

East Anglia THREE

Outline Code of Construction Practice

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1 INTRODUCTION

1.1 Background

1. This Outline Code of Construction Practice (OCoCP) relates to the proposed East Anglia THREE project and associated infrastructure.
2. The OCoCP forms part of a set of documents that supports the Development Consent Order (DCO) application submitted by East Anglia THREE Limited (EATL) to the Planning Inspectorate for authority to construct and operate the East Anglia THREE offshore windfarm.
3. A final detailed Code of Construction Practice (CoCP) will be produced prior to construction of the windfarm, and will be in line with this OCoCP. Both the OCoCP and the CoCP are secured by Requirement 22 of the draft DCO, which states:

22.—(1) No stage of the connection works may commence until for that stage a code of construction practice (which must accord with the outline code of construction practice) has been submitted to and approved by the relevant local planning authority, in consultation with the relevant highway authority.

(2) The code of construction practice must include—

- (a) a surface water and drainage management plan;*
- (b) watercourse crossing method statements;*
- (c) a flood plan;*
- (d) a written scheme for noise and vibration management during construction;*
- (e) an air quality monitoring plan;*
- (f) artificial light emissions plan;*
- (g) a site waste management plan;*
- (h) a pollution prevention and emergency incident response plan;*
- (i) a project community and public relations procedure; and*
- (j) a public rights of way management plan.*

(3) The code of construction practice approved in relation to the relevant stage of the connection works must be followed in relation to that stage of the connection works.

4. The CoCP provides a key mechanism, enforceable via DCO Requirement 22, through which the regulatory authorities can be assured that environmental impacts

associated with the construction of the onshore infrastructure will be formally controlled and mitigated.

5. This OCoCP reinforces commitments made in the Environmental Statement (ES) and complements other requirements set out in Schedule 1, Part 3 of the DCO.

1.2 Purpose and Scope

6. The purpose of this OCoCP is to support the construction management team in its duties to help ensure that the pre-construction and construction phases of the onshore elements of the proposed East Anglia THREE project comply with relevant European and UK legislation and requirements in the 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.
7. The CoCP sets out the management measures which EATL will require its contractors to adopt and implement for any onshore construction works for the proposed East Anglia THREE project and related off-site activities. 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 Mean Low Water Springs (MLWS) to the connection at Bramford) and are defined to include:
 - Fibre optic and export cable(s) installation from MLWS to the transition bay(s);
 - Temporary works associated with transition bay excavation and possible beach access for short pull-through method;
 - Onshore cable(s) installation along the onshore cable route including jointing bays;
 - Temporary works associated with the onshore cable route and substation enabling works for example the establishment of a haul road and Construction Consolidation Sites (CCSs);
 - Substation, access road and peripheral works installation (including open trenching between the end of the ducts and the substation);
 - Interface between the EATL assets and existing NGET assets (including open trenching between the substation and ducts to connect to NGET assets); and
 - Reinstatement and mitigation works enacted during the construction phase.

8. There are two possible approaches for the onshore cable installation that have been assessed for the proposed East Anglia THREE project;
 - Single Phase: a single phase (up to 1200MW installed in a single construction period); or
 - Two Phased: (two phases of up to 600MW each, with each start date separated by no more than 18 months).
9. EATL are currently considering both a High Voltage Direct Current (HVDC) and a Low Frequency Alternating Current (LFAC) electrical solution for the proposed East Anglia THREE project. A decision on the final electrical solution for the project would be made following consent during the final design stage of the project.
10. This document is relevant to the construction of the proposed East Anglia THREE project whichever approach is taken and whichever electrical solution is adopted.
11. The term ‘construction’ in the OCoCP includes all onshore site preparation, material delivery, excavated material disposal, waste removal and all related engineering and construction activities as defined in the draft DCO.
12. The term ‘project’ in this document means such projects forming part of the delivery of the proposed East Anglia THREE project, including onshore cable installation, substation works, from MLWS to the National Grid Electricity Transmission Plc (NGET) connection at Bramford.
13. The OCoCP has been compiled in accordance with the requirements of the Planning Act, with the objective of highlighting environmental management controls in one cohesive document for the onshore works and formalises commitments made to the Local Authorities and statutory consultees in the Environmental Statement.
14. The scope of the main body 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 EATL environmental management controls.
15. This OCoCP sets out the general objectives and measures for construction activities for the proposed East Anglia THREE project. Practical implementation and compliance arrangements associated with CoCP commitments will primarily be delivered via Construction Environmental Management Plans (CEMP) and other

associated and topic specific plans (such as Site Waste Management Plans and Landscape and Ecological Management Plans).

2 GENERAL PRINCIPLES

2.1 Environmental Management Principles

16. EATL operate an Environmental Management System (EMS) based on the requirements of ISO 14001:2004, that describes the processes and procedures by which EATL identifies and manages significant risks associated with its operations. 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 delivered. EATL will be compliant with the requirements of the EMS.
17. The EMS includes an Environmental Management Framework Plan (EMFP), which provides internal guidance to Managers on the approach and framework of controls to be adopted to manage the environmental risks associated with all phases of project activities. The EMFP includes reference to environmental management documents at an organisational and project level including the CoCP.
18. Through the EMS, contractors undertaking work on behalf of EATL are screened and selected using a variety of criteria that include environmental credentials. Where works have the potential to impact the environment, contractors are required to prepare a CEMP commensurate with the identified environmental risks.
19. A CEMP will be prepared for each major scope of work or project. The project CEMP will set out how the appointed Contractor intends to manage environmental risks associated with the construction activities and will set out specific control measures necessary to deliver the requirements of this OCoCP and any other mitigation measures that have been committed to by EATL that relate specifically to the construction phase of the project.
20. The appointed Contractor is likely to have internal management system requirements and CEMP templates, so the actual project CEMP may vary from what is set out within the EATL OCoCP. Site specific sensitivities and Requirements of the DCO along with updates in legal requirements and construction best practice, will also be captured in the project CEMP.
21. For each activity of work, the project CEMP shall identify specific construction work process / aspects, the environmental impact of each process / aspect, the mitigation measure / best practice and the relevant procedure or method of work to be followed.

22. In addition, a number of environmental plans and strategies for construction management relevant to construction arrangements across the project will be prepared and implemented; these are detailed in the sections below and will be attached as Schedules to the CoCP. As well as being captured by Requirement 22 of the DCO (Code of Construction Practice), certain of these plans and strategies are also individual Requirements in their own right. An outline description of the plans together with relevant references to the CoCP and DCO requirements is provided below in *Table 1*.

Table 1: Code of Construction Practice – subsidiary plans

Code of Construction Practice – Subsidiary Plans	
Description	DCO, Schedule A, Part 3, Requirement
A Surface Water and Drainage Management Plan (see Section 10) will be prepared and implemented. The plan will include the approach to surface water and foul water drainage, and water supply during construction.	Requirement 18, Requirement 22
A Surface Water Drainage Scheme for Work No. 67 (see Section 10) will be prepared and implemented.	Requirement 18(2)
A watercourse crossing method statement will be prepared to cover each watercourse crossing	Requirement 22
A Contamination Assessment and Mitigation Scheme (see Section 7) will be prepared (if required) based upon a review of East Anglia ONE site investigation works, results and recommendations.	Requirement 19
A flood plan will be prepared and implemented.	Requirement 22
A written scheme for Noise and Vibration for construction	Requirement 22, Requirement 24
An Air Quality Monitoring Plan (see Section 6) will be prepared and implemented incorporating emission control measures outlined in best practice guidance.	Requirement 22
An Artificial Light Emissions Management Plan (see Section 3) will be prepared and implemented. The plan will detail the appropriate mitigation measures to be taken to manage emissions from artificial light emissions.	Requirement 22 Requirement 23
A Site Waste Management Plan (see Section 9) will be prepared and implemented. The plan will manage construction waste across the project in accordance with a waste hierarchy to minimise, reuse and recycle waste materials.	Requirement 22
A Pollution Prevention and Emergency / Incident Response Plan (see Section 11) will be prepared and implemented to include measures to prevent pollution and those to be adopted in the event of a pollution incident including recording and response procedures in the event of a release of hazardous materials or fire.	Supporting Requirement 22
A Project Community and Public Relations Procedure	Requirement 22

23. The EMS will, inter alia, provide for the preparation and implementation of a programme of environmental monitoring and auditing to ensure that EATL environmental standards are being adhered to. A number of positions relating to clerks of works, officers etc are specified by this OCoCP and the other plans within *Table 1*. The project CEMP will contain a comprehensive list of these positions.

24. Prior to the commencement of construction works the CoCP will be sent out to the local authorities for review and approval.
25. EATL will then make available the final version of the CoCP and provide a copy to statutory bodies and the local authorities. The measures and standards identified in the CoCP will then be implemented by the appointed Contractors.
26. EATL will work with the relevant local authorities to ensure appropriate resourcing is in place to monitor compliance with the provisions of the CoCP.

2.2 Health and Safety Principles

27. EATL recognises that its decisions and activities have a direct impact on the health, safety and welfare of those working for us and on our behalf. We shall set specific health and safety goals and monitor performance in relation to the construction, operation and maintenance of our renewable energy generating projects. By our commitments we will:
 - Demonstrate our commitment to health and safety by our actions and behaviours.
 - Ensure that Health and Safety issues are fully considered as an integral part of project management throughout the project life; from design, through construction, operation and maintenance, and future demolition.
 - 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 project or to others who may be affected.
 - Ensure that suitably competent EATL employees and other designers, engineers, supervisors and contractors from other organisations are engaged to undertake the responsibilities associated with the 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 all those parties involved in the construction or operation and maintenance or demolition of our renewable energy generating projects (Client, Designer, CDM¹ Coordinator, Principal Contractor and all other Contractors), fulfil their roles and responsibilities both legal and organisational to health, safety and welfare.
 - Require that parties involved in our renewable energy generating projects 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) Regulations 2015.
 - Ensure that upon completion of construction activity a suitable and sufficient Health and Safety File is completed and transferred, where appropriate, to the ultimate owner.
28. A separate draft Health and Safety strategy has been produced for the proposed East Anglia THREE project and has been submitted with the DCO application.

2.3 Construction Principles

29. The appointed EATL Construction Manager and associated management team will be responsible for implementation of the CoCP provisions, for monitoring 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, including the construction CEMP and associated plans as identified in section 2.1 above.
30. The provisions of the OCoCP / CoCP will be incorporated into the contracts for the construction of the proposed East Anglia THREE project, and will be required to be adhered to as a requirement of the DCO. EATL and its implementing contractors will be required to comply fully with the terms of the CoCP.
31. Aims of the OCoCP 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 (ECW) supported by other specialists as necessary (such as ecological, archaeological, auditing specialists). In addition, 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.

¹ Co-ordinator required on projects falling within certain parameters as defined in the Construction (Design and Management) Regulations 2015

32. In addition to the arrangements under this OCoCP the appointed Contractors will be encouraged to register with the Considerate Constructors Scheme which is a voluntary code of practice that seeks to:
- Minimise any disturbance or negative impact (in terms of noise, dirt and inconvenience) sometimes caused by construction sites to the immediate neighbourhood
 - Eradicate offensive behaviour and language from construction sites; and - recognise and reward the constructor's commitment to raise standards of site management, safety and environmental awareness beyond statutory duties
33. The scheme requires constructors to adhere to the Scheme's Code of Considerate Practice.

2.4 Local Community Liaison

34. EATL will ensure effective and open communication with local residents and businesses that may be affected by noise or other amenity aspects caused 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 potential evening and night time works and activities which may occur in close proximity to receptors. A combination of communication mechanisms such as posters and parish meetings will be employed to keep local residents informed.
35. A designated EATL local community liaison officer will be appointed to 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 Authorities.
36. 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 a 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. All 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

37. Working hours are specified in Requirement 25, Schedule 1, Part 3 of the DCO. During the construction period normal working hours will be between 0700 hours and 1900 hours Monday to Saturday, with no activity on Sundays or public holidays.
38. In certain circumstances, when work is required to be undertaken at specific times to maintain the construction programme or address particular logistical, construction or environmental constraints (e.g. tidally dependent works), such as continuous processes lasting more than 12 hours or where emergency works are required, different working hours may be required. These are set out in the DCO and include:
- Where continuous periods of operation are required, such as concrete pouring;
 - For internal fit out works associated with the substation;
 - For the delivery of abnormal loads to the substation, which may cause congestion on the local road network;
 - Where works are being carried out on the foreshore;
39. In these circumstances, approval will be sought prior to the works commencing and sensitive receptors notified of the proposals. The type of receptor deemed to be sensitive will vary depending on the works, but broad categories will be defined in later iterations of the Code of Construction Practice. Where works are undertaken out-with consented hours in response to emergency situations, the local authorities will be advised as soon as practical, outlining the circumstances for the works, the likely duration and the mitigation measures implemented.
40. EATL 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

41. The construction CEMP will include a site layout showing the location of site compounds and main features of the site. 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.

42. A good housekeeping policy shall be applied across all construction areas throughout the construction period. This shall include the following requirements:
- All working areas shall be kept in a clean and tidy condition.
 - All site compound areas shall be non-smoking. Specific areas within the worksites shall be designated as smoking areas and shall be equipped with containers for smoking waste. These shall 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.
 - Radios (other than two-way radios used for the purposes of communication related to the works) and other forms of audio equipment (other than associated with safety mechanisms (such as reversing beepers) shall not be operated on any worksite.
 - Site waste susceptible to spreading by wind or liable to cause litter shall be stored in enclosed suitable containers and waste shall be removed at frequent intervals and the site kept clean and tidy.
 - Static plant should have suitable drip tray protection.
 - Hoardings and boundary fences shall be frequently inspected, repaired and repainted as necessary.
 - Adequate welfare facilities shall be provided for all site staff and visitors.
43. In addition, where working areas are within Flood Zone 2 or 3 additional measures shall 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
 - Stores of fuels, oils and chemicals shall be surrounded by an impervious bund wall. The volume of the bunded compound shall be at least equivalent to the

capacity of the tank or tanks plus 10%. This should constitute general site practice for the prevention of spills. In addition the bunded installation shall be installed in the remotest location possible from rising water and the walls of sufficient height and structural soundness to withstand flood water ingress

- Debris will be safely contained, reducing the risk of large items entering the flood flow
 - 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.
44. Where 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 to minimise impact on flood waters
 - There shall be no storage of spoil directly on watercourse banks. Where possible, spoil will be set back from watercourses by 5m. This will prevent excessive loading on the watercourse banks and minimise the risk of stored material entering the watercourses.

3.3 Site Induction

45. The construction of East Anglia THREE 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. The project CEMP guidance expects that site inductions will include reference to compliance with relevant planning / licence conditions, 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 staff according to their role.

3.4 Screening and Fencing

46. Site fencing requirements are controlled under Requirement 17, Schedule 1, Part 3 of the DCO, which requires details of permanent and temporary fencing, walls and other means of enclosure to be submitted to the relevant planning authorities for approval before any onshore works can commence.

47. This sub-section summarises the expected proposals in greater detail pursuant to this requirement.
48. 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. Hoardings shall be selected to suit the location but may be:
- A wire mesh fence, where appropriate for minimum security needs; or
 - A 2.4m minimum height, plywood faced, timber framed boundary hoarding or other hoarding providing equivalent security and noise attenuation in the vicinity of noise sensitive neighbours; or
 - Other designs where a particular appearance, acoustic rating or ecological performance is considered to be required and is agreed with the local authorities.

3.4.1 Woodland/Hedgerow protection

49. 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 and approved prior to construction. The protective fencing will comply with BS 5837, and be erected to demarcate the canopy spread of the trees and hedgerows. Further detail on fencing in relation to hedgerows and woodland will be contained within the Landscaping Management Scheme(s) and Ecological Management Plan(s), provided for by DCO Requirements 14 and 21 respectively.

3.4.2 Temporary works fencing along cable route

50. Temporary stock proof fencing will be constructed along the boundaries of the temporary works area along the remaining parts of the onshore works not described above, including along the cable corridor and the transition bay working area in accordance with the fencing 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.

3.4.3 Temporary works fencing beach area

51. Heras fencing, or other equivalent fencing types, will be utilised to enclose any temporary works, including excavation and cable pulling at jointing bays or beach cable pull-in. Any installation activities on the beach will be managed to ensure that the construction works are protected to reduce, so far as reasonably practicable, inconvenience to the public and to ensure the safety of the public and site staff.

52. The location and design of site boundaries, hoarding and temporary structures adjacent to the public highway shall permit adequate visibility at junctions and proper forward visibility along the highways in accordance with Department for Transport guidance and the requirements of the local Highway Authority.

3.5 Site Security

53. Adequate security shall be provided by contractors working on behalf of EATL 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 shall be closed and locked when there is no site activity and appropriate security measures shall be implemented. Further details on site security measures shall be provided in the construction CEMP.

3.6 Welfare

54. The construction areas shall 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 shall be in compliance with relevant legislation and codes of practise and shall be sited at the CCSs.

3.7 Artificial Light Emissions

55. An Artificial Light Emissions Management Plan will be prepared in accordance with DCO Requirement 22 and implemented as a component of the CEMP.
56. The plan will detail the mitigation measures to be taken to manage emissions from artificial light in accordance with good practice, such as the use of directional beams, non-reflective surfaces and barriers and screens, to avoid light nuisance whilst maintaining safety and security obligations.
57. 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 Plan which will be submitted to the local authorities for approval prior to construction commencing. The approved scheme will be maintained throughout the construction of the relevant works.
58. Site lighting shall be positioned and directed to minimise nuisance to footpath users, residents, to minimise distractions to passing drivers on adjoining public highways and to minimise skyglow, so far as reasonably practicable. Lighting spillage will also avoid or minimise impacts on ecological resources, including nocturnal species.

59. So far as is practicable, all power to temporary lighting shall 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 Reinstatement

60. Restoration of land is controlled under Requirement 30, of the draft DCO. Any land used temporarily for construction of the connection works and not ultimately incorporated in permanent works or approved landscaping, is to be reinstated to its former condition, or such condition as the relevant planning authorities may approve, in consultation with the local highway authority where relevant, as soon as reasonably practical and within twelve months of completion of the connection works.
61. Restoration under Requirement 30 will also apply to any land used for temporary construction for East Anglia THREE which was constructed pursuant to the East Anglia ONE DCO (and approved for retention for use by the East Anglia THREE project under Requirement 28 of the East Anglia ONE DCO), such as the haul road or construction consolidation sites.

4 PUBLIC RIGHTS OF WAY

62. Impacts to public rights of way (PRoW) have been assessed in Chapter 22 Land Use of the ES and a full list of the interactions between the construction works and PRoW is given in *Appendix 22.2*.
63. It is anticipated that where the PRoW interaction is limited to the installation of haul road across the PRoW, then no closure and diversion would be required whilst the short section of haul road is laid (and removed at the end of the construction period). During the installation and removal of the haul road, EATL propose to maintain the ongoing use of the PRoW by the public by the use of banksmen to ensure temporary cessation of haul road laying works and safe passage of users. Once the haul road is installed across the PRoW, further management measures (i.e. signage) would ensure that haul road users are aware of the potential for PRoW users to cross their path, and PRoW users are aware of the hazards to allow both to operate together safely. Precise details for management of PRoW to remain available during works will be agreed with the relevant Highway Authority prior to commencement of the relevant stage of works.
64. If appropriate, where a haul road or upgraded access track is formed from an existing PRoW or if open trenching at the substation crosses the bridleway (W 155/001/0) a diversion would be put in place. Diversionary details will be agreed with the relevant local authority and highway authority in each case as may be necessary. PRoW requiring closure will be closed for the minimum time practical and commensurate with the work requirements and restoration proposed.
65. 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 Highways Authority. A qualified agricultural liaison officer (ALO) will be employed to ensure that information on existing land conditions is obtained, recorded and verified during the rights of way surveys.
66. Where impacted by the works, the surveyed PRoW will be restored to its original condition or otherwise as agreed with the relevant Highways Authority. The ALO will act as the point of contact for the restoration of the PRoW.
67. EATL will advertise all diversions following the Highways Authority's standards for advertising temporary closures of PRoW. This will include:
- Provision of a map showing the extent of the closure and an alternative route if there is one

- Confirmation that the alternative route is to another PRoW or roads or on land in EATL control
 - Confirmation that the alternative route across land in EATL control is safe and fit for public use.
68. County, District and Parish Councils would be notified well in advance (4 – 6 weeks) of temporary closure
69. A legal notice describing the closure would be published in the press (East Anglia Daily Press) two weeks in advance of closure
70. 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 legal site notices would be erected in sensible locations on site 1 – 2 weeks in advance of closure
 - The above notices would describe the duration of closure and the alternative (diversion) proposed.
71. Any extensions to closure of a PRoW would be discussed with the relevant Highways Authority.

5 NOISE AND VIBRATION

72. 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.
73. 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
 - Comply with relevant legislation, requirements (including the DCO), standards and best practice relating to construction noise.

5.1 Control Measures

74. A Noise and Vibration Management Scheme is required under DCO Requirement 24. This Scheme will be included as part of the Code of Construction Practice, in fulfilment of Requirement 22 of the DCO.
75. The project ES identifies receptors that are potentially sensitive to noise and vibration impacts, including noise and vibration from construction traffic, together with 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 project CEMP. As a minimum the following standards shall be adhered to:
- BS5228 - Noise and vibration control on construction and open sites
 - Environmental Protection Act 1990
 - Noise and Statutory Nuisance Act 1993.
76. Best practice noise mitigation measures, to be implemented and controlled through the Noise and Vibration Management Scheme, will 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.
- No 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.
- Use of pre-construction survey to identify road surface irregularities which require remediation in order to mitigate vibration impacts.

5.2 Monitoring

77. The Noise and Vibration Management Scheme will set out a procedure for monitoring of the mitigation measures. If it is deemed by the relevant local authorities that during construction monitoring of construction noise is necessary, then the locations for such monitoring will be agreed in advance with the relevant local planning authorities. The mitigation measures will be monitored by the Constructor's environmental management representative and ECW throughout the construction phase. If a non-conformity with any of the mitigation measures is identified, it will be recorded and appropriate remedial actions will be implemented.

6 AIR QUALITY

6.1 Air Quality Management Plan

78. Chapter 20 of the ES assesses Air Quality for the project. It was identified that prior to commencement of construction activities agreement on the scope of an Air Quality Management Plan (AQMP) for the onshore construction works should be reached with the relevant local authorities to ensure that the potential for adverse environmental effects on local receptors is reduced to an absolute minimum.
79. An AQMP, incorporating emission control measures outlined in best practice guidance developed by the Greater London Authority (GLA) and London Councils², will form part of the construction CEMP and is likely to include the following:
- Requirement for nuisance dust and/or PM₁₀ monitoring at strategic locations
 - Procedures for monitoring dust complaints and implementing appropriate mitigation measures
 - Measures for controlling dust and general pollution from site construction operations, and include details of any monitoring scheme, if appropriate.

6.2 Control Measures

80. The level of risk for potential dust impacts differs depending on the stage of construction i.e. demolition, earthworks, construction or trackout. Appropriate mitigation measures, as outlined in best practice guidance produced by the GLA and London Councils, are anticipated to include those shown in *Table 2*.

Table 2: Appropriate mitigation measures, for the level of risk for potential dust impacts

Appropriate mitigation measures, for the level of risk for potential dust impacts		
Site Planning	Construction Traffic	Site Activities
Effective barriers would be erected around dusty activities or the site boundary	No vehicles would be allowed to idle on site Speed limit on un-surfaced roads to minimise potential for dust generation	Water would be used as a dust suppressant as appropriate

² London Councils and the Greater London Authority, 2006. The control of dust and emissions from construction and demolition: Best Practice Guidance. London: 1 London Councils and the Greater London Authority

Appropriate mitigation measures, for the level of risk for potential dust impacts		
Site Planning	Construction Traffic	Site Activities
No bonfires would be allowed on site	Vehicles leaving site would be washed if necessary	Temporary cover or re-vegetate earthworks if possible Wetting/dampening of dust generating stockpiles
Machinery and dust- generating activities would be located away from sensitive receptors	All loads entering and leaving site would be covered	Skips would be covered and drop heights minimised
	Runoff of mud and water would be prevented Monitoring of mud on road with road sweeping and brushing as required	Cutting equipment would have water suppression or suitable local exhaust ventilation systems
	All non-road mobile machinery would use ultra-low sulphur diesel where available	Dust-generating activities would be minimised

81. The traffic effects of the proposed development during the construction phase would be temporary and would be along traffic routes employed by haulage / construction vehicles and workers.

6.3 Monitoring

82. The mitigation measures described above will be monitored by the Contractor's environmental management representative and ECW throughout the construction phase as set out in the CEMP. If non-conformity with any of the mitigation measures is identified, it will be recorded during a site audit and appropriate remedial actions will be implemented.

7 GROUND CONDITIONS

7.1 Land Shrinkage

83. A complex pattern of ground conditions is present along the onshore cable route. At a simplistic level the surface deposits range from Alluvial, comprising soft clays, silt and sand to the south east of the route adjacent to the River Deben, to Glacial sand and gravel to the north and Glacial Till to the north east.
84. Cohesive soils (clays) are susceptible to shrinkage/swelling due to changes in moisture content, whereas granular soils (sands and gravels) are not. The magnitude of shrinkage of cohesive soils will depend on the degree to which their moisture content is modified and their specific mineral composition. In general the more clay mineral present, the more shrinkable the clay.
85. By adopting appropriate construction methods that will facilitate continuity of land drainage at all times both during and after construction, the risk of affecting current drainage patterns and therefore shrinkage / swelling of soils, will be avoided. This will prevent significant change in soil moisture content developing. Such measures are to:
- Ensure that drainage patterns are only interrupted for the shortest possible duration construction
 - Ensure complete and effective restoration of drains and ditches
86. These methods will be developed and agreed with the relevant local drainage authorities.
87. Construction works will be completed in line with details provided in Chapter 5 Description of the Development of the ES. Note that as the ducts will already be in place, relevant works are only the transition and jointing bays and any temporary water crossings. Wet or dry construction techniques will be adopted (further details provided in Section 10.4), but in either case the flow of water will be maintained throughout the construction. This will ensure that there is minimal change to surface water flow or to any associated groundwater drainage patterns during and after construction.
88. Wherever possible, the transition and jointing bays will be backfilled with arisings, in the order they were originally present. This will ensure that there are no significant changes to the drainage pattern of the land once construction has been completed. Drainage ditches will be reinstated in line with this OCoCP to ensure that there are

minimal changes to the drainage regime once construction and reinstatement are complete.

89. Drainage systems put in place in working areas and construction consolidation sites will ensure that existing drainage patterns are only minimally affected. Where permanent drainage systems are required (only at the converter station location), these will be designed in accordance with a Surface Water and Drainage Management Plan, to be approved by the local planning authorities. Separators will be provided where the drainage water may be impacted by oil contamination.

7.2 Contaminated Land

7.2.1 Current Knowledge of Contaminated sites

90. Chapter 19 Soils, Geology and Ground Conditions of the ES, details the assessment of contaminated land for the proposed East Anglia THREE project. There are three mapped sensitive sites along the electrical transmission works as detailed in Table 3 and all three relate to historical landfill sites. Principal and secondary aquifers underlie the majority of the preferred onshore cable route, with source protection zones present in some areas and nitrate protection zones present along the whole route.

7.2.2 Planned Response at known Contaminated Sites

91. The former landfill near Tuddenham St Martin is recorded by Suffolk Coastal District Council as Contaminated Land under Part IIA of the Environmental Protection Act 1990. At this site and at the former landfill near Culpho Hill, a site investigation will be undertaken as part of the East Anglia ONE project to establish the extent and nature of contamination.
92. The intrusive site works undertaken as part the East Anglia ONE project could take the form of trial pit, borehole or window sample surveys to assess ground conditions and collection of samples to enable laboratory analysis of soils to identify contaminants and the concentrations present. As the ducts will already be installed for the proposed East Anglia THREE project the first approach would be to avoid the area of contaminated land, and other areas identified as having the potential to cause contamination, through micro-siting of jointing bays. If avoidance is not achievable and jointing bays are required to be installed to pull cables through the ducts, then a review of East Anglia ONE data would be undertaken.
93. The East Anglia ONE data would be reviewed by competent officers commissioned by EATL to review and amend Risk Assessments and Method Statements to avoid impacts on the environment and construction workers, advise on the requirement

for offsite disposal of native material unsuitable for backfill, and on junction bay design to avoid creation of contaminant pathways. The appropriate measures for mitigation impacts shall be outlined (if required) within a Contamination Assessment and Mitigation Scheme (under Requirement 19, of the draft DCO). This Scheme will be submitted, following consultation with the Environment Agency, for approval to the local authorities prior to the specified Works commencing.

Table 3: Contaminated sites located within the onshore cable route

Site location	Grid ref	Site ref	Description	Crossed by corridor	Requirement for site investigation prior to construction	Likely actions required to be undertaken by East Anglia THREE
Sand pit / landfill site, Tuddenham St Martin	619372, 249198	17	<p>Historic landfill approximately 3ha, with maximum dimensions of approximately 300m, north to south and 130m, east to west. Recorded as receiving inert, industrial & commercial waste between 1948 and 1991.</p> <p>Recorded by Suffolk Coastal District Council as Contaminated Land under Part IIA of the Environmental Protection Act 1990</p>	Yes	<p>It is anticipated that EATL would not be required to undertake further site investigation in this area.</p> <p>It is anticipated that intrusive site investigation works would be undertaken as part of the East Anglia ONE project. These investigations would involve in-situ recording of type and depth of fill, presence and depth of groundwater, and collection of soil and groundwater samples for laboratory analysis.</p>	<p>Avoidance of the area for construction of junction bays will be considered closely</p> <p>If avoidance is not possible then, reports, method statements and as built drawings completed for the East Anglia ONE project would be reviewed by competent officers on behalf of EATL.</p> <p>New method statements would be created and agreed with Environment Agency and SCC to define safe systems of work to avoid impacts on construction workers, advise on the requirement for offsite disposal of native material unsuitable for backfill, and on junction bay design to avoid creation of contaminant pathways.</p>

Site location	Grid ref	Site ref	Description	Crossed by corridor	Requirement for site investigation prior to construction	Likely actions required to be undertaken by East Anglia THREE
Culpho Hall	620456, 248536	16	Potential historic landfill with conflicting positional records, showing the onshore cable route fully running through (for 325m) or clipping the edge of the former landfill. No deposition data is available. No records of site investigation exist.	Yes	<p>It is anticipated that EATL would not be required to undertake further site investigation in this area.</p> <p>It is anticipated that intrusive site investigation works would be undertaken as part of the East Anglia ONE project. These investigations would involve in-situ recording of type and depth of fill, presence and depth of groundwater, and collection of soil and groundwater samples for laboratory analysis.</p>	<p>Avoidance of the area for construction of junction bays will be considered closely</p> <p>If avoidance is not possible then, reports, method statements and as built drawings completed for the East Anglia ONE project would be reviewed by competent officers on behalf of EATL.</p> <p>New method statements would be created and agreed with Environment Agency and SCC to define safe systems of work to avoid impacts on construction workers, advise on the requirement for offsite disposal of native material unsuitable for backfill, and on junction bay design to avoid creation of contaminant pathways.</p>
Bramford Dairy	611496, 248104	42	Reference centre point indicating potential former landfill (no outline boundaries recorded)	Yes	<p>It is the conclusion of EATL that this record is erroneous and relates to the former Blood Hill landfill located 500m north of the site.</p> <p>No further action required.</p>	<p>It is the conclusion of EATL that this record is erroneous and relates to the former Blood Hill landfill located 500m north of the site.</p> <p>No further action required.</p>

7.3 Encountering Unexpected Contamination

94. As the ducts for the proposed East Anglia THREE project will be installed as part of the East Anglia ONE project, it is expected that unexpected contamination will be identified, recorded and managed. The data would then influence the location of East Anglia THREE jointing bays, with avoidance of contamination the first response available.
95. However, the same principles remain for both projects. Site managers would be instructed in the potential for encountering unexpected contamination, and made aware of the procedure should such an event occur. The site manager would be provided with contact details of an environmental advisor who can provide telephone advice as to whether construction needs to be halted to allow a site inspection to be undertaken.
96. 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 consultants, consultation with the local authorities and the Environment Agency (EA), and agreement on plans for further investigation and remediation measures where necessary.
97. The environmental consultant 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 consultant.
98. Where necessary, laboratory analysis will be completed (on an expedited turnaround, where possible), allowing conclusions to be reached as to whether material needs to be removed from the construction area.

7.4 Measures for Working in Areas of Suspected or Unexpectedly Found Contamination

99. Risk of exposure of site workers to contaminants at sites where contamination is suspected or unexpectedly found will be minimised through the adoption of good practice procedures as described in guidance documents such as the Protection of Workers and the General Public during the Development of Contaminated Land. HSE, 1991 and A Guide for Safe Working on Contaminated Sites, R132, CIRIA 1996.

100. Prior to work being undertaken that may have an effect on workers, the public or the environment, an approved site specific Risk Assessment and Method Statement (RAMS) must be completed. The Risk Assessment will identify risks associated with the proposed work at the site together with mitigation measures to adequately address the risks and embed these in the work Method Statement.
101. Mitigation measures working at contaminated sites are likely to include generic controls such as defining, demarcating and isolating the working area, use of designated access and egress routes, provision of hygiene facilities and maintenance of high hygiene standards, provision of first aid facilities and provision and use of appropriate personal protective equipment (PPE), together with any specific measures required and relating to the particular site environment.
102. Where required, provision will be made for the safe storage of contaminated materials at designated locations. Where disposal of contaminated material is required, it is proposed that advice will be sought from suitably qualified environmental consultants who will advise on the best method of disposal (e.g. licensed landfill, tanker for liquids). Transfers will be undertaken by registered waste carriers to authorised disposal sites in accordance with Duty of Care requirements.
103. Where material has been removed from site due to contamination it will be undertaken by a suitably licensed contractor in a manner to prevent the generation of pathways and the egress of pollutants from the site. Appropriate and clean replacement fill material will be imported to site and where necessary, fill material will be analysed prior to import to site to ensure that it is suitable for use.

8 OILS, FUELS AND CHEMICALS

8.1 Objectives

104. The main objectives with regard to managing potential hazardous materials are:
- Ensure that appropriate measures are in place to prevent hazardous materials being released into the environment.
 - Complying with relevant legislation and good practice associated with the storage and use of hazardous materials.
105. The construction CEMP will consider and outline control 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 Guidelines 2).

8.2 Control Measures

106. The following best practice will be implemented:
- Oil and fuel storage tanks will be robust and provide adequate secondary containment 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 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 and chemical storage areas will be inspected, at least weekly for signs of spillage, leaks and damage. 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 the main construction compounds 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
- Small plant will be provided with drip trays or commercial ‘plant nappies’.

8.3 Monitoring

107. The mitigation measures described above will be monitored by the Contractor’s environmental management representative and ECW throughout the construction phase as set out in the CEMP. If non-conformity with any of the mitigation measures is identified, it will be recorded and appropriate remedial actions will be implemented.

9 WASTE MANAGEMENT

9.1 Objectives

108. EATL aims to manage waste in accordance with:

- Legislative requirements
- The waste hierarchy by avoiding waste generation and promoting waste minimisation in the first instance. Where waste is produced, reuse, recycle or recovery should be considered where practical and economically feasible prior to considering disposal.

9.2 Control Measures

109. A project Site Waste Management Plan will be developed in line with legislation and best practice and this will record the following information, as a minimum:

- The types and quantities of waste generated
- The management approach for each waste type (Reuse, Recycle, Recover, Dispose) including any treatment
- The storage arrangements for each waste type
- The site waste monitoring and reporting arrangements.

110. Site waste will be segregated as far as practical (and at a minimum to separate hazardous wastes) and stored in labelled and secure facilities.

111. 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.

112. 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).

9.3 Monitoring

113. Monitoring of waste arisings, transfers and disposals will be monitored by the appointed Contractor(s) through the Site Waste Management Plan. Day to day monitoring of waste storage facilities will be undertaken by the Contractor's

environmental management representative and ECW throughout the construction phase as set out in the CEMP.

10 PROTECTION OF SURFACE AND GROUNDWATER RESOURCES

10.1 Objectives

114. 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 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 8 above
- 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.

10.2 General Provisions

115. To minimise potential impacts from the construction phase on land, surface water or groundwater receptors, EATL and contractors appointed to work on behalf of EATL will adhere to relevant Environment Agency's Pollution Prevention Guidance (PPG) notes, as well as general good construction practice, including:

- PPG01 – General guide to the prevention of water pollution
- PPG05 – Works near or liable to affect watercourses
- PPG06 – Working at construction and demolition sites
- PPG08 – 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 SUDS Manual, C697, CIRIA (2007)
- 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
- CIRIA Handbook C651 Environmental Good Practice on Site Checklist.

10.3 Control Measures: Surface and Foul Water Management

116. Controls for surface and foul drainage are provided for in Requirement 18 of the DCO. The latter requires EATL to submit written details of surface and (if any) foul drainage systems (including pollution controls) after consultation with the sewerage and drainage authorities and the Environment Agency, for approval to the local authorities prior to works commencing.
117. A Surface Water and Drainage Management Plan for the onshore electrical transmission works will be prepared. The plan will detail the foul and surface water drainage and management measures to be implemented. The detailed design will be supported by the rationale for selecting the chosen mitigation measures, together with associated calculations and methodologies for sizing.
118. The Surface Water and Drainage Management Plan will include provisions regarding use of best practice methods where any discharge to watercourses are proposed, in order to minimise impacts on water quality and flood risk.
119. The Surface Water and Drainage Management Plan and request for Land Drainage Consent and Flood Defence Consent for permanent works will be submitted to the Lead Local Flood Authority, East Suffolk Internal Drainage Board and the Environment Agency as appropriate. A screening assessment for the Water Framework Directive (WFD) has been undertaken for the permanent infrastructure of the proposed East Anglia THREE project, and supplied with the DCO application.
120. Where appropriate, the principles of Sustainable Urban Drainage Schemes (SUDS) will be applied and the principles, as set out in industry guidelines, identified below will be followed. SUDS principles will be applied where necessary, but in particular to the design of surface water management controls at the substation.
121. At the substation, the proposed surface water drainage scheme will be designed to meet the requirements of the NPPF by limiting the post development off site run-off to the existing Greenfield rate and providing sufficient on site attenuation for rainfall events up to the 1 in 100 year rainfall event, plus a 30% allowance for climate change over the lifetime of the development.

122. Sustainable drainage is a departure from the traditional approach to draining sites. There are some key principles that influence the planning and design process enabling SUDS to mimic natural drainage by:
- Storing runoff and releasing it slowly (attenuation)
 - Allowing water to soak into the ground (infiltration)
 - Slowly transporting (conveying) water on the surface
 - Filtering out pollutants
 - Allowing sediments to settle out by controlling the flow of the water.
123. Run-off from the substation site will be limited, where feasible, through the use of infiltration techniques which can be accommodated within the Order Limits. Where the proposed run-off rate from the site exceeds the current rate, the additional run-off will be attenuated using SUDS storage techniques. The SUDS principals will be implemented so as to mimic the existing environment at the substation site and will take into account the principles and provisions of the Outline Landscape and Ecological Management Strategy, considering synergies where possible.
124. Where construction operations may impact the drainage regime, the work will be undertaken in consultation and agreement with the local Internal Drainage Boards. During the construction phase, local drainage will only be interrupted for the shortest possible period and will be reinstated to minimise any effect on local drainage or soil moisture content.
125. Wherever practical, the transition bays and jointing bays will be backfilled with arisings, in the order they were originally present to minimise alterations to the drainage pattern once construction and restoration have been completed. The reinstatement materials placed within the transition bays and jointing bays floor and sides will be at least as erosion-resistant as the original bed material but where appropriate may also be formed from a low- permeability material (e.g. a 'clay plug') to ensure that no preferential drainage pathways are created). Existing ditches and field drains in close proximity to the operational site will be maintained and kept free from potential obstruction.
126. A Pollution Prevention Plan and Emergency / Incident Response Plan will form part of the project CEMP to be agreed with the Environment Agency. This will be in accordance with the EA's 'Pollution Prevention Guideline No.6 Working at Construction and Demolition Sites' and PPG 21 Incident Response Planning.

127. Generic pollution prevention and mitigation measures are likely to include:

- Diversion of clean water away from working areas to reduce volumes of dirty water generation
- Construction Consolidation Site compounds will generally comprise a permeable crushed stone or aggregate surface laid on a geotextile membrane which will allow direct infiltration of rainfall run-off at the same time as trapping and filtering any sediment and contaminants. Where hard surfacing is considered for utilisation in potentially high risk areas of the construction compound, positive surface water collection systems for the management of rainfall-run-off to prevent the pollution of ground water will be considered where appropriate
- Any wheel washes used in site compounds will operate where practical on a closed cycle basis and have self-contained water and silt collection systems. Where systems require a discharge these will be subject to consultation and in accordance with Environment Agency requirements. Waste silts and sludges will be removed in accordance with Duty of Care requirements
- Oil, water and silt separators will be used where applicable on construction compound surface water management systems to remove oils and fuels accidentally spilled/accumulated during construction. These will be maintained in accordance with the manufacturer's instructions to ensure they remain efficient
- The length of time excavations are kept open will be minimised to reduce the potential for dewatering
- The filtration of all run-off using mitigation measures such as straw bales, check dams, filter strips, silt fences or settling tanks/ponds prior to release, or the discharge of clean surface water run-off to land to allow natural percolation wherever possible (no discharge of water would take place directly into a watercourse)
- The separate storage of topsoil and excavated materials, to prevent mixing of sub-soil and topsoil, thus improving reinstatement
- The minimisation of excavation volumes and disturbance to the surrounding areas, together with the replacement of any soils inadvertently disturbed during excavations in general accordance with their original structure and location

- The setting of vehicular speeds along the construction access routes to minimise soil trafficking
- The use of pollution control measures to reduce sediment run-off entering any watercourses or surface water drainage systems during construction activities, with reference to the relevant EA Pollution Prevention Guidelines.
- Regular cleaning and maintenance of plant to ensure potential pollutants are not released e.g. from fuel spills and leaks
- The maintenance of a register of fuel volumes stored on site, and the location of fuel storage and refuelling points in designated areas, a minimum of 20m from watercourses
- Regular inspection of facilities storing hazardous materials, which will be locked and made secure when not in use (see Section 8 above)
- Best environmental practices would be followed, reducing the potential for release of contaminants to ground to a minimal level. Appropriate spill and leak containment systems would be incorporated into the construction procedures to ensure no uncontrolled releases of contaminants occur
- Any materials to be removed from site would be subject to the appropriate waste management licensing regulations. Care would be taken to manage any stockpiles of materials in order to reduce runoff from exposed surfaces

10.4 Control Measures Watercourse crossings

128. There are 75 watercourse crossings along the onshore cable route. These are detailed in *Appendix 21.5* of the ES. These are listed in two categories:
- Crossings by the East Anglia THREE export cable (56 in total); and
 - Crossing by the routes which will be used to access the cable (19 in total).
129. As the cables would be pulled through ducts installed as part of the East Anglia ONE project, the crossings made by the East Anglia THREE cables would not impact on the water bodies.
130. To access the East Anglia THREE onshore cable route, the road network and existing tracks would be utilised as far as possible, however at certain locations new haul road would be laid. Therefore two categories of water crossing would exist:
- Crossings using existing infrastructure (i.e. bridges and fords, 6 in total); and

- New temporary crossings which would require construction (13 in total).

131. For activities adjacent to a watercourse and the protection of the aquatic environment measures may include:

- Ensure protection of all habitats and species through careful micro-siting to minimise habitats affected; and
- Careful storage of all oils and fuels in the vicinity of watercourses to minimise potential for contamination of watercourses.

10.4.1 Plant and Vehicle Access

132. In most instances, temporary flume pipe(s) or bridges are installed at watercourse crossings to enable plant and machinery to cross during construction, to minimise delay and impacts on local roads from construction plant and machinery. In all cases, vehicles will be prohibited from driving through watercourses.

133. Flume pipe bridges are constructed by installing one or more sections of pipe in the watercourse ramped over to allow uninterrupted flow of water within the watercourse and a continuous running track for construction vehicles. These pipes are surrounded with sand bags before a temporary road is laid over the top. Additional sand bags are installed each side of the road to prevent mud falling over the side and temporary safety fencing erected where necessary. Access crossings will have proper temporary headwalls at both ends to reduce the risk of hardcore material making up the access track from collapsing into the watercourse.

134. Flume pipes will be sized in accordance with expected flows and will be oversized to compensate for any unexpected high flows. Monitoring will take place on a regular basis to ensure that no material from the running track over the temporary flumes enters the watercourse. If this does occur the material will be removed immediately.

10.4.2 Environmental Protection

135. The following measures will be implemented to minimise environmental impacts:

- Periods of low flow will be chosen wherever practicable. This will result in a quicker deposition from the water column of any sediment released
- All watercourses and ditches will be maintained in effective working condition across the where affected for the duration of the works, and will be restored to a condition at least as good as before the commencement of the works

- Construction methods will take into consideration plant and animal life, upstream and downstream of the crossing, and will be in accordance with the requirements of the Landscaping Management Scheme(s) and Ecological Management Plan(s) provided for by DCO Requirements 14 and 21, respectively
- Ecological surveys and investigations will be completed in advance of any construction work taking place. Investigations should consider optimum timings for works (e.g. where possible avoiding fish spawning times). The necessary mitigation for notable species (including otter and water vole) discovered during the surveys will be agreed before construction takes place as agreed through the Ecological Management Plan(s) provided for by DCO Requirement 21
- Bank-side vegetation would be retained, with trees and shrubs coppiced rather than grubbed-out where practicable. Any habitat removal required along banks would, where practicable, be restricted to the width required for the crossing (a maximum of 5.5m)
- Any aquatic vegetation removed during the process would be retained on the adjacent banks for 24 hours to allow the aquatic fauna to return to the water
- Bank and bed material would be stored separately to aid reinstatement. Topsoil, subsoil and bedrock will be stored separately and replaced in sequence as part of site restoration work. Where possible spoil would be set back 5m from watercourses to minimise potential for silt run off from the construction activities.
- Where required flume bridges would be in place for the duration of the construction period. At crossings a 5m strip of vegetation would be retained to act as a natural buffer. Full restoration of the site, including the dismantling of any temporary bridges and flume pipes will be undertaken when the whole cable has been laid
- Appropriate measures will be applied to match the individual circumstances of each watercourse or ditch crossing. The techniques used will be detailed within a Specific Method Statement for each watercourse crossing, to be consulted upon with the local authorities, Environment Agency and Internal Drainage Board. The techniques used will aim to provide rapid reinstatement, bank stabilisation and cable protection. In all instances, banks will be re-profiled to match the existing bank. If necessary, additional measures will be

taken to ensure that the banks remain stable. The size of the bank and flow rate in the channel will determine the techniques or combination of techniques to be used, and this will be discussed/agreed with the Internal Drainage Board

- Where practical refuelling of mobile plant will be carried out a minimum of 30m from any watercourse (and not on slopes leading to watercourses)
 - Spill control measures will be employed, including drip trays, nozzles and absorbent pads as appropriate. The design of bowsers, hoses etc. will be checked to ensure that they are not vulnerable to rupture or leak, e.g. because of exposed pipe-work
 - Adequate spill kits will be kept in all site vehicles and plant; additional stocks will be issued to watercourse crossing crews and the emergency crew(s) and staff will be trained in their use
 - All spillages to ground or watercourses will be reported and recorded as part of incident notification procedures to the statutory authorities
 - Within a floodplain gaps will be provided at intervals within soil or other material stockpiles to act as drainage pathways, to ensure that floodwater drainage is not hindered and flooding exacerbated
 - Within flood plains stockpiles will be constructed with a regular profile and the surface compacted to minimise the potential for erosion by flowing water.
136. The banks will then be fully reinstated to their original profile using best practice techniques, including stabilisation techniques such as use of geotextile matting. Such stabilisation techniques are usually very successful in ensuring future bank stability and as such no future monitoring is anticipated. The specific reinstatement techniques, including stabilisation techniques, will be outlined in the Specific Method Statement for each watercourse crossing.

10.4.3 In the Instance of a Ditch Being 'Dry'

137. If streams are ephemeral and the ditch is dry at the time of the crossing the above measures will not be required, however best practice soil storage and separation techniques will still be employed.

10.5 Abstractions

138. 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.

139. In the event that abstracted water is required for potable supply purposes, this will be undertaken in consultation with the Environmental Protection Team of Suffolk Coastal District Council to facilitate regulation under and compliance with the Private Water Supplies Regulations 2009.
140. Any landowners with private water supplies will be identified during initial landowner consultations, and all affected landowners/water supplies will be dealt with appropriately during construction works. Standard mitigation, where required, would include pre and post-construction monitoring surveys of the water supply (where necessary in liaison with the local authorities), development of risk management measures and the preparation of contingency supply arrangements.

10.6 Discharge

141. 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.
142. 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.
143. 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 Site Waste Management Plan.

10.7 Protection of Private Water Supplies

144. A number of private water supplies have been identified within the vicinity of the onshore works. Although the exact source of these is not always known it is likely that they will be sourced from a spring, borehole or well, which are potentially at very low, but non-negligible, risk of contamination during construction. Water

quality monitoring may be undertaken throughout the works to ensure no negative impacts occur.

145. Environmental controls will be put in place as discussed in previous sections to construction best practises and the Environment Agency pollution control guidelines.
146. An Emergency Plan shall be put in place to ensure prompt response to any complaint of perceived impact on private water supplies, including monitoring of the water supply in question and the immediate cessation of associated water-sensitive construction activities.
147. During the construction phase, measures will be adopted by the Contractor in order to prevent silt from being washed into existing watercourses. These measures will be based on construction best practice and guidance provided by the Environment Agency and the Construction Industry Research and Information Association (CIRIA). Areas exposed due to the removal of vegetation are more susceptible to erosion during heavy rainfall or through rapid surface run-off so areas will be reinstated as soon as possible to minimise this effect.
148. Surface water flows will be captured through a series of drainage ditches to prevent water entering excavations or eroding exposed surfaces. The flows will be controlled through the use of settlement ponds, small dams, sediment traps and other hydraulic features to reduce water velocity (thereby reducing erosive power), maximise infiltration and evaporation and to remove as much sediment as possible. Surface water flows will then be discharged across open areas adjacent to the works to allow further reduction in sediment transfer and increased infiltration of flows.
149. Where areas are disturbed, the following measures may be implemented to minimise these effects:
 - Ditches shall be provided adjacent to tracks and other operational areas, where practicable, and will primarily be used to hold water temporarily and to encourage infiltration/discharge into the ground locally to where the rainfall hits the ground
 - The level of silt run-off during construction shall be regularly monitored and if it is excessive in any area this can be managed by providing straw bales locally around the problem areas. These will filter the run-off and trap silt
 - Silt run-off from stockpiles and excavated spoil heaps can be contained through the placement of geotextile silt fences, mats or straw bales on the

downhill side of the stockpile. Stockpiles will be covered with plastic sheeting or geotextile materials to prevent erosion through heavy rainfall

- Any ditches or other water features will be regularly inspected and maintained to ensure their effectiveness. All excess silts will be removed and disposed of within site earthworks. Where check dams have become fully blocked with silt, they shall be replaced in accordance with the following procedure:
 - Silt deposits to be removed
 - Removed silt to be disposed of by spreading in an area of the site where surface run-off will not convey silt deposits back to a watercourse.
150. Ditches will remain in place to convey surface water flows during the operational life of the development. The ditches will therefore be seeded or turfed as soon as they have been formed to ensure their maximum effectiveness.
151. The Site Management team will call on specialist consultants (i.e. ecologists, hydrologists, ornithologists etc) as required to ensure that construction is being carried out in accordance with the requirements set out in the Environmental Statement, the Requirements of the DCO, environmental best practise and other approved Method Statements.
152. During construction works, there is a potential for contamination, emanating from construction plant or materials to enter the controlled surface and groundwater either by direct runoff, leaching or infiltration. Consequently, it may be necessary to monitor the concentrations of certain key contaminants at key locations throughout the construction phase. If necessary, sampling points would represent a selection of relevant watercourses and available wells, where present.

10.7.1 Sampling Interval

153. Site sensitivity will be taken into account when deciding on the need for and level and periodicity of sampling. The proposed monitoring plan would be discussed and agreed with the Environment Agency prior to commencement.

10.7.2 Reporting

154. A baseline report would be prepared following the baseline water quality monitoring programme. This report will provide details of any contamination concentrations recorded and will be used to depict “uncontaminated background pollution levels” for the site. The results will be compared to the most relevant Environmental Quality Standards appropriate.

155. Any environmental deterioration illustrated by the results would be highlighted. In the event of a potential pollution incident, all relevant monitoring points would be visited and re-sampled to determine any changes relative to baseline data. A report detailing the findings would be prepared for each incident and recommendations provided for further monitoring and / or requisite mitigation measures.
156. Following completion of the construction of the development, all sample points would be revisited, re-sampled and analysed for the full suite of analytical parameters and a further report prepared, assessing and discussing any impacts upon water quality throughout the construction process.
157. All information recovered during the monitoring process would be collated and an assessment made regarding the impact on the surface and groundwater of the construction activities.

10.7.3 Personnel

158. All personnel taking samples, analysing and reporting would be suitably qualified.

10.7.4 Other Actions

159. Residents will be provided with a suitable point of contact through establishment of a Communications Protocol, should they experience any problems with their Private Water Supply.
160. Regular progress updates will be provided to inform residents when works are likely to be undertaken in their Private Water Supply catchment area.
161. In the unlikely event that construction works lead to the temporary deterioration of a Private Water Supply, an alternative temporary supply of water will be provided (e.g. water tankered to property and provision of temporary drinking water storage tanks). Damaged filters will be replaced in the unlikely event that a Private Water Supply becomes contaminated with sediments.

10.7.5 Monitoring

162. The mitigation measures described above will be monitored by the ECW throughout the construction phase as set out in the CEMP. If non-conformity with any of the mitigation measures is identified, it will be recorded during a site audit and appropriate remedial actions will be implemented.
163. Mitigation measures will be maintained and monitored on a regular basis. A record of inspections of mitigation measures and any required maintenance will be maintained.

10.8 Licences

164. *Table 4* sets out the additional licences or permits necessary prior to construction in relation to water resources and flood risk.

Table 4 Licences or permits necessary prior to construction in relation to water resources and flood risk

Water Resources and Flood Risk		
Issuing body	Name of consent	Applicable to
Environment Agency	Flood Defence Consent	Any proposed works or structures within 9m of any tidal or fluvial defence; any proposed works or structures in/under/over/within 9m of the top of the bank of a Main River
	Abstraction licence	Abstractions of more than 20 cubic metres / day from Main and ordinary watercourses, and groundwater
	Environmental Permit (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 ENVIRONMENTAL INCIDENT RESPONSE AND CONTINGENCY

165. As part of the project CEMP, 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.
166. Personnel working on site, including any subcontractors 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, EATL encourages environmental emergency response plans to be tested on-site in consultation with EATL.
167. A Flood Plan would be produced. 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.
168. 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 project archaeologist will be consulted to assess the remains. If it is concluded that they are modern, the police will be consulted. If the police have no interest and it is necessary to exhume the remains, then an application for a licence will be made to the Ministry of Justice immediately.

12 MONITORING AND SITE INSPECTIONS

169. A monitoring programme will be established for environmental aspects associated with the project site, which will be documented in the construction CEMP. The EATL EMS and associated audit programme includes a requirement for EATL or an experienced nominated delegate to audit EATL construction sites on a periodic basis; included in the audit scope will be the appointed Contractor's monitoring and inspection regime.

Document 8.1 ends here