KEADBY
NEXT GENERATION
POWER STATION
Hydrogen-enabled flexible power

A collaboration between SSE Thermal and Equinor

The Keadby Next Generation Power Station Project

Document Ref: 7.4

Planning Inspectorate Ref: EN0110001

The Keadby Next Generation Power Station Development Consent Order [year]

Land at, and in the vicinity of, the existing Keadby Power Station (Trentside, Keadby, Scunthorpe DN17 3EF)

Outline Construction Environmental Management Plan

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(q)

Applicant: Keadby Next Generation Limited

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Glossary

Abbreviation	Description
AIL	Abnormal Indivisible Load – a load that cannot be broken down into smaller loads for transport without undue expense or risk of damage. It may also be a load that exceeds certain parameters for weight, length and width.
ALC	Agricultural Land Classification - part of the planning system in England and Wales which classifies agricultural land into five categories according to versatility and suitability for growing crops.
BPM	Best Practicable Means – Actions undertaken and mitigation measures implemented to ensure that noise levels are minimised to be as low as practicable.
British Standard	Standard produced by the British Standards Institution based upon the principles of standardisation recognised inter alia in European Policy.
CCGT	Combined Cycle Gas Turbine - a CCGT is a combustion plant where a gas turbine is used to generate electricity and the waste heat from the flue-gas of the gas turbine is converted to useful energy in a heat recovery steam generator (HRSG), where it is used to generate steam. The steam then expands in a steam turbine to produce additional electricity.
CEMP	Construction Environmental Management Plan - a plan to outline how a construction project will avoid, minimise or mitigate effects on the environment and surrounding area.
CIRIA	Construction Industry Research and Information Association - a member-based research and information organisation dedicated to improvement in all aspects of the construction industry.

Abbreviation	Description
COSHH	Control of Substances Hazardous to Health - a United Kingdom Statutory Instrument stating general requirements on employers to protect employees and other persons from the hazards of substances used at work by risk assessment.
CoW	Clerk of Works
CTMP	Construction Traffic Management Plan - a plan outlining measures to organise and control vehicular movement on a construction site so that vehicles and pedestrians using site routes can move around safely.
DCO	Development Consent Order - made by the relevant Secretary of State pursuant to The Planning Act 2008 to authorise a Nationally Significant Infrastructure Project. A DCO can incorporate or remove the need for a range of consents which would otherwise be required for a development. A DCO can also include rights of compulsory acquisition.
DEFRA	Department for Environment, Food and Rural Affairs – the UK government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities in the United Kingdom. The department's priorities are to grow the rural economy, improve the environment and safeguard animal and plant health.
EA	Environment Agency - a non-departmental public body sponsored by the United Kingdom government's Department for Environment, Food and Rural Affairs (DEFRA), with responsibilities relating to the protection and enhancement of the environment in England.
EIA	Environmental Impact Assessment - a term used for the statutory process that assesses environmental consequences (positive or negative) of a project prior to the decision to move forward with the proposed development. The EIA process concludes whether likely significant effects on the environment are expected.
EMS	Environment Management System - the management of an organization's environmental programs in a comprehensive, systematic, planned and documented manner.
EPC	Engineering, Procurement and Construction (EPC) contractor

Abbreviation	Description
ES	Environmental Statement - a report in which the process and results of an Environment Impact Assessment are documented.
GPP	Guidance for Pollution Prevention - provides updated good practice guidance to the UK.
HE	Highways England - operate, maintain and improve England's motorways and major A-roads.
HGV	Heavy Goods Vehicle - vehicles with a gross weight in excess of 3.5 tonnes.
IDBs	Internal Drainage Boards - a type of operating authority with permissive powers to undertake work to secure clean water drainage and water level management within drainage districts.
INNS	Invasive non-native species - species that have occurred outside of their natural range. Invasive species have the potential to hinder or prevent survival of others within the ecosystem.
IoAaNNWLMB	Isle of Axholme and North Nottinghamshire Water Level Management Board
ISMP	Invasive Species Management Plan - preventing and managing the spread of invasive species and their potential impacts.
JNCC	The Joint Nature Conservation Commission - the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.
LBMEP	Landscaping and Biodiversity Management and Enhancement Plan
LLFA	Lead Local Flood Authority - flood risk management body.
LWS	Local Wildlife Site - an area important for the conservation of wildlife, these are non-statutory sites of nature conservation value that have been designated 'locally'. These sites are referred to differently between counties with common terms including site of importance for nature conservation, county wildlife site, site of biological importance, site of local importance and sites of metropolitan importance.
NJUG	National Joint Utilities Group - a trade association which represents utilities and their contractors.

Abbreviation	Description
NLC	North Lincolnshire Council
NPPF	The National Planning Policy Framework - Policy Framework which first came into effect in March 2012 (with some transitional arrangements) replacing the majority of national planning policy other than NPSs. A revision of the NPPF was published in July 2018 by the Ministry of Housing, Communities and Local Government and updated again in February 2019. The NPPF is part of the Government's reform of the planning system intended to make it less complex, to protect the environment and to promote sustainable growth. It does not contain any specific policies on Nationally Significant Infrastructure Projects but its policies may be considered in decisions on DCOs if the Secretary of State considers them to be 'relevant'.
NSIP	Nationally Significant Infrastructure Projects - defined by the Planning Act 2008 and covers projects relating to energy (including generating stations, electric lines and pipelines); transport (including trunk roads and motorways, airports, harbour facilities, railways and rail freight interchanges); water (dams and reservoirs, and the transfer of water resources); waste water treatment plants and hazardous waste facilities.
NSR	Noise Sensitive Receptors
OWSI	Outline Written Scheme of Archaeological Investigation
PPE	Personal Protective Equipment.
SOAEL	Significant Observed Adverse Effect Level - the level above which significant adverse effects on health and quality of life occur.
SWMP	Site Waste Management Plan - a plan setting out how resources will be managed and waste controlled at all stages during a construction project.
WAC	Waste Acceptance Criteria - guidance on acceptance procedures and criteria for wastes destined for disposal in landfills.
WFD	Water Framework Directive - European Union directive which commits member states to achieve good qualitative and quantitative status of all water bodies.

Abbreviation	Description
WMP	Water Management Plan

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Executive Summary

1. This document has been prepared on behalf of Keadby Next Generation Limited (the Applicant) to provide an outline for a Construction Environment Management Plan (CEMP). The final CEMP will be produced by the contractor appointed by the Applicant to undertake the construction of the Proposed Development. By drawing upon the measures set out in the following sections, the final CEMP will help to manage environmental issues appropriately during construction.
2. The Outline CEMP provides an overview of the Proposed Development, the Applicant and a description of the Site, and sets out the indicative construction programme, including construction facilities, delivery routes for construction materials, construction lighting and recycling and disposal measures for construction waste.
3. The Outline CEMP summarises the potential impacts for each environmental topic (Air Quality, Traffic and Transport, Noise and Vibration, Ecology, Landscape and Visual Amenity , Geology, Hydrogeology and Land Contamination, Water Environment, Cultural Heritage, Waste, Socio-economics, Population and Human Health and Climate Change and Sustainability) reported in the Environmental Statement (ES) (**Application Document Ref. 6.2**). Mitigation and enhancement measures described in the ES to address construction impacts are also presented. Monitoring requirements for mitigation measures are described where these have been recommended in the ES and the responsibilities for implementation are to be confirmed in the final CEMP.
4. The CEMP also includes an Outline Site Waste Management Plan (SWMP) and an Outline Soils Resources Plan. The Outline SWMP outlines the waste management strategy for the construction phase by considering likely waste arisings from construction activities and provides recommended management measures, taking into account the principles of the waste hierarchy, and the Outline Soils Resources Plan which outlines the approach that will be implemented during the construction phase for the handling, movement and temporary storage of soils.
5. Submission and approval of the final CEMP (and associated final SWMP and final Soils Resources Plan) prior to the commencement of construction is proposed to be secured by a requirement of the **Draft DCO** (**Application Document Ref. 3.1**).

1. Introduction

1.1. Overview

1.1.1. This **Outline Construction Environmental Management Plan (CEMP)** (**Application Document Ref 7.4**) has been prepared by Arup on behalf of Keadby Next Generation Limited ('the Applicant') which is a subsidiary of SSE plc. It forms part of the application for a Development Consent Order (DCO) ('the Application'), that has been submitted to the Secretary of State (the 'SoS') for Energy Security and Net Zero under Section 37 of 'The Planning Act 2008' ('the 2008 Act').

1.1.2. The Applicant is seeking development consent for the construction, operation and maintenance of a new combined cycle gas turbine ('CCGT') electricity generating station on land at, and in the vicinity of, the existing Keadby Power Station, Trentside, Keadby, Scunthorpe DN17 3EF ('the Site').

1.1.3. The Keadby Next Generation Power Station ('the Proposed Development') is a new CCGT electricity generating station with a capacity of up to 910MW electrical output. The CCGT electricity generating station will be designed to run on 100% hydrogen and able to run on 100% natural gas or a blend of natural gas and hydrogen and will be located on land to the west of Keadby 1 and Keadby 2 Power Stations. The Proposed Development includes connections for cooling water, electricity, hydrogen and natural gas, and construction laydown areas and other associated development. It is described in full in **Environmental Statement (ES) Volume I Chapter 4:** The Proposed Development (**Application Document Ref. 6.2.4**).

1.1.4. The Proposed Development falls within the definition of a 'Nationally Significant Infrastructure Project' (NSIP) under Section 14(1)(a) and Sections 15(1) and (2) of the 2008 Act, as it is an onshore generating station in England that would have a generating capacity greater than 50MW electrical output (50MWe). As such, a DCO application is required to authorise the Proposed Development in accordance with Section 31 of the 2008 Act.

1.1.5. The DCO, if made by the SoS, would be known as 'The Keadby Next Generation Power Station Order' ('the Order').

1.2. The Applicant

1.2.1. The Applicant is a subsidiary of the FTSE-listed SSE plc, one of the UK's largest and broadest-based energy companies, and the country's leading

developer of renewable energy. Over the last 20 years, the SSE Group has invested over £20 billion to deliver industry-leading offshore wind, onshore wind, CCGT, energy from waste, biomass, battery energy storage, energy networks and gas storage projects. Related SSE companies own and operate the adjacent Keadby 1 and 2 Power Stations and have the benefit of the DCO for Keadby 3 CCS Power Station (herein referred to as the 'Keadby CCS Power Station').

1.2.2. The Proposed Development is being developed with Equinor, one of the country's leading energy providers, supplying natural gas, oil and electricity. Equinor is developing multiple low-carbon hydrogen and carbon capture projects in the Humber, working towards transforming the UK's most carbon intensive industrial cluster into a net zero region.

1.2.3. SSE Renewables Limited operates Keadby Windfarm, which lies to the north and south of the Site and generates renewable electricity from 34 turbines, with a total installed generation capacity of 68MW.

1.2.4. SSE plc has produced a 'Greenprint' document (SSE, 2020) that sets out a clear commitment to investment in low carbon power infrastructure, working with government and other stakeholders to create a Net Zero power system by 2040. This includes investment in flexible sources of electricity generation and storage for times of low renewable output which will complement other renewable generating sources, either using low carbon fuels and/ or capturing and storing carbon emissions.

1.2.5. The design of the Proposed Development demonstrates the commitment outlined within the Greenprint. The Proposed Development will be built with a clear route to decarbonisation, consistent with SSE's Net Zero Acceleration Programme which committed to the development and progression of new low carbon flexible power including hydrogen-fuelled generation.

1.3. The Proposed Development

1.3.1. The Proposed Development would comprise a high efficiency gas fired power station with an electrical output capacity of up to 910MWe and associated buildings, structures and plant and other associated development defined in Schedule 1 of the **Draft DCO** (**Application**

Document Ref. 3.1) as Work Nos. 1-11 and shown on the **Works Plans** (**Application Document Ref. 2.3**).

1.3.2. The Proposed Development will include:

- a new-build CCGT electricity generating station fuelled by hydrogen and/or natural gas with a power output of up to 910MW **(Work No. 1**) including:
  - a CCGT plant;
  - cooling infrastructure;
  - natural gas and hydrogen blending equipment;
  - supporting facilities including administration and control buildings, workshops, storage buildings, effluent treatment facilities, fire water storage tank(s), demineralised water treatment plant including storage tank(s), and permanent laydown areas for operation and maintenance activities;
- a hydrogen supply pipeline, including a gas compound for the hydrogen supplier's apparatus and a hydrogen gas compound for the Applicant's apparatus (**Work No. 2**);
- a natural gas supply pipeline including a compound for the natural gas supplier's apparatus and a natural gas compound for the Applicant's apparatus (**Work No. 3**);
- electrical connection works for the export and import of electricity to and from the generating station and the existing 400kV National Grid Electricity Transmission (NGET) substation located adjacent to the Keadby Power Station site, including works within the substation (which would be undertaken by NGET) (**Work No. 4**);
- water supply connection works to provide cooling and make-up water to the generating station, including intake structures and an underground and/or overground water supply pipeline running between the generating station and the Stainforth and Keadby Canal (**Work No. 5**);
- connections to and use of an existing outfall and associated pipework for the discharge of used cooling water, surface water and treated effluent to the River Trent (**Work No. 6**);
- public water connection pipeline from a new connection on Chapel Lane to provide potable water to the generating station (**Work No. 7**);
- new permanent access to the generating station (**Work No. 8**), comprising:

  - maintenance and improvement of an existing private access road from the A18, including replacement of a private bridge (Mabey Bridge) (**Work No. 8A**);
  - installation of layby and gatehouse with barriers, enclosures, drainage and lighting north of the A18 junction (**Work No. 8B**) and associated utilities connections (**Work No. 8C**); and
  - emergency access route comprising the maintenance and improvement of an existing private track running between the generating station and Chapel Lane and including new private bridge crossing over Glew Drain (**Work No. 8D**);

- temporary construction and laydown areas (**Work No. 9A**);
- maintenance and improvement of the existing access routes running between the A18 and construction laydown areas (**Work No. 9B**); and between Skew Bridge adjacent to the A18 and a temporary construction laydown area associated with Mabey Bridge replacement (**Work No. 9C**);
- retention, maintenance and improvement and subsequent removal of existing temporary haul route from the Waterborne Transport Offloading Facility (**Work No. 9D**) and the inspection and repair of the existing wharf, and temporary placement of mobile cranes including the temporary oversailing of crane arms (**Work No. 9E**); and
- landscaping and biodiversity enhancement measures (**Work No. 10**);
- an allocation of land to meet the requirements of the Carbon Capture Readiness (Electricity Generating Stations) Regulations 2013 (**Work No. 11**).

1.3.3. The Applicant will be responsible for the construction, operation (including maintenance) and eventual decommissioning of the Proposed Development including the on-site connections to electricity, cooling water, hydrogen and natural gas supplies.

1.3.4. The Proposed Development will be capable of operating 24 hours per day, 7 days per week with programmed offline periods for maintenance.

1.3.5. The route for the hydrogen supply pipeline to the Proposed Development has not yet been confirmed. The supply pipeline is not included in the Proposed Development and will be progressed by a third party under a separate consent. In line with Government policy, it is recognised that developments such as the Proposed Development are needed to

stimulate investment in the development of hydrogen production and supply infrastructure.

1.3.6. Further detail on the components of the Proposed Development is provided in **ES Volume I Chapter 4**: The Proposed Development (**Application Document Ref. 6.2.4**). The areas within which each numbered Work (component) of the Proposed Development are to be built are defined by the coloured and hatched areas on the **Works Plans** (**Application Document Ref. 2.3**).

1.4. The Proposed Development Site

1.4.1. The Site is located within and near to the existing Keadby Power Station site near Scunthorpe, Lincolnshire and lies within the administrative boundary of North Lincolnshire Council (NLC). The majority of land is within the ownership or control of the Applicant (or SSE associated companies) and is centred on national grid reference 482351, 411796.

1.4.2. The existing Keadby Power Station site currently encompasses the operational Keadby 1 and Keadby 2 Power Station sites, including the Keadby 2 Power Station Carbon Capture and Readiness reserve space.

1.4.3. The Site encompasses an area of approximately 77.1 hectares (ha), of which approximately 26.7 ha of land is proposed for construction laydown.

1.4.4. Multiple proposed land uses together make up the Site, with the different areas described in turn below and shown on **ES Volume III Figure 3.3** Indicative Parts of the Site Plan (**Application Document Ref. 6.4.4**). These terms have been used to describe land use zones within the Site.

1.4.5. The Site is divided into the following areas of permanent and temporary land use (the proposed use is described in more detail in **ES Volume I Chapter 3:** Site and Surrounding Area (**Application Document Ref. 6.2.3**)):

- Main Site;
- Ancillary Facilities;
- Water Connections;
- Electricity Connections;
- Waterborne Transport Off-loading Area;
- Construction Laydown Areas;
- Access routes (emergency, permanent and construction);
- Connections to Keadby 1 and Keadby 2 power stations; and
- Additional areas for landscaping and biodiversity provision.

1.5. The DCO Process

1.5.1. The Proposed Development falls within the definition of a NSIP under Section 14(1)(a) and 15(2) of the 2008 Act as a 'generating station exceeding 50 MW'.

1.5.2. As a NSIP project, the Applicant is required to seek a DCO to construct and operate the generating station, under Section 31 of the 2008 Act. Section 37 of the 2008 Act also governs the form, content and accompanying documents that are required as part of a DCO application. The requirements are implemented through the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) ('APFP Regulations') which state that an application must be accompanied by an ES, where a development is considered to be 'EIA development' under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) (as amended).

1.5.3. An application for development consent for the Proposed Development has been submitted to the Planning Inspectorate (PINS) acting on behalf of the SoS. Subject to the application being accepted, PINS will then examine it and make a recommendation to the SoS who will then decide whether to grant a DCO. The acceptance, examination, recommendation and decision stages are subject to fixed timescales and the decision is therefore anticipated to fall in 2026.

1.5.4. A DCO, if granted, has the effect of providing deemed planning permission for a development, in addition to a number of other consents and authorisations where specified within the Order.

1.6. The Purpose and Structure of this Document

1.6.1. This Outline CEMP sets out a series of proposed measures that would be applied by the contractor to provide effective planning, management and control during construction to control potential impacts upon people, businesses and the natural and historic environment.

1.6.2. This Outline CEMP has been produced in conjunction with the **ES Volume I** (**Application Document Ref. 6.2**) with the aim of ensuring that design and impact avoidance measures reported in the ES are implemented and are effective, and any additional mitigation measures proposed to reduce significant adverse effects are secured. Site-specific controls, which will be included within the final CEMP, will be developed taking the measures set

out in this Outline CEMP into account. The final CEMP will be developed in accordance with the principles set out in this Outline.

1.6.3. The Applicant will ensure that the contractor complies, as a minimum, with applicable environmental legislation at the time of construction, together with any additional environmental controls imposed by the **Draft DCO** (**Application Document Ref 3.1**). The final CEMP will, therefore, be designed with the objective of compliance with relevant environmental legislation and the mitigation measures set out within the ES and this Outline. Any additional construction licenses, permits or approvals that are required will be listed in the final CEMP, including any environmental information submitted in respect of them.

1.6.4. Further guidance on specific areas, such as soil handling and dust management, are considered from industry best practice guidance documents, as set out in each discipline section of this Outline CEMP. The references to guidance documents are not intended to be exhaustive.

1.6.5. The final CEMP will broadly reflect the structure of this Outline CEMP, which is as follows:

- Section 2 provides an indication of the construction arrangements that have been assessed in the ES;
- Section 3 presents additional information that will be included under each sub-section within the final CEMP, which includes –
  - Environmental impacts (assessed through the Environmental Impact Assessment (EIA));
  - Impact avoidance or reduction of measures to be applied, where the ES has assumed they would be applied during the detailed design or construction phase;
  - Any other additional mitigation measures;
  - Additional surveys or monitoring considered necessary pre-construction or during construction in order to confirm the status of receptors, and the effectiveness of impact avoidance/mitigation measures;
  - Corrective action procedures to be applied, where necessary; and
  - Links to other complimentary plans and procedures.
- **Appendix A** comprises an Outline Site Waste Management Plan (SWMP);
- **Appendix B** comprises an Outline Soil Resources Plan (SRP);
- **Appendix C** comprises an Outline Water Management Plan (WMP);

1.6.6. In summary, the final CEMP will identify how commitments made during the EIA (and reported in the ES) will be translated into actions on-site.

1.6.7. The contractor will be responsible for working in accordance with the environmental controls documented in the final CEMP, which will allocate responsibilities for environmental performance. The overall responsibility for implementation of the final CEMP will lie with the Applicant.

2. Construction Phase Arrangements

2.1. Indicative Programme

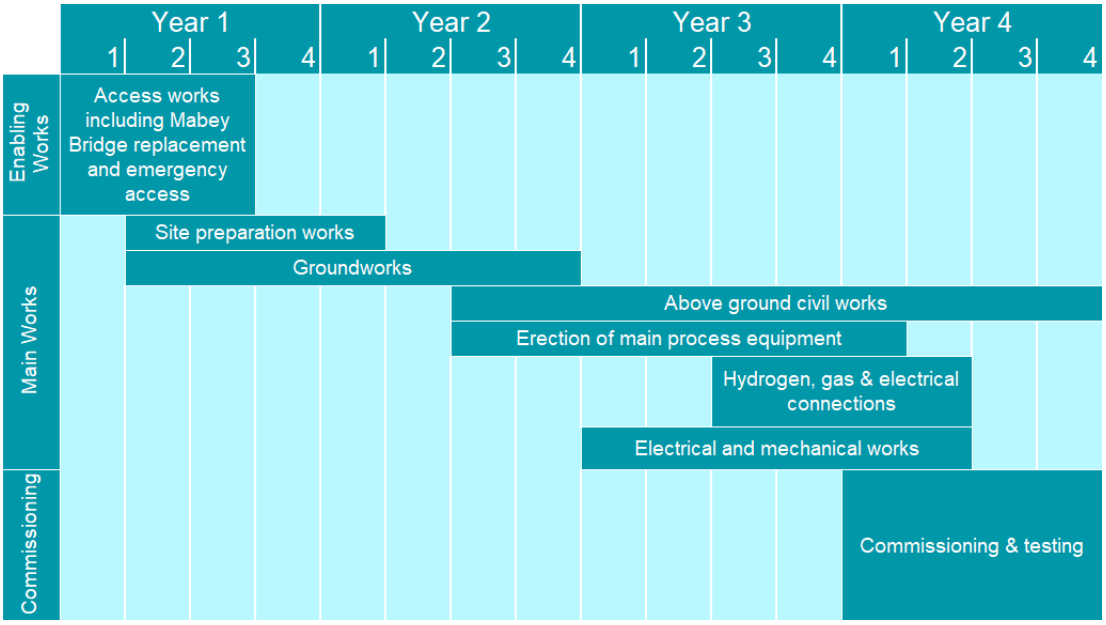
2.1.1. At this stage, a detailed construction programme is not available, as this is normally determined by the Engineering, Procurement and Construction (EPC) contractor who has not yet been appointed. The Applicant would appoint one or more EPC contractors for the construction of the CCGT (**Work No 1A**). Additional contractors are likely to be appointed to undertake the proposed Mabey Bridge replacement and access road improvement works (**Work No 9B**).

2.1.2. Construction of the Proposed Development could (subject to the necessary consents being granted and an investment decision being made) potentially start in 2027 after the DCO is anticipated to have been granted.

2.1.3. As this is a 'first of a kind project', the Application is being made on the basis that commencement of development can take place for up to seven years from the granting of consent. For this reason, a scenario where construction commences later in the programme, up to 2034 (seven years after the DCO could be granted) has also been considered as a reasonable worst-case for some technical assessments.

2.1.4. Initial enabling works comprising the Mabey Bridge replacement, access road improvement works, and construction of the emergency access crossing, would be undertaken over a circa 9-month period. Construction activities for the main works phase are expected to be completed within a timeframe of approximately 3.5 years, including commissioning. Table 1 shows an indicative construction and commissioning programme.

Table 1 Indicative Construction and Commissioning Programme



2.2. Working Hours

2.2.1. Core construction working hours will be between 07:00 and 19:00 Monday to Friday (except bank holidays) and 08:00 and 13:00 on Saturdays. However, it is likely that some construction activities may need to be undertaken outside of these core working hours. This is principally because certain construction activities cannot be stopped, such as concrete pouring, but also potentially to manage the construction programme and ensure the completion of the works in line with the agreed timescales for commissioning. Where on-site works are to be conducted outside the core hours, they would comply with any restrictions agreed with the local planning authority, in particular regarding control of noise and traffic. Twenty-four hour working for certain activities has therefore been assessed in **ES Volume I Chapter 9:** Noise and Vibration (**Application Document 6.2.9**) which sets out specific mitigation and control measures required to prevent disturbance from any activities outside of core working hours. DCO Requirements will secure the working hours and the approach to exceptions to the core working hours. Any such works will be minimised and will be carefully managed to reduce effects on the local community.

2.3. Traffic Management

2.3.1. During construction, the appointed contractor will ensure that the impacts from construction traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised, where reasonably practicable, by implementing the measures set out in the **Outline Construction Traffic Management Plan** (CTMP)

(**Application Document Ref. 7.3)** and the **Outline Construction Workers' Travel Plan** (CWTP) (**Application Document Ref. 7.4**); final versions of these Plans will be secured by a Requirement of the **Draft DCO** (**Application Document Ref. 3.1**).

2.3.2. Access to the Site during construction for both construction workers and HGV traffic will be via the existing access road from the A18. This access road is a purpose built road that serves the existing Keadby Windfarm and was used by all construction traffic for the Keadby 2 Power Station construction project. It is wide enough to allow access by construction traffic.

2.3.3. Construction staff are anticipated to travel to the Site via the existing trunk road and local networks. Construction staff arriving by car will use on-site parking, either:

- within the construction laydown area to the south of the Main Site; or
- within the construction laydown area to the south of the Stainforth and Keadby Canal.

2.3.4. HGVs delivering construction materials will access the Site from the M180 Junction 2, via the A161 and A18, entering via the existing access point off the A18 and over Mabey Bridge. Access into the Site will be controlled by a new gatehouse and HGV waiting area (**Work No. 8B**) where vehicle registration and deliveries will be recorded. At the junction of the M180, at this stage it is assumed that 80% would arrive/ depart to the west and 20% arrive/ depart to the east. The indicative HGV routing plan is shown Plate 1 below. The location of the gatehouse has been set sufficiently back from

the A18 to allow HGV to queue on the access road, rather than on the A18.

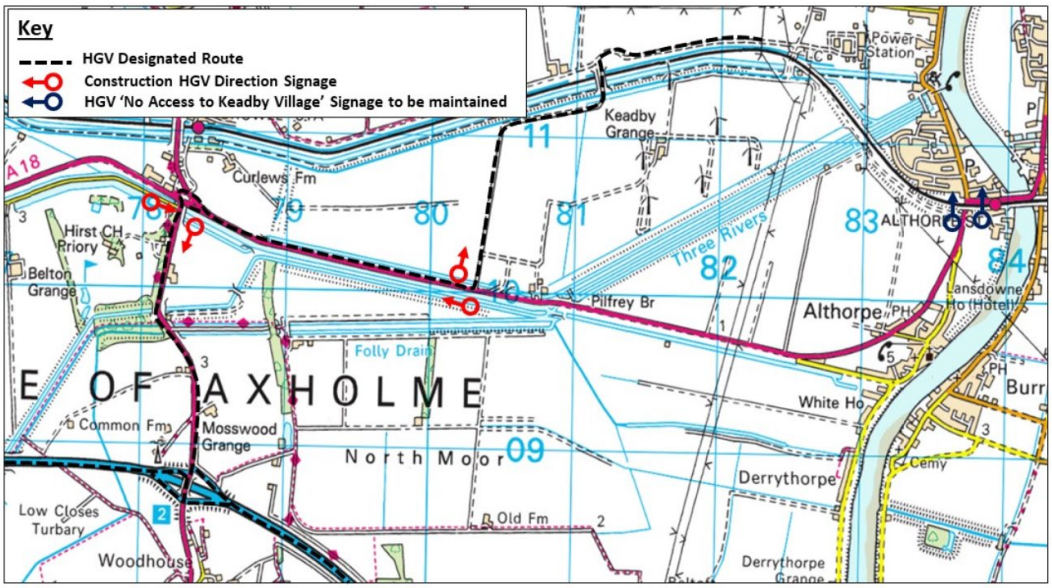


Plate 1: Illustrative HGV designated route during construction

2.3.5. The volume of HGVs associated with construction of the Proposed Development on the network is predicted to be at its maximum of 828 daily two-way vehicle movements (414 in and 414 out) during the initial six-month Site Enabling and Preparation phase of construction once Mabey Bridge has been replaced. This traffic is associated with the anticipated cut and fill of the top layer of ground within the Site to improve the geotechnical condition of the ground and the land raising requirements for the Main Site. The import and export of material will occur over a three month period during Months 7 to 9 of the construction programme.

2.3.6. During the remainder of the construction period, HGV movements will vary with 120 two-way daily HGV movements (60 in and 60 out) from Month 24 to Month 35 of construction, 60 two-way daily HGV movements (30 in and 30 out) from Months 9 to 23 and Months 36 to 42 of construction and 10 daily two-way HGV movements (5 in and 5 out) from Months 1 to 6 of construction.

2.3.7. HGV arrivals, including deliveries, will be managed as far as reasonably practicable, such that they are spread evenly over the day between the hours of 07:00 and 19:00 Monday to Friday (except bank holidays) and 08:00 to 13:00 on Saturday (if required) to avoid on-site congestion. HGV

deliveries would not be undertaken outside of core working hours, unless agreed with the local planning authority on a case by case basis.

2.3.8. Combining construction workforce vehicle movements with construction HGV movements over the entire construction programme shows the overall peak to occur in Months 26 and 27 when 1,022 two-way vehicle movements are anticipated (902 two-way car/ van movements and 120 two-way HGV movements per day). Further information on traffic volumes and routing is provided in **ES Volume II Appendix 10A**: Transport Assessment **(Application Document Ref. 6.3.8).**

2.3.9. It may be necessary to construct new temporary access points into the construction laydown areas south of North Pilfrey Bridge (illustrated on **ES Volume III Figure 3.3** (**Application Document Ref. 6.4.4**)) from this existing site access road. Existing farm crossings will be utilised and upgraded where this is reasonably practicable.

2.3.10. A number of Abnormal Indivisible Load (AIL) movements are expected during the construction programme associated with the delivery of large items of plant and equipment. The exact number and size/ weight is not known at this stage but is expected to be similar to that received during the construction of Keadby 2 Power Station (approximately 25). The final number will be based on specific construction methodologies and will be confirmed during detailed design. The route that these will take is outlined within the **Outline CTMP** (**Application Document Ref. 7.5**).

2.3.11. It is proposed that the largest abnormal loads will be received at the Port of Immingham and barged down the River Trent to the Waterborne Transport Offloading Area at Railway Wharf, where they would be offloaded using mobile cranes. The load bearing capacity of the wharf and crane pads was upgraded to facilitate the delivery of AIL for the Keadby 2 Power Station construction therefore only maintenance and temporary placement of mobile crane(s) is proposed. Following any minor clearance works, the temporary crane(s) will be delivered to and erected on-site (using separate vehicle mounted crane(s)) on a suitable foundation which may involve simple grading/ levelling, and compaction as well as the use of a temporary plate to spread loads. The components will then be transported to the Site crossing the B1392 onto the temporary haul road that runs to the east of PD Port Services yard. Temporary traffic management in the form of Stop/ Go signs will be used to halt traffic along the B1392 in order to allow the abnormal loads to cross the B1392. AIL would enter the Site via the haul route, which was also used in the construction of Keadby 2 Power Station.

2.3.12. Smaller abnormal loads are expected to be transported by road from Immingham Dock via the M180 to Junction 2 and then from the A161 to

the A18, entering the Site via Mabey Bridge, and then over the privately owned North Pilfrey Bridge.

2.3.13. Use of this AIL route would be subject to the load bearing capacity of North Pilfrey Bridge, as follows:

- normal design loading covering vehicles up to 44 tonnes gross vehicle weight;
- SV80 Vehicle (max gross weight 80 tonnes with a maximum basic axle load of 12.5 tonnes);
- SV100 Vehicle (max gross weight of 100 tonnes with a maximum basic axle load of 16.5 tonnes); and
- SV196 Vehicle (max gross weight of 196 tonnes with a maximum basic axle load of 16.5 tonnes).

2.3.14. Should it be necessary, there is an alternative access route for certain abnormal loads that cannot pass over North Pilfrey Bridge that was used during the construction of Keadby 2 Power Station, which is Ealand village via the A161, New Trent Road and Bonnyhale Road. During Keadby 2 Power Station construction, consent was provided for up to ten AIL deliveries to use this route. As this is already an established route and no works are required on this route to facilitate its use as an AIL route for the Proposed Development, this route is not included within the Site boundary. This route would only be used if North Pilfrey Bridge and Railway Wharf are unsuitable or if delays to the construction programme would otherwise result. Should any AILs be required to use this route they would be below the axle loading capacity of the A161 Crowle Bridge, owned and maintained by NLC as highway authority.

2.3.15. Detail of the routing strategy and procedures for the notification and conveyance of AIL, including agreed routes, the number of abnormal loads to be delivered by road, construction programme, and measures for the temporary protection of carriageway surfaces, the protection of statutory undertakers' plant and equipment, and any temporary removal of street furniture will be set out in the final CTMP, which is secured as a Requirement of the **Draft DCO** (**Application Document Ref. 3.1**).

2.3.16. NLC and National Highways (NH) abnormal loads officer will be consulted at the earliest opportunity on the programme and plan for the delivery of the AIL, as part of or in advance of discharging the relevant DCO Requirement. Relevant asset owners such as Network Rail (with infrastructure below North Pilfrey Bridge) would also be notified.

2.3.17. As was the case for Keadby 2 Power Station, the Applicant would notify and work closely with the Canal and River Trust and harbour authority to minimise restrictions on use of Keadby Lock during AIL deliveries. The

number of AIL deliveries is anticipated to be less than that required for Keadby CCS Power Station, nonetheless similar mitigation would be employed including providing advance notice of AIL deliveries at Railway Wharf to mariners to ensure sufficient forewarning of any required closures of Keadby Lock.

2.3.18. The public will also be made aware of when abnormal load deliveries are taking place via a notice on the board at the existing entrance to Keadby 1 Power Station in Keadby village, on the Applicant's website, and via the press and social media.

2.3.19. The contractor will be required to distribute the final HGV routing plan to all HGV drivers during their induction. It will be a condition of contract between the Applicant and the appointed contractor to require that all construction HGV deliveries must use the designated route to access and egress the construction site. Sanctions will be put in place to deal with non-compliance.

2.3.20. Signage was put in place at locations agreed with NLC for the construction of Keadby 2 Power Station, to facilitate appropriate routing of construction traffic, including avoiding Keadby village.

2.3.21. For the Proposed Development, the contractor will erect signage at the main junctions to appropriately direct all HGV traffic relating to the Proposed Development (both accessing and egressing the site) towards the M180. The indicative signage locations are shown in Plate 1 above. These will be in place for the duration of the construction phase and will be checked regularly to confirm they are visible throughout.

2.3.22. The appointed contractor will be required to maintain all the HGV route signage.

2.4. Parking Provisions

2.4.1. Parking demand will vary throughout the construction phase and parking areas will be set aside within the Site to accommodate parking for construction workers. It is anticipated that this may be on Site within the construction laydown area to the south of the Main Site or within the construction laydown area located south of Stainforth and Keadby Canal.

2.5. Wheel Cleaning Facilities

2.5.1. In the interests of highway safety, wheel cleaning facilities will be installed at the Site from the start of the construction phase. All HGVs will be

required to use the wheel wash prior to exiting the Site. The need for this measure will be periodically reviewed throughout the construction phase.

2.6. Site Lighting

2.6.1. Construction temporary site lighting is proposed to enable safe working on the construction site in the hours of darkness.

2.6.2. Construction lighting will be arranged so that glare is minimised outside the construction site. The appointed contractors will be responsible for establishing the required approach to and levels of lighting and a Lighting Strategy will be prepared for approval pursuant to a Requirement in the **Draft DCO** (**Application Document Ref. 3.1**) as required. **An Outline Lighting Strategy** (**Application Document Ref. 5.11**) is included in the DCO Application.

2.6.3. Measures will be adopted to minimise and mitigate and artificial light emissions during the construction, commissioning and operation of the proposed development in order to minimise nuisance impacts to surrounding sensitive receptors.

2.6.4. Schemes for all external lighting, for both construction and operation are proposed to be secured by a Requirement of the **Draft DCO** (**Application Document Ref. 3.1**). These details will be in general accordance with the Outline Lighting Strategy.

2.7. Recycling and Disposing of Waste

2.7.1. To control the waste generated during the site preparation and construction phase, the contractor will minimise the creation of waste, maximise the use of recycled materials and assist the collection, separation, sorting, recycling and recovery of waste arisings, as far as reasonably practicable.

2.7.2. A Site Waste Management Plan (SWMP) will be developed to control construction activities to minimise, as far as reasonably practicable, impacts on the environment and will specify the waste streams to be estimated and monitored and will set goals with regards to the waste produced. An **Outline SWMP** is included in **Appendix A** of this Outline CEMP. The SWMP will be finalised by the contractor, with specific measures to be implemented prior to the start of construction. This is

proposed to be secured by a Requirement of the **Draft DCO** (**Application Document Ref. 3.1**) and will form part of the final CEMP.

2.7.3. The Applicant will require that the contractor segregates the waste streams onsite, prior to them being taken to a waste facility for recycling or disposal. All waste to be removed from the Site will be undertaken by fully licensed waste carriers and taken to permitted waste facilities

2.8. Best Practice Measures

2.8.1. The selected contractor would be encouraged to be a member of the 'Considerate Constructors Scheme' which is an initiative open to all contractors undertaking building work.

2.8.2. Construction industry guidance (e.g. from the Construction Industry Research and Information Association (CIRIA)) will be adopted as far as reasonably practicable to assist in reducing the potential for pollution and nuisance. This will be achieved by employing best practice measures.

2.9. Soil Management

2.9.1. Impacts relating to the handling, movement and temporary storage of soils, including those agricultural soils classified as 'best and most versatile – Agricultural Land Classification (ALC) Grade 1' that will be disturbed for temporary laydown, will be controlled through the final CEMP. Measures within the final CEMP will include:

- a pre-construction condition survey of laydown areas within the area to the south of the Stainforth and Keadby Canal (ALC Grade 1) including soil depths and textures of soil horizons;
- a method statement for the works to include soil handling and storage proposals;
- a restoration specification; and
- a post-works survey to confirm condition.

2.9.2. All soils will be managed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Defra, 2009) to minimise impacts on soil structure and quality.

2.9.3. A Outline Soil Resources Plan is included within Appendix B of this report.

3. Impact Avoidance and Mitigation Measures Implementation Plan

3.1. Overview

3.1.1. This section sets out the embedded impact avoidance and additional mitigation enhancement and management measures to be included as a minimum in the final CEMP. It also illustrates where additional surveys will be required, either pre-construction or during construction. It describes how the monitoring strategy would be implemented in order to assess the effectiveness of mitigation measures, monitor the impact of construction works and take other actions necessary to enable compliance.

3.1.2. In the final CEMP, this section will identify the responsible party for each mitigation, enhancement measure or monitoring requirement. As a contractor has not yet been appointed, responsibilities cannot be assigned at this stage.

Table 2 Air Quality

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Increased nitrogen dioxide (NO_2) and particulate matter (PM_{10}) from on-site and off-site construction vehicle/plant emissions. Increased particulates and deposited dust from Site activities, materials transportation, storage and handling, including use of haul roads.	Appropriate standard and best practice control measures will be included in the final CEMP, which may include: <u>Construction Plant, Vehicles and Equipment</u> • minimise vehicle and plant idling; • where reasonably practicable, locating static plant away from site boundaries and sensitive receptors; • minimise operating time outside of normal working hours/ daylight hours; • enforcement of maximum speed limits; <u>Transportation, Storage and Handling of Materials</u> • employ wheel wash systems at site exits; • store sand and aggregates in bunded areas and store cement powder and fine materials in silos, where appropriate; • use water suppression and regular cleaning to minimise mud on roads, and control dust during earth moving activities;	To be confirmed in final CEMP. Dust monitoring or recording will be undertaken to an approach agreed with NLC. In the event that significant or unacceptable dust effects on receptors arise from an activity – due to dry weather and high winds for example – activities may need to be ceased following consultation with NLC.	To be confirmed in the final CEMP

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• emissions from site plant and non-road mobile machinery (NRMM) will be controlled to reduce emissions associated with this source, including restriction of their operation within designated areas only, prohibiting of idling, the enforcement a minimum engine emissions standard and enforcement of maximum site speed limits. • cover vehicles leaving the construction site that are carrying waste materials or spoil; • minimise duration of storage of topsoil or spoil during pipeline construction; and • the soil storage area is to be set away from sensitive receptors and Site boundaries. <u>Haul Routes</u> • restrict where practicable the use of unmade roads. <u>Good Site Techniques</u> • emissions of dust and particulates from the construction phase of the Proposed Development will be controlled in accordance with industry best practice, through		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	incorporation of appropriate control measures according to the risks posed by the activities undertaken; • avoid mechanical roughening or grinding of concrete surfaces; • prohibit open fires on Site; • control measures will be implemented to prevent fires and procedures will be prepared and implemented to respond to fires, in the event that they were to arise; and, • a watching brief will be adopted during the construction works and an asbestos management plan developed as part of the final CEMP. If identified, risks will be managed to ensure legal compliance through the Control of Asbestos Regulations 2012 (HM Government, 2012) governing the handling and disposal of ACM.		

Table 3 Traffic and Transport

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Severance and intimidation associated with increased construction traffic and abnormal indivisible loads (AIL). Decrease in highways safety and increase in driver delay. Increased traffic flows, including HGV, on the roads leading to the Site	The **Outline Construction Traffic Management Plan (Application Document Ref. 7.5)** for HGV and AIL traffic defines the following mitigation measures • HGV arrivals, including deliveries, will be managed as far as reasonably practicable such that they are spread evenly over the day between the hours of 07:00 and 19:00 Monday to Friday (except bank holidays) and 08:00 to 13:00 on Saturday (if required) to avoid on-site congestion. HGV deliveries will be restricted to these hours unless agreed otherwise with NLC. The only expected HGV deliveries outside these hours may be the delivery of certain AIL, if required. Any noisy works outside the core working hours, including timing of AIL deliveries, if required, would be agreed with NLC on a case by case basis; • traffic movements will be controlled during the Proposed Development construction phase in	The appointed contractor will undertake such monitoring as is necessary to assess the effectiveness of the measures included in the CTMP to control the routing and impact of construction HGV and final CWTP. This will include the maintenance of gatehouse records of construction HGV entering and leaving the Site, which will be available to NLC on request. Monitoring measures will provide a firm basis upon which to answer queries and complaints. Further details to be provided in the final CEMP.	Travel Plan Co-ordinator to oversee management, monitoring and implementation of the individual measures within the CTMP and CWTP. Other responsibilities to be confirmed in final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	order to minimise potential impacts on the surrounding road network, namely construction HGV arriving or departing the Site would travel to/ from the west via the A18, A161 and onwards to the M180 Junction 2. It is proposed that all construction HGV will be required to arrive and depart the Site to the west via the M180 Junction 2, the A161 and the A18, entering via the existing access point off the A18 (Mabey Bridge) • access into the Site will be controlled by a new gatehouse and HGV waiting area (refer to the Indicative General Arrangement and Elevations A18 Gatehouse Plan **Application Document Ref. 2.13)** where vehicle registration and deliveries will be recorded. The location of the gatehouse has been set sufficiently back from the A18 to allow HGV to queue on the access road, rather than on the A18. • the appointed contractor will maintain gatehouse records of construction HGV		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	entering and leaving the Site, which will be made available to NLC on request; • should any complaints be raised by members of the public with regards to construction HGV not using the dedicated HGV route to the Site, gatehouse records along with CCTV footage obtained from the gatehouse would be used to identify the offending HGV involved and appropriate sanctions put in place with the aim of avoiding repeat events; • the appointed contractor must ensure that the designated HGV route (which is the most direct route from the motorway network) is adhered to by HGV drivers and the contractor must ensure that the policy and routing plan is distributed to all HGV drivers. This policy will be reinforced during staff inductions and will include HGV drivers being made aware specifically not to access the Site via Keadby village (except in case of emergency), with sanctions put in place to deal with non-compliance with the aim of ensuring no repeat events;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• to ensure compliance with the measures set out above, the contractor must enforce the disciplinary procedure, 'yellow/ red card system' or equivalent. In the first event of non-compliance, a warning will be issued to the HGV driver (yellow card). In the event of any repeat of the contravention, that driver will be prohibited from making further HGV deliveries to the Site (red card); • All HGV would be required to wheel wash when exiting the Site. The need for this measure will be periodically reviewed throughout the construction phase; • A 24-hour contact name and number will be displayed on a notice board at the Site entrance and on the Applicant's website, for members of the public to contact should they have any issues regarding construction traffic. The contact number could also be displayed on the Keadby with Althorpe Parish Council website if they wish to host this; • residents will be updated on the construction of the Proposed Development via a regular		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	update bulletin posted on the Applicant's website. This will include information on the timing and routing of AIL deliveries and a 24-hour contact name and number for members of the public to contact should they have any issues regarding construction traffic. It is anticipated that the project liaison manager will act as the initial point of contact for members of the community to find out further information. A link to this information could also be provided on the Keadby with Althorpe Parish Council website if they wish to host this; • the Applicant will notify and work closely with the Canal and River Trust and harbour authority to minimise restrictions on use of Keadby Lock during AIL deliveries. The public will also be made aware of when AIL deliveries are taking place via a notice on the board at the existing entrance to Keadby 1 Power Station in Keadby village, on the Applicant's Website, and via the press and social media;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• the contractor will erect signage at the main junctions to appropriately direct all HGV traffic relating to the Proposed Development (both accessing and egressing the site) towards the M180. These will be in place for the duration of the construction phase and will be checked regularly to confirm they are visible throughout. The appointed contractor will be required to maintain all the HGV route signage. Traffic management in the form of Stop/ Go signs will be used to halt traffic along the B1392 in order to allow the abnormal loads to cross the B1392. • NLC and Highways England's abnormal loads officer would be consulted at the earliest opportunity on the programme and plan for the delivery of the AIL. As was undertaken for the construction of Keadby 2 Power Station, a formal process of liaison between all relevant parties (Principal Contractor, NLC and National Highways) via a Local Liaison Committee, will:		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• make all parties aware of the results of monitoring of the final CTMP; • provide a route by which any complaints can be communicated and dealt with; and • provide a route through which transport related issues can be identified and dealt with.		
	The Outline Construction Worker Travel Plan (CWTP) includes the following measures: • provide all construction staff with an awareness of the advantages and potential for travel by more sustainable and environmentally friendly modes of transport, through raising awareness and the provision of information identifying travel options and the necessary contact information. • implementation of measures and procedures to encourage construction workers to adopt modes of transport which reduce reliance on single occupancy private car use; • contractors will be encouraged to provide minibuses for transporting their workers from		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	the key points of construction worker origin to the Site; • it is proposed that sections of the car park will gradually be opened up as construction develops, with a defined number of construction worker car parking spaces to be provided during construction. Managing the number of parking spaces available onsite will help to control the number of vehicles and promote sustainable transport options. It will be the responsibility of the Travel Plan Co-ordinator working closely with the Site Manager, to determine the amount of spaces to be provided; • car parking at the Site will be monitored by the Travel Plan Co-ordinator, with restricted access. The Site Manager and the Travel Plan Co-ordinator will set the appropriate criteria for construction workers to receive a pre-allocated parking space; • the contractor will be encouraged to set up and manage a car share scheme for workers;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• in emergencies, the Travel Plan Co-ordinator will provide a guaranteed lift home for construction staff that travelled to Site; • the contractor will encourage the use of common hotels and B&Bs by workers that are not from the local area, as this will encourage the use of shared transport modes. The contractor will be requested to provide minibuses and to organise where the minibuses will pick up workers and at what times; • secure parking for bicycles will be provided and staff that cycle to work will have access to showers, changing facilities and lockers to store clothing, cycle helmets etc.; • an on-site storage facility will be provided. This facility would encourage construction workers to store their tools on-site. This will reduce the number of tools they would need to carry each day and assist those workers who are considering cycling or car sharing as a potential travel mode;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility

	• details of the sustainable transport options available for accessing the Site will be provided in an information pack and sent to construction workers, prior to them starting work at the Site. The contractor will be responsible for ensuring all construction workers receive the information pack prior to starting work on Site;
	• all construction workers will receive an introductory meeting on the travel plan when they commence work, incorporated into the Site safety briefing. It will include the provision of the following information:
	  ○ designated access and exit routes to the Site;
	  ○ details of sustainable transport measures available for accessing the Site; and
	  ○ parking arrangements.
	• the contractor will be responsible for encouraging and promoting the use of sustainable transport measures included within the CWTP and organising crew		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	minibuses to transport workers to and from the Site, where appropriate. The Applicant will liaise with the appointed contractor to implement these and car sharing options; • the Travel Plan Co-ordinator's details would be supplied to NLC and National Highways; • the Travel Plan Co-ordinator will work closely with the Site Manager, who has overall responsibility for the Site, and thus has the authority to introduce measures for those workers who do not follow the guidelines; • the contractor will be responsible for managing how their workers travel to and from the Site in order to control the demand for car parking spaces. The contractor's responsibilities will primarily include: ○ providing a Travel Plan Co-ordinator to oversee the management and delivery of the CWTP; ○ encouraging and promoting the use of sustainable transport measures included within the CWTP; and		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	○ organising crew minibuses to transport workers to and from the Site, where appropriate. During the commissioning (and operational) phase, working with suppliers to ensure that all relevant materials (including chemicals) bought to the Site that are classified as hazardous are transported in compliance with applicable regulations including the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG Regs) (as amended).		

Table 4 Noise and Vibration

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Construction noise and construction road traffic noise at nearby Noise Sensitive Receptors (NSR).	Core construction working hours will be 07:00 to 19:00 Monday to Friday and Saturday (08:00 to 13:00). As described in **ES Volume I Chapter 5:** Construction Programme and Management (**Application Document Ref. 6.2.5**), core working hours associated with installation of any cofferdam	The final CEMP will set out a scheme for the provision of information to NLC and local residents to advise of potential noisy works that are due to take place and for monitoring	To be confirmed in the final CEMP

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	required for the Canal Water Abstraction would be restricted to daytime hours only. However, for other construction activities, it is assumed that some works may need to take place outside of these core working hours providing that they comply with any restrictions agreed with NLC, in particular regarding control of noise and traffic. Measures to mitigate noise will be implemented during the construction phase of the Proposed Development in order to minimise impacts at local NSR and ecological receptors, particularly with respect to activities required outside of core working hours. Mitigation (to be included in the final CEMP) shall include, but not be limited to: • abiding by agreed construction noise limits at locations to be agreed with NLC; • ensuring that processes are in place to minimise noise before works begin and ensuring that best practicable means (BPM) are being achieved throughout the construction programme, including the use of	of noise complaints and reporting to the Applicant for immediate investigation and action. The need for monitoring of noise and vibration levels during construction will be determined through the detailed assessment undertaken. Details to be confirmed in final CEMP.	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	localised screening around significant noise producing plant and activities; • ensuring that modern plant is used, complying with applicable UK noise emission requirements, and selection of inherently quiet plant where possible; • hydraulic techniques for breaking to be used, where breaking is required, in preference to percussive techniques where reasonably practicable; • use of lower noise piling (e.g. rotary bored or hydraulic jacking) rather than driven piling techniques, where reasonably practicable; • off-site pre-fabrication for components of the Proposed Development, where reasonably practicable; • a soft-start or slow ramp-up of piling hammer power will be employed at the commencement of any impact piling activity or after a break of more than 10 minutes; • all plant and equipment being used for the works to be properly maintained, silenced where appropriate, operated to prevent		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	excessive noise and switched off when not in use; • all contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2) (BSI, 2014a and 2014b), which should form a prerequisite of their appointment; • loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials within the Site to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable; • appropriate routing of construction traffic on public roads and along access tracks, to reduce construction traffic noise, as far as reasonably practicable; • provision of information to NLC and local residents to advise of potential noisy works that are due to take place; • monitoring of noise complaints and reporting to the Applicant for immediate investigation.		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• construction activities taking place outside core working hours will need to be planned, managed and controlled appropriately so they do not exceed the Significant Observed Adverse Effect Level (SOAEL) threshold values. The list of noise control measures presented within **ES Volume I Chapter 9**: Noise and Vibration (**Document Ref. 6.2**) and summarised here provide a detailed but not exhaustive list of construction noise management measures. The measures listed will be implemented and supplemented as necessary with further bespoke measures identified through further detailed assessment as part of the final CEMP. The need for monitoring of noise and vibration levels during construction will also be determined through the detailed assessment undertaken. Method statements regarding construction management, traffic management, and overall site management will be prepared in accordance with best practice and relevant British Standards, to help		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	to reduce impacts of construction works. One of the key aims of such method statements will be to minimise noise disruption to local residents during the construction phase as far as reasonably practicable. Regular communication with the local community throughout the construction period will take place to publicise the works schedule, giving notification to residents regarding periods when higher levels of noise may occur during specific operations, and providing lines of communication where complaints can be addressed. The selected contractor will be encouraged to be a member of the 'Considerate Constructors Scheme'. There will be specific consideration regarding the control and mitigation of impacts on fish, within the final CEMP. A final CEMP will be prepared which will include setting out provisions to ensure that the noise and vibration impacts relating to construction activities are reduced, as far as reasonably practicable. To assist in the preparation of the final CEMP, a		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	detailed noise and vibration assessment will be undertaken once the contractor is appointed, and further details of construction methods are known in order to identify specific mitigation measures for the Proposed Development (including construction traffic). Further assessment has been identified as being required pre-construction, to ensure that appropriate mitigation measures are developed to achieve the ABC threshold noise values once the contractor is appointed The control and monitoring of noise during construction is proposed to be secured by a Requirement of the **draft DCO** (**Application Document Ref. 3.1**).		
Vibration due to construction activities causing annoyance at NSR, impacts on ecological receptors and/ or	Measures to minimise vibration impacts from construction works (e.g., at the Canal Water Abstraction intake) would be similar to those outlined above for the minimisation of noise impacts but may also include: • adoption of the Joint Nature Conservation Commission (JNCC) best-practice measures	The need for monitoring of noise and vibration levels during construction will be determined through the detailed assessment undertaken.	To be confirmed in the final CEMP

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
damage to building structures	for piling including the implementation of a soft-start process; and • Restriction of piling to daytime working hours; • Adoption of resonance-free vibratory driver for sheet piling; and • Use of non-vibratory methods of compaction (where required). Regular communication with the local community throughout the cofferdam installation/ removal will also serve to publicise the works schedule, giving notification to residents regarding periods when perceptible levels of vibration may occur during specific operations, reassuring that these levels are significantly below the levels at which building damage may occur and providing lines of communication should complaints arise. Measures would therefore be put in place to control or restrict activities during evenings/ night-time so as not to exceed the SOAEL or relevant noise limit at locations to be agreed with NLC. The measures listed will be implemented and supplemented as necessary with further bespoke	Details to be confirmed in final CEMP.	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	measures identified through further detailed assessment as part of the final CEMP.		

Table 5 Biodiversity and Nature Conservation

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Clearance or damage of habitat/ vegetation to facilitate construction – resulting in temporary or permanent reduction in habitat extent and potential direct and indirect effects on associated species.	<u>Landscaping and Biodiversity Management and Enhancement Plan</u> **Landscaping and Biodiversity Management and Enhancement Plan** (LBMEP) **(Application Document Ref 5.10)** sets out the measures proposed to mitigate the potential impacts and effects of the Proposed Development on biodiversity (and landscape) features, and to enhance the biodiversity, landscape and green infrastructure value of the Site. A final LBMEP, which will take into account and be prepared in accordance with the principles of the indicative LBMEP, will be submitted to and approved by NLC. This is proposed to be secured by a	Any additional surveys will be instructed during the advance works, site clearance and construction phases as identified as necessary by the ecologist, or otherwise as identified and requested by the Applicant or their contractor(s) when implementing the approved CEMP and other relevant approved plans and permits. This will provide up to date information on relevant protected or notable species whose status or distribution may have changed since	Section 7 of the Landscape and Biodiversity Management and Enhancement Plan (Application Document Ref 5.10) sets out roles and responsibilities for implementation , but these would be confirmed in final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Loss of and direct effects on drains leading to loss of habitat. Cofferdam works resulting in fish being potentially trapped within any cofferdam structure and be affected by dewatering. Potential for seeds/ propagules of plant species and aquatic animal invasive non-native species (INNS) to be disturbed and transferred to new sites as a result of	Requirement of the **Draft DCO** (**Application Document Ref. 3.1**). Measures proposed in the indicative **LBMEP** (**Application Document Ref. 5.10)** and outlined in **ES Volume I Chapter 11**: Biodiversity (**Application Document Ref. 6.2.11**) include: • all watercourses will be protected and subject to appropriate stand-offs (including those associated with proposed temporary construction laydown areas) except where construction works have been identified as necessary within **ES Volume I Chapter 4**: Proposed Development (**Application Document Ref. 6.2.4**) or **ES Volume I Chapter 5**: Construction Programme and Management (**Application Document Ref. 6.2.5**), and as assessed within the ES. Any impact on such watercourses will be minimised and appropriate mitigation will be adopted; • appropriate measures will be used to limit silt mobilisation and potential for scour, if	baseline surveys were completed (e.g. badger). Specifically: • appropriately experienced ecologists will complete Site walkovers in advance of mobilisation or other potential advance works to re-confirm the ecological baseline conditions and identify any new ecological risks. These updated surveys will be completed sufficiently far in advance of construction works to account for seasonality constraints and to allow time for the implementation of any	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
construction activities associated with the Proposed Development.	appropriate, during the installation and removal of the temporary cofferdam for the canal water abstraction; and • updated ecological surveys would be completed prior to the start of construction, where necessary, to gain up to date information on relevant protected or notable species whose status or distribution may have changed since baseline surveys were completed (e.g. badger). This would be required to inform protected species licence applications (where necessary), or otherwise to determine appropriate mitigation requirements. • Based on current data a water vole licence may be required prior to infilling the sections of the drains within the Main Site, as two territories were found. However, the status of water vole could change (decrease or increase) prior to construction so the need for a licence would need to be confirmed prior to construction.	necessary mitigation prior to construction; • any additional surveys will be instructed during the advance works, site clearance and construction phases as identified as necessary by the ecologist or landscape architect, or otherwise as identified and requested by the Applicant or their contractor(s) when implementing the approved CEMP and other relevant approved plans and permits; • based on current data a water vole licence may be required prior to infilling of the drains within the Main Site, as	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	<u>The Applicant and/ or the Appointed Main Contractor</u> The Applicant and/ or appointed main contractor will be responsible for: • correct instruction of all parties contributing to delivery of the final approved LBMEP (including but not restricted to the Applicant's staff and their appointed ecologists, CoW, landscape architects, landscape contractors, construction contractors and management organisations); • compliance with the final approved LBMEP, relevant legislation and any relevant planning commitments, including appropriate maintenance of new habitats for a minimum period of 25 years; • keeping the appointed ecologist/ landscape architect/ arboriculturalist/CoW informed of work activities that require support and supervision, so that it is clear when attendance on-site is required;	a single territory was found. However, the status of water vole could change (decrease or increase) prior to construction so the need for a licence would need to be confirmed prior to construction; • all necessary protected species licences will be applied for and obtained prior to undertaking any works likely to affect the conservation status of these species, as required by the relevant legislation; • standard construction risk management and avoidance measures for nesting birds will be undertaken;	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• enacting/ enforcing recommendations made by the ecologist/ landscape architect/ arboriculturalist/ CoW, or otherwise agreeing an appropriate alternative course of action, if it is subsequently determined that previous advice is not practicable or is out of date; and • keeping a record of measures taken to deliver the requirements of the final approved LBMEP, to provide an auditable record of compliance. <u>The Clerk of Works</u> The Clerk of Works (CoW) will: • be employed to supervise the implementation of measures to mitigate impacts on ecological features, including protected species, prior to and during the construction phase. This will encompass both licensed and relevant unlicensed activities; • supervise vegetation clearance and construction excavations to provide guidance on the measures required day-to-day to deliver legislative compliance;	• updated species surveys will also be undertaken to determine the status of protected and invasive nonnative species (INNS) identified as present or potentially present at the Site to inform mitigation requirements and support protected species licence applications. • an arboricultural survey in line with British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institute, 2012) will be undertaken concurrently	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• • provide relevant site staff with toolbox talks on the ecological risks present, legal requirements and working arrangements necessary to comply with legislation. Toolbox talks will be repeated as necessary over the duration of the relevant work; and • undertake monitoring and review progress with delivery of biodiversity objectives and target condition of habitats on an annual basis for the first ten years following commencement of operation of the Proposed Development; <u>Lighting</u> Temporary construction lighting will: • be designed so that excessive glare is minimised outside of the construction site, including towards the former Keadby Ash Tip and Stainforth and Keadby Canal habitat corridors, as far as reasonably practicable. <u>Habitat Restoration/ Reinstatement</u>	with the detailed design, to identify where trees are likely to be affected by the construction works and to inform the development of the detailed design and specification of tree root protection zones; • immediately prior to site clearance and the start of construction in each relevant part of the Site, further site walkover surveys will be undertaken by an appropriately experienced CoW to confirm whether the risks remain as previously assessed and/ or to confirm the correct implementation	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	In relation to habitat restoration/ reinstatement: • Where areas are proposed to be used for short-term or trivial levels of access or disturbance during construction (e.g., land used for short-term laydown in Mabey Bridge replacement works and the electrical/water connections at the A18 gatehouse), these would be reinstated for a like-for-like basis following construction; • Where reasonably practicable habitats within areas proposed for longer-term temporary use (e.g., temporary construction laydown, electricity connection routes and the proposed abstraction corridor) would be reinstated either for a like-for-like basis or, where land will remain within permanent control of the Applicant, an elevated biodiversity condition; • some habitats lost during construction of permanent infrastructure can also be restored (e.g., arable fields used for construction laydown south of North Pilfrey Bridge);	of impact avoidance measures (e.g. protected species stand-offs); • the scope of the required walkovers will be defined on a case by case basis, in consultation with the project team and NLC or other relevant statutory consultees as necessary, based on the specific risks associated with each relevant part of the Proposed Development and the findings of any preceding updated surveys.	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• further details are provided in the indicative **LBMEP** Report (**Application Document Ref. 5.10**). <u>Breeding/ Nesting Birds</u> The following approach would be taken to deliver legislative compliance in relation to nesting birds: • relevant grassland areas will be mown short (<5cm) prior to commencement of the breeding season (typically March-August inclusive for most species) and then mown weekly to maintain this short sward height until vegetation clearance. By so doing, ground nesting birds are unlikely to attempt to nest within construction areas; • all clearance of other suitable vegetation will be undertaken outside the breeding season (typically March-August inclusive for most species), where possible; • where there would be a gap in activity between site clearance/ soil stripping and the start of construction, then all cleared ground would be maintained in a disturbed state (e.g.		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	through regular harrowing to minimise the risk of ground nesting birds establishing in the lead in to construction; • site inductions and toolbox talks as appropriate; • in situations where the above breeding bird mitigation is not possible, the CoW will check the working area for nests before works commence. If active nests are discovered through this process, then the CoW will advise on appropriate mitigation to ensure that these are not impacted by construction activities. All relevant works will be completed in accordance with this advice and under the supervision of the CoW; and • consistent with the above, should Wildlife and Countryside Act (WCA) Schedule 1 bird species be present at the time of construction (to be determined through the committed pre-commencement update surveys) the CoW will advise on species-specific requirements to achieve legislative compliance.		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	<u>Water Vole</u> A Water Vole Impact Avoidance Strategy will be prepared, using updated baseline information, and agreed with relevant stakeholders to specify the measures and supervision required to deliver legislative compliance during construction of the CCGT on the Main Site and watercourse crossings. Prior submission and approval of the Water Vole Impact Avoidance Strategy is a commitment of this Outline CEMP. The Water Vole Impact Avoidance Strategy will include: • the latest updated survey data for relevant field drains; • requirements for further surveys (or the results of further surveys completed in advance to inform the Strategy), ongoing monitoring and attendance by an appropriately experienced CoW; • appropriate construction stand-offs from watercourses that will be maintained at all times (retained watercourses) or, in the case		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	of watercourse crossings, until such time that the CoW advises that the relevant construction works can proceed; • options for micro-siting to avoid water vole and its burrows; • appropriate timings to minimise potential for disturbance impacts on water vole; • requirements for habitat mitigation and enhancement to accommodate any water voles displaced as a result of land take for the Proposed Development; • requirements (if relevant) for displacement, trapping, exclusion and relocation of water voles from relevant construction areas. Based on current data confirming only a very small and localised water vole presence on relevant drains, the adjacent retained and enhanced areas of drain habitat are anticipated to be sufficient to accommodate any water voles displaced; • site inductions and toolbox talks as appropriate; and		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• any licence needed to permit the relevant construction works to proceed. If a licence is required, then enhancement proposals for water vole are likely to be needed to secure this licence. Proposals for water vole enhancement are already allowed for and outlined within the **Outline LBMEP Report** (**Application Document Ref. 5.10**), as well as to benefit other freshwater biodiversity. <u>Fish</u> A Fish Management Plan will be prepared and agreed to specify the measures and supervision required to deliver legislative compliance during installation and drawdown of any cofferdam(s) for the installation of the Canal Water Abstraction on the Stainforth and Keadby Canal. This would also apply if relevant to replacement of the existing Mabey Bridge over the Hatfield Waste Drain LWS. As all construction works within watercourses are subject to regulation and permitting regimes, the Fish Management Plan will be prepared and agreed in advance with the relevant regulator (Environment		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	Agency). The prior submission and approval of the Fish Management Plan is a commitment of this Outline CEMP. The installation and subsequent removal of the single temporary cofferdam required to enable construction of the Proposed Canal Water Intake (including eel screens) will be completed in accordance with the requirements of the relevant regulators, including restricting piling works to core daytime hours to minimise potential impacts on migrating fish. The Fish Management Plan will include details of: • appropriate timings to minimise potential for disturbance to fish; • provision for screening of pump intakes to prevent fish being drawn into the pipe/ pump; • supervision of dewatering of any cofferdam(s) by an appropriately experienced ECoW to oversee fish welfare and to support the relocation of any stranded fish or associated wildlife back to the main channel of the canal outside the working area;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• if appropriate, other specialist techniques to support the capture and relocation of fish to the main channel of the canal outside the working area prior to drawdown; and • biosecurity measures to address the invasive species known to be present within the canal. <u>Animal Welfare During Construction</u> Mammal/ badger gates will be installed in boundary fences as appropriate to maintain access for nocturnal wildlife into and through the habitat corridor associated with the existing overhead electricity transmission lines associated with the existing National Grid 400kV Substation. Further details will be provided once the locations and alignment of boundary fences has been specified further and confirmed. The required details will be included in the final LBMEP to be submitted and approved as a Requirement of the **draft DCO** (**Application Document Ref. 3.1**). Vegetation clearance and construction excavations have potential to affect wildlife and may result in offences under animal welfare legislation if not		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	appropriately managed. A CoW will be employed to supervise all relevant works to provide guidance on the measures required day-to-day to deliver legislative compliance. Ditches will only be infilled after a process of incremental vegetation removal supervised by the CoW, so that wildlife such as small mammals, reptiles and amphibians can be displaced or relocated prior to infilling taking place. This is in addition to any other specific measures required for species such as water vole and birds. All excavations will be covered or fenced overnight, or where this is not practicable, a means of escape will be fitted e.g. battered soil slope or scaffold plank, to provide an escape route should any animals (e.g. reptiles, badger, otter, brown hare, hedgehog) that may stray into the construction site to vacate excavations, should they fall in. Invasive Species Management Plan (ISMP)		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	An updated terrestrial plant INNS survey will be completed prior to site clearance to determine the current location and extent of these INNS within the land required for construction (none were present at the time of the baseline survey). If determined as necessary through this survey and after consideration of other available plant and animal INNS data, an ISMP will be prepared to accompany the final CEMP and would be agreed with relevant stakeholders. The ISMP will specify the measures and supervision necessary during construction to prevent the spread of plant and animal INNS to new locations. The ISMP will specify the control/ eradication (as reasonable and practicable), biosecurity measures and supervision necessary during construction to prevent the spread of plant and animal INNS to new locations. It will be assumed that aquatic plant and invertebrate INNS are present in all watercourses affected by construction, regardless of the scale of the proposed construction works.		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	Biosecurity requirements will address all potential pathways for interaction with and dispersal of INNS, including movements of vehicles, machinery and staff: • into the Proposed Development Site from third party locations, e.g. during construction mobilisation; • between different parts within the Site, most especially movements between different watercourses; and • from the Site for redeployment elsewhere. <u>Badgers</u> In relation to badgers: • an updated badger survey will be completed in advance of construction works to re-confirm the status and distribution of badgers; • mitigation requirements will be reviewed and confirmed based on this updated badger survey; and • if subsequently determined as necessary follow resurvey, a badger development		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	licence would be obtained from Natural England to permit works likely to result in offences under the relevant legislation. <u>Tree Works</u> Where works in close proximity to retained trees cannot be practicably avoided, these works will be undertaken in accordance with current best practice, defined in British Standard (BS) 5837: 2012 and National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (NJUG, 2007) and the protective measures outlined within the Arboricultural Impact Assessment (AIA) which is included as Appendix E of the **Outline LBMEP Report** (**Application Document Ref. 5.10**). All necessary protective fencing will be installed prior to the commencement of site clearance or construction works. <u>Piling</u>		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	The JNCC best-practice measures for piling will be adopted, including the implementation of a soft-start process and avoidance of night-time piling.		

Table 6 Landscape and Visual Amenity

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Visibility of new landscape features. Increased visibility of construction activities and vehicles. Permanent removal of areas of recently	<u>Landscaping and Biodiversity Management and Enhancement Plan</u> Mitigation and enhancement measures set out in the outline **LBMEP Report** (**Application Document Ref. 5.10**) include: • suitable materials will be used, where reasonably practicable, in the construction of structures to reduce reflections and to assist with breaking up the massing of the buildings and structures; • the selection of finishes for the buildings and other infrastructure will be informed by the finishes of the adjacent developments including Keadby 2 Power Station, in order to	To be confirmed in the final CEMP.	To be confirmed in the final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
reseeded grassland and minor losses of scattered scrub where this coincides with localised areas required for temporary works (e.g. the laying of electrical connections). Temporary removal of areas of arable farmland for construction laydown activities.	reduce the visual impact of the Proposed Development including using lighter coloured materials on the taller structures to enable them to recede against the sky. It is proposed that finishes and materials would be agreed with relevant consultees and approved by NLC at the detailed design stage, secured through a Requirement of the **Draft DCO** (**Application Document Ref. 3.1**), in order to minimise the visual impact of the Proposed Development; • the Applicant will agree when a Clerk of Works (CoW) should be present during construction in consultation with the ecologist and landscape architect based on relevant environmental commitments, the findings of the updated surveys, the requirements of protected species, and with reference to the relevant project programmes; and • where existing vegetation is present along the Site boundary, this will be retained, as far as reasonably practicable, and managed to ensure its continued presence to aid the screening of low level views into the Site.		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Removal of arable farmland, minor losses of scattered scrub where it coincides with localised areas required for temporary works (e.g. the laying of electrical connections) and recently reseeded grassland.	<u>Lighting</u> Lighting required during the construction stage of the Proposed Development will be designed to reduce unnecessary light spill/ glare outside of the Site boundary. Schemes for all external lighting, for both construction and operation are proposed to be secured by a Requirement of the Draft DCO (**Application Document Ref. 3.1**). These details will be in general accordance with the Outline Lighting Strategy (**Application Document Ref. 7.11**).		

Table 7 Geology, Hydrogeology and Land Contamination

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Mobilising existing contamination in soil and groundwater as a result of ground disturbance and potential dewatering during construction. Increasing the potential for contaminants in unsaturated soils to leach to groundwater in open excavations during construction.	<u>Ground Investigation</u> A previous ground investigation was undertaken in 2022 to investigate ground conditions and provide information on land contamination in relation to Keadby 3 Low Carbon Gas Power Station Project. This included groundwater and ground gas monitoring. The investigation concluded that due to the presence of elevated contaminants in made ground samples collected from the site there was a low to medium risk to human health which could be mitigated through appropriate method statements and precautionary mitigation measures. The investigation also recorded elevated concentrations of contaminants in groundwater samples which decreased over time. Recommendations were made to undertake further groundwater and ground gas sampling to inform a more robust risk assessment. This work has now been undertaken see **ES Volume I Chapter 13 (Application Document Ref 6.2.13).** <u>Construction Mitigation</u>	Ground investigation will be undertaken before construction to inform the development of the preliminary and detailed design. The ground investigation will validate the assumptions made in the initial Conceptual Site Model and Preliminary Risk Assessment (**ES Volume II Appendix 13A:** Phase 1 Desk-based Assessment (**Application Document Ref. 6.3.19**) and in **ES Volume II Appendix 13C**: Potential Areas of Contamination Baseline Risk Scores and Further Risk and Impact Assessment (**Application Document Ref. 6.3.21**) and provide site-specific data upon which to	To be confirmed in the final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Increasing the potential for contaminated surface run-off to migrate to surface water and groundwater receptors as a result of leaching from uncovered stockpiles. Introducing new sources of contamination, such as fuels and oils used in construction plant.	The final CEMP will contain measures to ensure compliance with relevant standards and legislation. The final CEMP will set out the environmental mitigation requirements and also the project level expectations on how the Proposed Development will be constructed. Measures contained within the final CEMP will be designed to limit the potential for dispersal and accidental releases of potential contaminants, soil derived dusts and uncontrolled run-off to occur during construction. For example, the final CEMP will set out how material is to be excavated, segregated and stockpiled to minimise the potential for run-off, soil quality degradation and wind dispersal of dusts. Piling design and construction works will be completed following preparation of a piling and penetrative foundation design method statement, informed by a risk assessment, completed in accordance with the Environment Agency's Land Contamination Risk Management (LCRM) Guidance (Environment Agency 2023). The method statement will be submitted to, and after consultation with the Environment Agency, approval sought from NLC prior	base a land contamination risk assessment. The ground investigation will be designed to target the potentially contaminative sources identified.	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Creating preferential pathways for the migration of soil contamination and gases, for example, along new below ground service routes, service ducts and as a result of potential de-watering. Introducing new human health receptors such as site staff during and post construction. Temporary effects during the construction period from	to relevant works commencing, secured by a Requirement of the **draft DCO** (**Application Document Ref. 3.1**). A Soil Resources Survey will be outlined in the final CEMP. A **Outline Soil Resources Plan** is presented in **Appendix B** of this Outline CEMP. In accordance with CIRIA C692, 2010 the following measures are proposed: • measures to minimise dust generation; • provision of Personal Protective Equipment (PPE), such as gloves, barrier cream, overalls etc. to minimise direct contact with soils; • provision of adequate hygiene facilities and clean welfare facilities for all construction site workers; • monitoring of confined spaces for potential ground gas accumulations, restricting access to confined spaces, i.e. to suitably trained personnel only, and use of specialist PPE, where necessary; and		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
ground disturbance.	• preparation and adoption of a site and task specific health and safety plan as is required under Health and Safety legislation. A Pollution Response Plan will be in place prior to the commencement of construction works. The plan will outline key pollution mitigation measures to be adopted including a Control of Substances Hazardous to Health (COSHH) / fuel inventory and key contacts to be notified in the event of a significant pollution incident, which may subsequently lead to the contamination of controlled waters or soils. All bulk fuel and COSHH items will be stored in accordance with the relevant Environment Agency Guidance for Pollution Prevention (GPP) documents and, where relevant, Pollution Prevention Guidance notes (the latter having been withdrawn but at the time of writing, widely considered good practice) NetRegs website (2020) and storage regulations. Tanks and dispensing pumps will be locked when not in use to prevent unauthorised access. Any hazardous materials will be stored in designated locations with specific measures to prevent leakage		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	and the release of their contents. This will include a requirement to position storage areas at least 10m away from surface water features/ drains (and take into consideration the positions of any groundwater abstraction wells), on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain at least 110% of the contents. Valves and trigger guns will be protected from vandalism and kept locked when not in use. Only well-maintained plant will be used during construction to minimise the potential for accidental pollution from leaking machinery or damaged equipment. Static machinery and plant are expected to be stored in hardstanding areas when not in use and, where necessary, to make use of drip trays beneath oil tanks/ engines/ gearboxes/ hydraulics. Spill response kits containing equipment that is appropriate to the types and quantities of materials being used and stored during construction will be maintained on the Site for the duration of the works. The final CEMP will establish procedures for dealing with unexpected soil or groundwater contamination		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	that may be encountered. This would typically require affected works to stop to enable appropriate people to be notified, and further characterisation and risk assessment to be undertaken before remediation or mitigation proposals are agreed with all required stakeholders. Specific mitigation measures may be required in the form of treating/ remediating any contamination encountered during construction (e.g. any contamination that may be associated with any potentially contaminative sites identified as part of the assessment, notably the landfills and areas of potentially infilled land). This will be confirmed based on information gathered through ground investigation. Any remediation works, or the removal of contaminated soils or waters associated with the construction of the Proposed Development would be expected to result in the enhancement of the local environment. <u>Excavated Materials Management</u> Prior to construction, a strategy will be prepared as part of the design development, which will set out how		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	the earthworks stage of the construction phase will be undertaken. Where necessary the strategy will consider what excavated materials can be reused or are required for the various components of the Proposed Development, and what materials are surplus and require either disposal or onward management to ensure appropriate re-use. To minimise the effects on soil resources during any earthworks, including materials management following foundation construction in relation to the Proposed Development, high standards of soil handling and management will be employed with a view to minimising where possible the double handling of soils and the extent to which exposed soils will be left vulnerable to erosional processes. The re-use of excavated materials during construction will be governed by either a Materials Management Plan developed in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (2011), an environmental permit or a relevant exemption.		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	The disposal of soil waste contaminated or otherwise, to landfill sites would be best mitigated by minimisation of the overall quantities of waste generated during construction, and by ensuring that excavated material consigned to landfill cannot, as an alternative, be put to use either on the Proposed Development or on other sites. Where there is a requirement to dispose of surplus excavated materials off site as waste, the material will be characterised to determine firstly whether it is Hazardous or Non-Hazardous waste in accordance with the Environment Agency's Technical Guidance WM3 and then once this is established, the appropriate disposal facility will be determined through Waste Acceptance Criteria (WAC) analysis, as required.		

Table 8 Water Environment and Flood Risk

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Leakage or accidental spillage of construction materials, sediments and potential pollutants used on-site, migrating to nearby surface watercourse or drains or infiltrating to groundwater. Flood Risk. Loss of habitat within watercourse and physical changes to watercourses e.g. scour. Physical works to watercourse	<u>General</u> Prior to construction starting on-site, a final CEMP will be prepared by the Contractor(s) and would outline the measures necessary to avoid, prevent and reduce adverse effects where possible on the local surface water and groundwater environment. A Outline WMP has been prepared to outline measures to be implemented during the construction phase to minimise as far as possible the impacts on the water environment, this is provided in Appendix C of this CEMP. The final WMP will be produced by the contractor and will form a technical appendix to the final CEMP. The final WMP will provide greater detail regarding the specific mitigation to be implemented to protect the water environment from adverse effects during construction. It is proposed that this will be secured by requirement on the **Draft DCO** (**Application Document Ref. 3.1).** The final CEMP will be reviewed, revised and updated as the project progresses towards	The final CEMP will include details of necessary water quality monitoring including visual observations, in situ testing using handheld water quality probes and periodic sampling for laboratory analysis. Water quality monitoring pre-construction and during construction will be undertaken. Requirements for water quality monitoring during construction will be explained in the final CEMP. These would be further developed by the Principal Contractor in consultation with the Environment Agency (due to works potentially impacting flow in a main river and WFD	To be confirmed in the final CEMP

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
leading to adverse impact against hydromorphological status.	construction to ensure all relevant potential impacts and residual effects are considered and addressed as far as reasonably practicable, in keeping with available good practice at that point in time. The principles of the mitigation measures set out below are the minimum standards that the Contractor will implement. However, it is acknowledged that for some issues, there are multiple ways in which they may be addressed. In addition, the methods of dealing with pollutant risk will need to be continually reviewed on-site and adapted as construction works progress in response to different types of work, weather conditions, and locations of work. The Contractor will as a minimum conform to all permit/ consent/ licence requirements and best practice measures to avoid, reduce and minimise the risk of water pollution or unacceptable physical impacts (without mitigation) on waterbodies. The relevant Guidance for Pollution Prevention (GPP) that are available on the NetRegs website (Northern Ireland Environment Agency and Scottish Environment Protection Agency, 2020; NetRegs,	waterbodies), the LLFA and/ or IDB (due to works potentially impacting flow in ordinary watercourses) for works affecting, or for temporary discharges to, waterbodies during the construction period. The programme is expected to include a combination of daily observations and monitoring using a calibrated, handheld water quality probe through the upstream and downstream reaches of water features hydrologically-connected to the Site. It is expected that water quality sampling will be undertaken on a periodic as well as ad-hoc basis, dependent upon circumstances/ activities onsite. Monitoring and sampling will be undertaken	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	2020) would be applied. While these are not regulatory guidance in England, they remain a useful resource for best practice. Methods to deal with pollutant risk will be reviewed and adapted as construction works progress in response to different activities, weather conditions, and work locations. For new bridges and crossings for the connection corridors and access, water will be over-pumped through the works; works will be undertaken in drier periods of the year, as far as reasonably practicable; pump intakes will be appropriately screened to prevent fish being drawn into the pipe/ pump; and drainage and planting to be reinstated following completion of works. <u>Pollution Prevention and Management of Spillages</u> The management measures outlined below will be implemented to prevent accidental pollution of waterbodies and the risk of accidental spillages and potential conveyance to waterbodies via surface water runoff or land drains. Management measures have also been included in the Outline WMP	prior to the commencement of construction as to allow a sufficient baseline data.	

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	included in Appendix C and will be developed further for the final WMP to form part of the final CEMP. Measures will be in accordance with prevailing pollution prevention legislation and following best practice guidance summarised earlier. They will include details of how fuel and other chemicals (including cement) will be stored, used on site, and equipment and plant cleaned, as well as how leaks and spillages will be prevented or remediated if needed. This will also include the implementation of a Pollution Prevention Plan and an Emergency Response Plan. In addition, site welfare facilities will be appropriately managed, and all foul waste disposed of by either to the existing Keadby 2 Power Station foul connection, or for the laydown areas south of the Stainforth and Keadby Canal, via a licensed waste contractor to a suitably permitted facility. In relation to accidental pollution:		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• plans to deal with accidental pollution will be included within the final CEMP prior to commencement of construction; • during construction, water pollution may occur directly from spillages of polluting substances into waterbodies, or indirectly by being conveyed in runoff from hard standing, other sealed surfaces or from construction machinery. Fine sediment may also be disturbed in waterbodies directly or also wash off working areas and hard standing (including approach roads) into waterbodies indirectly via existing drainage systems or overland. This sediment may potentially contain contaminants that could be harmful to the aquatic environment. • plans to deal with accidental pollution would be included within the CEMP prior to commencement of construction and any necessary equipment (e.g. spillage kits) would be held on site and all site personnel would be trained in their use. The Environment Agency would be informed		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	immediately in the unlikely event of a suspected pollution incident; • construction works undertaken adjacent to, beneath and within watercourses will comply with relevant guidance during construction, including the requirements of any Environmental Permit, Ordinary Watercourse Consent and/ or Environment Agency GPP and IDB Bylaws, particularly AN01, AN02, AN03, AN05 and AN06. Pollution prevention measures considered would include (but not be limited to): • any liquid fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002, and the Control of Pollution (Oil Storage) (England) Regulations 2001. • fuel and other potentially polluting chemicals will either be in self-bunded leak proof containers or stored in a secure impermeable and bunded area (minimum capacity of 110% of the capacity of the containers). No		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	hazardous materials would be stored unbunded within the construction laydown areas. All construction laydown areas would be secured by security fencing and gates as appropriate; • all refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling. • particular care will be taken with the delivery and use of concrete and cement as it is highly corrosive and alkaline; • suitable facilities for concrete wash water (e.g. geotextile wrapped sealed skip, container or earth bunded area) will be adequately contained, prevented from entering any drain, and removed from the Site for appropriate disposal at a suitably permitted waste facility;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• any plant, machinery or vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place off site if possible or only at designated areas within the Site compound. Only construction equipment and vehicles free of all oil/ fuel leaks will be permitted on site. Drip trays will be placed below static mechanical plant. • as far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses. • all fixed plant used on the Site will be self-bunded. • mobile plant is to be in good working order with drip trays installed beneath oil tanks/ engines/ gearboxes and hydraulics, which would be checked and emptied regularly. • the Site will be secure to prevent any vandalism that could lead to a pollution incident;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• construction waste/ debris will be prevented from entering any surface water drainage or water body; • the design of oil interceptors shall be undertaken based on manufacturer supplied information; • foul flows and effluent arising from the Proposed Development operation will be kept separate from the surface drainage network; and • during construction, the Contractor will adhere to all relevant pollution prevention guidelines and measures in the final CEMP. <u>Discharge/ Disposal of Site Runoff</u> The measures to manage fine sediment in surface water runoff as a result of construction activities are outlined below and included within the Outline WMP in Appendix C. These measures will be developed with further detail in the final WMP (to accompany the final CEMP). There are a wide range of measures that can be adopted by the Contractor(s) to reduce the risk of excessive fine sediment in		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	runoff (timing of works, minimising earthworks and seeding or covering them), to intercept runoff to prevent uncontrolled runoff from the Site (e.g. by using cut off drains, fabric silt fences, bunds and straw bales, designated areas for cleaning plant and equipment, wheel washes and road sweepers), and to treat runoff to remove excessive levels of fine sediment (e.g. settlement lagoons, sumps, spraying on to land or even proprietary measures such as lamella clarifiers). It will be for the Contractor(s) to continually monitor the need for measures depending on the nature of the works being undertaken the weather conditions, and the performance of sustainable drainage systems installed. The following control measures have been identified: • where necessary, suitable measures will be put in place to prevent sediment being washed off-site, and the stockpiles will be visually monitored for wash away during and after periods of prolonged rainfall;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• where required, laydown areas will be levelled to provide an even surface and underlain by semi-permeable surfacing, to allow surface water and rainwater to percolate through; • reasonably practicable measures will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing waterbody during construction taking into account relevant industry guidelines including CIRIA report 'C532: Control of water pollution from construction sites'. This may typically (CIRIA, 2001) include use and maintenance of temporary lagoons, tanks, seeding/ covering of earth stockpiles, earth bunds, straw bales and sandbag walls, other proprietary measures, fabric silt fences or silt screens and consideration of the type of plant used; • a temporary drainage system will be developed to prevent runoff contaminated with fine particulates from entering surface		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	water drains without treatment. This will cover all land drains and waterbodies within the Site that could be affected, taking measures to adequately protect using e.g. drain covers, sand bags, earth bunds, geotextile silt fences, straw bales, or proprietary treatment. Any discharge to waterbodies (directly or indirectly) will only be made with the consent of the Environment Agency (or relevant statutory undertaker, if to the public foul sewer) and with any agreed treatment measures implemented; • where reasonably practicable, earth moving works will seek to avoid periods of very wet weather, to minimise the risk of generating runoff contaminated with fine particulates. Where this is not reasonably practicable, mitigation measures will be implemented to control fine sediment laden runoff; • to protect waterbodies from fine sediment runoff, topsoil/ subsoil will be stored a minimum of 20m from watercourses on flat lying land (and further where any ground is		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	sloping. Where this is not reasonably practicable and material is to be stockpiled for longer than two weeks, material will either be covered with geotextile mats or seeded to promote vegetation growth, with runoff from the stockpile prevented from draining to any watercourses, without prior treatment; • appropriately sized runoff storage areas for the settlement of fine particulates in runoff will be provided. It is anticipated that treated water may be pumped under a temporary Water Activity Permit from the Environment Agency or agreed with the statutory undertaker (Severn Trent Water) to an existing WwTW; • mud deposits will be controlled, as far as reasonably practicable, at entry and exit points to the Site using wheel washing facilities and/ or road sweepers operating during earthworks activities or other times as considered necessary; • equipment and plant will be washed out and cleaned in designated areas within the Site		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	compound where runoff can be isolated for treatment before discharge to under appropriate consent and/ or agreement with Environment Agency, Isle of Axholme and North Nottinghamshire Water Level Management Board ('the IDB') and/ or statutory undertaker, or otherwise removed from the Site for appropriate disposal at a licensed waste facility; and • debris and other material will be prevented from entering surface water drainage, through maintenance of a clean and tidy site, provision of clearly labelled waste receptacles, grid covers and the presence of site security fencing. <u>Cofferdam Works</u> Installation of any cofferdam in the Stainforth and Keadby Canal would require permission from the Environment Agency and Canal and River Trust. Maintaining a dry working area for any in-channel working using a cofferdam will reduce the overall channel disturbance and potential for mobilising fine		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	sediment (and any contamination) into the water column and canal. Any cofferdam works will be undertaken with due regard to the Eels (England and Wales) Regulations 2009 (UK Government, 2009), which may require installation of an eel screen. A fish rescue will be required from the cofferdam before pumping out of water. All works will be undertaken in accordance with a Fish Management Plan. A dry working area will be maintained for any in-channel working using a cofferdam. The cofferdam will be designed to minimise changes to the canal bed and bank erosion and toe scour by extending the minimum distance possible into the channel. Pre-construction sediment contamination testing will be undertaken, and silt curtains used to minimise impacts on water quality. Dewatering within the cofferdam area will be undertaken once any fine sediment has settled out and following any necessary fish rescue. The rate		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	and location of the discharge will be controlled and carefully chosen to avoid further erosion of any nearby soft sediments. Whilst in-situ, the cofferdam will be regularly inspected and maintenance undertaken, where required, and any water entering the cofferdam area via seepage will be disposed of appropriately (i.e. by pumping back into the waterbody). <u>Water Supply Connection Corridors</u> Measures to reduce the potential adverse impacts considered will include: • implementation of a temporary site drainage system; • undertaking works in the typically drier periods of the year, where reasonably practicable; • completing a pre-works survey to record waterbody form and condition prior to works commencing; • any required pump intakes will be appropriately screened to prevent fish being drawn into the pipe/ pump;		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• no plant will track through any channel where works are undertaken and will be confined to the banks; • crossings will be perpendicular to the channel where reasonably practicable; • measures to control effects relating to bed substrate will also be developed including careful storage of sediment layers to enable typical pre-construction habitats and hydromorphological processes to quickly re-establish following the works. <u>Land Drainage</u> Appropriate measures to minimise short-term and long-term impacts on land drainage will be agreed with the relevant landowner for those works affecting drains within the temporary construction and laydown areas (**Work No. 9A** and refer to **ES Volume I Chapter 5**: Construction Programme and Management (**Application Document Ref. 6.2.5**) for further details). Where land drains are under the control of the IDB, relevant bylaws will be adhered to or consent obtained for works affecting/ crossing		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	drains within the Electrical Connection to the Northern Powergrid Substation (Work No. 4A) and emergency vehicle access route (Work No. 8D). These measures will be secured in the final CEMP. Management of Flood Risk A scheme for the mitigation of flood risk during construction is required to be submitted and agreed as a Requirement of the **Draft DCO** (**Application Document Ref. 3.1**). The contents of the scheme will be in accordance with the Flood Risk Assessment in **ES Volume II, Appendix 12A (Application Document Ref. 6.3).** Navigational Risk The Navigational Risk Assessment (**ES Volume II Appendix 12C, Application Document Ref. 6.3.18**) identifies measures to mitigate against navigational risks associated with the construction of the Canal Water Abstraction and use of Railway Wharf for the delivery of AILs. In summary, the measures related to construction of the Canal Water Abstraction will include:		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• continued engagement with the Canal and River Trust, ABP Humber and PD Ports (as appropriate) to help inform any planned programme for works at the abstraction point; • notices to Mariners/ local Canal Notices will be issued in order to ensure that mariners are aware of the cofferdam and planned activities; and • appropriate hazard warning, screening, lighting and signage will be installed, as required (for the Stainforth and Keadby Canal this is predicted to be comparable to the intake for Keadby 2 Power Station). Measures related to AIL movements via Railway Wharf will include: • engagement with ABP Humber, PD Ports and, where required due to planned closures of Keadby Lock, Canal and River Trust would be undertaken to help inform the planned use of Railway Wharf; including use of local working knowledge to inform the timing and		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	delivery of works and thereby minimise risks to other mariners within the River Trent and the Stainforth and Keadby Canal, where this is relevant; • navigational safety will be considered within the heavy lift contractor specification. Contractor proposals would be reviewed by appropriately qualified and experienced marine personnel; • prior to commencement of AIL deliveries, it is anticipated that ABP Humber would attend site with the heavy lift contractor, once appointed, in order to review access arrangements, moorings and agree the final approach; • Notices to Mariners will be prepared and requested for issue by the appropriate Navigational Authority in order to ensure that mariners are aware of the planned activities; • consistent with the Keadby 2 Power Station AIL deliveries, it is anticipated that any preparatory levelling would be undertaken by		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	the Navigational Authority (i.e. to provide a safe and stable NAABSA berthing pocket); • it is anticipated that the appropriate Navigational Authority would mandate pilotage and/ or use of supporting tug boats and support craft. This would further ensure minimisation of risk on docking; • in terms of distraction, the Notice to Mariners will raise awareness of vessel deliveries to help reduce this risk. Where task lighting is required, light spill will be minimised as far as reasonably practicable in accordance with the **Outline Lighting Strategy** (**Application Document Ref. 7.11**); • it is anticipated that some AIL deliveries may require the temporary closure of Keadby Lock. This will minimise risks to mariners using the Stainforth and Keadby Canal; • In this case, notices to Mariners ('Notices and Stoppages') will be requested through the Canal and River Trust to provide forewarning to mariners of closures; and		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• building upon lessons-learned from Keadby 2 Power Station, a shipping movement schedule will be maintained by the Applicant, in collaboration with the heavy lift contractor, once appointed providing information on the timing and nature of loads arriving. <u>Below Ground Construction</u> If water is encountered during below ground construction, suitable de-watering methods will be used. Any significant groundwater dewatering required will be undertaken in line with the requirements of the Environment Agency under the Water Resources Act 1991 as amended and Environmental Permitting (England and Wales) Regulations 2016. All works will comply with the safety clearances and requirements set out by the utility providers who have assets within the Site. <u>Mabey Bridge Replacement and Emergency Access Bridge over Drain 1</u>		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	There may be a requirement for minor works to be undertaken on existing watercourse crossings to strengthen, maintain or provide minor improvements in relation to temporary access roads required during construction. Any such work would again require the consent of IoAaNNWLMB and be subject to their bylaws. A Flood Risk Activity Permit will be required for works at the replacement Mabey Bridge. Refer to the Mabey Bridge replacement General Arrangement and Sections Plan (**Application Document Ref. 2.14)** which provides an indicative construction sequence and indicates laydown areas. Consent will be required from the IoAaNNWLMB for works at Glew Drain to install a new bridge crossing to facilitate emergency access to the main site. This will outline any required mitigation measures which will be included within the final CEMP.		

Table 9 Cultural Heritage

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Partial or total removal of heritage assets. Compaction of archaeological deposits by construction traffic and structures. Changes to local hydrology that could dry out underlying peat deposits and effect preservation levels of heritage assets. Vibration effects during construction and/ or operation of the Proposed Development.	The following impact avoidance/ mitigation measures will be followed: • where feasible, archaeological assets which will experience significant adverse effects arising from the construction of the Proposed Development should be preserved in situ. This will involve sensitive design measures (embedded mitigation) to avoid areas of significant archaeological potential; • where it is not reasonably practicable to apply design mitigation to the management of the archaeological resource, additional mitigation measures may be applied; • a further stage of archaeological evaluation is currently being undertaken which comprises further analysis and assessment of geoarchaeological data. The results from this stage of archaeological evaluation will inform the scope of any mitigation requirements to be specified in the final CEMP, which may comprise archaeological monitoring of	The **Outline Written Scheme of Archaeological Investigation** (OWSI) provided as **(Application Document Ref 7.7)** will be agreed with Historic England and NLC. Once agreed, this document would establish the objectives for the historic environment works and set out the mechanisms for the appointed archaeological contractor to design the investigation, undertake evaluation, analysis, reporting and deposit the archive prior to construction.	Refer to the OWSI provided for responsibilities (**Application Document Ref 7.7**). To be confirmed in final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Adverse effects on the setting of heritage assets as a result of, for example visual intrusion, noise, severance, access and amenity.	construction activities and detailed excavation. The steps and safety procedures outlined within the **Outline Written Scheme of Archaeological Investigation** (OWSI) (**Application Document Ref 7.7**) will be finalised and detailed within the final CEMP.		

Table 10 Climate Change and Sustainability

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Greenhouse gas emissions.	<u>GHG Emissions</u> The GHG Reduction Strategy (**Application Document Ref. 7.8**) sets out how GHG emissions associated with the Proposed Development should be managed and reduced, and how GHG reduction opportunities will be identified. The final CEMP will include best practice measures for reducing GHG emissions during the construction phase including but not limited to:	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	• fuel consumption on site in vehicles, equipment and plant; • minimisation of vehicle and plant idling; • energy consumption; • water consumption in the onsite amenity blocks; • water consumption from the construction process (including dampening down as part of dust mitigation); • transportation of materials to the site; • waste disposal (by method i.e. landfill, recycling etc.) and transportation from construction activities; • the Applicant will seek to maximise sustainable transport options such as public transport (including rail), cycling and car sharing in accordance with policy.		

Table 11 Socio-economics

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Employment opportunities will be created as a result of the works. Displacement leading to reduction of output or employment outside of the Proposed Development. Increase in local employment arising from indirect and induced effects of the construction activity. Increased local demand for accommodation	Due to the size and nature of the Proposed Development, it is anticipated that additional employment, skills and training development programmes will be provided by the Contractor(s) as mitigation. A mechanism for managing stakeholders' questions, concerns, and grievances and provide appropriate conflict resolution processes could be considered to ensure any issues are heard by the developer.	None	To be confirmed in the final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
during the construction period which could lead to an increase in local rent costs.			

Table 12 Major Accidents and Disasters

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Fire/ explosion and risk of release of harmful gas. Spillage/ leak of chemicals or pollutants into groundwater/ surface water. Extreme weather (e.g. flooding, drought).	Consultation with appropriate stakeholders such as National Grid, National Grid Gas and the Environment Agency will be undertaken to manage interfaces and define appropriate control measures. A final CEMP will be in place to control potential environmental impacts of construction works. Control measures will be implemented to prevent fires and procedures will be prepared and implemented to respond to fires, in the event that they were to arise. To reduce risks associated with ground instability, there will be use of industry standard construction	To be confirmed in the final CEMP.	To be confirmed in the final CEMP.

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
Vandalism (trespass)/ terrorism. Ground collapse. Major road traffic accident. Release of asbestos. Aircraft/ drone impact. Pandemic. Domino effects from impacts at neighbouring facilities. Drowning.	methods/ design features appropriate to the context of the Site. A watching brief will be adopted during the construction works and an asbestos management plan developed as part of the final CEMP. If identified, risks will be managed to ensure legal compliance through the Control of Asbestos Regulations 2012 governing the handling and disposal of ACM. Consultation with relevant airports/ Civil Aviation Authority (CAA) to manage interfaces and define appropriate control measures including aviation warning lighting and lighting to be fitted to tall construction machinery that exceeds relevant limits has been undertaken and lighting is proposed to be secured via a requirement of the **Draft DCO** (**Application Document Ref. 3.1**). Appropriate security measures will be installed at the construction site including CCTV, site security and fencing to prevent trespassers. If an influenza pandemic was to disrupt the construction of the Proposed Development,		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	measures would be adopted taking into account experience at the Keadby 2 Power Station project in which the Covid-19 pandemic required construction works to temporarily cease. Preliminary risk assessment has informed the inclusion of an exclusion zone for the siting of built infrastructure associated with the Proposed Development to mitigate the risks related to the presence of wind turbines in closer proximity to the Site boundary. During detailed design, the contractor will engage with the windfarm operator (SSE Renewables) to inform the need for/ size of any similar exclusion zones for construction. The Applicant will engage with PD Port Services Keadby to confirm the withdrawn status of their Hazardous Substances Consent and presence of any new hazardous substances stored on site, prior to construction. In preparing the notification for any COMAH licence application, which would be undertaken prior to construction, the emergency plan will consider HSG 191 Guidance (HSE, 2009) 'Emergency Planning for		

Potential Impact	Mitigation / Enhancement Measure	Monitoring / Additional Survey Requirements	Responsibility
	Major Accidents'. This guidance requires consideration of the potential for domino effects and that operators who are involved 'exchange any information necessary'. to inform the locations of hazardous sites/ assets and the mitigation required.		

3.2. Implementation and Operation

3.2.1. The final CEMP will set out all roles, responsibilities and actions required in respect of implementation of the measures described in this Outline CEMP, including:

- An organogram showing team roles, names and responsibilities;
- Training requirements for relevant personnel on environmental topics;
- Information on site briefings and toolbox talks that will be used to equip relevant staff with the necessary level of knowledge to follow environmental control procedures;
- Measures to advise employees of changing circumstances as work progresses;
- Communication methods (e.g. updates via the Applicant's website);
- Document Control; and
- Environmental emergency procedures.

3.2.2. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan unless otherwise agreed with the relevant planning authority.

3.3. Checking and Corrective Action

Monitoring

3.3.1. Environmental monitoring of impacts will be undertaken throughout the construction phase. In addition to any monitoring specified in other licences and consents (e.g. under Protected Species Licensing if required), the requirements of the CEMP specified in **Tables 2-12** will be closely monitored.

3.3.2. As part of the monitoring process, the appointed contractor will allocate a designated Environmental Site Officer(s), who would be present on-site throughout the construction, including when new activities are commencing. The Environmental Site Officer will observe site activities and report any deviations from the final CEMP in a log book, along with the action taken and general conditions at the time. The Applicant will be informed of any deviations from the final CEMP as soon as possible following identification of such issues. The Environmental Site Officer will

also assist the Applicant with day-to-day contact with NLC, and other regulatory agencies such as the Environment Agency.

3.3.3. The Environmental Site Officer would be appointed in addition to the CoW to oversee all aspects of the CEMP are being delivered and ensure that where the CoW has been specified to undertake specific tasks or surveys (i.e. in relation to landscape and biodiversity mitigation measures) within the CEMP that this has taken place. Where specific surveys as specified within Table 2-12, these remain the responsibility of the CoW to undertake.

3.3.4. During construction, the Environmental Site Officer will conduct regular walkover surveys to ensure all requirements of the final CEMP are being met. Action from these surveys will be documented on an Environmental Action Schedule, discussed with the Site Foreman for programming requirements and issued weekly for actioning.

3.3.5. The Environmental Site Officer will arrange regular formal inspections to ensure the requirements of the final CEMP are being met. After completion of the works, the Environmental Site Officer will conduct a final review

Records

3.3.6. The Environment Site Officer will retain records of environmental monitoring and implementation of the final CEMP. This will allow provision of evidence that the final CEMP is being implemented effectively. These records will include:

- An Environmental Action Schedule;
- Records of licenses, permits and approvals;
- Results of inspections;
- Other environmental surveys and investigations; and
- Environmental equipment test records.

3.3.7. The final CEMP will be a live document and as such updated regularly, with a full review on at least a quarterly basis throughout construction.

3.4. Management Review

3.4.1. The final CEMP will be signed off on completion of the construction works. The operator of the Site will then implement and maintain an Environment Management System (EMS).

4. References

British Standard Institute (2012) British Standard (BS) 5837: 2012 *Trees in relation to design, demolition and construction*.

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5. Appendices

Appendix A Outline Site Waste Management Plan

Contents

Plates

Tables

A.1 Introduction

Overview

A.1.1 This Outline Site Waste Management Plan (OSWMP) has been prepared by AECOM on behalf of Keadby Next Generation Limited (the 'Applicant') which is a subsidiary of SSE plc. It forms part of the application for a Development Consent Order (DCO) ('the Application'), that has been submitted to the Secretary of State (the 'SoS') for Energy Security and Net Zero under Section 37 of The Planning Act 2008 (the '2008 Act').

A.1.2 The Applicant is seeking development consent for the construction, operation and maintenance of a new combined cycle gas turbine ('CCGT') electricity generating station on land at, and in the vicinity of, the existing Keadby Power Station, Trentside, Keadby, Scunthorpe DN17 3EF ('the Site').

A.1.3 This OSWMP sets out the standard best practice measures that will be required to be implemented by the Principal Contractor to manage waste generated by the construction of the Keadby Next Generation Power Station (hereafter referred to as 'the Proposed Development').

A.1.4 This OSWMP will be updated by the Principal Contractor into a detailed Site Waste Management Plan (SWMP) prior to commencement of works, as secured through a requirement of the **Draft DCO** (**Application Document Ref. 3.1**).

A.1.5 Key terminology in relation to this OSWMP is detailed in **Table A.1**.

Table A.13: Key Terminology

Term	Definition
C&D waste	Construction and demolition waste e.g. concrete, bricks, tile and ceramics.
The Considerate Constructors Scheme (CCS)	The CCS – a non-profit making, independent organisation founded in 1997 by the construction industry to raise standards in the construction industry.
Combined cycle gas turbine (CCGT)	A power plant technology that uses both gas (i.e. Natural Gas and/or Hydrogen) and steam turbines to generate electricity.
Construction Environmental Management Plan (CEMP)	This document outlines the mitigation measures for environmental disruption caused by construction of the Proposed Development. It is submitted by the developer to the Local Planning Authority.
Construction Industry Research and Information Association (CIRIA)	A member-based research and information organisation dedicated to improvement in all aspects of the construction industry.
Controlled waste	Household, industrial and commercial waste (not agricultural waste, waste from mines or quarries and most radioactive waste).
Control of Substances Hazardous to Health (COSHH)	Risk assessment and control guidance relating to fuels, oils, and other substances associated with the Proposed Development's waste, so adverse health effects are mitigated.
Development Consent Order (DCO)	A decision ruled by the Secretary of State for planning permission of a nationally significant infrastructure project.
Duty of Care	Legal responsibility for anyone who produces, imports, keeps, stores, transports, treats or disposes of waste to take all reasonable steps to ensure that the waste is managed properly.
Duty of Care checks	Checks to ensure that only authorised persons transfer waste, and that the waste is managed legitimately, including checks on: – The waste carrier's registration certificate; – The waste broker's registration certificate (if used); – The Environmental Permits for waste management facilities; or proof of exemptions from permitting.
Environment Agency (EA)	The main environmental regulatory body in England.
Environmental Statement (ES)	An ES is part of the Environmental Impact Assessment (EIA) process and is drawn up ensure that the significant environmental effects of a Proposed Development are sufficiently described and understood.

Term	Definition
European Waste Catalogue (EWC) code	A six-digit number used to classify a particular waste stream.
Exempt activities	Activities not requiring an Environmental Permit (an exemption will require registration).
Flood Zone 3	The area of the floodplain where there is a high probability of flooding, having a 1 in 100 or greater annual probability of river flooding.
Hazardous Waste Consignment Note (HWCN)	A document that accompanies the movement of any hazardous waste from production (cradle) to disposal (grave).
Hazardous waste	Waste with any hazardous properties as listed in Annex III of The Hazardous Waste (England and Wales) Regulations 2005 (as amended).
Institute of Environmental Management and Assessment (IEMA)	IEMA are a professional body for sustainability and environmental professionals. They provide tools and resources to assist in report writing and other deliverables.
Key Performance Indicators (KPIs)	Quantifiable measurements to gauge performance of a project in recovering waste against national standards.
Material Safety Data Sheet (MSDS)	A sheet that details the risks of a hazardous chemical and advice about safety procedures, including handling, storage, and disposal
Non-hazardous waste	Waste which does not display any of the hazardous properties listed in Annex III of The Hazardous Waste (England and Wales) Regulations 2005 (as amended).
Principal Contractor	Contractor appointed to coordinate the construction phase of a project where it involves more than one contractor.
Registered Waste Carrier	A person who holds a registration certificate from the EA to transport waste.
Standard Industrial Classification (SIC)	A system for categorising and standardising industry classification nationally across organisations and agencies.
Outline Site Waste Management Plan (OSWMP)	The document provided as part of this ES is the OSWMP. This will be developed into a detailed SWMP prior to commencement of works.
Waste and Resources Action Plan (WRAP)	WRAP is a global environmental NGO that conduct research and implement a ‘Circular Living’ design-make-use approach with the aim of eliminating product and food waste.

Term	Definition
Waste Transfer Notes (WTN)	A document that details the transfer of waste from one organisation to another, and how each material waste type is disposed of or recovered.

Plan Purpose and Benefits

A.1.7 OSWMPs are used as best practice measures on construction projects and to support planning and consenting applications.

A.1.8 This OSWMP has been developed to act as a guide for site staff on how to manage materials (construction materials) and waste, in accordance with both legal requirements and best practice. The Principal Contractor will be required to use this OSWMP as a basis for producing the SWMP for use throughout the duration of the Proposed Development's construction phase, as secured through a requirement of the **Draft DCO** (**Application Document Ref 3.1**).

A.1.9 The Principal Contractor will be required to take all reasonable steps to ensure that:

- all waste from the site is dealt with in accordance with the waste duty of care (defined in section 34 of the Environmental Protection Act 1990 ('EPA 1990') (His Majesty's Stationery Office (HMSO), 1990) and The Waste (England and Wales) Regulations 2011 (as amended) (HMSO, 2011); and
- materials are handled efficiently, and waste managed appropriately.

Plan Scope

A.1.10 This OSWMP includes:

- an overview of applicable legislation;
- details of the Proposed Development;
- management arrangements, including roles and responsibilities, training, KPIs and best practice measures;
- estimates of construction material use and waste arising and how they will be managed;
- design decisions;
- materials and waste management on-site; and
- opportunities for waste minimisation, reuse, recycling and recovery in line with the requirements of the waste hierarchy.

A.2 Waste Management Legislation and Guidance

A.2.1 This section summarises the key legislation and guidance with regards to waste management and control in England.

Definition of Waste

A.2.2 The European Union (EU) Waste Framework Directive (Directive 2008/98/EC), as amended by Directive (EU) 2018/851 ('Waste Framework Directive') (EU, 2008) sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling and recovery.

A.2.3 Waste is defined by Article 3(1) of the Waste Framework Directive as "any substance or object which the holder discards or intends or is required to discard".

A.2.4 The legal definition of waste also covers substances or objects, which fall outside of the commercial cycle or out of the chain of utility. In particular, most items that are sold or taken off-site for recycling are wastes, as they require treatment before they can be resold or reused.

A.2.5 In practical terms, wastes include surplus earthworks materials and soil, scrap, unwanted surplus materials, packaging, recovered spills, office waste, and damaged, worn-out, contaminated or otherwise spoiled plant, equipment and materials.

Duty of Care

A.2.6 The duty of care for waste management is set out under section 34 of the Environmental Protection Act 1990 (HMSO, 1990) and The Waste (England and Wales) Regulations 2011 (as amended) (HMSO, 2011). It requires anyone who produces, imports, keeps, stores, transports, treats or disposes of waste to take all reasonable steps to ensure that the waste is managed properly. Anyone in possession of waste must take all reasonable steps to:

- prevent unauthorised or harmful deposit, treatment or disposal of waste;
- prevent a breach (failure) by any other person to meet the requirement to have an environmental permit, or a breach of a permit condition;
- prevent the escape of waste;
- ensure that waste is transferred to an authorised person; and
- provide an accurate description of the waste when it is transferred to another person, by using a compulsory system of WTNs that control the transfer of waste between parties.

A.2.7 Failure to comply with the duty of care requirements is a criminal offence and could lead to prosecution.

The Waste Hierarchy

A.2.8 The Waste (England and Wales) Regulations 2011 (as amended) (HMSO, 2011) transpose the requirements of the Waste Framework Directive (EU, 2008), and require:

- Those undertaking waste management activities, such as the import, production, collection, transportation, recovery and/or disposal of waste, to take all reasonable measures to apply the waste hierarchy, in priority order, as follows:

  – Prevention;
  – Preparation for reuse;
  – Recycling;
  – Other recovery (such as energy recovery); and
  – Disposal.

- Those producing waste to confirm that they have applied the waste hierarchy when transferring waste and to include a declaration on their WTN or consignment note.

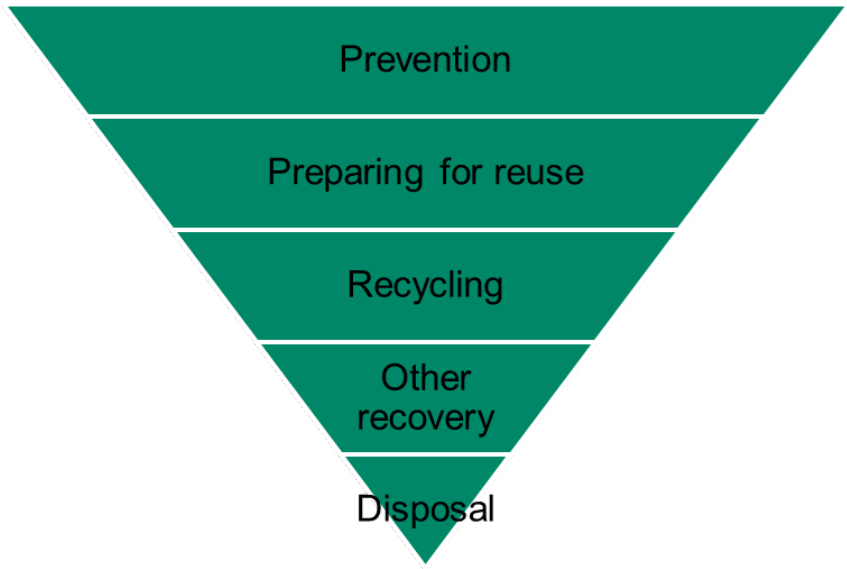

Plate A.2: Waste Hierarchy (reproduced from Defra, 2011)

Hazardous Waste

A.2.9 The Hazardous Waste (England and Wales) Regulations 2005 (as amended) (HMSO, 2005) require that a consignment note be used to document the transfer and management of all hazardous waste.

Registration of Waste Carriers

A.2.10 Under the Control of Pollution (Amendment) Act 1989 (HMSO, 1989) it is a criminal offence for anyone not registered as a waste carrier to transport controlled waste. The Waste (England and Wales) Regulations 2011 (as amended) (HMSO, 2011) updated the system for the registration of waste carriers, including brokers and dealers.

A.2.11 Anyone undertaking any of the following activities as part of their business must register as a waste carrier, broker or dealer:

- transporting their own waste;
- transporting waste for someone else;
- buying or selling waste; or
- acting as a waste broker (arranging for someone to handle waste produced by someone else).

Environmental Permits and Exemptions

A.2.12 The Environmental Permitting (England and Wales) Regulations 2016 (as amended) ('HMSO, 2016') require sites where waste is processed, treated or disposed of to hold a valid Environmental Permit issued by the Environment Agency ('EA').

A.2.13 The Environmental Permitting (England and Wales) Regulations 2016 also include a schedule of activities that are exempt from the requirements of permitting. However, to comply with these Regulations , an exempt activity must generally be registered with the EA before commencing.

A.2.14 A permit is not usually required where waste is temporarily stored on the site where it is produced prior to management or disposal. However, depending on the types and quantities of waste to be stored, the duration and place of storage and compliance with other defined conditions the following exemptions may be required:

- a non-waste framework directive exemption may apply, which does not need to be registered; and
- an exemption may need to be registered with the EA.

A.2.15 Waste contractors will be asked to provide details of how they meet the requirements of PAS402: 2013, or an appropriate equivalent assurance methodology.

A.3 Details of the Proposed Development

A.3.1 The Principal Contractor will be required to complete **Table A.2** as part of the SWMP, prior to commencement of construction.

Table A.14: Details of the Proposed Development

Project Title: Keadby Next Generation Power Station		
Project Location	Address	
	Town	
	Postcode	
Client	Name	
	Address	
	Contact	Email
	Phone	Mobile
Principal Contractor	Name	
	Address	
	Contact	Email
	Phone	Mobile
SWMP Drafter	Name	
	Address	
	Contact	Email

Project Title: Keadby Next Generation Power Station	
	Phone Mobile
Construction cost (estimated)	
Site area (gross area)	
Construction programme	
Start date (DD/MM/YYYY)	
Completion date (DD/MM/YYYY)	
Waste Management Champion	
Person Responsible for SWMP	
Document Controller/Secretary	
Location of SWMP	

Roles and Responsibilities

A.3.2 The main contract personnel responsible for producing the SWMP are shown in **Table A.3**. The Principal Contractor will be required to complete Table 3 as part of the SWMP prior to the commencement of the construction phase.

Table A.15: Roles and Responsibilities

Project Title: Keadby Next Generation Power Station			
Position	**Name**	**Contact Details**	**SWMP Responsibility**
Main Contract personnel			
Client Project Manager			Monitor the Principal Contractor's performance against the contract, including any environmental commitments and targets agreed for the Proposed Development.
Project Manager (Principal Contractor)			Approval of the SWMP for the relevant phase of works. Ensure that all controls specified within the SWMP are implemented by employees and sub-contractors.
Environment Manager (Principal Contractor)			Undertake site inspections to monitor compliance with the environmental licences/consents for the works and the measures within the SWMP. Ensure that the Proposed Development complies with all environmental legislation, consents, objectives, targets and other environmental commitments secured through the CEMP and SWMP throughout the relevant project phase.
Sub-contractor details			

Project Title: Keadby Next Generation Power Station			
Individual Sub-contractor(s), as appointed			Read through, familiarise and understand the requirements of the SWMP. Produce waste documentation. Comply with the requirements set out in the SWMP.

Instruction and Training

A.3.3 The Principal Contractor will be required to incorporate the SWMP requirements into the site induction and training procedures and will be required to provide on-site instruction of appropriate construction materials and waste separation, handling, recycling, reuse and return methods to be used by all parties at all appropriate stages during the construction of the Proposed Development.

A.3.4 The Principal Contractor will be required to ensure that all personnel working on the site, including sub-contractors, are inducted and appropriately trained.

Targets

A.3.5 The national target for recovery of construction and demolition (C&D) waste is 70% by weight, as set out in the Waste Framework Directive (EU, 2008) and the Waste Management Plan for England (HMSO, 2011). The target specifically excludes naturally occurring materials with EWC Code 17 05 04 (soil and stones other than those mentioned in 17 05 03* (soils and stones containing dangerous substances)). Recovery is deemed to include reuse, recycling and other recovery, e.g. energy recovery.

A.3.6 A good practice landfill diversion target of 90% has been achieved and exceeded by major UK developments, as outlined in the IEMA Guidance (IEMA, 2020). In 2020, the UK generated 59.4 million tonnes of non-hazardous C&D waste, of which 55 million tonnes were recovered. This represents a recovery rate of 92.6% (Defra, 2024).

A.3.7 Targets for materials and waste would be included in the SWMP and could include, for example:

- Achieving a set percentage (by weight) for recovery of non-hazardous C&D waste. Such a target would specifically exclude naturally occurring materials with EWC Code 17 05 04 (soil and stones other than those mentioned in 17 05 03* (soils and stones containing dangerous

substances)). Recovery is deemed to include reuse, recycling and other recovery, e.g. energy recovery; and

- Achieving a set percentage (by weight) of materials imported to site for use within the Project containing alternative (reused, recycled or secondary) content, for those applications where it is technically and economically feasible to substitute these alternatives to primary materials.

Best Practice Measures

A.3.8 To reduce the potential impacts from materials and waste, and to achieve high levels of sustainability in the Proposed Development as a whole, the Principal Contractor will be required to apply the principles of the waste hierarchy and adopt BPMs which go beyond statutory compliance.

A.3.9 This may include BPMs set out in construction industry guidance for example, guidance from the CCS, WRAP, and CIRIA.

A.3.10 The following approaches would be implemented, where practicable, to minimise the quantity of waste arising and requiring disposal:

- agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme;
- implementation of a 'just-in-time' (JIT) material delivery system where possible to avoid materials being stockpiled, which can increase the risk of damage and subsequent disposal as waste;
- attention to material quantity requirements to avoid over-ordering and the generation of waste materials due to surplus;
- reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping, recycling of demolition materials into aggregates;
- off-site prefabrication, where practical, including the use of prefabricated structural elements;
- segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling; and
- off-site reuse, recycling and recovery of materials and waste where reuse on-site is not practical, e.g. through use of an off-site waste segregation or treatment facility or for direct reuse or reprocessing off-site.

A.3.11 The Principal Contractor will be required to implement the following waste management measures, where practicable, to minimise the likelihood of any

localised impacts from pollution or nuisance from waste on the surrounding environment:

- damping down of surfaces during spells of dry weather and brushing/water spraying of heavily used hard surfaces/access points across the site as required;
- burning of waste or unwanted materials would not be permitted on-site;
- all hazardous materials including fuels, chemicals, cleaning agents, solvents and solvent containing products to be properly sealed in containers at the end of each day prior to storage in appropriately protected and bunded storage areas;
- all demolition and construction workers would be required to use appropriate personal protective equipment whilst performing activities on-site;
- any waste effluent would be tested and, where necessary, disposed of at a correctly licensed facility by a licensed specialist contractor/s; and
- materials requiring removal from the site would be transported using licensed carriers and records would be kept detailing the types and quantities of waste moved, and the destinations of this waste, in accordance with the relevant regulations.

A.4 Estimate of Waste Arisings

Demolition Waste

A.4.1 The Main Development Area would require site clearance and remedial works prior to the construction of the Proposed Development.

A.4.2 As outlined in **ES Volume I Chapter 5:** Construction Programme and Management (**Application Document Ref. 6.2.5**), the demolition and dismantling of three existing heavy fuel oil tanks (used as part of the Keadby 1 Power Station) will take place prior to the Proposed Development's construction. This is to provide sufficient space for the ancillary facilities required for the Proposed Development.

A.4.3 The estimated quantities of waste arising from the demolition of the tank farm are approximately 759 m^3 from buildings/ancillary equipment (i.e., tanks, pipes and piping, electrical unit building, and heat exchangers), 1,236 m^3

from bund and hardstanding waste, and 216 m^3 from asphalt waste with a total of 2,211 m^3.

A.4.4 Based on information about the operational use of the tank farm and the materials used in construction of this area, it is assumed that the majority of demolition waste would be non-hazardous and would be recycled off-site.

Excavated Material

A.4.5 At this stage the estimated quantity of excavated material generated during the Proposed Development's construction is 83,295 m^3.

A.4.6 It is anticipated that the majority of excavated materials would be non-hazardous (78,795 m^3), with this material being assumed to be sent to landfill as a worst-case scenario. The remaining excavated material (4,500 m^3) is expected to be generated from the on-site demolition of the tank farm. This material is anticipated to be hazardous since the areas surrounding the tank farm are expected to contain heavy fuel oils. Hazardous excavated material is assumed to be sent to landfill as a worst-case scenario for the materials and waste assessment.

A.4.7 The Proposed Development design is currently being progressed to optimise the requirements for cut and fill, and where possible, this will be minimised to reduce the import and export of materials and waste, although the current design is expected to generate excavated material that may require off-site treatment or disposal.

A.4.8 Through the detailed design of the Proposed Development the requirements for cut and fill would be optimised, and where possible, this would be minimised to reduce the import and export of materials and waste, although the design may generate excavated material that would require off-site treatment or disposal.

A.4.9 Where possible surplus excavated material would be reused or recovered on-site, in accordance with the Contaminated Land: Application in Real Environments Definition of Waste: Development Industry Code of Practice (CL:AIRE DoW CoP) (CL:AIRE, 2023), waste exemption or environmental permit. The CL:AIRE DoW CoP sets out the process for reuse of excavated materials on or off-site, and means the surplus material is recovered using best practice in the waste hierarchy.

Construction Waste

A.4.10 The estimated main types and quantities of waste to be generated during the Proposed Development's construction (excluding demolition and excavation) are:

- 4,274 m^3 of non-hazardous inert material (e.g. concrete, asphalt and aggregates), source separated recyclables (e.g. paper & card, plastic, metals and wood) and mixed construction waste;
- 4,659 m^3 of non-hazardous municipal waste, source-separated recyclables (e.g. paper, card, plastics) and mixed municipal waste; and
- 37 m^3 of hazardous construction waste (e.g. surplus paint/coatings, batteries and oil filters).

Total Construction Waste

A.4.11 **Table A.4** summarises the anticipated waste streams (i.e., demolition, excavation, and construction) for the construction phase and their estimated waste quantities.

Table A.16: Estimated Waste for Construction

Waste Type	Estimated Waste Quantity (m^3)	Potential Waste Management Routes and Recovery Rate
Demolition-hazardous waste	Minimal, it is assumed that the majority of demolition waste will be non-hazardous.	Recycling, Energy Recovery, Landfill 50% recovery rate.
Demolition – non-hazardous waste	2,211	Recycling, Energy Recovery, Landfill 50% recovery rate.
Excavation – hazardous waste	4,500	Recycling, Recovery, Landfill 50% recovery rate.
Excavation – non-hazardous waste	78,795	It is assumed that non-hazardous excavated material would be reused on-site where possible and would not be sent to landfill.
Construction – hazardous waste	37	Recycling, Energy Recovery, Landfill 50% recovery rate.

Construction – non-hazardous waste	4,659	Recycling, Energy Recovery, Landfill 90% recovery rate.
Construction – inert waste	4,274	Recycling, Energy Recovery, Landfill 90% recovery rate.
Total hazardous waste	4,537	
Total non-hazardous waste	85,665	
Total inert waste	4,274	

A.4.12 Full details of the methodology for estimating types and quantities of construction materials and waste are described in **ES Volume I, Chapter 20:** Materials and Waste (**Application Document Ref. 6.2.20)**.

A.4.13 The Principal Contractor would review, update and monitor these estimates throughout the design and construction of the Proposed Development, and incorporate these updates in the SWMP to ensure delivery of the Proposed Development KPIs.

A.5 Design Decisions

A.5.1 Decisions made at the detailed design stage of the Proposed Development would impact on the quantity and types of materials used, the quantity and types of waste arising, and the management of materials and waste.

A.5.2 The Proposed Development design development has applied and will continue to apply the principles of Designing out Waste (DoW) (WRAP, undated), which include:

- Design for Reuse and Recovery;
- Design for Off Site Construction;
- Design for Materials Optimisation;
- Design for Waste Efficient Procurement; and
- Design for Deconstruction and Flexibility.

A.5.3 Prior to construction, the Principal Contractor would record, in the SWMP, all actions to be implemented to reduce waste or material use on the Proposed Development, and the resulting benefits. Embedded measures considered in the preliminary design in relation to waste are included in **ES Volume I Chapter 20:** Materials and Waste (**Application Document Ref. 6.2). Table**

A.5 would be populated by the Principal Contractor during the detailed design of the Proposed Development.

Table A.17: Waste Minimisation Actions

Project Title: Keadby Next Generation Power Station					
Material / Waste	**Estimated reduction in waste arising**		**Will additional planning permission / authorisation be required?**	**Estimated cost saving (£)**	**Person(s) responsible for completing action**
	Tonnes	**m3**			

A.6 Construction Materials and Waste Management On-Site

Waste Management Routes

A.6.1 The waste hierarchy sets out the priority order that should be considered when managing wastes. A basic representation of the waste hierarchy is provided in **Plate A.1** (see Section A.2).

A.6.2 To reduce the potential impacts from materials and waste and achieve high levels of sustainability, the Principal Contractor would apply the principles of the Waste Hierarchy and adopt BPMs which go beyond statutory compliance.

A.6.3 When considering waste management options for the Proposed Development, the Principal Contractor would take into consideration the site's location, natural environment, and available infrastructure. The Principal Contractor would consider the following options when determining the preferred waste management option for each waste stream.

Prevention and Preparing for Reuse

A.6.4 The Principal Contractor would engage with the team or individuals tasked with procurement of materials and services to ensure best practice procedures are employed to prevent residual resources at the site. A range of best practice measures may include the following:

- select procurement routes to minimise unnecessary packaging – for example applying JIT delivery processes to minimise material spoilage;
- use of 'consolidation centres' to support JIT delivery – these are strategically-located storage and distribution facilities where materials can be stored prior to JIT delivery to sites;

- implement ordering procedures and supply chain systems that avoid waste, i.e. no over-ordering, use of take-back schemes for packaging, material surplus and offcuts;
- select procurement routes that minimise unnecessary packaging; and
- plan the work sequence to reduce the potential for on-site residual resource generation.

A.6.5 The following approaches would be implemented, where practicable, to further minimise the quantity of waste arising and requiring disposal:

- reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping, recycling of demolition materials into aggregates;
- off-site prefabrication, where practical, including the use of prefabricated elements;
- divert waste from landfill through off-site recycling and recovery;
- segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling; and
- off-site reuse, recycling and recovery of materials and waste where reuse on-site is not practical, e.g. through use of an off-site waste segregation or treatment facility or for direct reuse or reprocessing off-site.

Recycling

A.6.6 By recycling onsite and off-site, as far as practicable, the quantity of waste requiring disposal to landfill is reduced. Recycling may also be achieved by utilising materials with a recycled content, such as recycled aggregates produced off-site.

Recovery

A.6.7 This generally aims to recover energy from waste which cannot otherwise be reused or recycled. This may include waste materials such as hazardous liquids or solids that can be sent to energy from waste facilities.

A.6.8 Recovery may also include the beneficial use of materials on land for restoration (backfilling operations).

Disposal

A.6.9 The least preferred option in the waste hierarchy is a final disposal route such as landfill. Some waste streams would inevitably end up with such a solution.

A.6.10 When placing waste disposal contracts, the Principal Contractor would consider the implications of long-distance travel in terms of health and safety risk, commercial terms and increased emissions from vehicles.

A.6.11 The Principal Contractor would ensure the pre-treatment of all hazardous and non-hazardous wastes prior to disposal to landfill. The methods of pre-treatment will enable the waste to meet the 'three-point test':

- it must be a physical, thermal, chemical or biological process including sorting;
- it must change the characteristics of the waste;
- it must do so in order to:
  - reduce its volume;
  - reduce its hazardous nature;
  - facilitate its handling; and
  - enhance its recovery.

A.6.12 Source segregation can be a pre-treatment option and as such can be applied to waste generation on-site including general waste and arisings and will take place on-site.

A.6.13 The Principal Contractor would ensure that a declaration stating the pre-treatment method applied to the waste is appended to any WTNs for non-hazardous waste being sent for disposal.

Materials and Waste Storage and Segregation Options

A.6.14 The Principal Contractor would store excavated soils and earthworks materials on-site in stockpiles until required for use.

A.6.15 Demolition materials that are to be recycled for use on-site would be separated at source and stored separately both before and after the treatment process.

A.6.16 Construction materials that are stored on-site would be in designated areas that are flat, accessible and secure to avoid damage or loss (which could render the materials unusable (waste) and require replacement material to be purchased). Materials would be stored in appropriate conditions to avoid

damage through, for example, water ingress or vermin. Materials would be retained in their original packaging to protect them from damage.

A.6.17 The Principal Contractor would ensure that the construction site incorporates designated waste storage areas for skips or similar suitable waste receptacles.

A.6.18 At the waste storage areas, the Principal Contractor would segregate waste into the following types as a minimum: inert; wood; metals; packaging; general waste; hazardous solid wastes; hazardous liquid wastes.

A.6.19 The Principal Contractor would implement the following waste management procedures where practicable:

- all waste containers would be secure and ensure that no waste is allowed to escape;
- all waste containers would be clearly labelled using a colour coding system so that users know what wastes can be placed in each container. Waste containers would be appropriately colour coded using generic colour codes, an example is shown in **Plate A.2** below;
- lockable storage would be provided for all hazardous waste;
- all waste containers would be sited at least 10 m away from watercourses, ditches, and other areas of environmental sensitivity;
- liquid wastes would be stored in enclosed/lidded containers and stored within a suitable bunded area, or otherwise provided with secondary containment;
- separate containers would be provided for each type of hazardous waste;
- each type of hazardous waste would not be mixed with any other hazardous or non-hazardous waste;
- sewage from the site offices/compounds would drain to septic tank and be collected by a suitable specialist waste contractor; and
- portable toilet facilities on-site (portaloos, etc.) would be emptied by the facility provider as per their service agreement.

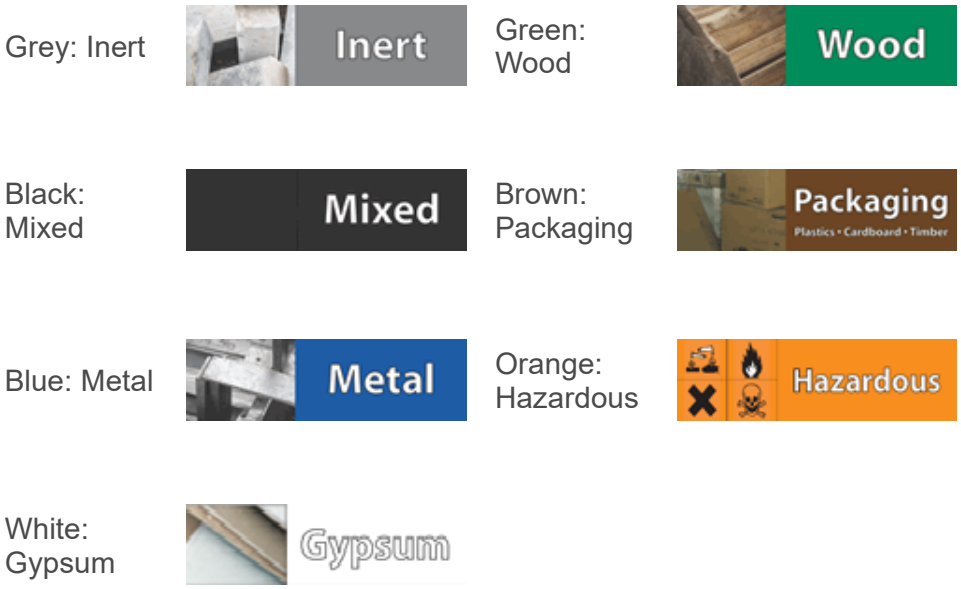

Plate A.2: Waste Container Colour Codes

Waste Carriers and Facilities

A.6.20 The Principal Contractor would manage all waste generated by the Proposed Development in accordance with legal requirements. The Principal Contractor would record details of the proposed waste carrier for each waste stream in the registration table (Annex 1: Waste Carriers), with Waste Carriers Licence details appended to the SWMP.

A.6.21 The Principal Contractor would ensure that the following information is recorded for all waste facilities used (where required and relevant):

- contractor's name;
- date(s) of waste removal;
- type(s) of waste removed (i.e. non-hazardous waste, hazardous waste, inert (specify);
- method of treatment, recovery or disposal (i.e. reuse, recycling, incineration, landfill etc.);
- volume or weight of waste removed;
- recovery rate achieved; and
- costs associated with waste removal, transport and treatment, including Landfill Tax charges where applicable.

Waste Transfer Notes (WTNs)

A.6.22 The Principal Contractor would ensure that all movements of waste from site are accompanied by a WTN, which detail specific information. The Principal Contractor's Site Materials and Waste Manager or other competent person would check that each WTN contains the following (where required and relevant):

- the name of the person receiving the waste and what they are authorised to do with that waste as a Registered Waste Carrier can only transport waste;
- type of waste;
- the SIC code;
- the six-digit EWC code;
- address of the producing site and details of the waste producer;
- waste carrier's details including registration number;
- quantity of waste;
- how it is contained (e.g. 8 cubic yard skip);
- address of the receiving site (e.g. landfill) and the Environmental Permit or Exemption No. associated with the receiving site;
- the date to which the WTN applies;
- if the material is non-hazardous waste and it is destined for disposal directly to landfill, pre-treatment would have been applied and a declaration detailing the treatment applied appended to the WTN; and
- a declaration that the waste has been treated in line with the requirements of the waste hierarchy.

A.6.23 The site representative signing the WTN would ensure all WTNs are placed in the Site Waste Management File and would be kept for a minimum period of two years for non-hazardous waste.

A.6.24 By signing a WTN, the site representative is confirming that all the details are correct and that the material is to be sent by a licensed waste carrier to a suitably licensed receiving site, permitted to receive that type of waste. The signature completes the WTN as a legal document.

A.6.25 The Site Materials and Waste Manager or other competent person signing the WTN would additionally ensure that the Waste Carrier is using a suitable vehicle with adequate, covered containment for the waste.

Waste Consignment Notes (Hazardous Waste)

A.6.26 The Principal Contractor would ensure that a HWCN is completed for every movement of hazardous waste. The HWCN would be prepared before the waste is moved. Prior to signing, the Site Materials and Waste Manager or another competent person would ensure that the HWCN includes:

- Hazardous Waste Premises Code;

- Consignment note code;
- SIC Code;
- name and address of the site from which the waste is being moved;
- date of removal;
- type of waste produced, including the quantity and the EWC code;
- the name of the person who is receiving the waste and what they are authorised to do with that waste (e.g. registered waste carrier can only transport waste);
- the final disposal site that is authorised to accept the waste; and
- retention period for hazardous waste.

A.6.27 The Principal Contractor would retain a copy of the HWCN for a minimum of three years.

Waste Documentation

A.6.28 The Principal Contractor would retain all waste documentation at the main site compound and, following completion of the Proposed Development construction, at the Principal Contractor's head office. This includes:

- the SWMP (two years after end of construction of the Proposed Development);
- waste transfer documentation (two years for WTNs and three years for HWCNs);
- copies of any exemptions or permits; and
- copies of waste carrier and treatment/disposal site licences or permits.

Fly Tipping

A.6.29 Fly-tipping of waste on or adjacent to ongoing construction projects can be a significant issue.

A.6.30 A site assessment of pre-existing fly tipping hotspots would be undertaken and, where appropriate, security measures to prevent access to such areas would be implemented.

A.6.31 If waste is fly tipped on the site, the Principal Contractor would have a duty of care to ensure it is dealt with safely and disposed of correctly, even if not the producer of the waste.

A.6.32 Regardless of whether the Principal Contractor has filled the obligation in the sentence above, any instance of fly-tipping on the site would be reported by the Principal Contractor to the local authority.

Fuels, oils and COSHH materials

A.6.33 The Principal Contractor would establish appropriate control and management measures for the storage, dispensing, containment and use of all fuels, oils and COSHH materials and wastes required during construction.

A.6.34 The storage, dispensing, containment and use of fuels, oils and COSHH materials have the potential to cause significant damage to the environment. Causes of environmental incidents linked to fuel, oil and COSHH materials on construction sites include:

- delivery and use of materials;
- overfilling of storage containers;
- plant or equipment failure;
- containment failure;
- accidents and vandalism; and
- mixing of inappropriate materials and wastes.

A.6.35 Environmental incidents could affect:

- Drainage systems, surface waters, groundwater and soil;
- Air quality, by producing fumes, vapours and airborne pollutants; and
- Land quality by contamination through spillages.

A.6.36 The storage, dispensing, containment and use of all fuels, oils and COSHH materials and wastes would be undertaken in accordance with regulatory and best practice guidance, the key points of which are set out below.

A.6.37 For COSHH materials and waste, relevant control and management measures may include:

- Storage would be in a secure, bunded and sheltered area;
- Waste would be segregated;
- COSHH liquids would not be stored in areas within Flood Zone 3;
- Areas would be supervised, and records of materials and waste stored and removed from the area recorded; and
- The handling, storage and disposal would be undertaken as described in the COSHH Assessment and any MSDS.

A.6.38 Fuel and oil (including mould oil) would be stored in accordance with The Control of Pollution (Oil Storage) (England) Regulations 2001 (HMSO, 2001), with fuels and oil handled in such a way that risk of pollution is minimised, specifically:

- Fuel and oil storage tanks would comply with The Control of Pollution (Oil Storage) (England) Regulations 2001 (HMSO. 2001), and would be locked outside working hours;

- Storage areas would not be located within 20 m of watercourses, ponds, site drainage or within any areas of Flood Zone 3 or on a gradient;
- Refuelling would not be permitted within 20 m of a watercourse/pond, within 20 m of a highway drainage gully/site drainage, or within areas of Flood Zone 3;
- Mobile bowsers would be bunded/double skinned and would comply with The Control of Pollution (Oil Storage) (England) Regulations (HMSO, 2011), and would be secured outside working hours;
- Trained operatives would carry out refuelling of plant and equipment;
- Plant nappies would be used during refuelling;
- Storage tanks and drums would be maintained in a good condition, fitted with lids, and labelled to indicate the contents;
- Static combustion engine plant (e.g. compressors, lighting sets) would be integrally bunded or placed on plant nappies;
- Bunds, tanks pipework and plant would be regularly checked for signs of damage or leaks and would be regularly maintained;
- Spill kits would be provided within close proximity to fuel and oil storage areas, with plant that is operating in isolated areas, and in welfare facilities. Drivers, operators and stores personnel will be trained in security and the use and safe disposal of spill kits; and
- Drums would be stored in bunded areas with a minimum capacity of 25% of the total volume contained within the bund, or 110% of the largest container, whichever is the greater. Where possible, these bunds will be fitted with roofs to prevent the collection of rainwater. Individual drums in use would be stored on a drip tray sufficient to contain 25% of the full capacity of the drum.

Key Responsibilities

Reporting and Auditing

A.6.39 The SWMP and its requirements on-site are enforced by the nominated Site Materials and Waste Manager (or similar) and Site Manager. Responsibility for the formal recording of waste movements lies with the Site Materials and Waste Manager or Project Manager.

A.6.40 The Principal Contractor would maintain a record of all materials that come on to site. The quantity of reused, recycled and secondary aggregate would be recorded, alongside details of the supplier, the producing facility and

records that demonstrate that the material meets all relevant technical and regulatory requirements (Annex 2: Aggregates Imported to Site).

A.6.41 The Principal Contractor would maintain a record of all wastes that are removed from the site and their management route. Each waste management contractor would provide details of the types and quantities of waste removed from the site, the receiving waste management facility and the associated recycling, recovery and disposal rates for each waste stream (Annex 3: Waste Management).

A.6.42 The Principal Contractor would monitor, and record details of the wastes placed in all waste receptacles to ensure that contamination has not occurred.

A.6.43 The Principal Contractor would continually review the types of surplus materials and waste being produced and change the site set up to minimise wastage rates and maximise reuse or recycling.

A.6.44 The Applicant or its representatives may carry out 'spot checks' in relation to the completeness of any WTNs and HWCNs

Review of the Site Waste Management Plan

A.6.45 The Principal Contractor would review the SWMP at least once every six months during the construction of the Proposed Development to ensure that targets are being achieved and that realistic solutions are provided for any unplanned events or abnormal wastes. The Principal Contractor would also review the SWMP if there is any significant change to the Proposed Development. These reviews would involve the completion and submission of a monitoring report to the Applicant (or its representative) in an agreed format.

Site Inspections

A.6.46 The Site Manager or nominated deputy would undertake a daily inspection of the construction areas including all areas used for waste management. Any issues shall be recorded in the daily log along with any corrective action taken.

Closure Reporting

A.6.47 Within three months of the completion of works under a contract, the Principal Contractor would submit a Waste Management Closure Report to the Undertaker (or its representative) to demonstrate the effective implementation, management and monitoring of construction materials and waste during the construction lifetime of the Proposed Development.

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- Waste and Resources Action Programme (WRAP) (Undated). Designing out Waste: a design team guide for buildings. Available at:

https://build360.ie/wpcontent/uploads/2023/01/WRAP_DOW_Guide.pdf
[Accessed 2 July 2025]

Annex 1 – Waste Carriers

Waste type(s)	EWC code	Waste carrier name	Contact details	Waste carrier's registration number	Expiry date (dd/mm/yyyy)	Date checked with Environment Agency (dd/mm/yyyy)

Annex 2 – Aggregates Imported to Site

Client Name:

Project:

Contractor:

Suggested Target:

At least [% to be confirmed by contractor] (by weight) of aggregates imported to site for use within the proposed development that shall comprise alternative (reused, recycled or secondary) aggregates. This applies for those applications where it is technically and economically feasible to substitute these alternatives to primary aggregates.

Material / aggregate	Material density	Quantity required for construction (m^3)	Quantity to be imported to site	Supplier	Supplier facility	Facility permit / license / exemption number	Evidence of compliance with specification	Evidence of compliance with aggregates from inert waste quality protocol	Recycled content (% by weight)
Overall proportion of reused, recycled and secondary aggregates								% (by weight)	

Annex 3 – Waste Management

Client Name:

Project:

Contractor:

Suggested Target:

Recover (through reuse, recycling or recovery) at least [% to be confirmed by the contractor] (by weight) of non-hazardous construction waste (excluding naturally occurring materials with European Waste Catalogue Code 17 05 04), with the aim to achieve recovery of [% to be confirmed] (by weight).

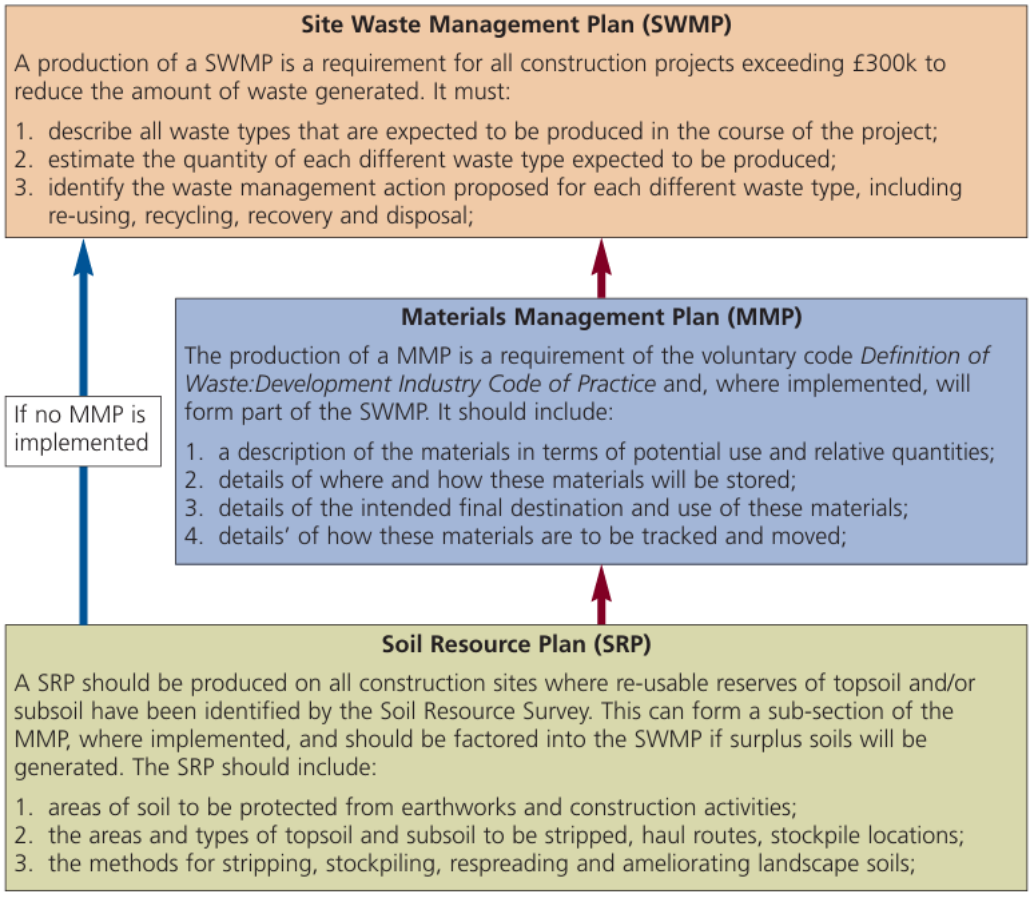
Waste type and quantity			**Management route (% or quantity)**						**Waste carrier**	**Off-site waste management facility**
Waste type	EWC code	Quantity (tonnes)	On-site		Off-site					
			Reused on-site	Recycled for use on-site	Reused off-site	Recycled off-site	Recovered off-site	Disposal		

Appendix B Outline Soil Resources Plan

B.1 Introduction

B.1.1 This Outline Soil Resources Plan illustrates and seeks to guide the appointed contractor and Applicant in relation to the approach that will be implemented during the construction phase for the handling, movement and temporary storage of soils, including those agricultural soils classified as 'best and most versatile' that will be disturbed for temporary laydown for the Proposed Development. The relationship between this Outline Soil Resources Plan and the Outline SWMP presented in Appendix A is illustrated in **Plate B.1** below (CIRIA, 2009)

Plate B.1: Hierarchal relationship of Site Waste Management Plans, materials Management Plans and Soil Resources Plans



Source: Defra Code of Practice for the Sustainable Use of Soils on Construction Sites

Aims and Objectives

B.1.2 The objective of this Soil Resources Plan is to avoid any reduction in long term capability, which could downgrade the quality of the disturbed land, through the adoption of good practice techniques in handling, storing and reinstating soils on that land, once construction is complete.

B.1.3 Measures in this Outline Soil Resources Plan will enable soils to be managed by the appointed contractor via an approved Soil Resources Plan so that they can be returned to their original uses in a suitable condition and remain able to fulfil their identified pre-construction function, or provide other beneficial uses, such as supporting landscape planting and biodiversity, where this has been agreed.

B.1.4 The final Soil Resources Plan will confirm the most appropriate re-use for the different types of soils and proposed methods for handling, storing and replacing soils in temporary construction laydown areas and wider Site.

B.1.5 The aim of the final Soil Resources Plan will be to re-use as much of the surplus soil resources on-site, in the detailed design of the Proposed Development as is possible. Any surplus soils will be re-used in a sustainable manner (i.e. as close to the Site as possible and to an after-use appropriate to the soil's quality) in accordance with Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

B.1.6 The final Soil Resources Plan will also aim to ensure that the quality of soils retained on-site and exported off-site (if required) is maintained by following good practice guidance on soil handling and storage, particularly to avoid compaction and biodegradation of soils that are to be retained on site in storage. In this respect, topsoil must be stockpiled separately to subsoil.

B.1.7 With the adoption of appropriate mitigation for the handling and restoration of soils, most soils will be able to continue their various ecosystem functions on or adjacent to the Site, principally as a medium for producing food and biomass; for storing and cycling water and carbon; and for supporting habitats, biodiversity and landscape planting.

B.2 Legislative Background

B.2.1 No specific UK legislation exists in relation to the protection of soil and agricultural land.

B.2.2 The EIA Directive (2014/52/EU) emphasises that public and private projects should consider and limit their impact on land, particularly as regards land required, and on soil, including in relation to erosion, compaction and sealing.

B.2.3 Defra issued Safeguarding our Soils – A Strategy for England in 2011 (Defra, 2011) and since this time, the Government's White Paper, The Natural Choice: securing the value of nature and policies set out in the 25 year

Environment Plan, have recognised the role that soils play in contributing to sustainable development including:

- the storage, filtration and transformation of water, carbon and nitrogen in the biosphere;
- the support of ecological habitats, biodiversity and gene pools;
- support for the landscape;
- the protection of cultural heritage;
- the provision of raw materials; and
- the provision of a platform for human activities, such as construction and recreation.

B.2.4 The land use planning context for the consideration of agricultural land and soil resource issues is provided primarily by national policies for development involving agricultural land set out in the National Planning Policy Framework (NPPF) (MHCLG, 2025). Planning policies of most relevance to this assessment are detailed in **Table B.1**.

Table B.1 Planning Policy of Relevance to the Soils Resources Plan

Policy Reference	Content
National Policy - National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, 2019) and associated Planning Practice Guidance (PPG) (2014)	
NPPF Paragraph 187	States that the planning system should contribute to and enhance the natural and local environment by, amongst other matters, protecting and enhancing soils.
NPPF Paragraph 187(b) and footnote 65	States that the economic and other benefits of the best and most versatile (BMV) agricultural land should be taken into account in development decisions. Where significant development of agricultural land is demonstrated to be necessary, poorer quality land should be used in preference to that of a higher quality.
Guidance	
National Planning Practice Guidance for Natural Environment (MHCLG and	Notes that the agricultural land classification (ALC) system provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within

Policy Reference	Content
Department for Levelling Up, Housing and Communities, 2016)	the planning system, with direction given to Natural England for further information on ALC. The guidance also confirms that Natural England has a statutory role in advising local planning authorities about agricultural land quality issues.
Soil Strategy for England – Safeguarding our Soils (Defra, 2011)	Sets out Defra's vision that by 2030, all of England's soils will be managed sustainably and degradation threats will be tackled successfully in order to improve soil quality and safeguard the ability to provide essential services for future generations. The Strategy sets out priorities for action in respect of better protection of agricultural soils; protecting and enhancing stores of soil carbon; building the resilience of soils to a changing climate; preventing soil pollution; effective soil protection during construction and development; and dealing with the legacy of contaminated land.
Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Department for Environment, Food & Rural Affairs, 2018)	A practical guide to assist the construction industry to protect the soil resources with which it works and achieve good soil management at all stages of the construction process. Advises that the protection, use and movement of soil should be considered from the outset of a development project's planning, through its design and construction phases and on into future maintenance and operation. Provides practical guidance on the following aspects of the sustainable use of soils on construction sites: • identifying existing soil resources on-site; • on-site soil management; • topsoil and subsoil stripping; • soil stockpiling and placement; • sourcing, importing and manufacturing topsoil; • soil aftercare; and

Policy Reference	Content
	• uses for surplus topsoil.
Local Development Framework Policy – North Lincolnshire Council Saved Policies	
Policy M5: Best and Most Versatile Agricultural Land (Saved Policies of the North Lincolnshire Local Plan, 2003)	Relates to mineral working and is therefore only likely to provide limited weight in decision making. States that applications for new mineral working on the best and most versatile agricultural land (grades 1, 2 and 3a) will be allowed only where it can be shown that restoration and after-care will preserve the long term potential of the land as a national, high quality, agricultural resource.

B.3 Baseline Conditions

B.3.1 Provisional ALC plans are available from magic.gov.uk and provide guidance on the ALC where agricultural land is to be developed. These plans indicate that the majority of the Proposed Development Site (including the Main Site) is located within land classified as Grade 2 (very good).

B.3.2 Land within the Construction Laydown Areas, within the agricultural fields north of the A18 are classified as Grade 1 land (excellent quality) under the Provisional ALC. These areas are currently under arable agricultural land use. Fields are generally subdivided by drainage ditches. There is limited vegetation cover except for boundary vegetation which includes immature hedgerow planting at the western boundary adjacent to the existing access road from the A18.

B.4 Measures to Reduce Potential Impacts on Agricultural Land and Soil Resources

B.4.1 The appointed contractor will develop a final Soil Resources Plan, taking into account DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2018). Pre-Construction Soils Survey.

B.4.2 Prior to construction, a soil survey will be undertaken by an appropriately qualified soil scientist to record agricultural soils to be disturbed during construction of the Proposed Development. Data collected will be used to characterise the topsoils and subsoils and calculate the volumes of soil resources to be disturbed and temporarily stored, in order to inform the soil

handling strategy required for the reinstatement of agricultural land in the final Soil Resource Plan.

B.4.3 The soil survey will include as appropriate:

- relevant local topographic features (local relief, slope, aspect, micro-relief), land use and ground cover, flood risk and climatic information;
- depth of the topsoil, upper subsoil (where present) and lower subsoil horizons;
- soil textures;
- soil structures;
- soil colours;
- stone content;
- signs of impeded drainage and presence of slowly permeable layers;
- presence of calcium carbonate; and
- sampling for laboratory analysis of pH, major nutrients (extractable phosphorus, potassium and magnesium) and organic matter content.

B.4.4 Other features that will be recorded for reinstatement include:

- drainage, irrigation and water supplies;
- roads, accesses and paths; and
- hedgerows, ditches, field boundaries and ponds, where presented.

B.4.5 The soil survey report shall contain specific recommendations that the appointed contractor will adhere to in order to provide appropriate methods for handling and storing soils in order to ensure that these are suitable for agricultural re-instatement following construction.

B.5 Handling and Storage of Soils During Construction

B.5.1 The following measures will be considered, and implemented, as far as reasonably practicable by the appointed contractor in relation to the handling and storage of soils during construction:

- separate handling and storage of different soils, particularly topsoils and subsoils will be undertaken under suitable weather and soil conditions using appropriate machinery;
- handling soils that are in a suitably dry condition and not during wet weather to avoid long-term damage to soil structure from compaction;
- seed for grass cover or seal excavated material and soil stockpiles;
- the prevention of soil contamination with chemicals or other materials; and
- the control of weeds on soil stores, either through treatment or removal.

B.5.2 Prior to stripping, the final Soil Resource Plan shall provide a record of the locations, contents and approximate volumes of soil stockpiles taking into account the soil survey results and relevant land parcel of origin which shall be subsequently restored.

B.5.3 All soils will be managed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soil on Construction Sites (Defra, 2009) to minimise impacts on soil structure and quality.

B.5.4 A Requirement is included in the **Draft DCO** (**Application Document Ref. 3.1**) in order to ensure a soil management plan is provided as part of the final CEMP.

B.6 References

- Defra (2011) Safeguarding our Soils – A Strategy for England in 2011. Available online: https://www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england [Accessed 12 June 2025].
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Appendix C Outline Water Management Plan

Contents

Tables

C.1 Introduction

Overview

C.1.1 This Outline Water Management Plan (OWMP) sets out the measures that would be implemented by the Principal Contractor to manage water during construction of the proposed Keadby Next Generation Power Station (hereafter referred to as the 'Proposed Development'), together with measures to protect the water environment.

C.1.2 This OWMP will be updated by the Principal Contractor into a detailed Water Management Plan (WMP) prior to commencement of works, as secured through a requirement of the **Draft Development Consent Order** (DCO) (**Application Document Ref. 3.1**).

Proposed Development

C.1.3 The Proposed Development would comprise a new low carbon CCGT electricity generating station with a capacity of up to 910MW electrical output. The CCGT electricity generating station will be designed to run on 100% hydrogen and able to run on 100% natural gas or a blend of natural gas and hydrogen on land to the west of Keadby 1 and Keadby 2 power stations.

C.1.4 The Proposed Development includes connections for cooling water, electricity, hydrogen, natural gas, construction laydown areas and other associated development. It is described in full in **Environmental Statement (ES) Volume I Chapter 4**: The Proposed Development (**Application Document Ref. 6.2.4**). The areas within which each numbered Work (component) of the Proposed Development are to be built are defined by the coloured and hatched areas on the Works Plans (**Application Document Ref. 2.3**).

Proposed Development Site

C.1.5 The Proposed Development Site ('the Site') is located within and near to the existing Keadby Power Station site near Scunthorpe, Lincolnshire and lies within the administrative boundary of North Lincolnshire Council. The majority of land is within the ownership or control of the Applicant (or SSE associated companies) and is centred on national grid reference 482351, 411796.

C.1.6 The existing Keadby Power Station site currently encompasses the operational Keadby 1 and Keadby 2 Power Station sites, including the Keadby 2 Power Station Carbon Capture and Readiness reserve space. The Proposed Development Site encompasses an area of approximately 77.1

hectares, of which approximately 26.7ha of land is proposed for construction laydown.

C.1.7 The Site is divided into the following areas of permanent and temporary land use (the proposed use is described in more detail in **ES Volume I Chapter 3**: Site and Surrounding Area (**Application Document Ref. 6.2.3**):

- Main Site;
- Ancillary Facilities;
- Water Connections;
- Electricity Connections;
- Waterborne Transport Off-loading Area;
- Construction Laydown Areas;
- Access routes (emergency, permanent and construction);
- Connections to Keadby 1 and Keadby 2 power stations; and
- Additional areas for landscaping and biodiversity provision.

Plan Purpose and Benefits

C.1.8 This OWMP has been developed to act as a guide for how water is to be managed and protected, in accordance with both legal requirements and best practice. The Principal Contractor would use this OWMP as a basis for producing the WMP for use throughout the duration of the Proposed Development's construction phase, as secured through a requirement of the **Draft DCO** (**Application Document Ref 3.1**).

C.1.9 Where the Principal Contractor seeks to utilise alternative measures to those identified within the OWMP, these would be agreed with the relevant stakeholders and be of equal (or better) efficacy.

Plan Scope

C.1.10 This OWMP includes:

- An overview of applicable legislation;
- Details of the Proposed Development;
- Management arrangements, including roles and responsibilities, training, and best practice measures;
- Pollution prevention measures;
- Management of flood risk during construction;
- Management of surface water during construction;
- Management of groundwater during construction;
- Water use and efficiency; and
- Monitoring.

C.2 Water Management Legislation and Guidance

C.2.1 This section summarises the key legislation and guidance with regards to water management in England.

Legislation

C.2.2 This OWMP seeks to guide compliance with the following legislation by ensuring that mitigation measures are in place to avoid adverse effects on water resources and flood risk, during construction:

- Water Environment (Water Framework Directive) (England and Wales) Regulation 2017;
- Flood and Water Management Act 2010;
- Land Drainage Act 1991.

C.2.3 The OWMP also seeks to guide compliance with the following local policies:

- North Lincolnshire Local Development Framework Policies CS17 to CS19, 2011

Guidance

C.2.4 The outline measures set out in this OWMP are based on good practice measures including, but not limited to, the following key guidance:

- Construction Industry Research and Information Association (CIRIA), 'Environmental Good Practice on Site (C811)' (2023)
- CIRIA, 'Control of Water Pollution from Construction Sites (C532)' (2001)
- CIRIA, 'The Sustainable Drainage System SuDS Manual (C753)' (2015)

C.3 Management Plan Overview

Roles and Responsibilities

C.3.1 The main contract personnel responsible for producing the WMP are shown in **Table C.1**. The Principal Contractor would complete Table 1 as part of the WMP prior to the commencement of the construction phase.

Table C.18: Roles and Responsibilities

Position	Name	Contact Details	SWMP Responsibility
Main Contract personnel			
Client Project Manager			Monitor the Principal Contractor's performance against the contract, including any environmental commitments and targets agreed for the Proposed Development.
Project Manager (Principal Contractor)			Approval of the WMP for the relevant phase of works. Ensure that all controls specified within the WMP are implemented by employees and sub-contractors.
Environment Site Officer(s) (Principal Contractor)			Undertake site inspections to monitor compliance with the environmental licences/consents for the works and the measures within the WMP. This includes routine visual inspection and observation of watercourses for the presence of silt, discolouration and hydrocarbons.

Position	Name	Contact Details	SWMP Responsibility
			Ensure that the Proposed Development complies with all environmental legislation, consents, objectives, targets and other environmental commitments secured through the Construction Environmental Management Plan (CEMP) and WMP throughout the relevant project phase. Implementation of remedial actions, where required, in consultation with relevant stakeholders.
Sub-contractor details			
Individual Sub-contractor(s), as appointed			Read through, familiarise and understand the requirements of the WMP. Produce relevant documentation in line with WMP and consent requirements. Comply with the requirements set out in the WMP.

Instruction and Training

C.3.2 The Principal Contractor would incorporate the relevant WMP requirements into the site induction and training procedures and would provide on-site

instruction on the relevant control measures to personnel during the construction of the Proposed Development.

C.3.3 The Principal Contractor would ensure that all personnel working on the site, including sub-contractors, are inducted and appropriately trained.

Targets

C.3.4 Targets for water management, and in particular in relation to water usage, would be included in the WMP and could include, for example:

- Achieving a set percentage of water demand through non-potable water supply measures (such as water recycling and rainwater harvesting).

Environmental Consents and Exemptions

C.3.5 The Principal Contractor will ensure authorisation is in place for any activities proximal to watercourses or in floodplains, as defined under Schedule 25 of the Environmental Permitting (England and Wales) Regulations 2016, within the Land Drainage Act 1991 or Internal Drainage Board (IDB) byelaws.

C.3.6 Consent under the Water Resources Act 1991 will be obtained for any abstraction from controlled waters (including groundwater) greater than 20m^3/d, unless exempt under the Water Abstraction and Impounding (Exemptions) Regulations 2017. Where abstractions are less than 20m^3/d, abstraction locations will be agreed with the Environmental Manager, prior to use and measures implemented to minimise impacts to the environment.

C.3.7 Consent under the Water Resources Act 1991 will be obtained for any discharge, including groundwater, unless otherwise permitted by other legislation (such as the Highways Act 1980) or by a regulatory position statement. For temporary discharges less than 3 months of water from excavations to watercourses, the Principal Contractor will comply with Environment Agency regulatory position statement and the schemes permit to pump regime.

C.3.8 Required environmental consents are to be documented within an Environmental Consents Register. Where activities such as temporary abstractions or discharges comply with exemptions, these should also be documented within the consents register, with supporting evidence. See **Schedule of Other Consents and Licences (Application Document Ref. 5.4).**

C.4 Pollution Prevention and Control

General

C.4.1 During construction, water pollution may occur directly from spillages of polluting substances into waterbodies, or indirectly by being conveyed in runoff from hard standing, other sealed surfaces or from construction machinery. Fine sediment may also be disturbed in waterbodies directly or wash off working areas and hard standing (including approach roads) into waterbodies indirectly via existing drainage systems or overland. This sediment can directly impact the aquatic environment (decreased water clarity, habitat destruction) or may potentially contain contaminants.

C.4.2 The management measures outlined below will be implemented to prevent accidental pollution of waterbodies and reduce the risk of accidental spillages and potential conveyance to waterbodies via surface water runoff or land drains.

C.4.3 Construction works undertaken will be in accordance with prevailing legislation and best practice guidance during construction, including the requirements of any Environmental Permits, Ordinary Watercourse Consents, Environment Agency groundwater protection guidance and/or IDB Bylaws, particularly AN01, AN02, AN03, AN05 and AN06.

C.4.4 In the event of a pollution incident, an Emergency/Pollution Response Plan will be in place prior to the commencement of construction works. The plan will outline key pollution mitigation measures to be adopted including a Control of Substances Hazardous to Health (COSHH) / fuel inventory and key contacts to be notified in the event of a significant pollution incident, which could subsequently lead to the contamination of controlled waters or soils. Additional mitigation measures for spill protection and pollution prevention are detailed within the **Outline CEMP (Application Document Ref. 7.4).**

Fuel handling and COSHH materials

C.4.5 All bulk fuel and COSHH items will be stored in accordance with relevant legislation, Environment Agency Guidance for Pollution Prevention (GPP) documents and, where relevant, Pollution Prevention Guidance notes (the latter having been withdrawn but at the time of writing, widely considered good practice).

C.4.6 Any hazardous materials will be stored in designated locations with specific measures to prevent leakage and the release of their contents. This will include a requirement to position storage areas at least 10m away from surface water features/ drains (and take into consideration the positions of any groundwater receptors), on an impermeable base with an impermeable bund/container that has no outflow and is of adequate capacity to contain at

least 110% of the contents. No hazardous materials would be stored unbunded within the construction laydown areas.

C.4.7 The site will be secure to prevent any vandalism that could lead to a pollution incident. This would include security fencing and gates, as appropriate, together with locks on tanks, dispensing pumps, valve and trigger guns when not in use.

C.4.8 All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling and spill kits will be distributed across the Site.

Sediment Management

C.4.9 Measures to limit and manage sediment erosion, control sediment mobilisation and entrainment and manage sediment transport and deposition will be implemented, that will include but not be limited to, as appropriate

- minimisation of areas of exposed ground and stockpiles, as far as reasonably practicable, to reduce silty runoff;
- adoption of geotextiles, where necessary, to shield stockpiles, and stockpiles left for more than three months will be seeded;
- installation of cut-off ditches around excavations, exposed ground and stockpiles to prevent sediment release;
- control of earth movement to reduce the risk of the contamination of silt and site run-off;
- control of mud at site entry and exit points using wheel-cleaning areas and road sweeps, as appropriate;
- washing and cleaning of plant, equipment and machinery in designated areas within the construction site where runoff is isolated for treatment prior to discharge;
- installation of restriction and barriers, such as straw bale traps and gravel, for works adjacent to watercourses/water bodies, to prevent damage to riparian vegetation, and manage the pathway for untreated silt-laden runoff to enter the watercourse, as appropriate; and
- adequate provision for the removal and treatment of sediment from site run-off, such as in settlement tanks/ponds.

Concrete washout

C.4.10 Particular care will be taken when working with concrete and cement, including during delivery, due to its corrosive and alkaline nature.

C.4.11 The Principal Contractor will instruct concrete suppliers that where practicable, concrete washout activities should be undertaken off site.

C.4.12 Designated areas will be provided for concrete washout. These will be located at least 20m away from any ditch or watercourse and will consist of a suitably sealed facility (e.g. geotextile wrapped sealed skip, container or earth bunded area) to prevent concrete washout from entering the water environment. Concrete washout will be removed from the Site for appropriate disposal at a suitably permitted waste facility, or treated for safe reuse or discharge (in line with relevant permits/consents).

C.4.13 Any loose cement and/or concrete onsite will be cleared as quickly as possible and will be subject to regular inspections by the environment site officer.

Maintenance of plant

C.4.14 Any plant, machinery or vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment.

C.4.15 Maintenance is to take at designated, secured areas within the Site. Only construction equipment and vehicles visibly free of oil/ fuel leaks will be permitted on site.

C.4.16 Static machinery and plant are expected to be stored in hardstanding areas, away from drains when not in use and, where necessary, to make use of drip trays beneath oil tanks/ engines/ gearboxes/ hydraulics. Drip trays are to be checked and emptied regularly.

C.4.17 As far as reasonably practicable, biodegradable hydraulic oils will be used in equipment working in or over watercourses.

Pumping works

C.4.18 The project will operate a permit to pump system, with any pumping controlled to prevent pollution of drainage systems and surface watercourses, and ensure compliance with Environment Agency Pollution Prevention Guidelines and regulatory position statements such as for temporary dewatering of excavations to surface water.

C.4.19 In general, subject to the appropriate permits, regulatory position statements or exemption/exclusions, small volumes of localised pumping to dewater excavations will be discharged to ground close to the excavation or surface

water, with appropriate silt and scour protection measures implemented, as appropriate.

C.4.20 Measures for prevention of pollution during larger dewatering activities will be agreed with the Environment Agency, as part of the licensing and permitting processes.

C.4.21 Water with a higher risk of contamination which requires discharge, such as groundwater pumped out during concrete pouring, would be contained and treated using appropriate measures such as coagulation of sediments, dewatering and pH neutralisation prior to discharge. Alternatively, the water would be tankered offsite for offsite disposal/neutralisation.

C.4.22 Pumping discharge rates will be controlled to avoid erosion or scouring of land downslope of the discharge point or watercourse banks/bed.

Spillages

C.4.23 The Emergency/Pollution Response Plan, as outlined in Section 4.1 and noted in the **Outline CEMP (Application Document Ref. 7.4)**, will be communicated to all personnel.

C.4.24 Emergency spill control equipment such as spill kits, oil booms and absorbent materials, would be held at appropriate locations on site and within site compounds. The spill response kits will be easily accessible and contain equipment that is appropriate to the types and quantities of materials being used and stored.

C.4.25 Spill kits will be regularly inspected, and kept on site for the duration of all construction and operation works.

Existing Contamination

C.4.26 The final CEMP will establish procedures for dealing with unexpected soil or groundwater contamination that may be encountered. This would typically require affected works to stop to enable appropriate people to be notified, and further characterisation and risk assessment to be undertaken before remediation or mitigation proposals are agreed with all required stakeholders.

C.4.27 Specific mitigation measures may be required in the form of treating/ remediating any contamination encountered during construction (e.g. any contamination that may be associated with any potentially contaminative sites identified as part of the assessment, notably the landfills and areas of

potentially infilled land). This will be confirmed based on information gathered through ground investigation.

C.4.28 Any remediation works, or the removal of contaminated soils or waters associated with the construction of the Proposed Development would be expected to result in the enhancement of the local environment.

C.5 Flood Risk

Flooding to the Proposed Development

C.5.1 The draft DCO contains a Requirement that requires details of a scheme for the mitigation of flood risk during construction to be agreed prior to the commencement of works. The scheme is required to be in general accordance with the Flood Risk Assessment (**Application Document 6.3.16**) The Principal Contractor will implement this flood risk mitigation scheme.

C.5.2 The Principal Contractor will ensure the effective planning of sites and storing of materials in relation to flood risk. For all construction works, a risk based precautionary approach will be adopted and specified.

C.5.3 It is expected that the scheme will provide details of proactive and reactive control measures to an impending flood and include:

- designation of site flood wardens;
- monitor weather daily and plan works accordingly;
- registration with the Environment Agency's flood warning service to inform if there is a risk of flooding, such as from a tidal storm surge type event which could result in overtopping or breach of defences;
- 24-hour availability and ability to mobilise staff in the event of a flood warning;
- restriction of construction works during times of high flow when there is a Flood Alert;
- the removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period;
- arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works area;
- adequate containment of storage areas, to ensure that material does not wash away and cause pollution and damage to infrastructure in the event of a flood;
- safe access and egress will be maintained at all times when working in excavations, with a banksman present at all times; and
- details of the evacuation and site closedown procedures

C.5.4 The scheme will account for a broad range of topics including all construction areas located within Flood Zone 2 and 3, areas vulnerable to surface water and groundwater flooding, and other flood risk sources such as sewer flooding and reservoir flooding.

Flooding as a result of the Proposed Development

C.5.5 The Principal Contractor will ensure that the construction activities do not result in an increased flood risk to third parties.

C.5.6 Flood risk to third parties is to be mitigated through appropriate site layout (i.e. avoidance of spoil in surface water flood paths), the implementation of appropriate construction drainage measures as outlined in Section 6, and compliance with permits/consents.

C.6 Surface Water Management

General

C.6.1 The Principal Contractor will incorporate surface water management measures (as detailed in **ES Volume I Chapter 12:** Water Environment and Flood Risk (**Application Document Ref. 6.2**) and **ES Volume II Appendix 12A:** Flood Risk Assessment (**Application Document Ref. 6.3**) designed to protect the quality of surface water resources from adverse effects and avoid any changes of level or volume that could increase in the likelihood of downstream flood risk or reduce the water resources available to a water dependent receptor. The WMP will be completed in line with Environmental Permitting requirements.

Construction SuDS

C.6.2 The draft DCO contains a Requirement that requires details of the temporary surface water drainage systems and details of a management and maintenance plan to be agreed prior to the commencement of works. These systems will manage the potential surface water impacts arising from construction operations. The Principal Contractor will implement these temporary construction surface water drainage systems.

C.6.3 The temporary construction site drainage measures will be completed before the commencement of the relevant earthwork operations and will be retained until the drainage system of the relevant part of the Proposed Development is fully operational, or site restoration works are completed.

C.6.4 The temporary construction site surface water drainage systems will include the provision of adequately sized attenuation and treatment facilities, where appropriate. The sizing of attenuation will take account of areas of existing flood risk and the relevant permitting requirements of the Environment Agency, the Lead Local Flood Authority and/or IDB

C.6.5 The temporary construction site surface water drainage systems will take into consideration best practice guidance for site surface water drainage systems such as the National Standards for sustainable drainage systems (SuDS).

C.6.6 The management of surface water across the construction site will take account of existing surface water catchments and the existing receptor of surface water will be retained wherever practicable.

C.6.7 Measures in the vicinity of existing contamination will ensure surface water is not able to infiltrate through contaminated material as this may lead to the

migration of contaminants into the wider area. Runoff from contaminated material will be captured and disposed of appropriately.

C.6.8 Appropriate treatment measures will be implemented across the site to treat potentially polluting matter contained within surface water runoff, prior to discharge to the environment. This may include measures to manage sediments, hydrocarbons, cement and other alkali-based construction materials and heavy metals (see Section 4). Alternatively contaminated water will be appropriately disposed of offsite or to sewer (subject to relevant consents).

C.6.9 Construction waste/ debris will be prevented from entering any surface water drainage or water body.

In channel working

C.6.10 Temporary works within minor watercourses will include suitable over pumping (or similar) provisions to pass high flows. Where feasible works should be timed during drier periods, when the watercourses are dry or contain low flows.

C.6.11 Appropriate sequencing and domaining of works within the channel, to reduce impacts to surface and groundwater flows to be temporarily diverted downstream of the works area, will be sought.

C.6.12 Species translocation and appropriate mitigation to avoid the injury or death of aquatic species during temporary watercourse works will be required. Works will be supervised by an appropriately qualified ECoW, where appropriate.

Canal Water Abstraction Cofferdam

C.6.13 Installation of any cofferdam in the Stainforth and Keadby Canal would require permission from the Environment Agency and Canal and River Trust. Maintaining a dry working area for any in-channel working using a cofferdam will reduce the overall channel disturbance and potential for mobilising fine sediment (and any contamination) into the water column and canal.

C.6.14 Any cofferdam works will be undertaken with due regard to the Eels (England and Wales) Regulations 2009, which may require installation of an eel screen. A fish rescue will be required from the cofferdam before pumping out of water. All works will be undertaken in accordance with a Fish Management Plan which will include details of:

- appropriate timings to minimise potential for disturbance to fish;
- provision for screening of pump intakes to prevent fish being drawn into the pipe/ pump;

- supervision of dewatering of any cofferdam(s) by an appropriately experienced ECoW to oversee fish welfare and to support the relocation of any stranded fish or associated wildlife back to the main channel of the canal outside the working area;
- if appropriate, other specialist techniques to support the capture and relocation of fish to the main channel of the canal outside the working area prior to drawdown; and
- biosecurity measures to address the invasive species known to be present within the canal.

C.6.15 The cofferdam will be designed to minimise changes to the canal bed and bank erosion and toe scour by extending the minimum distance possible into the channel.

C.6.16 Pre-construction sediment contamination testing will be undertaken, and silt curtains used to minimise impacts on water quality.

C.6.17 Dewatering within the cofferdam area will be undertaken once any fine sediment has settled out and following any necessary fish rescue. The rate and location of the discharge will be controlled and carefully chosen to avoid further erosion of any nearby soft sediments.

C.6.18 Whilst in-situ, the cofferdam will be regularly inspected and maintenance undertaken, where required, and any water entering the cofferdam area via seepage will be disposed of appropriately (i.e. by pumping back into the waterbody).

C.7 Groundwater Management

General

C.7.1 Groundwater is encountered at a shallow depth on site, and the majority of subterranean works could encounter the groundwater table.

C.7.2 Groundwater control, also known as construction dewatering, will be required to manage groundwater levels in excavations to enable construction in the dry, whilst pollution prevention measures will be required for drilling and piling works which could act as a pathway for contaminants.

Dewatering

C.7.3 For all dewatering activities, the appropriate licences, permits and consents will be obtained for the abstraction and discharge of groundwater.

C.7.4 Consideration will be given to local groundwater and surface water catchments and flow regimes that may be affected by dewatering design and discharging the abstracted water to the same groundwater and surface water catchment down gradient of the dewatered element.

Underground Structures

C.7.5 A site specific foundation works risk assessment for the construction of underground structures (including piling works) or ground improvement works will be conducted.

C.7.6 Design of underground structures, and in particular long linear buried structures) will require appropriate drainage provisions, to enable groundwater flow around the structures, to prevent groundwater mounding.

Borehole Decommissioning

C.7.7 Boreholes used for site investigation, dewatering and monitoring are to be decommissioned following completion of relevant works, to seal potential pathways for future contamination or groundwater flooding.

C.7.8 The decommissioning of boreholes should be undertaken in line with the Environment Agency's 'Good practice for decommissioning redundant boreholes and wells' guidance (2012).

C.7.9 The decommissioning of the boreholes should be undertaken in a way that mimics the natural geology, or alternatively the entire well/borehole is backfilled with a low permeability material that will prevent significant movement of groundwater through/along the borehole. Backfill materials

must be clean, inert and non-polluting, and appropriate to the ground and groundwater conditions.

C.8 Water Use and Disposal

Water Demand and Sources

C.8.1 The Principal Contractor will undertake a water use profiling exercise in advance of construction, to identify the volumes and quality (potable or non-potable) of water required throughout the construction process, and identify potential water sources.

C.8.2 All potable water required is anticipated to be supplied by Yorkshire Water, via a mains connection.

C.8.3 The Principal Contractor will investigate sources and measures that can be utilised for water that does not need to be potable. This may include:

- Utilisation of the existing abstraction licence (subject to a licence variation);
- Raw water connections;
- Rainwater harvesting and water recycling; and
- Water efficiency measures.

C.8.4 The Principal Contractor will adopt measures that prioritise use of non-potable water sources, for on-site non-potable purposes, such as but not limited to:

- wheel washes;
- dust suppression;
- washout;
- construction water use (such as piling or drilling);
- site and general cleaning (where appropriate); and
- welfare facilities (where appropriate, such as toilet flushing).

C.8.5 All abstractions required for construction (such as for excavations) will be non-consumptive, unless agreed with the Environment Agency as part of the licensing process.

Water Conservation Measures

C.8.6 The Principal Contractor will adopt measures to reduce water demand and improve water efficiency during construction, for both potable and non-potable end uses.

C.8.7 Water minimisation is to be implemented by utilising the water hierarchy approach to the management of water on site as set in order of preference;

the highest options will be adopted where reasonably practicable, but usually a combination of options will be appropriate.

- Eliminate - eliminate water use by identifying if the water-using process or activity is really necessary and/or if there is a cost effective alternative to using water.
- Substitute – identify and use alternative 'non-potable' sources and eliminate inappropriate use of drinking (potable) water. Assess whether rainwater or grey water can be used for the activity/process.
- Reduce - explore options that improves efficiency, e.g. by regular maintenance of water using equipment (to ensure they are working to maximum efficiency), metering and monitoring supplies, updating fittings and/or processes.
- Reuse – identify whether water (including grey water) can be treated/filtered for reuse in a process or activity, e.g. wheel washing.
- Recycle – identify if and where water can be recycled for use off-site.
- Disposal - dispose of excess water legally and responsibly to ensure there is no flooding, pollution or inconvenience to stakeholders.

C.8.8 The water efficiency measures will draw on best practice from other construction schemes for major infrastructure projects. Where reasonably practicable, the measures will include the following:

- embedding water efficiency measures into facilities such as temporary accommodation and welfare facilities. Measures may include low flush or flush stop toilets, aerated taps and waterless urinals;
- implementing water meters and regularly taking readings;
- implementing measures to identify, minimise and prevent leakage from construction site water supply systems, such as installing leakage monitoring and alert systems;
- adopting efficient technologies for dust suppression, such as efficient nozzle technology to create a more efficient spray pattern and/or the use of wetting additives to improve water efficiency for bowsers; and
- on-site messaging to raise awareness and reinforce water efficient behaviour, such as through briefings and posters, promoting water efficiency measures to reinforce behaviour.

C.8.9 Non-potable and potable water supply systems will be kept separate to remove the potential for cross contamination.

C.8.10 The Principal Contractor will set water use targets and effectively monitor, record and report water consumption to the Applicant.

Wastewater Disposal

C.8.11 The Principal Contractor will manage and dispose of foul water and sewage effluents from site facilities.

C.8.12 All foul flows and effluent arising from the Proposed Development operation will be kept separate from the surface water drainage network.

C.8.13 Approval from the Severn Trent Water will be required for any foul drainage discharged to a public sewer.

C.8.14 Where a foul sewer is not present or discharge to the foul sewer is not considered appropriate, the contractor will need to adopt provisions to dispose of the liquid from site, such as via a tanker or to surface water, via a package treatment plant (subject to appropriate consents/permits).

C.8.15 In disposal of wastewater, the contractor will adhere to following measures, as appropriate:

- provision of temporary foul drainage facilities to contain foul water;
- disposal of foul waters off-site will be by a licensed contractor; and
- compliance with relevant Environment Agency guidance, such as PPG4: Treatment and disposal of sewage, and the Environment Agency's Groundwater protection guides (previously GP3);
- connection to the local foul sewer system as agreed with the relevant statutory undertaker, where appropriate; and
- where a foul sewer is not present or discharge to the foul sewer is not considered appropriate, appropriate treatment and discharge to a watercourse with approval from the Environment Agency (and other relevant stakeholders), where required.

C.8.16 Records of existing foul water assets including pipe network and other facilities will be documented. Their location will be taken into account during all construction activities.

C.9 Monitoring and Reporting

Monitoring

C.9.1 Surface water and groundwater monitoring plans will be prepared prior to construction and implemented as part of the final WMP, and (as a minimum) be compliant with any obtained licences and permits.

C.9.2 The purpose of the monitoring plans will be to identify:

- pollution risks that are unacceptably high;
- spillages and leakages;
- potential non-compliance with the Code of Construction Practice (CoCP) or obtained consents; and
- suspected pollution incidences.

C.9.3 The Principal Contractor will consult the Environment Agency regarding water quality, flow and level monitoring to be undertaken for watercourses and groundwater that will be affected by construction works or the discharge of surface water run-off, which will include the following, as appropriate:

- pre-construction monitoring to establish baseline water quality conditions for watercourses and groundwater;
- monitoring during construction works to enable the effectiveness of mitigation measures to limit pollution risk to be monitored and any pollution incidents to be identified; and
- monitoring of watercourses or groundwater receiving surface water runoff during construction to enable the effectiveness of treatment and other sustainable drainage systems measures to be determined and to ensure that an unacceptable rise in groundwater levels does not occur.

C.9.4 The monitoring plans are likely to comprise a combination of onsite visual and in-situ testing, with supplementary laboratory analysis. The Principal Contractor will implement appropriate inspection and monitoring methodologies, in line with British standards where available and/or best practice guidance.

C.9.5 Appropriate actions will be taken, in consultation with the relevant stakeholders, where pollution risks are unacceptably high, where there is non-compliance with the CoCP, where spillages and leakages are unacceptable or where there are any suspected pollution incidents.

Reporting

C.9.6 Reporting will be undertaken in accordance with relevant consenting and permitting requirements.

C.9.7 The Principal Contractor will keep an electronic record of quantity and quality monitoring data available for inspection by the regulators upon request.

C.10 References

- CIRIA (2001) C532 Control of water pollution from construction sites – Guidance for consultants and contractors.
- CIRIA (2015) C753 The SuDS Manual.
- CIRIA (2023) C811 Environmental good practice on site guide (fifth edition)
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