

Appendix 14.1 – Construction Environment Management Plan

14.1.1 Introduction

Scheme Background

- 14.1.1.1 Anglian Water Services Ltd (“AWS”) is the largest water and wastewater company in England and Wales by geographic area. The AWS region stretches from the Humber estuary, north of Grimsby, to the Thames estuary, and from Buckinghamshire, in the south of England, to Lowestoft on the east coast.
- 14.1.1.2 AWS’s Water Resources Management Plan (WRMP), together with the Business Plan 2020-2025, will deliver a step change in investment through a twin-track approach to addressing acute challenges in water resources in the region. A new network of pipelines is a key part of the approved WRMP, which sets out how AWS will manage the water supplies across the region to meet current and future needs over a minimum of 25 years and it aims to tackle four key challenges – climate change, environmental protection, population growth and the risk of drought.
- 14.1.1.3 This new network includes a proposed 57 kilometre buried potable water pipeline between Elsham in the north and Waddington in the south, as well as above ground structures such as kiosks, pumping stations and associated structures (collectively referred to as ‘the proposed Scheme’).
- 14.1.1.4 Permanent elements of the proposed Scheme will comprise the following:
- A new buried potable water Pipeline from Elsham to Lincoln;
 - Two pipeline spurs (referred to in this ES as the ‘Bracebridge Heath spur’ and the ‘Welton spur’);
 - Ancillary Pipeline infrastructure including air valves and line valves along the pipeline route; and
 - Above ground infrastructure at Elsham and Welton.
- 14.1.1.5 The proposed pipeline will be constructed using open cut trenching methods for the majority of the route, with trenchless techniques used at strategic crossing points. Temporary pipeline works will include:
- Pipeline construction within a fenced strip of land, known as the working width;
 - Main construction compounds (the locations of which are to be confirmed but provisionally set up at the following locations) :
 - Elsham
 - Barnetby Top
 - Glentham; and
 - Welton
 - 7 satellite compounds;
 - 53 laydown areas; and
 - 13 temporary lagoons.

Purpose of the CEMP

14.1.1.6 This Construction Environmental Management Plan (CEMP) describes the mitigation measures that will be implemented by AWS and its appointed contractors during each stage of the construction of the proposed Scheme.

14.1.1.7 The CEMP has been prepared in accordance with:

- The mitigation measures identified in the Environmental Statement to reduce effects on the environment from the construction of the proposed Scheme;
- AWS Environmental Management Systems (EMS); and
- AWS Code of Practice for Pipelaying.

Delivery of the CEMP

14.1.1.8 Construction of different aspects of the Elsham to Lincoln pipeline scheme will be delivered by two separate delivery partners as follows:

- The Strategic Pipeline Alliance (SPA) has been appointed by AWS to construct and deliver all aspects of the 57 kilometre pipeline, including the Bracebridge Health spur and Welton spur as well as the above ground infrastructure within the existing Welton WTW; and
- The @One Alliance has been appointed by AWS to construct and deliver all aspects of the above ground infrastructure within the existing Elsham WTW and the new above ground infrastructure site to the south-east of Elsham WTW.

Environment Management System

14.1.1.9 The AWS EMS can be access via a dedicated SHEQ-W Gateway . Document ALL-PRO-SHEA-003 (Environmental Management Procedure) sets out the overarching approach to Environmental Management and specific EMS plans and policies of relevance to this CEMP are identified, with their EMS document number, throughout this document.

Environmental Management Plans

14.1.1.10 Various environmental management plans (EMPS) have been prepared to accompany this CEMP. The environmental management plans detail specific mitigation or working methods required for a particular topic/species and will be implemented alongside the CEMP during the construction of the proposed Scheme.

14.1.1.11 Relevant environmental management plans which have been produced include:

- Framework Construction Traffic Management Plan (FCTMP): Outlines the approach to managing construction traffic, impacts on the highway network and Public Rights of Way (PRoWs) during the construction phase. It establishes principles and approaches that would be implemented for the proposed Scheme;
- Public Rights of Way Management Plan (PRoW MP): provides a strategy for managing PRoW during the construction phase;
- Soils Management Plan (SMP): A strategy and action plan for the management of soils which are likely to be excavated and handled during the construction phase; and
- Outline Reinstatement Strategy.

Key Legislation and Guidance

14.1.1.12 In preparing this CEMP, reference has been made to relevant UK legislative requirements, British Standards, and UK Health and Safety legislation. These will apply to all construction works, including that undertaken by subcontractors.

- 14.1.1.13 The proposed Scheme shall comply with all legal requirements as identified in this CEMP and the Environmental Legal Register and Compliance Evaluation (ALL-POS-SHEA-004).
- 14.1.1.14 Relevant industry guidance includes Pollution Prevention Guidelines (PPGs) which contain a mix of regulatory requirements and good practice advice. They have been withdrawn by the Environment Agency but are still considered good practice advice to avoid pollution of watercourses.
- 14.1.1.15 Other useful guidance has been prepared by CIRIA, including guidance on the control of water pollution from construction sites, linear construction projects and general environmental good practice on site.

14.1.2 Management Structure, Roles and Responsibilities

Introduction

- 14.1.2.1 To deliver the additional water resources and associated assets outlined in the WRMP, AWS has appointed two alliances, the Strategic Pipeline Alliance (SPA) and the @One Alliance. These alliances are a group of organisations working together to design, plan and deliver the outcomes of the WRMP. The partners that make up the SPA group are Farrans, Mott MacDonald Bentley, Jacobs, Costain and Anglian Water. The partners that make up the @One Alliance group are Balfour Beatty, Barhale, MMB, MWH Treatment, Skanska and Sweco.

Roles and Responsibilities

- 14.1.2.2 Various organisations will be involved in the safe and environmentally responsible delivery of this project. The following key roles have been identified within these organisations to ensure that effective control is established both on-site, and in the back-office support structure, to manage construction activities.

Anglian Water Services

- 14.1.2.3 AWS shall provide general oversight and strategic direction for the proposed Scheme. The Regional Delivery Manager is the primary day to day manager acting for AWS. The Regional Delivery Manager shall guide the work of the Project Delivery Manager and the Environmental Manager and has the overall responsibility for the implementation of this CEMP.

Strategic Pipeline Alliance / @One Alliance

- 14.1.2.4 The SPA and @one Alliance delivery teams, each led by a Project Delivery Manager, will be responsible for the construction phase of the proposed Scheme. The delivery teams will also be responsible for the overall implementation, maintenance and auditing of this CEMP. This will be achieved through a number of roles:

Environmental Manager / Environmental Advisor

- 14.1.2.5 The Environmental Manager will support the Project Delivery Manager and will be responsible for co-ordinating:

- Regular review and revision of this CEMP as required;
- Consultation with relevant regulatory authorities and stakeholders on behalf of AWS;
- Satisfactory discharge of all relevant consent conditions;
- Attendance at appropriate progress meetings;
- Preparation of environmental audits;
- Implementation of approved mitigation measures; and

- Recording of actions in the CEMP and the contractor plans and reporting back to regulators and consenting bodies as appropriate.

Environmental Clerk of Works

14.1.2.6 The site based Environmental Clerk of Works (ECW) will be responsible for overseeing day to day environmental matters as set out in this CEMP and supporting or carrying out duties on behalf of the Environmental Manager / Environmental Advisor. Where appropriate the Environmental Manager / Environmental Advisor, ECW and Ecological Clerk of Works (EcCoW) may be incorporated into a single role. Where separate roles are required the below responsibilities will be allocated accordingly.

14.1.2.7 The ECW's responsibilities include, but are not limited to:

- Coordinate the implementation of this CEMP;
- Overseeing compliance with the Soil Management Plan (SMP) on-site;
- Supervise on-site works in proximity to sensitive receptors;
- Carry out routine environmental monitoring, reporting and recording as specified in this CEMP;
- Maintain and audit this CEMP and the method statements and plans which underpin it;
- Liaise with the Environmental Manager / Environmental Advisor (where this is a separate role) to carry out regular checks to assess compliance with this CEMP, Environmental Statement and consent conditions; and
- Assist with liaison with external bodies, including sub-contractors.

14.1.2.8 The ECW will be responsible for informing all construction workers of the site's sensitivities and advising on required good construction practice on-site as part of routine site inductions, toolbox talks and through other means of communications (for instance, posters at appropriate seasons). Training requirements are outlined in Section 2.3.

14.1.2.9 The ECW will be responsible for immediately informing the Project Delivery Manager of any significant environmental issues that arise during the construction works, who would in turn inform AWS and regulators/stakeholders, as required.

14.1.2.10 Alongside the ECW, an Archaeological Clerk of Works (ACoW) will be responsible for overseeing day to day construction activities where there are sensitive archaeological receptors. This includes but is not limited to the following areas:

- Bracebridge Heath;
- Sadney Farm;
- Snitterby Carr;
- Kettleby;
- Greetwell; and
- Greetwell medieval village scheduled monument (NHLE 1017332)

Site Agents/Site Manager

14.1.2.11 Construction of the proposed Scheme will be undertaken in a series of progressive working fronts grouped by discipline, with each discipline being overseen by a Site Agent/Site Manager. The ECW will provide appropriate environmental training to the Site Agent of each working front to allow them to take responsibility for the following:

- Implementation and maintenance of environmental controls on-site;

- Responding to any spills or environmental incidents that occur on-site;
- Developing and implementing flood response plans, including signing up to Environment Agency flood alerts; and
- Reporting to the ECW any activity that has resulted, or has the potential to result, in an environmental incident.

14.1.2.12 The Site Agents/Site Manager will liaise and coordinate with the ECW on a daily basis about environmental matters.

Training

14.1.2.13 The delivery team will be responsible for providing a programme of environmental training, to include all staff, at appropriate timings prior to and during the enabling, construction, commissioning and reinstatement phases.

14.1.2.14 Role specific environmental training shall be provided as per the Training and Appointments Procedure (ALL-PRO-SHEA-0134).

Environmental Induction

14.1.2.15 The Site Agent or an appropriate representative (which may be the ECW) will deliver a site induction to all staff in line with the Induction Procedure (ALL-PRO-SHEA-102) which shall include site specific environmental risks. The session will emphasise the role of this CEMP and address specifically:

- Any sensitive features that may be encountered and how they impact operations;
- Requirements for segregation and containment of waste; and
- Reporting of environmental incidents.

Toolbox Talks

14.1.2.16 Toolbox talks address specific environmental issues that may arise on-site, such as:

- Refuelling;
- Spill Response;
- Incident Reporting;
- Waste Handling and Disposal;
- Protection of specific species;
- Protection of and avoidance of damage to Scheduled Monuments;
- Working near water; and
- Material deliveries and storage.

14.1.2.17 The suite of toolbox talks forms part of continuing efforts to create an increased awareness of environmental issues and will focus on the environmental constraints highlighted in this CEMP and any additional environmental issues identified during pre-construction surveys and investigations. Toolbox talks will also be included as part of the site induction. Toolbox talk registers are to be held in the Health and Safety Toolbox Talk Registers.

Emergency Response Training

14.1.2.18 Emergency response training will be carried out periodically as site works progress. The emergency response training will cover the actions to be taken in the event of an environmental emergency such as a pollution incident or a flood event.

Public Communication

- 14.1.2.19 Local communities are to be updated with upcoming works in their area, with particular focus on the following:
- Parish Councils as a method of reaching the whole community; and
 - Individual properties close to construction works.
- 14.1.2.20 The Environmental Manager / Environmental Advisor shall regularly update the AWS Communications Team in relation to any feedback from the local communities.
- 14.1.2.21 Any communications made with third parties such as environmental regulators or members of the public shall be detailed on the Communications Register (ALL-FRM-SHEA-005).

Local Events

- 14.1.2.22 Local events will be identified and factored into the construction programme to minimise disruption to both construction and public events.

14.1.3 Monitoring, Reporting and Review

Introduction

- 14.1.3.1 Monitoring is required to establish the proposed Scheme's performance against the requirements, objectives and targets set out in this CEMP and the environmental policies of AWS. Reporting on the outcomes of monitoring provides a record of compliance and facilitates the communication of findings to relevant stakeholders.
- 14.1.3.2 Audit and review of the effectiveness of this CEMP's procedures and their implementation will lead to continual improvement and effective implementation of environmental mitigation actions. The requirements for monitoring, reporting and review are set out in the sections below.

Environmental Inspections and Audits

- 14.1.3.3 Monitoring of the environmental performance and/or compliance will be achieved via a programme of regular inspections and audits. The audits will assess performance against a prepared checklist to ensure consistency. Inspections and audits will cover the entire area of the proposed Scheme focussing on key Sites or working areas identified by the ECW or the Site Agent. Formal inspections and audits will be carried out by the ECW or suitably qualified delegate.
- 14.1.3.4 If a non-compliance with the checklist or form is identified the construction teams involved will be informed and corrective action notices served by the ECW. Corrective actions are to be addressed in both the short and long term and these actions must be shown to be effective and compliant with legislative requirements and the objective of environmental protection. Short term actions will address immediate causes of non-compliance, while long term actions will focus on the root cause.
- 14.1.3.5 Good practice and lessons learned will be shared across SPA and the @One Alliance via the Environmental Manager.

Environmental Inspections

- 14.1.3.6 Weekly SHE inspections of the site shall be carried out by a person nominated by the Site Agent/Site Manager or a nominated competent person.
- 14.1.3.7 The ECW/Environmental Advisor will also carry out routine inspections on a more ad-hoc basis. Data from inspections shall be used for trend analysis purposes to allow pinpoint targeting of recurring issues. The risk profile of the proposed Scheme will determine the frequency of

inspections. The ECW will also conduct visits following any occurrence of a high-risk event (such as a severe rainstorm) to ensure mitigation measures remain effective. Any issues identified by the ECW will be reported to the Site Agent including details of the corrective actions required.

- 14.1.3.8 The Health, Safety and Environment Inspection Checklist (ALL-FRM-SHEA-007) provides a structure for the inspections and a mechanism for recording the inspection outcomes and any corrective actions required. Actions will also be logged on the Non-Conformance and Findings Log (ALL-FRM-SHEA-032), which will record the owner of the corrective or preventative action required and when actions have been completed. Positive interventions and good practice, where notable, will be recorded and shared across SPA and the @One Alliance via the Environmental Manager / Environmental Advisor.

Construction Environmental Inspection Reports

- 14.1.3.9 Construction Environmental Inspection Reports (CEIR) will be undertaken by the Health, Safety, Environment and Wellbeing (HSEW) Team using the SPA templates on the M2i (Measure to Improve) system. CEIR inspections will be carried out at a frequency determined by the risk profile of the proposed Scheme.

Environmental Audits

- 14.1.3.10 Site Set-Up Audits (ALL-FRM-SHEA-038) will be carried out before mobilisation to site. An Audit Schedule (ALL-FRM-SHEA-028) will be developed on an annual basis which shall identify the number of audits required for the year, names of auditors and auditees, the type and approximate date of audit.
- 14.1.3.11 Audits shall be undertaken accordingly by the HSEW team. The Environmental Manager and/or a client representative of AWS may also be present for the environmental audits.
- 14.1.3.12 An audit form will be developed based on the CEMP and finalised prior to construction. In addition to a site inspection, the audits will also include a review of site records (for instance, training records, waste duty of care records, incident and near miss reports) and evidence of compliance with consent conditions. Findings raised from the audit will need to be registered in the Non-Conformance and Findings Log. In addition, one Environmental Systems Audit (ALL-FRM-SHEA-006) will be undertaken on each SPA Partner per year. The SPA and @One Environmental Management Systems may be required to pass certification audits from an external certification body, or verification of compliance from an independent consultant in order to ensure compliance with the requirements of ISO14001:2015 standard.

Non-compliance

- 14.1.3.13 If agreed procedures or actions set out in the relevant environmental reports, consent conditions, other licence conditions or this CEMP are not completed satisfactorily, or actions identified in the environmental inspections and audits are not closed out satisfactorily, a non-conformance will be raised by the ECW.
- 14.1.3.14 All non-conformances will be reviewed by the Environmental Manager /Environmental Advisor and the ECW and shall be included as an item in all regular meeting agendas. Corrective action reports shall be issued by AWS. The contractor or sub-contractor will immediately initiate corrective actions and, once completed, provide details of the actions undertaken on the non-conformance/corrective action report and return it signed to the Environmental Manager / Environmental Advisor within an agreed timeframe. If the non-conformance is considered to breach legislative requirements, the breach will be reported to the appropriate public authority and noted in monthly site reports.

Environmental Incidents

- 14.1.3.15 An environmental incident is defined as: ‘an unplanned event that either has caused or is likely to cause, harm to human health, property, or the environment’.
- 14.1.3.16 In the event of an environmental incident, the Environmental Incident Process Map (ALL-PRO-SHEA-021) and Environmental Emergency Response Guidance (ALL-GUI-SHEA-004) will be followed, which includes the following details:
- Immediate action to be taken in the event of an environmental incident;
 - Key contact names and telephone numbers, together with a SPA/@One Alliance/AWS escalation process flow chart visualising the notification process and timescales, for reporting of incidents;
 - Agreed timescales for reporting incidents, based on the incident nature and severity; and
 - Internal reporting and recording, and reporting to statutory bodies.
- 14.1.3.17 Site personnel will be briefed on the incident response plan via a toolbox talk and it will be displayed in site cabins and work locations.
- 14.1.3.18 In the event of a potential or actual environmental incident being noticed, the person(s) identifying it shall firstly take immediate steps to prevent or stop the cause and minimise the resulting additional impacts if safe to do so, for example:
- Fix or maintain silt protection measures;
 - Install additional silt protection measures; or
 - Isolate any source of hydrocarbon spill and utilise spill kits.
- 14.1.3.19 The person who identifies the incident shall promptly report the incident to the section Foreman/Site Agent/Site Manager and the ECW/Environmental Advisor in line with the SHE Incident Reporting & Escalation Process (ALL-PRO-SHEA-133b).
- 14.1.3.20 The Environmental Manager / Environmental Advisor will categorise the incident within 24 hours in accordance with the Incident Categorisation Guidance (ALL-GUI-SHEA-163). For Category 1 and Category 2 incidents an M2i incident report must be completed within 48 hours.
- 14.1.3.21 The HSEW Team will investigate the incident using the Full Investigation Report (ALL-FRM-SHEA-138) including undertaking a Root Cause Analysis (ALL-PRO-SHEA-100) and decide on any remediation or further notification that is required. Environmental specialists will be contacted if necessary.
- 14.1.3.22 A formal close out meeting will be held within 14 days and recorded using the Incident Close Out template (ALL-FRM-SHEA-144). Attendees will include, as a minimum, the Lead Investigator, Safety & Environment Lead, Head of HSEW, Project Delivery Manager, subcontractor representative and any other parties deemed appropriate. The Close Out Meeting must be used to agree the findings of the investigation, the actions required and the status of those actions. For Category 3 incidents, a desktop review will be carried out in M2i within 7 days and actions undertaken as required. Trending of Category 4 incidents (near misses) will be undertaken as part of the annual Management Review.
- 14.1.3.23 Resulting lessons learned will be shared across SPA and the @One Alliance as appropriate via the HSEW Team.

Environmental Reports

Fortnightly Report

- 14.1.3.24 The ECW for SPA will prepare a fortnightly environmental report summarising the findings of their inspections and audits and detailing the actions taken to rectify any breaches of this CEMP

and action taken in response to incidents/complaints. The report is to be submitted by the ECW to the Project Delivery Manager.

Monthly Report

14.1.3.25 The Environmental Manager / Environmental Advisor for SPA and the @One Alliance shall prepare a section for the monthly report to AWS, including information such as:

- details and advice on any outstanding non-conformities, corrective and preventive actions;
- details of environmental performance including any trends identified from inspections, audits and reported incidents;
- best practice noted and any areas (or potential areas) for concern; and
- level of performance against environmental objectives and where necessary the need and mechanisms for performance improvement.

Safety, Health, Environment and Quality Statistics

14.1.3.26 From the start of the physical works on-site, the Project Delivery Manager will ensure that data on environmental performance is obtained in order to complete the safety, health, environment and quality (SHEQ) statistics sheet which will be issued to AWS monthly. These sheets will provide an update on the environmental activities carried out in the previous month including any environmental incidents.

Waste Management

14.1.3.27 AWS and its contractors are responsible for managing waste arising from all activities in order to prevent pollution, to meet or exceed legal requirements and to support AWS's zero waste objective. As per the Management of Waste Procedure (ALL-PRO-SHEA-010), a Site Waste Management Plan (SWMP) will be prepared for each of the principal proposed Scheme components prior to the commencement of works. Table 14 1 1 below outlines the project waste monitoring requirements.

Table 14 1 1 - Waste Monitoring Requirements

To monitor	Requirement	Action
Waste Transfer Note (WTN)	Duty of Care* Waste Regulations	<ul style="list-style-type: none"> • Ensure there are adequate descriptions of the waste. Keep copies of all transfer notes. • WTNs to be retained for 2 years. • HWTNs to be retained for 3 years.
Hazardous Waste Transfer Note (HWTN)		
Registered Carriers/Disposers	Duty of Care* Waste Regulations	<ul style="list-style-type: none"> • Ensure waste carrier / disposers are licensed. • Hold copies of their certificates and ensure that they are up to date. • DOC checks will be undertaken by an Environmental Advisor, upon request.
Hazardous Waste Consignment Note Code	Hazardous Waste Regulations	<ul style="list-style-type: none"> • Each Consignment of Hazardous Waste must have a unique Hazardous Waste Consignment Note Code, generated using the following approach: <ul style="list-style-type: none"> - 1st six letters of the business name; - 1st three letters of the site name; and - Final three characters should be numbers increasing from 001

To monitor	Requirement	Action
		<ul style="list-style-type: none"> This information should be provided by partner companies
Waste from Electrical and Electronic Equipment (WEEE) Disposal	WEEE Regulations	<ul style="list-style-type: none"> Evidence documentation must be obtained to show the WEEE was treated and disposed of appropriately. Retain the evidence for four years.
Waste Acceptance Criteria (WAC) Tests	Landfill Directive	<ul style="list-style-type: none"> All WAC test results to be retained for six years. Copies of results to be sent to an Environmental Advisor.
Materials Management Plan	CL:AIRE Code of Practice	<ul style="list-style-type: none"> If re-using treated materials (i.e. soil, tarmac, concrete) without a waste exemption in place then a Materials Management Plan is required. Consult an Environmental Advisor.
Monthly Waste Returns	Client and Company	<ul style="list-style-type: none"> Monthly waste returns (including nil returns) to be sent to the Partner Company designated person responsible for waste collections, to be forwarded to AWS.
Site Skips	Company Policy	<ul style="list-style-type: none"> Monitor the site skips on a regular basis.

CEMP Review

14.1.3.28 In recognition of the fluid nature of construction, this CEMP shall be considered a live document and shall be updated fully prior to construction commencing and then no less than every three months throughout the duration of the works. Updates will include any changes to site conditions, legislation, published regulatory guidance and industry best practice for example.

Permits and Consents

14.1.3.29 A Consents Register will be maintained by the Environmental Manager / Environmental Advisor which will document all existing consent conditions, record all new applications made and the status of the applications. The consents register will be prepared with reference to the Register of Permits, Licences and Consents Guidance (ALL-FRM-SHEA-026).

14.1.4 Summary of Technical Topics

Environmental Constraints

- 14.1.4.1 The proposed Scheme is subject to Environmental Impact Assessment (EIA) and an Environmental Statement (ES) has been prepared and submitted as part of the application for planning consent. The ES provides detailed information on the environmental constraints present in the vicinity of the proposed Scheme and also sets out mitigation measures required to prevent or reduce any potentially significant environmental impacts from the construction or operation of the proposed Scheme.
- 14.1.4.2 A summary of the key EIA findings is presented in the sections below and in the Register of Environmental Actions and Commitments (REAC) in Chapter 14 of the ES.
- 14.1.4.3 An Environmental Constraints Plan will also be produced to accompany this CEMP on handover to the construction delivery team.

Air Quality

- 14.1.4.4 Construction activities associated with the proposed Scheme have the potential to generate dust that could impact on nearby human and ecological receptors. Air Quality was scoped out from detailed consideration in the ES on the basis that, with the application of best practice measures, impacts were unlikely to be significant.
- 14.1.4.5 Contractors are required to implement general principles and working practices to control air pollution risks as detailed in the following Codes of Practice:
- Management of Environmental Nuisance Procedure (ALL-PRO-SHEA-009);
 - Defra: Pollution Prevention for Businesses;
 - The Institute of Air Quality Management (IAQM) guidance on the assessment of dust from demolition and construction (Section 8.2: Dust and Air Emissions Mitigation Measures); and
 - Environment Agency's PPG 6: Working at Construction Sites.
- 14.1.4.6 PPG6, Working at Construction Sites, section 6, was withdrawn in December 2016. However, in the absence of new guidance, it still provides good practice measures to be considered during the construction phase.

Biodiversity

- 14.1.4.7 The land within the study area, due to its size and length (57 kilometres traversing Lincolnshire) contains a variety of habitats characteristic of rural arable farmland in eastern England. The main land use that the route of the proposed Scheme passes through is arable, representing approximately 78.7% of land area within the working width. The area contains the Rivers Witham, Kettleby Beck, North Kelsey Beck, the New River Ancholme, and the Seggimoor Beck, which influence the nature of the habitats in proximity to them to varying degrees due to historical re-sectioning, land drainage and flood defence structures.
- 14.1.4.8 The presence or potential presence of protected or notable habitats and species has been established through desk study and field surveys, as described in Chapter 5 of the ES, Biodiversity. Full details of the baseline are provided in the following appendices to the ES:
- Appendix 2.6 Biodiversity Net Gain Strategy;
 - Appendix 5.1 Designated Sites Technical Appendix;
 - Appendix 5.2 Habitats Regulations Assessment;
 - Appendix 5.3 Habitat Technical Appendix;
 - Appendix 5.4 Aquatic Ecology Technical Appendix;
 - Appendix 5.5 Bat Technical Appendix;
 - Appendix 5.6 Badger Technical Appendix CONFIDENTIAL;
 - Appendix 5.7 Birds Technical Report;
 - Appendix 5.8 Riparian Mammals Technical Report; and
 - Appendix 5.9 Other Notable Species Technical Appendix.
 - Appendix 5.10 Certificate of confirmation accepting the use of District Level Licensing for Great Crested Newt
- 14.1.4.9 A commitment has been made to various good practice measures in the proposed Scheme to avoid or reduce ecological impacts and meet relevant legislative requirements. Specifically, work is to be carried out in accordance with the following EMS guidance:
- ALL-PRO-SHEA-007 Management of Ecology;

- ALL-PRO-SHEA-025 Discovery of Protected Species procedure;
- ALL-GUI-SHEA-020 Trees and Hedgerow Guidance;
- ALL-GUI-SHEA-013 Biosecurity Guidance; and
- ALL-GUIS-SHEA-003 Designated Sites Guidance.

Designated Sites

- 14.1.4.10 There are no statutory designated sites for nature conservation within the working width of the proposed Scheme. The nearest site is Wrawby Moor Site of Special Scientific Interest (SSSI) which runs approximately 1.1 kilometres west of the working width. It should be acknowledged that the proposed Scheme intersects Greetwell Hollow Quarry SSSI but is designated for its geological interest. This site will be discussed in section 14.1.4.39 of the CEMP.
- 14.1.4.11 There are 5 Local Wildlife Sites (LWS) within the working width: Several of these include Habitats of Principal Importance (HPI) and/or Species of Principal Importance (SPI). Highate Lane Verges LWS and Bloxholm Lane LWS are road verges in Lincolnshire, which form part of a network of Road Verge Nature Reserves (RVNR). The sites include:
- Highgate Lane Verges LWS;
 - Willingham Fen West LWS;
 - Witham Corridor, East of City Centre LWS;
 - Sincil Dike, Washingborough LWS; and
 - Bloxholm Lane LWS;

Habitats

- 14.1.4.12 No Annex 1 habitats have been identified outside of designated sites within or adjacent to the working width of the proposed Scheme.
- 14.1.4.13 There is no ancient woodland within 250 metres of the planning application boundary. Ancient woodland is an irreplaceable habitat and describes woodland that has been continuously wooded (or wood pasture or historic parkland) since at least 1600 AD. This includes ancient semi-natural woodland (ASNW) and plantation (broadleaved or conifer) on ancient woodland sites (PAWS).
- 14.1.4.14 Twelve habitat types were confirmed within the working width during the field surveys to qualify as HPI (NERC Act, 2006). All surveyed hedgerows qualify as HPI. Of the 211 hedgerows within the working width the ecology surveys identified 14 'important' hedgerows, under the Hedgerow Regulations 1997. A further 24 potential hedgerows are present within the redline boundary which have not been surveyed.
- 14.1.4.15 Three veteran trees have been recorded within the redline boundary and two recorded within 15m of the redline boundary.
- 14.1.4.16 No terrestrial invasive non-native plants were recorded during ecological surveys for the proposed Scheme.

Protected and notable species

- 14.1.4.17 The baseline data collected recorded evidence of the following species within or near the working width:
- Protected species
 - Aquatic ecology (including European eel and aquatic beetles)
 - Badger

- Bats
- Common reptile species
- Otter
- Schedule 1 birds (notably barn owl)
- Water vole
- Other SPIs
 - Brown hare
 - Common toad
 - Hedgehog
 - Terrestrial invertebrates

Licenses

14.1.4.18 Natural England (NE) licences will be sought for activities affecting certain protected species.

Historic Environment

- 14.1.4.19 The route of the proposed Scheme has been subject to an agreed programme of geophysical survey and targeted trial trench evaluation, with further archaeological evaluation planned, following consultation with the County Archaeologist for Lincolnshire County Council and North Lincolnshire Council. The evaluative works will facilitate the production of a programme of mitigation measures intended to reduce or remove any significant impacts on buried archaeology due to the proposed Scheme.
- 14.1.4.20 The Scheduled Monument of Greetwell Medieval Village, cultivation and post-medieval garden remains (NHLE 1017332) is located within the working width. There are also three Grade II listed buildings within the working width. There are designated heritage assets within the 1 kilometre study area and there is the potential for construction impacts upon the setting of these. These impacts will be minimised through the implementation of the commitments and actions detailed in the REAC table (See chapter 14, Summary and Environmental Management **Error! Reference source not found.**) for example measures to minimise noise and dust.
- 14.1.4.21 There is the potential for indirect construction impacts upon previously identified archaeological remains of an Iron Age or Romano-British settlement site at Sadney Farm, and an Iron Age enclosure system at Greetwell. Direct construction based physical impacts on these archaeological remains have been mitigated through design iteration. An ACoW will ensure that such indirect impacts to these remains do not occur. Further toolbox talks in advance of the construction phase may also be required.
- 14.1.4.22 There is a potential for direct construction impacts to areas of previously recorded and unrecorded non-designated archaeological remains within the construction footprint of the proposed Scheme. Mitigation of such impacts will be dealt with in accordance with the SPA Archaeology Management Plan (B1-L2-001).
- 14.1.4.23 There is the potential, due to the undeveloped nature of land within the working width and the need to carry out excavation activities, for unexpected archaeological remains to be encountered during construction. These will be dealt with in accordance with the SPA Archaeology Management Plan (B1-L2-001), along with the SPA Unexpected Archaeological Finds Procedure (B1-L4-001).
- 14.1.4.24 There is a potential for direct construction impacts upon previously unrecorded geoarchaeological and palaeoenvironmental remains associated with the Rivers Ancholme and Witham. A conceptual model of these river valleys, where crossed by the proposed Scheme,

might be required to better understand the impacts to these remains, and inform any further mitigation strategies.

- 14.1.4.25 The contractor will ensure that all activities associated with the proposed Scheme that may result in loss of, or work within, areas of archaeological or heritage significance will adhere to the relevant legislation and any relevant conditions to consents.

Landscape and Visual Amenity

- 14.1.4.26 The proposed Scheme crosses a predominantly arable landscape, sparsely settled with villages and isolated farmsteads/ residential properties, with southern end of the proposed Scheme passing the eastern outskirts of the city of Lincoln.

- 14.1.4.27 In terms of national and local landscape designations along the proposed pipeline route:

- On the eastern outskirts of Lincoln, Greetwell Hollow Quarry, a SSSI, is crossed by the proposed pipeline route approximately 150 metres to the northeast of the A15 Lincoln Eastern bypass/ Greetwell Road roundabout. The SSSI is also (locally) designated as a LGS and, to the west of the A15 only, a LWS; and
- Approximately eight LWS are located 300 metres or less from proposed above-ground infrastructure or a main/ satellite compound, or wholly or partially within the Redline Boundary:
 - 3No. are approximately 300 metres or less to the southwest of the proposed above-ground infrastructure at Elsham WTW, specifically Elsham Chalk Pit North LWS; Elsham Chalk Pits LWS; and Elsham Road Verges LWS.
 - 1No., Highgate Lane Verges LWS, is crossed by the proposed pipeline route at Normanby-by-Spital, approximately 730 metres east of Main Street/ Normanby Road crossroads with Mill Lane/ Highgate Lane.
 - 3No. are crossed by the route of the proposed pipeline to the east of Lincoln, variously and approximately between 450 to 600 metres to the northeast of the A15/ B1190 Washingborough Road roundabout, specifically Willingham Fen West LWS; Witham Corridor, East of City Centre LWS; and Sincil Dyke, Washingborough LWS.
 - 1No., Bloxholm Lane LWS, is crossed by the proposed pipeline route towards the southern extents of the proposed Scheme, where the Bracebridge spur diverges from the main pipeline

- 14.1.4.28 Contractors will follow the general principles detailed in the following Codes of Practice to mitigate the impact of the proposed Scheme on landscape and visual amenity:

- British Standard BS5837 'Trees in Relation to Design, Demolition and Construction. Recommendations.' 2012;
- British Standard BS3998 'Tree Work. Recommendations' 2010; and
- British Standard BS4428 'Code of Practice for General Landscape Operations (Excluding Hard Surfaces)' 1989.

Noise and Vibration

Noise

- 14.1.4.29 There are various locations where the proposed Scheme passes in close proximity to individual noise sensitive properties or groups of such receptors. In order to avoid or minimise impacts on these receptors, the following measures should be implemented:

- Works to be undertaken with reference to the Codes of Practice set out below:

- BS 5228-1:2009+A1:2014 ‘Noise and vibration control on construction and open sites. Part 1 - Noise’ (BSI, 2014)
- BS 5228-2:2009+A1:2014 ‘Noise and vibration control on construction and open sites. Part 2 – Vibration’ (BSI, 2014)
- ALL-PRO-SHEA-121 Noise Procedure;
- Control over Saturday afternoon and Sunday works - Potentially noisy works which may breach the Saturday afternoon and Sunday Significant Observed Adverse Effect Level (SOAEL) (55 dB LAeq T) should be avoided. Where works cannot be paused, or have to take place during these time periods in order to manage other impacts, these should be restricted to one occasion only and advance notice of such works provided to the Environmental Health Officer and nearby neighbours;
- Consultation should be undertaken with receptors likely to be affected by noisy works;
- Review plant and equipment requirements and seek opportunities to reduce noise by best practicable means such as the procurement of quieter plant;
- Review programme and reduce the duration of noisy works wherever possible. In particular, works at the following locations should be reduced to a duration of less than 10 days to prevent significant impacts to nearby receptors:
 - E2L_RDS_1585
 - E2L_RDS_1331; and
 - E2L_RDS_1589
- Pipe ramming will not be used at the trenchless crossing near The Gatehouse, Kettleby Lane, Brigg, DN20 9HG (E2L_CP_017);
- Night-time works restricted to the following activities and locations:
 - Pipe jacking
 - E2L_CP_017 and 018 – programme to be reduced to less than 10 nights if practicable
 - E2L_CP_096 and 097 - programme to be reduced to less than 10 nights if practicable
 - Pipe jacking or directional drilling
 - E2L_CP_100, 101 and 102
- Consideration to be given to increasing site hoarding heights at:
 - E2L_CP_017 and 018 and
 - E2L_CP_096 and 097, E2L_CP_100, 101 and 102
- Air compressors and pumps required for dewatering to be sited to maximise stand off distances to receptors, especially for works near 25 Ridgeview Road, Lincoln, LN4 2LH.
- Review proposed compound layouts and maximise stand-off distances between noise sources and receptors wherever possible; and
- Application of a three-step mitigation approach in targeted locations (further details of which are set out below).

14.1.4.30 Three-step Mitigation Approach

14.1.4.31 A three-step mitigation approach was developed for construction noise to ensure that the mitigation applied was proportionate to the likely risk of exceeding the SOAEL at any particular location. The three-steps are applied sequentially as set out below:

- Step 1 – installation of a work site barrier. This can reduce noise levels from a group of noise sources affecting one or more receptors, and may take the form of a hoarding around a construction compound (assumed to be 2.4 metres in height), or the installation of 2 metre high temporary acoustic barrier such as heras fencing with echobarrier™ acoustic panels attached for example. The barriers should meet the design advice provided in BS5228-1:
 - no gaps or openings at joints in the barrier material, or with the ground;
 - a mass per unit of surface area in excess of about 7kg/m²; and
 - the length of a barrier is typically at least five times greater than its height. A shorter barrier should be bent round the noise source.
- Step 2 – localised barriers or enclosure. These measures are designed to target individual noise sources which are generally static and/or small in size and can be attenuated by the erection of localised barriers or the installation of an acoustic enclosure. Sources where this step has been applied include pumps, grinders, circular saw, compressors, and generators for example. Based upon guidance in BS5228-1, as a working approximation, it has been assumed that localised barriers would either provide an approximate attenuation of 5 dB, which would occur when the top of the plant is just visible to the receptor over the noise barrier, or of 10 dB when the noise screen completely hides the sources from the receptor.
- Step 3 – selection of quieter plant. Different makes and models of construction plant will result in varying noise levels. Initial noise modelling undertaken assumed that the noise emission data for each plant item was a typical value from the range presented by BS5228-1. Where required, this mitigation measure requires that plant be sourced to reflect the quietest applicable noise emission data presented by BS5228-1 for a plant item.

14.1.4.32 Locations where the above steps are required are shown on Figures 2.3 and 2.4 in the ES. This is based on the plant lists available for noise modelling at the time of reporting. As the plant list and programme continue to evolve in response to the appointment of subcontractors and increasing availability of information on ground conditions, the noise modelling and Figures 2.3 and 2.4 will be updated to reflect any additional locations where noise mitigation is required, and any locations where it is considered no longer necessary. The local Environmental Health Officer will be kept informed of any such changes and this CEMP updated accordingly.

14.1.4.33 Due to the variable and mobile nature of the works, it is not considered that routine noise monitoring would be beneficial or practical, however, noise monitoring should be undertaken in response to any complaints or at the request of the EHO.

Vibration

14.1.4.34 Where construction activities come into close proximity to sensitive receptors, the potential for vibration effects has also been identified. The following should be implemented to prevent or minimise vibration impacts:

- Works to be undertaken in accordance with ALL-PRO-SHEA-105 Vibration Procedure;
- The construction activity with the greatest potential to lead to elevated levels of vibration at receptors was identified as vibratory compaction and vibratory piling.
- For vibratory compaction, the Construction Environmental Manager will be responsible for ensuring that start up/run down activities and high amplitude settings are not undertaken within certain distances of receptors:
 - No start up/run down at high amplitude within 120 metres of sensitive receptors;
 - No steady state use at high amplitude within 85 metres of sensitive receptors; and
 - No start up/run down at low amplitude within 50 metres of sensitive receptors.

- A potential risk of cosmetic damage to buildings has been identified for buildings located within approximately 21 metres of vibratory compaction activities, and approximately 42m for vibratory piling activities. Non-vibratory methods will be used if compaction or piling are required within these distances to a building, unless a full vibration risk assessment concludes that the thresholds for cosmetic damage are unlikely to be breached.

Construction Traffic Noise

14.1.4.35 Construction traffic to avoid Main Road, A15 to Hackthorn, and Use Cliff Road to the north instead, thus avoiding Hackthorn village and Hackthorn Church of England Primary School.

Soils, Geology and Hydrogeology

Soil

- 14.1.4.36 A Soils Management Plan (SMP) has been produced which describes in full the strategy and action plan for the management of soils that are likely to be excavated and handled during the construction phase (Document number: 17640-100005-ELSLINTM-XXX-RPT-TC-0001).
- 14.1.4.37 High quality agricultural land is present along the majority of the proposed Scheme and the degradation of soils needs to be reduced to maintain this quality for future crop production. Therefore, effective management is required to ensure that soils are handled appropriately and reinstated to a condition consistent with the pre-construction baseline.
- 14.1.4.38 Contractors will implement the measures contained within the SMP to mitigate potential adverse effects on soil quality, and shall also take the following guidance into account:
- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites – Defra 2009;
 - Good Practice Guide for Handling Soils in Mineral Workings – Ministry of Agriculture, Fisheries and Food 2021;
 - British Standard BS3882 ‘Specification for Topsoil’ 2015;
 - British Standard BS8601 ‘Specification for Subsoil and Requirements for Use’ 2013;
 - British Standard BS4428 ‘Code of Practice for General Landscape Operations (Excluding Hard Surfaces) 1989; and
 - Preventing the spread of plant and animal diseases – Defra 1991.

Geological Sites

14.1.4.39 Impacts on geologically designated sites may occur where construction activities interact directly within the designated site and in doing so removes or disturbs any aspect of the geological feature affording it the designated status. The eastern extent of Greetwell Quarry SSSI and LGS (High sensitivity) is intersected by the proposed Scheme. Open cut earthworks will occur within the site boundary, however, the eastern part of the site does not contain any of the interest features for which the SSSI is designated. Following consultation, Natural England have stated that they would not foresee any issues with the routing through the eastern part of the SSSI. As such, construction activities will not directly affect the geological feature and no impacts are predicted.

Contamination

14.1.4.40 Given the agricultural nature of the land along the majority of the proposed Scheme, it is unlikely that existing land contamination issues will be encountered. There are a number of locations along the route where historical contamination is likely to be present. These are detailed within the Geo-environmental Risk Assessment (Appendix 10.1 of the ES).

- 14.1.4.41 Ground investigation to determine actual ground conditions is ongoing and a Ground Investigation Report (GIR) will be produced which will identify areas requiring remediation where appropriate prior to construction. This CEMP should be reviewed and updated if required following the production of the Ground Investigation Report.
- 14.1.4.42 There is also the potential for contamination such as oil, heavy metals, asbestos or other chemicals to be encountered as a result of agricultural activities or unrecorded potentially contaminative land uses that have not been identified in the Geo-environmental Risk Assessment. Indications of contamination may include unusual colour, odour or appearance. Any suspected contamination should be dealt with in accordance with the Discovery of Contaminated Land Procedure (ALL-PRO-SHEA-023).
- 14.1.4.43 Measures around the testing, handling and disposal of contaminated soils and groundwater, with reference to sites of potential contamination, will be developed as more detailed location specific information becomes available.
- 14.1.4.44 Contractors will implement the general principles and working practices to control pollution risks as detailed in the following Codes of Practice:
- Land Contamination Guidance ALL-GUI-SHEA-010;
 - CL:AIRE 'Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction & Demolition materials: Industry Guidance (CAR-SOIL) 2016;
 - British Standard BS3882 'Specification for Topsoil' 2015;
 - British Standard BS8601 'Specification for Subsoil and Requirements for Use' 2013; and
 - British Standard BS4428 'Code of Practice for General Landscape Operations (Excluding Hard Surfaces) 1989.

Minerals

- 14.1.4.45 The proposed Scheme crosses areas designated as Mineral Safeguarding Areas (MSAs). A Materials Management Plan will be produced for the proposed Scheme. This will address the re-use of 'suitable' materials excavated on-site and will include the use of valuable mineral resources including sand and gravel. The MMP will conform to CL:AIRE's Definition of Waste: Code of Practice (DoW CoP) guidance, which requires material tracing and separation from excavation to re-use or disposal.

Traffic and Transport

- 14.1.4.46 The existing highway network in the vicinity of the proposed Scheme is characterised by some busier roads on a north to south alignment between Lincoln and the M181, and country roads with low traffic flows. It is primarily the quieter roads that are crossed by the proposed Scheme.
- 14.1.4.47 Due to the geographical extent of the proposed Scheme there are potentially multiple routes to site accesses and compounds along the proposed pipeline route. The route for general construction traffic will also depend on the source of the materials and the origin of trips.
- 14.1.4.48 Construction traffic will use a route hierarchy that favours rural motorways then 'A' class roads then 'B' class roads where practicable and finally the unclassified road network on approach to individual site accesses.
- 14.1.4.49 Management measures for public highways are outlined in the Framework Construction Traffic Management Plan (FCTMP). The FCTMP also sets out the approach to street works and traffic management including diversions. Management measures for PRow are set out in the Public Rights of Way Management Plan.

- 14.1.4.50 The contractor will ensure that all public access and traffic related activities associated with the proposed Scheme adhere to all relevant legislation. The following guidance will be considered by the contractor with regard to the implementation of traffic management site-wide:
- 14.1.4.51 The Department for Transport 'Traffic Signs Manual' Chapter 8 (parts 1 and 2) focuses on the following objectives:
- Part one contains advice relating to traffic safety measures, and the identity and location of the traffic signs needed to guide road users, including pedestrians, safely past obstructions in temporary situations;
 - Part two contains advice relating to good working practice spanning all aspects of temporary traffic management operations from broad management issues to issues involving the activities of individual operatives; and
 - Part three provides information on changes to the methods used to prescribe traffic signs in the 2016 Traffic Signs Regulations and General Directions.
- 14.1.4.52 New Roads and Streetworks Act (1991) the overarching aims of which are:
- To ensure safety to the public and workforce;
 - To minimise inconvenience to people using the road/street, including specific reference to people with a disability; and
 - To protect the structure of the street (as defined) and the apparatus in it.
- 14.1.4.53 Safety at Street Works and Road Works: A Code of Practice (2013) the overarching aims of which focus on:
- Ensuring safety on street and road works for both operatives and the public;
 - Road users including pedestrians, cyclists and equestrians will not be put at risk, and will be able to determine the extent and nature of any obstruction before they reach it; and
 - Particular attention to vulnerable groups during construction which include elderly people, children and disabled people.

Public Rights of Way

- 14.1.4.54 Temporary diversions of ProW along the length of the proposed Scheme will be required due to open cut excavations during the construction phase. Where closures and diversions are required these will be agreed with the relevant local authority.
- 14.1.4.55 As per the FCTMP, the general principles to manage crossings of ProW will be:
- Closure or diversions of a ProW while construction of the proposed Scheme is actively crossing it (for example pipelaying across a ProW). This is anticipated to last for two weeks; or
 - At all other times, such as when the easement is in place for the duration of the construction programme from enabling works and site setup to reinstatement. Access along ProW will be maintained with a gated access to separate ProW users from construction activity.
- 14.1.4.56 Further details regarding the management of ProW during the construction phase are set out in the Public Rights of Way Management Plan (17640-100005-ELSLINTM-XXX-RPT-TT-0003).

Water Environment

Surface Water and Groundwater

- 14.1.4.57 A total of 352 watercourses have been identified within 250 metres of the proposed Scheme including:

- 11 WFD principal watercourses (of which eight are main rivers);
- 13 Main Rivers; and
- 339 Ordinary Watercourses (of which three are also WFD principal watercourses).

14.1.4.58 Of these, 75 watercourses will be crossed by the proposed pipe. Most Environment Agency Main Rivers and Principal WFD assessed watercourses will be crossed using trenchless techniques (typically horizontal directional drilling), to minimise ecological, hydrological and geomorphological impacts. The following Environment Agency Main Rivers and Principal WFD assessed watercourses will be crossed by open cut crossing techniques:

- Seggimoor Beck (ID WC_Ancholme from Source to Bishopbridge_0060), an Environment Agency Main River channel;
- East Firsby Drain (ID WC_Ancholme from Source to Bishopbridge_0018), a WFD principal watercourse;
- Nettleham Beck (ID WC_Nettleham Beck_0020), a WFD principal watercourse; and
- Kettleby Beck (WC_Ancholme from Bishopbridge to the Humber_0141), an Environment Agency Main River channel.

14.1.4.59 Segimoor Beck, East Firsby Drain and Nettleham Beck channels are narrow with low flows so its technically feasible and preferred by the project to cross them (due to health and safety and cost reasons). They will be flumed for the period of the crossings, but any haul road will cross these channels with a baily bridge.

14.1.4.60 Directional drilling was considered for the Kettleby Beck crossing, but the crossing is at a low point of the proposed Scheme and the pressure in the pipeline is close to the allowable limit Drilling under Kettleby Beck would both increase the depth (and therefore pressure) even further, increasing risk of failure of the pipeline and making it much more difficult to manage and fix if a failure were to occur.

14.1.4.61 The majority of smaller watercourses and drainage channels will be crossed using an open cut technique. A number of larger ordinary watercourses may need to be crossed using trenchless techniques, depending on topography, ground conditions and consultation with the relevant IDB or Lead Local Flood Authority (LLFA). A crossings register is presented as Appendix 2.2 of the ES and should be reviewed and updated as detailed design for the crossings is completed.

14.1.4.62 Where Bailey Bridges are required activities and time spent in-channel will be kept to a minimum, and the channel will be restored if altered (i.e. sediment disturbed/removed). Sediment traps may be used to capture excessive sediment released into surface watercourses when damming/over-pumping, where required.

14.1.4.63 Groundwater Source Protection Zones (SPZ) are also present under a significant proportion of the route.

14.1.4.64 To minimise the risk of adverse impacts to the water environment, works must be undertaken in accordance with the following:

- PPGs with particular reference to PPG1 (general guide to the prevention of water pollution), PPG3 (use and design of oil separators in surface water drainage systems), PPG5 (works near or liable to affect watercourses) and PPG6 (working at construction and demolition sites);
- ALL-PRO-SHEA-013 Pollution Prevention and Emergency Response Procedure;
- ALL-PRO-SHEA-016 Working Near Water Procedure;
- ALL-GUI-SHEA-022 Working Near Watercourses Abstractions and Discharges;
- ALL-GUI-SHEA-014 Permit to Pump Guidance and ALL-FRM-SHEA-015 Permit to Pump Form; and

- ALL-GUI-SHEA-039 Drilling Fluid Breakout Guidance and ALL-PRO-SHEA-030 Breakout Response Procedure

14.1.4.65 The Environmental Manager will also be responsible for ensuring adequate surface water management measures are implemented on-site to prevent run-off from construction areas polluting surface waters or drains. Where necessary, measures may include installation of silt fencing and the use of slope breakers, surface water ditches and bunds to divert surface water run-off to treatment areas.

Flooding

14.1.4.66 As detailed in the ES, parts of the proposed Scheme cross areas designated as Flood Zone 2 and 3. Flood Emergency Plans (FEPs) are to be developed by the Project Delivery Manager and Construction Environmental Manager in accordance with ALL-PRO-SHEA-026 Flood Emergency Plan.

14.1.4.67 The FEP will detail the procedure to be followed once a flood warning is received, either from the Environment Agency or LLFA. Primary considerations for the FEPs include:

- Evacuation of personnel from the working areas at risk of flooding – this is the primary safety consideration, and is the highest priority in the unlikely event that there is insufficient time to undertake the following activities;
- Making the site safe prior to evacuation – this would include appropriate storage of equipment and materials, securing items within site compounds to prevent them being mobilised in flood water; and
- Removal of critical plant and equipment from Flood Zone 3 – this may be removal from the haul roads or from the compounds and could include raising critical items above the design flood level or removing them from the floodplain completely to a suitable alternative compound. During the construction phase, the contractor would identify the need (or not) to remove equipment from working areas based on the flood warnings.

14.1.5 Register of Environmental Actions and Commitments (REAC)

14.1.5.1 The Register of Environmental Actions and Commitments (REAC) in Table 14 1 2 lists actions and commitments which have been identified as being required during the Environmental Impact Assessment of the proposed Scheme to mitigate potential adverse impacts.

Table 14 1 2 – Register of environmental actions and commitments (REAC)

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Source: Environmental Statement, Chapter 2, The Proposed Scheme				
Sensitive locations	The working width will be reduced at sensitive ecological locations shown on Figure 2.2.	CEMP / Enabling works RAMS	CEM / Project Delivery Manager	The proposed pipeline
Working hours	Weekday working hours will typically be 07.00 – 19.00 in summer and 07.00 – 17.30 in winter. Saturday working hours will be 07.00 – 17.00.	Site Management	Project Delivery Manager	The proposed Scheme
Working hours	Sunday working may be required between the hours of 08.00 and 16.00.	Site Management	Project Delivery Manager	The proposed Scheme
Working hours	Reduced working hours when within 50 metres of a noise sensitive receptor. Start times will move from 07:00 hours to 07:30 hours Monday to Friday, and to 08:00 hours on Saturdays. The use of heavy plant will stop at 18:00 hours Monday to Friday and at 13:00 hours on Saturdays. Only maintenance, end of shift housekeeping and next day preparations will continue until 19:00 hours Monday to Friday and 16:00 hours on Saturdays.	Site Management	Project Delivery Manager	The proposed pipeline
Tree protection	Clearance of existing vegetation and installation of suitable tree protection fencing will be undertaken in accordance with an arboriculture survey in progress, a report on which will be provided during the period for determination of the planning application.	CEMP / Enabling works RAMS	CEM / Environmental Advisor	The proposed Scheme
Fencing	Temporary fencing will restrict the movement of site personnel and plant but will allow passage to wildlife.	CEMP / Enabling works RAMS	CEM / Environmental Advisor	The proposed Scheme
Drainage	Where required, pre-construction drainage will be installed on the upslope of the works, intercepting any existing land drains and rerouting them to a new outfall, to prevent this water entering the	Design team; ground investigation (GI); Land	Project Delivery Manager	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	working width and becoming silt laden. The drainage design will be developed in accordance with the Remedial Field Drainage Design Principles included as Appendix 2.3.	drainage consenting process		
Flood Risk	Pre-construction land drainage will be installed as required before topsoil stripping commences. Land drainage will be constructed on the appropriate side/s of the working corridor to prevent trench and field flooding during construction. Land drainage will additionally be installed to prevent the runoff of muddy water from excavations towards sensitive receptors, including roads, watercourses and ecologically important sites. When required land drainage will be fully reinstated post-construction, in agreement with the landowner according to the AWS Pipelaying Code of Conduct. Details are provided in the Remedial Field Drainage Design Principles.	Site Management	Project Delivery Manager	The proposed pipeline
Flume crossings	Flume pipes will be of suitable size to provide a minimum headroom of 300mm wherever it is reasonably practical, to avoid fragmentation of water vole habitat.	Flume installation RAMS and permitting/consenting process	CEM / Project Delivery Manager	The proposed pipeline
Flume crossings	In determining flume sizes, consideration will be given to storm flows and increased water levels in the summer months for irrigation purposes. Flume sizes will be agreed with the relevant LLFA or IDB as part of the ordinary watercourse consenting process. Flume crossings at Seggimoor Beck and Kettleby Beck will be agrees with the EA as part of the consenting process..	Flume installation RAMS and permitting/consenting process	CEM / Project Delivery Manager	The proposed pipeline
Flume crossings	Where over pumping is required either to install flumes or to facilitate crossing which cannot be installed by trenching under a flume, appropriately sized pumps will be used to allow a range of high and low flows to pass downstream.	Flume installation RAMS and permitting/consenting process	CEM / Project Delivery Manager	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Flume crossings	The bed material removed from the watercourse channels will be stored separately, away from the channel and out of the floodplain where possible, to be used for bed reinstatement.	Flume installation RAMS and permitting/consenting process	CEM / Project Delivery Manager	The proposed pipeline
Flume crossings	Silt mitigation will be installed at flume crossings, typically in the form of silt fencing on the banks of the watercourse, as advised by the CEM.	Flume installation RAMS / CEMP	CEM / Project Delivery Manager	The proposed pipeline
Flood zones	Where the pipeline is to be constructed in Flood Zone 2 or Flood Zone 3, breaks will be incorporated into topsoil and subsoil bunds to permit the flow of water into and through the working area.	CEMP / Earthworks RAMS	CEM / Project Delivery Manager	The proposed pipeline
Soil handling	Good practice soil handling and storage procedures will be implemented on-site as detailed in the Soils Management Plan (Appendix 10.2).	SMP / Earthworks RAMS	CEM / Environmental Advisor / Project Delivery Manager	The proposed Scheme
Stanks (groundwater barriers)	Where required, impermeable stanks will be placed periodically along the pipe trench to restrict/prevent the migration of groundwater along the pipeline route during operation and manage any surface water that accumulates within the open excavation during construction.	Design and GI teams; Pipelaying RAMS	Project Delivery Manager	The proposed pipeline
Dewatering	Where dewatering is required, rates will be set to ensure some base flow in groundwater fed channels throughout construction.	Design and GI teams; CEMP	CEM / Environmental Advisor	The proposed pipeline
Public Rights of Way	Where the pipeline route or construction access routes cross ProW, access across the ProW will be managed, diverted or temporarily closed in accordance with the principles set out in the ProW Management Plan (Appendix 2.4).	ProW Management Plan/consenting process	CEM	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to															
Trenchless watercourse crossings	For trenchless watercourse crossings, the launch and reception pits will be set back at least 8 metres from the bank tops either side of the watercourse and the pipeline will be installed a minimum of 1.5 metres below the hard bed of the watercourse and will remain at this depth for a minimum of 5 metres from the watercourse bank top.	Trenchless crossing RAMS / and permitting/consenting process	Crossings Manager	The proposed pipeline															
Open cut watercourse crossings	Open cut crossings will be carried out by trenching underneath a preinstalled flume wherever possible, in preference to damming and over pumping, to maintain downstream sediment transfer. Parameters governing depth of burial below the channel, and the distance for which the pipe will be kept at the same level as under the hard bed, are as follows:	Open cut watercourse crossing RAMS	Project Delivery Manager	The proposed pipeline															
	<table border="1"> <thead> <tr> <th><i>Watercourse category</i></th> <th><i>Minimum depth below hard bed of channel</i></th> <th><i>Minimum set-back from bank tops</i></th> </tr> </thead> <tbody> <tr> <td>Other</td> <td>1.5 metres</td> <td>8 metres</td> </tr> <tr> <td>EA main rivers</td> <td>1.5 metres</td> <td>5 metres</td> </tr> <tr> <td>IDB main drains</td> <td>1 metres</td> <td>9 metres</td> </tr> <tr> <td>Other IDB drains</td> <td>0.5 metres</td> <td>3 metres</td> </tr> </tbody> </table>				<i>Watercourse category</i>	<i>Minimum depth below hard bed of channel</i>	<i>Minimum set-back from bank tops</i>	Other	1.5 metres	8 metres	EA main rivers	1.5 metres	5 metres	IDB main drains	1 metres	9 metres	Other IDB drains	0.5 metres	3 metres
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	IDB main drains				1 metres	9 metres													
Other IDB drains	0.5 metres	3 metres																	
Temporary commissioning lagoons	Commissioning water stored in lagoons will be tested for a range of water quality parameters prior to discharge including chlorine, turbidity and pH. Should the water fail to meet acceptable discharge criteria, it will be treated accordingly before being released to a watercourse, under the appropriate Environment Agency permits.	CEMP	CEM / Commissioning Manager	The proposed pipeline															
Reinstatement	Once testing is complete, all of the land used for construction along the pipeline route will be reinstated in accordance with a scheme	Reinstatement Plan	CEM / Environmental Advisor / Project	The proposed Scheme															

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	specific Reinstatement Plan which will be developed in accordance with the Outline Reinstatement Strategy (Appendix 14.2).		Delivery Manager	
Source: Environmental Statement, Chapter 5, Biodiversity				
Biodiversity Mitigation: Ecological Clerk of Works (EcoW)	A qualified and experienced EcoW will be available during the construction phase to advise, supervise and report on the delivery of the Biodiversity mitigation methods and controls outlined in the CEMP. The EcoW will be supported as necessary by appropriate specialists and/or licenced ecologists.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Biodiversity Mitigation: Site Inductions/ Toolbox Talks	Consideration of Biodiversity will be included in the induction talks for all relevant site personnel. Species-specific or location-specific toolbox talks would also be provided, as required.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Pre-construction surveys	Pre-construction surveys will be completed if existing baseline survey data needs to be updated or supplemented to inform protected species licencing ¹ .	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Protected Species	Construction will be undertaken in compliance with relevant protected species legislation including with regard to badger, bats, otter, water vole, great crested newt, reptile species and Schedule 1 birds. Appropriate licences will be obtained where necessary from Natural England for licensable activities. All applicable works would be undertaken in accordance with the relevant mitigation strategies and conditions set out in those licences.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Protected and notable habitats and species	Ecological constraints drawings will be produced prior to construction to identify known ecological features within and adjacent to the working area, and detail protection and licencing measures.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme

¹ [Advice-Note.pdf \(cieem.net\)](#)

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Protected and notable habitats	Following construction, enhancement measures at Greetwell Hollow Quarry SSSI will include the restoration of the grassland to its previous condition as unimproved calcareous grassland. See Appendix 14.1 (Outline Reinstatement Strategy).	Outline Reinstatement Strategy	CEM/Project delivery manager	The proposed pipeline
Air pollution caused by dust generation	During earthworks, methods will be employed to wet the material to suppress dust creation, where required.	CEMP	CEM/ Environmental Advisor	The proposed Scheme
Habitats	Reinstatement of Road Verge Nature Reserves will be undertaken following a bespoke Reinstatement Method Statement, to be developed during detailed design.	CEMP	CEM/EcoW	The proposed pipeline
Habitats	Works to be undertaken in accordance with BS 42020:2013 Biodiversity. Root protection zones for retained woodland and trees to be implemented in accordance with BS5837:2012 Trees in relation to design, demolition and construction. An appropriate buffer zone will be created where this extends within the working width. The buffers will be established using appropriate fencing and signage. De-vegetation works would be completed under an Arboricultural Method Statement, which is to be developed and refined during detailed design.	CEMP	CEM/EcoW	The proposed pipeline
Non-native invasive species	The use of standard good practice invasive species control and biosecurity measures will be implemented to avoid the spread of such species to other parts of the working area and off site.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Nesting Birds	Vegetation clearance will be programmed to avoid the nesting bird season (March – August inclusive). Where this is not possible a nesting bird survey will be carried out by a suitably competent ecologist not more than 48 hours in advance of proposed clearance works to check for bird nesting activity. Appropriate protection measures will be put in place should active nests be found. These would include exclusion zones around active nests until chicks	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	<p>fledge or nests become inactive as determined by monitoring by the EcoW.</p> <p>Where the programme unavoidably requires clearance of vegetation during the breeding bird season, the following additional measures will be taken during the preceding winter, during the period for determination of the planning application (where practicable and by agreement with landowners):</p> <ul style="list-style-type: none"> • Hedges within the working width will be cut back (coppiced) and hedgerow trees pollarded, to reduce the risk of them being occupied by nesting birds; • Areas of arable land will be kept bare of crops to reduce the risk of their being occupied by ground-nesting birds. 			
Nesting Birds – Schedule 1 species	Measures to avoid or minimise noise and visual disturbance where there is a risk to Schedule 1 species will be incorporated.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Bats	<p>Trees within the working width, confirmed to have high or moderate potential to support bats, that do not require removal, will be retained and protected with an appropriate buffer.</p> <p>Pre-construction surveys will be conducted for trees confirmed to have high or moderate bat roost potential, prior to tree removal. Trees will be removed under licence from Natural England if roosts are confirmed to be present. All licensable works will be undertaken in accordance with the relevant mitigation requirements and conditions set out in the licence.</p>	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Bats	<p>Prior to clearance of habitats, artificial bat boxes will be installed throughout retained woodland and trees (with landowner consent). A minimum of three boxes to be installed for every roost lost; one box to be installed for every high suitability feature lost; and one box to be installed for every five features with moderate suitability</p>	CEMP	CEM/ Environmental Advisor/EcoW	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	lost. Boxes will be made of woodcrete and will range in design including maternity and hibernation boxes.			
Bats	Where trees with potential roosts are to be retained within or immediately adjacent to the working width, an appropriate buffer zone will be created. The buffers will be established using appropriate fencing and signage.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Bats	Noise mitigation measures will be implemented to mitigate impacts from noise and vibration preventing departure of bats from roosts during daylight hours and reducing impacts to foraging and commuting bats.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Bats	Temporary lighting associated with main compounds will be sensitively designed. Lighting will be of the lowest luminosity necessary for safe delivery of works. It would be designed, positioned and directed to reduce the intrusion into adjacent properties and habitats. Relevant guidance on mitigating the impact of artificial lighting on bats will be applied where practicable. Lighting at compound sites to be in accordance with Bats and lighting in the UK, Bats and the Built Environment Series (BCT, 2009)	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Bats	Vegetation clearance, retention and protection drawings will be produced prior to the construction phase. These plans will be implemented during construction, including agreed mitigation where practicable.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Bats	Working widths will be reduced in specific locations where important commuting routes are present.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Bats	Artificial barriers will be installed overnight to reduce or close gaps created along important commuting features for bats to encourage bats species sensitive to gaps to cross.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Great Crested Newt/other amphibians/ reptiles/ hedgehog	Habitat with the potential to support hibernating reptiles, other amphibians and hedgehogs will not be removed between November and March without supervision by the EcoW, or unless previous mitigation has been implemented to exclude, remove, or encourage these animals away from the works area (e.g. habitat manipulation).	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Great Crested Newt/other amphibians/ reptiles /hedgehog	All habitats suitable for great crested newt, other amphibians, reptiles, common toad and hedgehog will be subject to two-stage habitat manipulation between mid-March and mid-October. Firstly, vegetation will be cut to approximately 150 millimetres (with the arisings removed) under the guidance of an EcoW and the site left for a minimum of two days to allow individuals to move away from the area. Secondly, vegetation will be cleared down to ground level under the guidance of an EcoW. Vegetation clearance will be achieved using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of killing or injuring species. Construction works could commence immediately after completion of the second stage.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Otter/badger/great crested newt/hedgehog/ reptile species	Where there would be a risk of animal entrapment, a means of escape will be installed into all excavations left open overnight.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Water Vole	Where water voles are present at watercourse crossings where works will be carried out in-channel, individuals will be displaced under licence. Enhancement of adjacent habitats will be undertaken, where required, to ensure sufficient suitable habitat in which to displace water vole. Appropriate methods will be used within the working width to prevent future colonisation of habitats within the works area during construction to minimise risk of injury or harm to water vole.	CEMP	CEM/EcoW	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Water vole	Guiding planting will be installed at the entrance of flumes to encourage the movement of water vole through them.	CEMP	CEM/EcoW	The proposed pipeline
Water vole	Pre-construction surveys are to be conducted of all watercourses where works would be carried out in-channel. The results of the survey will be used to inform the micro-siting of the main pipe and/or flume, to minimise loss of existing burrows, where reasonably practical to do so.	CEMP	CEM/EcoW	The proposed pipeline
Water vole/otter	Appropriate buffer zones will be established adjacent to watercourses with potential/known to support protected species (water vole/otter), where sensitive features are to be retained within or immediately adjacent to the working width. The buffers will be established using appropriate fencing and signage.	CEMP	CEM/EcoW	The proposed pipeline
Otter	Noise barriers will be installed when required under licence conditions to minimise disturbance of an otter resting site, if present. Speed limits of 10mph will be imposed on all construction haul roads to minimise the risk of road traffic collisions.	CEMP	CEM/EcoW	The proposed pipeline
Badger	Pre-construction surveys will be conducted to assess activity at known setts and to identify changes in distribution of this mobile species. Outlier setts to be lost will be closed under a licence from Natural England using badger gates outside of the badger breeding season (June-November inclusive). Setts will be closed using one-way gates so badgers can leave but cannot return to the sett. Following a 21-day period of monitoring, to ensure badgers are not within them, the setts will be dug out.	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Badger	Appropriate buffer zones will be established for retained badger setts adjacent to the working width. The buffers will be established using appropriate fencing and signage. Shredding or chipping of	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	vegetation would be carried out at an appropriate distance away from any retained sett entrance.			
Badger	<p>Capping open pipework, with an internal diameter large enough to allow access to badger, will be done at the end of each working day. In the event that an excavation has to be left overnight, a 45° slope will be created on one side to allow any animals that may enter to escape.</p> <p>All excavations left overnight will be checked each morning to ensure no badgers or other animals have become trapped overnight and if a badger is found within an excavation, then the EcoW will be contacted immediately for advice.</p>	CEMP	CEM/ Environmental Advisor/EcoW	The proposed Scheme
Source: Environmental Statement, Chapter 6, Capital carbon				
Capital Carbon	Opportunities to deliver greater reductions in carbon will continue to be explored in line with the 'build efficiently' philosophy of PAS 2080 and consideration will be given to the efficiency of construction plant, the technique for laying pipes, the trench width, the choice of backfill material and the potential re-use of assets and materials.	Formal reporting of the capital carbon reduction against the baseline at DM2 (outline design), DM3 (detailed design) and DM4 (delivery).	SPA / @One Alliance sustainability team	The proposed Scheme
Source: Environmental Statement, Chapter 7, Historic environment				
Archaeological/ Geoarchaeological investigation	Where archaeological and/or geoarchaeological investigations and recording are required, detailed specifications will be produced to define the scope and specific methodology to be applied, followed by Written Schemes of Investigations (WSIs) produced by the appointed Archaeological Contractor. The WSIs would be shared with the archaeological advisors for Lincolnshire and North Lincolnshire as appropriate prior to the commencement of the proposed works.	WSI	Archaeology Team	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Ground Investigation	Where Ground Investigations (GI) have been and will be undertaken for the proposed Scheme, an archaeological RAG (Red, Amber, Green) assessment is undertaken to determine any proposed locations that may impact archaeological remains. Any locations that lie in archaeological sensitive areas will either be moved or will be monitored by an archaeologist. A WSI will be provided by the appointed Archaeological Contractor, and shared with the archaeological advisors for Lincolnshire and North Lincolnshire as appropriate prior to the commencement of the proposed works.	GI RAMS	Archaeology Team	The proposed Scheme
Geophysics	Further targeted areas of geophysical survey may be required to refine proposed archaeological investigations. Where such surveys are required, specifications will be produced to define the scope and specific methodology to be applied, followed by Written Schemes of Investigations (WSIs) produced by the appointed Archaeological Contractor. The WSIs would be shared with the archaeological advisors for Lincolnshire and North Lincolnshire as appropriate prior to the commencement of the proposed works.	WSI	Archaeology Team	The proposed Scheme
Trial Trenching	A programme of archaeological trial trenching is underway across the working width of the majority of the proposed Scheme. The archaeological advisors for North Lincolnshire and Lincolnshire have agreed the scope of works and methodology and are monitoring the works. The reports on these works will be submitted following the submission of the ES.	WSI	Archaeology Team	The proposed Scheme
Geoarchaeological investigations	Geoarchaeological investigations and recording in the Ancholme Valley and River Witham areas will be undertaken and the full evaluation reports provided following the submission of the planning application.	WSI	Archaeology Team	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Unexpected Archaeological Remains	Unexpected archaeological remains will be dealt with in accordance with the measures set out in the CEMP.	CEMP; RAMS for all intrusive works.	CEM / Environmental Advisor	The proposed Scheme
Source: Environmental Statement, Chapter 8, Landscape and visual amenity				
Landscape and Ecological Design	A detailed Landscape and Ecological Design, including a Landscape and Ecological Specification, will be developed for the above ground infrastructure site at Elsham.	Construction Documents	Landscape/ Biodiversity team	Above ground sites at Elsham
Aftercare period	A Landscape and Ecological Maintenance Schedule will be developed for the above ground infrastructure site at Elsham.	Construction Documents	Landscape/ Biodiversity team	Above ground sites at Elsham
Aftercare period	A five-year landscape aftercare period for all the planted aspects of the proposed Scheme will be included as part of the construction contract requirements. Thereafter, the soft estate will be maintained by Anglian Water or its managing agent(s).	Construction Documents	Project delivery manager and Anglian Water (or Managing Agent)	The proposed Scheme
Retained vegetation	Design layout and construction of all compounds, soils stores, haul routes etc. are to provide appropriate clearance from vegetation to be retained, and to limit requirements for tree surgery.	Construction Documents/ Site Management	Project delivery manager	The proposed Scheme
Retained vegetation	All trees, hedgerows, and areas of significant vegetation within the redline boundary that are to be retained will be identified and have protective fencing in accordance with <i>BS 5837:2012 Trees in relation to design, demolition, and construction – Recommendations</i> erected and maintained around them for the duration of the construction works.	CEMP	CEM /Environmental Advisor	The proposed Scheme
Vegetation to be removed	Vegetation will not be removed until such time as a Risk Assessment Method Statement (RAMS) and Permit to Clear identifying the location and area of vegetation to be removed have been submitted to and subsequently approved by a suitably qualified and experienced Ecologist.	RAMS and Permits to Clear for all clearance works	EcoW	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Temporarily used land	Land to be used temporarily, such as for compounds, haul roads, etc., along the route of the proposed pipeline will be returned to a condition suitable for the continuation of its original use. This will include the replanting of hedgerows and trees, where these have had to be removed to facilitate construction.	CEMP	Project delivery manager	The proposed pipeline
Above Ground Infrastructure sites	Where possible, soils which remain in-situ at the above ground infrastructure sites should support soft landscaping such as amenity grassland.	Reserved Matters application	Design team / Consenting team	The proposed Scheme
Source: Environmental Statement, Chapter 9, Noise and vibration				
Construction noise	Application of a three-step mitigation approach in targeted locations, as summarised below (for more detail see the CEMP and Figures 2.3 and 2.4). In summary: <ul style="list-style-type: none"> • Step 1 – installation of a site work barrier meeting the design advice in BS5228-1; • Step 2 – localised barriers or enclosures meeting BS5228-1 targeting individual noise sources such as pumps, grinders, circular saws, compressors or generators; • Step 3 – selection of quieter plant (i.e. instead of ‘typical’ values from BS5228-1, plant should meet the quietest applicable example in BS5228-1). 	CEMP	CEM / Environmental Advisor	The proposed Scheme
Construction noise	Consultation will be undertaken with people likely to be affected by noisy works.	CEMP	CEM/ Environmental Advisor/ Project Delivery Manager	The proposed Scheme
Construction noise	Control over Saturday afternoon and Sunday works – Potentially noisy works which may breach the Saturday and Sunday afternoon Significant Observed Adverse Effect Level (SOAEL) (55 dB Laeq T)	CEMP / Site Management	CEM/ Environmental Advisor/ Project	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	should be avoided. Where works cannot be paused or have to take place during these time periods in order to manage other impacts, these should be restricted to one occasion only and advance notice of such works provided to the Environmental Health Officer and nearby neighbours.		Delivery Manager	
Construction noise	Review plant and equipment requirements and seek opportunities to reduce noise by best practicable means such as the procurement of quieter plant.	RAMS / Procurement	Project Delivery Manager	The proposed Scheme
Construction noise	Review programme and reduce the duration of noisy works wherever possible. In particular, works at the following crossings should be reduced to a duration of less than 10 days to prevent significant impacts to nearby receptors (see Figure 2.2 for locations): <ul style="list-style-type: none"> • E2L_RDS_1585 • E2L_RDS_1331; and • E2L_RDS_1589 	CEMP / Site Management	CEM / Project Delivery Manager	The proposed pipeline
Compound layouts	Compound layouts to maximise stand-off distances between noise sources and receptors as far as reasonably practicable.	CEMP	CEM/ Environmental Advisor	The proposed Scheme
Construction noise	Pipe ramming will not be used at the trenchless crossing near Kettleby Lane (E2L_RLY_0014).	CEMP / Site Management	CEM / Project Delivery Manager	The proposed pipeline
Construction noise	Auger boring will be used at the trenchless crossing near the A46 Lincoln Road (E2L_RDS_1580).	CEMP / Site Management	CEM / Project Delivery Manager	The proposed pipeline
Construction noise	Night-time works restricted to the following activities and locations: <ul style="list-style-type: none"> • Pipe jacking 		CEM / Project Delivery Manager	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	<ul style="list-style-type: none"> ○ E2L_CP_017 and 018 – programme to be reduced to less than 10 nights if practicable ○ E2L_CP_096 and 097 – programme to be reduced to less than 10 nights if practicable ● Pipe jacking or directional drilling <ul style="list-style-type: none"> ○ E2L_CP_100, 101 and 102 			
Site hoarding	<p>Consideration to be given to increasing site hoarding heights at:</p> <ul style="list-style-type: none"> ○ E2L_CP_017 and 018 and ○ E2L_CP_096 and 097 ○ E2L_CP_100, 101 and 102 		CEM / Project Delivery Manager	The proposed pipeline
Construction noise	At the crossings near Lincoln Road (compounds E2L_CP_100, 101 and 102), the trenchless crossing technique has not been confirmed. Once the crossing method has been selected, this area will be subject to detailed noise modelling to ensure that best practicable means are being used to control noise effects.	CEMP / Site Management	CEM / Project Delivery Manager	The proposed pipeline
Construction noise	Air compressors and pumps required for dewatering to be sited to maximise stand off distances to receptors, especially for works near 25 Ridge View Road, Lincoln, LN4 2LH		CEM / Project Delivery Manager	The proposed pipeline
Construction noise	Cliff Road will be used for construction traffic as an alternative to Main Street, Hackthorn.	CEMP / Site Management	CEM / Project Delivery Manager	The proposed pipeline
Vibration during construction	Works to be undertaken in accordance with ALL-PRO-SHEA-105 Vibration Procedure	CEMP / Site Management	CEM / Environmental Advisor/ Project Delivery Manager	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Vibratory compaction	<p>For vibratory compaction, the Construction Environmental Manager will be responsible for ensuring that start-up/run down activities and high amplitude settings are not undertaken within certain distances of receptors:</p> <ul style="list-style-type: none"> • No start-up/run down at high amplitude within 120 metres of sensitive receptors; • No steady state use at high amplitude within 85 metres of sensitive receptors; and • No start-up/run down at low amplitude within 50 metres of sensitive receptors. 	CEMP / Site Management	CEM / Environmental Advisor/ Project Delivery Manager	The proposed Scheme
Vibratory compaction	A potential risk of cosmetic damage to buildings has been identified for buildings located within approximately 21 metres of vibratory compaction activities, and approximately 42m for vibratory piling activities. Non-vibratory methods will be used if compaction or piling are required within these distances to a building, unless a full vibration risk assessment concludes that the thresholds for cosmetic damage are unlikely to be breached.	CEMP	CEM / Environmental Advisor/ Project Delivery Manager	The proposed Scheme
Pumping Stations – operational noise	Detailed pumping station designs will incorporate mitigation measures such as selection of quieter plant, acoustic enclosures, enhanced acoustic performance of building envelope and/or installation of noise absorptive materials to ensure predicted noise levels at receptors meet the proposed noise limits. This will be demonstrated through updated acoustic reporting prior to operation of the sites.	Acoustic Reporting at Detailed Design	Design team	The proposed Scheme
Source: Environmental Statement, Chapter 10, Soils, geology and hydrogeology				
Agricultural soils	Works will be undertaken in accordance with the Soils Management Plan (Appendix 10.2).	Soils Management Plan	CEM / Environmental Advisor	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Materials Management	A Materials Management Plan (MMP) will be completed for the construction phase of the proposed Scheme. This will address the re-use of 'suitable' materials excavated on-site and will include the use of valuable mineral resources including sand and gravel, limestone and chalk.	MMP	CEM / Environmental Advisor	The proposed Scheme
Contaminated Land	The proposed Scheme will be subject to targeted ground investigation (including chemical testing and gas and groundwater monitoring) and tiered risk assessment in accordance with Land Contamination Risk Management (LCRM) guidance (April 2021).	Phase 2 Risk Assessment	CEM / Environmental Advisor/ Project Delivery Manager	The proposed Scheme
Contaminated Land	If unexpected contaminated land is encountered during construction, works will be halted in the affected area and an appropriately qualified environmental advisor consulted. Works will only be allowed to recommence, following approval, when it is confirmed no ongoing risk is posed to human health or the environment and/or appropriate mitigation measures have been put in place. Detailed records of the ground conditions will be kept, including marked-up plans, visual and olfactory evidence of contamination and photographs, and record the actions undertaken including chemical testing, waste acceptance criteria (WAC) testing and information supporting disposal/recovery decisions.	CEMP / RAMS	CEM / Environmental Advisor	The proposed Scheme
Source: Environmental Statement, Chapter 11, Traffic and transport				
Traffic Management	Works will be undertaken in accordance with the principles of the Framework Construction Traffic Management Plan (FCTMP).	FCTMP	Project Delivery Manager	The proposed Scheme
Source: Environmental Statement, Chapter 12, The water environment				
Pollution Prevention	Works will be undertaken in accordance with good practice principles and with regard to Pollution Prevention Guidelines (PPG) as detailed in the CEMP.	CEMP	CEM / Environmental Advisor/ Project	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
			Delivery Manager	
Trenchless crossings	A programme of ground investigation is in progress to determine the underlying geology at each of the trenchless crossing locations. The contractors will be required to use a drilling mud which is environmentally designed specifically for use under watercourses and to follow the break-out procedure detailed in the CEMP.	Trenchless crossing RAMS / CEMP	Project Delivery Manager / CEM / Subcontractor	The proposed pipeline
Trenchless crossings	At trenchless crossing E2L_WTR_1598 (Caistor Canal), Seggimoor Beck (ID WC_Ancholme from Source to Bishopbridge_0060), and Kettleby Beck (WC_Ancholme from Bishopbridge to the Humber_0141), if a temporary crossing is required for construction access, a bailey bridge will be used.	CEMP	Project Delivery Manager/CEM	The proposed pipeline
Bailey Bridge / Open Cut Crossings	Keep activities/time spent in-channel to a minimum, restore the channel if altered (i.e. sediment disturbed/removed) and use sediment traps to capture excessive sediment released into surface watercourses when damming/over-pumping (if required).	CEMP	Project Delivery Manager/CEM	The proposed pipeline
Dewatering	Dewatering will be undertaken in accordance with good practice measures to minimise the likelihood of sediment or contaminants entering surface water, and potentially causing a change in flow and natural processes. These measures are detailed in the CEMP. Discharges of water from dewatering activities will be carefully controlled by a Permit to Pump System.	CEMP	CEM / Environmental Advisor	The proposed Scheme
Open cut watercourse crossings	Site specific cross sections and long profiles will be agreed with the relevant permitting authority through the consenting process for the reinstatement of the open cut crossings. The profiles agreed will allow for no change in flood risk and any natural channel change to occur while not exposing the pipe.	Open cut watercourse crossing RAMS and permitting/consenting process	Project Delivery Manager / CEM	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Flood risk	Wherever possible works in areas at risk of flooding will be programmed to occur during periods when the risk of flooding is lower (i.e. summer working). Contractors involved in the installation of the pipeline will be subscribed to the Environment Agency flood warning service and have plans in place to ensure staff and, insofar as possible, plant are removed from areas at risk of flooding before the onset of the flood.	Programme	Project Delivery Manager	The proposed pipeline
Flood risk	The design of temporary works will ensure that, if a flood does occur, the working area will fill with floodwater in preference to nearby receptors.	CEMP	CEM / Environmental Advisor/ Project Delivery Manager	The proposed Scheme
Flood risk	The temporary fencing of sites will be such to allow the free drainage of land in appropriate locations to prevent localised flooding.	CEMP	CEM / Environmental Advisor	The proposed Scheme
Flood risk	The design of temporary works will ensure that, if a compound is located in an area susceptible to groundwater flooding at the surface and within an area of surface water flooding, there will be no changes to ground levels across the compound or the surrounding area that would impede the flow or storage of flood water.	Permitting/consenting process	CEM / Environmental Advisor/ Project Delivery Manager	The proposed Scheme
Flood risk	The design of open cut watercourse crossings at the following locations will be subject to further detailed assessment to confirm potential impact to nearby sensitive receptors. Where the potential for an impact to receptors is confirmed mitigation measures will be incorporated such as use of larger structures for crossings and/or temporary / demountable flood defences. Final details should be agreed through the permitting process.	Open cut watercourse crossing RAMS and permitting/consenting process	Crossings Manager	The proposed pipeline

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
	<ul style="list-style-type: none"> E2L 			
Flood risk (Above Ground Infrastructure)	The increase in surface water runoff rates owing to the construction of impermeable areas at above ground infrastructure sites will be mitigated through surface water drainage systems. The surface water drainage systems will be designed in accordance with the NPPF and LLFA requirements, evidence of which will be collated into a drainage strategy to be submitted before determination.	Drainage strategy	Design Team	The proposed Scheme
Flood risk	Trenches will typically be open for up to two weeks, in stretches of 100-200 metres, thereby reducing the volume of arisings in the floodplain at a given time.		Project Delivery Manager	The proposed pipeline
Flood risk	Arisings will be stored in windrows along and within the working corridor. Breaks will be incorporated into the windrows to permit the flow of water into and through the working area.		Project Delivery Manager	The proposed pipeline
Flood risk	The design includes the restoration of the working corridor to its former use and ground levels. This will restore the original floodplain hydraulic functionality where present.		Project Delivery Manager	The proposed pipeline
Flood risk	Where watercourses are flumed they will be reinstated to their original cross section and long profile or greater as geotechnical conditions dictate. This will restore the original hydraulic conveyance and result in no increase in flood risk.	Outline reinstatement strategy	CEM	The proposed pipeline
Flood risk	Accesses to the working area and haul roads will be formed / maintained at existing grade ensuring that topography is unaltered and the hydraulic functionality of the topography in these areas is unchanged during construction. Topsoil removed to create these temporary roads and tracks will be stored in areas outside the undefended Flood Zone 3. In areas this is not possible, the linear stockpile will have breaks to allow water to penetrate.		Project Delivery Manager	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Flood risk	Development below the existing ground level will be suitably managed to minimise groundwater ingress and the impedance of groundwater flow.		Project Delivery Manager	The proposed Scheme
Flood risk	AWS' inspection and maintenance regimes are rigorous. This coupled with the proposed constant flow monitoring of water within the pipeline and valves to isolate structural breaches of the pipeline, means that the flood risk associated with asset failure is considered low.		Project Delivery Manager	The proposed pipeline
Flood risk	Discharges from lagoons / washouts during commissioning shall be restricted to rates and locations agreed by the consenting authority. The discharge will be scheduled to occur during periods of dry weather when the risk of flooding is lower than during periods of high rainfall/saturated ground conditions.		Project Delivery Manager/CEM	The proposed pipeline
Runoff from compounds	Controls for increased rates and volumes of runoff from compounds (through the introduction of less permeable land coverings) will be established during the site start-up inspection. These will be treated with SuDS where required, prior to discharge to the receiving environment at rates and locations agreed by the consenting authority.	CEMP	CEM / Environmental Advisor	The proposed Scheme
Line Valve – Washouts (operational)	Any discharges from line valve – washout arrangements during operation would be collected by tanker and taken off-site for appropriate disposal, not discharged into the environment, unless otherwise agreed with the Environment Agency/LLFA/IDB on a case-by-case basis.	Operational permitting	Anglian Water Services (AWS) Operations	The proposed pipeline
Above ground infrastructure	Temporary hardstanding will only be installed where necessary, and remain only whilst required, for construction of the proposed Scheme.	CEMP	CEM / Environmental Advisor/ Project Delivery Manager	The proposed Scheme

Aspect	Action/Commitment	Implementation/ Control Plan	Responsible Person	Section of scheme aspect applicable to
Reservoir outfalls (for maintenance during operation)	<p>Water will be treated (i.e. dechlorinated) prior to discharge, whilst the discharges themselves will comply with Environmental Permit discharge criteria.</p> <p>Sampling of water quality in the receiving watercourses before (i.e. before construction - to generate baseline conditions) and after an emergency discharge will be undertaken to assess if this has had an effect on water quality conditions. Action to restore baseline conditions may be considered depending on results.</p>	Operational permitting	Anglian Water Services (AWS) Operations	The proposed pipeline
Abstractions	<p>In the absence of data on locations of private water supplies (PWSs), landowners are expected to inform SPA about the locations of their PWS as per Anglian Water Code of Practice. Appropriate mitigation will be applied during construction to protect the PWS.</p> <p>To protect the licensed surface water abstraction, SPA will work with the landowners to verify the exact location of the abstraction, identify the time of the year when the abstraction is likely to be used and compare this to scheduled construction times, and liaise on potential temporary relocation of the abstraction point or design an alternative mitigation. To limit the impact on the licensed groundwater abstractions, SPA will liaise with the abstraction owners and agree acceptable mitigation measure if required.</p>	CEMP	Project Delivery Manager / CEM	The proposed pipeline

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