2) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals. An additional major/minor junction into the TCC would also be provided.
	<ul style="list-style-type: none"> TCC (S3) - Major/minor staggered crossroads design including adequate bell-mouths, controlled under temporary traffic signals. Two additional major/minor junctions linking a new access road would also be provided.
	<ul style="list-style-type: none"> TCC (S4) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T10) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCC (S5) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T11) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T12) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCC (P3) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCA (T13) - Major/minor crossroads design including adequate bell-mouths, controlled under temporary traffic signals.
	<ul style="list-style-type: none"> TCC (S6) - Major/minor staggered crossroads design including adequate bell-mouths, proposed right turn ghost island and carriageway widening.
	<ul style="list-style-type: none"> TCA (T14) - New junction into TCA from private road, including adequate bell-mouth. Sections of Crawcroft Lane would be widened to accommodate carriageway passing bays.
	<ul style="list-style-type: none"> TCA (T15) - Accessed via the proposed DC cable route working width.
	<ul style="list-style-type: none"> TCA (T16) - Accessed via the converter station permanent access road.

Table 6.9 Mitigation Requirements (Traffic & Transport)

Reference	Description of Mitigation Measure
TRA02	<ul style="list-style-type: none"> · A Construction Traffic Management Plan (CTMP) will be developed, which will identify how traffic would be managed throughout the duration of the construction period. The CTMP will include the following: <ul style="list-style-type: none"> · Location of Temporary Construction Facilities (TCFs) and the access/egress points for the working width; · Traffic routing plans – defining the routes to be taken by HGVs to each TCF on the proposed DC cable route. For example, prioritising the use of A and B-roads as far as possible, avoidance of Langrick Bridge and other sensitive locations; · Construction hours and delivery times; · Strategy for traffic management and measures for informing construction traffic of local access routes, road restrictions, timing restrictions and where access is prohibited; · Measures to protect the public highway (e.g. wheel wash facilities); · Measures for the monitoring of the CTMP to ensure compliance from drivers and appropriate actions in the event of non-compliance; · Mechanism for responding to traffic management issues arising during the works (including concerns raised from the public) including a joint consultation approach with relevant highways authorities; · Details of each road crossing, access points, and traffic management requirements; and · Strategy for traffic management and measures for informing construction traffic of local access routes, road restrictions (statutory limits: width, height, axle loading and gross weight), timing restrictions (if applicable) and where access is prohibited.

Table 6.9 Mitigation Requirements (Traffic & Transport)	
Reference	Description of Mitigation Measure
TRA03	<ul style="list-style-type: none"> · Control measures will include: <ul style="list-style-type: none"> · All construction traffic to adhere to the Traffic Route Plans included in the CTMP; · All vehicles will be able to access and egress the TCFs in a forward gear, with sufficient room off the public highway to allow them to wait without blocking the main carriageway; · Adequate parking will be provided at the TCFs to ensure that the safety and efficient operation of the public highway is not reduced; · Welfare facilities will be provided within the working width so as to minimise the need for off-site trips by staff during the working day; · At all site accesses, suitable supervision will be provided as required to ensure that traffic is controlled at access points during construction (for example banksman checking road traffic and controlling construction vehicle movements) and mud deposits on the roads are minimised; and · Where required, traffic signals (in accordance with New Roads and Street Works Act (NRSWA), or stop-go boards will be used to control road traffic. Road signs will conform to Chapter 8 of the Traffic Signs Manual and NRSWA. · Traffic management on the major road at TCF access locations would include temporary speed limit reductions, to be agreed with Lincolnshire County Council (LCC).
TRA04	<ul style="list-style-type: none"> · Road Safety <ul style="list-style-type: none"> · Whilst the majority of impacts relating to road safety are either 'Minor' or 'Negligible', the access to individual TCFs from the public highway will use Banksmen, where appropriate, HGVs can access and egress in a forward gear, to manage the movement of HGVs on and off the public highway. Warning signage will be provided on the approaches to junctions from the public highway.
TRA05	<ul style="list-style-type: none"> · Pedestrians & Cyclists <ul style="list-style-type: none"> · As part of a Travel Plan developed for the proposed DC cable route construction, measures such as an internal site layout to accommodate the movement of pedestrian and cyclists will be designed.
TRA06	<ul style="list-style-type: none"> · There would however be very few pedestrian/cyclist movements expected as part of the construction phase of the development, which relates to the relatively low number of additional workers expected.

Table 6.9 Mitigation Requirements (Traffic & Transport)

Reference	Description of Mitigation Measure
TRA07	<ul style="list-style-type: none"> • Travel Plan • A Travel Plan will be introduced in order to encourage sustainable travel to the TCFs. The Travel Plan would include measures such as; encouragement of car sharing and public transport usage, better marketing of information and implementation of a Travel Plan Co-ordinator. Where appropriate, a shuttle bus to transport workers to key interchange locations could be introduced.
TRA08	<ul style="list-style-type: none"> • An important element in ensuring the success of the construction phase of the proposed DC cable route and reducing the effects on traffic receptors is effective communication with local communities before and during the construction process, and in particular to inform them of the timing of construction activities and to help alleviate any concerns they may have. To address this NGVL will ensure, in line with NRSWA and any Section 278 Agreements with the Highway Authorities, that the Contractor maintains good communication with affected communities, keeping them informed about the timing and extent of activities which may affect them.
TRA09	<ul style="list-style-type: none"> • A Construction Phase Health and Safety Plan (CPH&SP) will be required for the construction of the proposed DC cable route. This will include details of best practice methods of reducing dust emissions and vehicle washing facilities (to help remove mud from vehicles before accessing the road network) . The CPH&SP is a Construction, Design and Management (CDM) requirement and is separate to any specific Contractor agreements to minimise the effect of construction traffic.
TRA10	<ul style="list-style-type: none"> • So far as practicably possible, material will be retained on site (or moved using the working width within the proposed DC cable route), including the retention of all soils and spoils, therefore minimising the need to move material on and off the site.
TRA11	<ul style="list-style-type: none"> • It is considered that with the implementation of the above measures, any minor effects on road users during the construction period will be reduced further. In terms of Road Safety, all accesses off the public highway will use Banksmen to manage the movement of HGVs on and off the public highway. Where appropriate, HGVs would access and egress in a forward gear. At all accesses, warning signage will be provided on the approaches to the access junctions. For the temporary junctions, this would be provided in line with Chapter 8 of the Traffic Signs Manual. For permanent junctions, these would be provided in line with The Traffic Signs Regulations and General Directions 2002 (TSRGD) and Traffic Signs Manual.

6.11 Noise & Vibration

Table 6.10 Mitigation Requirements (Noise & Vibration)	
Reference	Description of Mitigation Measure
NOI01	To ensure that mitigation measures are implemented, a CEMP will be issued by the Contractor prior to construction commencing which will fully define the mitigation measures that will be implemented and specifically indicate how the mitigation provided in the outline CEMP will be secured/delivered.
NOI02	As a guiding practice, noise emissions will be minimised as far as is reasonably practicable in accordance with the approved code of practice BS 5228: Code of practice for noise and vibration control on construction and open sites.
NOI03	<p>Best Practicable Means (BPM) will include, but not be limited to:</p> <ul style="list-style-type: none"> · The use of quieter alternative methods, plant and/or equipment; · The use of site hoardings, enclosures, acoustic barriers, portable screens and/or screening nosier items of plant; · Maintaining and operating all vehicles, plant and equipment in an appropriate manner, to ensure that extraneous sound from mechanical vibration, creaking and squeaking is kept to a minimum; · Siting all ancillary plant such as generators, compressors and pumps so as to cause minimum noise disturbance; · Machines in intermittent use will be shut down during periods of inactivity or throttled down to a minimum; and · using designated routes for construction related traffic.
NOI04	<p>To minimise adverse vibration as far as is reasonably practicable, the following mitigation measures will be implemented and where adverse effects could arise:</p> <ul style="list-style-type: none"> · Low vibration working methods will be employed, plant will be carefully selected to minimise the potential for vibration; · Vibration will be controlled at source and the spread of vibration will be limited; · Where processes could potentially give rise to significant levels of vibration, on-site vibration levels will be monitored regularly by a suitably qualified person appointed specifically for the purpose; and · Plant and/or methods of working likely to cause significant levels of vibration at sensitive receptors will be replaced by other less intrusive plant and/or methods of working.

Table 6.10 Mitigation Requirements (Noise & Vibration)	
Reference	Description of Mitigation Measure
NOI05	Where non-negligible construction noise impacts are identified, all reasonably practicable measures will be undertaken to reduce the effects of construction noise (particularly where work is required during evening or night-time periods). Once this has been done, any works which are predicted to have residual noise effects will be assessed in detail and the quantification of any effects issued to the relevant local authority (East Lindsey District Council (ELDC), Boston Borough Council (BBC), North Kesteven District Council (NKDC) or South Holland District Council (SHDC)) by means of an application(s) for Prior Consent for Works on Construction Sites under Section 61 of the Control of Pollution Act 1974 process.

CONTACT US



You can find out more information by:



calling our freephone number:
0800 731 0561



Sending an email to:
vikinglink@communityrelations.co.uk



Writing to our freepost address at:
FREEPOST VIKING LINK



Visiting our website at:
www.viking-link.com

If you, or someone you know, would like information in Braille, audio, large print or another language, please call us on the freephone number above.