



# Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Outline Code of Construction Practice (Revision D)  
(Clean)

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## Glossary of Acronyms

ALO	Agricultural Liaison Officer
BPM	Best Practicable Means
CDM	Construction (Design and Management) Regulations 2015
CIRIA	Construction Industry Research and Information Association
CoCP	Code of Construction Practice
COSHH	Control of Substances Hazardous to Health
DCO	Development Consent Order
DoWCoP	Definition of Waste Code of Practice
DEL	Dudgeon Extension Limited
DPF	Diesel Particulate Filters
ECW	Environmental Clerk of Works
ECoW	Ecological Clerk of Works
EMS	Environmental Management System
ES	Environmental Statement
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HVAC	High Voltage Alternating Current
LLFA	Lead Local Flood Authority
MLWS	Mean Low Water Springs
MMP	Materials Management Plan
NRMM	Non-Road Mobile Machinery
Outline CoCP	Outline Code of Construction Practice
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidance
PRoW	Public Rights of Way
SEL	Scira Extension Limited
SMP	Soils Management Plan
SWDP	Surface Water and Drainage Plan

## Glossary of Terms

Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Jointing bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.

Onshore Substation	Compound containing electrical equipment to enable connection to the National Grid.
PEIR boundary	The area subject to survey and preliminary impact assessment to inform the PEIR.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP onshore site	The Sheringham Shoal Wind Farm Extension onshore area consisting of the SEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
Study area	Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic.
The Applicant	Equinor New Energy Limited

## OUTLINE CODE OF CONSTRUCTION PRACTICE

### 1 Introduction

#### 1.1 Background

1. Equinor New Energy Limited (the Applicant) is seeking a Development Consent Order (DCO) for the Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP) (hereafter collectively referred to as ‘the project’ or ‘SEP and DEP’).
2. As the owners of SEP and DEP, Scira Extension Limited (SEL) and Dudgeon Extension Limited (DEL) are the named undertakers that have the benefit of the DCO. References in this document to obligations on, or commitments by, ‘the Applicant’ are given on behalf of SEL and DEL as the undertakers of SEP and DEP.
3. The SEP and DEP wind farm sites are located in the southern North Sea, 15.8 kilometres (km) and 26.5km from the coast respectively at their closest point. SEP and DEP will be connected to the shore by offshore export cables to a landfall point at Weybourne, on the North Norfolk coast. From there onshore export cables will transport power over approximately 60km to a new high voltage alternating current (HVAC) onshore substation near the existing Norwich Main substation. The onshore substation will be constructed to accommodate the connection of both SEP and DEP to the transmission grid. A full project description is given in the Environmental Statement (ES), **Chapter 4 Project Description (Revision B)** [document reference 6.1.4].

#### 1.2 Purpose of this Document

4. This Outline Code of Construction Practice (CoCP) forms part of a set of documents that support the DCO application submitted by the Applicant for consent to construct and operate the Project.
5. This Outline CoCP is provided to secure mitigation identified through the Environmental Impact Assessment (EIA) process for the onshore components of SEP and DEP, onshore development activities, and likely requirements associated with any development consent. The scope of the Outline CoCP is limited to the onshore works only.
6. Revision B of the Outline Code of Construction Practice includes the following amendments:
  - Updates to **Table 1-1** (Environmental Management Plans that will form part of the CoCP to include all management plans) referenced within this document;
  - Reference to the emergency services within **Section 2.4**;
  - Reference to consultation with the Mineral Planning Authority (**Section 4.1**);
  - Additional text added with respect to Source Protection Zone 2 (**Section 6.1.6**);
  - Additional information on Invasive Non-Native Species (**Section 8**); and
  - Additional detail with respect to Noise Control Measures (**Section 9.1**).



7. Revision C of the Outline Code of Construction Practice includes the following amendments:
- Reference to communications with landowners with regards to land requirement refinements following detailed design and the chosen development scenario (**Section 2.4**);
  - Reference to cable design and consideration given to soil heating (**Section 2.5.3**);
  - Additional detail in relation to the location of cable link boxes (**Section 2.5.5**);
  - A cross reference to the Environmental Statement Volume 3 Appendix 4.1 Crossing Schedule (**Section 2.5.10**);
  - Additional detail in relation to the requirement of a suitably qualified Arboriculturist (**Section 2.5.11**);
  - Additional detail in relation to woodland protection at Colton Wood (**Section 3.3.1**);
  - Additional detail in relation to the built environment (**Section 4**);
  - Additional detail in relation to Waste Management (**Section 5**);
  - Additional detail in relation to the role of the Agricultural Liaison Officer (ALO) (**Section 6.1**);
  - Additional detail in relation to the provision of appropriate measures to maintain flow conveyance during high flow events (**Section 7.1.3**);
  - Reference to Natural England within (**Section 7.1.4**);
  - Additional detail in relation to working in Flood Zones 2 and 3 and areas at risk of surface water flooding at temporary construction compound locations (including at the landfall and onshore substation) (**Section 2.5.7** and **Section 7.1.8**);
  - Addition of a figure showing the construction noise study area in **Appendix A**;
  - Additional detail in relation to the obtaining of prior consent under Section 61 of the Control of Pollution Act 1974 (**Section 10.1**).
8. Revision D of the Outline Code of Construction Practice includes the following amendments:
- Additional reference to the Contaminated Land and Groundwater Scheme secured by Requirement 32 of the draft DCO (**Section 4.1**);
  - Additional detail relating to the use of materials to manage the thermal resistivity of soils during backfilling operations (**Section 6.2**);
  - Change of reference from Broadland District Council to local planning authority in **Section 10** Noise and Vibration Control Measures.

9. A final CoCP will be produced prior to construction of the project and will be in accordance with the content of this Outline CoCP and the final design of the project. The CoCP is secured by Requirement 19 of the **draft DCO (Revision G)** [document reference 3.1], which states:
- “(1) No phase of the onshore works may commence until a code of construction practice (which accords with the outline code of construction practice) for that phase has been submitted to and approved by the relevant planning authority following consultation with Norfolk County Council, the Environment Agency, relevant statutory nature conservation bodies and, if applicable, the MMO.
- (2) Any code of construction practice submitted under sub-paragraph (1) may cover one or more phase of the onshore works.
- (3) All construction works for each phase must be undertaken in accordance with the relevant approved code of construction practice”
10. The Outline CoCP provides a key mechanism, enforceable via Requirement 19, through which the relevant regulatory authorities can be assured that environmental impacts associated with the construction of the onshore infrastructure will be formally controlled and mitigated.
11. A **Schedule of Mitigation** [APP-282] is also provided with the DCO application, which provides a summary of the mitigation identified for SEP and DEP. The Schedule of Mitigation also specifies a number of embedded mitigation measures, which have been designed into the project to ensure that their delivery is secured.

### 1.3 Scope

12. The Outline CoCP sets out the management measures which the Applicant will require all personnel on site to adopt and implement for any onshore construction works for the project and related off-site activities. The appointed Principal Contractor and associated management team will be responsible for implementation of the CoCP provisions, and for ensuring that any subcontractors and visitors are in compliance with these requirements.
13. Works and locations within the scope of this document include site preparation works, infrastructure construction, and commissioning phases of the project for onshore works (from the landfall at Mean Low Water Springs (MLWS) to the grid connection at Norwich Main substation) and are defined to include:
- Landfall and associated transition joint bay/s;
  - Onshore export cables (and ducts) installed underground from the landfall to the onshore substation and associated joint bays and link boxes;
  - Onshore substation and onward 400 kilovolt (kV) connection to the existing Norwich Main substation;
  - Trenchless crossing zones (e.g. Horizontal Directional Drilling (HDD));
  - Construction and operational accesses; and
  - Temporary construction compounds.
14. The following principles set out the framework for how SEP and DEP may be developed:
- SEP and DEP may be constructed at the same time, or at different times;

- If built at the same time both SEP and DEP could be constructed in four years;
  - If built at different times, either Project could be built first;
  - If built at different times the first Project would require a four-year period of construction and the second Project a four-year period of construction;
  - If built at different times, the duration of the gap between the start of construction of the first Project, and the start of construction of the second Project may vary from two to four years;
  - Taking the above into account, the maximum construction period over which the construction of both Projects could take place is eight years.
15. The earliest that construction could commence under any scenario is anticipated to be 2025, with the onshore construction works likely to commence first.
16. The term ‘construction’ in the Outline CoCP includes all onshore site preparation, material delivery, excavated material disposal, waste removal and all related engineering and construction activities as assessed in the ES.
17. Many of the detailed management measures to be captured in the CoCP would be captured within respective environmental management plans. Details of the management measures to be implemented within those plans are included within the relevant section of this this Outline CoCP. A list of those subsidiary management plans is detailed in **Table 1-1** below.

**Table 1-1: Environmental Management Plans that will form part of the CoCP**

Name	Description
Health and Safety Plan	A valid, suitable and sufficient Health and Safety Plan as defined in the Construction (Design and Management) (CDM) Regulations 2015.
Construction Method Statements	Detailed Construction Method Statements for construction operations relevant to that phase of the works. Each Construction Method Statement will follow industry best practice guidance.
Stakeholder Communications Plan	Setting out how effective and open communication with local residents and businesses and the emergency services that may be affected by the construction works will take place.
Construction Fencing Plan	Detailing any temporary fencing, walls or other means of enclosure required during construction.
Artificial Light Emissions Management and Mitigation Plan	Details of the location, height, design and luminance of all floodlighting to be used during construction, together with measures to limit obtrusive glare to nearby residential properties
Environmental Emergency / Incident Response Plan	The plan will be prepared in accordance with best practice guidance and include a response flow chart and detail how to report and deal with an environmental incident, including the measures available to contain/clean up an incident.

Name	Description
Watercourse crossing scheme	A scheme and programme for each watercourse crossing, diversion and reinstatement, which will include site specific details regarding sediment management and pollution prevention measures.
Flood warning and evacuation plan	Specific flood warning and evacuation plans should be produced for the construction phase of the onshore cable corridor, specifically related to construction works at watercourse crossing locations where personnel or materials may be located within Flood Zones 2 and 3.
Dust Management Plan	Plan setting out measures to control dust emissions for each phase of the works.
Invasive Non-Native Species Management Plan	Plan setting out measures to prevent transfer of invasive plant or animal species between watercourses.
Construction Noise (and vibration) Management Plan	Plan detailing standard measures (best practicable means) and where applicable, mitigation measures to reduce construction noise.
Contaminated Land and Groundwater Scheme	Plan setting out the areas whereby the potential for a contaminant linkage exists which will require ground investigation to determine the level of risk and bespoke mitigation requirements.
Materials Management Plan	Plan setting out the principals for the management and reuse of site won soils during the construction phase. The plan will be compliant with the CL:AIRE Definition of Waste Code of Practice (DoWCoP).
Soil Management Plan	Plan detailing measures to maintain soil sustainability during construction.
Site Waste Management Plan	Plan providing information on each waste type that is expected to be produced in SEP and DEP with the appropriate European Waste Catalogue (EWC) code and description for each waste type. The Plan would provide an estimate of the quantity of each type of waste and the proposed waste management option for each waste produced (i.e. re-use, recycling, recovery, or disposal; on or off-site).
Mineral Resource Assessment	Consultation will be undertaken with the local Mineral Authority to determine the requirement of a Mineral Resource Assessment.
Bentonite Break out Management Plan	Plan to reduce the risk of breakout, including site-specific risk assessment and a hydro-fraction survey. This will consider the potential impacts of using trenchless crossing techniques and set out the procedures required to monitor construction activities and avoid breakouts.

Name	Description
Construction Surface Water Drainage Plan	Plan detailing provisions to minimise water within the cable trench and other working areas and ensure ongoing drainage of surrounding land.

18. The following plans, listed in **Table 1-2** below are to be read alongside the CoCP and are subject to Requirements within the **draft DCO (Revision G)** [document reference 3.1]:

*Table 1-2: Plans to be read alongside the CoCP*

Name	Description
Construction Traffic Management Plan	Plan detailing the control measures and monitoring procedures for managing the potential traffic and transport impacts of constructing SEP and DEP.
Outline Ecological Management Plan	Plan providing an outline of the actions that are proposed to avoid or mitigate ecological impacts during the pre-construction, construction and operation phases of SEP and DEP.
Outline Landscape Management Plan	A framework from which to agree the detailed plans and operations for the soft landscape proposals (planting and seeding) for the onshore cable corridor and onshore substation site to ensure that the design and mitigation intent is realised.
Outline Written Scheme of Investigation (Onshore)	Plan to set out the proposed approaches and commitments to archaeological survey and investigation to be undertaken post-consent.

## 2 General Principles

### 2.1 Environmental Management System

19. During the construction phase, the Applicant will operate an Environmental Management System (EMS) based on the requirements of ISO 14001:2015, that describes the processes and procedures by which the Applicant identifies and manages significant risks associated with its operations and activities. The EMS is a primary mechanism by which environmental policy commitments, such as compliance with relevant legislation and standards, pollution prevention and continual improvement in environmental performance are measured, monitored and delivered.
20. Through the EMS, the Principal Contractor (and any subcontractors proposed by the Principal Contractor) undertaking work on behalf of the Applicant is screened and selected using a variety of criteria that include environmental credentials. The EMS will provide for the preparation and implementation of a programme of environmental monitoring and auditing to ensure that the Applicant’s environmental standards are being adhered to.

21. Prior to the commencement of construction works, a CoCP, for each phase of the works will be issued for review and approval by the relevant planning authority following consultation with Norfolk County Council, the Environment Agency, relevant statutory nature conservation bodies and, if applicable, the MMO. The measures and standards identified in the CoCP will then be implemented by the appointed Principal Contractor.

## 2.2 Health and Safety Principles

22. The Applicant recognises that its decisions and activities have a direct impact on the health, safety and welfare of those working for the Applicant and on their behalf. The Applicant will set specific health and safety goals and monitor performance in relation to the construction of the proposed SEP and DEP. The approved CoCP will include a health and safety plan, within which the Applicant will:
- Demonstrate commitment to health and safety by their actions and behaviours;
  - Ensure that Health and Safety issues are fully considered as an integral part of project management throughout the proposed SEP and DEP project life; from design, through construction, operation and maintenance, and future decommissioning;
  - Require all designers to consider and include the control measures necessary to minimise the risks to the health and safety of all those engaged in construction, maintenance (and demolition) of the proposed SEP and DEP project or to others who may be affected;
  - Ensure that suitably competent employees and other designers, engineers, supervisors and construction personnel are engaged to undertake the responsibilities associated with the proposed SEP and DEP project;
  - Ensure that all products, materials and processes used in construction, operation and maintenance present no significant risk to the health and safety of persons carrying out those duties or to others who may be affected by that activity;
  - Ensure that suitable and sufficient resources, (including labour, materials, time and finances), are made available to effectively manage the health and safety requirements;
  - Require that parties involved in the proposed SEP and DEP project have, where appropriate, a readily available, valid, suitable and sufficient Pre- Construction Information document and Health and Safety Plan as defined in the Construction (Design and Management) (CDM) Regulations 2015;
  - Ensure that upon completion of construction a suitable and sufficient Health and Safety File is completed and transferred, where appropriate, to the Applicant; and

- Site access for members of the public shall be restricted during the construction phase of the project, to ensure public safety. Site access for all parties involved in construction will also be managed through a number of actions, including signing in procedures, exclusion zones and induction certificates. The Health and Safety Plan will detail the safety measures to be imposed on site.

### 2.3 Construction Principles

23. The appointed Principal Contractor and associated management team will be responsible for implementation of the CoCP provisions, and for ensuring that any subcontractors and visitors are in compliance with these requirements. The practical implementation arrangements and responsibilities conferred to any subcontractors will be detailed in further management protocols to be developed.
24. The provisions of the Outline CoCP/CoCP will be incorporated into the contracts for the construction of the project and will be required to be adhered to as a requirement of the DCO. The Applicant and its appointed Principal Contractor will be required to comply fully with the terms of the CoCP.
25. Aims of the Outline CoCP/CoCP include mitigation of nuisance to the public and to safeguard the environment during construction. Construction activities will be monitored and policed by an Environmental Clerk of Works (ECoW) and Agricultural Liaison Officer (ALO) supported by other specialists as necessary (such as ecological, archaeological and auditing specialists. In addition, pre- and post-construction drainage plans will be developed by a qualified Drainage Specialist to record details of existing drainage arrangements and private water supplies. The purpose of the Construction Surface Water Drainage Plan is to ensure the integrity of the existing field is kept as dry as possible during construction and to prevent severed field drains draining into the cable trench. The purpose of the post-construction drainage plan is to restore the soil structure and drainage status of the easement to at least the same condition as recorded prior to commencement of the construction works.
26. In addition to the arrangements under this Outline CoCP, the appointed Principal Contractor will be encouraged to register with the Considerate Constructors Scheme (CCS) which is a voluntary code of practice that seeks to:
  - Enhance the appearance of the site;
  - Secure everyone's safety;
  - Respect the community;
  - Care for the workforce; and
  - Protect the environment.
27. The scheme requires contractors to adhere to the Scheme's Code of Considerate Practice.



### 2.3.1 Construction Method Statements

28. Detailed Construction Method Statements will be developed by the Principal Contractor for relevant construction operations. Relevant Construction Method Statements will be included as part of the CoCP for each phase of the works.
29. Each Construction Method Statement will follow construction industry good practice guidance and adhere to the following:
- Pollution Prevention Guidelines (PPG)01<sup>1</sup> – Understanding your Environmental Responsibilities – Good Environmental Practises;
  - PPG05 – Works or maintenance on or near water;
  - PPG06 – Working at construction and demolition sites;
  - PPG08 – Safe storage and disposal of used oils;
  - PPG11 – Preventing pollution at industrial sites;
  - PPG20 – Dewatering of underground ducts and chambers;
  - PPG 21 – Pollution incident response planning;
  - The Sustainable Drainage System (SuDS) Manual, C753F, CIRIA (2015) Site Handbook for the Construction of SuDS, C698, CIRIA (2007);
  - CIRIA Handbook C741 Environmental Good Practice on Site;
  - CIRIA Report C532 Control of Water Pollution from Construction Sites;
  - CIRIA Report C648 Control of Pollution from Linear Construction Project Technical Guidance;
  - Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009);
  - Environment Agency's Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention (2001);
  - Bat Conservation Trust Bats and Lighting in the UK guidance (2018); and
  - British Standard [BS] 5228 BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites.

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<sup>1</sup> It should be noted that the Pollution Prevention Guidelines are no longer the current documents used by the Environment Agency, although the mitigation presented in the guidelines is still appropriate for managing pollution prevention on construction sites.



## 2.4 Local Community Liaison

30. A Stakeholder Communications Plan will be developed as part of the CoCP. The Applicant will ensure effective and open communication with local residents, businesses, the local community and the emergency services that may be affected by the construction works. Communications will be co-ordinated on site by a designated member of the construction management team. Community engagement will be maintained, keeping local residents informed of the type and timing of works involved, paying particular attention to activities which may occur in close proximity to receptors. Communication with landowners will be carried out keeping them up to date of land requirement refinements following detailed design. In addition, landowners will be notified of the chosen development scenario at the same time or shortly after the relevant planning authorities are notified under Requirement 9 of the draft DCO. A combination of communication channels, for example information boards and parish council meetings, will be employed to keep local residents informed.
31. A designated Local Community Liaison Officer will respond to any public concerns, queries or complaints in a professional and diligent manner as set out by a project community and public relations procedure which will be submitted for comment to the relevant planning authority.
32. Parish Councils in the relevant area will be contacted in advance of the proposed works and ahead of key milestones. This information will include indicative details for timetable of works, a schedule of working hours, the extent of the works, and a contact name, address and telephone number in case of complaint or query. Enquiries will be dealt with in an expedient and courteous manner. Any complaints will be logged, investigated and, where appropriate, rectifying action will be taken.

## 2.5 Embedded Mitigation Measures

33. During the pre-application phase, the Applicant has made a decision on a number of techniques and inherent engineering designs/modifications as part of the project in order to avoid a number of impacts or reduce impacts as far as possible. Embedding mitigation into the project design is a type of primary mitigation and is an inherent aspect of the EIA process as detailed within **ES Chapter 5 EIA Methodology** [APP-091].
34. The following embedded mitigation measures are project commitments and are stated here to ensure that they are captured and that their delivery is secured.

### 2.5.1 Site Selection

35. SEP and DEP have undergone an extensive site selection process which has involved incorporating environmental considerations in collaboration with the engineering design requirements, avoiding where possible:
- key constraints e.g. height or weight restrictions on the highway network;
  - populated areas;
  - proximity to residential dwellings;

- minimising impacts to local residents in relation to avoiding disruption to emergency and routine health care, as well as general access to employment, amenities, services and goods and access to services and rail and road usage, including road and footpath closures; and
- historic and nature conservation designated sites.

36. Land take has been minimised where possible, reducing sterile land parcels, aligning with field boundaries and avoiding the best and most versatile land.

37. Trenchless installation methods for the export cables have been proposed to avoid direct impacts to any designated sites that currently fall within the Order limits.

### 2.5.2 Onshore Substation

38. Site selection has identified a single onshore substation site option in proximity to the existing Norwich Main substation approximately 500m from the nearest residential properties.

39. Site selection of the substation ensures appropriate separation distance from areas where people spend extended periods of time (i.e. residential dwellings, schools and places of work).

### 2.5.3 Cable Design

40. Embedded design for minimising electromagnetic fields (EMFs) comprises cable shielding designed to the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines (1998) 'Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz)' and guidelines (2010) 'Guidelines for limiting exposure to time-varying electric and magnetic fields (1Hz – 100 kHz)'.

41. Thermal analyses will be carried out during detailed design that will model the impact of the cables on soil heating. Final cable design and burial cross section design will ensure compliance with all applicable standards with respect to soil heating.

### 2.5.4 Cable Routing (Including Over Watercourses)

42. Trenchless crossing techniques such as HDD have been committed to where the cable corridor crosses all Main Rivers and Internal Drainage Board (IDB) maintained watercourses to avoid direct interaction with these watercourses. Trenchless crossings are also proposed for the 18 of 32 watercourses being crossed that are maintained by Norfolk County Council. The cable entry and exit pits will be at least 9m from the banks of the watercourse (in line with the permitting requirement for EA/IDB), and the cable will be at least 2m below the channel bed. Protective Provisions for drainage authorities are included within Schedule 14 Part 4 (Environment Agency) and Part 5 (Water Management Alliance) of the **draft DCO (Revision G)** [document reference 3.1].

43. The order limits have been developed to avoid interaction with Groundwater Source Protection Zone 1, and therefore minimise the potential for impact on abstractions for public water supply.

### 2.5.5 Link Boxes

44. One link box per circuit is required in proximity (within 10m) to the jointing bay for protection to the cable system from transient overvoltage. Link boxes would not be required at all jointing bay locations but as a worst-case it is assumed that they could be required up to a frequency of one every 1,000m. The number and placement of the link boxes would be determined as part of the detailed design. Where possible, the link boxes would be located close to field boundaries and in accessible locations.

### 2.5.6 Haul Road, Vehicle Routing and Access Points

45. The Applicant has committed to the use of a temporary haul road along lengths of the onshore cable corridor that will be used to deliver equipment to work fronts. This will reduce the number of access points and Heavy Goods Vehicle (HGV) trips on the local road network. Following an initial topsoil strip, the haul road would be installed in stages as each work front progresses. It would be formed of protective matting, temporary metalled road or permeable gravel aggregate dependent on the ground conditions, vehicle requirements and any necessary protection for underground services.
46. Construction access points are located to minimise impacts on sensitive receptors, road safety and local routes to meet stakeholder and landowner requests.
47. Links 91 (Blind Lane), 48 (Horsford), Cantley Road as well as Attlebridge Village, Barford Village, Cawston Village, Oulton Village and Weston Longville Village are prohibited for use by SEP and DEP HGV traffic at the request of highway stakeholders and the local community.
48. During an Expert Topic Group (ETG) meeting with National Highways (3 July 2021), National Highways requested that if improvements to the A47 are not completed prior to the commencement of SEP and DEP, road safety improvements to the junction of the A47, Blind Lane and Taverham Road proposed by Hornsea Project Three (HP3) are retained/ re-introduced for the construction of SEP and DEP.
49. These amendments include the closure of Blind Lane and creation of a left in left out only junction at Taverham Road and are detailed further within the **Outline Construction Traffic Management Plan (CTMP) (Revision C)** [document reference 9.16].

### 2.5.7 Temporary Construction Compounds

50. Temporary construction compounds have been located close to main A roads wherever possible, minimising impacts upon local communities and utilising the most suitable roads. They are also located away from population centres where practical to reduce impact on local communities and population centres.

51. A temporary construction compound will be located at the landfall site and will be situated in proximity to Weybourne coastline. This compound is primarily in Flood Zone 1 (i.e. Low risk of flooding); however there is a risk of coastal / tidal flooding to a small area to the eastern edge of the compound, which is located in either Flood Zone 2 (Medium risk) or Flood Zone 3 (High risk). Should a tidal event be forecast, mitigation measures will need to be put in place to ensure that materials remain confined to the compound and that portable offices, welfare facilities and storage are secured, to minimise the risk of damage from flood water.
52. A temporary construction compound will be situated within the onshore substation area and this would be located in Flood Zone 1. However, it is shown to be at risk from surface water flooding based on the Environment Agency Long Term Flood Risk mapping for surface water flooding. A comparison of the proposed location of this compound has been carried out with the results of the surface water modelling undertaken within the **Flood Risk Assessment (Part 1 of 8, Section 18.2.4.8.7)** [AS-023]. The compound appears to be located outside the 1 in 100 (1%) year surface water flood extent and therefore is considered to be at Low risk from surface water flooding. However, any requirements for extra mitigation measures will be reviewed during the design of the compound to ensure the safety of users and to minimise the risk of damage from flood water during construction.

### 2.5.8 Duct Installation Method

53. The onshore cable duct installation method is proposed to follow a sectionalised approach in order to minimise impacts. Construction teams would typically be working on sections of up to 1km at a time with topsoil strip taking place at the front of the 1km section, cable trenches opened, cable ducts installed and backfilling of trenches at the rear of the section as the work front proceeds forward. This would minimise the amount of land being worked on at any one time and would also minimise the duration of works on any given section of the route.
54. This strategy has informed suitable access points and optimum routes for construction traffic and also serves to minimise daily construction traffic demand.

### 2.5.9 Long HDD at Landfall Location

55. The Applicant has committed to installing the cables at the landfall using long HDD, thereby avoiding physical disturbance or prolonged access restrictions to Weybourne Beach. Long HDD (approximately 1.15km) will avoid trenching works within the intertidal as the offshore exit point would be no closer than 1km from the shore.

### 2.5.10 Trenchless Crossings

56. In line with **Environmental Statement Volume 3, Appendix 4.1 Crossing Schedule (Revision C)** [document reference 6.3.4.1], the Applicant has committed to trenchless crossing techniques at the following primary crossing locations:
- North Norfolk Railway;
  - Cambridge to Norwich Railway;
  - All A and B roads and 16 other local roads;

- The proposed Norwich Western Link Road;
- The proposed Solar Park development (should this be developed to its greatest spatial extent permitted);
- River Wensum (upstream of Norwich);
- River Bure;
- River Tud;
- River Yare;
- River Tiffey;
- Spring Beck;
- Swannington Beck;
- Intwood Stream;
- Various Woodlands (including Weybourne Woods in the Norfolk Coast AONB);
- Two crossings of Marriott's Way;
- Crossing with Hornsea Project Three (if required); and
- Crossing with Norfolk Vanguard and Norfolk Boreas (if required).

57. The primary crossing locations will be agreed in consultation with the relevant planning authority post consent.

#### 2.5.11 Woodland and Hedgerow Crossings

58. The route of the onshore cable corridor has been designed to avoid crossing woodlands and areas or groups of trees, where possible. The only exception will be a localised removal of vegetation at the HDD compound (of maximum 100m x 50m area) within Weybourne wood (a commercial woodland). The trenchless crossing compound has been located within an existing gap in the wood following previous felling operations.

59. The Order limits has been routed to avoid woodland habitat wherever possible, as demonstrated by the boundary alignment routing around woodlands such as Mossymere Wood (in the Civil Parishes of Itteringham and Corpusty and Saxthorpe), Colton Wood (in the Civil Parish of Marlingford and Colton) and Smeeth Wood (in the Civil Parish of Ketteringham). Colton Wood (20m away) and Smeeth Wood (100m away) are the only Ancient Woodlands in proximity to, but outside of, the Order limits.

60. Where avoiding woodland has not been possible, all significant woodlands (including Weybourne Wood within the Norfolk Coast AONB, and many smaller woodlands and areas of trees and scrub) would be avoided as far as possible through the use of trenchless crossing techniques when installing the cables. As described above, when crossing Weybourne Wood a small area of trees will be lost to accommodate a trenchless crossing compound.

61. A suitably qualified Arboriculturist will be appointed by the Principal Contractor. The Arboriculturist will oversee the installation of construction exclusion zones to encompass Root Protection Areas (RPAs) around existing woodland and trees. These buffer zones will be maintained throughout the works period.

62. Buffer zones surrounding retained areas of woodland and trees will have a radius of at least 12 times the stem diameter of the tree (or 15 times the stem diameter for veteran/ancient trees) as advised by the Arboriculturist and informed by Tree Protection Plans. RPAs around hedgerows will be assessed by the ECoW.
63. Where individual/groups of trees and hedgerows occur within the construction area, the working corridor width would be reduced to a typical working width of 20m. This is on the basis that a large part of the 45m (for a single project) or 60m (for both SEP and DEP) corridor is for soil storage/management, and trees and hedgerows would not be removed for this purpose and would be retained outside the 20m working corridor. The reduced 20m working width at trees/groups of trees and hedgerow crossings applies to all scenarios.
64. Where hedgerows require removal, these would be replanted on their original alignment. Where trees and groups of trees require removal, these would be replanted within the construction corridor but outside the final 20m wide operational easement (if both SEP and DEP are constructed) or 12m (if only SEP or DEP is constructed), where tree planting would be prohibited. Planting would be implemented during the first planting season following completion of construction of either SEP or DEP (subject to landowner agreements), whether constructed concurrently or sequentially.

#### 2.5.12 Designated Heritage Assets

65. The route refinement process has been undertaken to avoid direct physical impacts on all designated heritage assets and with consideration of known locations of non-designated heritage assets and areas of high archaeological potential. Further details of the heritage assets and further evaluation to be undertaken post-consent is set out in the [Outline Written Scheme of Investigation](#) [APP-308].

### 3 General Site Operations

#### 3.1 Working Hours and Timing of Works

66. Onshore working hours (and exceptions to these) are specified in Requirement 20, Schedule 2, Part 1 of the [draft DCO \(Revision G\)](#) [document reference 3.1].
67. Construction work for the onshore works must only take place between 0700 hours and 1900 hours Monday to Friday, and 0700 hours to 1300 hours on Saturdays, with no activity on Sundays or bank holidays, except as specified below.
68. Outside the hours specified above construction work may be undertaken for essential activities including but not limited to:
- continuous periods of operation that are required as assessed in the environmental statement, such as concrete pouring, drilling, dewatering, cable jointing and pulling cables (including fibre optic cables) through ducts;
  - delivery to the onshore works of abnormal loads that may otherwise cause congestion on the local road network;
  - works required that may necessitate the temporary closure of roads;
  - onshore works requiring trenchless installation techniques;



- onshore works at the landfall;
  - commissioning or outage works associated with the National Grid substation connection works;
  - electrical installation;
  - emergency works;
  - fitting out works within the onshore HVAC substation buildings comprised within Work Nos. 15A and 15B in the event of scenario 1 or scenario 2;
  - the integrated onshore substation building comprised within Work No. 15C in the event of scenario 1 or scenario 4; and
  - daily start up or shut down.
69. Save for emergency works, full details, including but not limited to type of activity, vehicle movements and type, timing and duration and any proposed mitigation, of all essential construction activities undertaken outside of the consented construction hours must be agreed with the relevant planning authority in writing in advance, and must be carried out within the agreed time.
70. Perimeter and site lighting would be required during working hours and a lower level of lighting would remain overnight for security purposes. This lighting would be kept to a minimum and adhere to the Bats and Lighting in the UK guidance (Bat Conservation Trust and Institute of Lighting Engineers, 2018). Further details on light emissions are set out within [Section 3.7](#).
71. The Applicant will use best endeavours to minimise the duration of, and sensitively time, construction activities. The relevant local planning authorities will be advised of the likely timetable of works. This timetable will also be shared with affected communities through the Local Community Liaison Officer.

### **3.2 Construction Site Layout and Housekeeping**

72. The CoCP will include a site layout showing the location of construction compounds, trenchless crossing (e.g. HDD) compounds (including the Landfall compound), onshore substation temporary works area, and main features of these sites. Ahead of construction, further site investigations will be required for the project. Prior to any intrusive investigation or construction work, all existing service plans would be consulted, and a comprehensive service line location survey carried out in order to ensure that existing services are not disrupted. This would include radio detection, ground penetration radar and vacuum excavation where necessary.
73. A good housekeeping policy will be applied across all construction areas throughout the construction period. This will include the following requirements:
- All working areas will be kept in a clean and tidy condition;
  - All site compound areas will be non-smoking / non-vaping. Specific areas within the worksites will be designated as smoking / vaping areas and will be equipped with containers for smoking waste. These will not be located at the boundary of working areas or adjacent to areas deemed sensitive to local residents, construction personnel or visitors;

- Open fires and burning of rubbish are prohibited at all times;
- Music shall not be played through speakers on any worksite;
- Site waste susceptible to spreading by wind or liable to cause litter will be stored in enclosed suitable containers and waste will be removed at frequent intervals and the site kept clean and tidy;
- Static plant will have suitable drip tray protection;
- Oils and chemicals will be clearly labelled, and the site should retain an up-to-date COSHH (Control of Substances Hazardous to Health) inventory;
- Hoardings and boundary fences will be frequently inspected, repaired and repainted as necessary; and
- Adequate welfare facilities will be provided for all site staff and visitors.

74. In addition, where working areas are within Flood Zone 2 or 3 additional measures will be taken to minimise pollution risk during periods of extreme weather (i.e. flooding) by including:

- Staff toolbox talks on pollution prevention and spill procedures;
- The Principal Contractor will be required to sign up to the Environment Agency 'Floodline' flood warning service;
- Stores of fuels, oils and chemicals will be surrounded by an impervious bund wall. The volume of the bunded compound will be at least equivalent to the capacity of the tank or tanks plus 10%. In addition, the bunded installation will be installed in the remotest location possible away from watercourses and from rising water, and the walls will be of sufficient height and structural soundness to withstand flood water ingress;
- Refuelling activities will be undertaken away from watercourses and from rising water;
- Debris will be safely contained, reducing the risk of large items entering the flood flow;
- Weekly monitoring of construction drainage sediment traps (visual inspection) with increased monitoring during inclement weather. If required these traps can be pumped via settling tanks to remove sediment, based on a pre-defined level / depth of sediment; and
- Machinery will be stored or returned to areas of hard standings, preferably remote from flood waters, or where this is not possible, sufficiently constrained so as not to wash away.

75. Where working areas are adjacent to watercourses or cross Flood Zone 2 or 3, the following measures will be implemented:

- Spoil will not be stored in the functional floodplain (Flood Zone 3b); and



- There shall be no storage of spoil directly on watercourse banks. Where possible, spoil will be set back from watercourses by 9m. This will prevent excessive loading on the watercourse banks and minimise the risk of stored material entering the watercourses.

### 3.3 Fencing

76. Details of temporary fencing, walls and other means of enclosure will be submitted to the relevant planning authorities for approval before the relevant stage of connection works can commence. A Construction Fencing Plan will be included within the CoCP based on the following:

- The landfall HDD temporary construction compound will be securely fenced;
- During construction of the onshore cable route, fencing or other means of enclosure will be installed to demarcate the working area. Stock fencing will be used where necessary; post and wire or similar will be used otherwise;
- The onshore substation will be enclosed by a temporary perimeter fence for the duration of the construction period with a permanent fence installed as part of the construction works; and
- Some fenced areas may include security gates to control access and egress.

#### 3.3.1 Woodland/Hedgerow Protection

77. Full details showing the position of fencing to protect all woodland areas, trees and hedgerows shown to be retained within the development will be submitted to the local authorities for approval prior to construction. The protective fencing will comply with BS 5837: 2012 and will be erected to demarcate the canopy spread of the trees and hedgerows. A 30m buffer from the ancient woodland, Colton Wood, will be maintained at all times in which no construction vehicles and machinery will enter and no materials or activities will take place.

78. A suitably qualified Arboriculturist will oversee the installation of protective fencing, which will be maintained throughout the works period. RPAs around hedgerows will be assessed by the ECoW.

79. Any requirement for protective fencing will be informed by the Hedgerow Mitigation Plan and arboricultural survey, which are described in the **Outline Landscape Management Plan (Revision C)** [document reference 9.18] and **Outline Ecological Management Plan (Revision C)** [document reference 9.19], secured under Requirements 11 and 13 of the **draft DCO (Revision G)** [document reference 3.1] respectively.

### 3.4 Site Induction

80. The construction of SEP and DEP will require all personnel working on site to have a site induction that includes an environmental protection and good practice component. Prior to commencing work on site, personnel must attend the site induction. Site inductions will include reference to compliance with relevant DCO Requirements, client environmental requirements (including the CoCP), environmental management structure and contacts, site specific environmental sensitivities, waste management arrangements, water and wastewater management, hazardous material management, fuel, oil and chemical management, spill contingency and environmental emergency response, reporting of incidents and complaints. More specific information will be provided to personnel according to their role.

### 3.5 Site Security

81. Adequate security will be provided by the Principal Contractor working on behalf of the Applicant to protect the public and personnel, prevent theft from or damage to the works, and prevent unauthorised entry to or exit from the site. Site gates will be closed and locked when there is no site activity and appropriate security measures shall be implemented. Further details on site security measures will be provided in the CoCP.

### 3.6 Welfare

82. The construction areas will be serviced by temporary construction offices and necessary welfare facilities, including mess rooms, locker rooms, showers and toilet facilities, plus facilities for mobile construction teams. These will be in compliance with relevant legislation and codes of practice and will be sited at the mobilisation areas.

### 3.7 Artificial Light Emissions

83. Mitigation measures to be taken to manage emissions from artificial light during construction will be in accordance with Bats and Lighting in the UK guidance (Bat Conservation Trust and Institute of Lighting Engineers, 2018), and will include the use of directional beams, non-reflective surfaces and barriers and screens, to avoid light nuisance whilst maintaining safety and security obligations.
84. Details of the location, height, design and luminance of all floodlighting to be used during the construction of the project, together with measures to limit obtrusive glare to nearby residential properties, will be set out in the Artificial Light Emissions Management and Mitigation Plan which will be submitted as part of the CoCP to the local authorities for approval prior to construction commencing. The approved scheme will be maintained throughout the construction of the relevant works.
85. Site lighting will be positioned and directed to minimise nuisance to footpath users and residents, to minimise distractions to passing drivers on adjoining public highways and to minimise skyglow, so far as reasonably practicable. Light spillage will also be mitigated to avoid or minimise impacts on ecological resources, including nocturnal species.

86. So far as is practicable, all power to temporary lighting will be taken from mains supplies rather than from portable generators. Where portable generators are used, industry best practice will be followed to minimise noise and pollution from such generators.

### 3.8 Pollution Prevention and Response

87. As part of the CoCP for each phase of the onshore construction works, an Environmental Emergency / Incident Response plan will be prepared in accordance with best practice guidance (refer to **Section 11.2**). The plan will include a response flow chart and detail how to report and deal with an environmental incident, including the measures available to contain/clean up an incident (e.g. spill kits, waste reception facilities). A contact list for notifying relevant stakeholders will be appended to the plan.
88. Personnel working on site, including any subcontractors and visitors, will be trained in the proposed environmental emergency response procedures so that they are prepared and able to respond to an incident promptly and effectively. Where appropriate, the Applicant encourages environmental emergency / incident response plans to be tested on-site in consultation with the relevant planning authority.
89. The main objectives with regard to managing potential hazardous materials are:
- Ensuring that appropriate measures are in place to prevent hazardous materials being released into the environment; and
  - Complying with relevant legislation and good practice associated with the storage and use of hazardous materials.
90. The CoCP will consider outline controls associated with the delivery, storage, and handling of hazardous materials and in particular oils and fuels taking into account the requirements of the Control of Pollution (Oil Storage) (England) Regulations 2001 and best practice guidelines (such as Pollution Prevention for Business).

### 3.9 Control Measures

91. The following best practice will be implemented:
- Oil and fuel will be stored in a bunded compound, the volume of which shall be at least equivalent to the capacity of the tank or tanks plus 10% and be located in designated areas taking into account security, the location of sensitive receptors and pathways such as drains and watercourses, and safe access and egress for plant and manual handling. Spill response materials will be provided nearby and be readily accessible, with personnel trained in spill response;
  - Oils and chemicals will be clearly labelled, and the site should retain an up-to-date COSHH (Control of Substances Hazardous to Health) inventory. Activities involving the handling of large quantities of hazardous materials, such as deliveries and refuelling, will be undertaken by designated and trained personnel;

- Oil, fuel and chemical storage areas will be inspected, at least weekly for signs of spillage, leaks and damage in line with the requirements of the EMS. Rainwater, materials and general debris will be stored in bunds and drip trays that compromise contingency storage shall be removed as part of the maintenance programme and in accordance with regulatory protocols;
- Use of portable bowsers with built-in bunds for any refuelling activities required in the active working area, with the return of bowsers to a construction compound overnight;
- Biodegradable oils to be used where possible;
- Inspection of all construction plant for fuel leaks before being delivered to the working area;
- Ensuring that spill kits are available on site at all times as well as sand bags and stop logs for deployment in case of emergency spillages;
- Facilities storing oils and fuels will be locked and made secure when not in use; and
- Small plant will be provided with drip trays or commercial 'plant nappies'.

#### 4 Contaminated Land and Groundwater

92. **Chapter 17 Onshore Ground Conditions and Contamination** of the ES [APP-103] identifies sensitive receptors to ground condition impacts (including groundwater) and management and mitigation measures proposed to reduce impacts. The control measures set out below are to be applied in order to ensure that any potential effects upon these receptors are adequately mitigated.
93. ES **Chapter 17 Onshore Ground Conditions and Contamination** [APP-103] additionally identifies that the onshore substation site is part located within a Mineral Safeguarding Site whereby Mineral Sterilisation may occur and as such there is a commitment to undertake consultation with the Mineral Planning Authority.

##### 4.1 Control Measures

94. For each phase of the onshore works a scheme to deal with the contamination of any land (including groundwater) within the Order limits will form part of the CoCP, which will be submitted to and approved by the relevant planning authority in consultation with the Environment Agency and, to the extent that the scheme relates to the intertidal area, the MMO. The Contaminated Land and Groundwater Scheme is secured via Requirement 32 of the **draft DCO (Revision G)** [document reference 3.1].
95. Each scheme must include an investigation and assessment report, prepared by a specialist consultant approved by the relevant planning authority, to identify the extent of any contamination and the remedial measures to be taken for that phase to render the land fit for its intended purpose, together with a management plan which sets out long-term measures with respect to any contaminants remaining on the site.

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96. Each scheme must include consideration of the potential creation of pathways which have the risk of creating a contaminant linkage to an off site location which was not previously at risk.
97. For each phase of the onshore works a Materials Management Plan (MMP) utilising the CL:AIRE Definition of Waste Code of Practice (DoWCoP) will be drafted for the re-use of site won soils and approval for its use will be sought from the Environment Agency and the relevant planning authority. The MMP will be approved by a Qualified Person and the declaration submitted to CL:AIRE.
98. Good environmental practice shall be followed during the construction phase of the proposed SEP and DEP project, in accordance with the Environment Agency's now-revoked PPG (PPG1, PPG5, PPG6, PPG8, PPG21 and PPG22)<sup>2</sup> and current best practice guidelines. In addition, the following management measures shall be employed during the construction:
- All works/operations to be carried out by appropriately trained personnel;
  - Appropriate PPE and working practices to be adopted by all personnel, including subcontractors and visitors, and health and safety measures to be undertaken to mitigate any short-term risk during construction. A CDM Regulations site specific risk assessment will be developed;
  - Where trenchless crossings are proposed within any Source Protection Zones, a detailed hydrogeological risk assessment meeting the requirements of Groundwater Protection Guides Covering: Requirements, Permissions, Risk Assessments and Controls (Environment Agency 2017), and in agreement with the Environment Agency would be undertaken;
  - Where possible, construction activities will be avoid being located in close proximity to existing infrastructure (commercial buildings, residential properties, schools etc). Where it is not possible to locate construction works away from existing infrastructure, measures outlined in **Section 3.8** of this document will be applicable;
  - Adherence to an environmental emergency / incident response plan (or similar) which will be drafted in advance of any construction works (refer to **Section 11.2**);

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<sup>2</sup> It should be noted that the Pollution Prevention Guidelines are no longer the current documents used by the Environment Agency, although the mitigation presented in the guidelines is still appropriate for managing pollution prevention on construction sites.

- Mitigation measures relating specifically to impacts to groundwater may include the development of a hydrogeological risk assessment where earthworks/excavations are within 50m (or 250m dependent upon volume abstracted) of private potable groundwater abstractions. The risk assessment will meet the requirements of Environment Agency's Approach to Groundwater Protection 2018 Framework. Furthermore, a piling risk assessment would be undertaken where piles are to be used (e.g., the onshore substation area) in areas of potential contamination, in line with the Environment Agency's Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention (Environment Agency, 2001);
- Validation of materials imported to site in line with pre-agreed assessment criteria to ensure they are suitable for proposed end use;
- A Soil Management Plan (SMP) as well as a Site Waste Management Plan (SWMP) for SEP and DEP will be developed; and
- Where possible, avoidance of construction in areas of historic development.

99. In the event that unexpected contamination is encountered, work in the area will cease on instruction by the Principal Contractor or delegate and be contained and made as safe as reasonably practical pending assessment by a suitably qualified environmental specialist. Consultation with the relevant planning authority and the Environment Agency will be undertaken and agreement reached on plans for further investigation and remediation measures where necessary. Remedial works would be undertaken should the area be considered to pose an unacceptable risk to human health. These remedial works would be undertaken prior to the operation of SEP and / or DEP.

100. The ECW will visit the site, if necessary, and determine what action is required to allow construction to recommence. It may be necessary to collect soil or water samples for laboratory analysis. Some types of contamination may need to be removed to ensure the safety of construction workers, in which case this will be advised by the environmental specialist.

101. Where necessary, laboratory analysis will be completed allowing conclusions to be reached as to whether material needs to be removed from the construction area and disposed of in a suitable specialist waste facility.

102. In relation to Mineral Sterilisation, following consultation with the Mineral Planning Authority it will be determined if a Mineral Resource Assessment would be undertaken, to provide an indication of the likely quality and extent of the mineral resource, the commercial viability of extraction and environmental impact.

## 5 Waste Management

103. **Environmental Statement Appendix 17.2 - Waste Assessment (Onshore Development)** [APP-207] assesses the impacts of the onshore project area in terms of waste generation during the construction, operation and decommissioning phases, taking into account the proposed options for recycling, recovery or disposal of waste, and the capability of the existing local or regional waste management facilities to manage the waste.



## 5.1 Control Measures

104. A Site Waste Management Plan (SWMP) will be prepared to record any decisions given to materials resource efficiency when designing and planning the works. Any assumptions on the nature of the project; its design; the construction method or materials employed, in order to minimise the quantity of waste produced on site; or maximise the amount of waste reused, recycled or recovered, will be captured within the SWMP.
105. The SWMP will provide information on each waste type that is expected to be produced by the project with the appropriate European Waste Catalogue (EWC) code and description for each waste type. It will provide an estimate of the quantity of each type of waste and the proposed waste management option for each waste produced (i.e. re-use, recycling, recovery or disposal; on or off-site).
106. There are certain principles of waste management that can be applied to the majority of wastes that would be created during the construction phase. These are:
- Adhere to waste legislation for storage and handling on-site; and also ensure that the relevant regulatory controls have been applied to the reuse, recycling or recovery of waste on-site.
  - No waste from the project shall be deposited outside the boundary of the site, unless it is at a facility that holds a valid environmental permit or suitable authorised exemption. Off-site waste management facilities are legally obliged to operate under an environmental permit (or an authorised exemption), which is in place to ensure that the site is operated in a manner to prevent emissions causing harm to human health or the environment.
  - Ensure that those who remove waste from site have the appropriate authorisation (i.e. are registered waste carriers); and those facilities that receive waste from the site hold a valid environmental permit or authorised exemption.
  - Allocate space on site for the storage of waste materials and ensure that storage areas and containers are clearly labelled (appropriate signage) so site workers know which wastes should be put there. Paved areas/impermeable surfaces may be required, as considered necessary, to prevent direct contact with the ground.
  - Hazardous waste must be stored separately from non-hazardous wastes to avoid contamination. The Hazardous Waste Regulations make it illegal to mix hazardous waste with non-hazardous waste.
  - Provide separate containers for dry recyclables, such as paper and cardboard, plastic, glass, wood and metal at welfare facilities within contractor compounds. This would encourage recycling and increase the potential value of the recyclable items by avoiding contamination.

- Monitor the actual quantities of wastes produced during construction and update the SWMP to allow comparison with waste arisings estimated prior to construction. Record the proposed waste management option (e.g. reuse on site, recycle off-site, or dispose off-site) for each waste produced.
- All wastes that are removed off site would be described on a waste transfer note or hazardous waste consignment note (as appropriate) that tracks the movement of the waste to the specified disposal or recovery facility.
- The appointed contractors should identify appropriate staff that are responsible for waste management; and ensure that all contractor staff are aware of the appropriate reuse, recovery or disposal routes for each waste.

## 6 Soil Management

107. **Chapter 19 Land Use, Agriculture and Recreation** of the ES [APP-105] identifies the soil resource potentially affected by SEP and DEP. There is the potential for soil compaction and erosion as well as changes to soil drainage during the construction process. Measures will be implemented on site to minimise any effects. An SMP will be produced as part of the CoCP, which will define the site specific mitigation measures and best practice techniques required to be followed by all to protect soil resources.
108. Best practice guidance and latest industry standards will be followed to manage the thermal resistivity of the soil.

### 6.1 Control Measures

109. An SMP, including a Construction Method Statement for soil handling, will be completed in advance of construction by a suitable and competent soil specialist, who will have experience of working in the Norfolk region if reasonably possible, and agreed with the relevant planning authority in advance of the works.
110. The pre-construction soil survey will be undertaken by the competent soil specialist to identify the physical characteristics of the soils. The survey will be undertaken at a standard density of 100m intervals. Soil pits will also be examined at appropriate locations to provide additional detail on soil structure and stoniness. The surveys will provide information on soil physical characteristics, including:
- Soil depths for topsoil and subsoil horizons;
  - Soil textures of all horizons;
  - Soil colour;
  - Soil analysis to BS3882 identifying current soil nutrients and contaminants
  - Levels of compaction; and
  - Stone contents, estimated from augering, confirmed by soil pit excavation and / or sample analysis



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111. A pre-construction land survey would be undertaken by a qualified ALO to record details of crop regimes, position and condition of field boundaries, existing drainage and access arrangements, and private water supplies. Land would be reinstated to its pre-construction condition as soon as reasonably possible following onshore cable installation.
112. The ALO will be appointed by the Applicant prior to the commencement of the construction works and will be the primary contact for ongoing engagement with owners, their agents and occupiers of land about practical agricultural matters before and during the construction process. There may be more than one ALO if required.
113. The ALO (or their company) will be contactable within the core working hours during the construction phase by landowners, occupiers and their agents and will provide 24- hour team or company contact details for use in the event of emergency.
114. Post-construction the ALO will remain appointed for up to one year in order to manage remediation issues.
115. The scope of works for the ALO will include but are not limited to:
- Coordinating drainage surveys and assisting in sharing pre and post construction drainage schemes with landowners, occupiers and their agents in advance for their consideration.
  - Coordinating the provision of a detailed pre-construction condition survey (where necessary pre-application, accounting for surveys undertaken pre-application) to include a soil survey as detailed in (ii) Pre-Construction Soil Statement and Pre-Entry Schedule of Condition above.
  - Advising the Projects on risks relating to the translocation of soil diseases, where necessary, and assisting in ensuring appropriate protective provisions are implemented.
  - Arranging quarterly meetings with the landowners, occupiers and their agents were considered necessary.
  - Undertaking pre-construction liaison with landowners, occupiers and their agents to minimise disruption, where possible, to existing farming regimes and timings of activities.
  - Undertaking site inspections during construction to monitor working practices including implementation of soil handling methodologies.
  - Discussing and agreeing reinstatement measures between the Applicant and land interests following completion of the construction works.
  - Ensuring landowners, occupiers and their agents are consulted in respect of requirements to field entrances and crossing points across the Works Corridor, in particular to severed land parcels.
  - Discussing the location, grouping, and marking of inspection chambers with landowners, occupiers and their agents.

116. The Principal Contractor would be required to comply with the SMP. The SMP will typically include the following measures:
- Soils handling, storage and reinstatement by competent construction personnel under Defra (2009) Construction code of practice for the Sustainable Use of Soils on Construction Sites;
  - Topsoil stripping within all construction areas and storage adjacent to where it is extracted, where practical;
  - Storage of the excavated subsoil separately from the topsoil, with sufficient separation to ensure segregation;
  - Handling of soils according to their characteristics e.g. within wooded areas it is unlikely that topsoil resources of any quality could be separated and preserved for reuse. If current wooded areas are to be used for storage it would not be necessary to undertake topsoil stripping. Topsoil from agricultural land may be treated as a single resource for stockpiling and reuse;
  - Loosening of subsoils is proposed when dry to improve permeability before the topsoil is replaced;
  - For most after-uses, subsoils may be treated as a single resource for stockpiling;
  - During wet periods, limiting mechanised soil handling in areas where soils are highly vulnerable to compaction;
  - Restricting movements of heavy plant and vehicles to specific routes and avoidance of trafficking of construction vehicles in areas of the site which are not subject to construction phase earthworks;
  - Minimising the excavation footprint where possible;
  - In circumstances where construction has resulted in soil compaction, further remediation may be provided, through an agreed remediation strategy; and
  - Weed control on topsoil and subsoil bunds.

## 6.2 Soil Reinstatement

117. It is anticipated that the duct installation will be undertaken on multiple work fronts. Each front will be approximately 1km in length broken down into the following activities:
- Excavation team cutting the profile of the trench for pre-duct installation.
  - Duct Installation Team: Installing ducts.
  - Reinstatement Team: Backfilling and compacting subsoil.

118. Depending on the thermal resistivity of the soil and the height of the water table a stabilised backfill such as cement bound sand (CBS) could be required to encase the cable ducts. This is commonly used to ensure that the thermal conductivity of the material around the cables is of a known consistent value for the length of the installation. CBS has a low thermal resistance to conduct the heat produced during electricity transmission.
119. The work front will continually move as the soils at the back of the work area are being backfilled. This would minimise the amount of land being worked on at any one time. However, the haul road, and associated drainage, would need to be retained throughout much of the cable corridor to maintain access to each work front.
120. Long-term storage of topsoil in bunds or heaps will be avoided where possible. However, some topsoil will have to be reserved for re-covering the final area when the haul road is removed at the end of the duct installation phase.
121. Specific replanting measures will be set out within the **Outline Landscape Management Plan (Revision C)** [document reference 9.18] and the **Outline Ecological Management Plan (Revision C)** [document reference 9.19], which are secured through Requirement 11 and 13 of the of the **draft DCO (Revision G)** [document reference 3.1].
122. In addition to the above mitigation measures, where possible during detailed project design, the project will seek to avoid mature trees within hedgerows through the micro-siting of individual cables, in order to retain as many additional mature trees as possible.

## 7 Surface Water, Groundwater and Drainage Management

123. **Chapter 18 Water Resources and Flood Risk** of the ES [APP-104] includes applicable mitigation measures for the construction and operational phases of the project. The measures have been provided to reduce the impact of the project on the surface and groundwater resources. In particular, the control measures are designed to manage flood risk and sediment management.
124. The Applicant has committed to develop a scheme and programme for each watercourse crossing, diversion and reinstatement, which will include site-specific details regarding sediment management and pollution prevention measures. This scheme will be submitted, as part of the CoCP, to the relevant planning authority.

### 7.1 Control Measures

#### 7.1.1 Sediment Management - all onshore areas

125. To minimise potential impacts from the construction phase on land, surface water or groundwater receptors, the Applicant has committed to the following measures:
- Temporary works areas (e.g. construction compounds and trenchless crossing areas) within the onshore development area may comprise hardstanding of permeable material, such as gravel aggregate or alternatively matting/timber or similar, underlain by geotextile or another suitable material to a minimum of 50% of the exposed area. This would minimise the area of open ground;

- Changes in surface water runoff resulting from the increase in impermeable area from the construction of the onshore cable corridor and particularly the onshore substation will be attenuated and discharged at a controlled rate, in consultation with the Lead Local Flood Authority (LLFA) and the Environment Agency. This controlled runoff rate will would be equivalent to the greenfield runoff rate;
- Limiting extent of open excavations along the onshore cable route to short sections at any one time (work fronts). Topsoil would be stripped from the entire width of the onshore cable route for the length of the work front and stored and capped to minimise wind and water erosion within the onshore cable route;
- Once all the trenching is completed and back-filled within each work front, the stored topsoil will be re-distributed over the area of the work front, with the exception of the running track and any associated drainage;
- Mobilisation areas within the onshore project area will comprise hardstanding of permeable gravel aggregate underlain by geotextile, or other suitable material;
- Minimising of subsoil exposure and retention of strips of undisturbed vegetation on the edge of the working area where possible;
- Where surface vegetation has been removed (with the exception of arable crops), this will be reseeded to prevent future runoff;
- On-site retention of sediment will be maximised by routing all drainage through the site drainage systems;
- Measures to intercept sediment runoff at source in the drainage system using suitable filters to remove sediment from water discharged to the surface drainage network;
- Cleaning of the wheels of vehicles leaving site to prevent the accumulation of soil and sediment on road surfaces. Traffic movements would be restricted to minimise surface disturbance;
- Routeing the cable to avoid water resources and flood risk receptors where possible; and
- In locations where large areas of exposed ground lie adjacent to watercourses, buffer strips of vegetation will be retained where possible to prevent runoff.

### 7.1.2 Pollution Prevention

126. Construction activities will adhere to industry good practice measures as detailed in the Environment Agency's Pollution Prevention Guidance (PPG) notes (including PPG1, PPG5, PPG8 and PPG21) (although these have been revoked, they provide a useful guide for best practice measures) and Construction Industry Research and Information Association (CIRIA)'s 'Control of water pollution from construction sites: Guidance for consultants and contractors (C532)' (2001).

127. Locating concrete and cement mixing and washing areas at least 10m away from the nearest water body. These areas will incorporate settlement and recirculation systems to allow water to be re-used. All washing out of equipment would take place in a contained area and the water collected for disposal off-site.
128. Storing all fuels, oils, lubricants and other chemicals in impermeable bunds with at least 110% of the stored capacity, with any damaged containers being removed from site. Refuelling would take place in a dedicated impermeable area, using a bunded bowser, located at least 10m away from the nearest water body.
129. Ensuring that spill kits are available on site at all times as well as sandbags and stop logs for deployment on the outlets from the site drainage system in case of emergency spillages.
130. Perched waters within Made Ground or groundwater from dewatering activities will be collected within a tank or lagoon prior to any treatment or discharge. This waste water shall either be:
  - Discharged to foul sewer under a trade effluent consent agreed with the local water company / supplier; and / or
  - Discharged to surface water under an environmental permit issued from the Environment Agency.

### 7.1.3 Watercourse Crossings

131. Ground investigations and a hydrogeological risk assessment meeting the requirements of Groundwater Protection Principles (Environment Agency, 2017) will be undertaken at each HDD crossing location.
132. Where trenched crossings would be carried out on Ordinary Watercourses (this would involve installing temporary dams (composed of sandbags, straw bales and ditching clay, or another suitable technique) upstream and downstream of the crossing point. The cable trench would then be excavated in the dry area of riverbed between the two dams with the river flow maintained using a temporary pump or flume using fish-friendly filters.
133. In order to ensure that there are no adverse impacts resulting from the installation of temporary dams, the following measures would be adopted, as appropriate (to be detailed in the Construction Method Statements outlined in **Table 1-1**) :
  - Restricting the amount of time that temporary dams are in place, e.g. typically no more than one week;
  - Fish rescue will be undertaken in the area between the temporary dams prior to dewatering;
  - Ensuring that any pumps, flumes (pipes) or diversion channels are appropriately sized to maintain flows downstream of the obstruction whilst minimising upstream impoundment;
  - Ensuring that any pumps, flumes or diversion channels have a capacity equivalent to the bank full volume of the channel, or is equivalent to the capacity of any upstream pipe / culvert, as appropriate, to maintain flow conveyance during high flow events;

- Adopting the flood warning and evacuation measures set out in **Section 7.1.8** to minimise flood risk impacts to both site users and off-site receptors associated with temporary works in watercourses;
- Where appropriate, selecting a technique that can allow fish passage to be maintained in watercourses which support migratory fish species such as brown trout;
- Where diversion channels are used, geotextiles or similar techniques will be used to line the channel and prevent sediment entering the watercourse;
- Scour protection would also be used to protect the river bed downstream of the dam from high energy flow at the outlets of flumes and pumps; and
- Potential impacts resulting from the use of temporary culverts at watercourse crossings will be mitigated via the following:
  - The cable ducts would typically be installed 2m below the bed of the water body (dependent on local geology and geomorphological risks). This would avoid exposure during periods of higher energy flow when the bed could be mobilised and the consequent change in geomorphological conditions. This depth takes into consideration anticipated climate-change related changes in fluvial flows and erosion that will occur over time. In addition, vegetation would not be removed from the banks unless necessary to undertake the works, in which case removal would be restricted to the smallest practicable footprint.
  - Where possible, localised improvements to the geomorphology and in-channel habitats supported by watercourses that would be crossed using open cut techniques, through the sympathetic reinstatement of banks (e.g. by replacing re-sectioned banks with more natural profiles that are typical of the natural geomorphology of the watercourse) will be considered. Note that any improvements would be restricted to within the working area of the project.
  - In addition to the cable infrastructure itself, it may also be necessary to install temporary structures to allow haul road access across watercourses where direct access is not readily available from both sides. This may comprise an appropriately sized culvert installed within the ditch with the haul road being installed over the top of the culvert. The culvert would be installed in the channel bed so as to avoid upstream impoundment and would be sized to accommodate reasonable 'worst-case' weather volumes and flows. These culverts may remain in place for the duration of the cable duct installation and subsequent cable pull.
  - In some sensitive locations where a culvert or temporary bridge would not be appropriate to maintain access over watercourses, the haul road would effectively stop and would re-start on the opposite side of the river. Access to the opposite side of the river would need to be taken from the existing road network.



- Any culverts installed to maintain access across watercourses would be adequately sized to avoid impounding flows (including an allowance for potential increases in winter flows as a result of projected climate change). Culverts would be installed below the active bed of the channel, so that sediment continuity and movement of fish and aquatic invertebrates can be maintained.

#### 7.1.4 Bentonite Breakout

134. Bentonite is an inert clay-based material (comprising 95% water and 5% clay) used as a lubricant at the drill head for trenchless crossing techniques. It does not represent a pollutant but can cause smothering of habitats.
135. For small breakouts it may cause more damage to habitats to attempt to contain the breakout and remove the escaped material, i.e. trampling of grassland associated with responding to the breakout and the potential for exposing bare ground. To reduce the risk of breakout a hydro-fraction survey can be undertaken at all drill sites. A site-specific risk assessment will then be undertaken as part of the post consent detailed design process. This will consider the potential risks of using trenchless crossing techniques and set out the procedures required to monitor construction activities and avoid breakouts. A Bentonite Breakout Management Plan will be agreed with the Environment Agency prior to commencement of construction activities. Procedures will include:
- Measures to ensure drilling stops once a breakout is reported (there will be a drop in pressure at the drill head);
  - Measures to contain the breakout, for example sandbags, to minimise the extent of any smothering;
  - Measures to remove the released bentonite if a significant volume of material is contained – for example pumped back to the bentonite lagoon within the trenchless crossing compound, or pumped to the interceptor drains, or pumped to the mobile settling tanks that will be used for managing sediment traps; and
  - The exact specification for the contingency plan will be informed by further ground investigation and the specific design of the trenchless crossing.
136. All bentonite breakouts within designated sites are to be reported to Natural England as soon as possible and within 24 hours.

#### 7.1.5 Surface Water Drainage

137. During construction, the onshore cable installation will be designed with drainage channels to intercept drainage within the working width. Additional drainage channels will be installed to intercept water from the cable trench. This will be discharged at a controlled rate into local ditches or drains via temporary interceptor drains. Depending upon the precise location, water from the channels will be infiltrated or discharged into the existing drainage network.

138. Construction drainage will be developed and implemented to minimise water within the cable trench and ensure ongoing drainage of surrounding land. If water enters the trenches during installation from surface runoff of groundwater seepage, this will be pumped via settling tanks, sediment basins, sediment filtration socks or mobile treatment facilities to remove sediment, before being discharged into local ditches or drains via temporary interceptor drains. Existing land drains will be reinstated following construction.
139. In addition, buffer strips of vegetation will be retained adjacent to water bodies where possible, to intercept any contaminated runoff. To protect groundwater bodies, excavation will be shallow, limited to approximately 1.6m below the surface, except where it passes below road and rail infrastructure or water bodies where it may be deeper.
140. A Construction Surface Water Drainage Plan will be developed, as part of the CoCP, and agreed with the relevant regulators and implemented to minimise water within the cable trench and other working areas and ensure ongoing drainage of surrounding land. This typically includes interceptor drainage ditches being temporarily installed parallel to the trenches and soil storage areas to provide interception of surface water runoff and the use of pumps to remove water from the trenches during cable installation.
141. The Construction Surface Water Drainage Plan will include the following measures:
- Any pumps, flumes or channels will be designed to have sufficient capacity, as set out in [Section 7.1.3](#), to convey the required range of flows at each location;
  - Interceptor drains for the settlement of sediment (sediment traps). Sediment traps are locally wider/deeper areas of the drains that will encourage passive sediment deposition;
  - Weekly monitoring of sediment traps (visual inspection) with increased monitoring during inclement weather. If required these traps can be pumped via settling tanks to remove sediment, based on a pre-defined level / depth of sediment;
  - Where water enters the construction areas, this will be pumped via settling tanks, sediment filtration socks or ponds to remove sediment before being discharged into local ditches or drains via the interceptor drains in order to prevent increases in fine sediment supply to the watercourses; and
  - When the interceptor drains, and associated sediment traps are decommissioned any standing water within the drains would be pumped out to settling tanks as described above. Sediment that has settled out within the interceptor drain would be left in place. Soils would be replaced in the reverse order that they were removed, and turf reinstated.



142. Existing land drains along the onshore cable route and at the onshore project substation will be reinstated following construction. A local specialist drainage contractor will undertake surveys to locate drains and create drawings both pre- and post-construction and ensure appropriate reinstatement. The Construction Surface Water Drainage Plan will include provisions to minimise water within the working area and ensure ongoing drainage of surrounding land.

#### 7.1.6 Groundwater

143. To prevent deterioration in water body status, the following groundwater control measures will be implemented during construction phase:
- Use of best practice techniques and due diligence regarding the potential for pollution throughout all construction, operation and maintenance, and decommissioning activities. This provides a robust approach to managing pollution incidents on site to reduce the probability and impact of leaks and spills;
  - Ground investigations and a hydrogeological risk assessment meeting the requirements of Groundwater Protection Guides (Environment Agency, 2017), will be undertaken at each trenchless crossing location;
  - A written scheme dealing with contamination of any land and groundwater will be submitted and approved by the Local Planning Authority before construction activities commence; and
  - No works will be undertaken in Source Protection Zone (SPZ) 1 areas to ensure there is no direct impact on sensitive potable abstractions.
  - There is a very small area where construction access for the substation site overlaps with SPZ 2. This small overlap covers an area of the proposed onshore substation temporary construction access road where it leaves the A140 Ipswich Road (illustrated on **ES Figure 18.4 Groundwater Receptors, Sheet 6 of 6** [APP-129]). Works here will be limited to a maximum depth of 600mm below the ground surface to assist in minor road widening, making the ground suitable for construction traffic use.

#### 7.1.7 Foul Drainage

144. Foul drainage (e.g. from construction welfare facilities) will be collected through mains connection to an existing mains sewer (if such a connection is available) or collected in a septic tank located within the development boundary and transported off site for disposal at a licensed facility with appropriate treatment capacity within its existing permit.
145. On site treatment plant may be required to treat the wastewater prior to disposal in order to meet discharge limits set by either the Environment Agency or local water company.

### 7.1.8 Flood Warning and Evacuation

146. Site personnel and users will be required to monitor local weather forecasts and ensure there is an evacuation route in place, in the event that fluvial flooding takes place during the construction stages of the development.
147. Where there are Environment Agency Flood Alerts and Flood Warnings, it is recommended that site users sign up to receive the relevant flood warnings and alerts.
148. A flood warning and evacuation plan is a list of steps to be taken in case of a flood, although it can also include steps such as taking out the relevant insurance or using recommended flood mitigation products.
149. Specific flood warning and evacuation plans should be produced for the construction phase of the onshore cable corridor, specifically related to construction works at watercourse crossing locations where personnel or materials may be located, albeit temporarily, within Flood Zones 2 and 3.
150. All personnel should be made aware of any access routes which are located within Flood Zones 2 and 3 and any flood warnings issued for those areas should result in the relevant access routes being cleared of all project personnel and, where possible, all project plant / materials.
151. A site-specific flood warning and evacuation plan should include practical steps for protecting SEP and DEP, be easy to communicate and consider delegated responsibility, or whether personnel are likely to require additional support during a flood event.
152. It is anticipated that SEP and DEP will require a comprehensive flood warning and evacuation plan including the following aspects:
  - A list of important contacts, including Floodline, utilities companies and insurance providers;
  - A description or map showing locations of service shut-off points;
  - Basic strategies for protecting property, including moving assets to safety where possible, turning off / isolating services and moving to safety; and
  - Safe access and egress routes.
153. The Environment Agency provide a free Flood Alert (“flooding is possible”) and Flood Warning (“flooding is expected”) service for fluvial flooding (rising river levels). It is recommended that the flood warning and evacuation plan considers how receipt of these flood alerts or warnings may affect their operations.
154. It should be noted that large parts of the onshore cable corridor are in rural undeveloped areas, that are not covered by flood warnings. Furthermore, it is important to note that Environment Agency flood alerts and warnings are not issued in response to surface water flooding.

155. As such the flood warning and evacuation plan will include independent checks (i.e. Met Office Weather Warnings) alongside any alerts or warnings issued by the Environment Agency. These checks will also account for risks outside of the alerts / warnings in areas that may be at risk from failure of defences (such as a breach). This will allow consideration of how this information will affect planned works, especially areas in close proximity to key watercourses.
156. The Principal Contractor and management should liaise with Norfolk County Council, as the LLFA, and the Environment Agency so they are aware of any forecast related to heavy rainfall events. The potential for flooding can then be assessed to enable work to stop, especially in areas in close proximity to key watercourses, and the site cleared of all personnel in this instance.
157. Also refer to **Section 2.5.6** for details of measures when working in Flood Zones 2 and 3 and areas at risk of surface water flooding with regard to temporary construction compound locations.

## 8 Air Quality Management

158. **Chapter 22 Air Quality** of the ES [APP-108] identifies receptors that are potentially sensitive to air and dust emissions. The control measures set out below are to be applied in order to ensure that any potential effects upon these receptors are adequately mitigated.

### 8.1 Control Measures

159. A number of management and mitigation measures in relation to the emission of dust and other emissions during construction works have been identified.

#### 8.1.1 Communications

160. A Stakeholder Communications Plan will be developed and implemented and will include community engagement before work commences on site.
161. The name and contact details of person(s) accountable for air quality and dust issues, within the Principal Contractor's team, will be displayed on the site boundary.
162. The head or regional office contact information, for the Principal Contractor, will also be displayed.
163. A Dust Management Plan (DMP) will form part of the CoCP for each phase of the works setting out measures to control emissions. The level of detail will depend on the risk and will include as a minimum the recommended measures below.

#### 8.1.2 Dust Management

164. Throughout the construction works, the following dust management measures shall be implemented where possible to maintain suspended particulates to suitable levels:
  - Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;

- Make the complaints log available to the relevant planning authority when asked;
- Record any exceptional incidents that cause dust and / or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book;
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the relevant planning authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary;
- Liaise with any other high-risk construction sites within 500m of the site boundary 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;
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;
- Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is practicable;
- Erect solid screens or barriers around dusty activities, or the site boundary, that 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, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible;
- Manage stockpiles to prevent wind whipping as appropriate;
- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable;
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced, and 10 mph on unsurfaced, haul roads and work areas;
- 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;
- 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; and
- Avoid bonfires and burning of waste materials.

### 8.1.3 Measures Specific to Earthworks

165. Measures specific to earthworks may typically include:

- Re-vegetate or cover earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Only remove the cover in small areas during work and not all at once; and
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.

### 8.1.4 Measures Specific to Construction

166. Measures specific to construction may typically include:

- Ensure construction sand and other construction aggregates are stored in silos, bunded areas or in a controlled and well-managed manner;
- Avoid scabbling (roughening of concrete surfaces) if possible;
- 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 overflowing during delivery; and
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust release.

### 8.1.5 Measures Specific to Access and Egress from Site

167. Measures specific to access and egress from site may typically include:

- 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 haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site log book;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and
- Locate site access gates at least 10m from receptors where possible.

### 8.1.6 Measures Specific to Non-Road Mobile Machinery (NRMM)

168. Non-Road Mobile Machinery (NRMM) and plant would be well maintained. If any emissions of dark smoke occur, then the relevant machinery should stop immediately, and any problem rectified. In addition, the following controls should apply to NRMM:
- All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2022).
  - All NRMM will comply with the appropriate NRMM regulations;
  - All NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting);
  - The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks; and
  - Fuel conservation measures should be implemented, including instructions to (i) throttle down or switch off idle construction equipment; (ii) switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded and (iii) ensure equipment is properly maintained to ensure efficient fuel consumption.

## 9 Invasive Non-Native Species

169. Invasive non-native species (INNS) that are known, or are highly likely to occur, in selected parts of the construction works areas are Himalayan balsam and signal crayfish (potentially carrying crayfish plague). Since actions to address their presence (or potential presence) differ, they are addressed separately below. These should be read in conjunction with the **Outline Ecological Management Plan (Revision C)** [document reference 9.19], secured under Requirement 13 of the **draft DCO (Revision G)** [document reference 3.1].
170. Three separate stands of Himalayan balsam have been recorded within, or in proximity to, the Order limits. The locations of Himalayan balsam are as follows:
- River Tud between Honingham and Easton (TG 1232 1152) within woodland bordering the River Tud, outside of the Order limits;

- Unnamed stream, tributary of the River Wensum east of Swannington (TG 1411 1893), dense stand along the banks; and
  - River Bure, east of Saxthorpe (TG 1309 2987), stands on the banks of the river.
171. The non-native signal crayfish has been recorded through eDNA laboratory analysis at five locations within, or in proximity to the Order Limits. The recorded locations of signal crayfish are as follows:
- River Bure At Saxthorpe Hall, east of Saxthorpe (TG 1308 2987);
  - Unnamed tributary of River Wensum South of Church Lane, east of Swannington (TG 1410 1893);
  - River Wensum South of the A1067 Fakenham Road at Attlebridge (TG 1288 1650);
  - River Tud Unnamed plantation woodland north-west of Easton (TG 1245 1154);
  - River Yare South-east of Colton Wood (TG 1186 0847).
172. The main risks presented by signal crayfish is its transfer from a watercourse or waterbody where it is present to a watercourse or waterbody where the native white-clawed crayfish is present and in that process for the signal crayfish to spread crayfish plague to the population of white-clawed crayfish.
173. All the watercourse crossings where signal crayfish have been detected are being undertaken using HDD and hence the risk of transferring signal crayfish or spores of crayfish plague to other watercourses have been avoided.
174. As a result of this avoidance action, specific mitigation measures targeted at managing the risk of transferring signal crayfish or spores of crayfish plague to other watercourses is not required.
175. Prior to construction, an INNS Management Plan will be developed as part of the CoCP. This plan will be agreed with the Environment Agency and Natural England in advance of construction in order to minimise the potential for pollution from silt deposition into watercourses and from works vehicles, including measures to prevent transfer of invasive plant or animal species between watercourses. The plan will include the following:
- A plan of all invasive species locations and extents within works areas;
  - A protocol for removing INNS and for managing the waste generated (where required);
  - Good site practice measures for managing the spread of INNS during works at watercourses; and
  - A requirement for an ECoW and details of their responsibilities with respect to INNS.
176. All construction vehicles and machinery entering and leaving the working area(s) will follow the biosecurity measures of the Great Britain Invasive Non-native Species Strategy (Defra, 2015) “check, clean, dry” guidance. In addition, the following biosecurity protocols will be adopted in all areas known to support INNS as a minimum:



- To avoid disturbance and spread of INNS, where practical an exclusion zone will be created around INNS of at least 7m;
- Signage will be erected to indicate the location of soils, materials or water contaminated with INNS;
- Should exclusion not be practical, good site practice measures for managing the spread of INNS during works at watercourses will be followed, including:
  - All vehicles arriving on site will be checked to ensure that they are clean and free from any INNS prior to entering the working area(s).
  - If soil or other material is imported to the working area(s), documentation from suppliers will be obtained to ensure it is free from INNS.
  - All footwear of construction personnel and visitors will be inspected visually to ensure they are clean from soil and debris before entering and leaving the working area(s).
  - All vehicles will be kept clean, in particular removing any accumulated mud/material before entering and leaving the working area(s).
  - All facilities within working area(s) will be equipped with disinfectant to clean footwear/equipment/vehicles prior to entering and leaving the working area(s).
  - All removed material and/or disinfectant used to clean footwear/equipment/vehicles will be appropriately disposed of.
  - All access to working area(s) will be kept to a minimum and all vehicles and personnel will keep to maintained tracks, with vehicles parked within designated areas and/or hard standing.
- The use of tracked vehicles should be avoided within areas of INNS.
- Wherever possible, personnel and vehicles will avoid areas known to contain INNS. The ECoW will undertake regular inspections of the work area to confirm the presence of INNS (including Himalayan balsam) and adherence to required measures. In the event that additional areas of INNS are identified the ECoW will review and update the INNS Management Plan to include these additional area/INNS and their appropriate measures.

## 10 Noise and Vibration

177. **Chapter 23 Noise and Vibration** of the ES [APP-109] identifies receptors that are potentially sensitive to noise and vibration impacts. The control measures set out below are to be applied in order to ensure that any potential effects upon these receptors are adequately mitigated.
178. There is the potential for noise and vibration to be generated during the construction process, especially from heavy plant and machinery. Measures will be implemented on site to minimise any effects and a programme of monitoring may be required.

## 10.1 Control Measures

179. A Construction Noise (and vibration) Management Plan (CNMP) will be included in the CoCP. A study area for the CNMP has been identified which is 300m from the construction works, as shown in Appendix A.
180. The CNMP will apply throughout that stage of construction and will detail standard measures (best practicable means) and where applicable, mitigation measures. The CNMP will be developed based on the confirmed list of plant and equipment proposed by the appointed Principal Contractor for that phase of the works, i.e. confirming the actual expected noise levels and location of works during construction activities.
181. The Contractor will obtain prior consent from the local planning authority under Section 61 of the Control of Pollution Act 1974 for the proposed main construction compound. Prior consent will also be obtained for the proposed secondary compounds, where deemed appropriate based on the predicted level of risk of noise-related disturbance. Any Section 61 consent that is obtained may contain site specific management and mitigation requirements for noise and vibration.

### 10.1.1 Best Practicable Means

182. 'Best Practicable Means' (BPM) that the Principal Contractor will adopt to minimise noise during construction include:
- No crushing works at any time on any of the mobilisation areas, without the prior written consent of the relevant planning authority;
  - Where possible, locating temporary plant so that it is screened from receptors by on-site structures, such as site cabins;
  - Using modern, quiet equipment and ensuring such equipment is properly maintained and operated by trained staff;
  - Applying enclosures to particularly noisy equipment / plant where possible;
  - Ensuring that mobile plant is well maintained such that loose body fittings or exhausts do not rattle or vibrate;
  - Avoiding unnecessary revving of engines;
  - Avoiding reversing wherever possible;
  - Vehicles should be fitted low noise reversing warnings where possible;
  - Reporting any defective equipment/plant as soon as possible so that corrective maintenance can be undertaken;
  - Ensuring plant machinery is turned off when not in use;
  - Any plant found to be requiring interim maintenance to be taken out of use;
  - Providing local residents with 24-hour contact details for a site representative in the event that disturbance due to noise from the construction works is perceived;

- Establishing a community engagement process, through the Stakeholder Communications Plan, including informing local residents, businesses and blue light organisations about the construction works, detailing the timing and duration of any particularly noisy elements, and providing a contact telephone number to them;
- Where practicable, noisy works should be interspersed between quieter works to provide periods of respite;
- Where practicable, the works should be phased to ensure that the noisiest operations are performed during the least sensitive times;
- Minimising the duration of the works is generally beneficial, if higher noise levels may result in a significant reduction in the overall duration of the works this should be considered;
- Phasing of works at the closest approach to properties where possible to give periods of respite;
- Using non-vibratory ground compaction methods at distances of 8m or less from a receptor;
- Choosing alternative, lower impact equipment or methods wherever possible;
- Scheduling the use of vibration-causing equipment at the least sensitive time of day;
- Routing, operating or locating high vibration sources as far away from sensitive areas as possible;
- Sequencing operations so that vibration-causing activities do not occur simultaneously;
- Isolating the equipment causing the vibration on resilient mounts; and
- Keeping equipment well maintained.

### 10.1.2 Mitigation

183. Following the application of BPM, should any residual impacts remain, at any of the receptors in the CNMP study area, these would be reduced to non-significant with the addition of site-specific solutions where practicable, such as:
- increased separation distance of noisy plant to receptors;
  - works scheduling to avoid high noise levels at receptors for more than 10 days in any 15 consecutive days, or 40 days in any 6 consecutive months; and
  - the use of temporary noise barriers.

### 10.1.3 Measures specific to cumulative noise

184. The appointed Principal Contractor will liaise with the principal construction contractors for the Hornsea Project Three and Norfolk Vanguard schemes, if the relevant projects overlap temporally and spatially. This liaison will ensure that simultaneous working at similar locations will be considered (alongside appropriate mitigation measures), thereby minimising the potential for cumulative construction noise effects to occur.

### 10.1.4 Construction Plant Mitigation

185. Careful scrutiny of plant selection at procurement stage will ensure that the potential construction noise impacts are reduced as much as reasonably possible.

### 10.1.5 Localised Screening / Temporary Noise Barriers

186. Noise barriers may be installed within the Order limits to further reduce noise emissions in proximity to noise sensitive receptors, such as residential properties.
187. As an example of the relative effectiveness of applying a temporary localised noise barrier BS 5228 states:
- *“...as a working approximation, if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources from the receiver. High topographical features and specifically designed and positioned noise barriers could provide greater attenuation.”*
188. The exact specification of any noise barriers that may be required to mitigate significant residual construction noise will be determined during detailed design based on the confirmed list of plant and equipment and presented in the CNMP. Noise barriers will be introduced with the appropriate specification for the location and noise reduction required.

### 10.1.6 Noise Insulation or Temporary Rehousing

189. If the implementation of all reasonable mitigation measures and BPM still results in construction noise levels exceeding the Threshold Values, BS 5228-1 does recommend further options such as the provision of noise insulation to affected habitable rooms.
190. BS 5228-1 also provides example noise limits for determining eligibility for noise insulation and temporary rehousing which are above the Threshold Values. To qualify for insulation or temporary rehousing these noise limits would have to be exceeded *“for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months.”* (BS 5228-1 section E.4).

## 11 Public Rights of Way

191. A number of public rights of way (PRoWs) which will be impacted during the construction phase of the project have been identified in **Chapter 19 Land Use, Agriculture and Recreation** of the ES [APP-105] and a full list of all the PRoWs that cross the SEP/DEP Order limits is contained within **Appendix 19.1** of that chapter [APP-213].
192. The onshore elements of the project interact with PRoWs at 38 recreational routes. PRoWs identified include Marriott's Way, Peddar's Way and Norfolk Coast Path, and Norfolk Coast Cycleway. These PRoWs are located within the onshore cable route and landfall.

### 11.1 Control measures

193. In accordance with Requirement 24 of the **draft DCO (Revision G)** [document reference 3.1], no phase of the onshore works that would affect a public right of way (PRoW) specified in Schedule 4 (PRoWs to be temporarily stopped up) is to be undertaken until a PRoW strategy has been submitted to and approved by the relevant planning authority in consultation with the local highway authority.
194. During construction, disruption to any PRoW will be managed to ensure continued safe access along the PRoW. The exact method will be agreed in advance with the relevant planning authority and detailed within the CoCP. Methods available include:
- Appropriately fenced (unmanned) crossing points;
  - Manned crossing points; and
  - Temporary alternative routes (approximately 1 week).
195. There will be no permanent closures of these routes.
196. Soft management techniques will be employed where cycle routes intersect the onshore cable corridor. These methods will include (but not be limited to) the use of pilot vehicles and stop and go signs.
197. Safety measures will be implemented where the haul road crosses a footpath or cycle way, including raising awareness of the footpath or cycle way to construction personnel and informing footpath and cycleway users of the hazards associated with the haul road. Where a recreational route is used as part of a construction access, an alternative route for the PRoW would be provided.
198. Following the cessation of construction works, all footpaths, other PRoWs or any land landward of MLWS within the Order limits that is used temporarily for construction of the onshore works, and not ultimately incorporated in permanent works or approved landscaping, must be reinstated to its former condition, or such condition as the relevant planning authority may approve, as soon as reasonably practicable and in any event within twelve months of completion of the relevant phase of the onshore works, or such other period as the relevant planning authority may approve, in accordance with Requirement 25 of the **draft DCO (Revision G)** [document reference 3.1].
199. Precise details for management of PRoWs to remain available during works will be agreed with the relevant planning authority prior to commencement of the relevant stage of works.

200. For all temporary alternative routes required, the following measures will be followed:
- A pre- and post-construction survey (including identification of surface condition and street furniture) of the PRow affected will be undertaken. PRow surveys will be undertaken by an experienced surveyor with scope of coverage and methodology to be agreed with the relevant planning authority;
  - A qualified ALO will be employed to ensure that information on existing land conditions is obtained, recorded and verified during the rights of way surveys;
  - Where impacted by the works, the surveyed PRow will be restored to its original condition or otherwise as agreed with the relevant planning authority. The ALO will act as the point of contact for the restoration of the PRow;
  - The Applicant will advertise all alternative routes following the relevant planning authority's standards for advertising temporary closures of PRow. This will include:
    - Provision of a map showing the extent of the temporary closure and an alternative route;
    - Confirmation that the alternative route is to another PRow or roads or on land in The Applicant's control;
    - Confirmation that the alternative route across land in the Applicant's control is safe and fit for public use.
  - County, District and Parish Councils would be notified in advance (4 – 6 weeks) of temporary closure;
  - A notice describing the temporary closure would be published in the press a minimum of two weeks in advance of closure;
  - Advanced site notices (i.e. notices to members of the public warning of diversions ahead) would be posted at appropriate places to minimise likelihood of trespass at obstruction and unnecessary aborted journeys:
    - These site notices would be erected in visible locations on site up to 2 weeks in advance of temporary closure; and
    - The above notices would describe the duration of temporary closure and the alternative route proposed.
  - Any extensions to closure of a PRow would be discussed with the relevant planning authority.

## 12 Utility Providers

201. Utility providers potentially affected by construction works would be contacted prior to construction works commencing. Methodology for utility crossings would be agreed with asset owners in line with best practice.

202. The continuity of utilities during the construction works would be ensured. Prior to construction, the team on the ground would be made aware of the precise locations of existing services.

### 12.1 Compliance and Site Inspections











203. The management and mitigation measures described above will be monitored by the Principal Contractor and the ECoW throughout the construction phase. If non-conformity with any of the management and mitigation measures is identified, it will be recorded during a site audit and appropriate remedial actions will be implemented.
204. A monitoring programme will be established for environmental aspects associated with the proposed SEP and DEP project site, which will be documented in the CoCP. The Applicant's EMS and associated audit programme includes a requirement for the Applicant or an experienced nominated delegate to audit the Applicant's construction sites on a periodic basis; included in the audit scope will be the appointed Principal Contractor's monitoring and inspection regime.





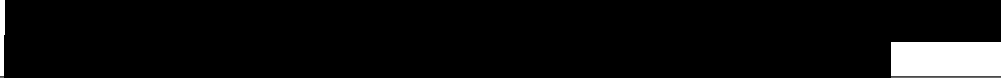

### 12.2 Incident Response and Contingency

205. As part of the CoCP, a project-specific environmental emergency / incident response plan will be prepared. The plan will include a response flow chart and detail how to report and deal with an environmental incident, including the measures available to contain/clean up an incident (e.g. spill kits, waste reception facilities). A contact list for notifying relevant stakeholders will be appended to the plan.
206. Personnel working on site, including any subcontractors and visitors, will be trained in the project environmental emergency response procedures, so that they are prepared and able to respond to an incident promptly and effectively. Where appropriate, the Applicant encourages environmental emergency response plans to be tested on-site in consultation with the Applicant.
207. During construction, all site staff would be made aware of sections of the route that are located within a Flood Zone, and aware of the evacuation process in the event of a flood and any Flood Warning Systems would be subscribed to.



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<p>CL:AIRE Definition of Waste Code of Practice Version 2: <a href="#">DoW:CoP</a> </p>
<p>CIRIA (2001) Report C532 Control of Water Pollution from Construction Sites:  </p>
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<p>Department of the Environment Food and Rural Affairs (2015) Great Britain Invasive Non-native Species Strategy</p>
<p>Environment Agency (2004) PPG08 – Storage and disposal of used oils:  </p>

<p>Environment Agency (2007) PPG05 – Works near or liable to affect watercourses:  </p>
<p>Environment Agency (2008) PPG11 – Preventing pollution at industrial sites:  </p>
<p>Environment Agency (2009) PPG 21 – Pollution incident response planning:  </p>
<p>Environment Agency (2012) PPG06 – Working at construction and demolition sites:  </p>
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<p>Environment Agency (undated) PPG20 – Dewatering of underground ducts and chambers:  </p>
<p>Environment Agency (2017) Groundwater Protection Principles and Practice.          Available online at:  <a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/598799/LIT_7660.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/598799/LIT_7660.pdf</a></p>
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