From:	Louise Staples
To:	Hornsea Project Three
Cc:	Jane Kenny
Subject:	Submissions by NFU and LIG re Hearing Thursday 6th December 2018
Date:	14 December 2018 20:16:22
Attachments:	Triton Knoll - Outline Soil Management Plan (Revision E).pdf ERichborough Connection -Construction_Environmental_Management_Plan_Apr_17.pdf

Dear Kay

Please find attached the documents to go with our submission in regard to the specific hearing Thursday 6th December 2018.

Kind regards

Louise

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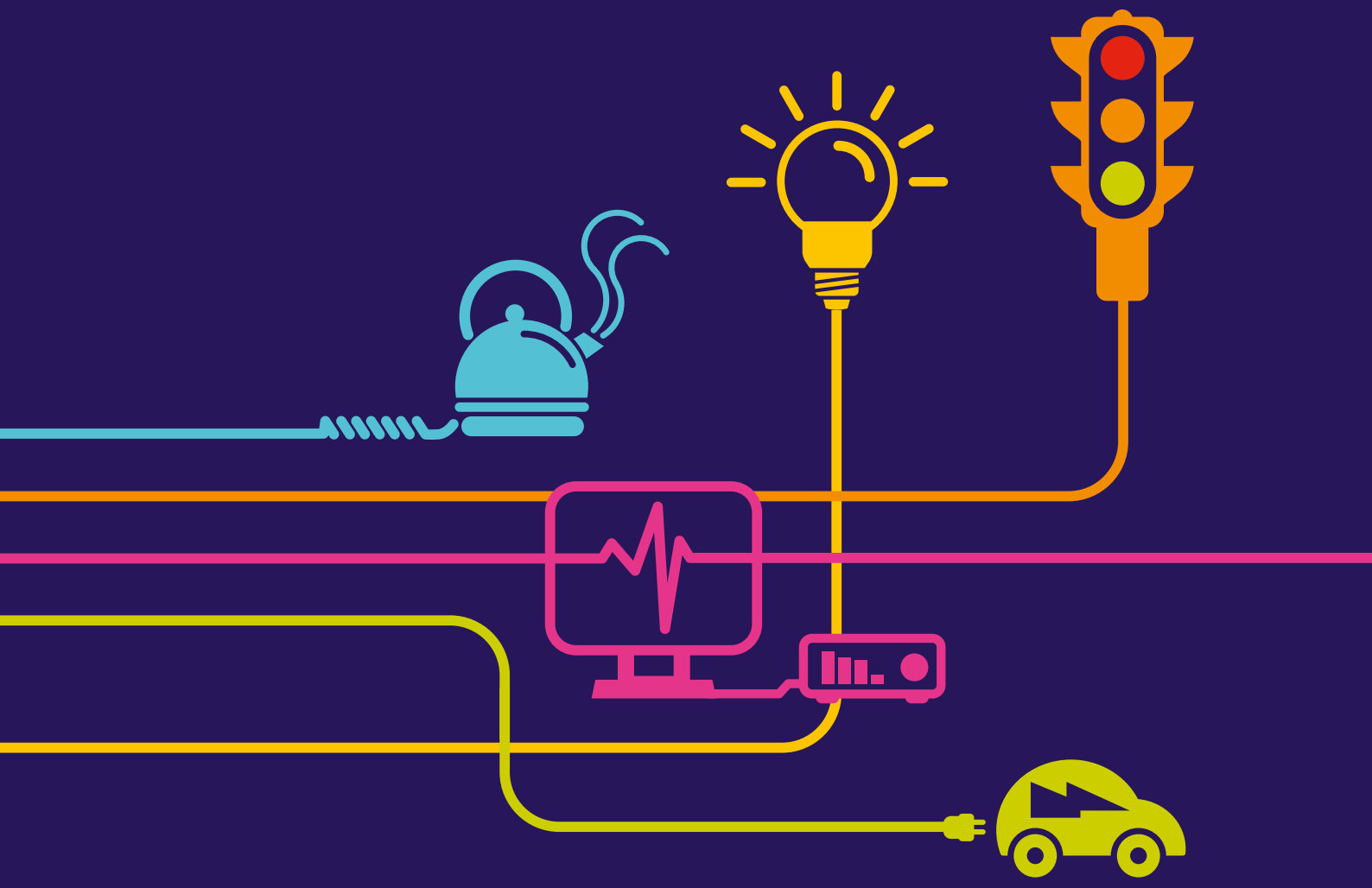
DOCUMENT 5.4.3C(D)

nationalgrid

Construction Environmental Management Plan

National Grid (Richborough Connection Project) Order

Regulation (5)(2)(a) of the
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 and
TEN-E Regulation EU347/2013



Application Ref: EN020017

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Richborough Connection Project

Volume 5

5.4 Environmental Statement Appendices

5.4.3C(D) Construction Environmental Management Plan

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Final

April 2017

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1. EXECUTIVE SUMMARY

1.1 Purpose of the CEMP

1.1.1 This Construction Environmental Management Plan (CEMP) supports the application by National Grid Electricity Transmission plc (National Grid) to seek powers to construct, operate and maintain a new 400,000 volt (400kV) connection between Canterbury North 400kV Substation, east of Canterbury city centre, and the proposed Richborough 400kV Substation, together with various associated development and other works ("the proposed development"). Due to the size and characteristics of the proposed development, it is defined as a Nationally Significant Infrastructure Project (NSIP) and the application for development is undertaken as a Development Consent Order (DCO) Application submitted to the Planning Inspectorate and Secretary of State. The proposed development is in the administrative boundaries of Kent County, Canterbury City, Thanet District and Dover District Councils in the south east of England.

1.1.2 This document describes the embedded environmental measures that will be implemented by National Grid and its appointed contractors during each stage of the construction of the proposed development, and any works undertaken on the assets of UK Power Networks (UKPN).

1.1.3 The CEMP has been prepared in accordance with:

- the environmental measures identified in the Environmental Statement (ES) (**Volume 5, Documents 5.1 - 5.4**) to avoid, reduce or compensate for effects on the environment from the construction of the proposed development;
- National Grid's Environmental Management System (EMS) (National Grid's Environmental Policy); and
- National Grid's management control documents that accompany the EMS.

1.1.4 Revisions to this CEMP, including the referenced management plans, may be undertaken during the examination of the DCO Application. Revisions will be incorporated and the document will be finalised at the close of examination. This document will then become the final CEMP as required by **Requirement 5** and Certified under the DCO. National Grid and their contractors will carry out all work in accordance with the CEMP during the construction of the proposed development unless otherwise agree with the relevant planning authority.

1.2 Management Plans

1.2.1 Construction management plans have been prepared and included as part of the CEMP, which will be implemented during the construction of the proposed development. These are as per **Requirement 5** and certified under the DCO. The construction management plans detail further environmental measures to avoid, reduce or compensate for effects on the environment. These are:

- the Outline Waste Management Plan (OWMP) (**Volume 5, Document 5.4.3D(A)**);
- the Biodiversity Mitigation Strategy (BMS) (**Volume 5, Document 5.4.3E(C)**);

- the Archaeological Mitigation Written Scheme of Investigation (AWSI) (**Volume 5, Document 5.4.3F(B)**);
- the Construction Traffic Management Plan (CTMP) (**Volume 5, Document 5.4.3G(C)**);
- the Public Rights of Way Management Plan (PRoWMP) (**Volume 5, Document 5.4.3H(C)**); and
- the Noise and Vibration Management Plan (NVMP) (**Volume 8**, **Document 8.8(B)**).

1.2.2 Prior to the commencement of construction of the relevant stage of works further detailed plans and schemes will be submitted to and approved by the relevant planning authority. These are required under **Requirement 6** of the DCO and are set out in **Table 3C.2.2**:.

1.2.3 Additional documentation set out in **Table 3C.2.3** will be prepared, such as plans and procedures prior to each stage of construction, to set out in detail the management systems and approaches that will be implemented during construction to comply with the CEMP.

1.3 Objectives

1.3.1 The objectives of the CEMP are as follows:

- to provide a mechanism for ensuring the delivery of environmental measures (other than those which will be secured through specific Requirements of the DCO), to avoid, reduce or compensate for environmental effects identified in the ES;
- to provide an outline of the content that will be supplied in the detailed plans and schemes prior to construction of the relevant stage of works (**Table 3C.2.2 and Table 3C.2.3**);
- to ensure compliance with legislation and identify where it will be necessary to obtain authorisation from relevant statutory bodies;
- to provide a framework for compliance auditing and inspection to ensure the agreed environmental aims are being met; and
- to ensure a prompt response to any non-compliance with legislative and DCO Requirements, including reporting, remediation and any additional mitigation measures required to prevent a recurrence.

1.4 Securing Implementation of the CEMP

1.4.1 The CEMP will be implemented by National Grid, and is secured through a Requirement of the DCO:

1.4.2 **Schedule 3, Requirement 5** – (1) All construction works for the authorised development must be carried out in accordance with the CEMP, unless otherwise agreed with the relevant planning authority and the highway authority as may be appropriate to the relevant plan, scheme or strategy concerned.

1.4.3 National Grid will require their contractors to adopt and implement the CEMP during the construction of the proposed development. This will be secured through contractual agreements.

1.5 Inspection and Incident Control

1.5.1 Inspections will be undertaken to ensure the measures in the CEMP and management plans are being implemented. In the event that an aspect of the CEMP is not implemented, an incident control procedure will be followed. The incident control procedure will identify, report, and investigate all environmental incidents, near misses, hazards and any learning points associated with the construction of the proposed development.

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2. INTRODUCTION

2.1 The Applicant and an Overview of the Richborough Connection Project

2.1.1 At National Grid, our job is to connect people to the energy they use, whether to heat and light homes, or to keep factories and offices running. As old power stations close new sources of energy need to be connected to our network, so that electricity continues to be available at the flick of a switch.

2.1.2 One of these new sources of energy is a proposed high-voltage electricity link between Belgium and Richborough near Sandwich in Kent, known as the Nemo Link®. In order to transport the energy from Nemo Link around the country, National Grid need to connect it to the high-voltage electricity network.

2.1.3 There is no high-voltage electricity network in the Richborough area, so National Grid will need to build a new connection to join Richborough to their existing network approximately 20km away, near Canterbury. This new infrastructure project is known as the Richborough Connection project.

2.1.4 The proposed development consists of the following principle activities:

- a new 400,000 volts (400kV) overhead line between Richborough and Canterbury North Substations 400kV Substations (to be known as the PC route). This would be approximately 20km long and would be built using 45 standard lattice pylons and 15 low height lattice pylons (60 pylons in total);
- a permanent diversion of an existing lower voltage (132kV) overhead line, known as the PY route, owned by UKPN;
- three temporary diversions of another existing lower voltage 132kV overhead line, known as the PX route, owned by UKPN;
- the removal of 20.6km (79 pylons) of an existing lower voltage 132kV PX route overhead line; and
- other works, for example, temporary access roads to reach pylon construction and demolition areas, bridge structures, highway works, construction compounds, protective scaffold structures, pylon work sites and ancillary works.

2.1.5 National Grid has prepared a series of plans and reports to explain our proposals to build a new 400kV overhead line between the existing Canterbury North 400kV substation and the proposed Richborough 400kV substation. The application has been submitted under the Planning Act 2008 (known as a Development Consent Order application) and the TEN-E Regulations (European Legislation) which has been submitted to the Planning Inspectorate for examination.

2.2 The Purpose of the Construction Environmental Management Plan

2.2.1 This Construction Environmental Management Plan (CEMP) has been prepared by National Grid and presents the approach and application of environmental management and mitigation for the construction of the proposed development (which includes the works on UKPN 132kV routes). The CEMP covers construction and the 5 year maintenance period(s) of the proposed development and the associated

environmental mitigation measures. It aims to ensure that adverse effects from the construction phase of the proposed development, on the environment and the local communities, are minimised. It does not describe environmental measures relating to the operation and decommissioning of the proposed development.

2.2.2 The CEMP has been prepared in accordance with the construction environmental measures identified in the ES Chapters (**Volume 5, Document 5.2**) and in accordance with National Grid's Environmental Management System (EMS).

2.3 The Development Consent Order

2.3.1 The CEMP will be implemented by National Grid and secured through **Schedule 3, Requirement 5** of the Development Consent Order (DCO).

2.3.2 Revisions to this CEMP, including the referenced management plans (detailed in **Table 3C.2.1**), have been undertaken during the examination of the DCO Application. The CEMP is finalised at the end of examination. This document will be certified under the DCO. National Grid and their contractors will carry out all work in accordance with the CEMP during the construction of the proposed development unless otherwise agreed with the relevant planning authority.

2.4 Objectives

2.4.1 The objectives of the CEMP are to:

- provide a mechanism for ensuring the delivery of environmental measures (other than those which will be secured through specific Requirements of the DCO), to avoid, reduce or compensate for environmental effects identified in the ES;
- provide an outline of the content that will be supplied in the additional plans (**Table 3C.2.2** and **Table 3C.2.3**);
- ensure compliance with legislation and identifying where it will be necessary to obtain authorisation from relevant statutory bodies;
- provide a framework for compliance auditing and inspection to ensure the agreed environmental aims are being met; and
- ensure a prompt response to any non-compliance with legislative and DCO Requirements, including reporting, remediation and any additional mitigation measures required to prevent a recurrence.

2.5 Plans included in the CEMP

2.5.1 The plans and strategies as shown in **Table 3C.2.1** are included as part of the CEMP, and were submitted as part of the DCO application:

Table 3C.2.1: Management Plans

Plan/Strategy	Description	Appendix/Volume
Outline Waste Management Plan (OWMP)	A strategy and action plan for the management of waste which is likely to arise during the construction phase of the proposed development.	Volume 5, Document 5.3, Appendix 3D(A)
Biodiversity Mitigation Strategy (BMS)	Describes measures to avoid, reduce and compensate for likely adverse effects on ecological receptors.	Volume 5, Document 5.3, Appendix 3E(C)
Archaeological Mitigation Written Scheme of Investigation (AWSI)	Sets out the steps that need to be taken to mitigate the predicted effects on archaeology, geo-archaeology and historic landscape heritage assets.	Volume 5, Document 5.3, Appendix 3F(B)
Construction Traffic Management Plan (CTMP)	Details the strategy and mitigation measures to be used to limit the impact on existing users of the public highway network.	Volume 5, Document 5.3, Appendix 3G(C)
Public Rights of Way Management Plan (PRoWMP)	Describes where the PRoW will be affected and how the PRoW will be managed, to ensure they are safe to use and the disruption to the users of the PRoW is minimised.	Volume 5, Document 5.3, Appendix 3H(C)
Noise and Vibration Management Plan (NVMP)	Details the relevant noise and vibration restrictions and monitoring to be implemented by the Contractor during each stage of the construction works. This will be in accordance with the site-specific measures identified within the Environmental Statement.	Volume 8, Document 8.8(B)

2.5.2 **Table 3C.2.2** and **Table 3C.2.3** list the plans and procedures that will be developed for each stage of the proposed development to set out in detail the management systems and approaches that will be implemented during construction to comply with the CEMP.

2.5.3 The plans set out in **Table 3C.2.2** are required in accordance with **Schedule 3**, **Requirement 6** of the DCO. No stage of the authorised development may commence until, for that stage, the plans have been submitted to and approved by the relevant planning authority.

Table 3C.2.2: Construction mitigation plans to be produced under Requirement 6

Plan or Procedure	Description
Soil and Aftercare Management Plan (SAMP)	Identifies the nature of the soil, areas of potential difficulty in gaining access, working, excavating or soil handling arising from the nature of the soil. Describes how works should be undertaken to minimise effects on the nature and quality of the soil (detailed further at **Section 4.4**). Aftercare management provides for protection of the agricultural use of the land during and following the construction period up to the end of the 5 year maintenance period(s), to allow for soil rehabilitation. The area required for construction will be defined and provision for ongoing access to areas within field affected by construction activity will be agreed to take account of crop husbandry requirements.
Drainage Management Plan (DMP)	Identifies all known risks to the water environment and identifies appropriate measures to control flood risk and prevent pollution during construction (detailed further at **Section 4.4** and **4.5**). A phased approach may be taken to the development of the DMP to reflect the phasing of the construction programme.
Pollution Incident Control Plan (PICP)	Identifies how the risk of pollution due to construction works, materials and extreme weather events will be controlled and identifies the remedial actions in the event of an incident (detailed further at **Section 2.13**).
Lighting Scheme	Identifies the detail of the location, type and use of lighting at the construction site (detailed further at **Section 3.6**).
Emergency Response Plan for Flood Events	Details the emergency procedures in the event of a flood (outlined at **Section 4.5**).
Site Waste Management Plan (SWMP)	Sets out details developed from the Initial OWMP to identify site-specific measures for the collection, segregation, treatment and disposal of waste (detailed further at **Section 3.7**).
Tree and Hedgerow Protection Strategy (THPS)	To include tree protection plans, a schedule of all proposed tree and hedge removal and pruning, with annotated plans; specification for temporary physical protection for trees and hedgerows; and details of an auditable system of compliance.

Plan or Procedure	Description
Travel Plan	The Travel Plan will be produced by the contractor at detailed design stage and will set out a number of travel planning initiatives.

Table 3C.2.3: Plans and procedures to be prepared by the Appointed Contractors

Plan or Procedure	Description
Detailed Environmental Management Procedures	Details the day to day environmental mitigation measures and site management such as toolbox talks that will be implemented by the contractor during each stage of the construction works. To ensure work is undertaken in accordance with the CEMP.
Contractor Environmental Management System	Detail the framework and management processes and structure for managing the environmental aspects of the project.
Construction Phase Safety, Health and Environmental (SHE) Plan	Details relevant safety, health and environmental information relating to all construction activities (detailed further at **Section 3.2**).
Materials Management Plan (MMP)	Demonstrates that any excavated material re-used on site is not classified as 'waste'.
Emergency Response Plan for Unexploded Ordnance	Describes the procedure to be followed in the discovery of unexploded ordnance (detailed further at **Section 3.12**).
Mitigation Planting Scheme	Details the mitigation planting required for trees, groups of trees, woodlands and hedgerows to replace those removed during that stage that accords with the Arboricultural Impact Assessment (**Volume 5, Document 5.4.3l**). In accordance with **Requirements 8 and 9** of the DCO.
Complaints Procedure	All complaints associated with the construction of the proposed development, including non-conformance with the CEMP and other management plans, will be reported and investigated using a detailed complaints procedure developed by the contractor.

2.6 Conformance with Corporate and Project Environmental Management System (EMS)

2.6.1 National Grid is committed to safeguarding the environment for future generations by taking a responsible and sustainable approach in all that they do.

2.6.2 In accordance with this proactive approach to sustainable design and construction National Grid and the appointed contractors will to seek to maximise resource efficiency through reducing the amount of waste generated, minimising water consumption and making the most efficient use of energy.

2.6.3 The carbon footprint of the proposed development will be minimised during construction by avoiding CO_2 emissions where possible through, for example, keeping construction vehicle movements to the minimum necessary.

2.6.4 National Grid maintains an EMS to provide a framework within which to manage and reduce their effects on the environment. The EMS is accredited to ISO14001:2015. This CEMP complies with National Grid's environmental policy.

2.6.5 Each EMS sets out the overall processes for:

- environmental responsibilities;
- identifying environmental aspects;
- setting and achieving environmental objective and targets;
- controlling environmental impact;
- meeting the conditions of environmental consents and permits; and
- preparing and responding to environmental emergencies and incidents.

2.6.6 The contractors will prepare their own project-based EMS in accordance with National Grid's EMS prior to construction commencing. An EMS will be prepared by the contractors for each element of the proposed development, including the installation of the new 400kV route, the removal of the existing 132kV PX route, 132kV route diversions and ancillary works such as site access, scaffolding and substation works. The contractors' EMS will detail their framework for managing the environment.

2.6.7 The contractors' EMS will address:

- the environmental aspects identified in the ES (**Volume 5, Documents 5.1 – 5.4**) and CEMP;
- compliance with environmental consents and permits;
- overall compliance with environmental legislation, approved codes of practice and industry best practice;
- detailed environmental management procedures to deliver the CEMP, including roles and responsibilities;
- monitoring and review arrangements;
- emergency procedures that are defined and adopted; and
- appropriate training and information for personnel.

2.7 Conformance with the Environmental Statement

2.7.1 An Environmental Impact Assessment (EIA) has been undertaken for the proposed development. An ES has been prepared in accordance with the Infrastructure Planning (EIA) Regulations 2009 (the 2009 Regulations) as amended. The ES is provided at **Volume 5, Documents 5.1 – 5.4** and includes assessments of the potential effects on the environment that are likely to be caused during the construction, operation and decommissioning phases of the proposed development.

2.7.2 This CEMP, to be implemented by National Grid and their contractors, has been prepared in accordance with the environmental measures identified in the ES and supporting documentation to avoid, reduce or compensate for the adverse effects of the proposed development on the environment during construction and the 5 year maintenance period(s).

2.8 Compliance with Legislation, Standards and Guidance

2.8.1 There is a broad range of legislation covering the different aspects of environmental protection. These are supported by additional statutory guidance; 'standards', such as British Standards (BS) or International Standards (ISO); and other 'best practice' guidance, including industry codes of practice. Where applicable, references to specific legislation, standards and guidance are included within each subsequent section of this CEMP. Should the referenced legislation, statutory guidance, 'standards' or other 'best practice' be updated this should be treated 'as amended'.

2.8.2 This aspect of the CEMP will be kept under review and updated as required as a result of new or amended legislation, standards and guidance by National Grid and their contractors.

2.9 Involvement of Local Authorities and Other Statutory Bodies

2.9.1 National Grid has engaged with stakeholders, including local authorities and other statutory and non-statutory bodies, throughout the design evolution of the proposed development, as is described in the Consultation Report (**Volume 6, Document 6.1**).

2.9.2 Specifically, stakeholders have been invited to provide comment on the EIA of the proposed development, at preliminary stage and on the ES. Comments were received on all aspects of the EIA including on proposed mitigation. These comments have been taken into account in the design of the proposed development, the ES and this CEMP.

2.9.3 During the examination of the DCO Application, the local authorities and other statutory bodies had the opportunity to provide further input and advice to National Grid on the adequacy of the measures in this CEMP and the management plans included as part of the CEMP submitted. This includes the adequacy of the process and controls to be implemented. Any advice provided during the examination process has been considered and where appropriate revisions to the CEMP have been made by National Grid.

2.9.4 Additional consents will be sought where required, such as environmental permits from the Environment Agency (EA) for example, and further consultation will be undertaken with the appropriate bodies.

2.10 Community Engagement and Public Information

2.10.1 A community relations agency will continue to provide dedicated community relations and external communication support throughout the construction of the proposed development. The community relations agency will work with the internal established communications teams at National Grid.

2.10.2 A 24 hour free telephone project helpline and project website will be maintained and managed by the community relations team. The project helpline and website information will be visible on boards placed around the perimeter of the construction site in appropriate locations where they would be visible to the public. The telephone number and project website details will be provided to the local authorities and other relevant parties.

2.10.3 The community relations team will ensure the details of any complaints are recorded and all complaints are appropriately managed. Complaints will be investigated and appropriate action will be taken. The investigation procedure is detailed at **Section 2.14**.

2.10.4 In addition to the project telephone helpline and the project website, complaints from an external party may also be received via a number of other sources, for example, via written correspondence or incidental contact with construction workers.

2.10.5 Where a person from a community local to the works makes a complaint, it will be passed initially to the community relations team. The community relations team will liaise with the other members of the project team to investigate the complaint. Appropriate action will be taken by the project construction team.

2.11 Roles and Responsibilities

2.11.1 Establishing roles and responsibilities on site is important to ensure the successful construction of the proposed development, including the implementation of the CEMP. **Inset 3C.2.1** shows the titles of the likely project construction team.

2.11.2 NOTE: Details of **Inset 3C.2.1** and **Table 3C.2.4** to be confirmed once a contractor has been appointed. The specific roles of the construction team and their titles will be determined in due course.

Inset 3C.2.1: Likely Roles of Project Construction Team

Responsibilities

2.11.3 The responsibilities of the personnel who will be responsible for implementing, monitoring, responding to, and updating the CEMP are described at **Table 3C.2.3**.

Table 3C.2.4: Responsibilities of the likely Project Construction Team

Role	Responsibilities
Senior Project Manager	Overall responsibility for ensuring conformance with the CEMP; and Incident investigation.
Contractor Project Manager	Reviewing risk assessments and method statements (RAMS); Manager of the Safety, Health and Environment (SHE) Plan; Reviewing, updating and issuing the CEMP; Incident investigation; Development and implementation of Emergency Response Plan for Flood Events; Liaison with the emergency services; Site inspection; Reviewing applications for environmental consents and permits; and Sensible monitoring.
Contractor Environmental Manager	Site inspection; Preparing and submitting applications for environmental consents and permits; Liaison with third parties and licensing authorities; Organising environmental surveys; Sensible monitoring; Overseeing and monitoring all environmental management plans (see also **Volume 5, Document 5.4.3H(C)** and **Section 4.11** of this CEMP); and Discharging consent conditions.
Project Engineer	Reviewing risk assessments and method statements (RAMS); Reviewer of the Safety, Health and Environment (SHE) Plan; Reviewing and monitoring the CEMP; Incident investigation; Monitoring of contractor compliance with plans and procedures; Liaison with the emergency services; Site inspection; Reviewing applications for environmental consents and permits; and Sensible monitoring.

Role	Responsibilities
Ecological Clerk of Works	Overseeing and monitoring the implementation of the BMS (see also **Volume 5, Document 5.4.3E(C)** and **Section 4.3** of this CEMP).
Landscape Clerk of Works	Overseeing and monitoring all landscape works (see also **Section 4.2** of this CEMP).
Archaeological Clerk of Works	Overseeing and monitoring the implementation of the AWSI (see also **Volume 5, Document 5.4.3F(B)** and **Section 4.6** of this CEMP).
Arboriculture Clerk of Works	Overseeing and monitoring the production and implementation of the **Tree and Hedgerow Protection Strategy** including the production of a tree works schedule and specifications, tree works management plans, tree protection detail, and a system of monitoring and compliance (described by **Volume 5, Document 5.4.3I**, **Section 8.1 to 8.5** and **Section 8.7**). Assessing the requirement for mitigation planting in accordance with the Arboricultural Impact Assessment (see **Volume 5, Document 5.4.3I, Section 8.6**) to inform the production of a mitigation planting scheme.
Agricultural Liaison Officer	An Agricultural Liaison Officer (ALO) (or person of similar title) will be employed by the principal contractor to assist in the day to day liaison between the contractor and Persons with Interest in Land (PILs). The ALO will be responsible for providing PILs with information about the daily construction activities and project programme and reporting any issues to both the main contractor and National Grid Land and Engineering teams. Other duties to be conducted by the ALO include the following:- • to be responsible for ensuring that contractors are using the correct access routes and report any deviation from those routes to the National Grid Land officer/Agent; • to report and record any damage that may occur to fences, drainage, gates, trees, buildings etc to the National Grid Land Officer; • to relay any requests from PILs to alter/amend access routes conditions of access to the National Grid Land Officer; and • to attend all project progress meetings. Contact details for the ALO will be made available to PILs, who will be contactable throughout the contractors working days and hours. Outside of these times and in the event of emergency, out of hours contact details will be provided.

Role	Responsibilities
National Grid Land Officer / Agent	The role of the National Grid Land Officer/Agent will include the following:- • to discuss/agree all conditions relating to access, including fencing, gates, access to severed land, stock relocation, reinstatement, drainage, security and the complaints handling procedure; • first point of contact for PILs/Agents for all land related matters. Although the ALO will have a responsibility to pass any land related requests from PILs onto the National Grid Land Officer/Agent which might include requests to alter/amend access routes, it is requested that wherever possible requests are directed straight to the National Grid Land Officer/Agent; • responsible for dealing with all matters relating to compensation claims or losses from PILs arising as a result of the project; and • to attend all project progress meetings. Contact details for the National Grid Land Officer/Agent will be made available to all PILs/Agents. An out of hours and emergency contact details will also be provided.
Land Drainage Consultant	A Land Drainage Consultant (or person of similar title) will be employed by the principal contractor to design a land drainage remediation scheme. The Land Drainage Consultant will be responsible for providing PILs with information and obtaining their views on the land drainage remediation scheme relevant to their land.

Contractors

2.11.4 The contractors will be responsible for implementing the CEMP through contractual agreements with National Grid.

2.11.5 Prior to each stage of construction commencing, the contractors will prepare or update the management plans set out in **Table 3C.2.2** and **Table 3C.2.3** of this CEMP.

2.11.6 The contractors will prepare and update the site Safety Health and Environment (SHE) Plan, which details relevant safety, health and environmental information relating to all land within the construction site.

2.11.7 The contractors will prepare a list of Contractors Proposals, which will detail all of the environmental mitigation measures for each stage of the works that will be implemented. The Contractors Proposals will be in accordance with the CEMP.

2.11.8 The plans will be made available to all persons working on the proposed development.

2.11.9 Environmental issues that arise during the construction of the proposed development will be reviewed at the inaugural and subsequent regular meetings held by the contractors. Daily toolbox talks will be held by the contractors to inform the construction staff of any environmental issues and any changes to the CEMP, Contractors Proposals and/or the SHE Plan.

2.11.10 National Grid and the contractors will ensure that all staff, including sub-contractors are trained and competent in the management of environmental impacts to a level that is appropriate to their role.

2.12 Inspections

2.12.1 The contractors will undertake daily inspections, which will include monitoring conformance with the CEMP. Daily assessment forms will be completed during the daily checks. Checks on equipment will be undertaken to reduce the risk of incidents occurring (for example oil leaks). As a minimum the following will be inspected:

- fencing;
- waste storage facilities;
- soil management;
- oil separators;
- chemical storage facilities;
- bund integrity;
- foul water storage facilities;
- silt traps;
- haul roads;
- drainage ditches and watercourses;
- storage vessels (including pumps, gauges, pipework and hoses);
- secondary containment (for example, secondary skins for oil tanks);
- spill response materials; and
- equipment with potential to leak oils and other liquids, for example, compressors and transformers.

2.12.2 Sensible monitoring inspections will be undertaken by National Grid and the contractors to ensure the daily checks are being undertaken correctly.

2.12.3 The inspections will also include, in addition to the list at **paragraph 2.12.1**:

- reviewing the daily risk assessment forms;
- ensuring that faults and defects are identified and rectified; and
- providing data for performance monitoring.

2.12.4 Environmental performance data will be collected and collated into the SHE Plan.

2.12.5 Immediate action including, if necessary ‘stopping a job’, will be taken should any incidents or non-conformance with the CEMP be found during inspection.

2.12.6 National Grid's and the contractors' monitoring reports will be made available to statutory and non-statutory bodies on request. Where specific environmental management and reporting is required it will be set out in the relevant management plans.

2.13 Incident Procedure

Pollution Incident Control Plan (PICP)

2.13.1 Contractors will develop and implement a PICP which will detail their response in the event of any incident on site.

2.13.2 The following measures and information will be included and detailed further in the PICP to manage any incidents and limit adverse effects on the receiving environment:

- describe the procedure to be followed in the event of an incident (in accordance with the 'Incident Response' procedure below);
- describe the procedure for the notification of appropriate emergency services, authorities and personnel on the construction site;
- describe the procedure for the notification of relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers;
- provide maps showing the locations of local emergency services facilities such as police stations, fire authorities, medical facilities, other relevant authorities, such as the EA and also the address and contact details for each service and authority;
- provide contact details for the persons responsible on the construction site for pollution incident response;
- provide contact details of a competent spill response company which can be contacted at short notice for an immediate response.
- ensure that Site Drainage Strategies and Emergency Flood Response Plans are available on site and are kept up-to date; and
- ensure staff competence and awareness in implementing plans and using pollution response kit.

Incident Response

2.13.3 All incidents associated with the construction of the proposed development, including environmental incidents and non-conformance with the CEMP, will be reported and investigated using the PICP (unless stated differently in other Management Plans, for example the BMS, CTMP, AWSI and OWMP).

2.13.4 The following procedure will be followed in the event of an incident and will be detailed further in the PICP:

- works will stop;
- the contractor Project Manager and Environmental Manager will be contacted, the Land Officer will be contacted if on private land, for grantor liaison;
- the size of the incident will be assessed;

- if the incident is controllable by staff on site, remedial action will be taken immediately in accordance with the Pollution Incident Control Plan;
- if the incident cannot be controlled by the staff on site, emergency assistance will be sought;

- the appropriate enforcing authority will be contacted and informed, including:
  - the EA for incidents affecting rivers, groundwater and major emissions to atmosphere;
  - the Marine Management Organisation for incidents if below Mean High Water level;
  - the local sewerage undertaker for incidents affecting sewers;
  - the Local Authority Environmental Health Department for incidents that could affect the public; and
  - the Food Standards Agency for incidents that have the potential to affect food through deposition on crops or land used for grazing livestock.
- the Senior Project Manager and Contractor Project Manager will instigate an investigation into the occurrence of the incident;
- the findings will be sent to the appropriate enforcing authority where necessary; and
- an action plan will be prepared to determine why the incident occurred and whether any modifications to working practices are required to prevent a recurrence. If necessary, the CEMP and SHE Plan will be updated (and any other plans as appropriate) and all workers will be notified.

2.14 Complaints Procedure

2.14.1 All complaints associated with the construction of the proposed development, including non-conformance with the CEMP and other management plans, will be reported and investigated using a detailed complaints procedure developed by the contractor.

2.14.2 The detailed complaints procedure (including but not limited to complaints relating to noise, dust, vibration, pollution and construction traffic) will set out—

- how and to whom complaints can be made;
- a reasonable timeframe for responding to complaints;
- the potential remedies available to address complaints; and
- who to contact in the event that the complainant is not satisfied with the outcome.

2.14.3 Primarily any minor issues or complaints relating to site incidents will be dealt with by the contractor site management team. For the escalation of these issues or for more serious issues these will be dealt with by National Grid project team.

2.15 PIL Liaison Procedure for micro-siting

2.15.1 If the position of a pylon needs to be moved within the Limits of Deviation (LoD) due to an unforeseen or unknown constraint then the following procedure will be followed to ensure PILs/Agents views are reflected where possible:

- Initial consideration of proposed micro-siting with information on the ground conditions found that necessitated a possible move;
- Preliminary impact assessment to define all relevant engineering, environmental, planning and landowner constraints;
- Engineering feasibility study to consider engineering options and implications; and
- Final consideration of all relevant engineering, environmental, planning and landowner concerns before arriving at final solution. Feedback final solution to all parties.

2.15.2 It will be the responsibility of the National Grid Land Officer/Agent to co-ordinate all relevant consultation with PILs/Agents regarding the utilisation of the LoD to ensure that all their concerns are considered at the preliminary impact assessment.

2.16 Structure of the CEMP

2.16.1 The remainder of this CEMP is split into two further chapters:

- **Chapter 3** describes the general principles that will be adopted on the construction site in accordance with National Grid's environmental policy. The general principles cover the following elements:
  - health and safety;
  - construction hours;
  - construction site layout and appearance;
  - fencing and other means of enclosure;
  - lighting;
  - waste management;
  - security;
  - welfare;
  - pest control;
  - invasive species management;
  - unexploded ordnance;
  - utility works;
  - reinstatement of land on completion; and
  - consents and licences.
- **Chapter 4** describes the environmental measures that will be adopted during the construction and 5 year maintenance period(s) of the proposed development which is in accordance with the ES (**Volume 5, Documents 5.1 – 5.4**). The environmental measures will be implemented to avoid, reduce or

compensate for effects on receptors identified in the following environmental topics:

- landscape and views;
- biodiversity and nature conservation;
- geology, soils and agriculture;
- the water environment;
- the historic environment;
- traffic and transport;
- air quality;
- noise and vibration;
- socio-economics and land-use; and
- public rights of way.

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3. GENERAL SITE OPERATIONS

3.1 Objective

3.1.1 To construct the proposed development having regard to the safety and security of the public and construction staff and to mitigate the environmental impact of general site operations.

3.2 Health and Safety

3.2.1 National Grid is committed to ensuring the health and safety of persons working on projects and the protection of the environment is maintained in accordance with the Construction (Design and Management) Regulations 2015 (CDM) (**REF 1.1**) and the principles and philosophy behind them.

3.2.2 In accordance with health and safety legislation (**REF 1.2**), the contractors will prepare a Construction Phase SHE Plan prior to construction works commencing. A Construction Phase Health and Safety Plan will be prepared by the contractors for each element of the proposed development, including overhead line works, diversion works and demolition works. The Plan will ensure that adequate arrangements and welfare facilities are in place to cover:

- the safety of construction staff;
- the safety of all other people working at or visiting the construction site;
- the protection of the public in the vicinity of the construction site;
- overall compliance with health and safety legislation, approved codes of practice and industry best practice;
- emergency procedures being defined and adopted; and
- appropriate training and information being provided to personnel.

3.2.3 The contractors' Construction Phase SHE Plan will be reviewed by National Grid to ensure it meets CDM 2015 prior to construction commencing. As described at **Section 2.11**, the SHE Plan will be managed, implemented and updated as necessary through the duration of the project by the Contractor Project Manager.

3.2.4 All staff, site visitors and delivery drivers will receive a relevant project induction by the contractors to ensure they are aware of site hazards and health, safety and environmental management requirements. Site staff will be briefed daily by the contractors prior to work commencing. Site-specific risk assessments will be carried out to ensure the risk strategy of the frequently changing workplace remains relevant. The contractors will be required to carry out audits and inspections throughout the proposed development in accordance with **Section 2.12** of this CEMP.

3.2.5 Emergency contact for the public will be through the enquiries and complaints procedure as described in **Section 2.10** of this CEMP.

3.3 Construction Hours

3.3.1 Construction work will take place in accordance with the 'Construction Hours' set out in **Schedule 3, Requirement 7** of the DCO.

3.4 Construction Site Layout and Appearance

3.4.1 The layout, appearance and operation of the construction site, site offices and compounds will be detailed prior to construction commencing and will comply with the commitments in this CEMP. In particular, the layout, appearance and operation of the construction site, site offices and compounds will be managed as follows:

- all working areas will be kept in a clean and tidy condition;
- smoking areas at site offices, compounds and construction sites will be equipped with containers for smoking waste and will not be located at the boundary of working areas or adjacent to neighbouring land;
- all necessary measures will be taken to minimise the risk of fire;
- workers will maintain a reasonable and appropriate standard of dress at all times and will not use foul language or display lewd or derogatory behaviour;
- appropriate measures, such as use of enclosed containers, will be employed to store waste susceptible to spreading by wind or liable to cause litter (see **Section 3.7** of this CEMP and the OWMP (**Volume 5, Document 5.4.3D(A)**);
- fencing and other means of enclosure will be inspected daily and repaired as necessary (see **Section 3.5** of this CEMP);
- adequate welfare facilities will be provided for all construction staff. All toilets will be serviced and kept clean (see **Section 3.9** of this CEMP);
- good personal hygiene will be promoted by the contractors for the workforce, particularly when using site mess facilities;
- site accesses, accesses to site compounds and roads in the vicinity of site access points will be maintained and kept clean as required (see **Section 4.7** of this CEMP);
- commitments relating to noise and vibration (see **Section 4.9** of this CEMP);
- commitments relating to dust, odours and air pollution (see **Section 4.8** of this CEMP);
- commitments relating to the handling, storage and disposal of materials (see **Sections 3.7** and **4.4** of this CEMP); and
- appropriate management and disposal of foul water and sewage (see **Sections 4.4** and **Section 4.5** of this CEMP).

3.5 Fencing and Other Means of Enclosure

3.5.1 Working areas will be appropriately fenced from members of the public and to prevent livestock from straying onto a working area. Fencing will also delineate site

boundaries to reduce the risk of site staff from unintentionally exiting working areas. Fencing and other means of enclosure at the construction compounds will comply with **Section 4.2** of this CEMP.

3.5.2 Fencing and other means of enclosure in areas at risk of flooding will be permeable to floodwater, unless otherwise agreed with the EA, to ensure that the fluvial floodplain and areas liable to other sources of flooding continue to function effectively for storage and conveyance of floodwater.

3.5.3 Fencing and other means of enclosure will be inspected daily and repaired as necessary. Any temporary fencing will be removed as soon as reasonably practicable after completion of the works.

3.6 Lighting

3.6.1 The relevant planning authority will be consulted regarding details of any temporary external lighting to be installed during each stage of the proposed development, including measures to prevent light spillage. A Lighting Scheme will be produced under **Requirement 6** of the DCO.

3.6.2 The written details must incorporate the environmental measures in relation to lighting set out in the Embedded Environmental Measures Schedule (**Volume 5, Document 5.4.3B(C)**) to avoid, reduce or compensate for potential effects on habitats and species.

3.6.3 Winter working may require task-specific lighting due to the short day lengths when lighting will be required at the beginning and end of the day. Lighting will be used only when required during core working hours, unless otherwise stated and will comprise lighting of work areas and access and egress with low level directional lighting.

3.6.4 Construction compounds will not be lit at night outside core working hours except for welfare and site security cabins that will include low level lighting. Motion sensor lighting will be used in areas of high security risk.

3.6.5 Other works required to be undertaken outside of the normal working hours may also require lighting, such as the installation of protective scaffold netting over roads or railways.

3.6.6 The Lighting Scheme will include measures to minimise the extent to which lighting associated with construction activity affects areas of habitats on or in the vicinity of the Site. This strategy will be informed by latest research and guidance.

3.6.7 External lighting, including security lighting will be minimised during the hours of darkness where possible. Should site compounds require security lighting these would be on a timer and motion sensitive. If the need to light trees or structures arises, advice will be sought from a suitably qualified ecologist, and additional bat surveys, assessment and mitigation may be required. Best practice guidelines would be followed during the works.

3.6.8 The following measures will also be implemented:

- lights installed will be of the minimum brightness and/or power rating capable of performing the desired function;
- light fittings will be used that reduce the amount of light emitted above the horizontal;

- light fittings will be positioned correctly and directed downwards;
- the direction of lights will seek to avoid spillage onto neighbouring properties;
- Passive Infra-Red (PIR) controlled lights will be considered for use where appropriate as these may be more acceptable to sensitive receptors than those which are controlled by a time switch or are on all the time; and
- unnecessary lights will be switched off.

3.7 Waste Management

3.7.1 National Grid and the contractors are responsible for managing waste arising from all activities in order to prevent pollution and to meet or exceed legal requirements (**REF 1.3, REF 1.4, REF 1.5 and REF 1.6**).

3.7.2 National Grid has prepared an OWMP (**Volume 5, Document 5.4.3D(A)**). The contractors will prepare and submit a SWMP to National Grid to include their associated works, which will be in accordance with the following measures, as provided in the OWMP:

- the consumption of raw materials and waste shall be minimised, through sound design and good practice in sustainable procurement;
- where waste is generated, opportunities for reusing or recycling the waste will be considered prior to disposal via landfill;
- waste materials will be stored securely on site in order to prevent their escape and protect them against vandalism, vermin or outside interference;
- hazardous waste (e.g. paints, solvents, sealants) will be segregated on-site to avoid contaminating other material and waste streams;
- storage of waste on site will either be:
  - within the scope of, and comply with, the requirements of one or more of the activities specified as exempt form Waste Management Licensing; or
  - carried out under an environmental permit issue by the EA.
- waste management activities on sites operating under an environmental permit will be managed by a nominated technically competent manager;
- all waste disposal contractors carrying waste will be authorised to do so and all sites that receive the waste will be authorised to do so;
- disposal of all waste will be accompanied by the relevant statutory transfer documentation that adequately describes the waste;
- quantities of waste generated will be recorded and monitored. Records will be kept for a minimum of three years;
- all employees and contractors will have a Duty of Care (**REF 1.3**) when controlling the carriage and disposal of waste to ensure it is handled in a responsible manner; and

- all staff and contractors working on the proposed development will be informed of which waste should be deposited where.

3.7.3 The relevant planning authority or other relevant statutory body will be consulted on the SWMP for the proposed development.

3.8 Security

3.8.1 Construction sites will be controlled in accordance with the statutory duty (**REF 1.2**) to prevent unauthorised access to the site. Site-specific assessments of the security and trespass risk will be undertaken at each site and appropriate control measures implemented. The control measures are likely to include:

- use of high perimeter fencing or hoarding for site security and public safety, and placed so that PRoW are maintained or appropriately diverted;
- use of site lighting at site perimeters, in accordance with **Section 3.6** and the BMS (**Volume 5, Document 5.4.3E(C)**);
- use of appropriately trained and qualified security guards;
- consultation with Kent Police on security proposals for sites with regular liaison to review security effectiveness and response to incidents; and
- immobilisation of plant out of hours, removing or securing hazardous materials from site, securing fuel storage containers and preventing unauthorised use of scaffolding.

3.9 Welfare

3.9.1 No living accommodation will be permitted on the construction site. Onsite welfare facilities will be provided for all site workers and visitors. Welfare facilities will be kept clean and tidy, in accordance with **Section 3.4** of this CEMP.

3.10 Pest Control

3.10.1 The risk of infestation by pests or vermin will be reduced by implementing appropriate storage and regular collection of putrescible waste. If infestation is found, removal and prevention measures will be implemented promptly in consultation with the Ecological Clerk of Works (ECoW) to ensure that no protected species is harmed as a result. Any pest infestation of the construction site will be notified to the local authority as soon as is practicable.

3.11 Invasive Species Management

3.11.1 As controlled species, there is a need to ensure that the proposed development does not result in contravention of the legislation relating to Japanese knotweed, water fern and Himalayan balsam.

3.11.2 The spread of these invasive species would be prevented by the implementation of best practice measures following EA guidelines, thus avoiding contravention of the legislation. Further details of the locations of and guidelines for managing Japanese

knotweed, water fern and Himalayan balsam are provided in the Biodiversity Mitigation Strategy (**Volume 5, Document 5.4.3E(C)**).

3.11.3 Due to the ability of Japanese knotweed, water fern and Himalayan balsam to establish and spread, pre works surveys would be conducted prior to any UKPN 132kV dismantling works and if required, Method Statements would be developed and employed that reflect the legislation and biodiversity conditions in the Order limits prevalent at that time to ensure that no legal breaches occur.

3.12 Unexploded Ordnance

3.12.1 Risk assessments will be undertaken prior to each stage of construction commencing for the possibility of unexploded ordnance being found within construction areas. These will be used to specify safe working requirements, which may include advance magnetometer surveys at piling locations and appropriate training for site operatives. An unexploded ordnance specialist will be available on-call for any works in high risk areas. An Emergency Response Plan for unexploded ordnance will be prepared by the contractors and will be followed to respond to the discovery of unexploded ordnance. This will include notifications to the relevant local authorities, emergency services, residents and businesses.

3.13 Utility Works

3.13.1 Appropriate plans and schedules will be provided by National Grid to the contractors identifying all known utility infrastructure and any proposed diversions. Where changes to utility infrastructure cannot reasonably be avoided, the contractors will agree arrangements with National Grid and the owner of the utility equipment for it to be relocated.

3.14 Reinstatement of Land on Completion

3.14.1 Any land temporarily used for the construction of the proposed development will be reinstated in accordance with Articles 28 (temporary use of land by National Grid) and Article 29 (temporary use of land by UK Power Networks) of the DCO.

3.15 Consents and Licences

3.15.1 A number of sections of this CEMP reference consents, permits and licences that will be required during construction. **Volume 7, Document 7.2(A)** (Details of other Consents and Licences) contains the consents and licences National Grid currently believes will be required to construct the proposed development that will be obtained outside of the DCO process. A Consents Register will be maintained by the Environmental Manager which will document all existing consent conditions, record all new applications made and the status of the applications.

4. ENVIRONMENTAL MANAGEMENT AND CONSTRUCTION PRINCIPLES

4.1 Objective

4.1.1 This chapter of the CEMP describes the environmental measures that will be implemented during the construction of the proposed development to avoid, reduce or compensate for adverse effects as identified in the ES (**Volume 5, Documents 5.1 – 5.4**), and in National Grid's environmental policy.

4.2 Landscape and Views

Objective

4.2.1 To undertake construction environmental measures so that adverse effects on landscape and visual amenity are avoided, reduced or compensated for as far as practicable during the construction of the proposed development.

4.2.2 Environmental measures relating to the operational phase of the proposed development are described in the Embedded Environmental Measures Schedule in the ES (**Volume 5, Document 5.4.3B(C)**).

4.2.3 In addition, there are a number of DCO Requirements (**Schedule 3**) relating to mitigation planting and vegetation protection for the operational phase of the proposed development as follows:

- **Requirement 8**: Mitigation Planting;
- **Requirement 9**: Implementation of mitigation planting;
- **Requirement 10**: Retention and protection of existing trees and hedgerows; and
- **Requirement 12**: Reinstatement schemes.

Environmental Measures

Topsoil Bunding

4.2.4 Topsoil will be stockpiled around the edges of the construction compounds, as detailed in the SAMP. Stockpiled soils will be protected from erosion by appropriate measures, such as covering with geo-membranes and/ or seeding with grass.

Fencing

4.2.5 Location specific fencing requirements and mitigation measures are discussed in **Section 8** of the ***Arboricultural Impact Assessment (Volume 5, Document 5.4.3I)***.

Westbere Compound

4.2.6 A two storey residential property on Staines Hill (A28) (visual receptor ref A1.H64) is located adjacent and east of the Westbere Compound. The close proximity of construction working areas to this residential property means that screen fencing is appropriate to further reduce visual effects.

Retained Trees and Hedges

4.2.7 With respect to the retention of trees and hedgerows to aid compartmentalisation, National Grid is committed to the following measures at construction compounds;

- trees to be retained are shown on Arboricultural Impacts Plans (**Volume 5, Document 5.4.3I Figure 3I.2** in the EIA). This plan will be refined prior to construction by the Arboricultural Clerk of Works to identify individual trees for removal;
- all retained trees will be protected according to the Tree and Hedgerow Protection Strategy (**Schedule 3, Requirement 10**);
- a schedule of the construction compounds, the proposed development components to which they relate, their estimated duration of use, the facilities they would accommodate and the approximate percentage of land to be used shall be prepared; and
- a cross-section across the South West boundary of the Westbere compound is shown in **Annex 3C.1**

Arboricultural Measures

4.2.8 The Arboricultural Clerk of Works will be responsible for overseeing and monitoring all arboricultural measures as described below and in the Arboricultural Impact Assessment (AIA) (**Volume 5, Document 5.4.3I, Section 8**).

4.2.9 National Grid is committed to planting trees to mitigate losses as described by the AIA **(Volume 5, Document 5.4.3I)**. Individual tree planting is proposed at a rate of four trees for each individual tree removed. This commitment acknowledges the value of trees in their own right and also that there is substantial risk of failure if a single tree is planted as a replacement for one to be lost. Where groups of trees are removed, the total area (m^2) will be replaced at a rate of 1:1 (by area) which will necessarily include a greater number of individual trees than are removed. Hedgerows that are removed will also be replaced at a rate of 1:1 by length (m).

4.2.10 Arboricultural mitigation for the construction phase will be delivered in accordance with measures set out in the AIA **(Volume 5, Document 5.4.3I),** secured by **Requirements 6, 8, 9 and 10** of the DCO.

4.2.11 Of particular relevance during the construction phase, **Requirement 10** of the DCO States that:

'No stage of the authorised development may commence until, for that stage, a Tree and Hedgerow Protection Strategy (THPS) as referred to in Requirement 6(1)(h) and prepared in accordance with the Arboricultural Impact Assessment (Document 5.4.3I) and its addendum, figures 3I.2a to 3I2v of the Arboricultural Impacts Plan (Document 4.4.3I.1) and BS 5837:2012 (Trees in relation to design, demolition and construction) identifying the trees, groups of trees and hedgerows to be retained during that stage has been submitted to and approved by the relevant planning authority.'

4.2.12 The THPS will include tree protection plans, as detailed in **Section 8** of the AIA; a schedule of all proposed tree and hedge removal and pruning, with annotated plans; tree works management plans for specified areas of complex tree works; specification for temporary physical protection for trees and hedgerows; and details of an auditable system of compliance.

4.2.13 In accordance with **Requirement 10** of the DCO, trees that are to be felled will be clearly identified. The Tree Impact Plans provided at **Volume 5, Document 5.4.3I** will be refined where necessary, dependent on actual tree growth in relation to that predicted and any amendments to details of the Project in the Order limits and Limits of Deviation.

4.2.14 The management of waste arisings associated with surface vegetation removal, including trees and hedgerows, is detailed in the OWMP (**Volume 5, Document 5.4.3D(A)**).

Arisings from Arboricultural Works

4.2.15 The treatment of arisings (material produced by tree felling or pruning or hedgerow removal) will be detailed on a site by site basis along with the specification for pruning or removal, points of access and any other restrictions or requirements that are to be observed by the contractor. All works will be undertaken according to British Standard 3998:2010 Tree Works Recommendations.

4.2.16 The treatment of arisings will be determined according to a hierarchy of options. The options for treatment will address the distance arisings are to be moved (Displacement), and the resultant size of arisings (Processing). The preference will be to minimise both the Displacement and Processing of arisings.

4.2.17 The hierarchy of options is outlined below. This list is not exhaustive and not all options apply to all pruning operations (e.g. for small trees without timber value):

- leave tree in-situ;
- leave standing stem in-situ, stack branches in windrows or habitat piles;
- fell tree and leave in-situ (rarely suitable);
- fell tree, make stem safe, stack branches in windrows or habitat piles;
- cut up tree and stack in-situ;
- cut up tree and stack elsewhere on site;
- extract timber and stack branches on site;
- extract timber and chip branches on site;
- chip or mulch entire tree and leave on site;
- chip branches and remove from site, leave stem on site;
- remove all arisings from site, stem entire; and
- remove all arisings from site, stem ringed (e.g. for firewood).

4.2.18 Burning will not be considered unless this is specifically for biosecurity reasons. Burning may be required to control the spread of a known pest or disease. Such decisions would be made in accordance with current advice published by DEFRA and the Forestry Commission.

4.2.19 The Environment Agency (EA) considers arboricultural arisings to be virgin timber and not waste. This position is contingent on the material being mainly woody in composition and on the end use being 'one to which virgin timber is commonly put'. Examples of such uses are provided by EA and include: woodchip for landscaping,

material for composting, fuel for an appliance, and a material to create or maintain a habitat as part of the natural cycle of land management.

4.2.20 All material that will be produced by tree pruning and felling operations will meet the EA criteria for virgin timber and therefore be capable of not being classed as waste. The purpose of the above hierarchy is to cause the least possible disruption to nutrient and carbon cycling and to preserve or create habitats for invertebrates, fungi, small mammals and birds. Arisings that are left on site therefore create or maintain a habitat as part of the natural cycle of land management and are not classed as waste.

4.2.21 Where trees are felled, there will be a preference for the retention of stumps. In some situations, the removal of stumps will be required because they would present an obstruction to excavation or safe passage of plant, vehicles or pedestrians. Stump removal will be undertaken by stump grinding. This process mixes the pulverised stump fibres back into the surrounding topsoil and all arisings will be left in-situ. Excavation or ground works involving the removal of soils containing wood fibre from stumps or roots is considered as part of that excavation operation and not under the arboricultural impact assessment.

4.2.22 Arisings that must leave the site on which they were produced will be treated according to the above hierarchy, (i.e. with a preference for the shortest distance of travel and the least amount of processing). No arisings will be sent to landfill and all material will be recovered. It is anticipated that the majority of material will be recovered either as woodchip for landscaping, material for composting, firewood, woodfuel, or timber. It should be noted that only five of the above twelve options involve the removal of any material and only two options describe the removal of all material produced by tree works. Where material can be appropriately retained on the site of origin, the main purpose is to retain habitat functions associated with the features that have been removed such as connectivity of dormouse habitat, decaying wood for invertebrates or fungi and aerial cavities for bats. In addition, there is an imperative to reduce the removal of nutrient from each site by the extraction of arisings. It is therefore likely that a large proportion of tree works will fall under the above EA description: a material to create or maintain a habitat as part of the natural cycle of land management.

4.2.23 The mechanism for recovery and the selection of the preferred end use will be according to the individual contractor's and land owner's choice. It will also be the responsibility of each contractor to ensure that the appropriate licences and exemptions are in place for the transport, conversion and storage of any such material. Distance to sites may be factored into the selection of contractors to minimise the transport of arisings and all contractors must be able to demonstrate the end use of all arisings (normally for woodchip, compost or firewood). The end use of all arisings leaving site will be monitored by the Landscape Clerk of Works (LCoW).

4.2.24 Where biodiversity has a mitigation plan in place for the pylon concerned, that plan will take precedence over these measures should they differ (legal aspects of protected species need to be considered first and many of the sites will be under derogation licences).

Inspections

4.2.25 A LCoW will be appointed by National Grid to oversee and monitor all landscape works.

4.2.26 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP.

4.3 Biodiversity and Nature Conservation

Objective

4.3.1 The BMS is provided at **Volume 5, Document 5.4.3E(C)** and describes the environmental measures that will be implemented during the construction of the proposed development and during the maintenance period(s) of up to 5 years. The objectives of the BMS are to:

- ensure that construction works will be carried out to control and minimise disturbance to ecological interests/receptors, including designated sites;
- ensure that appropriate measures are adopted to protect the ecosystems within the working areas (the Order limits) and within the zone of influence of the works;
- avoid impacts on protected species in accordance with relevant good practice and legislative requirements; and
- ensure that habitats are reinstated where appropriate following completion of works.

4.3.2 The BMS sets out:

- ecological mitigation measures as identified within the Environmental Statement and specific best-practice measures to minimise the effects of the development on ecological receptors;
- measures for ecological supervision during the delivery of construction and mitigation activities;
- roles associated with the delivery of the work activities that need to take account of ecology including National Grid staff and contractors; and
- provision for and details of specific ecological mitigation plans and method statements or other management documents, where relevant (for example, the Natural England Great Crested Newt, Dormice and Bat Licence Method Statements).

Environmental Measures

4.3.3 The BMS describes the environmental measures that will be implemented during (and where appropriate following) the construction of the proposed development.

4.3.4 Prior to any stage of construction works commencing an Ecological Clerk of Works (ECoW) will be appointed by National Grid who will be responsible for ensuring the BMS is implemented. As necessary they will be supported by other suitably qualified ecologists.

4.3.5 The ECoW will advise and provide support to National Grid and the Principal Contractor, who will have the responsibility to oversee the delivery of all construction and maintenance period activities. The ECoW will report to the Project Engineer.

4.3.6 The ECoW will monitor that the measures outlined within the BMS are applied to work activities on site by the Contractor; this will be done in conjunction with the Project Engineer.

4.3.7 In summary, the ECoW will be responsible for the following activities:

- overseeing, in conjunction with the Project Engineer, the delivery of all measures detailed within the BMS (**Volume 5, Document 5.4.3E(C)**), including inspection, monitoring and quality control, of the embedded environmental (ecological) measures implemented by the Contractor during the construction phase;
- reviewing applicable documents, including risk assessments, method statements and evidence relating to all proposed work activities that may impact upon ecology to ensure they comply appropriately;
- advising the Project Engineer and contractors, in relation to how legal and contractual ecological management measures should be met;
- participating in tool box talks or other ecological briefings with the contractors;
- recording and reporting any ecological non-compliances to the Project Engineer, with advisory actions and responsibilities as appropriate;
- maintaining a Site Ecology Register (SER) of works conducted, from site establishment through to demobilisation. This should include weekly updates and a photographic record of activities carried out (and recommendations of future works);
- on request of the Project Engineer, meet landowners and occupiers to describe the BMS, its intentions, and its implications for their land interests;
- undertaking monitoring surveys as required (outline as required in **Sections 2-4** within **Volume 5, Document 5.4.3E(C)**); and
- liaison and reporting of ecological monitoring results as appropriate with Natural England to agreed timescales in respect of derogation licensing only.

4.4 Geology, Soils and Agriculture

Objective

4.4.1 To undertake the construction activities whilst reducing risks to soil resources and from potential contamination. The escape of stored materials, in particular liquids and hazardous materials, presents a risk to the environment. Storage, handling facilities and procedures will be designed to minimise that risk.

Environmental Measures

4.4.2 The following measures will be implemented during the construction of the proposed development to avoid or reduce the risk of contamination caused by construction activities.

4.4.3 The following Pollution Prevention Guidelines (PPGs) as set out in **Volume 8, Document 8.10** will be followed on site to prevent pollution.

- Guidance for storing and handling materials and products:
  i. PPG2: Above ground oil storage tanks;
  ii. PPG 6: Working at construction and demolition sites;
  iii. PPG 7: The safe operation of refuelling facilities; and
  iv. PPG 26: Drums and intermediate bulk containers.
- Guidance for site drainage, dealing with sewage and trade effluents:
  i. PPG 3: Use and design of oil separators in surface water drainage systems;
  ii. PPG 4: Treatment and disposal of sewage where no foul sewer is available; and
  iii. PPG 13: Vehicle washing and cleaning.
- Guidance on general good environmental practice:
  i. PPG 1: Understanding your environmental responsibilities – Good environmental practices;
  ii. PPG 5: Works and maintenance in or near water; and
  iii. PPG 21: Incident response planning.

Pre-construction Activities

Land affected by contamination

4.4.4 Soil affected by contamination may be encountered when excavating any site, for example; oil, heavy metals, asbestos or other chemicals. Indications of contamination could include unusual colour, odour or appearance.

4.4.5 Technical baseline investigations (desk studies) have been undertaken during the design phase of the proposed development in line with the Model Procedures for the Management of Land Contamination (CLR11) (**REF 1.7**). The findings of these baseline studies have informed the ES. These findings will be used to inform targeted intrusive ground investigations, which shall be undertaken in advance of construction. The process will be as follows:

- obtain and review updated unexploded ordnance surveys for relevant sections of the proposed development (see also **Section 3.12** of this CEMP);
- review existing desk study data to identify requirements for intrusive ground investigation;
- undertake site-specific intrusive ground investigation in available areas. Analytical suites to be determined based on the desk study findings and field observations made during the ground investigation;
- undertake generic quantitative human health and ground gas risk assessments;
- undertake detailed quantitative risk assessments should generic risk assessment identify a potentially significant human health or ground gas risk; and
- should the above items identify a potentially significant risk requiring remediation, then undertake a remedial options appraisal and identify appropriate remediation / mitigation solution; and

- implement the detailed mitigation measures or remedial works;
- verify the implemented mitigation measures or remedial works; and
- prepare verification reports, demonstrating that the remedial works have been successfully implemented, in accordance with the agreed scheme.

4.4.6 In addition to the above, the protection of controlled waters from leachable soil contaminants, as discussed further in **Section 4.5** below, will also need to be considered and incorporated into the above process.

4.4.7 Following the findings of the baseline technical studies and assessment provided in the ES (**Volume 5, Documents 5.1 - 5.4**), it is envisaged that any environmental management procedures identified as necessary by the post-consent process described in paragraph 4.4.5 would fall within the following general scope:

- Dust control. This will be achieved by dust suppression measures (e.g. spraying with water), minimisation of dust generation (e.g. sheeting of soil stockpiles, planning of work to avoid temporary stockpiling in windy / exposed areas etc.) and construction phase compliance monitoring;
- Asbestos control. Any work involving materials suspected of containing asbestos to be undertaken in accordance with the Control of Asbestos Regulations (2012), by appropriately trained operatives. Operational procedures will be informed by occupational health and safety measures and environmental measures specific to the nature of the risk, and may include the use of specialist personal protective equipment by site workers (e.g. respiratory protection), the delineation of controlled areas for materials handling and air monitoring (including perimeter monitoring to ensure no risk to adjacent site users);
- Use of personal protective equipment (PPE) that is suitable for the ground conditions. This may range from standard measures, such as the use of gloves and dust masks, to specialist measures (as above);
- Re-use of soil arisings in a manner and location that is suitable for their chemical composition (see Outline Waste Management Plan). This will be achieved via a Materials Management Plan (MMP), which will be prepared by the contractor. A mandatory requirement of an MMP is to demonstrate that soil re-use does not demonstrate a risk to human health or the environment. Appropriate chemical classification testing will be undertaken to inform the MMP, as necessary;
- Soil Remediation. Chemical or physical remediation of soil affected by contamination e.g. in situ bioremediation of soils affected by hydrocarbon contamination;
- Soil Disposal. Off-site disposal of any highly contaminated materials (e.g. asbestos sheeting) that cannot be directly re-used, or remediated and re-used, in accordance with the procedures described in the Outline Waste Management Plan;
- Validation of Imported Materials. Compliance testing on all incoming materials (e.g. any import used to form access tracks) to ensure chemical suitability;
- Ground gas protection in compound buildings.

- Confirmatory ground gas monitoring during construction works that may intersect gas sources or affect gas migration pathways, to ensure no off-site migration risk. In the very unlikely event that perimeter monitoring indicates that the works are causing significant gas migration, then intervention would be undertaken to prevent this affecting nearby buildings (e.g. installation of in-ground ventilation measures / gas barriers);
- Use of an appropriate concrete specification for the ground conditions, in accordance with the recommendations of Building Research Establishment (BRE) Special Digest 1: Concrete in Aggressive Ground (2005);
- Use of specialist foundations where necessary, to prevent any ground instability effects; and
- Specialist working methods when dismantling UKPN 132kV pylons in locations that may overlie landfill waste (i.e. pylons PX6 and PX23). These involve: minimisation of disturbance of surrounding soil when excavating foundations (foundations to be removed to 1.5m below ground level), use of personal protective equipment by construction workers (as required by the ground conditions), re-instatement of any very minor damage to landfill capping (to an engineered specification), damping down of excavation sites to prevent dust generation, removal of any waste arisings to a landfill, and ground gas monitoring to ensure no gas mobilisation (with intervention measures as discussed above in the very unlikely event that this identifies that dismantling works are mobilising gas).

4.4.8 The baseline studies identified human health and ground gas risks which range from low to moderate. Therefore, it is unlikely that, following the implementation of the process described in **paragraph 4.4.5**, the full range of measures specified above will be required. However, the full range is presented to demonstrate that any ground contamination / ground gas that could reasonably be expected (i.e. 'reasonable worst case scenario', based on the desk study findings) will be satisfactorily mitigated. Specific details of the mitigation measures required, from this general range, will be specified within the Contractors Proposals under **Requirement 13** of the DCO. In addition, occupational health and safety measures will be designed with regard to the ground conditions and will be specified within the Construction Phase SHE Plan. Work in excavations and trenches will be undertaken by trained operatives and in accordance with The Confined Spaces Regulations (1997) and should include gas monitoring within excavations / trenches.

4.4.9 In accordance with **Requirement 13** of the DCO, any proposed remediation and detailed environmental measures will be presented to the local authority and other appropriate regulators for approval prior to implementation, as part of the written scheme specified by that Requirement. Should the approved scheme identify that remediation is necessary then a verification report that demonstrates the effectiveness of the remediation carried out will be produced, on completion of the remediation.

4.4.10 Professional advice will be sought only from those with demonstrable specialist competence in risk-based management of land contamination.

4.4.11 Should any unexpected contamination (i.e. that not identified by the ground investigation) be encountered during the construction phase, then work in the affected location will be suspended until the nature and concentration of the

contaminants has been determined and appropriate risk control measures implemented, in accordance with the general process described in **Section 2.13** of this CEMP.

4.4.12 It should be noted that the information presented above relates primarily to environmental management procedures that relate to human health risk and ground gas. Measures relating to the protection of the Water Environment are discussed in **Section 4.5** of this CEMP.

Piling Risk Assessment

4.4.13 All piling works will be informed by piling risk assessments undertaken in accordance with EA guidance 'Piling and Penetrative Ground Improvement Methods on land affected by Contamination: Guidance on Pollution Prevention (Report NC/99/73)' and 'Piling into Contaminated Sites'. Piling risk assessments will consider the underlying geology at pylon locations, which will be determined by pre-construction borehole investigations where necessary. Any subsequent mitigation required will be agreed with the EA prior to construction commencing including soft start piling techniques where piling needs to operate within 16m of a tidal river.

Construction Activities

Soil and Aftercare Management Plan (SAMP)

4.4.14 Measures to protect soils will be set out in a SAMP prepared by the contractor and will include, but not be restricted to, the following measures:

- prior to commencement of construction a soil survey (including fertility) to establish baseline conditions will be carried out by a competent person (e.g. a soil scientist) to inform soil handling, storage and reinstatement. Any crop husbandry requirements through to crop harvest will need to be taken into account;
- the area required for construction will be defined and provision for ongoing access to crop areas will be agreed with land owners/farmers;
- prior to commencement of construction, detailed underdrainage provisions that will be required to maintain drainage from undisturbed areas during construction will be designed (see **paragraphs 4.4.33 to 4.4.42** in this CEMP). Any affected water supply and other agricultural supply pipes may also need to be rerouted prior to construction;
- during construction and within working areas, weed control would be maintained to minimise the spread of pernicious and/or injurious weeds; the programme would take account of crop management in adjacent fields;
- the area within which soil disturbance will occur will be clearly delineated and no trafficking will take place outside it;
- construction traffic will be restricted to operating on the designated access roads and not on the unprotected soils;
- topsoil stripping will be restricted to the width of the permanent and temporary elements of the proposed development, thereby minimising disturbance to the integrity of the biomass;

- appropriate geotextile membranes, wooden matting or aluminium trackways will be used over particularly sensitive areas;
- in sensitive soil conditions, where the use of geotextile membranes is not appropriate, wheeled vehicles may be fitted with low ground pressure bearing pneumatic tyres to allow a greater distribution of weight;
- soil loosening techniques such as deep-tine cultivation and subsoiling will be used where required to break up any compaction which has occurred, for example after removal of temporary track surface before topsoil reinstatement;
- subsoil and different superficial deposits will be stored separately to prevent mixing and will be reinstated in reverse order of excavation;
- topsoil and subsoil movements will only be undertaken in suitable conditions, for example, when it is not too wet, in accordance with DEFRA guidance (**REF 1.8**);
- soil stabilising methods to reduce the risk of erosion, the creation of leachate and potential water quality issues;
- soils will not be stockpiled close to surface water features (refer to Water Environment **Section 4.5** for further details). Stockpiled soils will be protected by appropriate measures, for example, permeable membranes, spraying or seeding to reduce the risk of windblown dust, surface water run-off and to reduce the risk of overland migration of silt and sediment to surface waters. Any excavated Made Ground (material that is not natural or agricultural soils) will be stored on an appropriate impermeable surface material and appropriate risk control measures will be implemented (in accordance with **Section 2.13** of the CEMP);
- following completion of construction and soil replacement, the restored profile would be surveyed to validate, profile depth, soil structure, stoniness and suitability for commercial agriculture;
- the SAMP will provide the requirements for rehabilitation of the soils to an equivalent capability for agricultural use to that of the baseline conditions, including aftercare management, drainage and soil nutrient content;
- early re-seeding of the reinstated ground will be undertaken to help re-establish and stabilise the structure of the topsoil; and
- during aftercare, the maintenance may involve the use of herbicides. Adverse effects on land quality will be avoided by compliance with DEFRA 'Code of Practice for Using Plant Protection Products' (2006).

The SAMP will be approved by the relevant planning authority prior to the commencement of any stage of construction works.

Construction Design Methods

4.4.15 The Order Limits contain various natural geotechnical challenges, including the presence of low lying compressible soils with a high water table in the east. Engineering design, within the parameters defined in the Project Description in **Documents 5.1-5.5, Chapter 3**, is able to address many of these issues. However, this will be supplemented by specific working methods in some instances. The

precise requirements will be determined as a result of the detailed engineering design process. However, measures may include:

- land drainage management, to minimise additional wetting / saturation of soils;
- sheeting of soil stockpiles, to ensure that their condition is not damaged by water prior to re-use;
- pre-removal of potentially collapsible deposits of Head / brickearth prior to construction, where thicknesses make this practically feasible;
- the use of 'floating roads' (with geogrid and stone sub-base) for access tracks on compressible soils;
- restriction of plant movements per hour over compressible soils and use of specialist plant (e.g. low ground pressure bearing pneumatic tyres, as above); and
- proof rolling of the formation level prior to construction in instances where dewatering of compressible ground is unavoidable.

Specification, Supply and Use of Materials

4.4.16 Where there is a suitable recycled or otherwise sustainable material which can be cost-effectively used, it will be preferred. Good practice in design and procurement will be adopted to keep stocks of materials to a minimum Specification, Supply and Use of Materials

Storage and Handling Requirements

4.4.17 The proposals for the storage of waste on site are detailed in the OWMP (**Volume 5, Document 5.4.3D(A)**). Details will also be provided in the OWMPs. Facilities will be provided for the collection, segregation, treatment and disposal of solid and liquid waste in accordance with the OWMP.

4.4.18 The following measures will be implemented on site for the storage of materials:

- all oil and diesel storage facilities will be at least 10m from any watercourse, ditch or drainage channel, and at least 50m from any spring, well or borehole;
- suitable and adequate spill kits, and drip trays or plant nappies (lightweight flexible spill containment trays with removable absorbent inserts) will be provided for all equipment and at locations where any liquids are stored and dispensed;
- storage facilities will be provided for solid materials to prevent deterioration of the materials and their escape;
- storage facilities will be kept secure to prevent acts of vandalism that could result in leaks or spills; and
- all containers of any size will be correctly labelled indicating their contents and any hazard warning signs.

Fuel Tanks, Mobile Bowsers and Bunds

4.4.19 In accordance with The Control of Pollution (Oil Storage) (England) Regulations 2001 the following measures will be implemented on site for the prevention of spills:

- fuel tanks and mobile bowsers (and any other equipment that contains oil and other fuels) will have a secondary containment, for example, double skinned tanks. All tanks and mobile bowsers will be located in a sealed impervious bund;
- fuel fill pipes will not extend beyond the bund wall and will have a lockable cap secured with a chain;
- any tap or valve permanently attached to a tank or bowser through which fuel can discharge, will be fitted with a lock;
- where fuel is delivered through a pipe permanently attached to a tank or bowser:
  - the pipe will be fitted with a manually operated pump or a valve at the delivery end which closes automatically when not in use;
  - the pump or valve will be fitted with a lock;
  - the pipe will be fitted with a lockable valve at the end where it leaves the tank or bowser;
  - the pipework will pass over and not through bund walls;
  - tanks and bunds will be protected from vehicle impact damage; and
  - tanks will be labelled with contents and capacity information.
- all valves, pumps and trigger guns will be turned off and locked when not in use. All caps on fill pipes will be locked when not in use.

4.4.20 Suitable precautions will be taken to prevent spillages from equipment containing small quantities of hazardous substances (for example, chainsaws and jerry cans) including:

- each container or piece of equipment will be stored in its own drip tray made of a material suitable for the substance being handled; and
- containers and equipment will be stored on a firm, level surface.

Drum Storage

4.4.21 In accordance with The Control of Pollution (Oil Storage) (England) Regulations 2001, where oil drums are over 200 litres it will be ensured that:

- multiple drums and containers have suitable secondary containment with sufficient capacity to contain at least 25% of the total volume of the containers or 110% of the largest container, whichever is the greatest;
- drum storage areas will be covered to prevent rainwater getting into bunds and drum pallets;
- drums will be labelled and positioned such that leaks cannot overshoot the bund or drip tray wall; and
- all containers are stored securely when the site is unattended.

Flammable and Hazardous Substances

4.4.22 All flammable and hazardous substances will be kept in a secure bunded cupboard, cabinet or tank constructed of materials which are chemically resistant to its contents.

Deliveries and Dispensing

4.4.23 For deliveries and dispensing activities it will be ensured that:

- site-specific procedures are in place for bulk deliveries;
- delivery points and vehicle routes are clearly marked;
- emergency procedures are displayed and a suitably sized spill kit is available at all delivery points, and staff are trained in these procedures and the use of spill kits;
- suitable facilities (for example, drip trays, drum trolleys, funnels) meet the sites specific dispensing needs and are maintained and used;
- tank capacities and current contents levels are checked prior to accepting a delivery to ensure that they are not overfilled;
- all deliveries are supervised throughout the delivery operation;
- spill prevention equipment is used during dispensing activities; and
- all spillages occurring during dispensing and handling activities are cleared up and reported via the Contractor Project Manager and are dealt with in accordance with **Section 2.13** of this CEMP.

Vehicles and Plant

4.4.24 The use of vehicles and plant poses similar risks to those posed by storage of liquids. Fuel and oil may leak from such equipment which may enter drains and/or watercourses, as well as contaminating the ground itself. The following measures will be implemented to reduce this risk:

- vehicles and plant provided for use on the site will be in good working order to ensure optimum fuel efficiency, and be free from leaks. Plant with integral bunding and/or drip trays will be specified;
- sufficient spill kits will be carried on all vehicles;
- any hired vehicles and plant will be checked on delivery and not accepted if they are not in good working order for example, leaking, excessive fumes, excessive noise and/or smoke;
- vehicles and plant will be regularly maintained to ensure that they are working at optimum efficiency and are promptly repaired when not in good working order;
- vehicles and plant will not park near or over drains and will be washed in accordance with the commitments in the CTMP (**Volume 5, Document 5.4.3G(C)**);
- topping up of vehicles and plant will be carried out on hardstanding using drip trays and not over or near drains, or, where this is not reasonably practicable, drip trays and/or drain covers will be used to reduce the risk of spills;
- vehicles and plant will not be overfilled with fuel; and
- plant containing oils will be inspected daily and maintained to both prevent and identify leaks.

De-watering and Drainage

4.4.25 Details on dewatering and drainage are provided in **Section 4.5** of this CEMP.

Land Drainage

4.4.26 The construction of pylons will take place in fields where according to the drainage plans and landowners knowledge land drains are present. The absence of plans or information from landowner will not be regarded as evidence that land drains do not exist.

4.4.27 Land drains and ditch locations will be identified based on existing land drainage plans and/or identified during the works (in the absence of drainage plans). Land drainage will be installed (either temporary or permanent) to maintain the integrity of the field drainage for the duration of works. Drainage systems however will not be installed into areas where they are not currently present, e.g. environmental wetlands. The actual condition and characteristics (e.g. depth of installation, pipe type and diameter) of the existing drainage will be recorded upon excavation.

4.4.28 Post-construction drainage plans will be created when it has been necessary to repair or install new permanent drainage and will be made available to the land owner and/or Occupier at the conclusion of the works.

4.4.29 Drainage systems (land drains) will generally not be introduced into areas where they are not currently present, e.g. ash meadows. However, underdrainage may need to be installed on land currently supporting arable agriculture, where poor drainage areas resulting from construction is identified.

4.4.30 The construction of access tracks may not require diversion of existing drainage due to the excavations not exceeding 0.5m depth in those areas, but it will be monitored during the construction process.

4.4.31 All land drainage works will be carried out by a Specialist Agricultural Land Drainage Contractor and the installed drainage will be at least as effective as the previous condition of the existing drainage.

4.4.32 Landowners will be consulted during the pre-construction surveys to establish the existing underdrainage within those areas to be disturbed during construction.

4.4.33 Landowners will be informed of the design of drainage works required during construction and following installation of pylons, including: pipe layout, falls, dimensions and outfalls (if required), together with the timing of the land drainage work. This will ensure any local knowledge appropriate to individual circumstances is not missed.

4.4.34 National Grid will maintain liaison with land owners to ensure they are kept informed and offered the opportunity to inspect land drainage works as they progress.

4.4.35 Where it is reasonable for the reinstatement of drainage works to involve work outside of the Order Limits, it will be done subject to the agreement of the landowner.

4.4.36 Consents from the Environment Agency and Internal Drainage Board for outfalls into controlled watercourses may be required and an application will be made as necessary for these outfalls.

Inspections

4.4.37 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP.

4.4.38 In particular monitoring will be undertaken of:

- ground and surface water conditions for spills or uncontrolled tipped surface spoil;
- oil tanks and associated bunds for leaks; and
- plant containing oils will be inspected daily and maintained to both prevent and identify leaks.

4.5 Protection of the Water Environment

Objective

4.5.1 To comply with relevant statutory provisions including any consents or permits required in respect of the water environment; to protect both the aquatic environment and to avoid unacceptable adverse effects including changes to flow volume, water levels, water quality and watercourse morphology due to construction.

Environmental Measures

PPGs

4.5.2 All relevant Pollution Prevention Guidance (PPG) (set out in **Volume 8, Document 8.10**) will be followed on site to avoid pollution. The following PPGs will apply:

- Guidance for storing and handling materials and products:
  i. PPG2: Above ground oil storage tanks;
  ii. PPG 6: Working at construction and demolition sites;
  iii. PPG 7: The safe operation of refuelling facilities; and
  iv. PPG 26: Drums and intermediate bulk containers.
- Guidance for site drainage, dealing with sewage and trade effluents:
  i. PPG 3: Use and design of oil separators in surface water drainage systems;
  ii. PPG 4: Treatment and disposal of sewage where no foul sewer is available; and
  iii. PPG 13: Vehicle washing and cleaning.
- Guidance on general good environmental practice:
  i. PPG 1: Understanding your environmental responsibilities – Good Environmental Practices
  ii. PPG 5: Works and maintenance in or near water; and
  iii. PPG 21: Incident response planning.

4.5.3 Further details for prevention of pollution from storage and handling of fuel, oil and other hazardous substances are provided in **Section 4.4** of the CEMP.

4.5.4 A monitoring programme will be implemented to ensure that the measures taken to protect the water environment are effective, as described in **Section 2.12** of this document.

Drainage Management Plan

4.5.5 In accordance with **Requirement 6**, details of construction phase drainage management measures will be developed by the appointed contractors and will be presented in a Drainage Management Plan (DMP). This will be developed following detailed drainage investigations and hydrological assessments, which will determine potential location-specific risks in relation to the water environment, and identify appropriate control measures to avoid or reduce the risks. Examples of the mitigation measures that will be implemented to reduce the risk to the water environment are described below. A phased approach may be taken to the development of the DMP to reflect the phasing of the construction programme. The details of the DMP will be approved by the relevant planning authority (in consultation with relevant consenting authorities such as the EA, IDB and/or KCC) prior to the start of construction operations.

Stand-off distances from watercourses

4.5.6 Where possible, works within 8m (16m where navigable) of watercourse banktops will be avoided to minimise the number of Flood Defence (or Land Drainage) Consents required. An absolute minimum 3m stand-off distance from all watercourses/ waterbodies will be applied (with the exception of crossings and where existing field access roads that are already located adjacent to watercourses are to be utilised). This stand-off distance increases to 5m where environmental measures relating to Biodiversity receptors are required.

Flood Risk Activity Permits/Land Defence Consents

4.5.7 Flood Risk Activity Permit(FRAP)/Land Drainage Consent will be obtained from the EA, IDB and KCC for all works within 8m of a Main River banktop (EA) or Main River flood defence (EA), 16m where tidal (EA), 8m for IDB watercourses and where works are proposed between the bank-tops of all other watercourses[1] (KCC). Formal Flood Risk Activity Permit /Land Drainage Consent applications will need to demonstrate measures are in place to protect water quality and to minimise effects on watercourse morphology and conveyance, in order to ensure compliance with Water Framework Directive objectives. A FRAP will also be necessary for any works affecting the Abbott's Wall as it provides a flood defence benefit against tidal flooding, a FRAP will be required for any work on or within 16m of the toe of this feature.

4.5.8 A copy of all permits from the EA will be sent to the IDB for information.

Watercourse crossings (culverts and bridges)

4.5.9 Culverts and watercourse crossings will be designed to minimise morphological and conveyance effects and sized to maintain existing flow conveyance. Clear span bridges will be used for those watercourses too wide or deep to be crossed using culverts; for example, the two temporary crossings proposed over the River Stour, and for crossings of larger drainage channels, including Sarre Penn, Sevenscore Dike, West Monkton Stream, East Monkton Steam, Minster Stream and the River Wantsum.

[1]Kent County Council advised during the 13/10/2015 consultation meeting that they do not have byelaws in place (as the EA and IDB do) that requires consent for works outside of the banktop of Ordinary Watercourses outside of IDB areas. Consequently, clear span designs (banktop to banktop) that do not require works within the watercourse itself will not require land drainage consent.

4.5.10 The soffits of the two crossings over the River Stour have been set on the basis of navigational requirements, which far exceed the requirements for flooding, i.e. well in excess of both the fluvial 1% AEP plus climate change and tidal 0.5% AEP plus climate change modelled design levels plus a 600mm freeboard.

4.5.11 Culvert design will be chosen to minimise in-channel disturbance of bed and banks. Installation of culverts will be made in a dry channel (isolated from the channel flow) with overpumping of water made as necessary. No multiple pipes for culverts would be permitted. Culverts would have concrete bedding to prevent settling of the culvert and resultant loss of flow capacity.

4.5.12 Detailed design will require approval from EA via Flood Defence Consent (Main Rivers), or from IDB/KCC via Land Drainage Consent (Ordinary Watercourses).

Soil stockpiles

4.5.13 Soil stockpiles will be located at least 8m from all watercourses (16m from the Stour on account of EA access requirements). Where stockpiles run parallel to watercourses, the stockpiles will be located on the opposite side of the access road. Temporary soakaway ditches (as above) will be installed where required to capture sediment-laden runoff from soil stockpiles, with ditches installed adjacent to those stockpiles that are deemed to present a potential risk of runoff to water features. Silt fences may also be installed adjacent to soil stockpiles or at the Order Limits boundary where watercourses are in close proximity or downslope. The surface of stockpiled soils will be smoothed with excavators to reduce potential for runoff generation. With the exception of stockpiles with a lifetime of less than 3 months, where appropriate all topsoil mounds will be seeded to stabilise the surface of the stockpile and reduce the risk of erosion.

4.5.14 Breaks in soil stockpiles of 20m will be ensured at no greater than 80m intervals. Stockpile gaps will be located at topographic low points to preserve existing flow paths. Where stockpiles are placed on either side of the access roads, the gaps should coincide.

Structures in the floodplain (stockpiles, access roads and working areas)

4.5.15 Access roads (and working areas) in the floodplain are to be as close to ground level as possible (a slight raise surface is often required to allow to for drainage). This is to minimise the loss of floodplain storage volumes associated with raised structures such as raised access roads, working areas and associated topsoil stockpiles (for example Trackway may be used). Cross drainage would be provided as necessary at topographic low points.

4.5.16 At specific locations, in the vicinity of identified receptors, no raised structures will be located within the floodplain. Access roads and working areas will be 'at grade' and any associated stockpiles will be located outside of the floodplain. Locations include the upper section of the River Great Stour valley in Canterbury, and in Sarre Penn valley the vicinity of Tile Lodge Farm and Nethergong Farm. These specific locations are indicated in Figures 9a-9c of the Flood Risk Assessment. **(Volume 5, Document 5.4, Appendix 13A)**

Access routes, pylon working areas and laydown compounds

4.5.17 Access routes and works areas (including laydown compounds and pylon working areas) will, in most cases, be constructed from compacted aggregate, which may allow some infiltration of incident rainfall. However, fuel storage areas in the

construction compounds which will be underlain by low permeability material to specifically exclude infiltration in order to ensure that any pollution incidents associated with spillages/leakages can be contained. Furthermore, there are some areas where temporary trackway may be utilised in preference to compacted aggregate, which would also not allow infiltration.

4.5.18 As a consequence, there may be a requirement to manage locally displaced surface runoff from access routes and works areas on to agricultural or other land. This will generally not be drained via a piped or open channel drainage system, but will instead be allowed to infiltrate wherever possible. Infiltration trenches will be used to promote infiltration of locally displaced runoff where required. Further measures, such as silt fencing, will be installed to prevent runoff from disturbed areas from reaching watercourses where appropriate. Environmental measures will be provided in-situ in small scale measures in preference to larger regional systems.

4.5.19 All access road and working area construction material will be removed at the end of construction/demolition and reinstated with the topsoil stockpiles (to a level slightly above natural ground level to allow for settlement).

Laydown compound drainage (Westbere and Richborough)

4.5.20 Prior to the utilisation of any existing piped drainage systems, the contractor would investigate the suitability of such systems and replace elements and install additional measures, such as oil interceptors, where required. Detailed drainage strategies will be prepared for each compound, utilising SuDS principles for any areas requiring new drainage system. Drainage from areas not served by existing drainage systems will be designed in accordance with SuDS principles and at pre-development rates. SuDS measures may include attenuation storage; infiltration trenches/soakaways. Discharge of site drainage to Controlled Waters may be subject to Environmental Permit from the EA. Any discharge to sewer will be subject to permit from the relevant sewage undertaker.

Discharges and permits

Approach to permitted discharges

4.5.21 An Environmental Permit from the EA in relation to the dewatering discharge activity will likely be required across much of the Order Limits due to the presence of Local Wildlife Sites (LWS). Elsewhere a permit may not be required, provided the exceptions as set out by the EA's regulatory position statement are met[2]. Discharges will not be made without prior consent from the EA (or sewerage undertaker if discharges to sewer are proposed).

4.5.22 To ensure discharges are appropriately authorised, the following measures will be followed:

- consult with the appropriate consenting body (the EA for discharges to controlled waters, including rivers, other watercourses and soakaways and the local sewerage undertaker for discharges to sewer) before any discharge is expected to be required from the site and obtain a permit, or where a permit is not required, obtain written confirmation that one is not required;

[2] Regulatory Position Statement: Temporary Water Discharges from Excavations. GEHO0810BSYE-E-E. Version: 4, Issued: July 2015. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/445466/LIT_5107.pdf

- ensure that any permitted discharge is sampled and analysed at the frequency specified in the permit to ensure compliance and that monitoring results are kept, as noted in **Section 2.12**. More frequent analysis may be required if analytical results indicate that limits are being approached or exceeded; and

- ensure that the consenting body is advised if results indicate that limits are being exceeded, and report the occurrence as an incident in accordance with **Section 2.13** of this CEMP. Take immediate steps to rectify the situation; check receiving water for pollution resulting from exceedance; carry out any remediation works necessary.

Groundwater dewatering discharges

4.5.23 No silty water will be discharged directly into any watercourse. Groundwater dewatered from excavations (e.g. pylon foundation excavations) will be discharged to adjacent grassed/vegetated agricultural land, away from watercourses as far as possible. Where there remains the potential for this water to runoff into nearby surface water features or agricultural land used for crops, additional control measures will be put in place, which may include surrounding the discharge area (grassed/vegetated agricultural land) with sediment fencing or passing the silt-laden water through a Siltbuster® or similar. As set out in Section 2.2d of PPG5 (**Appendix B of Volume 8, Document 8.10, Guidelines for Pollution Prevention**), "the discharge rate must match the rate of infiltration in to the soil which will vary with the soil type, amount of vegetation cover and the gradient." If infiltration is not possible, and discharge to a watercourse is required, this will be subject to a permit from the EA or IDB and will be proactively managed to meet the permit conditions. If discharges are at rates that could cause erosion to bed or banks, appropriate erosion control measures would be incorporated. Dewatering will cease if a Flood Alert or Flood Warning has been issued by the EA for an area downstream. The receipt of the Flood Alert/Warning and actions to be taken will be detailed in the Emergency Response Plan for Flood Events discussed further below.

Disposal of accumulated rainfall/surface water

4.5.24 Rainwater and surface water may accumulate in a number of locations on site, for example in uncovered bunds and drip trays. This has the potential to become contaminated. Measures to reduce this risk will be included in the DMP, such as:

- bunds or drum pallets to be covered, where possible, to prevent the accumulation of rainwater. Where this is not possible, the below procedures will be followed;

- interceptor type drip trays to be provided rather than standard drip trays (for locations where drip trays will be permanently in place) or plant nappies (for mobile plant);

- if a standard drip tray or uncovered bund is used, the contractor will:

  - ensure it is regularly inspected (daily) and emptied either via tanker and disposed of immediately off site at an appropriately licensed facility (for large quantities) or to an on-site, bunded, storage facility for later off-site disposal (small quantities). The inspection frequency will increase during times of frequent rainfall;

- check water from uncovered bunds for obvious signs of contamination (for example, visible oil and smells) in order that the correct disposal option can be identified;
- ensure that only uncontaminated water is disposed of by draining it onto a grassed or stoned area on the site. The grassed or stoned area will be at least 10m from any drains and 50m away from any boreholes or wells. If contaminated, it will be disposed of as Hazardous Waste; and
- ensure that any oil present is absorbed using a spill kit and disposed of as Hazardous Waste.

Management of other sources of effluent

4.5.25 In accordance with the PPGs, other effluents may be produced that need to be properly managed and controlled in order to prevent contamination of surface water. The contractor will ensure that:

- washing of equipment using detergent is carried out at commercial facilities only;
- washing of vehicles and equipment without the use of detergent is only carried out at either commercial facilities, or at purpose-built on-site wash stations (provision of which will be at the contractor's discretion) where the water is contained for controlled disposal;
- all foul effluent will be contained; and
- the foul effluent container will be subject to daily inspection and a maintenance and emptying schedule as recommended by the manufacturer. The effluent will be removed by tanker and disposed of at a licensed facility.

4.5.26 As discussed in **Section 4.4**, works to mitigate any impacts to agricultural field drainage have been identified. For example, where field drains are excavated/encountered, measures will include local re-routing works, installation of lateral drains to allow new subsurface crossing of drain flow paths beneath access roads for example (if applicable) or reinforcement above drains to protect from crushing/collapse.

Pylon foundations

4.5.27 Suitably corrosion and pH resistant concrete formulas will be utilised for pylon foundations to minimise the risk of leaching of harmful compounds into soil- and groundwater.

Protection of controlled waters from leached contaminants

4.5.28 The exposure of land affected by contamination, as a result of excavations and/or the stockpiling of topsoil, could result in the mobilisation of contaminants into nearby surface water bodies and/or groundwater.

4.5.29 Technical baseline investigations (desk studies) have been undertaken during the design phase of the proposed development in line with the Model Procedures for the Management of Land Contamination (CLR11) (**REF 1.7**). The findings of these baseline studies have informed the ES, and indicate that the contamination risk to controlled waters is low. Confirmatory intrusive investigations would be undertaken prior to construction. In the unlikely event that this identified a potential risk greater than that indicated by the desk study, then protection/remediation measures would

be determined based on the specific ground conditions and agreed with the Environment Agency prior to construction. This process would be secured by **Requirement 13** of the DCO, ensuring that controlled waters are protected from potentially contaminative ground conditions. The installation of runoff control measures and ensuring that stockpiles are located away from watercourses, as discussed above, would further minimise the risk of contaminants arising from the excavation of contaminated land from reaching watercourses.

Emergency Response Plan for Flood Events

4.5.30 Emergency Response Plan for Flood Events will be prepared for all working areas located in Flood Zones 2 and 3. This/these will also cover those working areas that are accessed via Flood Zones 2 and/or 3, to/from which access/egress could be compromised during a flood event.

4.5.31 Details of emergency responses for different parts of the proposed route will be developed by the Contractor prior to commencement of construction in that area. The plan will detail the procedure to be followed if flooding of the construction site is expected:

- **personnel to evacuate** the working areas at risk of flooding – this is the primary safety consideration, and is the highest priority in the unlikely event that there is insufficient time to undertake the following activities;
- **making the site safe** prior to evacuation – this would include appropriate storage of equipment and materials, securing items to prevent them being mobilised in, or causing pollution of flood water; and
- **removal of critical plant and equipment** from at risk areas – this may be removal from access roads or working areas, and could include raising critical items above the design flood level or removing them from the floodplain completely to one of the compounds.

4.5.32 To expedite response upon receiving an alert/warning, the following elements should be specified in the plan:

- areas at risk of flooding should be clearly marked on site access plans, including details of EA Flood Warning Areas;
- evacuation routes from flood risk areas should be clearly defined;
- the circumstances under which different responses would be implemented should be specified, with an escalation of response associated with increasing levels of danger. For example, a 'be prepared' alert may be raised upon receipt of an EA Flood Alert or a Met Office Severe Weather Warning for heavy rain, followed by an 'evacuate' order upon receipt of an EA Flood Warning, or at the discretion of the site HSSE Manager, based upon an appraisal of local conditions; and
- those items of plant and equipment that could be left in-situ without risk of damage or causing pollution should be identified, together with those items that should be evacuated, provided sufficient notice is provided and it is safe to do so.

4.5.33 In addition, as discussed previously, dewatering activities should be ceased when a Flood Alert or Flood Warning is received for an area downstream.

4.5.34 For any given area of construction, the flood response and evacuation plan(s) for that area should be finalised before commencement of works on site. All personnel should be briefed on the contents of the plan as part of the site induction process.

Inspections

4.5.35 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP.

Broad Oak reservoir proposal

4.5.36 In proximity to South East Water's proposed Broad Oak reservoir, whilst it is not proposing to change the project design as submitted in the DCO application, National Grid has considered a number of options for the locations of pylons PC8-PC10 (see the ES Addendum at **Doc 5.2.3**). All of the options are considered to be within the LoD for the Richborough Connection and therefore fall within the assumptions and conclusions of the ES (**Docs 5.1-5.4**). The exception to this is the water environment assessment for options 5, 6 and 7, which, due to the introduction of direct impacts on local field drainage ditches (which were avoided due to the ES assumptions applied in relation to watercourses) would require additional environmental measures in order to avoid significant effects.

4.5.37 These additional environmental measures are set out in Annex 3C.2 of this document in the event that the Secretary of State directs National Grid to use one of these options.

4.6 Historic Environment

Objective

4.6.1 An AWSI (**Volume 5, Document 5.4.3F(B)**) has been prepared which details the measures that will be implemented to mitigate the construction phase effects of the proposed development on heritage assets with archaeological interest. The environmental measures summarised in this section of the CEMP are described in further detail in the AWSI.

4.6.2 The AWSI at paragraph 2.5.4 sets out the detailed method statement to be produced and implemented.

Environmental Measures

4.6.3 Prior to any stage of construction works commencing an appropriately qualified Archaeological Clerk of Works (ACoW) who will be responsible for ensuring the AWSI is implemented will be appointed by the contractor. The ACoW shall monitor the Archaeological Consultant and will report directly to National Grid. In addition, a specialist archaeological organisation or organisations will be appointed to implement the measures in the AWSI overseen by the ACoW.

4.6.4 All archaeological mitigation works will be managed in accordance with standard and guidance documents issued by the Institute for Archaeologists and best practice guidance notes issued by Historic England. These are listed in the AWSI (**Volume 5, Document 5.4.3F(B)**).

General Measures

4.6.5 The following general historic environment management measures from the AWSI will be implemented during the construction of the proposed development:

- locations and descriptions of all known heritage assets within and adjacent to construction works will be made available, including restrictions to construction methods to protect heritage assets, where these have been identified in the ES and the AWSI;
- a programme will be prepared detailing the implementation of archaeological mitigation works prior to and during construction;
- the archaeological mitigation programme will be incorporated into the overall construction programme;
- during all stages of construction, an archaeological specialist will undertake the works specified as an appropriate mitigation measure (including purposive investigation and/or watching brief works);
- all archaeological mitigation recording, analysis, dissemination and archiving will be undertaken by a suitably qualified and demonstrably experienced organisation; and
- the local planning authorities' archaeological representatives and/or Historic England will be consulted through all stages of the implementation of the programme of archaeological works (**see Volume 5, Document 5.4.3F(B)**).

Archaeological Remains

4.6.6 Suitable measures and procedures will be developed in consultation with the local planning authorities' archaeological representatives and/or Historic England, and will include the following as appropriate:

- archaeological excavation of known heritage assets. This will enable a greater understanding of the character and extent of the archaeological remains, and understand the magnitude of effect, and ensure that the loss of a material part of the assets significance is justified;
- archaeological controlled strip will be used to ensure the appropriate identification and treatment of archaeological remains during construction;
- an archaeological watching brief to ensure that any as yet undiscovered archaeological remains are appropriately identified and adequately recorded; and
- an agreed programme of geo-archaeological investigation through augering.

4.6.7 Throughout the works identified above consultation will be maintained with the relevant statutory bodies to ensure that the strategy for each identified heritage asset is proportionate and appropriate. This will include the option of considering preservation in situ for assets with high heritage significance. Preservation in situ could be achieved by:

- avoiding the heritage asset through a minor variation (within the Limits of Deviation) in the proposed working area;
- using non-open cut techniques; and

- protecting subsoil within the working area, for example, through the use of floating trackway panels, topsoil retention, or any other suitable technique.

4.6.8 Recordings of archaeological remains will be collected where preservation in situ is not warranted or achievable. Recordings will be undertaken by excavating each area of archaeological remains. Excavation will be carried out in accordance with a risk assessment and method statement (RAMS) that takes account of the relevant research aims and is proportionate to the nature and level of the asset's significance and the extent of the loss of significance.

4.6.9 All archaeological work will be subject to an appropriate programme of post excavation assessment, analysis, review and publication.

4.6.10 On completion of construction works, the temporary working areas will be reinstated pursuant to **Requirement 12** of the DCO. Reinstatement measures will not include any intrusive activities in areas of known buried archaeology and where preservation in situ has been used. Any such areas will be identified on reinstatement plans. The reinstatement of archaeological earthworks such as ridge and furrow will follow the pre-construction contours unless otherwise agreed with the relevant local planning authority archaeological representative and/or Historic England.

Human Remains

4.6.11 Should human remains be located during construction, either during archaeological works or as part of construction activity the requirements in Article 46 of the DCO will be followed.

Treasure

4.6.12 Should artefacts be located during construction that are deemed by their material content or context to be treasure, as defined by the Treasure Act 1996 and the Treasure (Designation) Order 2002, then all necessary measures to comply with the requirements of that Act will be implemented.

Historic Hedgerows

4.6.13 Historically significant hedgerows have been identified within the historic environment baseline data. During construction, archaeological recordings will be undertaken by the ACoW for any gaps made in historically significant hedgerows. This will be undertaken through watching brief conditions, to record in section the hedgerow profile and any associated structure or dating evidence.

Protection of Military Remains

4.6.14 Where remains are observed during archaeological investigation or construction work which may constitute remains protected under the Protection of Military Remains Act 1986, intrusive work should cease and the site be secured while consultation with the Ministry of Defence is undertaken.

Built Heritage

4.6.15 The contractors will be provided with the locations and descriptions of all known heritage assets within and adjacent to construction works, including restrictions to construction methods, to protect built heritage assets where necessary.

4.6.16 Access across the Abbot's Wall shall be achieved by building up the temporary access road over the wall consistent with the details shown on **Volume 4, Document 4.15(A) Sheet 4 of 8**. The access track will be laid over the Abbot's Wall with no

stripping of topsoil. The Abbot's Wall shall not be breached, and the access track construction shall ensure that damage to the Abbot's Wall by direct disturbance, compaction or vibration shall not occur.

Inspections

4.6.17 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP and measures described in the AWSI (**Volume 5, Document 5.4.3F(B)**).

4.6.18 A specialist archaeological organisation will be appointed to implement the measures in the AWSI. The ACoW will monitor all archaeological mitigation works. If there are any significant archaeological findings, these will be reported by the archaeological contractor to the ACoW. The archaeological contractor will also maintain a log of the mitigation works undertaken and the results obtained and will update the historic environment data on a regular basis.

4.7 Traffic and Transport

Objective

4.7.1 To undertake the construction of the proposed development whilst minimising disruption to public travel and effects on the condition of the highways, a Construction Traffic Management Plan (CTMP) (**Volume 5, Document 5.4.3G(C)**) has been prepared, to mitigate the potential effects of construction traffic on local communities and the environment. The CTMP describes the mitigation measures that will be implemented during the construction of the proposed development.

Environmental Measures

4.7.2 The measures that will be implemented through the CTMP, include:

- a Transport Co-ordination Officer (TCO) will be appointed, prior to construction, to implement and monitor the traffic and transport requirements of this CTMP;
- only those construction traffic routes and access roads which have been agreed with the relevant authorities will be used;
- a 'Banksman' or other qualified personnel will be in place at all bellmouth locations to guide construction traffic; and record arrivals and departure of vehicles against the deliveries schedule;
- condition surveys will be conducted on the Local Road Network (LRN) (including, private roads access roads and connections to the LRN), PRoW and cycle routes;
- temporary traffic management (TTM) procedures will be used where required to enhance safety conditions on the LRN and mitigate potential impacts of the construction of the bellmouths and access roads;
- temporary closures of the River Great Stour to navigation will be required where works are located over/near to the waterway. Notification will be provided to the Environment Agency, Marine Management Organisation, boat clubs, interest groups and Sandwich harbour master to enable closure and erect appropriate warning/information signage for users of the river. Warning signs

and emergency mooring buoys will be provided upstream and downstream of these works;

- discussions with Network Rail to coordinate any required track possessions and the timetable to avoid peak service times when travelling over railway level crossings; and
- temporary relocation of bus stops located near to access roads and bellmouths.

Road Sweeping

4.7.3 Road sweeping will be undertaken where required and in accordance with the CTMP (**Volume 5, Document 5.4.3G(C)**), to remove deposits of silt from roads and reduce the risk of silt being washed into surface water gullies and watercourses.

Inspections

4.7.4 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP and measures described in the CTMP.

4.7.5 The Transport Co-ordination Officer (TCO) will ensure that the measures in the CTMP are implemented. Information packs will be provided to all contractors which will contain the details of the commitments in the CTMP (**Volume 5, Document 5.4.3G(C)**).

4.8 Air Quality

Objective

4.8.1 To undertake the construction of the proposed development whilst minimising emissions of dust and other pollutants to avoid effects on air quality.

Environmental Measures

Dust and Smoke

4.8.2 The following measures will be implemented where practicable to reduce the effect of dust and smoke from construction activities:

- hold regular liaison meetings with other high risk construction sites within 500m of the site boundary if applicable to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes;
- plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- erect solid screens or barriers around dusty activities or the site boundary so that they are at least as high as any stockpiles on site;
- fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- avoid site runoff of water or mud;

- keep site fencing and barriers clean using wet methods;
- remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site;
- cover, seed or fence stockpiles to prevent wind whipping;
- ensure all vehicles switch off engines when stationary - no idling vehicles;
- avoid the use of diesel or petrol powered generators and use mains electricity, solar or battery powered equipment where practicable;
- impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas (if long haul routes are required, these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the Local Authorities, where appropriate);
- only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- use enclosed chutes and conveyors and covered skips, should they be required;
- minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;
- ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;
- no bonfires and burning of waste materials;
- ensure effective water suppression is used during demolition operations where applicable. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground;
- do not undertake explosive blasting, use appropriate manual or mechanical alternatives;
- bag and remove any biological debris or damp down such material before demolition;
- re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Only remove the cover in small areas during work and not all at once;
- avoid scabbling (roughening of concrete surfaces) if possible;

- ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust;
- use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site;
- avoid dry sweeping of large areas;
- ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- inspect on-site access routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- install hard surfaced access routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- implement a wheel washing system;
- ensure there is an adequate area of hard surfaced road between the wheel washing area and the site exit, wherever site size and layout permits;
- access gates to be located at least 10m from receptors where possible;
- construction vehicles should avoid travelling through Air Quality Management Areas (AQMAs) where possible, namely, the Canterbury City Council AQMA;
- waste will be disposed of in accordance with the OWMP (**Volume 5, Document 5.4.3D(A)**) and the OWMPs; and
- alternative methods for business travel will be considered by all employees to reduce vehicle use.

Odour

4.8.3 Covers will be put over items liable to emit odour to minimise fugitive emissions.

Inspections

4.8.4 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP. Daily inspections both on and off-site will be undertaken to monitor dust, comprising regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary. The frequency of inspections will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

4.8.5 Should the site inspections indicate air quality and dust issues, further monitoring will be considered.

4.8.6 Records will be kept of air quality incidents and complaints in accordance with **Section 2.10** and **2.13** of this CEMP. These would be made available on request in accordance with **paragraph 2.12.6**.

4.9 Noise and Vibration

Objective

4.9.1 To undertake the construction of the proposed development whilst minimising noise and vibration on sensitive receptors.

Environmental Measures

4.9.2 Works will be undertaken in accordance with the Noise and Statutory Nuisance Act 1993 and in accordance with British Standard for Noise and Vibration (**REF 1.9**). The Noise and Vibration Management Plan (NVMP) (**Volume 8, Document 8.8(B)**) will be implemented to reduce effects from noise and vibration from the construction activities of the proposed development. Measures described in the NVMP include:

- construction work will be undertaken in accordance with **Requirement 7** of the DCO;
- If necessary, consent will be sought by the contractor under Section 61 of the Control of Pollution Act 1974;
- works will be restricted to weekday daytime only where significance thresholds would otherwise be exceeded at sensitive receptors. These activities and receptors are set out in **Table 1.3** of the **Noise and Vibration Management Plan, Volume 8, Document 8.8(B)**;
- loading and unloading activities will be located as far as reasonably possible from residential properties;
- mains electricity will be used rather than diesel generators where connection to mains electricity is possible;
- exhaust silencing and plant muffling equipment will be fitted and maintained in good working order;
- low-noise generators and quieter plant and equipment will be used and will conform to European standards (**REF 1.10**);
- the bunding (soil stockpiles) and fencing proposed at the construction compounds be maintained to help to attenuate noise;
- construction traffic movements will be undertaken in accordance with the CTMP (**Volume 5, Document 5.4 3G(B)**);
- reverse alarms will incorporate at least one of the following features: directional sounders, broadband signals, self-adjusting sounders, and/or flashing warning lights;
- internal access roads will be well maintained;
- vehicles will not wait or queue on the public highway with engines idling;

- engines will be turned off when vehicles are not in use to avoid ‘idling’;
- plant and equipment will be shut down when not in use;
- plant and equipment will be started-up sequentially rather than simultaneously; and
- drop heights of materials will be minimised.

Operational Noise

4.9.3 Damage to or contamination of overhead line conductors during handling and stringing can lead to a potential increase in noise once the overhead line is energised. To reduce the likelihood of damage or contamination of the conductors, a rigorous quality assurance process will be in place during manufacturing and transportation of the conductors. Additionally care will be taken during installation to ensure that conductors are kept clean and free of surface contaminants during stringing.

Inspections

4.9.4 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP.

4.9.5 Records will be kept of noise and vibration incidents and complaints in accordance with **Section 2.10** of this CEMP.

4.10 Socio-Economic and Land Use

Objective

4.10.1 To undertake the construction of the proposed development whilst avoiding, minimising or compensating for the adverse effects and to enhance anticipated positive effects of the proposed development.

Mitigation and Enhancement Measures

4.10.2 Opportunities will be sought to maximise the procurement of materials and employees from within the South East.

4.10.3 A SAMP (as described at **Section 4.4** of this CEMP) will be prepared, which provide relevant guidance in relation to the reinstatement of agricultural land to maintain existing agricultural land quality.

4.10.4 The PRoWMP (**Volume 5, Document 5.4.3H(C)**) will be implemented, as described at **Section 4.11** of this CEMP, which seeks to minimise the extent to which usage of PRoW is disrupted.

4.10.5 Consultation will be undertaken with the relevant authorities prior to each stage of construction commencing to identify and understand any constraints in the area that will need to be accounted for.

Construction Constraints at pylons PC26 - PC27

4.10.6 During the period May to September the following construction activities may not take place at pylons PC26 and PC27:

- excavation for pylon foundations;
- construction of pylon foundations, including piling; and
- pylon assembly and erection.

4.10.7 For the avoidance of doubt, the following activities are permitted at all times throughout the year:

- environmental mitigation;
- vegetation clearance / planting;
- bellmouth installation / removal
- access route installation / removal;
- pylon painting;
- installation of insulators and fittings;
- scaffold installation / removal;
- wiring of conductors;
- all other construction works associated with PC25 and PC28 which are accessed from Nethergong Hill / Sandpit Hill; and
- Future maintenance

Inspections

4.10.8 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12** and **2.13** of this CEMP.

4.11 Public Rights of Way

Objective

4.11.1 To undertake the construction of the proposed development whilst avoiding, reducing or compensating for effects on the PRoW network. A PRoWMP is provided at **Volume 5, Document 5.4.3H(C)**. Measures described in the PRoWMP are summarised in this section of the CEMP.

Environmental Measures

PRoW General Management

4.11.2 All points where PRoWs cross the proposed development will have appropriate signage, which will advise of dates and hours of working. Management may involve the use of contractors staff at those crossing points where and when construction works affect a PRoW.

Temporary PRoW Closure and Temporary Diversion

4.11.3 Where a PRoW has been identified for a longer duration temporary closure, a temporary diversion will be established. Signage will be used confirming dates and hours of working.

Signage

4.11.4 Signs will be erected warning PRoW users of construction work. Information signs detailing works will be maintained.

4.11.5 The location of signs providing information of temporary diversions and closures will be discussed with the PRoW Officers. Affected Parish Councils and if required Land Agents and/or PILs will be notified at least seven days in advance of any closure and will be notified when the closure has ceased.

Safety Measures

4.11.6 Suitable fencing will be erected where appropriate to form a safe corridor for users of the PRoW.

Condition Surveys

4.11.7 Pre-commencement condition surveys will be undertaken of the PRoW prior to the commencement of construction. The surveys will include photographic records and written descriptions.

Reinstatement of PRoW

4.11.8 The directly affected PRoW will be reinstated as a minimum to the same condition as was recorded prior to the commencement of construction.

Inspections

4.11.9 Inspections and any action required, relating to non-conformance with the CEMP, will be undertaken in accordance with **Sections 2.12 and 2.13** of this CEMP. Inspections will be undertaken on the PRoW directly affected by construction and where the environmental measures have been implemented, to ensure that all signage and fencing are still in place and that the condition of the PRoW is suitable for use within the working area.

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5. REFERENCES

REF 1.1 The Construction (Design and Management) Regulations, 2015

REF 1.2 The Management of Health and Safety at Work Act 1999, Health and Safety Executive

REF 1.3 The Waste (England and Wales) Regulations, 2011

REF 1.4 Water Resources Act, 1991

REF 1.5 Hazardous Waste (England and Wales) Regulations 2005, (as amended by the Hazardous Waste (England and Wales) Regulations 2009

REF 1.6 Waste Framework Directive, 2008

REF 1.7 Model Procedures for the Management of Land Contamination (CLR11), 2004

REF 1.8 Department for Environment Food and Rural Affairs (DEFRA), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, 2009

REF 1.9 British Standard 5228-1:2009+A1:2014, Code of Practice for Noise and Vibration Control on Construction and Open Sites Noise, 2009 (amended February 2014)

REF 1.10 European Commission, 2002/49/EC, The Environmental Noise Directive, 2002

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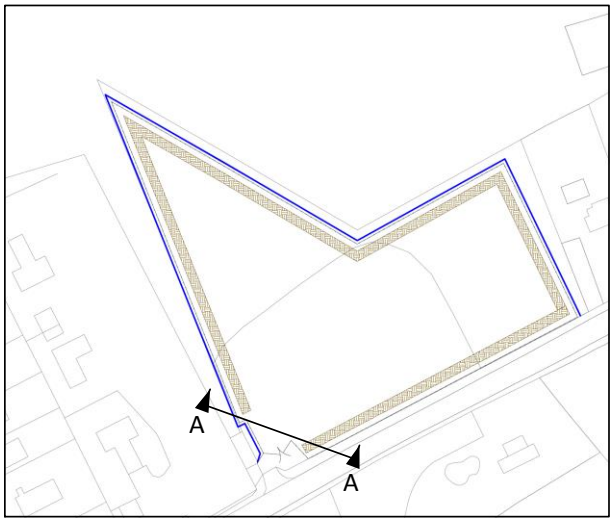
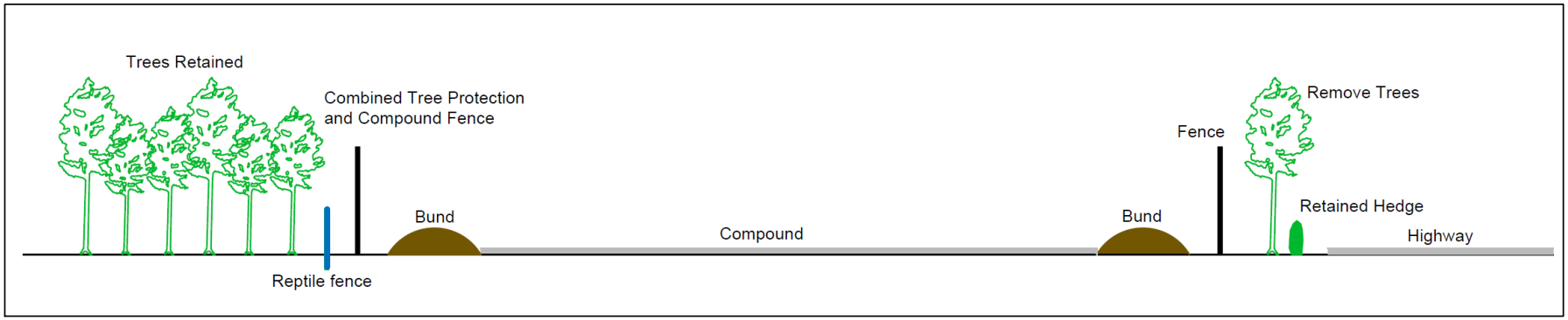
ANNEX 3C.1

WESTBERE COMPOUND CROSS-SECTION

Plan view and cross-section of Westbere compound



Plan view



Section A-A

ANNEX 3C.2

MOVEMENT OF PC10 ADDITIONAL EMBEDDED ENVIRONMENTAL MEASURES

Additional location-specific embedded environmental measures at pylon PC10 (water environment) should the pylon location affect existing drainage ditches

Potential receptor type*	Predicted changes and potential effects	Incorporated measure
Aquatic environment receptor e.g. WFD water body or water dependent designated site	Change in water quality via generation of sediment laden run-off as a result of ditch diversion construction activities, resulting in potential deterioration in status of receptor WFD water body or designated site.	**Ditch diversions** **EA PPGs** Construction of ditch diversions would adhere to best practice guidance for works in or near watercourses, as set out in **National Grid's Guidelines for Pollution Prevention (Doc 8.10)**. **Ditch diversion works in advance** Watercourse/ditch diversions should be provided in advance of other construction works at the working area in question, other than those works necessary to gain access to undertake the diversions. **Minimise disturbance of bed and banks** The general approach to ditch diversions would be to minimise in-channel disturbance of bed and banks wherever possible where the diversions tie into the existing watercourses. **Natural channels** Diversion solutions would utilise natural earth bank channels that align with the natural topography, unless such an approach is not possible due to ground elevations. As far as possible, bank and bed profiles would be recreated with appropriate measures to ensure stability that minimises the need for hard engineering options. **Status of ditch diversions once constructed** Once constructed, the diverted ditches should be subject to the same embedded measures as those for existing watercourses, such as an absolute minimum 3m stand-off (5m where ecological environmental measures are required).

Potential receptor type*	Predicted changes and potential effects	Incorporated measure
		Erosion/sediment control Measures would be taken to prevent erosion/sediment control within any newly created ditch diversions, such as encouraging bankside vegetation/seeding. **Establishment of riparian vegetation** Establishment of riparian vegetation would likely provide the most effective and cost efficient method by which the initial erosion risk associated with the new diversions would be managed. Therefore, if possible within the constraints of the project programme, new diversion ditches would be undertaken in spring/early summer, to provide vegetation with the greatest opportunity to be quickly established naturally. Where necessary, seeding of the banks and immediate riparian zone would be undertaken to promote the early establishment of vegetation within the minimum 3m watercourse stand-off distance. If the diversion ditches are excavated at a time of year when regeneration would not take place naturally (such as late summer, autumn or winter), appropriate measures would be undertaken to minimise the risk of erosion in the meantime. Sediment control would be put in place to minimise sediment flows until such time as vegetation is established, as discussed below. **In channel sediment control measures** Prior to vegetation in the newly diverted ditches (and immediate vicinity) becoming established, in-channel sediment control measures would be enacted as necessary to prevent any increase in sediment-laden flows in the downstream channels. Measures would include compaction of the newly formed channel sides and bed, and if necessary (considered unlikely in the vicinity of PC10 based upon baseline characteristics in this area) placement of coarse bed material and the use of geotextiles long the banks. **Dry conditions and overpumping**

Potential receptor type*	Predicted changes and potential effects	Incorporated measure
		Ditch diversion works would be undertaken in dry conditions (isolated from upstream and downstream channel flow), thus minimising the risk that additional measures (such as in-channel sediment control) would be necessary to prevent impacts on water quality. Where necessary, flow would be diverted from the working area by overpumping. Overpumping requirements may be minimal, on account of a lack of significant flow. Silty water from the work area would be pumped out into a sediment trap, before being discharged back into the watercourse downstream of the working area. **Consents** Land Drainage Consent will be obtained from KCC[3] for the ditch diversions. Such applications would need to demonstrate that measures are in place to protect water quality and to minimise effects on watercourse morphology and conveyance. This would be necessary to ensure compliance with WFD objectives and so as not to increase flood risk to adjacent areas. **Embedded Environmental Measures Schedule** If ditch diversions are necessary should the location of pylon PC10 be moved at the direction of the Secretary of State, all of the measures above would be detailed in the Embedded Environmental Measures Schedule. **CEMP** Further details regarding the process for obtaining discharge consents and the procedures for the management of consents are provided in the CEMP (**Doc 5.4.3C(D))**.

[3] Kent County Council advised during the 13 October 2015 consultation meeting that they do not have byelaws in place (as the EA and IDB do) that requires consent for works outside of the banktop of Ordinary Watercourses outside of IDB areas. Consequently, clear span designs (banktop to banktop) that do not require works within the watercourse itself will not require land drainage consent. Land drainage consent for non-IDB Ordinary Watercourses is only required where in-channel works (i.e. between banktops) is to occur.

Potential receptor type*	Predicted changes and potential effects	Incorporated measure
Aquatic environment receptor e.g. WFD water body or water dependent designated site	Changes in morphology and flow conveyance as a result of increased sediment inputs or direct watercourse disturbance, resulting in potential deterioration in status of receptor WFD water body or designated site.	**Flow capacities and slopes** Ensuring ditch diversions are designed to minimise morphological and conveyance effects**Error! Bookmark not defined.**. Dimensions and flow capacities would be commensurate with those of the existing channel. The longitudinal slope of the channel would be consistent with the immediate upstream and downstream section of channel bed. This would ensure appropriate conveyance of flood flows and sediment transfer.
Aquatic environment receptor e.g. WFD water body or water dependent designated site	Potential change to surface water quality affected by chemical leaching of any hard engineered concrete channel (subsurface corrosion of concrete).	**Hard engineered sections** Suitably corrosion and pH resistant concrete formulas would be utilised for any hard engineered sections of channel, if an engineered approach was found to be the only feasible option for the diversion.
Water resources receptor e.g. WFD groundwater body	Potential change to groundwater quality affected by chemical leaching of any hard engineered concrete channel (subsurface corrosion of concrete).	**Hard engineered sections** As per measures for surface water quality above.
Flood risk receptor	Disruption of horizontal flows, e.g. disruption to field drains as a result of ditch diversion works.	**Land drains** Where there is a need to maintain land drainage, new land drains will be installed or existing ones diverted to connect with the diverted ditches.
Flood risk receptor	Changes to flow conveyance as a result of watercourse diversion, leading to increased	**Flow conveyance of ditch diversions** All ditch diversions would be sized to maintain existing flow conveyance**Error! Bookmark not defined.**. The diversions would be designed to have similar flow capacity (a function of channel slope, cross

Potential receptor type*	Predicted changes and potential effects	Incorporated measure
	flood risk to people, property and infrastructure.	sectional area and in-channel vegetation/materials) and characteristics to the existing channels to be replaced. **Ditch diversion works in advance** As per the measure to reduce changes in water quality via generation of sediment laden run-off, ditch diversions would be created in advance of other construction works at the working area in question (other than works to enable access to the diversion locations), to ensure no temporary loss in flow conveyance. **Flood events** Diversion activities would take place during periods of normal to low flow conditions in order to avoid any conveyance-related flood risk effects and would cease in the event of a flood alert or warning being issued.
Flood risk receptor	Changes to run-off pathways resulting from localised changes in flow directions and the potential imposition of barriers to run-off.	**Flow pathways** Where possible, restored ground elevations post-construction should be sympathetic to the location of the new ditches, such that no new topographic low points are created in which surface water would pond. Similarly, barriers to surface water flow pathways should be avoided, except where absolutely necessary to facilitate the ditch diversion itself.