



East Anglia ONE North Offshore Windfarm

Outline Code of Construction Practice

Applicant: East Anglia ONE North Limited

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Author: Royal HaskoningDHV

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01	08/10/2019	Paolo Pizzolla	Ian Mackay	Helen Walker

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Glossary of Acronyms

ALO	Agricultural Liaison Officer
AQMP	Air Quality Management Plan
CCS	Construction Consolidation Sites
CDM	Construction (Design and Management) Regulations 2015
CMS	Construction Method Statement
CoCP	Code of Construction Practice
COSHH	Control of Substances Hazardous to Health
DCO	Development Consent Order
DPF	Diesel Particulate Filters
ECoW	Environmental Clerk of Works
EMS	Environmental Management System
ES	Environmental Statement
GP3	Groundwater Protection Principles and Practice
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
LLFA	Lead Local Flood Authority
MMP	Materials Management Plan
NRMM	Non-Road Mobile Machinery
OCoCP	Outline Code of Construction Practice
OLEMS	Outline Landscape and Ecological Management Strategy
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidance
PRoW	Public Rights of Way
SMP	Soils Management Plan
SPZ	Source Protection Zone
SuDS	Sustainable Drainage System
SWDP	Surface Water and Drainage Plan

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
Cable sealing end compound	A compound which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
Cable sealing end (with circuit breaker) compound	A compound (which includes a circuit breaker) which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
Construction consolidation sites	Compounds associated with the onshore works which may include elements such as hard standings, lay down and storage areas for construction materials and equipment, areas for vehicular parking, welfare facilities, wheel washing facilities, workshop facilities and temporary fencing or other means of enclosure.
Development area	The area comprising the onshore development area and the offshore development area (described as the 'order limits' within the Development Consent Order).
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia ONE North windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
HDD temporary working area	Temporary compounds which will contain laydown, storage and work areas for HDD drilling works.
Heavy Goods Vehicle (HGV)	A term for any vehicle with a Gross Weight over 3.5 tonnes. This assessment also uses the term HGV as a proxy for HGVs and buses / coaches recognising the similar size and environmental characteristics of the respective vehicle types.
Jointing bay	Underground structures constructed at intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.

Link boxes	Underground chambers within the onshore cable route housing electrical earthing links.
Mitigation areas	Areas captured within the onshore Development Area specifically for mitigating expected or anticipated impacts.
National electricity grid	The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia ONE North project Development Consent Order but will be National Grid owned assets.
National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines (including cable sealing end compounds and cable sealing end (with circuit breaker) compound) to transport electricity from the National Grid substation to the national electricity grid.
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia ONE North project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
Natura 2000 site	A site forming part of the network of sites made up of Special Areas of Conservation and Special Protection Areas designated respectively under the Habitats Directive and Birds Directive.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables (which may be laid directly within a trench, or laid in cable ducts or protective covers), up to two fibre optic cables and up to two distributed temperature sensing cables.
Onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, landscaping and ecological mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.

Onshore infrastructure	The combined name for all of the onshore infrastructure associated with the proposed East Anglia ONE North project from landfall to the connection to the national electricity grid.
Onshore preparation works	Activities to be undertaken prior to formal commencement of onshore construction such as pre-planting of landscaping works, archaeological investigations, environmental and engineering surveys, diversion and laying of services, and highway alterations.
Onshore substation	The East Anglia ONE North substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia ONE North project.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

Outline Code of Construction Practice

1 Introduction

1.1 Background

1. This Outline Code of Construction Practice (OCoCP) relates to the onshore elements of the proposed East Anglia ONE North project and associated infrastructure.
2. The OCoCP forms part of a set of documents that supports the Environmental Statement (ES) (document reference 6.1) submitted by the Applicant as part of the Development Consent Order (DCO) application.
3. A final detailed Code of Construction Practice (CoCP) will be produced post-consent, prior to onshore construction of the proposed East Anglia ONE North project, and will be in line with this OCoCP (as secured under the requirements of the draft DCO).
4. This OCoCP reinforces commitments made in the ES (document reference 6.1).
5. The final CoCP will provide a key mechanism, enforceable via the DCO, 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. The final CoCP will provide this control through agreed site practices and mitigation as outlined in this document.

1.2 Structure of the OCoCP

6. The OCoCP will summarise the general principles and control measures to be adopted during construction of the onshore infrastructure associated with the proposed East Anglia ONE North project, and will provide the framework for the preparation of the final, more detailed CoCP which will be developed post-consent.
7. A number of management plans will set out how the appointed contractor will manage environmental risks associated with construction activities. These management plans will set out specific control measures necessary to deliver the requirements of the COCP and any other management and mitigation measures that the Applicant will implement, where possible, that relate specifically to the onshore construction phase of the proposed East Anglia ONE North project. These management plans and strategies are detailed in the sections below and summarised in **Table 1.1**

Table 1.1 Code of Construction Practice

Description	Section of OCoCP
<p>A Surface Water and Drainage Management Plan will be prepared which describes the approach to surface water and foul water drainage, and water supply during construction and details of existing drainage within the construction areas. The plan will detail local baseline conditions, and summarise the Water Framework Directive (WFD) assessment. The plan will detail any control measures and mitigation measures which will be implemented, along with any monitoring and reporting requirements, for construction drainage and surrounding land (in consultation with landowners where possible).</p>	10.1.7
<p>A Flood Management Plan will be prepared which describes the control measures designed to manage flood risk during construction. The plan will include details of flood warning and evacuation procedures, key contacts, emergency contacts and insurance details.</p>	10.1.7
<p>A Construction Phase Noise and Vibration Management Plan will be prepared which describes measures to minimise noise and vibration impacts on sensitive receptors and comply with relevant legislation, requirements, standards and best practice relating to construction noise. The plan will detail noise and vibration baseline conditions and assessments, and describe mitigation to minimise adverse impacts which will be followed for construction activities at the landfall, the onshore cable route, onshore substation and National Grid infrastructure. The plan will also specify the procedures to be followed in the event of a noise or vibration environmental incident, alongside any monitoring or reporting which may be required.</p>	9
<p>A Site Waste Management Plan will be prepared which describes measures to manage waste across the construction areas in accordance with a waste hierarchy to minimise, reuse and recycle waste materials. The plan will identify training and monitoring required, and highlight areas where best practice in waste management can be achieved to reduce the quantities of waste going to landfill, maximising opportunities for reuse and recycling that are cost neutral (or cost negative), and provides options for planning and processing waste during the construction and excavation activities.</p>	7
<p>A Soil Management Plan will be prepared which describes methods to avoid mixing of topsoil and subsoil, minimise soil compaction and disturbance to the surrounding areas, and reinstatement of soils in general accordance with their original structure and location. The Soil Management Plan will require the production of Methods Statements for soil handling.</p>	8
<p>An Air Quality Management Plan will be prepared describes control measures to manage dust and emission during construction works. The plan will detail air quality baseline conditions, and describe mitigation to minimise adverse impacts which will be followed for enabling works and construction activities at the landfall, the onshore cable route, onshore substation and National Grid infrastructure, and any monitoring and reporting which may be required.</p>	10.1.2
<p>A Materials Management Plan will be prepared which describes methods to quantify wastes generated from construction related excavation and its potential reuse, and the import and export of construction materials (in particular aggregate for temporary haul roads).</p>	6

Description	Section of OCoCP
A Pollution Prevention and Response Plan will be prepared which describes controls for the prevention of pollution which will be in place during construction works. The plan will include all emergency incident response procedures (including unconsented discharge to land or water, release of silt, emergency pollution events to air, flooding and extreme weather) and will detail key site and emergency contacts. The Pollution Prevention and Response Plan will require the production of a Groundwater Protection Method Statement and Construction Method Statements for the protection of onshore waters.	11.1.2 and 14
A Stakeholder Communications Plan will be prepared which describes Communication process to ensure construction works are fully communicated to interested parties. The plan will detail all methods of communication which will be used to inform stakeholders and the public, including letters, newsletters, exhibitions and public information days, parish magazines, Parish Council meetings and the relevant webpage, as well as detailing the roles and responsibilities of the Community Liaison Officer.	2.5
An Artificial Light Emissions Management Plan will be prepared and implemented. The plan will detail the appropriate management and mitigation measures to be taken to manage artificial light emissions. The plan will detail any sensitive receptors, and describe the Artificial Light Emissions Management Plan which will be implemented, including lighting requirements, positioning and hours of operation, alongside any monitoring and reporting which might be required.	3.7
A Watercourse Crossing Method Statement will provide information on the watercourses to be crossed, the different types of crossing that will be used as part of the onshore construction works and details of proposed methods of crossing. The method statement will also detail control measures which will be implemented to safeguard surface water quality and ensure no adverse impacts occurs on local drainage, flood risk or fisheries.	11.1.3

8. The OCoCP describes the following:

- **Section 2:** General Principles
- **Section 3:** General Site Operations
- **Section 4:** Reinstatement
- **Section 5:** Pollution Prevention and Response
- **Section 6:** Contaminated Land and Groundwater
- **Section 7:** Waste Management
- **Section 8:** Soil Management
- **Section 9:** Noise and Vibration Management
- **Section 10:** Air Quality Management
- **Section 11:** Surface Water and Drainage Management
- **Section 12:** Utility Providers

- **Section 13:** Monitoring and Site Inspections
- **Section 14:** Contingency Planning

1.2.1 Plans outwith the OCoCP

9. The following plans will also be prepared as part of the proposed East Anglia ONE North project, but do not form part of the final CoCP:

- An **Onshore Substation Design Principles Statement** will be prepared detailing the design principles which will determine the layout, scale and external appearance of the onshore substation buildings. An outline version of this plan has been submitted with this DCO application;
- **Construction Method Statements** will be prepared, detailing procedures and construction best practice that will be adhered to during construction (see **section 2.4**);
- A **Landscape Management Plan** and **Ecological Management Plan** will be prepared and will set out the overarching principles of landscape and ecological management to be adhered to. An outline version of these plans has been submitted with this DCO application (Outline Landscape and Ecological Mitigation Strategy (OLEMS));
- An **Access Management Plan** sets out detail on location, frontage, general layout, visibility and embedded mitigation measures for access for each Construction Consolidation Site (CCS), substation, and points of access to the onshore cable route. An outline version of this plan has been submitted with this DCO application;
- An **Archaeological Written Scheme of Investigation (Onshore)** will be prepared, detailing the methods to be used for the suite of archaeological works during construction. An outline version of this plan has been submitted with this DCO application;
- A **Traffic Management Plan** will be prepared, detailing the standards and procedures for managing the impact of HGV traffic during the construction period, including localised road improvements necessary to facilitate the safe use of the existing road network. An outline version of this plan has been submitted with this DCO application;
- A **Travel Plan** will be prepared, documenting how construction personnel traffic would be managed and controlled. An outline version of this plan has been submitted with this DCO application;
- A **Public Rights of Way (PRoW) Strategy** will be prepared, detailing the agreed approach to any PRoW diversions or other mitigation required. An outline version of this plan has been submitted with this DCO application; and
- A **Pre-Commencement Archaeological Execution Plan** will be prepared.

1.3 Purpose and Scope of final CoCP

10. The purpose of the final CoCP is to support the construction management team in its duties to help ensure that the construction of the onshore infrastructure of the proposed East Anglia ONE North project complies with relevant European and UK legislation and requirements in the draft DCO. The document is also a mechanism to deliver environmental commitments as set out in the ES and to promote environmental and construction best practice.
11. The final CoCP will set out the management measures which the proposed East Anglia ONE North project will require its contractors to adopt and implement for any onshore construction works for the proposed East Anglia ONE North project. Works and locations within the scope of this document include enabling works, construction, commissioning and re-instatement of the proposed East Anglia ONE North project for onshore works from the landfall located north of the edge of Thorpeness to the National Grid infrastructure. Works include:
 - Export cable installation from the landfall location to the transition bays, including horizontal directional drilling (HDD);
 - Temporary works associated with landfall HDD and transition bay excavation;
 - Onshore cable installation along the onshore cable route including jointing bays and potential HDD;
 - Temporary works associated within the onshore cable route and onshore substation including enabling works for example the establishment of a haul road, CCSs and working area (any area with the onshore development area where construction activities are taking place);
 - Onshore substation, and temporary access;
 - National Grid infrastructure;
 - Interface between the onshore substation and National Grid infrastructure; and
 - Reinstatement and mitigation works enacted during the construction phase.
12. The OCoCP has been compiled with the objective of demonstrating environmental management controls in one cohesive document for the onshore works and formalises commitments made to the Local Planning Authority and statutory consultees outlined in the ES (document reference 6.1).
13. The scope of this document is not intended to identify the responsibilities at an implementation level or provide specific detailed methods, but rather to highlight the proposed content of the final CoCP and outline the approach to be taken

within the context of the wider framework of the Applicant's environmental management controls.

14. Practical implementation and compliance arrangements associated with CoCP commitments will primarily be delivered via other associated and topic specific plans as identified in **Table 1.1**.

2 General Principles

2.1 Environmental Management Principles

15. 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.
16. Through the EMS, contractors undertaking work on behalf of the Applicant are screened and selected using a variety of criteria that include environmental credentials. The EMS will, inter alia, 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.
17. Prior to the commencement of each stage of construction works, the CoCP for that phase will be issued to the Local Planning Authority for review and approval.
18. The Applicant will then provide the final version of the CoCP to statutory bodies and the Local Planning Authority. The measures and standards identified in the CoCP will then be implemented by the appointed Contractors.

2.2 Health and Safety Principles

19. 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 East Anglia ONE North project. 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 East Anglia ONE North 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 East Anglia ONE North project or to others who may be affected;
- Ensure that suitably competent employees and other designers, engineers, supervisors and contractors are engaged to undertake the responsibilities associated with the proposed East Anglia ONE North 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 East Anglia ONE North 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. A method statement detailing the safety measures to be imposed on site will be prepared prior to the commencement of the development.

2.3 Construction Principles

20. The appointed Construction Manager and associated management team will be responsible for implementation of the CoCP provisions, and for ensuring that the various construction contractors are in compliance with these requirements. The practical implementation arrangements and responsibilities conferred to the construction contractors will be detailed in further management protocols to be developed, such as the associated plans as identified in **Table 1.1**.

21. The provisions of the CoCP, will be incorporated into the contracts for the construction of the proposed East Anglia ONE North project and will be required to be adhered to. The Applicant and its contractors will be required to comply fully with the terms of the CoCP.
22. Aims of the final CoCP include the avoidance 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) supported by other specialists as necessary (such as ecological, archaeological, auditing specialists).
23. In addition to the arrangements under the CoCP, the appointed contractors will be encouraged to register with the Considerate Constructors Scheme¹ which is a voluntary code of practice that seeks to:
 - Enhance the appearance of the site;
 - Constructors ensure sites appear professional and well managed.
 - Secure everyone's safety;
 - Constructors attain the highest levels of safety performance.
 - Respect the community;
 - Constructors give utmost consideration to their impact on neighbours and the public.
 - Care for the workforce; and
 - Constructors provide a supportive and caring working environment).
 - Protect the environment.
 - Constructors protect and enhance the environment.

2.4 Construction Method Statements

24. Detailed Construction Method Statements (CMS) will be developed by the Principal Contractor for relevant construction operations.
25. The CMS which will be produced as part of the CoCP:
 - Watercourse Crossing Method Statement;
 - Groundwater Protection Method Statement;
 - Method Statement for Soil Handling; and
 - Construction Method Statements for the Protection of Onshore Water.

¹ <https://www.ccscheme.org.uk/>

26. The CMS which will be produced, but not as part of the CoCP, are:
- Landfall Construction Method Statement (secured under a requirement of the draft DCO);
 - Breeding Bird Protection Plan (secured under the EMP, further detail is provided in the OLEMS submitted with this DCO application);
 - Arboricultural Method Statement (secured under the EMP, further detail is provided in the OLEMS submitted with this DCO application);
 - Invasive Species Management Plan (secured under the EMP, further detail is provided in the OLEMS submitted with this DCO application); and
 - SPA Crossing Method Statement (secured under the EMP, further detail is provided in the OLEMS submitted with this DCO application).
27. Each CMS will follow construction industry good practice guidance and adhere to the following:
- Environment Agency Pollution Prevention Guidance (PPG²) 01 – General guide to the prevention of water pollution;
 - Environment Agency PPG05 – Works near or liable to affect watercourses;
 - Environment Agency PPG06 – Working at construction and demolition sites;
 - Environment Agency PPG08 – Storage and disposal of used oils;
 - Environment Agency PPG11 – Preventing pollution at industrial sites;
 - Environment Agency PPG20 – Dewatering of underground ducts and chambers;
 - Environment Agency PPG 21 – Pollution incident response planning;
 - Environment Agency, Pollution Prevention for Businesses (2016);
 - The Sustainable Drainage System (SuDS) Manual, C697/C753, CIRIA (2007 and 2015);
 - Site Handbook for the Construction of SuDS, C698, CIRIA (2007);
 - CIRIA Report C502 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;
 - CIRIA Handbook C692 Environmental Good Practice on Site; and

² N.B PPG guidance withdrawn in 2015 by the UK Government. Following which, Pollution Prevention for Businesses was published in 2016. The PPGs are revoked as regulatory guidance in England, but still provide a useful guide for best practice measures.

- CIRIA Handbook C651 Environmental Good Practice on Site Checklist.

2.5 Local Community Liaison

28. A Stakeholder Communications Plan will be developed as part of the CoCP.
29. The Applicant will ensure effective and open communication with local residents and businesses that may be affected by the construction works. Communications will be co-ordinated on site by a designated member of the construction management team. A proactive public relations campaign 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. A combination of communication channels, for example information boards and parish council meetings, will be employed to keep local residents informed.
30. 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 Local Planning Authority.
31. Parish Councils in the relevant area will be contacted (in writing) 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.

3 General Site Operations

3.1 Working Hours and Timing of Works

32. Onshore working hours (and exceptions to these) will be specified under the requirements of the draft DCO. Onshore construction activities would normally be conducted during working hours of 7am to 7pm Monday to Friday and 7am to 1pm on Saturdays with no construction works on Sundays or bank holidays. Construction works may occur outside the above times where permitted within the DCO.
33. Where works are undertaken out with consented hours in response to emergency situations, the Local Planning Authority will be advised as soon as practical, outlining the circumstances for the works, the likely duration and the management and mitigation measures implemented.

34. The Applicant will seek to sensitively time and minimise the duration of construction activities. The Local Planning Authority 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

35. The final CoCP will include a site layout showing the location of CCSs, HDD compounds, onshore substation and National Grid infrastructure and main features of these sites. Ahead of construction, further site investigations will be required for the proposed East Anglia ONE North 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. Any changes to site layout or design following approval of the final CoCP will require updated layouts to be issued to the Local Planning Authority in accordance with arrangements set out in the final CoCP.
36. 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. Specific areas within the worksites will be designated as smoking 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, workers 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 suitably enclosed containers and waste will be removed at frequent intervals and the site kept clean and tidy;
 - Hoardings will be painted in a colour agreed with the Local Planning Authority;
 - Any weeds will be appropriately managed;
 - Static plant will have suitable drip tray protection;
 - Hoardings and boundary fences will be frequently inspected, repaired and repainted as necessary;
 - Cover, seed or fence stockpiles to prevent wind whipping as appropriate; and
 - Adequate welfare facilities will be provided for all site staff and visitors.

37. In addition, where construction 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 Contractor will be required to sign up to the Environment Agency 'Floodline' flood warning service;
 - During construction, all site staff would be made aware of sections of the onshore cable route that are located within a Flood Zone;
 - Debris will be safely contained and will be kept at least 10m from watercourses, reducing the risk of large items and sediment entering the flood flow; 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.
38. Where construction working areas are adjacent to watercourses or cross Flood Zone 2 or 3, the following measures will be implemented:
- Spoil storage will be laid out with gaps at regular intervals and tightly compacted to minimise impact on flood waters;
 - Any site fencing installed will have regard to possible flood risk and should be designed so as to not impede flows as necessary; and
 - There shall be no storage of spoil directly on watercourse banks. Where possible, spoil will be set back from watercourses by 10m. This will prevent excessive loading on the watercourse banks and minimise the risk of stored material entering the watercourses.
39. Temporary means of access will be provided to severed fields for vehicles and machinery in order to ensure access is maintained wherever practicable.
40. Wherever practicable, appropriate planning and timing of works will be agreed with landowners and occupiers, subject to individual agreements.

3.3 Screening and Fencing

41. Site fencing requirements will be controlled under the requirements of the draft DCO, which will require details of permanent and temporary fencing, walls and other means of enclosure to be submitted to the Local Planning Authority for approval before the relevant stage of onshore works can commence. This will be in accordance with the specification for fences set out in the Specification for

Highway Works, Vol. 3 (BS1722 Part 2), or equivalent, using single wire detail or sheep netting with similar horizontal spacing.

42. Details of temporary construction screening, fencing and site security will be included within the final CoCP based on the following:
- The landfall CSS and HDD temporary working area will be securely fenced with hoarding and access from the local road network, suitable for haulage equipment, will be installed along the onshore cable route to the drilling site;
 - During construction of the onshore cable route, fencing will be installed to demarcate the working area, including CCSs and jointing bays. Fencing will be used where necessary; post and wire or similar will be used otherwise;
 - Once each work area is completed, it may be possible to bring the fences in to the sides of the haul road so that the land occupied by the trenches and soil storage areas can be returned to normal use;
 - The onshore substation and National Grid substation will be enclosed by a temporary perimeter fence for the duration of the construction period with a permanent fence installed at the end of the construction works; and
 - All working areas shall be sufficiently and adequately fenced off from members of the public and to prevent animals from straying on to the construction areas. Species-specific fencing may be prescribed where relevant.

3.3.1 Woodland/Hedgerow Protection

43. Where possible, the proposed East Anglia ONE North project will seek to avoid mature trees within hedgerows through the micro-siting of individual cables, in order to retain mature trees where practicable.
44. Full details showing the position of fencing to protect all woodland areas, trees and hedgerows to be retained within the proposed East Anglia ONE North project will be submitted to the Local Planning Authority for approval prior to construction. The protective fencing will comply with BS 5837 (Trees in relation to design, demolition and construction - Recommendations), and will be erected to demarcate the canopy spread of the trees and hedgerows. Further detail on fencing in relation to hedgerows and woodland is contained within the OLEMS.

3.4 Site Induction

45. The construction of the proposed East Anglia ONE North project will require all personnel working on or attending 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 requirements / licence conditions;
- Client environmental requirements (including the CoCP);
- Environmental management structure and contacts;
- Pollution Prevention Plan;
- Site specific environmental sensitivities;
- Waste management arrangements;
- Water and wastewater management;
- Hazardous material management;
- Fuel, oil and chemical management;
- Spill contingency;
- Environmental emergency response;
- Reporting of incidents and complaints; and
- The relevant Personal Protective Equipment (PPE) requirements.

46. More specific information will be provided to staff according to their role.

3.5 Site Security

47. Adequate security will be provided by contractors working on behalf of the Applicant to protect the public and staff, 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 final CoCP.

3.6 Welfare

48. Construction areas will be serviced by temporary construction offices and necessary welfare facilities, which may include 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 CCS. Small welfare facilities may be provided at areas outside the CCS to serve specific work activities.

3.7 Artificial Light Emissions

49. An Artificial Light Emissions Management Plan will be prepared as part of the final CoCP, under the requirements of the draft DCO, and which will be submitted to the Local Planning Authority for approval prior to construction commencing.

The approved Artificial Light Emissions Management Plan will be maintained throughout the construction of the relevant works and could include:

- Micrositing to avoid identified bat roosts, where possible;
 - Pre-construction survey to confirm the presence of bats;
 - All temporary lighting to be designed in line with the BCT Guidance Note 8 Bats and artificial lighting (2018). This to include the use of directional lighting during construction;
 - Construction phase lighting will be limited to permitted working hours in low light conditions, with lower-level security lighting outside of these times;
 - The use of directional beams, non-reflective surfaces and barriers and screens, to avoid light nuisance whilst maintaining safety and security obligations; and
 - Ensure that dark corridors remain in place during the construction phase.
50. Details of the location, height, design and luminance of all floodlighting to be used during the construction of the proposed East Anglia ONE North project, together with measures to limit obtrusive glare to nearby residential properties, will be set out in the Artificial Light Emissions Management Plan.
51. 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 sky glow, so far as reasonably practicable. Lighting spillage will also avoid or minimise impacts on ecological receptors, including nocturnal species.
52. 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.

4 Reinstatement

53. Restoration of land will be controlled under the requirements of the DCO. Any land used temporarily for construction is to be reinstated to its former condition, or such condition as the Local Planning Authority may approve. Reinstatement associated with roads will be undertaken in consultation with the local highway authority where relevant. All reinstatement will be undertaken as soon as reasonably practical and within twelve months of completion of the relevant stage of the onshore works or such other period as agreed with the Local Planning Authority.

54. Topsoil and subsoil will be stored separately in bunds as per Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra 2009). This guidance should be used as a reference and should be assessed against current legislation and controls. Once trenches are complete and back-filled, the stored topsoil will be re-distributed over the area of the relevant work section, with the exception of the haul road and any associated drainage.
55. 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 construction.
56. Reinstatement as far as practicable of fences, and re-planting sections of hedgerows, hedge banks, would be undertaken. Further detail is provided in the OLEMS.

5 Pollution Prevention and Response

57. As part of the final CoCP, a proposed East Anglia ONE North project specific Pollution Prevention and 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.
58. Personnel working on site, including any subcontractors, will be trained in the proposed East Anglia ONE North 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 Local Planning Authority.
59. 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.
60. The final CoCP will consider and 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).

61. The Pollution Prevention and Response Plan will require the production of a Groundwater Protection Method Statement and Construction Method Statements for the protection of onshore waters.

5.1 Control Measures

62. 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 CCS overnight;
 - Inspection of all construction plant for fuel leaks before being delivered to the working area;
 - 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'.

5.2 Monitoring

63. The monitoring of management and mitigation measures is described in **section 13**.

6 Contaminated Land and Groundwater (including Materials Management)

64. **Chapter 18 Ground Conditions and Contamination** of the ES (document reference 6.1.18) 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.

6.1 Control Measures

65. A Materials Management Plan (MMP) will be drafted in advance of any construction works. Good environmental practice shall be followed during the construction phase of the proposed East Anglia ONE North project, in accordance with the now revoked Environment Agency's PPG (PPG1, PPG5, PPG6, PPG21 and PPG22)³ 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 construction workers, including subcontractors, and health and safety measures would 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;
- Adherence to an Incident/Emergency Response Plan which will be drafted in advance of any construction works;
- Adoption of a CL:AIRE⁴ Industry Code of Practice (Definition of Waste Code of Practice (DoW CoP)) to manage excavated soils on site, thereby maximise

³ 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.

⁴ CL:AIRE is an environmental body providing training, information and resources for all those involved in sustainable land management. <https://www.claire.co.uk/>

- sustainability and providing an audit trail to demonstrate the appropriate use of materials;
 - 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) for the proposed East Anglia ONE North project will be developed;
 - Where possible, avoidance of construction in areas of historic development.
66. In the event that unexpected contamination is encountered, work in the area will cease on instruction by the Site Manager or delegate and be contained and made as safe as reasonably practical pending assessment by suitably qualified environmental specialist. Consultation with the Local Planning Authority and the Environment Agency will be undertaken and agreement reached on plans for further investigation and remediation measures where necessary.
67. The ECoW 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.
68. 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.

6.2 Monitoring

69. The monitoring of management and mitigation measures is described in **section 13**.

7 Waste Management

70. **Chapter 18 Ground Conditions and Contamination** of the ES (document reference 6.1.18) assesses the impacts of the onshore development area in terms of waste generation during the construction, operation and decommissioning phases. The Applicant aims to manage waste in accordance with:
- Legislative requirements;
 - The EMS; and
 - The waste hierarchy by avoiding waste generation and promoting waste minimisation in the first instance. Where waste is produced, reuse or recycle

or recovery should be considered where practical and economically feasible prior to considering disposal.

7.1 Control Measures

71. A Site Waste Management Plan (SWMP) for the proposed East Anglia ONE North project will be developed. The plan will manage construction waste across the proposed East Anglia ONE North project in accordance with a waste hierarchy to minimise, reuse and recycle waste materials. The plan will be developed in line with legislation and best practice and will record the following information, as a minimum:
- The types and quantities of waste generated (using the appropriate European Waste Catalogue (EWC) code and description for each waste type);
 - The management approach for each waste type (Reduce, Reuse, Recycle, Recover, Dispose) including any treatment;
 - The storage arrangements for each waste type; and
 - The site waste monitoring and reporting arrangements.
72. In addition, the following management measures shall be employed during the construction:
- 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 proposed East Anglia ONE North 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 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 within each CCS. 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;
- Site waste will be segregated as far as practical (and at a minimum to separate hazardous wastes) and stored in labelled and secure facilities;
- Duty of Care requirements in relation to the storage, transfer and disposal of waste will be complied with;
- Site waste management and environmental, health and safety plans will be prepared in advance of all construction or other disruptive site works;
- All personnel will be fully trained in these matters to ensure compliance;
- Site waste management will feature as a topic in the site environmental induction, which all staff working on site must attend, which will be supplemented by Tool Box Talks (TBT's);
- 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; and
- 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.

7.2 Monitoring

73. Waste arisings, transfers and disposals will be monitored by the appointed Contractor(s) through the SWMP. Additional monitoring measures are outlined in **section 13**.

8 Soil Management

74. **Chapter 21 Land Use** of the ES (document reference 6.1.21) identifies the soil resource potentially affected by the proposed East Anglia ONE North project. 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. The SMP will require the production of Methods Statements for soil handling.

8.1 Control Measures

75. A Soil Management Plan (SMP) including CMS for soil handling, would be produced by a competent soil science contractor and agreed with the Local Planning Authority in advance of the works. This would be completed pre-construction once an earthworks contractor has been appointed and detailed earthworks phasing information is available.
76. A pre-construction land survey would be undertaken by a qualified Agricultural Liaison Officer (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.
77. The contractor would be required to comply with the SMP. The SMP will typically include the following measures:
- Soils handling, storage and reinstatement by a competent contractor 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;
 - Where under storage areas, 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; and

- In circumstances where construction has resulted in soil compaction, further remediation may be provided, through an agreed remediation strategy

8.2 Monitoring

78. The monitoring of management and mitigation measures is described in **section 13**.

9 Noise and Vibration Management

79. There is the potential for noise to be generated during the construction process, from for example heavy plant and machinery, as identified in **Chapter 25 Noise and Vibration** of the ES (document reference 6.1.25). Measures will be implemented on site to minimise any effects and a programme of monitoring may be required.
80. The main objectives with regard to managing construction noise are to:
- Minimise noise and vibration impacts on nearby residents and other sensitive receptors to acceptable levels; and
 - Comply with relevant legislation, requirements, standards and best practice relating to construction noise.

9.1 Control Measures

81. A Construction Phase Noise and Vibration Management Plan will be submitted to and approved by the Local Planning Authority and form part of the final CoCP.
82. The project ES identifies receptors that are potentially sensitive to noise and vibration impacts, including noise and vibration from construction traffic, together with management and mitigation measures for the project. Standard noise and vibration mitigation techniques will be considered, such as specified working times and use of low noise emitting plant and equipment, detail of these measures shall be presented in the final CoCP. As a minimum, the following standards shall be adhered to:
- BS5228 - Noise and vibration control on construction and open sites;
 - BS4142:2014 – Rating and assessment of industrial and/or commercial sound'
 - Environmental Protection Act 1990; and
 - Noise and Statutory Nuisance Act 1993.

83. Best practice noise mitigation measures, to be implemented and controlled through the Construction Phase Noise and Vibration Management Plan, will typically include:
- Management of construction operating hours;
 - Implementation of traffic management measures such as agreed routes for construction traffic;
 - Use of screens and noise barriers / acoustic screens;
 - Construction site layout to minimise or avoid reversing with use of banksmen where appropriate. Output noise from reversing alarms set at levels for health and safety compliance;
 - Use of modern, fit for purpose, well maintained plant and equipment to minimise noise generation. Plant and vehicles will be fitted with mufflers / silencers maintained in good working order. Use of silenced equipment, as far as possible and low impact type compressors and generators fitted with lined and sealed acoustic covers. Doors and covers housing noise emitting plant will be kept closed when machines are in use. The positioning and specification of any generators used close to residential properties shall be positioned so as to ensure compliance with the assessed noise guidance thresholds.
 - No audible music or radios to be played on site;
 - Ensuring engines are switched off when machines are idle;
 - Regular communication with site neighbours to inform them of the construction schedule, and when noisy activities are likely to occur; and
 - Use of pre-construction surveys to identify road surface irregularities which require remediation in order to mitigate vibration impacts (including monitoring of haul road condition).
84. A Construction Traffic Management Plan (CTMP), under the requirements of the draft DCO, will also be submitted to and approved by the Local Planning Authority which will outline measures to manage impacts of construction vehicles.

9.2 Monitoring

85. The Construction Phase Noise and Vibration Management Plan will set out a procedure for monitoring of the management and mitigation measures. If it is deemed by the Local Planning Authority that during construction monitoring of construction noise is necessary, then the locations for such monitoring will be agreed in advance with the Local Planning Authority. Additional monitoring of management and mitigation measure is described in **section 13**.

10 Air Quality Management

86. **Chapter 19 Air Quality** of the ES (document reference 6.1.19) identifies receptors that are potentially sensitive to air and dust emissions. The control measures set out in **section 10.1.1** to **section 10.1.6** are to be applied in order to ensure that any potential effects upon these receptors are adequately mitigated.

10.1 Control Measures

87. A number of management and mitigation measures in relation to the emission of dust and other emissions during construction works have been identified.
88. An Air Quality Management Plan (AQMP) will be developed and implemented, which may include measures to control other emissions, approved by the Local Planning Authority.
89. Contact details shall be clearly displayed at suitable positions along the site boundary to allow members of the public to raise comments on air quality and dust matters. A stakeholder communications plan will be developed and implemented that includes community engagement before work commences on site.

10.1.1 Access Strategy

90. The movement of Heavy Goods Vehicles (HGVs) travelling to construction sites can influence air quality and as such the emissions associated with vehicle movements are taken account of in the strategies used to manage traffic. Detailed information regarding the impact of HGVs and construction traffic is laid out in the Outline Construction Traffic Management Plan (document reference 8.9), Outline Access Management Plan (OAMP) (document reference 8.10) and the Outline Travel Plan (OTP) (document reference 8.11). The OTP sets out how construction personnel traffic would be managed and controlled and the Outline Construction Traffic Management Plan (OCTMP) sets out the standards and procedures for managing the impact of HGV traffic during the construction period, including localised road improvements necessary to facilitate the safe use of the existing road network. These are secured under of the requirements of the draft DCO.
91. The access strategy applies a hierarchical approach to selecting routes and where possible, seeks to reduce the impact of HGV traffic upon the most sensitive communities. This access strategy includes the following commitments:

- All HGV traffic would be required to travel via the A1094 or B1122 from the A12, no traffic would be permitted to travel via alternative routes, such as the B1121 or B1119;
- No HGV traffic would be permitted to travel through Leiston or Coldfair Green / Knodishall;
- No HGV traffic would be permitted to travel via B1121 past Benhall, Sternfield or Friston; and
- No HGV traffic would be permitted to travel via B1353 (Thorpeness Road).

10.1.2 Dust Management

92. 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 Local 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.
- 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.
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to note any dust deposition, record inspection results, and make the log available to the Local Planning Authority when asked.
- 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.
- Take measures to control 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.
- Cover, seed or fence 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.
- Produce a CTMP to manage the sustainable delivery of goods and materials.
- Implement the Travel Plan that will be produced for the proposed East Anglia ONE North project, which supports and encourages sustainable travel for contractor operatives and staff (public transport, cycling, walking, and car-sharing).
- 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.
- Bonfires and burning of waste materials should not be permitted.

10.1.3 Measures Specific to Earthworks

93. 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.

10.1.4 Measures Specific to Construction

94. Measures specific to construction may typically include:

- Ensure construction sand and other construction aggregates are stored in silos, banded 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 overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust release.

10.1.5 Measures Specific to Access and Egress from Site

95. 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.
- Loaded 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.
- Install a wheel washing system (with rumble grids to dislodge accumulated dust and mud) prior to leaving the site where reasonably practicable.
- Adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Locate site access gates at least 10m from receptors where possible.

10.1.6 Measures Specific to Non-Road Mobile Machinery (NRMM)

96. 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 EN590:2004).

- All NRMM will comply with regulation (EU) 2016/1628 of the European Parliament and of the European Council.
- 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.
- Implementation of energy conservation measures including instructions to throttle down or switch off idle construction equipment; switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded, ensure equipment is properly maintained to ensure efficient energy consumption.

10.1.7 Monitoring

97. The monitoring of management and mitigation measures is described in **section 13**.

11 Surface Water and Drainage Management

98. **Chapter 20 Water Resources and Flood Risk** of the ES (document reference 6.1.20) includes applicable management and mitigation measures for the construction and operational phases of the proposed East Anglia ONE North project. The measures have been provided to reduce the impact of the proposed East Anglia ONE North project on surface and groundwater resources. The main objectives with regards to managing potential surface water and foul water drainage are as follows:
- To protect surface and groundwater by ensuring that appropriate measures are in place to prevent contaminants (e.g. sediment release) from entering the surrounding environment and in particular pathways that might lead to water receptors. An overview of proposed controls for hazardous materials is provided in **section 5**.
 - To comply with relevant legislation and good practice in terms of managing surface and foul water abstractions and discharges.
 - To maintain and protect private water supplies during construction.
99. In particular, the control measures are designed to manage flood risk. Control measures identified are set out below.

11.1 Control Measures

100. A Surface Water and Drainage Management Plan and a Flood Management Plan will be produced as part of the final CoCP. These are discussed further in the following sections.
101. Note that management measures of operational stage surface water drainage will be detailed and secured in the final Landscape Management Plan (LMP) produced post-consent to discharge requirements of the draft DCO. The LMP will be based upon the Outline Landscape and Ecological Management Strategy (OLEMS) submitted with this DCO application.

11.1.1 Sediment Management

102. To minimise potential impacts from the construction phase on land, surface water or groundwater receptors, where possible, the following measures will be implemented:
 - Work along the cable route would be limited to short sections (work fronts) at any one time. 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. Subsoil will then be excavated to the appropriate depth and stored separately to the topsoil. On completion of trenching, trenches will be back-filled, and the stored topsoil will be re-distributed over the area of the work front, with the exception of the access road and any associated drainage.
 - Buffer strips of vegetation will be retained adjacent to the Hundred River and Friston Watercourse, where possible. Where surface vegetation has been removed, it will be reseeded to prevent future runoff (excluding arable crops).
 - A CMS will be developed for the construction activities and will adhere to construction industry good practice guidance as detailed in the Environment Agency's PPG notes (including PPG01, PPG05, PPG08 and PPG21) and CIRIA's 'Control of water pollution from construction sites: Guidance for consultants and contractors (C532) – A guide to good practice' (2001). Specific measures to control sediment supply that will be captured within the CMS include:
 - Subsoil exposure will be minimised and strips of undisturbed vegetation will be retained 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.

- The drainage system will include drainage channels (or swales) along the length of the onshore cable route to collect surface water runoff and direct it to a suitable point of discharge or soak-away.
- The drainage system will also include silt fences at the foot of soil storage areas to intercept sediment runoff at source.
- Attenuation or settlement ponds will be established within the onshore development area to assist in surface water runoff. Where necessary, topsoil and subsoil storage areas along the onshore cable route will be cleared to accommodate attenuation or settlement ponds.
- Suitable filters will be used to remove sediment from any water discharged into the surface drainage network.
- Additional silt fences will be included in parts of the working area that are in proximity to surface drainage channels.
- Where possible, spoil storage would be set back 5m from water courses, to minimise potential for silt run off from the onshore cable route working width.
- Soil and sediment accumulation on road surfaces will be minimised as reasonably practicable by washing the wheels of vehicles leaving site and, where required, clearance of the road surface. Traffic movement would be restricted to minimise the potential for surface disturbance.

11.1.2 Pollution Prevention

103. Specific measures relating to pollution prevention that will be captured within the CMS will typically include:

- Cable installation activities will be designed to ensure that they will not affect groundwater in any significant manner. Excavations will be shallow (approximately 1.2m under the ground surface, although they may be slightly deeper beneath watercourse and service crossings) and significantly above the level of the Principal Aquifer. If subsurface works are required in Source Protection Zone (SPZ) 1 or SPZ2 (as identified in **Chapter 18 Ground Conditions and Contamination**), the construction methodology will stipulate that the best available techniques are used for any installations, to be agreed in advance with the Environment Agency. Furthermore, a hydrogeological risk assessment meeting the requirements of GP3 (Environment Agency 2017) will be undertaken for any trenchless crossing locations in SPZ2 or SPZ3. If significant risks are identified, alternatives to cross the SPZ will be considered.
- Concrete and cement mixing and washing areas will be situated at least 10m away from the nearest watercourse. These will incorporate settlement and recirculation systems to allow water to be re-used. All washing out of

equipment will be undertaken in a contained area, and all water will be collected for off-site disposal.

- All fuels, oils, lubricants and other chemicals will be stored in an impermeable bund with at least 110% of the stored capacity. Damaged containers will be removed from site. All refuelling will take place in a dedicated impermeable area, using a bunded bowser. The refuelling and fuel storage area will be located at least 10m from the nearest watercourse. Biodegradable oils will be used where possible.
- Spill kits will be available on site at all times. Sand bags or stop logs will also be available for deployment on the outlets from the site drainage system in case of emergency spillages.
- Foul drainage (e.g. from construction welfare facilities) will be collected through a mains connection to an existing mains sewer (if a suitable connection is available), or collected in a septic tank located within the onshore development area and transported off site for disposal at a licensed facility. The specific approach will be determined during detailed design with consideration of the availability of mains connections and the number of working hours for site attendees.

11.1.3 Watercourse Crossings

104. The following additional measures would be applied where possible, and detailed in the Watercourses Crossing Construction Method Statement (which will be included as part of the final CoCP) to reduce the impacts associated with the trenched crossing of the Hundred River:

- In order to ensure that there are no adverse impacts resulting from the installation of temporary dams, where possible the amount of time that temporary dams are in place would be restricted to a maximum of 10 weeks. Flumes or pumps would be adequately sized to maintain flows downstream of the obstruction whilst minimising upstream impoundment, and scour protection would be used to protect the bed downstream of the dam from higher energy flows at the outlet of the flumes or pumps. Furthermore, a fish rescue would be undertaken in the area between the temporary dams prior to dewatering.
- The temporary bridge or culvert for the haul road would be adequately sized to avoid impounding flows. If a culvert is used, the invert level of the structure will be installed below the natural bed of the channel so that sediment transport and the movement of fish and aquatic invertebrates can be maintained.
- Cable ducts would typically be installed 2m below the bed of the watercourse, allowing the necessary water volumes and flows (sufficient to account for

climate-related changes in fluvial flows and erosion). This would be dependent upon local geology and geomorphological risks (e.g. bed scour and channel instability) and avoid exposure during periods of higher energy flow where the bed could be mobilised.

- Vegetation would not be removed from the banks unless necessary to undertake the works; any vegetation removal would be restricted to the smallest practicable footprint.
- Where possible, localised improvements to the geomorphology and in-channel habitats will be considered where the watercourse is crossed using open cut techniques. This will include 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). Note that any improvements would be restricted to within the onshore development area of the proposed East Anglia ONE North project.

11.1.4 Surface Water Drainage

105. Changes in surface water runoff as a result of the increase in impermeable area from the onshore substation and National Grid substation during construction will be attenuated and discharged at a controlled rate, in consultation with the Lead Local Flood Authority (LLFA) and Environment Agency.
106. The controlled runoff rate will be at least the equivalent to the greenfield runoff rate.
107. Attenuation ponds will be included within or close to the onshore substation and National Grid substation to provide sufficient attenuation of runoff into the closest watercourse or sewer connection. Where necessary, topsoil and subsoil storage areas along the onshore cable route will be cleared to accommodate attenuation or settlement ponds. The full specification for the attenuation ponds will be addressed as part of detailed design during the post consent phase.
108. During construction, where required, the onshore cable route will be bounded by drainage channels (one on each side) to intercept drainage from within the working corridor. Additional drainage channels will be installed to intercept water from the cable trench. Depending upon the precise location, water from the channels will be infiltrated or discharged into the surface drainage network.
109. A Surface Water and Drainage Management Plan (SWDP) will be developed and implemented to minimise water within the cable trench and ensure ongoing drainage of surrounding land. Where water enters the trenches during installation from surface runoff or groundwater seepage, this will be pumped via settling tanks, sediment basins or mobile treatment facilities to remove sediment, before

being discharged into local ditches or drains via temporary interceptor drains in order to prevent increases in fine sediment supply to the watercourses.

110. At drain crossings, the haul road would be installed over a pre-installed culvert pipe to allow continued access to the cable route. The pipe would be installed in the drain bed so as to avoid upstream impoundment and would be sized to accommodate reasonable 'worst-case' water volumes and flows.
111. Where drains are shallower than 1.5m, temporary damming, culverting or diverting may be employed, with agreement from internal drainage boards and flood management agencies.
112. As a worst case, the cable ducts and/or cables would be installed in a flat formation (each cable core installed alongside each other). Onshore cables will typically be installed in trenches approximately 1.2m below ground level and of approximate 0.9m width. The default arrangement assumes that cables (and ducts if used) are laid in trefoil (plus fibre-optic cables and DTS cabling) in a total of two trenches. The width of the trenches and the spacing between them would vary depending on the depth of burial. This depth would allow the cables (and protective tiles and tape) to be laid below the level of typical field drainage pipes and other underground services to minimise impact and interaction.
113. Land drainage systems would be maintained during construction, where possible, and reinstated on completion. Consultation with landowners and occupiers would be undertaken to establish existing drainage arrangements, location of drains and any other relevant information. Following construction, field drainage systems and ditches would be fully reinstated where possible in consultation with landowners / occupiers. A local specialised drainage contractor will undertake surveys to locate drains and create drawings both pre- and post-construction, and ensure appropriate reinstatement. The pre-construction SWDP will include provisions to minimise water within the working area and ensure ongoing drainage of surrounding land.

11.2 Licences

114. **Table 11.1** sets out the additional licences or permits necessary prior to construction in relation to water resources and flood risk.

Table 11.1 Licences or Permits Necessary prior to Construction in relation to Water Resources and Flood Risk

Issuing body	Name of consent	Applicable to
Environment Agency	Flood Risk Activity Permit issued under the Environmental Permitting (England and Wales) Regulations 2016	A permit may be required for any proposed works or structures within 8m of any fluvial defence; any proposed works or structures in/under/over/within 8m of the top of the bank of a main river, or 16m if it is a tidally influenced main river.
	Water Abstraction licence	Abstractions of more than 20 cubic metres / day from main and ordinary watercourses, and groundwater and certain dewatering activities.
	Environmental Permit for water discharge or waste operations / registration of exempt waste operations and water discharges (as necessary or registered exemption from such)	Discharge to surface water (main river or ordinary watercourse) or groundwater of anything other than clean, uncontaminated surface water run-off
Lead Local Flood Authority (Suffolk County Council) or East Suffolk Internal Drainage Board	Consent for works affecting ordinary watercourses (Ordinary Watercourse Consent – also known as Land Drainage Consent)	Works in/over/under/near an ordinary watercourse

11.3 Abstractions

115. Abstraction of water may be required for potable supply or for use during site activities, such as concrete batching or washing. The appointed Contractor will be responsible for obtaining from the Environment Agency, in advance of use, any permits for the use of abstracted water during the construction related activities and for monitoring and recording associated abstraction rates or other licence requirements to demonstrate compliance.
116. In the event that abstracted water is required for potable supply purposes, this will be undertaken in consultation with the Environmental Protection Team of the Local Planning Authority to facilitate regulation under and compliance with the Private Water Supplies (England) Regulations 2016.
117. Any landowners with private water supplies will be identified during landowner consultations, and all affected landowners and water supplies will be monitored appropriately during construction works. Standard mitigation, where required, would include pre- and post-construction monitoring surveys of the water supply,

development of risk management measures and the preparation of contingency supply arrangements.

11.4 Discharge

118. The appointed Contractor will be responsible for obtaining from the Environment Agency, in advance of discharge, any permits associated with the use of septic tanks or other effluent / washout water treatment facilities and for monitoring and recording specified volumetric, quality or reference conditions, to demonstrate compliance.
119. If the permanent connection to the foul sewer is not available during the construction phase, the foul water and sewage effluents produced by the construction workforce shall be contained by temporary foul drainage facilities to be installed. In the case of the latter, all foul water shall be disposed of off-site by a licensed contractor.
120. Waste sludge from septic tanks and effluents from cesspits and sewage holding tanks will be removed by a suitably licensed and registered waste carrier in accordance with Duty of Care requirements, with details and records maintained in accordance with the SWMP.

12 Utility Providers

121. 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.
122. 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.

13 Monitoring and Site Inspections

123. The management and mitigation measures described above will be monitored by the Contractor's environmental management representative 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.
124. A monitoring programme will be established for environmental aspects associated with the proposed East Anglia ONE North project site, which will be documented in the final CoCP. The Applicant's EMS and associated audit

programme includes a requirement for the Applicant or an experienced nominated delegate to audit the Applicant construction sites on a periodic basis; included in the audit scope will be the appointed Contractor's monitoring and inspection regime.

14 Contingency Planning

125. The proposed East Anglia ONE North project specific Pollution Prevention and Response Plan, detailing how to report and deal with an environmental incident, is discussed in **section 5**.
126. During construction, all site staff would be made aware of sections of the onshore cable 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.
127. If, during construction, remains are found unexpectedly on a site not known to be a burial ground, they will not be removed. In such circumstances, the local environmental health officer and the proposed East Anglia ONE North project archaeologist will be consulted to assess the remains and the police will be consulted. If the police conclude that the remains are of no investigative significance and it is necessary to exhume the remains, then an application for a licence will be made to the Ministry of Justice. Should any animal remains be discovered during the construction phase that indicate a potential burial site, the main works contractor would cease all work in the vicinity and immediately advise the Animal Health Regional Office accordingly.

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