ARUP

Uniper UK Limited

Proposed Carbon Capture Plant for the Killingholme Low Carbon Power project

Environmental Impact Assessment Scoping Report

Reference: KLC-ARU-EN-EA030-0003

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Glossary and Abbreviations

Glossary:

Term	Definition
The Proposed Development	The development for which planning consent is to be sought via a planning application under the Town and Country Planning Act 1990 (as amended), as described in Section 1.3 of this report.
The Site	The area of land within the Proposed Development Scoping Boundary, which is the subject of this EIA Scoping Report. This is illustrated in Figure 2.1 in Appendix A1.
Main Site	The area for the proposed carbon capture plant and the construction laydown as shown on Figure 2.2 in Appendix A1.
Spur pipeline	The Proposed Development includes two options for a spur pipeline that will connect the carbon capture plant to a carbon dioxide transport and storage infrastructure project, which would be developed by a third party. Option A extends 3.7km south from the Main Site to connect with the Viking CCS Pipeline at the Immingham Above Ground Infrastructure (AGI). Option B extends 2.7km south-west from the Main Site to connect with the Humber Carbon Capture Pipeline at the North Killingholme AGI. See Figure 2.2 in Appendix A1.

Abbreviations:

Abbreviation	Definition
AADT	Annual Average Daily Traffic
AGI	Above-Ground Infrastructure
AILs	Abnormal Indivisible Loads
ALARP	As Low As Reasonably Practicable
ALC	Agricultural Land Classification
AMAAA	Ancient Monuments and Archaeological Areas Act
APIS	Air Pollution Information System
AQAP	Air Quality Action Plan
ASR	Annual Status Report
ATC	Automatic Traffic Count
AWI	Ancient Woodland Inventory
BAT	Best Available Techniques
BEIS	Business, Energy & Industrial Strategy
BGS	British Geological Survey
BMV	Best And Most Versatile
BNG	Biodiversity Net Gain
BREFs	BAT Reference Documents
CCGT	Combined Cycle Gas Turbine
CCP	Carbon Capture Plant
CCR	Climate Change Risk
CCUS	Carbon Capture Usage and Storage
CDM	Construction (Design and Management) Regulations 2015

Abbreviation	Definition
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists
CNP	Critical National Priority
CO	Carbon Monoxide
CO2	Carbon Dioxide
COMAH	Control Of Major Accidents and Hazards
CPK	C.Ro Ports Killingholme Ltd
CRTN	Calculation of Road Traffic Noise
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
Defra	Environment, Food and Rural Affairs
DEMP	Decommissioning Environmental Management Plan
DfT	Department For Transport
DMRB	Design Manual for Roads and Bridges
DPD	Development Plan Document
EALs	Environmental Assessment Levels
eDNA	Environmental DNA
EIA	Environmental Impact Assessment
ELVs	Emission Limit Values
EPR	Environmental Permitting (England and Wales) Regulations 2016
EPUK	Environmental Protection UK
ES	Environmental Statement
EWP	Energy White Paper
FTE	Full Time Equivalent
GHG	Greenhouse Gas
GLVIA3	Guidelines For Landscape and Visual Impact Assessment, 3rd Edition
GVA	Gross Value Added
HAS	Hazardous Substances Authority
HCA	Homes and Communities Agency
HDV	Heavy Duty Vehicle
HoPI	Habitats of Principal Importance
HRA	Habitat Regulation Assessment
HSE	Health and Safety
IAQM	Institute of Air Quality Management
ICCI	In-Combination Climate Change Impact
IED	Industrial Emissions Directive

Abbreviation	Definition
IEMA	Institute of Environmental Management and Assessment
IHBC	Institute of Historic Building Conservation
IMD	Index of Multiple Deprivation
LAQM	Local Air Quality Management
LCRM	Land Contamination Risk Management
LDV	Light Duty Vehicle
LPA	Local Planning Authority
LWS	Local Wildlife Site
MCP	Medium Combustion Plant
MID	Method Implementation Document
MMP	Materials Management Plan
MW	Megawatt
NCA	National Character Area
NHLE	National Heritage List for England
NLC	North Lincolnshire Council
NO2	Nitrogen Dioxide
NPPF	National Planning Policy Framework
NPSE	Noise Policy Statement for England
NPSs	National Policy Statements
NRR	National Risk Register
NSIPs	Nationally Significant Infrastructure Projects
NTS	Non-Technical Summary
PEA	Preliminary Ecological Appraisal
PM10	Particulate Matter
PM2.5	Fine Particulate Matter
PPC	Pollution Prevention and Control
PRoW	Public Right of Way
RIGS	Regionally Important Geological Sites
SAC	Special Area of Conservation
SHB	South Humber Bank
SO2	Sulphur Dioxide
SPA	Special Protection Area
SRN	Strategic Route Network
SSSI	Sites Of Special Scientific Interest
SWMP	Site Waste Management Plan
tCO2e	Tonnes of Carbon Dioxide Equivalent
TCPA	Town and Country Planning Act

Abbreviation	Definition
UKHab	UK Habitat
UXO	Unexploded Ordnance
WFD	Water Framework Directive
WHO	World Health Organisation
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility

1. Introduction

1.1 Introduction

1.1.1 This Environmental Impact Assessment (EIA) Scoping Report has been prepared by Ove Arup and Partners Ltd, on behalf of Uniper UK Limited (hereafter referred to as 'the Applicant') to support a request for a Scoping Opinion for a proposed carbon capture plant (CCP) and a spur pipeline (hereafter referred to as 'the Proposed Development').

1.1.2 The proposed CCP will be located in close proximity to the already consented North Killingholme Power Project (on land adjacent to the C.RO Ports Killingholme Ltd (CPK) Terminal at North Killingholme, North Lincolnshire). In addition to the proposed CCP, the Proposed Development includes two options for a spur pipeline that could connect the CCP to a carbon dioxide transport and storage infrastructure project, which would be developed by a third party. Option A extends 3.7km south from the Main Site to connect with the Viking CCS Pipeline at the Immingham Above Ground Infrastructure (AGI). Option B extends 2.7km south-west from the Main Site to connect with the Humber Carbon Capture Pipeline at the North Killingholme AGI.

1.2 The need for the Proposed Development

1.2.1 According to the UK's independent advisor on climate change, the Climate Change Committee (CCC), demand for electricity is forecast to increase by 50% by 2035[1]. To meet this increasing demand and achieve the UK's decarbonisation goals, the CCC has also advised that a range of different technologies with both renewables and decarbonised generation, such as gas with carbon capture and storage (CCS), will be needed to maintain a secure and stable supply of electricity[2].An application was made by a third party for a Development Consent Order (DCO) in April 2013 to construct and operate the North Killingholme Power Project; a new 470 megawatt (MW) electrical generating station and associated development. On 11 September 2014, the Secretary of State for Energy and Climate Change granted development consent by way of a DCO, amended by correction order on 26 October 2015 and a further amendment to the Order which was granted in 2021. Land required for the North Killingholme Power Project was acquired by the Applicant in 2024 and the Applicant has been transferred the benefit of the DCO accordingly.

1.2.2 The DCO for the North Killingholme Power Project grants development consent to construct and operate the Combined Cycle Gas Turbine (CCGT). Initially this CCGT was proposed to be linked to a solid fuel gasifier project but there are no plans to develop the solid fuel handling or gasification parts of that DCO and the most recent DCO amendment in 2021 included compliance with the Carbon Capture Readiness requirements to demonstrate that post combustion carbon capture equipment could be retrofitted to the CCGT, if required. The DCO however did not extend to granting permission to construct and operate any such CCP, therefore an application is being made to seek consent for the construction, operation (including maintenance) and decommissioning of the Proposed Development.

[1] Sixth Carbon Budget (2020), Available at: https://www.theccc.org.uk/publication/sixth-carbon-budget/ [Accessed February 2025]

[2] The Sixth Carbon Budget Electricity Generation, Available at: *CC Sixth Carbon Budget electricity generation sector summary Sector-summary-Electricity-generation.pdf (theccc.org.uk)* [Accessed February 2025]

1.2.3 Through the inclusion of the Proposed Development, carbon dioxide (CO_2) emissions will be captured and emissions to the atmosphere reduced and so the Proposed Development will contribute to the mitigation of climate change while continuing to meet the UK's energy requirements. Therefore, there is a need for the Proposed Development to decarbonise the North Killingholme Power Project; this will bring it in line with the Applicant's strategy to become completely carbon neutral by 2040 and for its installed power generating capacity to be more than 80% zero-carbon by the early 2030s. The Applicant is therefore seeking to develop the North Killingholme Power Project as a carbon capture and storage enabled plant (collectively known as the 'Killingholme Low Carbon Power project'), recognising that the operation of the plant will require carbon dioxide transport and storage infrastructure to be developed by a third party to enable the captured emissions to be permanently stored.

1.3 The need for an EIA

1.3.1 Planning consent for the Proposed Development is to be sought via a planning application under the Town and Country Planning Act 1990 (as amended).

1.3.2 This application does not seek to amend the DCO for the CCGT.

1.3.3 As part of the planning application, an EIA and Environmental Statement (ES) will be required. EIA is a legally required process examining the likely significant effects of the construction, operation and decommissioning of a proposed development. The relevant regulations are the Town and Country Planning (EIA) Regulations 2017 (as amended) (hereafter referred to as the 'EIA Regulations').

1.3.4 There are two schedules of development included within the EIA Regulations. These comprise Schedule 1 development, for which EIA is mandatory, and Schedule 2 development, for which EIA is undertaken where a development is likely to have significant effects on the environment by virtue of its nature, size or location.

1.3.5 The Proposed Development is of a type which falls within Schedule 1 Paragraph 23 of the EIA Regulations ("*Installations for the capture of carbon dioxide streams for the purposes of geological storage (pursuant to Chapter 3 of Part 1 of the Energy Act 2008 and any law that implemented Directive 2009/31/EC) from installations referred to in this Schedule, or where the total yearly capture of carbon dioxide is 1.5 megatonnes or more*") for which EIA is mandatory.

1.3.6 As such, an EIA will be undertaken and an ES produced for the Proposed Development. Although not mandatory, this EIA Scoping Report has been prepared in order to inform the scope and content of the EIA for the Proposed Development. Submission of the EIA Scoping Report to North Lincolnshire Council (NLC), as the Local Planning Authority (LPA), commences the EIA process and represents the first formal notification that the Applicant will undertake an EIA in respect of the Proposed Development.

1.4 Objectives of EIA Scoping

1.4.1 EIA Scoping forms a key stage of the EIA process, providing a framework for identifying likely significant environmental effects arising as a result of the Proposed Development, and distinguishing the priority issues needing to be addressed within the ES. The Scoping Report also identifies those matters which do not need to be assessed in detail and provides key stakeholders with an early opportunity to comment on the proposed structure, methodology and content of the EIA.

1.4.2 The EIA will assess the likely significant effects which the Proposed Development could have on the environment through detailed baseline studies and technical assessment. It will propose mitigation measures and further monitoring, as required. This information will be used to produce an ES and will inform the design of the Proposed Development.

1.4.3 In accordance with Regulation 15(1) of the EIA Regulations, a person who is minded to make an EIA application may ask the relevant planning authority (i.e. NLC) to state in writing their opinion as to the scope and level of detail of the information to be provided in the ES (a "scoping opinion"). This EIA Scoping Report sets out the information which the Applicant is required to provide in accordance with Regulation 15(2)(a) of the EIA Regulations in support of this request, namely:

- a plan sufficient to identify the land;
- a brief description of the nature and purpose of the development, including its location and technical capacity;
- an explanation of the likely significant effects of the development on the environment; and
- such other information or representations as the person making the request may wish to provide or make.

1.4.4 Table 1-1 presents a list of information required in the Scoping Report and where the information is presented.

Table 1-1 Information included within this Scoping Report

Description of information Required	Section in Scoping Report where the information is presented
A request under paragraph (1) must include (a) in relation to an application for planning permission:	
(i) a plan sufficient to identify the land	Figure 2.1 in Appendix A1.
(ii) a brief description of the nature and purpose of the development, including its location and technical capacity;	Section 1.2, Section 2 and Section 3.
(iii) an explanation of the likely significant effects of the development on the environment; and	Sections 6 and 7.
(iv) such other information or representations as the person making the request may wish to provide or make.	Additional information is provided in Sections 1-7, including information on project alternatives at Section 4, planning policy at Section 5 and the proposed EIA process at Section 8.

1.5 Structure of the Scoping Report

1.5.1 The structure of this report is set out as follows:

- Section 2 – Description of the Existing Environment: provides a description of the Site and the surrounding areas, history of the Site, local topography and land-use, and any potentially significant environmental sensitivities/receptors within the vicinity of the Site;
- Section 3 – Description of the Proposed Development: outlines the key components of the Proposed Development, the infrastructure to be developed and how it will operate;
- Section 4 – Project Alternatives: summarises the alternatives that have been considered during definition of the Proposed Development;
- Section 5 – Planning Policy: identifies the key documents relating to national and local planning policy in the area, together with a summary of some of the principal planning policies or provisions as relevant to the need for the Proposed Development;

- Section 6 – Scoping Assessment of Environmental Issues: provides a discussion of how the Proposed Development may interact with the different aspects of the receiving environment, the potential for significant adverse effects on environmental receptors, and a description of the proposed assessment methodologies, guidance and best practice to be adopted for the EIA of the Proposed Development;
- Section 7 – Summary of Potentially Significant Environmental issues: provides a summary of the issues proposed to be scoped in and out of the EIA; and
- Section 8 – The EIA Process: provides an overview of the approach to be taken in the EIA and outline structure for the proposed ES.

1.6 Competence

1.6.1 Regulation 18(5) of the EIA Regulations requires that an ES is prepared by 'competent experts' and that the ES is accompanied by a statement outlining the relevant expertise or qualifications of such experts.

1.6.2 Competent experts have prepared this EIA Scoping Report and will undertake the EIA and prepare the ES. The Applicant has commissioned Ove Arup and Partners Limited (Arup) to complete the EIA and produce the ES. Arup holds the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark. This is an independently reviewed voluntary standard, requiring an organisation to commit to excellence in their EIA activities. All specialists have demonstrable expertise in their fields. Further information will be provided within the ES, as required.

2. Description of the existing environment

2.1 The Site

2.1.1 For the purposes of this EIA Scoping Report, the 'Site' is defined by the Proposed Development Scoping Boundary as shown on Figure 2.1 in Appendix A1. The Site includes land for the construction and operation of the proposed CCP, land to be used as a construction laydown area and land for the construction and operation of the spur pipeline. The Site is split into the Main Site and an area for the spur pipeline options.

2.1.2 The Site is located within the administrative boundary of NLC, within the Humber region of England.

2.2 The Main Site

2.2.1 The 'Main Site' refers to the area required for the proposed CCP and the construction laydown area, as shown on Figure 2.2 in Appendix A1. The proposed CCP will be located in close proximity to the already consented North Killingholme Power Project. The location of the power station platform is centred at Ordnance Survey National Grid Reference TA 157 198.

2.2.2 The Main Site is located approximately 5km north-west of Immingham Docks and on land to the west of C.RO Ports Killingholme Ltd (CPK) Terminal at North Killingholme, North Lincolnshire. To the west of the Main Site is the Hornsea substation and Killingholme Power Station. Areas of hardstanding exist to the north and south of the Main Site, which are predominantly used for port related purposes including the storage of vehicles.

2.2.3 The Main Site is predominantly brownfield land that is currently-largely covered by stockpiled inert crushed material being used to raise land on other parts of the port development. The western most part of the Main Site is in agricultural use.

2.2.4 Historically the part of the Main Site that is brownfield land was used as a gas production plant (reforming plant), utilising light petroleum distillate (naphtha) rather than coal/coke, between 1963 and 1974. The main gas works buildings were located across the centre of the Main Site with the main naphtha tanks located outside the Site boundary to the north and east. It is understood that the gas processing plant was demolished to ground level in the late 1980s (with the exception of an electricity substation building in the centre of the Main Site) and until 2005 was utilised by Transco for the storage of empty large diameter pipes. The area to the north of the Main Site has since been used for vehicle parking/storage.

2.2.5 The Main Site sits on Chalk bedrock, which is a principal aquifer, whilst the superficial deposits are a Secondary Undifferentiated aquifer. There are no groundwater protection zones or water extractions nearby, and the Main Site has a medium groundwater vulnerability. Shallow groundwater was found between 0.46 and 3.47m below the ground level, generally flowing south-eastwards. The Groundwater within the Chalk is confined by low-permeability Glacial Till, with groundwater levels expected between 0-5m AOD at the Main Site and possibly affected by tides, though groundwater within the Chalk was not encountered during previous investigations.

2.3 Spur pipeline

2.3.1 The Proposed Development will include a spur pipeline for the export of CO_2 to carbon dioxide transport and storage infrastructure developed by a third party. There are two options for the spur pipeline that are currently under consideration. For Option A, the spur pipeline would extend 3.7km south from the Main Site to connect with the Viking CCS Pipeline at the Immingham AGI. For Option B the spur pipeline would extend 2.7km southwest from the Main Site to connect with the Humber Carbon Capture Pipeline at the North Killingholme AGI. (see Figure 2.2). The final selection of spur pipeline will be subject to several factors, including technical feasibility and agreements with the respective infrastructure owners.

2.3.2 The alignment of the spur pipeline is currently under consideration, and the route, and land required, will be confirmed prior to submission of the planning application.

2.4 Local topography and surrounding land-use

2.4.1 The area surrounding the Site is predominantly characterised by industrial activities and transportation infrastructure, including roads, railways, and a port. Further to the north and west of the Site, beyond the neighbouring Killingholme Power Station and Hornsea substation, lies agricultural land. The spur pipeline alignment passes through industrial development and a series of open grassland fields, which are bound on each edge by industrial development.

2.4.2 The nearest residential settlements to the Main Site are the East Halton (approximately 1.2km to the west), North Killingholme (approximately 2km to the south-west) and East Halton Primary School (approximately 2km to the west). Hazeldene is a residential property on Marsh Lane which would be in proximity to Option A of the spur pipeline, depending on the final alignment.

2.4.3 The Main Site is accessible from Clough Lane. The nearest A road is the Humber Road/A160 which runs in an east-west direction, approximately 3km to the south of the Main Site. The A160 links to the A180, which in turn links with the M180 motorway (at Junction 5) and, thereby, with the wider motorway network. Access to the spur pipeline will be dependent on the finalised route.

2.5 Environmental context

2.5.1 Figure 2.3 illustrates the environmental constraints within 2km and 15km of the Proposed Development. The key environmental constraints and receptors include (distances shown are those from the nearest point of the Site):

- the land for the construction and operation of the Proposed Development is extends across Flood Zone 1, 2 and 3 and protected by an existing network of tidal flood defences to the east (Figure 2.4);
- the Humber Estuary Special Area of Conservation (SAC) is approximately 0.7km to the east;
- the Humber Estuary Special Protection Area (SPA) is approximately 0.4km to the north-east;
- the Humber Estuary Ramsar site is approximately 0.4km to the east;
- two Sites of Special Scientific Interest (SSSI) lie within 1km of the Site:
    - North Killingholme Haven Pits, approximately 0.4km to the east; and
    - Humber Estuary, approximately 0.7km to the east.
- six local wildlife sites (LWS) and one Lincolnshire Wildlife Trust Reserve (WTR) within 2km of the Site:
    - Chase Hill Wood LWS, including a small section with the Site (spur pipeline);
    - Burkinshaw's Covert LWS, bordering the Site (spur pipeline);

- Halton Marsh Clay Pits LWS, approximately 0.9km to the north;
- Swinster Lane Field LWS, approximately 1.6km to the north-west;
- Scrub Lane East Field LWS, approximately 1.4km to the north-west;
- East View Meadow LWS, approximately 1.9km to the north-west; and
- Killingholme Haven Pits WTR, approximately 0.4km to east.

- four Scheduled Monuments within 2km of the Site:
  - the Moated site and associated earthworks at Baysgarth Farm, approximately 650m to the west;
  - Manor Farm moated site, approximately 1.5 km to the north-west;
  - North Garth moated site and associated enclosures, approximately 375m to the south-west; and
  - the Moated site at Manor Farm, approximately 350m to the west.
- there are 16 listed buildings within 2km of the Site:
  - Grade II listed Brick and Tile Kiln Including Chimney, approximately 500m to the north (LB 1103675);
  - Grade I listed Church of Saint Denys, approximately 1.9km to the west (LB 1103701);
  - Grade II listed cross base south of Church of St Andrew, approximately 1.7km to the south (LB 1161628);
  - Grade II listed Killingholme High Lighthouse, approximately 550m to the east (LB 1103706);
  - Grade II listed Killingholme North Low Lighthouse, approximately 850m to the east (LB 1103707);
  - Grade I listed Church of St Peter, approximately 650m to the west (LB 1103729);
  - Grade II listed Churchfield Manor, approximately 1.6km to the south (LB 1161630);
  - Grade II listed Old Vicarage, approximately 600m south-west of the Site (LB 1214966);
  - Grade II listed Belmont Cottage, approximately 1.8km to the south (LB 1161631);
  - Grade II listed White Cottage, approximately 1.8km to the north-west (LB 1214719);
  - Grade II listed Stables and Granary approximately 500m south-west (LB 1214980);
  - Grade II listed Killingholme South Low Lighthouse, approximately 800m to the east (LB 1215093);
  - Grade II listed “The Nook” house, approximately 1.3km south-west (LB 1215113);
  - Grade I listed Church of St Andrew, approximately 1.7km to the south (LB 1310011);
  - Grade II* listed Manor Farmhouse approximately 550m west; (LB 1346854); and
  - Grade II listed Baptist Chapel, approximately 1.5km south-west (LB 1346858);
- a public right of way (PRoW) (number 77) runs in a north-westerly direction through the Main Site and another PRoW (number 100) runs along the southern boundary of the land for the construction and operation of the spur pipeline. It runs in a south-easterly direction to PRoW (number 50), forming a continuous pathway along the coast of the Humber Estuary;
- it is a brownfield site and may contain some localised contamination; and

- there are no Air Quality Management Areas (AQMAs) within 2 km of the Site.

3. Description of the Proposed Development

3.1 Overview

3.1.1 The Proposed Development will provide the post-combustion CCP for the Killingholme Low Carbon Power project. The CCGT will be fired on natural gas which will be obtained from a connection to the existing high-pressure gas transportation network within the Main Site. After combustion, the flue gases will be cooled in a direct contact cooler and then directed to the CCP for removal of the carbon dioxide (CO_2).

3.1.2 Following the processing in the CCP, the CO_2 will then be cleaned, compressed and exported, via the spur pipeline and the separately consented Viking CCS Pipeline or Humber Carbon Capture Pipeline, for sequestration in depleted gas fields or saline aquifers under the North Sea.

3.2 Components of the Proposed Development

3.2.1 The Proposed Development is likely to include the following components:

- one carbon capture unit, with a direct contact cooler to cool the flue gas, a flue gas blower, a CO_2 absorber with stack and solvent stripper/ regenerator and hybrid air and water cooling systems;
- CO_2 compression and purification facility;
- a chemical store and storage tanks;
- ducting to connect the carbon capture unit to the CCGT unit;
- utilities connections;
- surface water drainage system;
- wastewater treatment plant;
- administration and facilities building; and
- a spur pipeline connecting the CCP to the Viking CCS Pipeline or Humber Carbon Capture Pipeline.

3.2.2 The CCP unit will capture CO_2 from the flue gas in an amine-based solution. That CO_2 will then be stripped from the amine solution for subsequent compression, oxygen removal and dehydration to achieve the required specification for exporting the CO_2 off site for transport and storage (where it will leave the Applicant's control). Following export from the Main Site via the spur pipeline, the CO_2 will likely be converted to dense (liquid) phase at a liquefaction facility and injected into a CO_2 transport and storage network. The CO_2 liquefaction, transport and storage facilities will be provided by third parties and do not form part of the Proposed Development.

3.2.3 The electricity and steam required for the Proposed Development will be supplied from the CCGT. The CCP unit will be designed for a minimum 95% CO_2 capture during steady state operation.

3.3 Access

3.3.1 The Main Site will be accessed from Clough Lane, as the main access point during construction operation (including maintenance) and decommissioning. Additionally, access will also be available from a private road through the existing site. This road is not officially named but it is colloquially known as Chase Hill Wood Road.

3.4 Site preparation

3.4.1 It is assumed that preparation of the land required for the power station would be completed under the extant DCO, prior to commencement of construction of the CCP.

3.4.2 Therefore, site preparation works for the CCP would likely be limited to any clearance and levelling of the Main Site that is required outside of the DCO Order limits, earthworks and excavations for foundations. This will be confirmed as the design progresses and will be considered as appropriate within the ES technical chapters.

3.4.3 Parts of the Main Site were previously used as a gas processing works and there is potential for subsurface contamination. Ground investigations to date have highlighted evidence of relatively minor possible contamination in a number of locations, e.g. clinker/slag, fly ash, suspected asbestos containing material, potential waste catalyst cylinders, black hydrocarbon staining and minor free phase hydrocarbon product.

3.4.4 Prior to site preparation works, a detailed, development-specific ground investigation would be undertaken to assess the ground conditions and contamination risks. Based on the results of this investigation, should the need for any remediation be identified, remediation works would be undertaken across the Site as necessary.

3.5 Construction

Construction works

3.5.1 The main construction works associated with the Proposed Development include:

- site preparation works, as set out in Section 3.4 of this report;
- piling for new foundations;
- underground piping and cabling;
- installation of a number of tie ins to the CCGT unit;
- installation of steel work;
- assembly and installation of the CCP components – stripper, compressors, absorber etc.;
- installation of CO_2 pipeline; and
- commissioning.

Overall construction programme

3.5.2 Subject to planning permission, it is anticipated that construction will commence in 2027. Construction of the Proposed Development is anticipated to take approximately 33 months.

3.5.3 The ES will provide further details of the proposed construction activities and an indicative programme of each phase of works. It will provide an overview of the construction approach for the CCP, CCGT and the spur pipeline, including the anticipated timelines and sequencing of the works.

Construction working hours

3.5.4 It is assumed the normal construction site operating hours will be from 07:00 to 19:00 Monday to Friday (except bank holidays) and 07:00 to 13:00 on Saturday. There will be some activities outside of these hours and some 24 hours working may be needed e.g. for large concrete pours and major lifts which need to take place with fewer people on site.

Construction staff

3.5.5 During construction of the Proposed Development, the estimated peak workforce is approximately 500 staff.

Proposed laydown area

3.5.6 Laydown areas for construction will be located within the Main Site. These would allocate space for construction staff car parking, material and equipment laydown and storage, and temporary office space including canteen and welfare facilities.

3.5.7 The ES will provide further details of the proposed laydown areas.

Construction traffic movements

3.5.8 There will be a mix of construction vehicles accessing the Site including lorries for delivering and taking material away, excavators, concrete trucks and cranes. The ES will provide details of the equipment and vehicles that it is anticipated will be required.

3.5.9 Peak vehicle movements are anticipated to occur during the excavation and fill activities, with an estimated 40 HGV movements per day, operating five days per week for six months.

3.5.10 It is anticipated that the construction workers would likely travel to the Site in cars or vans. The use of public transport and measures to reduce the number of staff vehicles will be considered as part of the transport assessment. Temporary car parking will be available on the construction laydown area during construction.

Approach to construction environmental management

3.5.11 Contracts with companies involved in the construction works will incorporate environmental control, health and safety regulations and current guidance with the intention that construction activities are sustainable and that all contractors involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including: Control of Pollution Act 1974 (COPA), Environment Act 1995 and Hazardous Waste (England and Wales) Regulations 2005.

3.5.12 All construction works will adhere to the Construction (Design and Management) Regulations 2015 (CDM).

3.5.13 Before construction of the Proposed Development, a series of environmental management plans will be produced. These are expected to include:

- Construction Environmental Management Plan (CEMP), detailing the environmental controls, environmental protection measures and safety procedures that will be implemented during the construction stage. This will be in accordance with the principles that will be set out in an Outline Construction Environmental Management Plan that will be prepared to accompany the planning application;
- Site Waste Management Plan (SWMP), following the waste hierarchy and proximity principles and would seek to avoid waste where possible;
- Materials Management Plan (MMP), setting out measures for excavation and re-use of materials on the Site; and
- Construction Traffic Management Plan (CTMP), including measures to ensure the transport of construction materials and waste is managed as sustainably as possible.

3.6 Operation

3.6.1 Commissioning and start-up activities are expected to take approximately nine months. The Proposed Development will be designed to operate 24 hours a day, 7 days a week in line with the wider Killingholme Low Carbon Power project.

3.6.2 The Proposed Development will operate under an Environmental Permit from the Environment Agency (EA) which will stipulate the required environmental monitoring and controls to be employed, including emissions monitoring systems.

3.6.3 After one and a half to two years of operation, the first maintenance outages are expected to be carried out to check certain equipment performance parameters and form a maintenance assessment of when the next major maintenance outage should be. The assessment will consider the operating parameters and any changes to the process encountered over the operating period.

3.6.4 Planned outages for the Proposed Development are anticipated to typically take place every four to five years and are expected to be scheduled to align with the planned outages of the CCGT. Equipment utilised within the Proposed Development does not typically require additional planned outages beyond what the CCGT will require.

3.6.5 Surface water runoff will be managed in accordance with an approved drainage strategy and is anticipated to discharge via the existing discharge.

3.7 Decommissioning

3.7.1 The Proposed Development will have a design life of 25 years however is likely to be able to operate for longer subject to regular maintenance and technical and commercial considerations. This aligns with the wider Killingholme Low Carbon Power project. After 25 years of operation the Proposed Development would be evaluated to determine whether its life can be continued further, dependent on legislative requirements and the UK net zero and energy generation context at that time.

3.7.2 At the end of its operating life, the most likely scenario is that the Proposed Development would be shut down and all above ground structures removed from the Site. The Site would then be suitably remediated as required to facilitate re-use.

3.7.3 A Decommissioning Plan (including Decommissioning Environmental Management Plan (DEMP)) would be produced at the time of decommissioning and agreed with the EA as part of the Environmental Permitting and site surrender process. The DEMP would consider in detail all potential environmental risks on the Site and contain guidance on how risks can be removed or mitigated during the decommissioning and demolition.

3.7.4 Decommissioning of the Proposed Development is a similar process to construction but in reverse. The environmental impact of decommissioning cannot be fully assessed until the environmental conditions at the time of decommissioning are established. In any event, it is not anticipated that impacts from decommissioning would present any greater environmental risk than any assessed impacts from the construction phase. For the purposes of this EIA, it is proposed that decommissioning effects are not assessed at this stage. They will be assessed at the time of decommissioning in line with the applicable guidance and regulations at the time.

3.8 Embedded environmental mitigation

3.8.1 The purpose of the Proposed Development is to reduce CO_2 emissions from entering the atmosphere, thereby resulting in a beneficial effect on the environment when compared to a future scenario of the Killingholme Low Carbon Power project operating unabated.

3.8.2 The design of the Proposed Development will be required to meet relevant legislation, standards and guidance including:

- The Environmental Permitting Regulations 2016 (as amended);
- The Pollution Prevention and Control Act 1999;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- The Environmental Noise (England) Regulations 2006;
- The Hazardous Waste (England and Wales) Regulations 2005;
- The Environmental Protection Act 1990;
- The Industrial Emissions Directive (Directive 2010/75/EU);
- The Environment Agency guidance 'Post-combustion carbon dioxide capture: best available techniques (BAT)';
- BAT reference documents (BREFs) for Large Combustion Plants;
- UK and EU ambient air quality standards;
- Environment Agency Land Contamination Risk Management guidance (LCRM)[3]; and
- British Standard 10175: Investigation of potentially contaminated sites – code of practice.

3.8.3 The stack height for the carbon capture unit will be determined on the basis of air dispersion modelling results to ensure compliance with the relevant air quality standards or Environmental Assessment Levels (EALs).

[3] Environment Agency, Land contamination risk management (LCRM) guidance, https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm [Accessed February 2025]

4. Project alternatives

4.1.1 The EIA Regulations require that an ES should include an outline of the main alternatives that have been studied by the Applicant and an indication of the main reasons for its choices, taking into account the likely significant environmental impacts of each alternative. Under the EIA Regulations there is no requirement to assess alternatives, only a requirement to provide a review of those alternatives that have actually been considered.

4.1.2 As the Proposed Development is required to be in close proximity to the CCGT, alternative sites are not considered a viable option and therefore will not be assessed within the ES. The assessment of alternatives will focus on alternative design, size, scale, technologies, infrastructure locations, the construction strategy and best available technology (BAT). The ES will consider the 'do nothing' scenario, i.e. the missed opportunities or avoidance of likely significant environmental effects associated with the Proposed Development.

4.1.3 The following alternatives have been considered at this stage:

- No CCP (the 'do nothing' scenario). The CCGT would operate long term without the CCP unit. This option was disregarded as it does not align with current decarbonisation legislation, national policy and the Applicant's decarbonisation strategy.
- Killingholme Low Carbon Power project does not proceed. The power station is not constructed, and operation does not commence. This would not be in line with national and local economic policies and the Government's aims of meeting increasing electricity demand through clean energy. If it is not built, the project could not contribute towards a secure electricity supply or support the UK Government's ambition for Great Britain to achieve a clean power system.
- Alternative overall emissions reduction strategies for the CCGT, such as steam export and processing of rich off-gas.
- Alternative fuel source in the power plant, such as using hydrogen. Due to the associated running costs, this option is not considered feasible at this time.

5. Planning policy

5.1 Introduction

5.1.1 This chapter of the EIA Scoping Report provides an overview of the local development plan policy and refers to national planning, energy and climate change policy that may be material and relevant to the determination of a future planning application for the Proposed Development.

5.1.2 Development plan policy and any other material considerations, including national policy, which may be relevant to the Proposed Development, will be considered in detail within the Planning Statement that will form part of the planning application submitted to NLC.

5.2 Development plan policy

5.2.1 The North Lincolnshire Local Development Framework comprises a suite of Development Plan Documents (DPDs) which set out the local planning policy of the area. The DPDs considered to be of relevance to the Proposed Development include:

- The Core Strategy (adopted in June 2011); and
- Housing and Employment Land Allocations DPD (adopted in Mar 2016).

5.2.2 The North Lincolnshire Local Plan ('the Local Plan') was adopted in May 2003 but has been largely replaced by the Local Development Framework following the adoption of the Core Strategy and Housing and Employment Land Allocation DPD. However, a number of policies in the Local Plan have been 'saved' together with a number of supplementary planning guidance notes and development briefs. Therefore, these components of the Local Plan may still hold weight in the determination of the planning application.

5.2.3 NLC is currently preparing a new Local Plan. Once this new Local Plan is formally adopted, it will replace the current North Lincolnshire Local Development Framework (including DPDs) and North Lincolnshire Local Plan. The new Local Plan is currently under submission and examination stage. An explanatory meeting with NLC was held by the appointed Planning Inspector in January 2024. According to the agenda of the meeting, there is a delay in examination and therefore the adoption of the new Local Plan is yet to be confirmed. At present, the new Local Plan holds minimal weight in decision making.

5.2.4 The Core Strategy, identifies the Proposed Development as being located within the South Humber Bank (SHB) strategic allocation area. The Core Strategy identifies the SHB as an ideal site for a range of port-related industries or those requiring proximity to a deep-water frontage, giving employment opportunities for both North Lincolnshire and North East Lincolnshire residents. The continuing development of the SHB is the NLC's key economic driver.

5.2.5 The SHB is also regionally significant in environmental terms and is home to sensitive estuary and wetland habitats and some important bird species. The Humber Estuary is located to the north and north east of the Site and is covered by Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar designations. In order to preserve the environment, establishing of buffer areas around existing and proposed industry, adopting high quality landscaping to screen industrial development and provision of new habitats and local green networks between and around industrial areas are mitigations to help minimising any potential negative effects due to the industrial development in the area.

5.2.6 The policies within the Core Strategy and Housing and Employment Land Allocations DPD considered relevant to the Proposed Development are:

- Policy CS1: Spatial Strategy for North Lincolnshire;
- Policy CS2: Delivering more Sustainable Development;
- Policy CS3: Development Limits;
- Policy CS5: Delivering quality design in North Lincolnshire;
- Policy CS6: Historic Environment;
- Policy CS12: South Humber Bank Strategic Employment Site – A Broad Location;
- Policy CS16: North Lincolnshire's Landscape, Greenspace and Waterscape;
- Policy CS17: Biodiversity;
- Policy CS18: Sustainable Resource Use and Climate Change;
- Policy CS19: Flood Risk;
- Policy CS20: Sustainable Waste Management;
- Policy CS25: Promoting Sustainable Transport; and
- Policy SHBE-1: South Humber Bank Strategic Employment Site.

5.2.7 'Saved' policies in the current Local Plan considered relevant to the Proposed Development are:

- Policy IN6: Defined Industrial Buffers;
- Policy T1: Location of Development;
- Policy T18: Traffic Management;
- Policy LC1: Special Protection Areas, Special Areas of Conservation and Ramsar Sites;
- Policy LC2: Sites of Special Scientific Interest and National Nature Reserves;
- Policy LC5: Species Protection;
- Policy LC6: Habitat Creation;
- Policy LC7: Landscape Protection;
- Policy LC12: Protection of Trees, Woodland and Hedgerows;
- Policy LC15: Landscape Enhancement;
- Policy LC20: South Humber Bank – Landscape Initiative;
- Policy HE9: Archaeological Excavation;
- Policy DS1: General Requirements (Development Standards);
- Policy DS7: Contaminated Land;
- Policy DS9: Development of Land in the Vicinity of Established Hazardous Installations and Pipelines;
- Policy DS10: New Hazardous Installations and Pipelines;
- Policy DS11: Polluting Activities;
- Policy DS12: Light Pollution;
- Policy DS13: Groundwater Protection and Land Drainage;

- Policy DS14: Foul Sewage and Surface Water Drainage;
- Policy DS15: Water Resources; and
- Policy DS16: Flood Risk.

5.3 National Planning Policy Framework

5.3.1 The National Planning Policy Framework[4] ('the NPPF') was last amended in December 2024. The NPPF sets out the Government's national planning policies for England. Those policies are supported by the Planning Practice Guidance, available online. Paragraph 2 of the NPPF states that the NPPF is a material consideration in planning decisions, including the determination of planning applications.

5.3.2 The planning policies within the NPPF considered relevant to the Proposed Development are found within the following chapters of the NPPF:

- Chapter 2: Achieving Sustainable Development;
- Chapter 6: Building a Strong, Competitive Economy;
- Chapter 11: Making Effective Use of Land;
- Chapter 14: Meeting the Challenge of Climate Change, Flooding and Coastal Change;
- Chapter 15: Conserving and Enhancing the Natural Environment; and
- Chapter 16: Conserving and Enhancing the Historic Environment.

5.4 National Policy Statements

5.4.1 While National Policy Statements (NPSs) apply to Nationally Significant Infrastructure Projects (NSIPs) rather than planning applications under the Town and Country Planning Act 1990 (TCPA), they can have points of relevance in the determination of other planning consent applications. The NPSs for energy infrastructure were updated in November 2023 by the UK Government and adopted in January 2024.

5.4.2 The Overarching NPS for Energy (EN-1)[5] includes general policies and assessment principles for nationally significant energy infrastructure. Paragraph 1.2.1 states that in England and Wales the NPSs are likely to be material considerations for LPA in determining planning applications under the TCPA.

5.4.3 In response to the Government's commitment to achieve net zero in terms of greenhouse gas emissions by 2050 and the publication of the Energy White Paper ('the EWP') in December 2020[6], the Secretary of State for Department for Business, Energy & Industrial Strategy (BEIS) (now DESNZ) undertook a review of the suite of NPSs for energy infrastructure to ensure that these reflect the policies set out in the EWP, and that the Government maintains a planning policy framework that supports the legally binding target of achieving net zero greenhouse gas emissions by 2050.

[4] Ministry of Housing, Communities and Local Government (December 2024). National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf. Accessed January 2025

[5] Department for Energy Security and Net Zero, 2023. Overarching National Policy Statement for Energy (EN-1). November 2023

[6] Department for Business, Energy & Industrial (now Department for Energy Security and Net Zero) (2020). Energy white paper: Powering our net zero future

5.4.4 The NPSs relevant to the Proposed Development are:

- Overarching NPS for Energy (EN-1) (updated 2023);
- NPS for Natural Gas Electricity Generating Infrastructure (EN-2)[7]; and
- NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)[8]

5.4.5 Section 4.9 of EN-1 specifically outlines the need for new nationally significant CCS infrastructure, and the role that it could play in the UK electricity system. Paragraph 4.9.4 explains that "Carbon capture technologies offer the opportunity to decarbonise the electricity system whilst maintaining security of supply, providing reliable low carbon generation capacity.".

5.4.6 Section 3.5, Paragraph 3.5.4 of EN-1 discusses ambitions relating to carbon capture and storage and Section 1.7, Paragraph 1.6.4 of EN-2 outlines how "to support the urgent need for new low carbon infrastructure, natural gas fired generation which is carbon capture ready is considered to be Critical National Priority (CNP) infrastructure".

5.5 National energy and climate change policy

5.5.1 According to the UK's independent advisor on climate change, the Climate Change Committee (CCC), demand for electricity is forecast to increase by 50% by 2035[1]. To meet this increasing demand and achieve the UK's decarbonisation goals, the CCC has also advised that a range of different technologies with both renewables and low carbon, flexible generation, such as gas with CCS, will be needed to maintain a secure and stable supply of electricity[2]. In its report in March 2023[9], the CCC recommended that the Government give equal focus to low-carbon flexible solutions as to the full delivery of its existing renewables and nuclear commitments.

5.5.2 The proposed Killingholme Low Carbon Power project would be able to flexibly and reliably generate low carbon power to meet the growing need for electricity, whenever it is required. Power stations such as this will play a crucial role in the future energy system, as they can help ensure that energy is available at times when it is needed most, and when power from renewable sources can't meet demand.

5.5.3 UK Government energy and climate change policy is considered to be both material and relevant to the Proposed Development. Development plan policy and national planning, and energy and climate change policy material relevant to the Proposed Development will be considered in detail within the Planning Statement that will form part of the planning application.

[7] Department for Energy Security & Net Zero (2024). National Policy Statement for Natural Gas Electricity Generating Infrastructure (EN-2).

[8] Department for Energy Security & Net Zero (2024). Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4).

[9] Delivering a reliable decarbonised power system, Available at https://www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system/ [Accessed February 2025]

6. Scoping assessment of environmental issues

6.1 Overview

6.1.1 The following topics are considered in this section:

- Air quality;
- Greenhouse gas emissions;
- Cultural heritage;
- Ecology and nature conservation;
- Geology, hydrogeology and land contamination;
- Landscape and visual amenity;
- Noise and vibration;
- Socio-economics;
- Traffic and transport;
- Water resources and flood risk;
- Major accidents and disasters;
- Climate change resilience;
- Material and waste;
- Human health;
- Aviation; and
- Cumulative and combined effects.

6.1.2 Each section considers:

- identification of key legislation, policy and guidance where relevant;
- baseline conditions (existing baseline and future baseline);
- potential impacts from the construction, operation and decommissioning of the Proposed Development;
- any identified design and control measures; and
- the proposed scope of assessment, using a proportionate approach by focusing on assessment of potentially significant effects.

6.2 Air quality

Relevant legislation, policy and guidance

Legislation

6.2.1 The Environment Bill became an Act (law) in November 2021. The Environment Act 2021[10] amends the Environment Act 1995[11], transposing the requirement for local authorities to review air quality within their district or borough, in order to determine where pollutant levels identified in the National Air Quality Standards may be exceeded.

6.2.2 The Air Quality Standards Regulations 2010 (amended in 2020)[12] defines the policy framework for 12 air pollutants known to have harmful effects on human health or the natural environment. The Secretary of State for the Environment, Food and Rural Affairs has the duty of ensuring compliance with the air quality limit values (pollutant concentrations not to be exceeded by a certain date).

6.2.3 Some pollutants have standards expressed as annual average concentrations due to the chronic way in which they affect health or the natural environment, i.e. effects occur after a prolonged period of exposure to elevated concentrations. Other pollutants have standards expressed as 24-hour, 1-hour or 15-minute average concentrations due to the acute way in which they affect health or the natural environment, i.e. after a relatively short period of exposure. Some pollutants have standards expressed in terms of both long and short-term concentrations. Air quality limit values and objectives are quality standards for clean air. Table 6-1 sets out the national air quality standards and the standards relevant to this assessment.

Table 6-1: Air quality standards

Pollutant	Averaging Period	Limit value / standard
Nitrogen dioxide (NO_2)	Annual mean	40µg/m^3
	1-hour mean	200µg/m^3 not to be exceeded more than 18 times a year (99.79th percentile)
Particulate matter (PM_{10})	Annual mean	40µg/m^3
	24-hour mean	50µg/m^3 not to be exceeded more than 35 times a year (90.41st percentile)
Fine particulate matter ($PM_{2.5}$)	Annual mean	20µg/m^3
		12µg/m^3 to be achieved by 2028 [1][2]
		10µg/m^3 to be achieved by 2040 [1]

Note:

[1] The Environmental Targets (Fine Particular Matter) (England) Regulations 2023 updated in 2023, to state that the "the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10 µg/m^3 ("the target level")" by 31st December 2040[13]. The Environmental Improvement Plan (2023) sets an interim target of 12µg/m^3, to be achieved by 31 January 2028.

[2] For the purpose of this assessment, a limit value of 12µg/m^3 for $PM_{2.5}$ has been used.

[10] Environment Act 2021. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed June 2024]

[11] Environment Act 1995, Chapter 25, Part IV Air Quality

[12] The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020

[13] Defra, 2023. Chief Planners Newsletter. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1140170/03_Chief_Planners_Newsletter_March_2023.pdf [Accessed June 2024]

6.2.4 Statutory and nationally agreed environmental standards exist only for a limited number of substances emitted to air. Therefore, the EA has derived and published benchmark values for several other substances commonly emitted by industry. These benchmark values, representing levels in ambient air with no appreciable risk or minimal risk to human health, are known as EALs. Although EALs do not carry any statutory basis, they are a benchmark for assessing harm.

6.2.5 The EALs are listed in the EA guidance[14] 'Air emissions risk assessment for your environmental permit' which includes an additional EAL for hourly concentrations of carbon monoxide (CO) and annual average and hourly EALs for NH_3, which can result from the operational CCGT plant if Selective Catalytic Reduction is required to meet the required NOx emission limits or to limit solvent degradation within the CCP.

6.2.6 As well as the combustion emissions from the operational CCGT plant, emissions of amines and their breakdown products could occur from the CCP absorber stack and amine breakdown products could be formed in the atmosphere following release. Due to the relatively new nature of CCP technology, there are limited EALs available for such pollutant species however, the EA are in the process of deriving up to eight more EALs for amines that are commonly used for CCP. These have been circulated in draft to the Carbon Capture and Storage Agency for comment and a public consultation is expected early in 2025.

6.2.7 At present there is only one published EAL available, and that is for monoethanolamine (MEA). This amine has not been confirmed as the CCP solvent to be used in the operational Proposed Development, however consideration will be given to whether this could be used as an appropriate surrogate species taking into account discussions with potential providers and the amine EAL review activity referenced above. In the absence of further information at this time, this EAL has been referenced.

6.2.8 It is also known that some amines can potentially degrade (thermally and chemically) and form nitrosamines and nitramines (collectively referred to as N-amines) both during the carbon capture process itself and also in the environment following release. Therefore, the impacts of both directly released N-amines and the N-amines produced through atmospheric degradation of released amines will also be considered in the assessment.

6.2.9 The only N-amine the EA has derived an EAL for is N-nitrosodimethylamine (NDMA). It is understood that NDMA has been used for the EAL, as this is considered to be one of the most toxic nitrosamines and therefore results in a conservative EAL. The EA have proposed that this EAL should be used to compare the total N-amine concentration from CCP emissions, although it should be recognised that some of the degradation products will be less harmful, and therefore this is a very conservative assumption.

6.2.10 Other degradation products, such as ammonia, formaldehyde, aldehydes, amides and ketones may also result from the CCP absorber stack, depending on the amine solvent used, and appropriate EALs, where available will be applied. The EALs applicable for this assessment for the protection of human health are shown in Table 6-2.

Table 6-2: Environmental Assessment Levels for Amines and degradation species

Pollutant	Averaging Period	EAL
MEA	24-hour mean	100µg/m^3
	1-hour mean	400µg/m^3

[14] EA, 2016. Air emissions risk assessment for your environmental permit. Available at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit [Accessed July 2024]

Pollutant	Averaging Period	EAL
Ammonia	1-hour mean	2,500µg/m^3
	Annual mean	180µg/m^3
Formaldehyde	30-minute mean	100µg/m^3
	Annual mean	5µg/m^3
Aldehydes	1-hour mean	9,200µg/m^3
	Annual mean	370µg/m^3
Amides[1]	Annual mean	0.05µg/m^3
Ketones[2]	1-hour mean	89,500
	Annual mean	6,000
NDMA	Annual mean	0.2ng/m^3

[1] EAL for Acrylamide used, as lowest EAL of any amide listed in the EA Risk Assessment Guidance, therefore used for a conservative assessment.

[2] EAL for Methyl ethyl ketone used, as the lowest EAL of any ketone listed in the EA Risk Assessment Guidance, therefore used for a conservative assessment.

6.2.11 Dust is the generic term used in the British Standard document BS 6069 (Part Two)[15] to describe particulate matter in the size range 1–75µm in diameter. Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Under provisions in the Environmental Protection Act 1990[16], dust nuisance is defined as a statutory nuisance.

Policy and guidance

6.2.12 The Industrial Emissions Directive (IED) (2010/75/EU)[33] was transposed into UK law through the Pollution Prevention and Control (PPC) system defined in The Environmental Permitting (England and Wales) Regulations 2016[17] (EPR). It is the regulatory regime being followed by the EA. The UK government has introduced secondary legislation under the EU Withdrawal Act 2018[18], and further legislation in the devolved administrations where required, to ensure the domestic legislation that implements the IED can continue to operate. The IED regulates pollutant emissions of NO_x, dust, SO_2 and CO to the air from combustion of fuel in plants with an aggregated rated thermal input equal or greater than 50MWth. These are classified as Part A(1)(a) processes in the EPR and as the Proposed Development is greater than 50MWth will therefore require a Part A process permit consistent with IED requirements.

6.2.13 Defra's Clean Air Strategy[19] was published in 2019 and sets targets for improving air quality across the country. It includes actions for reducing emissions from various sources, such as transport, domestic activities, farming and industry. There is also a long-term target for reducing population exposure to $PM_{2.5}$ concentrations to meet the World Health Organisation's (WHO) target of 10µg/m^3 as an annual mean.

6.2.14 The following guidance and information have also been used to inform this air quality EIA scoping assessment:

[15] BS 6069-2:1994, ISO 4225:1994 Characterisation of air quality

[16] Environmental Protection Act 1990, Chapter 43, Part III: Statutory Nuisance and Clean Air

[17] The Environmental Permitting (England and Wales) Regulation 2016, SI 2016/1154

[18] European Union (Withdrawal) Act 2018. Available at: https://www.legislation.gov.uk/ukpga/2018/16/contents [Accessed July 2024]

[19] Defra (2019) Clean Air Strategy 2019.

- Defra Local Air Quality Management (LAQM) Technical Guidance (TG.22) document[20];
- Institute of Air Quality Management (IAQM) Construction Dust Guidance[21];
- Environmental Protection UK (EPUK) / IAQM Land-Use Planning Guidance for Air Quality[22];
- Air Quality Modelling and Assessment Unit (AQMAU) Recommendations for the Assessment and Regulation of Impacts to Air Quality from Amine-Based Post-Combustion Carbon Capture Plants Guidance[23];
- AQMAU Guidance on Deposition Modelling for Amines[24];
- IAQM Assessment of Air Quality Impacts on Designated Conservation Sites Guidance[25];
- EA guidance on Best Available Techniques (BAT) for carbon dioxide (CO_2) capture[26]; and
- EA Air Emissions Risk Assessment guidance[27].

Baseline conditions

Existing baseline

6.2.15 Baseline ambient air quality refers to the concentrations of relevant substances that are already present in the atmosphere which are present from various sources such as industrial processes, commercial and domestic activities, agriculture, traffic and natural sources.

6.2.16 A 2km study area is considered appropriate for this assessment appropriate to understand local sources that may affect air quality in the area. This review identifies the main sources of air pollution within 2km of the Site, the local air quality monitoring data for recent years and local background pollutant concentrations. It should be noted that the 2km buffer crosses into the neighbouring local authority (North East Lincolnshire).

6.2.17 The following data sources have been used to gather information regarding the existing conditions:

[20] Defra, 2022. Local Air Quality Management Technical Guidance TG(22)

[21] IAQM (2024), Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2) Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

[22] EPUK/IAQM (2017), Land-Use Planning & Development Control: Planning for Air Quality. Available at: https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

[23] AQMAU (2021) Recommendations for the Assessment and Regulation of Impacts to Air Quality from Amine-Based Post-Combustion Carbon Capture Plants Guidance. Available at: https://ukccsrc.ac.uk/wp-content/uploads/2021/11/AQMAU-C2025-RP01.pdf [Accessed September 2024]

[24] AQMAU (2023) Proposed assessment method to include amines and degradation products in nutrient nitrogen deposition estimations at ecological sites. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010103/EN010103-002888-Appendix%201%20-%20Main%20Letter%20-%20AQMAU%20Assessment%20Methodology.pdf [Accessed September 2024]

[25] IAQM (2019) A guide to the assessment of air quality impacts on designated nature conservation sites. Available at: https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2019.pdf [Accessed September 2024]

[26] EA (2021) Post-combustion carbon dioxide capture: emerging techniques. Available at: https://www.gov.uk/guidance/post-combustion-carbon-dioxide-capture-best-available-techniques-bat [Accessed June 2024]

[27] EA (2016) Air emissions risk assessment for your environmental permit. Available at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit [Accessed June 2024]

- EA Website[28];
- Defra websites[29,30];
- North East Lincolnshire Council (NELC) Air Quality Annual Status Report (ASR) 2023[31]; and
- North Lincolnshire Council (NLC) Air Quality ASR 2023[32].

Local air quality management

6.2.18 If pollutant levels in an area are likely to exceed statutory objectives, then local authorities must declare an AQMA and draft an Air Quality Action Plan (AQAP) to achieve the statutory objectives. The Department for Environment, Food and Rural Affairs (Defra) has developed technical guidance to local authorities to assist in undertaking this.

6.2.19 A review of the Defra website[29] shows there is one AQMA within the administrative boundary of NLC. However, it is situated approximately 22km south-west of the Site in Scunthorpe. Hence, it is deemed unlikely that the Proposed Development would impact this AQMA.

Sources of air pollution

6.2.20 Industrial air pollution sources are regulated through a system of operating permits or authorisations, requiring stringent emission limits to be met. This ensures that any releases to the environment are minimised or rendered harmless. Regulated (or prescribed) industrial processes are classified as Part A (1), A (2), Part B or Medium Combustion Plant (MCP) processes and are regulated through the Industrial Emissions Directive[33]. The larger more polluting processes are regulated by the EA, and the smaller less polluting ones by the local authorities. Local authorities focus on regulation for emissions to air, whereas the EA regulates emissions to air, water and land.

6.2.21 There are seven Part A (1) processes with releases to air within 2km of the Site, according to the EA website[28]. These are outlined in Table 6-3.

Table 6-3: Industrial facilities with releases to air within 2km of the Proposed Development

Facility	Activity	Approximate distance from the Site (km)
VPI Immingham Energy Park A Limited	Combustion; Any Fuel => 50MW	Within the Site boundary
C.Gen Killingholme Limited*	Combustion; Any Fuel => 50MW	0.1
VPI Immingham B Limited	Combustion; Any Fuel => 50MW	0.14

[28] Environment Agency, Environmental Permitting Regulations – Installations. Available at: https://environment.data.gov.uk/public-register/view/search-industrial-installations [Accessed June 2024]

[29] Defra, 2022. Air Quality Management Areas. Available at: https://uk-air.defra.gov.uk/aqma/

[30] Defra, Background Pollutant Mapping, Available at: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

[31] North East Lincolnshire Council, 2023 Air Quality Annual Status Report (ASR) June 2023, Available at: https://www.nelincs.gov.uk/assets/uploads/2024/09/North-East-Lincolnshire-ASR-2023.pdf

[32] North Lincolnshire Council, 2023 Air Quality Annual Status Report (ASR) June 2023, Available at: https://www.northlincs.gov.uk/wp-content/uploads/2023/08/Air-Quality-Annual-Status-Report-2023-FINAL-a.pdf

[33] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).

Facility	Activity	Approximate distance from the Site (km)
Uniper UK Limited	Combustion; Any Fuel => 50MW	0.18
Prax Lindsey Oil Refinery Limited	Combustion; Any Fuel => 50MW	0.19
VPI Immingham LLP	Combustion; Any Fuel => 50MW	0.3
Phillips 66 Limited	Combustion; Any Fuel => 50MW	0.6
*Now owned by the Applicant.		

6.2.22 With the exception of C. Gen Killingholme Limited (now owned by the Applicant), it is considered that any contributions from releases to air from any of these processes would be included in the Defra background concentrations.

6.2.23 The C. Gen Killinghome Limited development (now owned by the Applicant) is the CCGT associated with this project and therefore will be assessed as part of this EIA for the proposed carbon capture plant; the emissions from the CCGT will be passed through this CCP.

Local monitoring

6.2.24 According to the 2023 Air Quality ASR[32] prepared by NLC, the main pollutant of concern within the local authority area is PM_{10}, largely due to the local port. The PM_{10} 24-hour mean objective was exceeded at one location within the Scunthorpe AQMA boundary in 2022. The annual mean AQS for PM_{10} was not exceeded at any monitoring location across NLC. In addition, no exceedances were recorded for SO_2, NO_2 and $PM_{2.5}$ across North Lincolnshire.

6.2.25 Automatic or continuous monitoring involves drawing air through an analyser continuously to obtain near real-time pollutant concentration data. A review of the 2023 NLC ASR[32] and 2023 NELC ASR and 2023 NELC ASRhows that there is one automatic monitoring site within 2km of the Site. Details of this monitoring location are presented in Table 6-4, with monitoring results for NO_2 and PM_{10} from 2018 to 2022 presented in Table 6-5 and Table 6-6.

Table 6-4: Details of automatic monitoring sites within 2km of the Site

Local Authority	Site ID	Site Name	Site Type	OS Grid Ref (m)	
				X	Y
NLC	CM6	Killingholme School	Other	514880	416133

Table 6-5: Automatic monitoring results for annual mean NO_2 from 2018 to 2022

Site ID	Site Name	Annual mean NO_2 concentration (µg/m^3)				
		2018	2019	2020	2021	2022
CM6	Killingholme School	18.0	15.0	13.0	14.0	14.0

Table 6-6: Automatic monitoring results for annual mean PM_{10} from 2018 to 2022

Site ID	Site Name	Annual mean PM_{10} concentration (µg/m^3)				
		2018	2019	2020	2021	2022
CM6	Killingholme School	19.0	19.0	15.0	11.0	18.0

6.2.26 There are 24 diffusion tubes within the NLC authority area, with 30 located within the NELC authority area. A review of the 2023 NLC ASR[32] and 2023 NELC ASR shows that there are three diffusion tubes within 2km of the Site. Details of these monitoring sites are presented in Table 6-7, with their monitoring results from 2018 to 2022 presented in Table 6-8.

Table 6-7: Details of diffusion tube monitoring sites within 2km of the Site

Local Authority	Site ID	Site Name	Site Type	OS Grid Ref (m)	
				X	Y
NLC	22	East Halton Road Killingholme	Roadside	514141	417483
NLC	16	Humber Road	Roadside	515279	416085
NLC	15	Humber Road Chip Shop	Urban Background	515452	416107
NLC	14	School Road Killingholme	Roadside	514782	415971
NLC	13	Ulceby Road Killingholme	Roadside	514573	415901

Table 6-8: Diffusion tube monitoring results for annual mean NO_2 from 2018 to 2022

Site ID	Site Name	Annual mean NO_2 concentration (µg/m^3)				
		2018	2019	2020	2021	2022
22	East Halton Road Killingholme	21.0	21.0	22.0	25.6	24.4
16	Humber Road	26.0	25.0	23.4	22.0	23.8
15	Humber Road Chip Shop	20.0	18.0	16.6	17.9	16.7
14	School Road Killingholme	28.0	29.0	26.4	28.4	27.1
13	Ulceby Road Killingholme	17.0	17.0	18.2	17.4	16.8

Background concentrations

6.2.27 The Defra website includes estimated background pollutant concentrations for oxides of nitrogen (NO_x), NO_2, PM_{10} and $PM_{2.5}$ for each 1 km by 1 km OS grid square. Table 6-9 presents the Defra background pollutant concentrations for the grid squares the Site sits in. All estimated background pollutant concentrations outlined in Table 6-9 are well below their respective air quality standards (Table 6-1).

Table 6-9: Defra background pollutant concentrations for 2023

Description	X, Y	Average Annual Mean Concentrations (µg/m^3)			
		NO_2	NO_x	PM_{10}	$PM_{2.5}$
Site	515500, 419500	11.4	15.3	15.4	8.3
	514500, 418500	10.1	13.4	16.7	8.2
	515500, 418500	10.8	14.5	15.9	8.4
	516500, 418500	11.6	15.6	15.1	8.2
	517500, 418500	12.8	17.5	14.1	8.0
	514500, 417500	9.6	12.7	14.2	7.9
	515500, 417500	10.4	13.9	15.6	8.4

Description	X, Y	Average Annual Mean Concentrations (µg/m^3)			
		NO_2	NO_x	PM_{10}	$PM_{2.5}$
	516500, 417500	11.1	14.8	15.2	8.3
	517500, 417500	12.1	16.4	14.3	8.1
	516500, 416500	10.7	14.2	14.6	8.5
	517500, 416500	11.7	15.8	13.7	8.0

Future baseline

6.2.28 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the North Killingholme Power Project, this will be considered as necessary.

6.2.29 Concentrations of NO_x, NO_2, PM_{10} and $PM_{2.5}$ are likely to continue to decrease in future years as a result of vehicle turnover and fleet renewal, improvements in technology and the introduction of more stringent regulations and policies.

6.2.30 It is likely that over time, with greater regulation, emissions to air will decrease; however, for the purposes of this EIA, it is assumed that there will be no material changes.

Receptors

6.2.31 Sensitive receptors are defined as those residential properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction and operation of the Proposed Development.

6.2.32 There are sensitive human receptors within a 2km vicinity of the Site. These include:

- Residential receptors in East Halton, approximately 1.2km to the west of the Site;
- Residential receptors in North Killingholme, approximately 2km to the south-west of the Site;
- Residential receptors in Immingham, approximately 2km south of the Site;
- Killingholme Primary School, approximately 1.2km south of the Site;
- Pilgrim Academy Primary School, approximately 2km south-east of the Site;
- Westfield Farm, approximately 630m to the south-west of the Site;
- Residential receptors on Marsh Lane known as Hazeldene; and
- East Halton Primary School, approximately 2km to the west of the Site.

6.2.33 Ecological receptors have been reviewed within the vicinity of the Proposed Development in accordance with EA guidance[34]:

- Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar Sites and Sites of Special Scientific Interest (SSSI) within 10km; and

[34] Environment Agency (2019) Specified generators: dispersion modelling assessment. Available at: https://www.gov.uk/guidance/specified-generators-dispersion-modelling-assessment

- Local Nature Sites (including ancient woodlands, Local Wildlife Sites (LWS), National Nature Reserves (NNR), Local Nature Reserves (LNR) and Lincolnshire Wildlife Trust Reserve (WTR) within 2km.

6.2.34 This review has identified that within 2km of the Site, there are 10 ecological receptors that could be impacted by changes in air quality. Receptors beyond the 2km baseline study area will be identified during the assessment stage as required. Details can be found in Section 6.5. Details can be found in Table 6-10 below:

Table 6-10: Ecological receptors within 2km of the Proposed Development

Receptor	Designation	Approximate distance and direction from the Proposed Development
Chase Hill Wood	LWS	Small section within the Site (spur pipeline)
Killingholme Haven Pits	WTR	0.4km, east
Burkinshaw's Covert	LWS	Bordering the Site (spur pipeline)
Halton Marsh Clay Pits	LWS	0.9km, north
Swinster Lane Field	LWS	1.6km, north west
Scrub Land East Field	LWS	1.4km, north-west
East View Meadow	LWS	1.9km, north-west
Humber Estuary	Ramsar	0.4km, east
Humber Estuary	SPA, SSSI, SAC	0.4km east
North Killingholme Haven Pits	SSSI	0.4km, east

6.2.35 More details on these sites can be found in Section 6.5 (Ecology and Nature Conservation).

6.2.36 The existing air quality concentrations at designated habitat sites in the vicinity of the Site, and the existing acid and nutrient nitrogen deposition rates at those sites, will be obtained from the UK Air Pollution Information System (APIS), supplemented by data from UK-AIR.

Potential impacts

Construction

6.2.37 The construction of the Proposed Development may impact on air quality in the local area due to potential fugitive emissions of dust from construction works, and emissions from plant equipment. However, with the implementation of best practice control measures any impacts on dust soiling, human health and biodiversity will be reduced to negligible.

6.2.38 In addition, the screening criteria as per the IAQM guidance[21] for a construction dust assessment is 250m from the Site boundary for human health receptors and 50m for ecological receptors. There are no highly sensitive human or ecological receptors within the assessment areas, however, there are two low sensitivity ecological receptors located immediately adjacent to and within the Site boundary. Therefore, following the IAQM guidance[21] screening criteria, a construction dust assessment has been scoped into the ES.

6.2.39 Air quality impacts from the Proposed Development could arise due to traffic changes on the local road network during the construction phase.

6.2.40 The criteria contained within the EPUK/IAQM guidance document has been used to determine whether a detailed assessment will be required for construction traffic. As the Site is not located

within an AQMA, the following criteria have been used:

- A change of Light Duty Vehicle (LDV) flows of more than 500 Annual Average Daily Traffic (AADT) movements; or
- A change of Heavy Duty Vehicle (HDV) flows of more than 100 AADT movements.

6.2.41 It is estimated that peak traffic movements will include an estimated 40 HGV movements per day, operating 5 days per week for a 6-month period. This is equivalent to 31 HGV AADT movements. The number of LDV movements is not yet known for the construction period but based on the staff numbers and estimated waste values, the 500 AADT criteria is not expected to be exceeded.

6.2.42 As the estimated peak traffic volume do not exceed the HDV criteria outlined above, detailed modelling will therefore be scoped out of the assessment.

Operation

6.2.43 The primary pollutants of concern with regards to gas-fired power stations seeking to include carbon capture and storage are NO_x, carbon monoxide (CO), ammonia, amines and amine-degradation products. In addition, following release to atmosphere the amines can react with the NO_x in ambient air in the presence of sunlight and ozone to form the degradation products called nitramines and nitrosamines (collectively referred to as N-amines). Detailed dispersion modelling will be undertaken during the ES stage to identify any potential impacts of NO_x or amines.

6.2.44 It is estimated that during peak operations, there will be approximately 30 HGV/LGV movements (15 return journeys (deliveries)) per day. The Proposed Development is unlikely to lead to a significant increase in operational traffic and this has therefore been scoped out of the assessment.

Decommissioning

6.2.45 The potential impacts on air quality resulting from the decommissioning of the Proposed Development, will not be separately evaluated in this EIA air quality impact assessment. A further assessment of any decommissioning-related impacts on air quality will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.2.46 Construction of the Proposed Development will be undertaken in-line with a CEMP, which will include best practice guidance mitigation measures for the control of dust and the avoidance of likely significant effects.

6.2.47 The Proposed Development will be designed and operated to comply with the relevant provisions of the IED[33] as implemented through the EPR.

6.2.48 The Proposed Development will operate in accordance with an environmental permit issued by the EA. The existing Environmental Permit for the Site will be varied to include the operation of the Proposed Development. As part of this permitting process, a BAT assessment will be conducted on the proposed carbon capture technology.

6.2.49 The EA set Emission Limit Values (ELVs) within the environmental permit for pollutant releases, based on the IED ELVs, the Large Combustion Plant BAT Reference Conclusions and

other relevant guidance, or levels that can be demonstrated to not result in potential for human health or ecological impacts. For carbon capture, the EA guidance[26] will be considered within the Proposed Development design and during the permitting process.

Scope of Assessment

6.2.50 The assessment will consider potential impacts on identified human health and ecologically sensitive receptors as a result of:

- Construction dust impacts from any construction, demolition and trackout activities; and
- Emissions to air from the operational phase of the Proposed Development, considering the normal and abnormal (bypass) operation of the CCP and including appraisal of effects of releases of amine and releases and formation of amine degradation products.

6.2.51 A construction dust assessment will be undertaken to identify appropriate mitigation measures to ensure no significant effects occur.

6.2.52 Potential impacts from construction traffic have been screened out, in line with EPUK/IAQM guidance. Operational traffic will be screened once information is available although based on preliminary information it is assumed that this will be scoped out.

6.2.53 Potential impacts related to operational plant will be considered and assessed in-line with the EA's Air Emissions Risk Assessment[27], including the assessment of significance, as well as the protocol for assessment of CCP emissions developed by the EA.

6.2.54 The assessment will consider the potential impact of the NO_x, CO, ammonia, amines and their associated degradation products, including N-amines, using the latest version of the dispersion modelling software ADMS 6.

6.2.55 The potential impact of NO_x, CO, ammonia and amine emissions at sensitive ecological sites, including the consideration of nitrogen deposition and acid deposition, will also be assessed.

Proposed scope of assessment

6.2.56 Following the outcome of the detailed assessment of NO_x and amine emissions, there could also be further mitigation measures required. This will be confirmed at the ES stage.

6.2.57 Table 6-11 provides an overview of the proposed scope of the air quality assessment to be undertaken in the EIA.

Table 6-11: Scoping summary for the air quality assessment

Topic aspect (potential impact)	Construction	Operation	Decommissioning
Construction dust	Scoped in	N/A	Scoped out
Vehicle movements	Scoped out	Scoped out	Scoped out
Operational phase plant emissions	N/A	Scoped in	N/A

6.3 Greenhouse gas emissions

Introduction

6.3.1 Schedule 4, Article 5(f) of the 2017 EIA Regulations requires *"a description of the likely significant effects of the development on the environment resulting from, … (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;…".* To meet this requirement three individual assessments are typically undertaken:

- **Greenhouse Gas (GHG) emissions assessment** – i.e. the nature and magnitude of whole life carbon emissions arising from construction, operation and decommissioning of the proposed development.
- **Climate Change Resilience (CCR) assessment** – i.e. identification of the projected climate changes that will occur in the future, and the vulnerability of the proposed development to those identified changes in climate.
- **In-combination Climate Change Impact (ICCI) assessment** – i.e. where projected changes in climate will combine with environmental impacts identified by other topic areas to result in significant effects on environmental receptors.

6.3.2 This chapter outlines the scope and methodology for the assessment of the likely significant effects arising from the Proposed Development in respect of GHG emissions. The CCR and ICCI assessments can be found in Section 6.13.

6.3.3 This chapter sets out relevant legislation, policy, standards and guidance, the study area, baseline conditions, and a high-level assessment of potential impacts associated with construction, operation, and decommissioning of the Proposed Development. It also identifies mitigation measures to reduce GHG emissions through the lifecycle of the Proposed Development.

Relevant legislation, policy and guidance

6.3.4 The methodology for the GHG assessment has been developed in accordance with relevant legislation, policy, and industry guidance, as shown in Table 6-12.

Table 6-12: Legislation

Document	Relevance to assessment
Legislation	
The Kyoto Protocol[35]	The Kyoto Protocol is an international treaty which extends the UNFCCC and commits state parties to reduce GHG emissions.
The Paris Agreement[36]	The Paris Agreement is a legally binding treaty that pledges to limit the increase in global average temperature to well below 2 degrees Celsius (°C), and to aim for 1.5°C, above pre-industrial levels.

[35] United Nations Framework Convention on Climate Change (1997) *The Kyoto Protocol.* Available at: Kyoto Protocol to the United Nations Framework Convention on Climate Change. | UNFCCC (Accessed September 2024)

[36] United Nations Framework Convention on Climate Change (2016) *The Paris Agreement.* Available at: ADOPTION OF THE PARIS AGREEMENT - Paris Agreement text English (unfccc.int) (Accessed September 2024)

Document	Relevance to assessment
Environmental Impact Assessment (EIA) Directive (2014/52/EU) [37]	An update to the EIA Directive includes climate change (both mitigation of GHGs and adaptation/vulnerability of projects) within assessment and decision-making processes.
The Town and Country Planning (Environmental Impact Assessment) Regulations 2017[38]	These regulations apply the amended EU EIA directive to the planning system in England. The 2017 Regulations are an update on the 2009 version, and for the first time introduces a requirement to consider the impacts of a project on climate.
The Climate Change Act 2008, as amended by the Climate Change Act (2050 Target Amendment) Order 2019[39]	The Climate Change Act commits the UK to GHG emissions reductions and reporting. The Act requires the setting of five-yearly Carbon Budgets that are not to be exceeded. The amendment Order updates the Climate Change Act, stating the UK's net zero target by 2050.
Policy	
The Clean Growth Strategy[40]	This strategy document sets out key policies and proposals to accelerate clean growth. It projects power sector emissions, taking into account the Clean Growth Pathway between 1990 and 2050.
UK's Nationally Determined Contribution[41]	The UK's Nationally Determined Contribution was updated in 2022. The UK commits to reducing economy-wide GHG emissions by at least 68% by 2030, compared to 1990 levels.
British Energy Security Strategy[42]	This strategy sets out how the UK will accelerate homegrown power for greater energy independence.
Standards and Guidance	
IEMA guidance on Assessing Greenhouse Gas Emissions and Evaluating their Significance[43]	This updated guidance from the IEMA provides a revised, and more nuanced, approach to the assessment of greenhouse gases and their significance within an EIA than the previous iteration. It directs the assessment to adopt a whole life carbon approach to the quantification of GHG emissions. It also directs that the assessment of significance should consider not just the magnitude of GHG emissions arising from a development, but also the role that the Project (and resultant increases and decreases in GHG emissions) will play in the transition to net zero in 2050.
Low Energy Transformation Initiative (LETI) Embodied Carbon Primer[44]	The LETI Embodied Carbon Primer sets challenging net zero carbon targets of the built environment industry, current regulations and construction practices. It also provides a useful source of benchmark information for supporting the quantification of GHG emissions.

[37] The European Parliament and The Council of the European Union (2014) *Directive 2014/52/EU*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052 (Accessed September 2024)

[38] HM Government (2017) *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*. Available at: The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (legislation.gov.uk) (Accessed September 2024)

[39] HM Government (2019) *The Climate Change Act 2008 (2050 Target Amendment) Order 2019.* Available at: The Climate Change Act 2008 (2050 Target Amendment) Order 2019 (legislation.gov.uk) (Accessed September 2024)

[40] HM Government (2017) *The Clean Growth Strategy.* Available at: Clean Growth Strategy (publishing.service.gov.uk) (Accessed September 2024)

[41] HM Government (2022) *UK's Nationally Determined Contribution, updated September 2022*. Available at: UK's Nationally Determined Contribution, updated September 2022 - GOV.UK (www.gov.uk) (Accessed September 2024)

[42] HM Government (2022) *British Energy Security Strategy*. Available at: British Energy Security Strategy (publishing.service.gov.uk) (Accessed September 2024)

[43] Institute of Environmental Management and Assessment (2022) *Assessing Greenhouse Gas Emissions and Evaluating their Significance.* Available at: TR010056-001649-Climate Emergency Planning and Policy - Appendix A - IEMA Guide- Assessing Greenhouse Gas Emissions and Evaluating their Significance, Version 2, Feb 2022.pdf (planninginspectorate.gov.uk) (Accessed September 2024)

[44] LETI (2020) *Embodied Carbon Primer*. Available at: 252d09_8ceffcbcafdb43cf8a19ab9af5073b92.pdf (leti.uk) (Accessed September 2024)

Document	Relevance to assessment
Royal Institution of Charted Surveyors (RICS), 'Whole life carbon assessment for the built environment' (2nd Edition)[45]	The guidance document provides a comprehensive methodology for industry professionals to calculate and report the quantity of GHG emissions throughout all life cycle stages of a project.
BSI - PAS 2080:2023 'Carbon Management in Buildings and Infrastructure'[46]	This standard provides guidance for whole life carbon management, including all stakeholders, and any development to be in line with government's Net Zero 2050 pathway.

Baseline conditions

Existing baseline

6.3.5 Aligning with IEMA guidance, the baseline (Do-Minimum (DM) scenario) is the reference against which the impact of the Proposed Development will be compared and assessed.

6.3.6 The 2021 DCO amendment for the North Killingholme Power Project was consented on the grounds that the development is in compliance with Carbon Capture Readiness requirements i.e. it can demonstrate that post combustion carbon capture equipment could be retrofitted to the Combined Cycle Gas Turbine (CCGT). However, there is potential for the future operations of the CCGT to take place without the use of carbon capture technology.

6.3.7 The DM scenario for the Proposed Development will comprise the presence of the North Killingholme Power Plan as the Proposed Development will not take place unless the Power Project is similarly being taken forward.

6.3.8 The DM scenario is therefore taken to be the presence of the site with the CCGT in place, but without any infrastructure or technology to capture CO_2 emissions.

Future baseline

6.3.9 For the purposes of the GHG assessment, the future baseline is defined as the GHG emissions arising from the study area (Section 6.3.16) in the absence of the Proposed Development, but with the CCGT in operation.

Potential impacts

6.3.10 As set out in the IEMA guidance, GHG quantification within an EIA should follow the principles outlined in key documents such as the GHG Protocol Corporate Standard, BS EN ISO14064-2, and PAS 2080, and in doing so ensure the assessment aligns with the principles of Relevance, Completeness, Consistency, Transparency and Accuracy.

6.3.11 PAS 2080 outlines a modular, lifecycle approach for GHG emissions assessments, providing a framework to consider impacts throughout the Proposed Development's life cycle. This approach informs the scope of an assessment, the methodology for quantifying emissions, and the process for resolving any data gaps.

6.3.12 Table 6-13 outlines the likely sources of GHG emissions associated with each lifecycle stage for

[45] Royal Institution of Charted Surveyors (2023) *Whole life carbon assessment for the built environment.* Available at: https://www.rics.org/content/dam/ricsglobal/documents/standards/Whole_life_carbon_assessment_PS_Sept23.pdf (Accessed September 2024)

[46] British Standards Institute (2023) *Carbon Management in Infrastructure*. Available at: PAS 2080:2023 Carbon Management in Infrastructure | BSI (bsigroup.com) (Accessed September 2024)

the Proposed Development. These are presented within the modular framework set out in PAS 2080 under the broad headings of Construction, Operation, and Decommissioning[47].

Table 6-13: Potential sources of GHG emissions during construction, operation and decommissioning

Sub-stage of PAS 2080 Lifecycle		Activity	Potential sources of GHG emissions
Construction			
A1-A3	Product stage	Raw material extraction and manufacturing of materials	Emissions associated with the required raw materials for construction of the Proposed Development
		Transportation of materials to Site	Emissions associated with fuel consumption of vehicles used
A4-A5	Construction process stage	On-site construction activities	Emissions associated with fuel/energy consumption of plant
		Transport of construction workers	Emissions associated with fuel consumption of vehicles used
		Disposal of, and transport of, construction waste	Emissions associated with fuel consumption of vehicles used
D	Benefits beyond the system boundary	Changes to current land habitats	Emissions associated with land use change
Operation (including maintenance)			
B1	Use	Fugitive emissions	Process and/or fugitive emissions arising from the operation of the carbon capture process
		Changes to currently vegetated land	Emissions associated with land use change
B2-B4	Maintenance, repair and replacement	Routine maintenance, repair and replacement of components.	Emissions associated with the required raw materials for maintenance, repair and replacement and from energy required for these activities
B6	Operational energy use	Energy use of the Proposed Development	Emissions associated with energy required for the operation of the Proposed Development.
B7	Operational water use	Water used for direct and indirect cooling	Emissions associated with the supply of water and treatment of wastewater
B8.1	User activities: energy-related impact	Operational transport	Emissions associated with employee commuting and deliveries
		Operational waste	Emissions associated with the disposal/ recovery of hazardous and non-hazardous waste
B8.2	User activities: other impacts	CO_2 emissions arising from energy generation at the Power Plant	CO_2 emissions arising from energy generation at the Power Plant
		CO_2 emissions abated through the operation of the Proposed Development	CO_2 emissions abated through the operation of the Proposed Development [48]
		CO_2 leakage/seepage from CO_2 transport and storage network	CO_2 leakage/seepage from CO_2 transport and storage network
Decommissioning			
C1	Deconstruction and demolition impacts	Deconstruction and demolition activities.	Emissions associated with any on- or offsite deconstruction and demolition activities at the end of life of the Proposed Development, including any energy consumption for these activities.
C2	Transport impacts	Transportation of material from deconstruction and demolition to the final location.	Emissions associated with the transport of deconstruction and demolition waste.
C3	Waste processing for reuse, recycling or other recovery	Waste processing	Emissions associated with the preparation of material for reuse, waste treatment and recovery prior to reaching the end-of-waste state.

[47] As set out in Section 3.7, after 25 years of operation the Proposed Development would be evaluated to determine whether its life can be continued further, dependent on legislative requirements and the UK net zero and energy generation context at that time. In order to present a worst case assessment, for the purposes of the GHG assessment it is assumed that after 25 years the Proposed Development is decommissioned.

[48] The operational lifespan of the Proposed Development is expected to be approximately 25 years. During this period the Proposed Development will reduce the CO_2 emissions associated with the operation of the CCGT as a result of the capture of CO_2 from the flue gas.

Sub-stage of PAS 2080 Lifecycle		Activity	Potential sources of GHG emissions
C4	Disposal impacts	Disposal of materials	Emissions associated with any processing required prior to disposal and from the degradation of landfilled materials, or incineration.

Design and control measures

6.3.13 Measures to reduce GHG emissions arising from the construction, operation, and decommissioning of the Proposed Development will be developed in line with the hierarchy set out in the IEMA guidance as shown in Table 6-14.

6.3.14 Mitigation measures may include, but not be limited to, sourcing of local construction materials, selecting construction materials with lower embodied carbon, increased efficiency of construction plant and machinery, and use of renewable/low carbon fuels for construction vehicles and machinery.

Table 6-14: IEMA GHG Management Hierarchy

GHG Management Hierarchy	Examples
Eliminate	Influence business decisions/use to prevent GHG emissions across the lifecycle Potential exists when organisations change, expand, rationalise or move business Transition to new business model, alternative operation or new product/service
Reduce	Real and relative (per unit) reductions in carbon and energy Efficiency in operations, processes, fleet and energy management Optimise approaches (e.g. technology) and digital as enablers
Substitute	Adopt renewables/low-carbon technologies (on site, transport etc) Reduce carbon (GHG) intensity of energy use and of energy purchased Purchase inputs and services with lower embodied/embedded emissions
Compensate	Compensate 'unavoidable' residual emissions (removals, offsets etc) Investigate land management, value chain, asset sharing, carbon credits Support climate action and developing markets (beyond carbon neutral)

Embedded measures

6.3.15 At this stage of design embedded mitigation measures are not known. Opportunities to reduce GHG emissions within the design of the Proposed Development will be developed in line with the principles in Table 6-14.

Management plans

6.3.16 A suite of management plans will be developed for the Proposed Development some of which will contribute to the mitigation of GHG emissions. Those considered relevant to the GHG emissions assessment include:

- Construction Environmental Management Plan (CEMP);
- Site Waste Management Plan (SWMP);
- Materials Management Plan (MMP);
- Construction Traffic Management Plan (CTMP); and

- Decommissioning Environmental Management Plan (DEMP).

Assessment methodology

Study area

6.3.17 Taking into account recent case-law (Finch vs Surrey County Council), which successfully argued that downstream effects should be assessed within the EIA, the overall impact associated with the Proposed Development will be considered. This includes evaluating the whole life carbon impact, encompassing the construction and operation of a pipeline and storage facility.

6.3.18 The study area for the GHG assessment, therefore, considers the emissions arising from[49]:

- The CCGT (with regards to the direct operational GHG emissions arising from power generation);
- The Proposed Development;
- A pipeline and storage facility (with regard to construction, operation, and leakage of CO2 emissions); and
- Areas beyond the boundary of the site of the Proposed Development and the associated infrastructure such as are required to be considered for the whole life carbon assessment (such as material sourcing, and waste management).

6.3.19 Due to the nature of GHG emissions some emissions associated with the Proposed Development arise within the project site boundary, however the majority will arise outside the site boundary but within the study area.

Approach

6.3.20 GHGs emissions will be reported as tonnes of carbon dioxide equivalent (tCO_2e[50]) and calculated using the following formula:

$$Activity \times GHG\ factor = GHG\ emissions$$

Where:

- Activity data = a measure of the quantity of an activity; and
- GHG factor = a measure of the GHG emissions per unit of activity.

[49] Across the general EIA process the assessment of cumulative effects is typically intended to examine how the impacts arising from the Proposed Development might cumulatively impact upon individual receptors when other consented or planned development takes place. However, the assessment of cumulative impacts as carried out for other environmental topics is not transferable to the assessment of GHG emissions in an analogous way, as the single receptor for GHG emissions is the global climate in the atmosphere.

[50] In line with applicable guidelines from the World Business Council for Sustainable Development (WBCSD) / World Resources Institute (WRI) Greenhouse Gas Protocol initiative (Ref 15-15), GHG emissions will be reported as tonnes of carbon dioxide equivalent (tCO2e) and consider the seven Kyoto Protocol gases

6.3.21 Activity data will be gathered from project specific information available at the current design stage. Where limited data is available due to the outline nature of the application, appropriate assumptions or benchmarks will be used.

6.3.22 GHG factors used in the assessment will be from the following sources:

- DESNZ Greenhouse Gas Reporting: Conversion Factors (published annually);
- Inventory of Carbon & Energy (ICE) Database V3; and
- Valuation of energy use and GHG emissions for appraisal: supplementary guidance to the HM Treasure Green Book.

Scope of assessment

6.3.23 The GHG assessment will quantify the net GHG emissions arising from each lifecycle stage, as shown in Table 6-13. The proposed scope of the assessment is set out in Table 6-15.

Table 6-15: Proposed scope of the GHG assessment

Lifecycle module		Emission source	Scope of assessment		
			The Proposed Development	The CCGT	Pipeline and Storage facility
Construction					
A1-A3	Product stage	Manufacture and production of construction materials	Included	Excluded	Included
A4	Transport impacts	Transport of construction materials to site	Included	Excluded	Included
A5	Construction installation process	Construction installation process including pre-construction demolition	Included	Excluded	Included
D	Benefits beyond the system boundary	Changes to currently vegetated land	Included	Excluded	Excluded – considered to be highly speculative
Operation					
B1	In-use material emissions and removals	Manufacture, production and transport of in-use materials and chemicals	Included	Excluded	Excluded – assumed negligible
		Land-use based carbon sequestration	Included	Excluded	Excluded – considered to be highly speculative
B2 – B3	Maintenance and Repair	Maintenance and Repair	Included	Excluded	Excluded – considered to be highly speculative
B4	Replacement	Replacement	No replacements are expected during the design life of the Proposed Development since each of the individual build elements in the design have a service life equal to or greater than 25 years.	Excluded	Excluded – considered to be highly speculative

Lifecycle module		Emission source	Scope of assessment		
			The Proposed Development	The CCGT	Pipeline and Storage facility
B5	Refurbishment	Refurbishment	At the time of this assessment, there is no future refurbishment, retrofit or extension (i.e. no change in performance of the asset) planned to occur at any point following the completion of construction.	Excluded	Excluded – considered to be highly speculative
B6	Operational energy use	Energy use associated with the operation of the power station and CCS	Included	Excluded	Excluded – assumed negligible
B7	Operational water use	Potable water use	Included	Excluded	Excluded – assumed negligible
B8.1	User activities: energy-related impacts	Operational transport	Included	Excluded	Excluded – assumed negligible
		Transport, treatment and disposal of operational waste	Included	Excluded	Excluded – assumed negligible
B8.2	User activities: other impacts	CO_2 emissions arising from energy generation at the Power Plant	n/a	Included	n/a
		CO_2 emissions abated through the operation of the Proposed Development	Included	n/a	n/a
		CO_2 leakage/seepage from CO_2 transport and storage network	n/a	n/a	Included
Decommissioning					
C1	Deconstruction and demolition impacts	Deconstruction and demolition	Included	Excluded	Excluded
C2	Transport impacts	Transportation of material from deconstruction and demolition to the final location.	Included	Excluded	Excluded
C3	Waste processing for reuse, recycling or other recovery	Waste processing	Included	Excluded	Excluded
C4	Disposal impacts	Disposal of materials	Included	Excluded	Excluded

Assessment of significance

6.3.24 The 2022 IEMA guidance revised the overall approach to assessing the impacts and significance of GHG emissions from projects. There is no quantifiable threshold above or below which the significance of GHG emissions can be based. The guidance directs that emissions must be contextualised as part of the assessment process (including, but not exclusively, against national Carbon Budgets).

6.3.25 The guidance restates the principles that:

- GHG emissions from all projects will contribute to climate change, the largest interrelated cumulative environmental effect; and
- the consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive (e.g. human health, biodiversity, water, land use, air quality).

6.3.26 The guidance provides a more nuanced approach to the appraisal of significance of changes in GHG emissions arising from a project than was set out in previous guidance (which concluded that all GHG emissions, regardless of scale or extent of mitigation, were significant). The guidance notes that some projects will lead to increases in emissions but that this alone does not represent a significant impact. Instead, it is the role of the suitably qualified expert carrying out the assessment to consider the scale of changes in emissions; the context within which these are expected to occur; the mitigation undertaken to minimise negative impacts; and the overall alignment of the project to achievement of the UK's carbon targets.

6.3.27 The UK Carbon Budgets considered relevant to the assessment are set out in Table 6-16 below.

Table 6-16: Carbon Budget Periods relevant to this assessment

Carbon Budget & Period	Carbon Budget Limit	Reduction below 1990 levels
Fourth (2023 – 2027)	1,950 $MtCO_2e$	50% by 2025
Fifth (2028 – 2032)	1,725 $MtCO_2e$	68% by 2030
Sixth (2033 – 2037)	965 $MtCO_2e$	78% by 2035

6.3.28 To inform the assessment of overall impact of the Proposed Development the assessment of emissions from power generation (upstream emissions) and from transport and storage infrastructure (downstream) will also be considered. When evaluating the significance of GHG emissions, it is recommended that the Environmental Statement (ES) considers significance in relation to:

- The Proposed Development (in isolation);
- The impacts arising from the Proposed Development in combination with the impacts arising from mitigation of emissions from energy generation, and emissions associated with the pipeline and storage facility.

6.3.29 The approach to assessment significance draws on guidance set out in the IEMA guidance and reproduced in Table 6-17.

Table 6-17: Levels of significance for the GHG emissions assessment, as per IEMA (2022) guidance

Significance Level	Definition
Significant adverse ('moderate' or 'major')	A project that follows a 'business-as-usual' or 'do minimum' approach and is not compatible with the UK's net zero trajectory or accepted aligned practice or area-based transition targets. It is down to the practitioner to differentiate between the 'level' of significant adverse effects e.g. 'moderate' or 'major'

Significance Level	Definition
	adverse effects.
Minor adverse (not significant)	A project that is compatible with the budgeted, science based 1.5°C trajectory (in terms of rate of emissions reduction) and which complies with up-to-date policy and 'good practice' reduction measures. It may have residual emissions but is doing enough to align with and contribute to the relevant transition scenario, keeping the UK on track towards net zero by 2050 with at least a 78% reduction by 2035 and thereby potentially avoiding significant adverse effects.
Negligible (not significant)	A project that achieves emissions mitigation that goes substantially beyond the reduction trajectory, or substantially beyond existing and emerging policy compatible with that trajectory, and has minimal residual emissions, is assessed as having a negligible effect that is not significant. This project is playing a part in achieving the rate of transition required by nationally set policy commitments.
Significant beneficial	A project that causes GHG emissions to be avoided or removed from the atmosphere. Only projects that actively reverse (rather than only reduce) the risk of severe climate change can be judged as having a beneficial effect.

Proposed scope of assessment

6.3.30 Table 6-18 provides an overview of the proposed scope of the GHG assessment to be undertaken in the EIA.

Table 6-18: Scoping summary for the GHG emissions assessment

Topic Aspect (potential impact)	Construction	Operation	Decommissioning
GHG emissions	Scoped in	Scoped in	Scoped in[51]

[51] The GHG impacts arising from decommissioning are integral to whole life carbon accounting as they can influence the design process for the Proposed Development.

6.4 Cultural heritage

Relevant legislation, policy and guidance

6.4.1 A brief overview of the policy, legislative and guidance relevant to the cultural heritage assessment is summarised below.

Legislation

- Ancient Monuments and Archaeological Areas Act (AMAAA) 1979[52];
- Planning (Listed Buildings and Conservation Areas) Act 1990[53]; and
- The Hedgerow Regulations 1997[54].

Policy

- National Planning Policy Framework (NPPF) (2024)[4]; and
- North Lincolnshire Local Development Framework - Core Strategy (2011), Policy CS6: Historic Environment[55].

Guidance

- Planning Practice Guidance, Section 16: Conserving and Enhancing the Historic Environment (2019)[56];
- Historic Environment Good Practice Advice in Planning Note 2. Managing Significance in Decision Taking in the Historic Environment. Historic England[57];
- Historic Environment Good Practice Advice in Planning Note 3. The Setting of Heritage Assets. Historic England (2nd edition, 2017)[58];
- Historic Environment Statement of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12. Historic England (2019)[59];

[52] HM Government (1979) Ancient Monuments and Archaeological Areas Act. Ancient Monuments and Archaeological Areas Act 1979. Available at: https://www.legislation.gov.uk/ukpga/1979/46/contents. Accessed July 2024.

[53] HM Government (1990) Planning (Listed Buildings and Conservation Areas) Act. Planning (Listed Buildings and Conservation Areas) Act 1990 Available at: Planning (Listed Buildings and Conservation Areas) Act 1990 (legislation.gov.uk). Accessed July 2024.

[54] HM Government (1997) The Hedgerows Regulations 1997. Available at: https://www.legislation.gov.uk/uksi/1997/1160/contents. Accessed July 2024.

[55] North Lincolnshire Council (2011) North Lincolnshire Local Development Framework - Core Strategy. Available at: https://m.northlincs.gov.uk/public/planningreports/corestratergy/adopteddpd/FullCoreStrategy.pdf. Accessed July 2024.

[56] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance: Historic Environment. Available at: https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment. Accessed July 2024.

[57] Historic England (2015). Historic Environment Good Practice Advice in Planning: 2. Managing Significance in Decision – Taking in the Historic Environment. Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/. Accessed July 2024.

[58]Historic England (2017). Historic Environment Good Practice Advice in Planning Note 3 (second edition). The Setting of Heritage Assets. [online] Available at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/ Accessed July 2024.

[59] Historic England (2019). Historic England Advice Note 12. Statements of Heritage Significance: Analysing Significance in Heritage Assets. [online] Available at: https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/ Accessed July 2024.

- Code of conduct: professional ethics in archaeology (2022)[60];
- Standard and guidance for Historic Environment Desk-based Assessment (2020)[61];
- Institute of Environmental Management and Assessment (IEMA), the Institute of Historic Building Conservation (IHBC) and CIfA, Principles of Cultural Heritage Impact Assessment in the UK[62];
- Design Manual for Roads and Bridges (DMRB), LA 104: Environmental assessment and monitoring[63]; and
- DMRB, LA 106: Cultural heritage assessment[64].

6.4.2 The following guidance and information have been used to inform this archaeology and built heritage EIA scoping assessment:

- Historic England's National Heritage List for England (NHLE) data for designated heritage assets[65];
- Historic Ordnance Survey mapping;
- Aerial photographs available from Google Earth;
- North Lincolnshire Interactive Constraints Map (Conservation Areas)[66]; and
- Heritage Gateway for initial scoping review of North Lincolnshire Historic Environment Record data. A full search will be commissioned for the EIA.

Baseline conditions

Existing baseline

6.4.3 The location of designated heritage assets in relation to the Site is illustrated within Figure 2.3.

6.4.4 There are no World Heritage Sites within 10km of the Site and there are no registered parks and gardens within 2km of the Site. There are no registered battlefields, registered parks and gardens or historic wreck sites located within the Site or in its vicinity.

6.4.5 There are four scheduled monuments located within 2km of the Site:

- the Moated site and associated earthworks at Baysgarth Farm, approximately 650m to the north- west of the Site (SM 1007813);

[60] Chartered Institute for Archaeologists (2022) Code of conduct: Professional ethics in archaeology. Code of conduct - revised Oct 2022. Available at: https://www.archaeologists.net/sites/default/files/Code%20of%20conduct%20revOct2022.pdf . Accessed July 2024.

[61] Chartered Institute for Archaeologists (2020) Standard and guidance for Desk-based Assessments. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf. Accessed July 2024.

[62] Institute of Environmental Management & Assessment, in partnership with the Chartered Institute for Archaeologists and the Institute of Historic Building Conservation (2021). Principles of Cultural Heritage Impact Assessment in the UK.

[63] National Highways (formerly Highways England (2020) Design Manual for Roads and Bridges LA 104 - Environmental assessment and monitoring. Available at: https://standardsforhighways.co.uk/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a Accessed July 2024.

[64] National Highways (formerly Highways England) (2020) Design Manual for Roads and Bridges LA 106 - Cultural heritage assessment. Available at: https://www.standardsforhighways.co.uk/search/8c51c51b-579b-405b-b583-9b584e996c80 Accessed July 2024.

[65] GIS Open Data | Historic England. Available at: https://historicengland.org.uk/listing/the-list/open-data-hub/. Accessed June 2024.

[66] North Lincolnshire Interactive Constraints Map: Available at: https://map.northlincs.gov.uk/mycouncil.aspx?tab=maps&ms=nlincs_mapsources/AllMaps&Layers=Conservation_Area. Accessed July 2024.

- Manor Farm moated site, approximately 1.5km to the north-west of the Site (SM 1007816);
- North Garth moated site and associated enclosures, approximately 375km to the west of the Site (SM 1007815); and
- the Moated site at Manor Farm, approximately 350m to the west of the Site (SM 1008044).

6.4.6 There are 16 listed buildings within 2km of the Site:

- Grade II listed Brick and Tile Kiln Including Chimney, approximately 1.5km to the north of the Site (LB 1103675);
- Grade I listed Church of Saint Denys, approximately 500m to the west of the Site (LB 1103701);
- Grade II listed cross base south of Church of St Andrew, approximately 1.7km south of the Site (LB 1161628);
- Grade II listed Killingholme High Lighthouse, approximately 550m east of the Site (LB 1103706);
- Grade II listed Killingholme North Low Lighthouse, approximately 850m east of the Site (LB 1103707);
- Grade I listed Church of St Peter, approximately 650m to the west of the Site (LB 1103729);
- Grade II listed Churchfield Manor, approximately 1.6km to the south of the Site (LB 1161630);
- Grade II listed Old Vicarage, approximately 600m south-west of the Site (LB 1214966);
- Grade II listed Belmont Cottage, approximately 1.8km to the south of the Site (LB 1161631);
- Grade II listed White Cottage, approximately 1.8km to the north-west of the Site (LB 1214719);
- Grade II listed Stables and Granary approximately 500m south-west of the Site (LB 1214980);
- Grade II listed Killingholme South Low Lighthouse, approximately 800m, east of the Site (LB 1215093);
- Grade II listed “The Nook” house, approximately 1.3km south-west of the Site (LB 1215113);
- Grade I listed Church of St Andrew, approximately 1.7km to the south of the Site (LB 1310011);
- Grade II* listed Manor Farmhouse approximately 500m west of the Site; (LB 1346854); and
- Grade II listed Baptist Chapel, approximately 1.5km south-west of the Site (LB 1346858).

6.4.7 The Site is located within a landscape known to contain high levels of later prehistoric and Romano-British archaeology. The well-developed nature of the archaeological record in this area is partially the result of extensive industrial development across the 20th and 21st century and associated archaeological interventions.

6.4.8 The remains of a Romano-British occupation site, associated finds and earlier lithic material are noted within the publicly accessible North Lincolnshire HER data. A Second World War bomb crater and contemporary military infrastructure may also have extended into the Site.

6.4.9 Part of the Main Site was formerly used as a gas production plant. It is anticipated that any archaeological features within this area would have experienced impacts during this historic phase of development and are unlikely to survive. An assessment of the depth of anticipated historic impacts and the potential for the presence of geoarchaeological/palaeoenvironmental material to survive beyond this depth will be made as part of the EIA.

6.4.10 Within the western area of the Main Site, previous phases of geophysical survey have identified pit-type anomalies and a number of ditches. The hedgerow bounding the south-eastern edge of this area is recorded as 'historically important'. This part of the Site has not been subject to industrial development and, based on publicly available data, is considered likely to contain archaeological features.

6.4.11 Within the area for the Option A spur pipeline, earlier geophysical surveys and archaeological evaluations of the area between Rosper Road and Station Road have uncovered rectilinear enclosures, trackways, and settlement features dating from the mid-Iron Age to the late Roman period, along with paleoenvironmental remains. The southern section of the spur pipeline remains undeveloped and, based on available data, is likely to contain further archaeological features. Additionally, investigations north of the A160 roundabout have revealed extensive Late Iron Age and Romano-British activity, including enclosures, field systems, and settlement features, with evidence of occupation and domestic activity concentrated on elevated ground. These findings highlight a high level of presence for later prehistoric and Romano-British archaeology in the southern section of the spur pipeline.

6.4.12 The area for the Option B spur pipeline encompasses two known Iron Age enclosures. Previous excavations indicate that remaining parts of both enclosures would intersect with the pipeline route. Evidence of Iron Age metal working and other material culture has been recovered from these sites. Romano-British pottery and occupation related material have been found to the immediate east, with medieval and post-medieval settlement and agriculture to the west. These include the deserted medieval village of Lobingham. 20th Century military infrastructure associated with former WWII RAF dispersed sites was located in and around the Option B spur pipeline corridor. As with Option A, there is a high level of potential for later prehistoric and Romano British Archaeology across the Option B spur pipeline. There may also be elements of WWII infrastructure and evidence of medieval and post-medieval agricultural activity.

6.4.13 Further elaboration on baseline conditions, including a detailed review of non-designated heritage assets and previous archaeological surveys/investigation, will be verified through consultation with NLC and the North Lincolnshire Historic Environment Record.

Future baseline

6.4.14 The future baseline in relation to cultural heritage is expected to remain consistent with the existing baseline as described above.

6.4.15 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

Potential impacts

6.4.16 There may be potential for the following impacts to occur as a result of the Proposed Development:

- direct construction impacts on non-designated heritage assets located within the Site; and
- indirect impacts on designated and non-designated heritage assets, as a result of changes in their setting, during construction and operation.

6.4.17 The potential impacts on cultural heritage resulting from the decommissioning of the Proposed Development, will not be separately evaluated in this EIA cultural heritage impact assessment. A further assessment of any decommissioning-related impacts on cultural heritage will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.4.18 The assessment described will take into account any embedded design mitigation, including temporary mitigation put in place to minimise any temporary construction impacts (arising from potential increases in noise, dust, traffic, lighting etc.). Relevant embedded mitigation measures will be described, and any residual significance of effects will be mitigated with further recommendations.

6.4.19 There have been multiple archaeological surveys across the Site. As part of the baseline assessment for the EIA, the extent of previous survey will be established. Alongside assessment of archaeological potential, there may be a need for further identify the need for targeted survey.

6.4.20 If avoidance of archaeological features is not possible, mitigation may involve the excavation and detailed recording of any non-designated heritage assets identified within the Site. This may take place in advance of, or during, construction (if identified during archaeological monitoring of works).

6.4.21 Planting and landscaping will provide screening between the Site and designated heritage assets within the surrounding area.

6.4.22 Any scheme of mitigation will be developed in consultation with the archaeological advisor to NLC.

Scope of assessment

6.4.23 The assessment will follow current professional best practice and guidance including that produced by the Chartered Institute for Archaeologists (CIfA).

6.4.24 The study area will be confirmed with the archaeological advisor to NLC prior to the commencement of the EIA.

6.4.25 Due to the scale of the Proposed Development, there is the potential for heritage assets to

experience changes which could impact upon their significance. Therefore, a Zone of Theoretical Visibility (ZTV) will be used to identify areas of visibility in conjunction with a Site and study area walkover.

6.4.26 Once all potential heritage receptors have been identified, they will be assigned a 'value' reflecting the extent of their artistic, archaeological, architectural or historic interest. The impact from the Proposed Development upon the heritage assets will then be quantified and expressed within the EIA. This will produce an initial significance of effect of the Proposed Development upon the heritage resource, taking into account any design or embedded mitigation.

6.4.27 The assessment will also set out the mitigation measures required to reduce significant adverse effects and propose measures for biodiversity enhancements across the Site. Following the implementation of mitigation, any residual effects on heritage receptors will be identified.

6.4.28 Assessment of potential impact(s) from the Proposed Development on heritage receptors will be based upon the approach presented outlined in DMRB. Whilst organisations such as the Ministry for Communities, Housing, and Local Government (regarding NPPF) and CIfA set out policy and good practice guidance and standards for assessing heritage significance, they do not provide specific guidance on the assessment of impact/change and effect. Our approach will also be informed by the methodology set out by IEMA as part of their Principles of Cultural Heritage Impact Assessment in the UK (2021).

6.4.29 As the DMRB is concerned not only with roads and bridges but all development that could be associated with them, it provides a development-agnostic approach to assessment that can be used as the basis for the assessment of other types of development. As such, it is widely adopted for use in EIAs. The EIA for the Proposed Development will, therefore, apply this approach to its assessment and will report only those parts of the cultural heritage which are assessed as likely to receive an impact(s) to their heritage significance.

6.4.30 The heritage significance of the heritage assets and the magnitude of potential impact(s) will therefore be determined according to the definitions and the criteria for establishing significance set out in Table 6-19 and Table 6-20 have been developed using Table 3.2N and Table 3.4N of LA104 (DMRB), and informed by LA106 (DMRB) and IEMA/CIFA/IHBC (2021).

Table 6-19: Criteria for heritage significance

Heritage significance	Typical descriptors
Very High	Very High importance and rarity, international scale, and very limited potential for substitution. Includes world heritage sites and nominated sites.
High	High importance and rarity, national scale, and limited potential for substitution. Includes scheduled monuments, listed buildings (all grades), registered parks and gardens (all grades), conservation areas containing very important buildings, undesignated structures of clear national importance, undesignated resources of schedulable quality and importance.
Medium	Medium or High importance and rarity, regional scale, limited potential for substitution. Includes conservation areas containing buildings that contribute significantly to historic character and some non-designated archaeological remains.
Low	Low or Medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

Table 6-20: Magnitude of impact

Magnitude of impact (degree of change)		Typical descriptors
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.

Magnitude of impact (degree of change)		Typical descriptors
	Beneficial	Large-scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality or setting.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Some measurable change in attributes, quality, or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

6.4.31 The significance of effect(s) which may be brought about by the Proposed Development will also be evaluated according to the DMRB methodology outlined in the Significance Matrix set out in LA104 Table 3.8.1. This methodology is outlined in Table 6-21 which combines the assessment of a heritage assets heritage significance against the magnitude of impact it may receive.

Table 6-21: Matrix for relative significance of effect

		Magnitude of Impact (degree of change)				
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Heritage Significance (Importance)	**Very High**	Neutral	Slight	Moderate / Large	Large / Very Large	Very Large
	High	Neutral	Slight	Slight / Moderate	Moderate / Large	Large / Very Large
	Medium	Neutral	Neutral / Slight	Slight	Moderate	Moderate / Large
	Low	Neutral	Neutral / Slight	Neutral / Slight	Slight	Slight / Moderate
	Negligible	Neutral	Neutral	Neutral / Slight	Neutral / Slight	Slight

6.4.32 In accordance with standard EIA practice, and for the purposes of the EIA Regulations, a significance of effect assessed as being Moderate, Large, or Very Large will be considered to be 'significant'.

Proposed scope of assessment

6.4.33 Table 6-22 summarises the aspects of the cultural heritage assessment that will be scoped in/ out of the EIA.

Table 6-22: Scoping summary for the cultural heritage assessment

Archaeology and built heritage aspect	Construction	Operation	Decommissioning
Buried archaeology	Scoped in	Scoped out	Scoped out
Built heritage assets	Scoped in	Scoped in	Scoped out

6.5 Ecology and nature conservation

Relevant legislation, policy and guidance

6.5.1 The ecological assessment will be undertaken within the context of relevant planning policies, guidance documents and legislative instruments. These are summarised below.

Legislation

- Conservation of Habitats and Species Regulations 2017 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Environment Act 2021 (and related secondary legislation);
- Natural Environment and Rural Communities Act 2006 (as amended);
- The Hedgerows Regulations 1997; and
- The Protection of Badgers Act 1992 (as amended).

Policy

- The National Planning Policy Framework[4] (NPPF), as supported by the Government Circular 06/2005. Within Chapter 15 of the NPPF, 'Conserving and enhancing the natural environment', paragraphs 187-188 and 192-194 are most relevant to ecology;
- Overarching NPS for Energy (EN-1) (updated 2023);
- NPS for Natural Gas Electricity Generating Infrastructure (EN-2);
- Core Strategy (2011), North Lincolnshire Local Development Framework and Housing and Employment Land Allocations DPD and Local Plan, within which the most relevant policies are:
    - Policy CS17: Biodiversity;
    - Policy LC1: Special Protection Areas, Special Areas of Conservation and Ramsar Sites;
    - Policy LC2: Sites of Special Scientific Interest and National Nature Reserves;
    - Policy LC5: Species Protection;
    - Policy LC6: Habitat Creation;
    - Policy LC12: Protection of Trees, Woodland and Hedgerows;
    - DS12: Light Pollution; and
    - DS15: Water Resources.

Guidance

- UK Habitat (UKHab) Classification system;
- Standing advice on protected species surveys and various species-specific industry best practice guidance documents;
- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland; Terrestrial, Freshwater and Coastal;

- British Standard BS42020:2013 Biodiversity;
- The statutory Defra Biodiversity Metric (or later) system; and
- The Habitats Regulations Assessment Handbook and related industry best practice guidance. documents.

Study area

6.5.2 The study area was defined in accordance with CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland. In accordance with this guidance, the study area covers the Site in its entirety and extends beyond the Site, where necessary, to encompass all the areas potentially within the Zone of Influence (ZoI) for impacts from the Proposed Development.

6.5.3 In establishing the ZoI, potential impact pathways during construction and operational phases were considered in relation to water quality, air quality and noise and vibration, which could have direct or indirect effects on ecological features.

6.5.4 The ZoI differs for each ecological feature as follows:

- International/European statutory designations including SPA, SAC and Ramsar Sites within 2km of the Site;
- for National statutory designations including SSSI, NNR, and LNR within 2km of the Site;
- 2km radius from the Site for local non-statutory designated sites, Section 41 Habitats of Principal Importance (HoPI), Ancient Woodland Inventory (AWI) sites and veteran trees;
- 250m radius from the Site for great crested newt *Triturus cristatus*, breeding birds and wintering birds; and
- 30m radius from the Site for habitats, water vole *Arvicola amphibius*, otter *Lutra lutra*, badger *Meles meles*, bats, other terrestrial mammals and amphibians.

Baseline conditions

Designated sites

6.5.5 The Humber Estuary (Ramsar) and SPA are located approximately 0.4km east of the Site. The Humber Estuary SAC and SSSI are located approximately 0.7km east of the Site. The Humber is the second-largest coastal plain estuary in the UK, and it is characterised by the Atlantic salt meadows and a range of sand dune types in the outer estuary, together with subtidal sandbanks, extensive intertidal mudflats, glasswort beds, and coastal lagoons. The area regularly supports internationally important numbers of various species of breeding and wintering waterbirds.

6.5.6 There are three European designated sites within a 2km radius of the Site and two nationally designated sites within a 2 km radius of the Site. Details are presented within Table 6-23.

Table 6-23: Statutory nature conservation designations

Designation name	Reasons for designation	Distance and direction from Site
Statutory Designations: European/international sites within 2km		
Humber Estuary (Ramsar)	The Estuary qualifies as a Ramsar site under Ramsar criterion 1, 3, 5, 6, and 8. The Site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. It is also known to regularly support internationally important numbers of waterfowl in winter and nationally important breeding populations in summer including shelduck, golden plover, knot, dunlin, black-tailed godwit, bar-tailed godwit, and redshank. It also supports breeding colonies of grey seals and natterjack toad *Bufo calamita*.	0.4km east
Humber Estuary (SPA)	The Site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season: avocet *Recurvirostra avosett*[WB]; bittern *Botaurus stellaris*[WB]; hen harrier *Circus cyaneus* [W]; golden plover *Pluvialis apricaria* [w]; bar-tailed godwit *Limosa lapponica*[W]; ruff *Calidris pugnax*[P]; little tern *Sterna albifrons*[B]; and marsh harrier *Circus aeruginosus*[B]. The Site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season: shelduck *Tadorna tadorna* [WP]; knot *Calidris canutus*[WP]; dunlin *Calidris alpina*[WP]; black-tailed godwit[WP]; and redshank *Tringa tetanus*[WP]. The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season: In the non-breeding season, the area regularly supports 153,934 individual waterbirds including dark-bellied brent goose, shelduck, wigeon, teal, mallard *Anas platyrhynchos*, pochard, scaup, goldeneye, bittern, oystercatcher, avocet, ringed plover, golden plover, grey plover, lapwing, knot, sanderling, dunlin, ruff, black-tailed godwit, bar-tailed godwit, whimbrel, curlew, redshank, greenshank and turnstone.	0.4km north-east
Humber Estuary (SAC)	The Site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I: Atlantic salt meadows Glauco-Puccinellietalia maritima; Coastal lagoons*; Dunes with *Hippophae rhamnoides*; Embryonic shifting dunes; Estuaries;	0.7km east

Designation name	Reasons for designation	Distance and direction from Site
	Mudflats and sandflats not covered by seawater at low tide; Fixed dunes with herbaceous vegetation (`grey dunes`)*; Salicornia and other annuals colonising mud and sand; Sandbanks which are slightly covered by sea water all the time; and Shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes').	
	The Site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II: Grey seal *Halichoerus grypus*; River lamprey *Lampetra fluviatili*; and Sea lamprey *Petromyzon marinus*.	
Statutory Designations: National-level SSSI within 2km		
North Killingholme Haven Pits (SSSI)	The main reasons for notification of these pits are their importance as large saline lagoons with an exceptionally rich fauna, and their significance as roosting and feeding grounds for waterfowl, which occur in internationally important numbers in the Humber Estuary in winter. Nine species of specialist lagoonal species recorded from the pits include the polychaete worm *Alkmaria romijni*, prawn *Palaemonetes varians*, the molluscs *Hydrobia ventrosa* and *Hydrobia neglecta* and the bryzoan *Conopium seurati*. Water levels within the lagoons vary and provide expanses of open mud for visiting waterfowl, especially waders. Amongst these are nationally important numbers of black-tailed godwits, which have visited the Site in increasing numbers since the late 1980's. There are also occasional visits by large flocks of roosting redshank. These visitors indicate that North Killingholme Haven Pits form an integral part of the estuarine feeding and roosting opportunities for the internationally important populations of winter waterfowl for which the Humber Estuary is noted. The lagoons are fringed with common reed *Phragmites australis* and sea club-rush *Scirpus maritimus* and this fringe provide valuable feeding and breeding grounds for a range of bird species including reed warbler *Acrocephalus scirpaceus*, sedge warbler *Acrocephalus schoenobaenus,* bearded tit *Panurus biarmicus* and bittern. Hawthorn *Crataegus monogyna* scrub also provided important bird habitat, including a roost of up to five long-eared owls *Asio otus,* which also breed here and are of particular local importance.	0.4km east
Humber Estuary - 2000480 (SSSI)	The Humber Estuary is a nationally important site with a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The estuary supports nationally important numbers of breeding grey seals *Halichoerus grypus*, river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*, as well as a vascular plant and invertebrate assemblage (especially the Coleoptera and Lepidoptera). The estuary also supports 22 wintering waterfowl, nine passage waders and a nationally important assemblage of breeding birds of lowland open waters and their margins.	0.7km east

W: Wintering populations, P: Passage species, B: Breeding populations, Annex 1 priority habitats are denoted by a *.

6.5.7 A total of six LWS and one Lincolnshire WTR are present within 2km of the Site. Details are presented within Table 6-24. None of the woodland within 2km of the Site are listed on Natural England's Ancient Woodland Inventory.

Table 6-24: Non-statutory nature conservation designations

Designation name	Reasons for designation	Distance & direction from site
Burkinshaw's Covert (LWS)	A large, fairly flat wood lying at approximately 5m above sea level. It is crossed by a series of deep, old drains and a very recently erected set of electricity transmission lines. The lack of ancient semi-natural woodland is reflected in the plant populations. Indeed, apart from a moderately interesting ground flora mostly restricted to the central section, the main interest is in the open and/or wet habitats, including the wide strip of cleared land along the electricity line corridor. Damp or wet habitat with little shading under the powerlines supports a rapidly changing flora that is currently dominated by tall-growing species such as water figwort *Scrophularia auriculata*, marsh thistle *Cirsium palustre*, angelica *Angelica archangelica* , common fleabane *Erigeron philadelphicus*, great willowherb *Epilobium hirsutum*, hard rush *Juncus inflexus*, soft rush *Juncus effusus* and compact rush *Juncus conglomeratus*. There is a good range of common woodland birds, including blackcap and willow tit *Poecile montanus*.	Bordering the Site (spur pipeline)
Chase Hill Wood (LWS)	This is a moderately-sized, rectangular wood on almost flat land, lying between the 5m and 10m contours. Most of the canopy consists of even-aged trees that have not yet reached maturity. Ash *Fraxinus excelsior* is the most numerous canopy tree, with smaller numbers of sycamore, Norway maple *Acer platanoides*, beech *Fagus sylvatica*, oak and pine *pinus* sp. The ground flora is dominated by ivy *Hedera helix*, but many other species of interest are present, including enchanter's nightshade *Circaea lutetiana*, wood avens *Geum urbanum*, dog-violet *Viola riviniana*, common spotted-orchid, red campion *Silene dioica* and large numbers of early-purple orchid *Orchis mascula*. The Site supports a range of common woodland birds, for example blackcap *Sylvia atricapilla*, chiffchaff *Phylloscopus collybita* and great spotted woodpecker *Dendrocopos major*.	Small section within the Site (spur pipeline)
Killingholme Haven Pits (WTR)	A complex of four flooded clay pits with associated rough grassland and scrub. Islands and promontories in the two larger lagoons, together with controlled water-levels, attract a variety and good numbers of waders and wildfowls. The reserve is important for its saline lagoon habitat, which supports several rare invertebrate species. The two smaller lagoons have deeper water and are fringed with reed and sedges; they provide suitable habitat for diving ducks, such as pochard, tufted duck and, occasionally, scaup. Breeding species include little grebe, and reed, sedge, willow warbler *Phylloscopus trochilus* and grasshopper warblers *Locustella naevia*. The ruddy duck *Oxyura jamaicensis* has also been known to breed here. It is the two large shallow pits, however, that are of the greatest importance for birds, particularly for migrant waders in spring and autumn. Spotted redshank *Tringa erythropus*, dunlin, greenshank, common sandpiper *Actitis hypoleucos*, little ringed plover, ruff and black-tailed godwit, the latter often in large numbers, are regular visitors. The list of scarce and rare species is long and includes spoonbill *Platalea leucorodia*, avocet, little egret *Egretta garzetta*, little stint *Calidris minuta*, Temminck's stint *Calidris temminckii*, red-necked phalarope *Phalaropus lobatus*, curlew, pectoral sandpiper *Calidris melanotos*, Baird's sandpiper *Calidris bairdii* and white-rumped sandpiper *Calidris fuscicollis*.[67]	0.4km east

[67] Lincolnshire Wildlife Trust: Killingholme Haven Pits. Available at: https://www.lincstrust.org.uk/sites/default/files/2018-10/Killingholme%20Haven%20Pits.pdf (Accessed: June 2024).

Designation name	Reasons for designation	Distance & direction from site
Halton Marsh Clay Pits (LWS)	This is a large area where clay extraction used to take place. Today the main features are a large fishing lake, a smaller lake to the south, several pools, damp pasture, ungrazed wetland, and developing scrub and planted woodland. The whole complex of habitats is important for breeding, wintering and migrating birds and also has much potential for invertebrates and other fauna. Aquatic plants include common duckweed *Lemna minor*, ivy-leaved duckweed *Lemna trisulca*, water-starwort *Callitriche stagnalis*, fan-leaved water-crowfoot *Ranunculus circinatus*, spiked water-milfoil *Myriophyllum spicatum* and at least one species of pondweed *Potamogeton* sp.	0.9km north
Scrub Lane East Field (LWS)	The site is a rectangular field of neutral grassland, with ridge-and-furrow aligned north-south. Overgrown dense hedges surround the field. The flora is typical of somewhat neglected neutral grassland that may have received some applications of artificial fertiliser. Only relatively small areas are herb-rich, but common knapweed *Centaurea nigra* is prominent on ridges.	1.4km north west
Swinster Lane Field (LWS)	The site supports moderately interesting grassland, two small ponds and boundary hedges. A large fishing lake with two small ponds was also created in 1994, stocked with roach *Rutilus rutilus*, bream *Abramis brama*, rudd *Scardinius erythrophthalmus*, carp *Cyprinus carpio* and pike *Esox lucius* for fishing, but all three native newt species were recorded in June 2006 (smooth *Lissotriton vulgaris*, palmate *Lissotriton helveticus* and Great Crested Newt (GCN) while one of the ponds held palmate and GCN. Wetland plants include sea club-rush, fool's water-cress *Apium nodiflorum*, yellow iris *Iris pseudacorus*, common reed, common spike-rush, water-cress *Nasturtium officinale*, floating sweet-grass *Glyceria fluitans*, common duckweed and fat duckweed *Lemna gibba*. A few interesting grassland plants are common spotted-orchid, common bird's-foot trefoil, meadow vetchling *Lathyrus pratensis*, lesser trefoil *Trifolium dubium*, meadow barley *Hordeum secalinum*, yellow oat-grass *Trisetum flavescens* and meadow fescue *Festuca pratensis*.	1.6km north west
East View Meadow (LWS)	This is a fairly small field of neutral grassland on ridge-and-furrow, surrounded by thick un-managed hedges to the north and west. Botanically rich dry grassland on the ridges is characterised by common knapweed, common bird's foot-trefoil, pignut *Conopodium majus*, oxeye daisy *Leucanthemum vulgare*, meadow vetchling, common sorrel *Rumex acetosa*, ribwort plantain *Plantago lanceolata*, sweet vernal-grass *Anthoxanthum odoratum*, common bent fescue *Agrostis capillaris* and red fescue *Festuca rubra.* Hedges add considerably to the biodiversity of the Site. Woody species are ash, elm *Ulmus procera*, blackthorn *Prunus spinosa*, hawthorn, elder, dog-rose *Rosa canina*, bramble, ivy, and at least one bush of the uncommon Midland hawthorn. A range of woodland and woodland-edge ground flora species here includes wood dock *Rumex sanguineus*, cow parsley *Anthriscus sylvestris*, ground ivy *Glechoma hederacea* and hairy-brome *Bromus ramosus*.	1.9km north west

Habitats

6.5.8 A preliminary ecological appraisal (PEA) of the Site was undertaken in 2024 to inform understanding of habitats and species present on the Main Site. For details, see Appendix A2.

6.5.9 According to the UKHab Classification system, there are six habitat types identified within the Main Site. UKHab Classification codes are also provided in brackets.

h3h mixed scrub (32; scattered trees)

6.5.10 Two areas of dense mixed scrub were identified during the field survey. One along the north western edge and one along the north eastern edge which contained scattered trees.

6.5.11 Species comprised: hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and elder *Sambucus nigra.*

u1b5 buildings

6.5.12 A single derelict building in poor condition is present within the Main Site boundary.

u1b6 other developed land

6.5.13 A series of tracks were identified within the Main Site.

u1c artificial unvegetated, unsealed surface (112; earth bank)

6.5.14 Four areas of artificial unvegetated, unsealed surface were identified during the field survey. All of these were located to the north of the Main Site. One of these areas contained large earth piles of crushed aggregate.

u1f sparsely vegetated land (10; scattered scrub)

6.5.15 Sparsely vegetated land is the dominant habitat type present within the Main Site. Five areas of sparsely vegetated land were identified during the field survey towards the centre of the Main Site. Scattered bramble scrub was present within one of these areas towards the northern extent.

6.5.16 Habitat comprised mostly of bare ground with patches of vegetation present. Species included ribwort plantain *Plantago lanceolata*, forget-me-not *Myosotis* sp., narrow leaved ragwort *Senecio inaequidens*, broad leaved dock *Rumex obtusifolius*, mouse ear chickweed *Cerastium fontanum* and common nettle. Colonising plant flora comprised of early ephemerals such as teasel *Dipsacus fullonum*, woundwort *Stachys sylvatica*, hoary mustard *Hirschfeldia incana*, prickly sow thistle *Sonchus asper*, creeping thistle *Cirsium arvense*, cow parsley *Anthriscus sylvestris* and groundsel *Senecio vulgaris*.

r2b other rivers and streams

6.5.17 Three ditches were identified during the field survey towards the south of the Main Site.

6.5.18 One wet ditch was present alongside the area of scrub habitat associated with the western edge of the Main Site. The second was dry at the time of survey and was identified running alongside two field boundaries. The third was wet but couldn't be easily surveyed due to inaccessible steep bank sides obscured by overgrown vegetation in places. Channel width was 1-2m and banks made up of earth and stones, the flow was considered to be sluggish. The final wet ditch connected with the previous ditch and had similar access issues due to steep banks and overgrown vegetation.

Protected and notable species

6.5.19 Table 6-25 provides a summary of the baseline protected and notable species information available to date. Surveys are currently on going and are expected to finish in 2025.

Table 6-25: Summary of baseline faunal species information

Survey scoped in	Survey scope with reference to key methodological guidance
Badger	Due to the sensitivity of badgers, any data and recommendations for further survey have been included within a confidential badger Appendix and should not be made publicly available (see Appendix D of PEA report[68]).
Bats	British bat species are fully protected through their inclusion in Schedule 5 of the WCA 1981 (as amended) and in Schedule 2 of The Conservation of Habitats and Species Regulations 2010 (as amended). Under the legislation, it is an offence to intentionally kill, injure or take a bat as well as intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat or disturb an animal while it is occupying a structure or place which it uses for that purpose. A preliminary bat roost assessment (PBRA) was undertaken as part of the PEA survey and the building to the north of the Site was assessed as having moderate bat roost suitability, containing roosting and entrance features such as gaps in concrete slabs and top of building, crevices in brickwork at front and rear elevations. It is anticipated this building will be subject to excessive levels of disturbance/demolition to facilitate the works. Therefore, bat surveys are currently being undertaken comprising two bat activity surveys in accordance with BCT Good Practice Guidelines[69] to determine if bats are using the building to roost prior to the proposed works commencing on site. If a bat roost is identified and will be disturbed by the proposed works, then a mitigation licence will be required from Natural England prior to the commencement of works. Natural England takes a minimum of 30 working days to process a licence application. To obtain a bat licence, appropriate mitigation will need to be developed and implemented; works may also be seasonally restricted. Foraging and commuting potential on Site was considered to be negligible and no further surveys to assess bat activity levels throughout the Site were undertaken.
Otter	Habitats within the Site were assessed as being unsuitable to support notable populations of otters. However, any evidence of otters would be recorded during water vole surveys.
Water vole	The network of ditches within the Main Site were assessed as being suitable to support water vole. Water voles receive full protection under Section 9 of the WCA 1981 (as amended) making it an offence to intentionally kill, injure or take them, possess or control them (alive or dead). It is also an offence to intentionally or recklessly damage or destroy a structure or place used for shelter or protection, disturb them in a place used for shelter or protection or obstruct access to a place used for shelter or protection. Therefore, water vole surveys are currently being undertaken by a suitably qualified ecologist (SQE) in line with current guidance[70], to determine the presence or likely absence of this species. Water vole surveys require two survey visits: mid-April to June; and July to September inclusive. If water voles are found to be utilising the watercourses and they are to be affected by the proposed works, mitigation and a licence from Natural England will be required.
Great crested newt	GCN are fully protected through their inclusion in Schedule 5 of the WCA 1981 (as amended) and in Schedule 2 of The Conservation of Habitats and Species Regulations 2017. Under the legislation, it is an offence to intentionally kill, injure or take a great crested newt as well intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt or disturb an animal while it is occupying a structure or place which it uses for that purpose. 115 waterbodies (1 inland river, 53 surface water; linear features and 61 surface water; area features) were recorded on maps within 250m of The Site. However, only four of these waterbodies were assessed for GCN within the Main Site. There is also a confirmed GCN population in Swinster Lane Field LWS located approximately 1.6km north west of the Site.

[68] Arup (2025). North Killingholme Carbon Capture Plant; Preliminary Ecological Appraisal.

[69] Collins (2023). Bat Surveys for Professional Ecologists: Good Practise Guidelines (4th edition). The Bat Conservation Trust, London.

[70] Dean, M., Strachen, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

Survey scoped in	Survey scope with reference to key methodological guidance
	Environmental DNA (eDNA)[71] surveys are being undertaken on the waterbodies. An eDNA survey entails the collection of water samples from the waterbody which is then sent to a laboratory to test for the presence of GCN DNA. The eDNA survey may be undertaken 15 April – 30 June. If GCN DNA is recorded, a licence from Natural England may be required for the works. Due to the distance of the pond to the north of the Site, the absence of habitat connectivity and intervening land uses, no eDNA surveys are required for this pond.
Birds	All wild birds are protected under Section 1 of the WCA 1981 (as amended); they are protected from being killed, injured or captured, while their nests and eggs are protected from being damaged, destroyed or taken. Certain birds (listed in Schedule 1 of the 1981 Act) receive extra protection. For these species it is an offence to recklessly disturb them when nesting, building a nest, in or near a nest that contains their young. The predominant habitat of sparsely vegetated land within the Main Site provides limited opportunities for supporting notable populations of birds. However, habitats including dense scrub, waterbodies, areas of wet grassland and fields to the north-west, west and south of the Site were considered suitable for foraging and nesting by wader species during high water conditions on the Humber Estuary outside the breeding bird season. It is recommended that any work with the potential to damage a breeding bird nest, such as vegetation clearance, be undertaken outside the bird nesting season (March to August inclusive). If this is not possible, a nesting bird survey should be conducted by a suitably qualified ecologist (SQE) immediately prior to the commencement of clearance works to ensure no bird nests or eggs are harmed by The Site. If an active bird nest is discovered, an appropriate exclusion zone, as determined by the SQE, must be implemented until the young have fledged. It is recommended that breeding bird surveys are undertaken within the Main Site plus an appropriate buffer for disturbance. Six visits should be undertaken between April and July using the amended Common Birds Census (CBC) methodology (Bibby et al., 1992)[72]. The surveys also include targeted surveys for Cetti's warbler due to their confirmed presence within the Main Site. Wintering and passage bird surveys will also be undertaken during the survey season, focusing on Humber Estuary SPA bird species.

Key receptors

6.5.20 Taking into account the survey information and overall baseline, the key receptors to consider when assessing the potential ecological effects of the Proposed Development are presented in Table 6-26.

Table 6-26: Key ecological receptors (Indicative – to be confirmed on completion of the baseline surveys)

Scale	Receptor
International	The Humber Estuary SAC, SPA and Ramsar site scoped in on the basis of potential impacts via water outflow to the Estuary, and/or via air quality and potential impacts on qualifying bird species.
UK/National	The Humber Estuary SSSI (via water outflow to the Estuary, and/or via air quality).
Regional	No receptors of regional importance are assessed to be within range of any likely significant effects arising from the Proposed Development.
County	No receptors of county importance are assessed to be within range of any likely significant effects arising from the Proposed Development.
District	No receptors of district importance are assessed to be within range of any likely significant effects arising from the Proposed Development.
Parish	Bats (roosting – provisional evaluation*). Potential for bats roosts in structures.

[71] s J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., Wilkinson J., Arnett A., Williams P. and Dunn F. (2014) Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

[72] Bibby, C.J., Burgess, N.D. & Hill, D.A. (1992) Bird census techniques. Academic Press Limited, London, UK.

Scale	Receptor
	Great crested newt (provisional evaluation*) Water vole (provisional evaluation*) Breeding bird assemblage (provisional evaluation*) Wintering birds (provisional evaluation*)
Immediate locality (within zone of influence only)	Ponds* Scrub* Badger
Scoped out	The populations of other species and representations of other habitats within the Site and surrounds are either small, of negligible significance or value, or both, and are similarly assessed as of only immediate local (i.e. Site) value. They are therefore scoped out as a key receptor. However, the habitats will still be considered in terms of their biodiversity value when assessing overall net benefit for biodiversity.
*Provisional evaluation to be confirmed on completion of the baseline surveys	

Future baseline

6.5.21 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

Potential impacts

6.5.22 A high-level list is provided below of the potential impacts that could arise as a result of the Proposed Development.

Construction

6.5.23 The following impacts could occur during the construction phase:

- permanent direct loss of habitat during construction of the Proposed Development;
- temporary degradation of habitat, for example arising via temporary construction laydown uses, or changes in water quality;
- potential for both permanent and temporary loss of features/habitat used by protected species, including badger and birds;
- temporary disturbance (from noise and light pollution and vibration) to protected species, including badger, bats, birds, great crested newt and water vole; and
- creation of new habitats and/or enhancement of existing habitats as part of a long-term Biodiversity Net Gain (BNG) delivery strategy.

Operation

6.5.24 The following impacts could occur during the operational phase:

- permanent reduction in habitat condition arising from changes in air or water quality;
- permanent on-going disturbance of protected species, including via increased levels of noise and/or artificial lighting; and
- long-term net-positive effects arising from the construction and maturation of enhanced and new habitats, including as part of a strategy to deliver BNG.

Decommissioning

6.5.25 The potential impacts on ecology resulting from the decommissioning of the Proposed Development will not be separately evaluated in this EIA ecology assessment. A further assessment of any decommissioning-related impacts on ecology will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.5.26 Proposals for mitigation will follow the following 'mitigation hierarchy' as per guidance published by CIEEM[73], i.e. avoidance or reduction of impacts where possible in the first instance and wherever possible, with mitigation and/or compensation where necessary unavoidable. Where beneficial effects and or opportunities for enhancement and betterment are identified, measures to maximise these will also be proposed.

6.5.27 Avoidance measures will include as far as possible the sensitive siting of the Proposed Development, and the temporary construction/laydown areas. Where practicable, construction and transportation methods will be selected that minimise impacts on habitats and/or protected species. Mitigation measures include adoption of a CEMP or similar, and seasonal timing restrictions within the construction programme, especially in respect of licenced mitigation for protected species. Where compensation is required (including to achieve statutory Biodiversity Net Gain), consideration is to be given to locally appropriate design of new habitats, and the potential for synergies with local biodiversity strategies.

6.5.28 Mitigation and compensation measures will be refined as surveys are completed.

Scope of assessment

6.5.29 The ecological assessment will follow industry standard guidance on Ecological Impact Assessment, as published by CIEEM[73].

6.5.30 Impacts on each ecological receptor will be assessed, taking into account the avoidance, mitigation and compensation measures embedded into the scheme design, or proposed as part of implementation. Residual effects will be identified, characterised and assessed in terms of significance at the relevant geographical scale, in accordance with the CIEEM approach.

Proposed scope of assessment

6.5.31 Table 6-27 summarises the aspects of the ecology assessment that will be scoped in/ out of the EIA. Rationale for exclusion from the assessment is detailed below.

6.5.32 Permanent loss of habitat is scoped out of the assessment during operation and decommissioning. Loss of habitats on site are anticipated to be largely limited to urban/highly disturbed habitats of limited ecological value. During operation and decommissioning the loss of habitats will be negligible. In addition, habitats of similar and greater value are abundant in the immediate local area.

6.5.33 Temporary degradation of habitat is scoped out of the assessment during operation and

[73] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2 (updated April 2022). Chartered Institute of Ecology and Environmental Management, Winchester. https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/

decommissioning. Retained habitats on site are anticipated to be largely limited ecological value, any degradation of habitats during operation and decommissioning are anticipated to be negligible. In addition, habitats of similar and greater value are abundant in the immediate local area.

Table 6-27: Scoping summary for the ecology and nature conservation assessment

Impacts on designated sites	Construction	Operation	Decommissioning
Impacts on designated sites	Scoped in	Scoped in	Scoped out
Permanent loss of habitat	Scoped in	Scoped out	Scoped out
Temporary degradation of habitat	Scoped in	Scoped out	Scoped out
Permanent and temporary loss of a feature/habitat used by protected species	Scoped in	Scoped in	Scoped out
Disturbance to protected species	Scoped in	Scoped in	Scoped out
Creation and/or enhancement of existing habitats	Scoped in	Scoped in	Scoped out

Habitat regulation assessment (HRA) and Biodiversity Net Gain (BNG)

6.5.34 The Humber Estuary Ramsar and SPA are located approximately 0.4km east of the Site. The Humber Estuary SAC and SSSI are located approximately 0.7km east of the Site. Consideration will therefore be given to HRA matters, including in the context of air quality. A HRA report will be prepared by reference to best practice procedural guidance[74].

6.5.35 Technical work will be undertaken to quantify the change in biodiversity units predicted to arise from construction of the Proposed Development, and to determine the BNG that can be achieved via habitat enhancement and creation. Calculations will be prepared using the statutory Biodiversity Metric, and related guidance documents as published by Defra,[75] and an uplift of at least 10% in biodiversity units will need to be met.

[74] Tyldesley & Chapman (2013); The Habitats Regulations Assessment Handbook (as updated). UK: DTA Publications Ltd.

[75] Defra (December 2023). Guidance: Statutory biodiversity metric tools and guides. https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides

6.6 Geology, hydrogeology and land contamination

Baseline conditions

Land use and topography

6.6.1 The Main Site largely comprises a vacant site covered in hardstanding, bare ground and rough vegetation. The Main Site is relatively flat, however there are slopes along the drainage channel on the southern site boundary. The land in the west of the Main Site is relatively flat undeveloped agricultural land. A pond is present adjacent to the south-east of the Main Site and the Humber Estuary is approximately 800m to the north-east.

6.6.2 Historically, part of the Main Site was formerly used as a gas production plant (reforming plant), utilising light petroleum distillate (naphtha) rather than coal/coke, between 1963 and 1974[76]. The main gas works buildings were located across the north and centre of the Main Site with the main naphtha tanks to the north and east.

6.6.3 It is understood that the plant was demolished to ground level in the late 1980s (with the exception of the electricity substation to the north-west of the Site) and until January 2005 the Main Site was utilised by Transco for the storage of large diameter pipes[13]. The area to the north of the Main Site has since been used for vehicle parking/storage. The agricultural land in the west of the Main Site is understood to have remained undeveloped.

6.6.4 Within the area of the spur pipeline, land uses are predominantly industrial/commercial, with some open grassland fields. Given the indicative nature of the pipeline, information on the site history has not been obtained but will be included within the Phase 1 Geoenvironmental Desk Study Report that will be prepared for the Site.

Geology

6.6.5 The British Geological Survey (BGS) 1:50,000 geology map[77] records an area of made ground beneath the eastern part of the Main Site. Historical ground investigation records within the Main Site indicates the made ground is up to 4.5m thick[13]. Made ground is anticipated in beneath developed areas within the spur pipeline.

6.6.6 Natural superficial deposits beneath the west of the Main Site and majority of the area within the spur pipeline is Glacial Till comprising sandy and gravelly clays. Tidal Flat Deposits are present beneath the southeast of the Option A spur pipeline. The bedrock beneath the Site is the Burnham Chalk Formation, historical BGS borehole data[78] indicates the Chalk is at approximately 14 to 18m depth.

6.6.7 There are no geologically designated SSSI or Regionally Important Geological Sites (RIGS) within the Site or within 250m of it.

Hydrogeology

[76] Parsons Brinckerhoff (PB) Ltd (2004) Environmental Assessment Site Investigation Factual Report (Final) Clough Road, North Killingholme, North Lincolnshire, Juen 2004. Prepared for Second Site Property Holdings Ltd.

[77] British Geological Survey (1991) 1:50,000 Series Solid and Drift Geology, Partington Sheet 81 (and including parts of Sheet 82 and 90)

[78] British Geological Survey GeoIndex Onshore https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.80718423.1344365845.1688571288-1063187633.1688571288 [accessed June 2024]

6.6.8 The Chalk bedrock beneath the Site is designated as a principal aquifer, whilst the Glacial Till deposits are a Secondary Undifferentiated aquifer and the Tidal Flat Deposits are classified as Unproductive strata. The Main Site is not located within a groundwater Source Protection Zone (SPZ) or Drinking Water Safeguard Zone. The Option B spur pipeline and south-east area of the Option A spur pipeline is located within SPZ 3. There are no active licensed groundwater abstractions within 2km of the Main Site boundary. The Main Site has a medium groundwater vulnerability[79] and the Option A spur pipeline has a low to medium groundwater vulnerability.

6.6.9 Historical ground investigation records recorded shallow groundwater within the granular horizons of the superficial deposits beneath the Main Site at levels between 0.46 and 3.47m below ground level[80]. Shallow groundwater is inferred to generally flow towards the southeast[81].

6.6.10 Localised areas of perched groundwater have been encountered in the Made Ground during previous ground investigations[69] at the Main Site. Sampling of the perched groundwater indicated the presence of elevated concentrations of total petroleum hydrocarbons (TPH).

6.6.11 Groundwater within the Chalk is confined by the overlying Glacial Till which forms a low permeability barrier. The Chalk groundwater levels is anticipated to be between 0-5m AOD at the Main Site, and potentially tidally influenced. Groundwater in the Chalk was not encountered during the previous intrusive ground investigations at the Main Site.

Soil type and agricultural land

6.6.12 The Site is situated on land classified as Grade 3 under the Defra Agricultural Land Classification (ALC)[82]. Grade 3 Agricultural Land is classified as "good to moderate quality land, with moderate limitations that affect the choice of crops, timing and type of cultivation, harvesting or the level of yield" and may include Best and Most Versatile (BMV) agricultural land.

6.6.13 Nevertheless, the Defra ALC is a high-level tool that categorises extensive land areas at a 1:250,000 scale, lacking consideration for factors such as smaller industrial sites. Considering the site history and current development, the eastern part of the Main Site and central part of the Option A spur pipeline holds no inherent agricultural value with only the western part of the Main Site, south-eastern part of the spur pipeline in use as agricultural land.

6.6.14 The agricultural land within the Main Site has an area of approximately 4 hectares.

Contamination

6.6.15 The historic use of the land associated with the former gas production plant indicates there is the possibility for the presence of potential contaminants in ground and groundwater at the Main Site.

6.6.16 Previous intrusive ground investigations[76] have found evidence of elevated concentrations of

[79] DEFRA Magic Maps https://magic.defra.gov.uk/MagicMap.aspx [accessed June 2024]

[80] Parsons Brinckerhoff (PB) Ltd (2004) Environmental Assessment Site Investigation Factual Report (Final) Clough Road, North Killingholme, North Lincolnshire, Juen 2004. Prepared for Second Site Property Holdings Ltd.

[81] Encica Consulting Limited (2005) Site specific risk assessment at former das reforming plant Clough Road North Killingholme, April 2005. Prepared for Humber Sea terminal Ltd

[82] Natural England, Provisional Agricultural Land Classification (ALC) (England) https://naturalengland-defra.opendata.arcgis.com/datasets/5d2477d8d04b41d4bbc9a8742f858f4d_0/explore?location=53.071884%2C-0.864313%2C15.00 [accessed June 2024]

both organic (total petroleum hydrocarbons and polycyclic aromatic hydrocarbons) and inorganic (heavy metals) contaminants across the Main Site, both in soils and groundwater. Visible evidence of contamination in the made ground in a number of locations comprised clinker/slag, fly ash, suspected asbestos containing material, black hydrocarbon staining and localised free phase hydrocarbon product in the form of an iridescent sheen. Contamination was found to be limited to make ground deposits and perched groundwater.

6.6.17 Given the indicative nature of the spur pipeline, information on the site history and potential presence of contaminants has not been obtained but will be included within the Phase 1 Geoenvironmental Desk Study Report that will be prepared for the site. Made Ground is anticipated in areas of current and historical development within the spur pipeline.

6.6.18 Based on publicly available risk mapping prepared by Zetica[83], the Main Site is in area of low risk from Unexploded Ordnance (UXO). As the gas production plant was developed after WWII, it would likely have been agricultural land during the war and would not have been a bombing target. However, Zetica notes that there are nearby historical Luftwaffe targets which include Dock Ports Killingholme, 1.km to the east, Immingham Dock 1.5km to the south-east and the former RAF Goxhill airbase 3.6km to the north-west.

Mining, quarrying and minerals

6.6.19 The Main Site is not located within the Mining Remediation Authority (formerly the Coal Authority) coal mining reporting area.

6.6.20 There no records of any quarries or non-coal mine workings beneath the Main Site or within the 250m boundary of the Main Site[84].

6.6.21 There are no mineral safeguarding areas within the 250m boundary of the Main Site[85].

Geohazards

6.6.22 The Main Site is within an area considered to have a very low to low hazard rating for shrink swell clays[73].

6.6.23 The Main Site is within an area considered to have a very low hazard rating for running sands. A moderate hazard is present immediately to the east of the Site.

6.6.24 The Main Site is within an area considered to have a negligible to very low hazard rating for compressible deposits. A moderate hazard is present immediately to the east of the Site.

6.6.25 The Main Site is within an area considered to have a negligible to very low hazard rating for collapsible deposits.

6.6.26 The Main Site is within an area considered to have a very low hazard rating for landslides and negligible hazard rating for soluble rocks.

Future baseline

[83] https://zeticauxo.com/guidance/risk-maps/ [accessed June 2024]

[84] Groundsure (2023) Enviro and Geo Insight Report, GS-1WC-THH-MTA-XXI. Purchased October 2023

[85] North Lincolnshire Local Plan, online policy map https://localplan.northlincs.gov.uk/stages/3/policy-map [accessed August 2024]

6.6.27 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

Potential impacts

Geology

6.6.28 There will be no effects on geological SSSIs and RIGS as a result of the Proposed Development as there are none within 250m boundary of the Site.

Hydrogeology

6.6.29 Disturbance of any contaminated made ground may cause an increase in the leaching and mobilisation of contamination, along new or existing surface or sub-surface pathways. The Main Site is located close to surface water receptors including existing drains within the boundary of the Main Site and adjacent ponds.

6.6.30 There is the potential for contamination of aquifers and watercourses within and surrounding the Site during construction and operation due to spillages, leaching and/or run off.

Soil type and agricultural land

6.6.31 Agricultural land in the west of the Main Site will likely be used as part of the Proposed Development therefore the land will not be useable for agricultural purposes during the construction and operation of the Proposed Development.

Contamination

6.6.32 During construction, there may be disturbance of potentially contaminated soils and perched groundwater that are present as a result of historical site activities, which may cause impacts on sensitive receptors (including construction workers, nearby human receptors and controlled waters). The use of piled foundations may result in the creation of new pathways allowing migration of any contaminants into groundwater and nearby surface waters.

6.6.33 The risk of encountering UXO within the Site is low, however, the Site is located close to former bombing targets.

Mining, quarrying and mineral resources

6.6.34 There will be no effects on mines, quarries or mineral resources as a result of the Proposed Development as there are none within 250m boundary of the Site.

Geohazards

6.6.35 No significant geohazards have been identified that could impact the Proposed Development.

Decommissioning

6.6.36 The potential impacts on geology, hydrogeology, and land use, resulting from the decommissioning of the Proposed Development, will not be separately evaluated in this EIA

geology, hydrogeology, and land use impact assessment. A further assessment of any decommissioning-related impacts on geology, hydrogeology, and land use will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.6.37 Proposed mitigation measures include:

- Ground Investigation and Risk Assessment prior to construction, with remediation strategies developed as appropriate to deal with any contamination risks;
- Outline CEMP which will be consolidated to into a CEMP following the grant of planning permission;
- Health and Safety Plan;
- Incident Response Plan; and
- Spill kit training / contamination toolbox talks.

6.6.38 Subject to the assessments, typical good construction and health and safety practice is likely to be sufficient to mitigate any potential effects from the presence of made ground during construction, to both construction workers and nearby human receptors.

6.6.39 Depending on the design, there may be a requirement to retain materials on site for reuse. Measures will be taken to establish acceptable reuse and import criteria and procedures defined for ensuring that the suitability of material can be demonstrated and verified. A discovery strategy will be developed to enable unforeseen ground conditions to be addressed if or when encountered during construction.

6.6.40 Development-specific ground investigations will need to be undertaken prior to construction to assess the ground conditions, to provide information for foundation and earthworks design and assess the presence of contamination. If contamination is present and a risk assessment confirms that there are potential impacts to the identified receptors, then a remediation strategy will be developed to mitigate these risks.

Scope of assessment

6.6.41 Phase 1 Geo-environmental Desk Study Report will be prepared for the Site, which will establish the history of the Site, the anticipated ground conditions and the potential for contamination to be present based on past and current use. The desk study will include a preliminary geoenvironmental risk assessment which will be prepared in accordance with the Environment Agency Land Contamination Risk Management guidance (LCRM)[3] and British Standard 10175: Investigation of potentially contaminated sites – code of practice . The results of the assessment will be used to assess data gaps and uncertainties to inform the scope for pre-construction ground investigation.

6.6.42 Table 6-28 sets out the sensitivities that will be assigned to typical receptors and resources of relevance to the Site in the EIA.

Table 6-28: Sensitivities assigned to geology, hydrology and land contamination receptors

Designation	Receptors
Very High (e.g. International)	**Human health:** Residential developments with gardens **Controlled waters:** Surface water bodies of high quality immediately bordering the Site,

Designation	Receptors
	principal aquifers with high vulnerability, Sites within groundwater source protection zone 1 (SPZ) **Geology and ecology:** Internationally designated areas e.g. World Heritage Site, RAMSAR, Geoparks, biosphere reserves
High (e.g. National)	**Human health:** Residential developments without gardens, allotment gardens and sports pitches/playing fields. **Controlled waters:** Principal aquifers of high vulnerability outside Zone 1 SPZ, surface water bodies of high quality within 250m of the Site **Geology and ecology:** Nationally designated areas e.g. SSSI, NNR, National Parks, SPA, SAC, Limestone Pavement Orders
Medium (e.g. Regional / County)	**Human health:** Public open space including public parks. **Controlled waters:** Secondary A aquifer of high to moderate vulnerability immediately bordering the Site or contributing to river base flow, surface water bodies of moderate quality. **Geology and ecology:** Regionally designated areas e.g. Regionally Important Geological Sites (RIGS), Special Landscape Areas (SLA)
Low (e.g. Local)	**Human health:** Commercial developments, construction workers/maintenance workers with limited exposure duration to contamination **Controlled waters:** Secondary A aquifer of low vulnerability, Secondary B aquifers, surface water bodies of low quality **Geology and ecology:** Local Geological Sites (LGS), Local Wildlife Sites (LWS), local nature reserves, locally designated ancient woodlands **Built environment:** Buried structures and services, new planting in landscaped areas
Negligible	**Human health:** Industrial developments **Controlled waters:** Undifferentiated aquifers, unproductive strata, surface water bodies of poor quality **Geology and ecology:** Local woodlands, plantations and parks with no official designation

6.6.43 Impacts will be assessed during both the construction and operational phases of the Proposed Development. The assessment of environmental impacts with respect to geology, hydrology and land contamination will be developed taking account the fact that impacts could be beneficial or adverse, short, medium or long term, direct or indirect, permanent, temporary and cumulative.

6.6.44 The significance of effect is determined using the significance matrix in Section 8.1 of this Scoping Report. Effects will be considered significant if they are identified to be moderate or greater. Effects which are identified as minor, negligible or neutral are not considered to be significant.

6.6.45 The lack of protected or designated geological sites within or close to the Site boundary means that no effect during construction and operation is anticipated. Therefore, this has been scoped out from further assessment.

6.6.46 The risk of encountering UXO is low but has been scoped in for construction pending completion of a detailed UXO risk assessment due to the proximity of the Site to former bombing targets. No operational effects are anticipated with respect to UXO as ground disturbance will be limited to construction only.

6.6.47 Disturbance of potentially contaminated soils during construction may pose a risk to human health receptors (construction workers and site neighbours). Such risks during construction are typically mitigated by applying good working practices set out in a CEMP and Health and Safety Plan. A land contamination risk assessment will provide information to support the development design, remediation strategy and inform health and safety requirements. While it is not expected that the residual effects from the disturbance of contaminated land would be significant, at this

stage additional assessment is required to understand the presence of contamination within the site. Therefore, this aspect will be scoped in for further assessment.

6.6.48 There are sensitive controlled water receptors within, or close to, the Site boundary which have the potential to be impacted by the Proposed Development. Controlled waters have been scoped in for Construction, as they require further assessment. Operation and decommissioning impacts have been scoped out, as any significant effects due to contamination would normally be mitigated during construction e.g. through remediation, and will be assessed as part of the permit application for the Proposed Development.

6.6.49 There is potential for inter-related cumulative effects which could arise from construction of the wider power station. This will be assessed in the EIA.

Proposed scope of assessment

6.6.50 Table 6-29 summarises the aspects of the geology, hydrogeology and land contamination assessment that will be scoped in/ out of the EIA.

Table 6-29: Scoping summary for the geology, hydrogeology and land contamination assessment

Geology, hydrogeology, and land contamination aspect	Construction	Operation	Decommissioning
Effects on geology	Scoped out	Scoped out	Scoped out
Effects from contamination on surface water and groundwater resources	Scoped in	Scoped out	Scoped out
Effects from contamination on human health/built environment	Scoped out	Scoped out	Scoped out
Effects from UXO on human health/built environment	Scoped in	Scoped out	Scoped out
Effects on agricultural land	Scoped in	Scoped out	Scoped out

6.7 Landscape and visual amenity

Relevant legislation, policy and guidance

6.7.1 A summary of the relevant guidance is set out below.

- Christine Tudor, Natural England (2014). An Approach to Landscape Character Assessment;
- Landscape Institute (2021). Assessing Landscape Value Outside National Designations, Technical Guidance Note 02/21;
- National Infrastructure Commission (2024). Project Level Design Principles – Guidance from the National Infrastructure Commission;
- National Infrastructure Commission (2020). Design Principles for National Infrastructure;
- Landscape Institute (2019). Visual Representation of Development Proposals, Technical Guidance Note 06/19;
- Landscape Institute and Institute of Environmental Management and Assessment (2013); and
- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3).

Study area

6.7.2 The study area for the LVIA is proposed as a 3km radius from the Site, which is considered sufficiently wide to enable the assessment of potentially significant landscape and visual effects. This is in accordance with GLVIA3 and based on the character of the Site and surrounding area and the size and scale of the development proposed.

Baseline conditions

Site context

6.7.3 The Main Site is located approximately 5km north-west of Immingham Docks and adjacent to the Killingholme Terminal, a busy operational port on the south bank of the Humber Estuary. It is characterised by large industrial areas around Killingholme and Immingham with associated industrial activities and transportation infrastructure. The settlements of East Halton and North Killingholme lie to the west and south-west of the Main Site (1.2km and 2km respectively) and the Humber Estuary lies 0.3km to the east.

6.7.4 The area has been heavily developed for industry from the 1960's onwards with now only remnant pockets of flat open farmland, woodland and naturalised coastal habitats interspersed amongst the dominant industrial infrastructure. To the north and west of the Main Site lies agricultural land bounded by hedgerows and mature trees. Deciduous woodland blocks at Chase Hill Wood and Burkinshaw's Covert sit within the industrial landscape. The woodlands have been present for over 100 years, with the former retaining its original footprint, but the latter has been partially removed.

6.7.5 No nationally designated landscapes exist within the study area. The Wold Villages Scarp Slope Area of High Landscape Value lies approximately 10 km to the west. Areas of woodland at Kirmington, which lies approximately 9km south-west of the Site, are currently proposed as an Area of High Landscape Value. There are two Sites of SSSI; the Humber Estuary (which is also a SPA and SAC) is approximately 0.4km north-east of the Site and North Killingholme Haven Pits are approximately 0.4km to the east of the Site.

Landscape character

6.7.6 The Site falls within the Humber Estuary National Character Area (NCA) 41. This NCA focuses on the low-lying estuarine landscape, with extensive stretches of intertidal habitats including mudflats, salt marsh and reedbeds, coastal dunes and wetlands along the side of the estuary. Lincolnshire Coast and Marshes NCA 42 also falls within the study area and is characterised by a wide coastal plain and Outmarsh, with a mix arable fields and rich pasture divided by narrow dykes across an open landscape.

6.7.7 The Site and study area fall within the North Lincolnshire Landscape Character Assessment (1999). This document will be reviewed during the preparation of ES and any significant changes which have taken place since it was prepared will be noted.

6.7.8 The Landscape Character Assessment defines the Site as being within the 'Humber Estuary' character area, and within this the 'Industrial' local landscape type. The relevant character areas and types for the study area are:

- Humber Estuary:
  - Industrial Landscape – South Humber Bank;
  - Wooded Farmland - East Halton, North Killingholme;
  - Flat Open Farmland - Barrow Haven, New Holland, Goxhill Haven; and
  - Open Undulating Farmland - South Killingholme.
- Lincolnshire Drift:
  - Wooded Farmland – East Halton, Kirmington, Thornton Abbey, Ulceby Junction.

South Humber Bank Landscape Initiative

6.7.9 The Site falls within the wider South Humber Bank area as defined within saved policy LC20 *'South Humber Bank – Landscape Initiative'* [86]of the North Lincolnshire Local Plan[87]. *"The South Humber Bank Landscape Initiative offers good opportunities for industry and agriculture to help create a showcase where both are placed in greater harmony with their surroundings".*

Views and visual amenity

6.7.10 Visual receptors likely to experience views of the construction and/or operation of the Proposed Development can be categorised into the following types:

- residents in settlements neighbouring the Site (East Halton, North Killingholme, South Killingholme, and Immingham);
- users of PRoW between East Halton and the Humber River; and
- users of the local road network.

[86] North Lincolnshire Council (2003). Saved 2003 Local Plan Policies (October 2024) – Landscape and Conservation. Available at: https://m.northlincs.gov.uk/planningreports/northlincolnshirelocalplan/landscapeandconservation2.pdf

[87] North Lincolnshire Council (2003). The North Lincolnshire Local Plan. Available at: https://www.northlincs.gov.uk/planning-and-environment/planning-policy-the-north-lincolnshire-local-plan/

Future baseline

6.7.11 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

Potential impacts

6.7.12 This section sets out the potential impacts on landscape and visual receptors during the construction and operation phase.

6.7.13 A ZTV will be prepared based on the tallest component of the Proposed Development (assumed to be the CCP absorber) to confirm the extent to which the Proposed Development will be visible in the surrounding area.

Construction phase

6.7.14 The potential sources of landscape and visual impacts during the construction phase include:

- presence and views of construction activity including hoardings, structures under construction, construction laydown areas and material stockpiles within the Main Site, resulting in potential temporary effects on landscape and views.

6.7.15 Some existing landscape components, such as vegetation may be removed during the construction of the spur pipeline. This might increase intervisibility of views from the local PRoW network. If the spur pipeline is buried then landscape impacts will include localised earthworks, structures under construction, construction laydown areas and material stockpiles.

Operational phase

6.7.16 The potential sources of landscape and visual impacts during operation of the Proposed Development include:

- the presence and increased massing of the proposed buildings and ancillary structures including stacks resulting in potential changes to landscape character and views;
- increased frequency of condensed water plumes from the absorber stacks, due to a potentially lower flue gas temperature;
- cumulative visual impacts where the Proposed Development and CCGT will be seen together; and
- the presence of the spur pipeline if it is above ground. The spur pipeline will have a low profile and would be expected to have a limited impact on landscape and visual amenity. The pipeline corridor would extend the industrial context into the remnant pockets of flat open farmland albeit set against the wider industrial context. If the spur pipeline is buried it will not be visible but accommodating it would result in potential changes to landscape character.

Decommissioning

6.7.17 The potential impacts on landscape and visual amenity resulting from the decommissioning of the Proposed Development, will not be separately evaluated in this EIA landscape and visual amenity impact assessment. A further assessment of any decommissioning-related impacts on landscape and visual amenity will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.7.18 The following mitigation measures are anticipated to be used during the construction phase of the development:

- implementation of construction best practice;
- minimisation of vegetation removal and tree loss; and
- adherence to tree protection measures outlined in British Standard: BS 5837[88];

6.7.19 The following mitigation measures are assumed during the operational phase of the development:

- building and stack design, including materials colour and cladding to be appropriate to the context of the area, and help break up the visual massing as relevant, avoiding overly reflective materials; and
- remediation and restoration of any hedgerow and vegetation removed as part of the construction of the spur pipeline where possible.

Scope of assessment

6.7.20 There are clear differences between landscape effects and visual effects and the following distinctions have been made:

- landscape effects relate to changes in the physical fabric, and/or character of the landscape. Landscape effects may include direct impacts upon specific physical landscape elements (for example loss of distinctive topography, woodland or hedgerows) or effects on wider landscape character (for example available views of the development, lighting or sound effects, which may affect how the wider landscape is perceived).
- visual effects relate to changes that would occur in the composition of view character as a result of implementing a development. Visual receptors include residents, users of public rights of way, of roads and of recreational facilities.

6.7.21 The approach and methodology to be used in the LVIA will follow GLVIA3.

6.7.22 The assessment process comprises the following key stages:

- determine the scope of the assessment;
- collate baseline information relating to the existing landscape and visual context of the receiving environment through desk study research and field-based assessment;
- define the landscape and visual receptors and describe the landscape and visual baseline;
- review the type of development proposed and identify and describe the likely impacts

[88] BSI Standards Limited (2012) Trees in relation to design, demolition and construction. Recommendations.

(enabling specific judgements to be made on the sensitivity of landscape and visual receptors), including embedding mitigation measures into the design of the Proposed Development to avoid or minimise adverse landscape and visual effects and maximise opportunities for landscape integration and enhancement;

- establish the sensitivity of visual receptors (balancing judgements on value and susceptibility);
- determine the magnitude of impacts (balancing judgements on size/scale, geographical extent, duration and reversibility);
- assess the significance of likely visual effects through a balanced approach and clear description of professional judgements on sensitivity and magnitude; and
- identify any additional design and mitigation measures appropriate to the development proposals and landscape of the receiving area, to avoid or remedy impacts and the subsequent reassessment of likely effects.

Elements scoped in and elements proposed to be scoped out

National, district and site-level character areas

6.7.23 Due to the existing industrial nature of the Site and surrounding context, it is not anticipated that the Proposed Development will give rise to any significant effects on wider landscape character. There are no landscape designations within the study area, and landscape character areas in the wider study area are already affected by the presence of industrial features in views. A large part of the Site comprises open, brownfield land. The changes associated with the Proposed Development are similar in type and scale and are therefore unlikely to result in significant impacts during construction or operation.

6.7.24 Effects on landscape character are therefore proposed to be scoped out of the EIA.

Views and visual amenity

6.7.25 Whilst new built form associated with the consented CCGT will be a feature of the future baseline of the Site, there will be additional elements, notably the CCP absorber stack, which may give rise to effects on views and visual amenity over and above that anticipated by the DCO consent for the North Killingholme Power Project. These views would be principally experienced by local communities in neighbouring towns and villages and recreational users of inland PRoWs around East Halton. These receptors are therefore proposed to be scoped into the EIA.

Proposed scope of assessment

6.7.26 Table 6-30 summarises the aspects of the landscape and visual assessment that will be scoped in/ out of the EIA.

Table 6-30: Scoping summary for the landscape and visual assessment

Landscape and visual aspect	Construction	Operation	Decommissioning
District landscape character areas (NCA 41)	Scoped out	Scoped out	Scoped out
District landscape character areas (NCA 42)	Scoped out	Scoped out	Scoped out
North Lincolnshire Landscape Character Assessment: Humber Estuary character area, including 'Industrial - South Humber Bank', 'Wooded Farmland - East Halton, North Killingholme';	Scoped out	Scoped out	Scoped out

Landscape and visual aspect	Construction	Operation	Decommissioning
'Flat Open Farmland - Barrow Haven, New Holland, Goxhill Haven'; and 'Open Undulating Farmland - South Killingholme'			
North Lincolnshire Landscape Character Assessment: Lincolnshire Drift character area, including 'Wooded Farmland – East Halton, Kirmington, Thornton Abbey, Ulceby Junction'	Scoped out	Scoped out	Scoped out
Site specific character	Scoped out	Scoped out	Scoped out
Views and visual amenity for local communities in neighbouring towns and villages	Scoped in	Scoped in	Scoped out
Views and visual amenity for recreational users of inland PRoWs around East Halton	Scoped in	Scoped in	Scoped out

6.8 Noise and vibration

Relevant legislation, policy and guidance

6.8.1 The following sources of legislation and guidance will be considered in the noise and vibration impact assessment:

- National Planning Policy Framework (NPPF)[4];
- Noise Policy Statement for England (NPSE)[89];
- Control of Pollution Act 1974[90];
- Environmental Protection Act 1990[91];
- BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial noise[92];
- Method implementation document (MID) for BS4142[93];
- BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 1: Noise and Part 2: Vibration[94];
- BS 8233:2014 Guidance on noise insulation and noise reduction for buildings[95];
- BS 7445-1:2003 Description and measurement of environmental noise – Part 1; Guide to quantities and procedures[96];
- NANR45 Proposed criteria for the assessment of low frequency noise disturbance[97];
- ISO 9613-2 Acoustics-Attenuation of noise during propagation outdoors[98];
- Design Manual for Road and Bridges (DMRB) LA 111 Noise and Vibration[99];
- World Health Organization (WHO) Guidelines for community noise[100];

[89] Noise Policy Statement for England - Department for Environment, Food and Rural Affairs (Defra) March 2010. Available at https://www.gov.uk/government/publications/noise-policy-statement-for-england (last accessed 03 July 2024)

[90] Control of Pollution Act 1974. Available at: https://www.legislation.gov.uk/ukpga/1974/40 (last accessed 03 July 2024)

[91] Environmental Protection Act 1990. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents (last accessed 03 July 2024)

[92] BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial noise. BSI Standards Publication.

[93] Method Implementation document (MID) for BS 4142 (Guidance), 20 December 2023, Environment Agency. Available at: https://www.gov.uk/government/publications/method-implementation-document-mid-for-bs-4142/method-implementation-document-mid-for-bs-4142#:~:text=The%20preferred%20method%20of%20BS,noise%20level%20from%20these%20measurements. Last accessed (03 July 2024)

[94] BS5228-1:2009+A1:2014 Code of Practice for noise and vibration on construction and open sites – Part 1: Noise, and Part: Vibration. BSI Standard Publication.

[95] BS8233:2014 Guidance on noise insulation and noise reduction for buildings. BSI Standard Publication.

[96] BS 7445-1:2003 Description and measurement of environmental noise – Part 1 Guide to quantities and procedures. BSI Standard Publication.

[97] Proposed criteria for the assessment of low frequency noise disturbance NANR45. University of Salford (2005) and Department for Environment, Food and Rural Affairs (Defra).

[98] International Organization for Standardization (2024), ISO 9613-2:2024, Acoustics-Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors, ISO.

[99] Design Manual for Roads and Bridges. Sustainability & Environment Appraisal. LA 111 Noise and Vibration, Revision 2 – May 2020.

[100] World Health Organization, "Guidelines for community noise," 1999

- WHO Night Noise Guidelines For Europe[101]; and
- WHO Environmental Noise Guidelines for the European Region[102].

Baseline conditions

Existing baseline

6.8.2 The Site currently comprises an area of mixed industrial development and small areas of agriculture. The nearest noise sensitive receptors, with the potential to be affected by noise or vibration from the construction or operation of the Proposed Development are properties at Hazeldene (within the red line boundary for the spur pipeline and approximately 2.6km from the Main Site), properties approximately 170m west of the Pipeline on Church Lane (>1.5km from the Main Site), properties 1km to the west of the Main Site in the village of East Halton (including on Station Road, Kettlebridge Lane, Swinster Lane, Scrub Lane and Brick Lane) and also a single dwelling, approximately 1.5km to the north of the development on Marsh Lane.

6.8.3 The nearest ecological receptors to the Proposed Development, with potential noise sensitivity, are at the Humber Estuary SSSI, SAC and SPA (approximately 0.4km to the north-east) and Humber Estuary Ramsar site (approximately 0.3km to the east) and North Killingholme Haven Pits SSSI (approximately 0.4km to the east).

6.8.4 Baseline noise monitoring was undertaken to inform the ES[103] submitted as part of the DCO application for the North Killingholme Power Project in 2011 and 2012. Additional baseline noise monitoring was undertaken in June 2019 and March 2020 to support the amendment to the DCO[104] in 2021. The 2019/2020 noise monitoring showed noise levels to be generally lower than at the time of the original noise surveys, particularly during the night-time. The noise monitoring undertaken in 2019/2020 will be used to inform the baseline of this study supplemented as necessary with additional measurements.

6.8.5 The results of the 2019/2020 noise surveys are summarized in Table 6-31: and the monitoring positions are shown as pink dots on Picture 1. Monitoring position IDs are consistent with the ES submitted with the DCO for the North Killingholme Power Project. Only those positions where noise monitoring was repeated as part of the 2019/2020 update are shown. Additionally, receptors at Chase Hill Road, Manor Farm, Church Lane and Hazel Dene, which were not identified as receptors for either the DCO, or the 2021 amendment are marked up in orange in Picture 1.

Table 6-31: Results of previous baseline noise monitoring, for the North Killingholme Power Project, in 2019/2020

Noise survey position ID	Receptor Location	Easting_Northing	Daytime dB L_{A90} (0700 to 2300)	Night-time dB L_{A90} (2300 to 0700)
1	Marsh Lane	515224_421136	35	32

[101] World Health Organization, "Night Noise Guidelines For Europe," 2009

[102] World Health Organization, "Environmental Noise Guidelines for the European Region," 2018

[103] North Killingholme Power Project Environmental Statement. C.GEN Killingholme Limited, 2013.

[104] North Killingholme Power Project Non-Material Change to the Development Consent Order Environmental Report. C.GEN Killingholme Limited, 2021.

Noise survey position ID	Receptor Location	Easting_Northing	Daytime dB L_{A90} (0700 to 2300)	Night-time dB L_{A90} (2300 to 0700)
3	Station Road	513980_420240	38	33
5	Swinster Lane	514276_419329	40	34
7	Brick Lane	514517_418794	38	40
8	Haven Pits SSSI	516596 _419991	46	44
N/A	Chase Hill Road	514427_418205	-	-
N/A	Manor Farm	514476_417675	-	-
N/A	Church Lane	514755_417334	-	-
N/A	Hazel Dene	517349_417330	-	-

Picture 1: Plan showing Proposed Development (red outline), previous noise survey positions and additional receptor locations

6.8.6 NLC will be consulted regarding the details of the baseline noise surveys. Agreement on locations and durations of measurements will be sought prior to any surveys. The project ecologists will be consulted to agree the scope and methodology of baseline noise surveys for ecological receptors. All noise measurements will be undertaken in accordance with BS7445.

6.8.7 It is not expected that there will be any requirement for baseline vibration surveys due to the distances of sensitive receptors from the Proposed Development and the low likelihood of existing vibration from the local road network giving rise to impacts at sensitive receptors. This will be confirmed in consultation with NLC.

Future baseline

6.8.8 The future baseline for the noise assessment of the Proposed Development will be the noise levels at the nearest noise sensitive receptors in the absence of any construction or operational noise from the Site (including from the CCGT).

6.8.9 Baseline noise levels in the area are predominantly from industrial noise sources. Any available information about known changes to the surrounding industrial operations will be used to provide a qualitative assessment of the likely change in baseline noise levels between the time of the noise surveys and the opening year of the Proposed Development.

Potential impacts

Construction

6.8.10 Construction works may result in additional levels of noise and vibration produced during the various phases of these works. For the construction of the Proposed Development, the following potential impacts have been identified:

- noise produced during on-site construction works, including haul road movements. This would likely comprise several phases of work, including: installation of temporary facilities, ground foundation works (including piling), installation of steel work, installation of main plant items and commissioning. The effects of construction noise on human receptors are typically limited to within around 300m of the works. The nearest noise sensitive human receptors to the Site are at Hazeldene which is likely to be within 300m of construction works to install the spur pipeline and therefore construction noise affecting human receptors is scoped in. Ecological receptors, including waterfowl, may also be within around 300m of the Site and therefore it is proposed that this element is scoped in;
- vibration produced during on-site construction works. The highest levels of ground vibration are commonly associated with ground preparation works, to include foundation piling and ground compaction operations. The effects of groundborne vibration during construction are typically limited to within 100m of the works, even for the highest vibration sources and therefore impacts from the construction of the Main Site are unlikely to affect any receptors and can be scoped out. It is not yet known whether the pipeline will be installed above or below ground. In either case, there is the potential for vibratory construction works within 100m of the receptors at Hazeldene and therefore it is proposed that groundborne vibration during construction of the spur pipeline is scoped in; and
- noise and vibration produced by additional vehicles on the surrounding road network as a result of the construction works.

Operation

6.8.11 For the operation of the Proposed Development, the following potential impacts have been identified:

- noise emission during operation. The plant and equipment comprising the Proposed Development would be sources of additional noise;
- vibration produced during operation. Whilst some equipment with rotating components associated with the Proposed Development e.g. compressor equipment, has the capacity to produce vibration, in practice such equipment is well-balanced by design and then installed on a heavy base. Such design measures stabilise vibration to the extent it is at a low level even next to the foundation base of the equipment. There would be no perceptible ground vibration at the Site boundary and consequently at the more distant ecological and residential receptor positions. It is therefore proposed that operational vibration can be scoped out; and
- It is estimated that there would be approximately 15 HGV/LGV and three car return trips per day associated with the CCP plant. This would have a negligible impact on local road traffic noise levels and therefore it is proposed that noise effects associated with operational traffic from the Proposed Development can be scoped out of the EIA.

Decommissioning

6.8.12 The potential impacts on noise and vibration resulting from the decommissioning of the Proposed Development will not be separately evaluated in this EIA noise and vibration assessment. A further assessment of any decommissioning-related impacts on noise and vibration will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

Construction

6.8.13 Construction noise and vibration would be managed and controlled through the CEMP which would include a noise and vibration mitigation plan, which will be developed once detail of the construction design and management become available.

6.8.14 As a general principle, construction noise and vibration would be controlled by adopting 'best practicable means'. In this respect, consideration would be given to the guidance provided in Section 8 (Control of Noise) of BS 5228-1, which details general methods for the control of noise at equipment source, including:

- avoid unnecessary revving of engines and switch off equipment when not required;
- keep temporary and internal haul roads well maintained;
- select quiet options for equipment, where these are available;
- consider modification of plant and equipment to improve noise reduction measures, particularly where ready-made kits are available (e.g., install better exhaust silencers, install acoustic canopies over engines); and
- provide good equipment maintenance.

6.8.15 BS 5228-1 also advises alternative approaches for reducing the transmission of noise between the Site and sensitive receptors:

- locate noisy processes and equipment (such as temporary site generators) as far as is

reasonably practicable from sensitive receptor locations;

- install temporary acoustic screens as close as possible to particularly noisy equipment items or processes; and
- make use of screening, such as that which may be provided by site buildings, earth bunds and other structures.

Operation

6.8.16 There are two main categories of mitigation that can be considered if required for the purpose of controlling operational noise impacts from the Proposed Development:

- embedded mitigation, which takes account of the selection of the site and the favourable positioning and orientation of plant, to make use of noise reduction by distance separation and screening; and
- design (or adaptive) mitigation that will be developed as the detailed design progresses, to further enhance or complement the effectiveness of the embedded mitigation. This would include consideration being given, where practicable, to mitigation such as low-noise equipment selection, use of attenuators, installing plant within buildings or dedicated enclosures and acoustic barriers (which may be a wall, or earth bund or a combination of these structures).

6.8.17 With respect to embedded mitigation, the site of the Proposed Development is favourably located approximately 1.2 km from the closest noise sensitive property (i.e. East Halton), thus benefitting from a high level of noise reduction due to propagation over this distance.

6.8.18 In line with the principle of applying BAT to minimise noise emission, design or adaptive mitigation would be developed through the detailed design process. Depending on feasibility and availability, these would include items of plant and equipment being selected with low-noise options, or fitted with suitable noise control treatment (e.g., attenuators, close-fitting enclosures or plant buildings) to reduce noise emission to the environment.

6.8.19 During the detailed design process, potential mitigation measures would be reviewed by iterations of a predictive noise model, for the purpose of minimising noise emission as much as is practicable.

Scope of the Assessment

6.8.20 Predictions and an assessment of construction noise on human receptors within 300m of the Site boundary will be undertaken following the prediction methodology of BS5228 Part 1: Noise. Predictions will also be passed to the project ecologist to assess noise effects on sensitive species. Predictions would be based on the information provided in this Standard, or other available information, applicable to the construction activities with the potential to result in impacts on human or ecological receptors. The activities and noise sources to be included in the Ecology assessment will be agreed in advance with the project ecologist.

6.8.21 Noise and vibration due to additional heavy and construction workforce vehicles on the local road network will be assessed according to the methodology in DMRB LA 111. This will involve the prediction of roadside noise level changes between baseline and during construction using the prediction methodology in Calculation of Road Traffic Noise (CRTN)[105].

[105] Department of Transport and Welsh Office, "Calculation of Road Traffic Noise," TSO, London, 1988

6.8.22 The operational noise level from the Proposed Development will be predicted using a computer noise model, based on information on plant layout, and the operating conditions and the levels of noise generated by plant items and vehicles. The modelling software enables a detailed implementation of the proposed equipment and buildings, existing surrounding buildings and ground features. The software implements the methodology in ISO 9613-2 for the calculation of environmental noise propagation from industrial sources.

6.8.23 For the assessment of the noise impact from the Proposed Development during the operational phase, the methodology outlined in BS 4142 will be adopted. BS 4142 offers a framework for assessing the acceptability of noise levels at noise-sensitive receptors affected by noise from industrial sources in proposed developments. Reference to WHO guidance and BS 8233 will also be made on the resulting absolute levels of noise in relation to amenity/annoyance in the daytime and sleep disturbance during the night-time. Additional details of this approach, including the noise impact magnitude criteria, will be discussed, and mutually agreed upon with NLC.

Proposed scope of assessment

6.8.24 Table 6-32 summarises the aspects of the noise impact assessment that will be scoped in/ out of the EIA.

Table 6-32: Scoping summary for the noise and vibration assessment

Noise and vibration aspect	Construction	Operation	Decommissioning
Noise affecting human receptors	Scoped in	Scoped in	Scoped out
Noise affecting ecological receptors	Scoped in	Scoped in	Scoped out
Traffic noise and vibration	Scoped in	Scoped out	Scoped out
Vibration	Scoped in	Scoped out	Scoped out

6.9 Socio-economics

Relevant legislation, policy and guidance

6.9.1 A brief overview of the policy and guidance relevant to socio-economics is summarised below.

- NPPF (December 2024)[4];
- Build Back Better: Our Plan for Growth (2021)[106];
- Industrial Decarbonisation Strategy (2021)[107];
- Net Zero Strategy: Build Back Greener (2021)[108];
- National Infrastructure Strategy: Fairer, faster, greener (2020)[109];
- The Energy White Paper (2020)[110];
- Clean Growth – The UK Carbon Capture Usage and Storage deployment pathway – An Action Plan (2018)[111];
- The Clean Growth Strategy (2018)[112];
- Humber Vision 2030 (2022)[113];
- North Lincolnshire Core Strategy (2011)[114];
- North Lincolnshire Submission Local Plan (2022)[115];
- North Lincolnshire Economic Growth Plan 2023-2028[116]; and
- North Lincolnshire Green Futures Strategy[117].

[106] HM Treasury (2021). Build Back Better: Our Plan for Growth.

[107] Department for Business, Energy & Industrial Strategy (now Department for Energy Security and Net Zero) (2021). Industrial decarbonisation strategy.

[108] HM Government (2021) Net Zero Strategy: Build Back Greener.

[109] HM Treasury (2020). National Infrastructure Strategy: Fairer, faster, greener.

[110] Department for Business, Energy & Industrial Strategy (now Department for Energy Security and Net Zero) (2020). Energy White Paper: Powering our net zero future.

[111] Department for Business, Energy & Industrial Strategy (now Department for Energy Security and Net Zero) (2018). The UK carbon capture usage and storage deployment pathway: an action plan.

[112] Department for Business, Energy & Industrial Strategy (now Department for Energy Security and Net Zero) (2018). The Clean Growth Strategy.

[113] Humber Vision 2030 (2022). Available at: https://investhumber.com/documents/HED-Brochure.pdf

[114] North Lincolnshire Council (2011) North Lincolnshire Core Strategy. Available at: https://m.northlincs.gov.uk/public/planningreports/corestratergy/adopteddpd/FullCoreStrategy.pdf

[115] North Lincolnshire Council (2022) Proposed Submission North Lincolnshire Local Plan. Available at: https://m.northlincs.gov.uk/public/localplan/examination/North%20Lincolnshire%20Local%20Plan%20-%20Submission%202022.pdf

[116] North Lincolnshire Council (2022) Economic Growth Plan 2023-2028. Available at: https://investinnorthlincolnshire.com/downloads/economic-growth-plan.pdf

[117] North Lincolnshire Council Green Futures Strategy. Available at: https://www.northlincs.gov.uk/your-council/a-green-future/our-strategy/

6.9.2 There is limited published guidance available regarding socio-economic assessment. As such, best practice and professional experience have been used to inform this scoping assessment, alongside the following data sources:

- NOMIS data [118];
- ONS data[119]; and
- Aerial imagery.

Study area

6.9.3 The study area for the socio-economic assessment will comprise the relevant geographical areas within which socio-economic impacts are likely to occur. The Proposed Development is located within the administrative boundary of NLC, and it is in the Yorkshire and the Humber region of England. Due to the scale and nature of the Proposed Development and the local commuting patterns, the study area for the socio-economic assessment will consist of the following local authority areas: North Lincolnshire, North East Lincolnshire, and West Lindsey. It is anticipated the majority of socio-economic effects will be experienced in these areas. The baseline will also provide data for the Yorkshire and the Humber region and Great Britain as a comparator where appropriate.

Baseline conditions

Existing baseline

6.9.4 A preliminary desk-based review of baseline data has been conducted for this EIA scoping assessment to establish current socio-economic conditions using NOMIS data for the economically active population in the study area. This data is shown in Table 6-33. The data shows that the percentage of economically active people in employment in North Lincolnshire is the highest in the study area and higher than the Yorkshire and the Humber average. Unemployment levels in North Lincolnshire are also lower than the regional and national average. Full time workers hourly pay in North Lincolnshire is lower than the national average and the regional average.

Table 6-33: Socio-economic data

	Total Population	Economically active (%)	Economically active – In employment, %	Economically active – Unemployed, %	Full-time workers hourly pay, £
North Lincolnshire	169,900	77.3	75.0	2.8	15.64
North East Lincolnshire	157,200	77.1	73.5	3.1	15.85
West Lindsey	95,600	72.2	70.3	4.4	16.49
Yorkshire and the Humber	5,482,500	76.8	74.2	3.4	15.93
Great Britain	65,121,700	78.8	75.8	3.7	17.49

6.9.5 In relation to sensitive socio-economic receptors, there are no residential properties within the Site however there are a number of residential properties and settlements in close proximity to the Site. The nearest residential properties are located along Brick Lane approximately 1.1 km to

[118] NOMIS (2023) Local authority profile. Available at: https://www.nomisweb.co.uk/reports/lmp/la/contents.aspx

[119] Office for National Statistics. Available at: https://www.ons.gov.uk/

the south-west of the Site. The nearest settlements to the Site are East Halton (approximately 1.2 km to the west) and North Killingholme (approximately 2 km to the south-west).

Future baseline

6.9.6 It is assumed that, for the purposes of the socio-economic assessment, without the Proposed Development no future changes are anticipated within the Site and the existing baseline will remain the same.

Potential impacts

Construction

6.9.7 Construction impacts are temporary effects that arise during enabling works and construction, which cease after the completion of construction.

6.9.8 Construction impacts arising from the Proposed Development will consider:

- Employment: including the temporary direct, indirect and induced employment during the construction phase and the effect of this on the study area labour market and economy. During construction, there will be an estimated peak workforce of approximately 500 workers. This has the potential to have a significant beneficial effect on the study area labour market which is likely to result in an uplift in gross value added (GVA) productivity. It is anticipated that the vast majority of the construction workforce will be sourced from within the study area. The assessment will consider the Full Time Equivalent (FTE) direct jobs created on-Site during the construction phase and indirect jobs created through supply chain linkages in firms that will provide supporting services during construction. The gross construction employment will be calculated based on the estimated total cost of construction of the Proposed Development. The gross figure will then be used to calculate the net employment generation figure by applying appropriate allowances for leakage[120] and displacement[121,] in line with recognised guidance (Homes and Communities Agency (HCA) Additionality Guide)[122]. The uplift in GVA productivity generated through the construction of the Proposed Development will then be calculated based on data for the average GVA per construction worker within Yorkshire and the Humber.

- Wider economic impacts: whilst the Proposed Development will result in additional employment, it is not anticipated that the increase in construction employment alone will act as a catalyst for significant inward investment to the study area. It is acknowledged that the additional employment is likely to result in an uplift in GVA productivity and wider indirect supply chain benefits however these will be captured in the assessment of employment impacts (as set out above). An assessment of wider economic impacts during construction has therefore been scoped out.

- Access to accommodation: at peak construction there may be non-local workers seeking a range of largely temporary accommodation provision in the locality. A qualitative assessment of the likely impact of construction workers seeking accommodation will be considered to ascertain the ability to access affordable and suitable accommodation.

- Local community: an assessment of the likely impacts of construction on the local community will be considered based on residual adverse effects (including noise, vibration,

[120] Leakage refers to the number or proportion of jobs that can be expected to benefit people living outside of the study area.

[121] Displacement refers to the number or proportion of jobs that could account for reduced employment elsewhere in the study area.

[122] HCA (2014) Additionality Guide, 4th edition. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378177/additionality_guide_2014_full.pdf

air quality, visual, and construction traffic movements). It is envisaged that these effects are unlikely to be significant as they will be temporary and reduced through the mitigation measures outlined in the relevant sections however, given that this will be dependent on the individual topic assessments, this has been scoped in at this stage.

Operation

6.9.9 Operational impacts arising from the Proposed Development will consider:

- Employment: including the temporary direct, indirect and induced employment during the operational phase and the effect of this on the labour market and economy of the study area and the wider region. The operational employment is not anticipated to be significant (approximately 20 new jobs), however given that the number is yet to be confirmed, it has been scoped into the assessment. Operational employment (gross) will either be based on information provided by the Applicant, or it will be estimated based on employment densities applied in similar facilities elsewhere. The gross figure will then be used to calculate the net employment figure by applying appropriate allowances for leakage and displacement, in line with recognised guidance (HCA Additionality Guide). The change in GVA productivity during the operational phase of the Proposed Development will then be calculated at a study area and regional level.
- Wider Economic Impacts: the impact on the local and regional economy due to indirect or catalytic economic effects of operation will be considered. The operation of the Proposed Development has the potential to act as an important catalyst for inward investment drawing businesses and investors to the study area.
- Local community impacts: during operation, there is the potential for impacts on the local community due to residual adverse effects (including noise, vibration, air quality, visual, and traffic). Operational traffic impacts, vibration impacts have been scoped out of the topic assessments, while scoping of air quality impact is subject to screening once data are available. However, as potential noise impacts and visual amenity impacts during operation have been scoped into the topic assessments, there is potential for local community impacts resulting from combined significant adverse environmental effects. This has therefore been scoped into the assessment.

Decommissioning

6.9.10 Potential impacts on socio-economics, as a result of decommissioning the Proposed Development, will not be separately assessed as part of this EIA socio-economic assessment. Further assessment of any impacts on socio-economics associated with decommissioning will be undertaken at the time of decommissioning in line with the applicable guidance and regulations at the time. This will be secured through a DEMP, detailed in Section 3.7.3.

Design and control measures

6.9.11 Potential traffic, noise, vibration, air quality/dust and visual impacts on residential and other sensitive receptors will be assessed as part of the traffic and transport, noise and vibration, air quality, and landscape and visual amenity assessments described in other sections above.

6.9.12 No significant adverse effects that require mitigation are anticipated however there may be potential to enhance the beneficial socio-economic effects. This might include measures to maximise the positive benefits for the local economy by encouraging the use of local labour manufacturers and suppliers where possible, in addition to any training and skills opportunities.

Scope of assessment

6.9.13 Socio-economic impact assessment involves a systematic appraisal of the impacts on the day-to-day quality of life of the people and communities (population) when the environment is affected by a development. As such, sensitivities can be defined in terms of the various groups and agencies likely to be affected by the Proposed Development. These are likely to include: local workforce and employees (job opportunities); local employers (business opportunities and also competition for resources); local services (increased demand); local population (e.g., changes in level of local activity/traffic/housing demand); and local authorities/agencies at various levels of governance.

6.9.14 The methodology for assessing socio-economic impacts will involve:

- assembly of baseline data for the study area, using published data sources;
- preparation of a comprehensive socio-economic baseline of the study area to identify any key topic areas or key local issues;
- understanding the socio-economic and labour force characteristics of the Proposed Development; and
- identification of potential socio-economic impacts for the construction and operational stages of the Proposed Development and identification of possible impact mitigation and enhancement measures where required.

6.9.15 It is assumed that most of the impacts from the Proposed Development will be experienced across the study area, however it is likely that some leakage beyond the study area to the wider Yorkshire and the Humber region may occur, particularly relating to wider economic benefits due to the nature of the Proposed Development. As such, the Yorkshire and the Humber region represents the wider study area.

6.9.16 The socio-economic assessment within the ES will provide a full socio-economic baseline of the study area and the wider Yorkshire and the Humber region. Sources of data will include national statistics such as the 2021 Census, the Index of Multiple Deprivation (2019), the Annual Population Survey (2023), the Annual Survey of Hours and Earnings (2023), and the most recent Annual Population Projections produced by the ONS. Business and employment data will be drawn from the Business Register and Employment Survey, and data on growth and productivity from ONS Gross Value Added (GVA) statistics.

6.9.17 The assessments of construction and operational employment will follow industry standard approaches and guidance including the HCA Additionality Guide[123] and the HCA Employment Density Guide[122] and will take account of leakage[122] and displacement[124] factors. Appropriate multipliers will be applied to capture supply chain effects such as induced spend and additional income within the local economy.

Proposed scope of assessment

6.9.18 Table 6-34 summarises the aspects of the socio-economic assessment that will be scoped in/ out of the EIA.

[123] Homes and Communities Agency (HCA) (2015), Employment Density Guide, 3rd edition. Available at: https://www.kirklees.gov.uk/beta/planning-policy/pdf/examination/national-evidence/NE48_employment_density_guide_3rd_edition.pdf

[124] Displacement refers to the number or proportion of jobs that could account for reduced employment elsewhere in the study area.

Table 6-34: Scoping summary for the socio-economic assessment

Socio-economic aspect	Construction	Operation	Decommissioning
Employment generation	Scoped in	Scoped in	Scoped out
Access to accommodation	Scoped in	Scoped out	Scoped out
Local community impacts	Scoped in	Scoped in	Scoped out
Wider economic impacts (catalytic effects)	Scoped out	Scoped in	Scoped out

6.10 Traffic and transport

Relevant legislation, policy and guidance

6.10.1 The following guidance and information have been used to inform this traffic and transport EIA scoping assessment:

- Institute of Environmental Management and Assessment (IEMA) Guidelines on Environmental Assessment of Traffic and Movement, July 2023[125];
- NPPF (December 2024)[4];
- North Lincolnshire Council Local Transport Plan 2011-2026[126];
- TAG Unit M1.2 Data Sources and Surveys[127]; and
- Guidance: Travel Plans, Transport Assessments and Statements, Department for Levelling Up, Housing & Communities, and Ministry of Housing, Communities & Local Government 2014 [128].

Baseline conditions

Existing baseline

Highways

6.10.2 The Proposed Development is situated north of Haven Road and west of Clough Lane, falling within the administrative boundary of NLC. NLC holds the responsibility for both Planning and Highways matters in this administrative area.

6.10.3 It is anticipated that the following strategic/ primary links will be used by vehicles accessing to the Proposed Development:

- Haven Road;
- Clough Lane;
- Chase Hill Road;
- Rosper Road;
- East Halton Road;
- Station Road;
- Marsh Lane;
- Humber Road/A160 (part of the Strategic Route Network (SRN) managed by National Highways (NH)); and
- A180/M180 (part of the SRN managed by NH).

[125] Environmental Assessment of Traffic and Movement, Institute of Environmental Management and Assessment (IEMA) Guidelines, July 2023. Available at: https://www.iema.net/resources/reading-room/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

[126] Local Transport Plan 2011-2026 . Available at: https://www.northlincs.gov.uk/roads-paths-and-transport/local-transport-plan-2011-2026/

[127] TAG UNIT M1.2 Data Sources and Surveys

[128] Travel Plans, Transport Assessments and Statements, Department for Levelling Up, Housing & Communities, and Ministry of Housing, Communities & Local Government. Available at: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements

6.10.4 Department for Transport traffic count data[129] has some data available for some of the roads listed in 6.10.3. The available data is summarised in Table 6-35.

Table 6-35: Department for Transport traffic count data

Link / Location	Average Annual Daily Flows	Date/Data Type
East Halton Road (north of junction with West Middle Mere Road)	4,813	2023 Manual Count
A160 (north of junction with A180)	17,069	2023 Estimation, last manual count was 2020
A180 (west of junction with A160)	32,328	2023 Estimation, based on neighboring link.
A180 (east of junction with A160)	26,084	2023 Manual Count

Public Transport

6.10.5 Public transport is limited in the vicinity and includes:

- Rail: Thornton Abbey station is located approximately 2km west of the Proposed Development and links Barton on Humber to Cleethorpes every two hours, in each direction.
- Bus: Various bus services exist within the study area including routes; 250, 260, and 560 services. Destinations served include Immingham, Barton, East Halton, Goxhill and Scunthorpe. Services are infrequent, and typically one every two hours, in each direction, or less frequent.

Walking and Cycling

6.10.6 The following routes are in the vicinity of the Site:

- PRoW number 77 runs along the southern boundary of the western part of the Site and then turns to run in a north-westerly direction through the Main Site;
- PRoW number 100 runs along the southern boundary of the land for the construction and operation of the spur pipeline. It runs in a north-easterly direction to PRoW (number 50), forming a continuous pathway along the coast of the Humber Estuary; and
- National Cycle Route 1 passes approximately 6km to the west of the Proposed Development.

Future baseline

6.10.7 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

Potential impacts

Construction

6.10.8 The movement of HGVs delivering construction materials and plant to the Site and construction

[129] Department for Transport traffic count data. Available at: https://roadtraffic.dft.gov.uk/

worker vehicle movements are anticipated to result in temporary impacts on the surrounding road network and nearby receptors. The impact associated with material deliveries and commuting construction workers would be experienced over a period of around 33 months.

6.10.9 During the preliminary works phase of the project, the level of traffic would grow slowly and intermittently. At the time of the main plant contractors starting on Site, the increase would be more marked, reaching a plateau when major construction work was in progress. At the end of this phase a fairly rapid reduction in construction traffic would occur.

6.10.10 During the main construction phase, delivery of bulk building and civil engineering materials by HGV would be expected to peak at approximately 40 movements per day across a five day week, over a six month period. In addition, there would be some light commercial vehicle traffic.

6.10.11 It is anticipated that there would be a peak workforce of around 500 employees per day. Further information on staff vehicle movements, including measures to transport workers to minimise single occupancy car trips, and likely shift patterns, will be presented in the Transport Assessment.

6.10.12 It is anticipated that PRoW 77 which runs through the Main Site would need to be diverted. This will be considered as the design progresses. Impacts upon PRoW 100 from construction of the spur pipeline may occur, dependent on the chosen routing.

Operation

6.10.13 The impacts during the operational phase would arise from:

- travel to work by operational staff: and
- routine deliveries and visits to Site by maintenance contractors.

6.10.14 During operation HGV traffic would be required, for example, for the delivery of bulk chemical deliveries for CCP, delivery of lubricating oils and the removal of some waste materials. The quantities of these supplies required would be dependent on the operating regime of the CCP, but it is estimated that typically approximately five HGV/LGV deliveries per day with an additional 10 HGV/ LGV per day (peak) additional daily return journeys would be generated.

6.10.15 At this time the exact number of operational staff is unknown however based on similar sites, it is anticipated that approximately 20 employees could be required during operation. The impact of operational staff vehicle movements on the public highway during the operation is therefore considered to be negligible.

Decommissioning

6.10.16 The potential impacts on traffic and transport resulting from the decommissioning of the Proposed Development will not be separately evaluated. A further assessment of any decommissioning-related impacts on traffic and transport will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.10.17 An outline CTMP will be drafted for the Proposed Development. The CTMP will include:

- an outline of the traffic management procedures, controls and protocols that will be applied to the Site for on-site activities;

- forecasts of traffic movements during each of the stages of construction;
- an outline of the traffic management procedures, controls and protocols that will be applied to off-site construction vehicle movements, and specifically HGVs travelling to the Site;
- identification of prescribed HGV construction traffic routes, driver training, expected behaviours and education measures, a process for the enforcement of permitted routes, delivery hours, and the process for the co-ordination of deliveries; and
- a description of how the CTMP will be communicated to local residents and businesses, coordinated with other road users and how and when it will be reviewed and updated.

6.10.18 The CTMP will incorporate standard industry best practice, considered as embedded measures, as well as any further mitigation that is deemed required as a result of the EIA process. The CTMP will be developed into full management plans by the appointed contractor, substantially in accordance with these outline plans, and likely secured through a Condition of any forthcoming planning consent.

Scope of assessment

6.10.19 This section sets out the anticipated scope of assessment for Traffic and transport. The following types of impacts will be assessed:

- Severance of communities;
- Motorised and Non-Motorised user delay;
- Non-Motorised user amenity;
- Fear and Intimidation;
- Safety;
- Road Safety Audits; and
- Hazardous/ Large Loads.

6.10.20 In addition to the chapter, and based on the current understanding of traffic generated by the Proposed Development during construction, is it is anticipated that a Transport Assessment will be required. The scope of this document and its content will be agreed with NLC and NH once more detailed data on construction traffic data is available.

6.10.21 Automatic Traffic Count (ATC) surveys will be undertaken to establish the baseline traffic volumes of key routes on the highway network around the Site. The locations of the traffic surveys will be agreed through discussion with NLC and NH highways officers during scoping discussions. This will also afford a chance to understand if any congestion issues exist on the highway network around the Site which may need to be assessed.

6.10.22 Depending on the outcomes of scoping with the relevant authorities, Classified Turning Counts (CTC) may also be required to understand the impact of construction traffic movements at junctions, which will inform the assessment of road vehicle driver and passenger delay.

6.10.23 In line with Department for Transport (DfT) guidance, traffic surveys will be carried out during a ‘neutral’, or representative, month avoiding main and local holiday periods, local school holidays and half terms, and other abnormal traffic periods, and will be agreed with NLC and NH.

6.10.24 The assessment will then consider the impact of Proposed Development traffic on the

surrounding highway network. This will be done by identifying the percentage increase in vehicular traffic along the identified construction routes, compared to baseline and future baseline traffic flows. The type of traffic which is anticipated to be generated by the Proposed Development will be categorised as follows; LGVs, HGVs and Abnormal Indivisible Loads (AILs). Peak construction traffic flows will be derived by analysing construction traffic data and anticipated construction programmes.

6.10.25 Construction traffic associated with the proposals will be distributed onto the local highway network based on agreed construction traffic routes for HGVs, and likely worker locations to calculate the resultant percentage increase on each link. The proposed vehicle routeing and movement associated with the construction of the Proposed Development is to be considered in detail and confirmed through consultation with NLC and NH.

6.10.26 Once the links affected by construction traffic movements have been identified it is necessary to identify those receptors that may be impacted upon, due to the increase in vehicle movements. These will be assigned to each highway link to determine each link's sensitivity to increase in traffic.

6.10.27 It is anticipated that the scope of this assessment will include road links designated as prescribed construction traffic routes, following the IEMA criteria as follows:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%);
- Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more.

6.10.28 The IEMA Guidance also goes on to state that the Rule 1 and Rule 2 criteria process may not be appropriate for some impacts, and it is generally accepted by regulators and practitioners that it should not be applied to assessments of air quality, noise, road safety and driver delay. For these impacts, a separate study area and assessment criteria should be agreed with the relevant stakeholders.

6.10.29 Assessments will be undertaken for a peak month of construction to reflect a worse-case scenario for traffic and transport impacts.

6.10.30 Currently, it is anticipated that, subject to planning, the construction will commence in 2027. Base traffic flows would therefore be factored up, using appropriate growth factors derived from TEMPro, to the future year in order to establish future baseline flows. Peak construction traffic flows will be derived by analysing construction traffic data and the anticipated construction programme.

6.10.31 Based on the percentage increases on each link (the magnitude of effects), and each link's sensitivity, the level of effects will be determined, in line with IEMA guidance.

6.10.32 The assessment will also consider any committed developments that share routes subject to traffic from the Proposed Development. These will be agreed with the local planning and highways authority.

6.10.33 If any AILs are generated by the Proposed Development these will be considered in the EIA, considering the frequency and size of the loads.

Proposed scope of assessment

6.10.34 This section sets out whether each of the potential effects set out above are scoped in or scoped out at this stage, and the basis for that judgement, noting that all construction related impacts would be short-term and temporary (c.33 months).

Construction

Severance

6.10.35 As set out in para 3.16 of the 'IEMA, 2023' guidance, changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance, respectively. The Proposed Development has potential to generate increased traffic flows within the study area. Traffic flow increases owing to construction on each link within the proposed study area are not yet known, therefore this is scoped in to further assessment in the ES at this stage.

Delay

6.10.36 The 'IEMA, 2023' guidance makes reference to potential delays to drivers and to pedestrians. Users of other modes can also experience delays, such as cyclists and those travelling by bus.

Driver delay

6.10.37 The Proposed Development could result in changes which could significantly affect perceptions of driver delay during construction because of increased vehicle travel demand on the local network. This will be reviewed once traffic flow forecasts and further assessment is undertaken. Driver delay is therefore scoped in for the assessment of the Proposed Development during construction and will be reported in the ES.

Non-Motorised User Delay

6.10.38 Drawing upon the 'IEMA, 2023' guidance, the assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads. Delays will be assessed qualitatively based on the nature of the Proposed Development and construction proposals using assessor judgment.

6.10.39 The Proposed Development may result in changes which could significantly affect perceptions of pedestrian and other non-motorised user delay during construction because of increased vehicle travel demand on the local network. This is therefore scoped in for the assessment of the Proposed Development during construction, however this will be reviewed once traffic flow forecasts are finalised and reported in the ES.

Non-Motorised User Amenity

6.10.40 Drawing upon the 'IEMA, 2023' guidance, with regard to amenity, there are no set thresholds, but the following is stated,

"a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled" and that *"thresholds… should be used cautiously in any assessment. The assessment of amenity should pay full regard to specific local conditions."*

6.10.41 Traffic flow increases owing to the construction on specific road links are not yet known, therefore this is scoped in for further assessment at this stage and will be reported in the ES.

Non-motorised user amenity

6.10.42 The Proposed Development could result in changes which could significantly affect perceptions of non-motorised user amenity during construction because of change in total traffic (or HGV component) on the local network. This will be reviewed once traffic flow forecasts and further assessment is undertaken. Non-motorised delay is therefore scoped in for the assessment of the Proposed Development during construction and will be reported in the ES.

Fear and Intimidation

6.10.43 Drawing upon the 'IEMA,2023' guidance, with regard to fear and intimidation, the following is stated:

"previous work that put forward thresholds for fear and intimidation based on an earlier study (Crompton and Gilbert, 1976) can be useful."

and;

"*The extent of fear and intimidation is dependent on:*

- *The total volume of traffic*
- *The heavy vehicle composition*
- *The speed these vehicles are passing*
- *The proximity of traffic to people – and/or the feeling of the inherent lack of protection created by factors such as a narrow pavement median, a narrow path or a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles."*

6.10.44 Thresholds have been set that seek to categorise fear and intimidation depending on existing road conditions and likely additional flow of traffic resultant from the development. Traffic flow increases owing to the construction on specific road links are not yet known, therefore this is scoped in for further assessment at this stage and will be reported in the ES.

Road Safety

6.10.45 The key issue in assessing accidents and safety is in understanding the potential for change. There can be some small changes in prevailing road safety conditions arising simply as a result of having a greater number of journeys being made on a network; very simply, the more people that are travelling, the more people that are liable to become involved in an accident. By far the more important issue to consider is how travel and the design of the transport networks interrelate to affect prevailing road safety.

6.10.46 The Proposed Development is not expected to result in changes which could significantly affect accidents and safety during construction because it is an explicit requirement of the highway authorities that any planning application proposals do not unacceptably increase safety risks. Accidents and safety are therefore scoped out of further assessment and will not be considered in the ES. Road Safety will however be considered in the Transport Statement as appropriate and reported in that separate document.

Road Safety Audits

6.10.47 Any new or amended access points required to serve the Proposed Development to/from the public highway will be subject to Road Safety Audit at the appropriate stage, to be agreed with NLC and NH. This will be considered as part of the Transport Statement and reported in that separate document and is therefore scoped out of the ES.

Hazardous/Large Loads

6.10.48 It is unknown whether the Proposed Development will generate or attract hazardous loads at this stage. AILs are expected, however the number and type are unknown at this stage. Hazardous/Large loads are therefore scoped into the assessment at this time.

Operation

6.10.49 Operational traffic is expected to be minimal, with occasional visits taking place by a handful of operatives. The majority of these trips will be by cars or vans, with some HGVs as outlined above. Therefore, it is expected that any operational impacts on traffic and transport will be minimal, and the topic is scoped out of the operational assessment.

Decommissioning

6.10.50 As outlined above, decommissioning is set to be assessed at the time it happens, in line with relevant guidance in place in the future.

6.10.51 Table 6-36 summarises the aspects of the traffic and movement assessment that will be scoped in/ out of the EIA.

Table 6-36: Scoping summary for the traffic and transport assessment

Traffic and transport aspect	Construction	Operation	Decommissioning
Severance	Scoped in	Scoped out	Scoped out
Road vehicle driver and passenger delay	Scoped in	Scoped out	Scoped out
Non-motorised user delay	Scoped in	Scoped out	Scoped out
Non-motorised user amenity	Scoped in	Scoped out	Scoped out
Fear and Intimidation	Scoped in	Scoped out	Scoped out
Road user and pedestrian safety	Scoped out	Scoped out	Scoped out
Road Safety Audits	Scoped out	Scoped out	Scoped out
Hazardous/large loads	Scoped in	Scoped out	Scoped out

6.11 Water resources and flood risk

Relevant legislation, policy and guidance

Legislation

- The Environment Act 2021[130];
- Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019[131];
- Environment (Amendment etc.) (EU Exit) Regulations 2019[132];
- The Floods and Water (Amendment etc.) (EU Exit) Regulations 2019[133];
- Water Environment (Water Framework Directive (WFD)) (England and Wales) Regulations 2017[134];
- Water Act 2014[135];
- Flood and Water Management Act 2010[136];
- Flood Risk Regulations 2009[137];
- Marine and Coastal Access Act 2009[138];
- The Water Resources (Abstraction and Impounding) Regulations 2006[139];
- Environment Act 1995[140];
- Water Resources Act 1991[141];
- Land Drainage Act 1991[142]; and
- Environmental Protection Act 1990[143].

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[130] HM Government (2021). The Environment Act 2021. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted

[131] HM Government (2019). The Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/uksi/2019/39

[132] HM Government (2019). The Environment (Amendment etc.) (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/uksi/2019/458/contents/made

[133] HM Government (2019). The Floods and Water (Amendment etc.) (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/uksi/2019/558/contents/made

[134] HM Government (2017). The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made

[135] HM Government (2014). Water Act 2014. Available at: https://www.legislation.gov.uk/ukpga/2014/21/contents/enacted

[136] HM Government (2010). Flood and Water Management Act 2010. Available at: https://www.legislation.gov.uk/ukpga/2010/29/contents

[137] HM Government (2009). Flood Risk Regulations 2009. Available at: https://www.legislation.gov.uk/uksi/2009/3042/contents/made

[138] HM Government (2009). Marine and Coastal Access Act 2009. Available at: https://www.legislation.gov.uk/ukpga/2009/23/contents

[139] HM Government (2006) The Water resources (Abstraction & Impounding) Regulations 2006. Available at https://www.legislation.gov.uk/uksi/2006/641/contents/made

[140] HM Government (1995). Environment Act 1995. Available at: https://www.legislation.gov.uk/ukpga/1995/25/contents

[141] HM Government (1991). Water Resources Act 1991. Available at: https://www.legislation.gov.uk/ukpga/1991/57/contents

[142] HM Government (1991). Land Drainage Act 1991. Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents

[143] HM Government (1990). Environmental Protection Act 1990. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents

Policy

- North Lincolnshire Local Development Framework including the 'Core Strategy'[144]; and
- East Inshore and East Offshore Marine Plans[145].

Guidance

- Pollution Prevention and Groundwater Protection guidance[146];
- NLC SuDS and Flood Risk Guidance Document[147];
- Flood Estimation Handbook[148]; and
- DMRB LA113: Road drainage and the water environment[149].

Baseline conditions

Existing baseline

6.11.1 The study area for water resources will be within the Site and within a 1km buffer of the Site. The study area for water resources is informed by the 'source-pathway-receptor' model and is selected based on the potential pathways and effects on the water environment associated with the Project. The likely zones of influence associated with changes in the water environment have been identified based on professional judgement. The study area will be reviewed and, as appropriate, refined as the assessment progresses, taking into account any activities which have the potential to affect surface water, groundwater and flood risk resources at greater distance (such as dewatering and discharges).

Surface Water

6.11.2 The Site falls within the North Beck Drain water body catchment. This waterbody is designated as moderate WFD ecological status, and heavily modified. The North Beck Drain is located approximately 7km to the south-east of the Main Site.

6.11.3 The north of the study area (outside the Site) is located within the Skitter Beck/East Halton water body catchment. This waterbody is designated as bad WFD ecological status and is heavily modified. The Skitter Beck/East Halton drain is located approximately 3km to the north-west.

6.11.4 The North Killingholme Haven Pits transitional water body is located to the east of the Site at approximately 370m distance. The North Killingholme Haven Pits comprise a complex of four flooded clay pits, which are designated as moderate WFD ecological status and artificial. The

[144] North Lincolnshire (2011) Core Strategy Adopted. Available at: https://m.northlincs.gov.uk/public/planningreports/corestratergy/adopteddpd/FullCoreStrategy.pdf

[145] HM Government (2014) East Inshroe and East Offshroe Marine Plans. Available at: https://assets.publishing.service.gov.uk/media/5a7ec0eced915d74e33f2342/east-plan.pdf

[146] Environment Agency (2024) Guidance Protect groundwater and prevent groundwater pollution. Available at https://www.gov.uk/government/publications/protect-groundwater-and-prevent-groundwater-pollution/protect-groundwater-and-prevent-groundwater-pollution

[147] North Lincolnshire Council (2017) SuDS and Flood Risk Guidance Document. Available at: https://www.northlincs.gov.uk/wp-content/uploads/2020/11/NLC-SuDS-Guidance-Published-document-aa.pdf

[148] Centre for Ecology & Hydrology (1999). Flood Estimation Handbook. Available at: https://www.ceh.ac.uk/services/flood-estimation-handbook

[149] National Highways (formerly Highways England) (2020) Design Manual for Roads and Bridges LA 113 - Road drainage and the water environment. Available at: https://www.standardsforhighways.co.uk/search/d6388f5f-2694-4986-ac46-b17b62c21727

North Killingholme Haven Pits is designated as a SSSI.

6.11.5 The Humber Lower transitional water body is located approximately 720m east of the Site. The Humber Lower is designated as moderate ecological status and heavily modified. The Humber Estuary is designated as a SSSI, SPA, SAC and RAMSAR.

6.11.6 A number of minor watercourses and ditches are located within the Site and surrounding area which may be hydraulically connected to the wider water network. The Site sits within an area managed by the North East Lindsay Internal Drainage Board (NELIDB).

6.11.7 There are three NELIDB watercourses located within the Site boundary of the spur pipeline; Marsh Drain Branch 1, South Killingholme Drain and South Killingholme Drain Branch 1.

6.11.8 No surface water Drinking Water Safeguard Zones or Drinking Water Protected Areas are located within the study area.

6.11.9 No licensed surface water abstractions are currently located within the study area for the Main Site, although an abstraction from the River Humber is proposed as part of the consented North Killingholme Power Project. Details on abstractions within the study area for the spur pipeline, together with private water supplies in the Site study area are not known at this time, but will be requested from the EA and NLC.

6.11.10 A number of active consented discharges to surface water exist within the study area. A discharge to the River Humber is included in the consented North Killingholme Power Project.

Groundwater

6.11.11 The Main Site is mapped as being underlain by Till Superficial Deposits, except for a small area in the east of the Site mapped as being underlain by Tidal Flat Deposits. The spur pipeline is primarily underlain by Till Superficial Deposits in the north and Tidal Flat Deposits in the east. In the east of the study area, adjacent to the Humber, the geology is mapped as Beach and Tidal Flat Deposits. Glaciofluvial deposits are mapped to the east of the spur pipeline (but outside the Scoping Boundary). The Glaciofluvial deposits are mapped as a Secondary A aquifer, whilst the Till and Beach Deposits are designated as Secondary (undifferentiated) aquifers. The Tidal Flat Deposits are designated as an Unproductive aquifer. Shallow groundwater is anticipated within the Superficial Deposits in more granular horizons.

6.11.12 The Site and study area are mapped as being underlain by the Burnham Chalk Formation, with the exception of a section in the east of the spur pipeline study area which is the Flamborough Chalk Formation. The Chalk is designated as a principal aquifer. Historical ground investigation data[150] from boreholes in the area indicates that the Chalk bedrock beneath the Main Site is in the order of 14 to 18m below ground level. Blow wells (a type of artesian spring) are present in the wider region, but no known blow wells are mapped within the Site. The Chalk groundwater levels is anticipated to be between 0-5m AOD at the Main Site, and potentially tidally influenced.

6.11.13 No groundwater Drinking Water Safeguard Zone are located within the study area. The southern half of the spur pipeline is underlain by Source Protection Zone 3. The Humber River is designated by the EA as a Groundwater Dependent Terrestrial Ecosystem.

[150] British Geological Survey (2024) Geoindex Webmap. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.241961355.848776500.1720612215-805755297.1720612215

6.11.14 There are no licensed groundwater abstraction sources within the study area of the Main Site. Details on licensed abstractions in the wider area together with private water supplies are not known at this time but will be requested from Environment Agency and North Lincolnshire Council.

6.11.15 Active consented discharges to ground are mapped within the study area (outside the Site boundary).

Flood Risk

6.11.16 The Main Site is mapped in an area of high fluvial and coastal flood risk, with the majority of the Site in Flood Zone 2 or 3 (Figure 2.4).

6.11.17 The Main Site is mapped at risk of surface water flooding (pluvial flooding) in a number of areas for 1 in 30 (high risk), 1 in 100 (medium risk) and 1 in 1000 year scenarios (low risk). The areas at highest risk are associated with the minor watercourse/drains within the Site. See Figure 6.1.

6.11.18 No reservoir flood extents (both dry and wet day) are mapped within the study area.

6.11.19 Groundwater flood risk susceptibility data has not been obtained at the scoping stage.

Future baseline

6.11.20 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

6.11.21 The volume and intensity of precipitation falling on the Site and wider region could increase due to climate change with or without development, leading to increased fluvial and pluvial flood risk and increased pressure on water supply and sewerage infrastructure. Flood risk climate allowances will be considered in the flood risk assessment. An increase in groundwater levels, associated with rising sea levels and increased precipitation could also result in shallower groundwater levels at the Site. Conversely prolonged dry periods and increasing regional water demand may increase water stress, and impact water supplies.

Potential impacts

Construction

6.11.22 During construction, potential impacts to surface water and groundwater features and flood risk could arise from:

- increased pollution entering the watercourses from mobilised suspended solids, discharges and spillage of fuels or other harmful substances that may migrate to surface water and groundwater receptors;
- impacts to the hydromorphological and ecological quality of watercourses associated with works within or in close proximity to watercourses, including physical change to the watercourses and longer-term changes associated with sediment deposition;
- changes to catchments and pathways may alter existing surface water and groundwater flows with potential impacts on water dependent receptors;
- impacts to local land drainage structures, that may alter existing drainage patterns within

catchments and provide potential pathways for pollution;

- water usage impacts on regional water resources; and
- impacts on the local groundwater environment and dependent receptors. Changes to groundwater levels, flows and quality arising from construction activities, primarily dewatering, earthworks and intrusive works (such as ground investigation and piling). Impacts to the water environment from contamination will be assessed in the Geology, Hydrogeology and Land Contamination chapter.

Operation

6.11.23 During operation, potential impacts to surface water features and groundwater features and flood risk could arise from:

- permanent impact to the hydromorphological and ecological quality of water features associated with works within or in close proximity to water features;
- permanent impacts to catchment hydrology and hydrogeology;
- water usage impacts on regional water resources; and
- increased flood risk to the Proposed Development and to people and property elsewhere.

Decommissioning

6.11.24 The potential impacts on water resources and flood risk resulting from the decommissioning of the Proposed Development will not be separately evaluated in this EIA water resources and flood risk assessment. A further assessment of any decommissioning-related impacts on water resources and flood risk will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.11.25 The assessment will take into account any embedded design mitigation. Relevant embedded mitigation measures will be described in the ES and any residual significance of effects will be mitigated with further recommendations.

6.11.26 Any abstractions or discharges required for the Proposed Development will be consented in line with the relevant legislation (such as the Environmental Permitting Regulations 2019[151] and The Water Resources (Abstraction and Impounding) Regulations 2006[152]). The assessment will be undertaken on the basis that these consents will include the appropriate control measures to mitigate any impact on the water environment, or other disciplines where relevant[153]. Any new/amended consents will be applied for in line with the appropriate guidance and assessments, such as 'Surface water pollution risk assessment for your environmental permit'[154].

[151] HM Government (2019). The Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/uksi/2019/39

[152] HM Government (2006) The Water resources (Abstraction & Impounding) Regulations 2006. Available at https://www.legislation.gov.uk/uksi/2006/641/contents/made

[153] This includes control measures to mitigate impacts to aquatic fauna such as fish and eels. It is assumed that appropriate fish and eel protection and mitigation will be embedded into the design to comply with abstraction license and environmental permit requirements.

[154] Environment Agency (2022) Surface water pollution risk assessment for your environmental permit. Available at https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit

6.11.27 Pre and post construction surveying and sampling will be undertaken to demonstrate that environmental degradation has not occurred as a result of the works.

Construction

6.11.28 A CEMP will be produced in line with an Outline CEMP to be submitted with the planning application. The CEMP will be implemented to avoid, minimise or mitigate effects on the environment during the construction of the Proposed Development. The Outline CEMP will include good practice measures relevant to the Site that will be required to be implemented by any appointed contractor to reduce the likelihood of impacts, or their magnitude if they were to occur. The Outline CEMP will include ground and surface water monitoring plans, if required. Examples of standard practice mitigation measures that will be included in the Outline CEMP include:

- the provision of spill kits, locating machinery cleaning stations away from watercourses, and restricting concrete mixing to at least 10m away from watercourses;
- a surface water management system using measures such as temporary silt fencing, cut off ditches, settlement ponds and bunds set up early in the construction period to capture all runoff and prevent ingress of sediments and contaminants into existing drainage ditches where necessary. This would be managed in accordance with CIRIA Guidelines;
- water with a higher risk of contamination which requires discharge, including groundwater pumped out of pilings during concrete pouring, would be contained and treated using appropriate measures such as coagulation of sediments, dewatering and pH neutralisation prior to discharge;
- contaminated water that cannot be treated on Site would, if necessary, be pumped to a suitably licenced tanker before being exported off site for treatment at an appropriately permitted facility;
- a Flood Warning and Evacuation Plan will be developed, or an existing plan amended as appropriate, where works are within areas potentially affected by flooding. This will set out the potential risks and identify a procedure for receiving and acting on flood warnings or for monitoring conditions on Site to ensure that Site operatives are aware of potential risks and how to mitigate them through safe working practices;
- works in the floodplain would be suspended during out-of-bank river flows or during intense rainstorms;
- a suitable strategy will be developed for managing any temporary impacts on floodplain storage or conveyance which may include identifying specific areas outside the floodplain for storage of materials or providing compensatory storage on a temporary basis;
- water use efficiency measures will be adopted where applicable, for example rainwater harvesting and grey water re-use for wheel washing and dust suppression; and
- consideration of local groundwater catchment and flow regimes that may be affected by dewatering design and discharging the abstracted water to the same groundwater catchment and down gradient of the dewatered element.

Operation

6.11.29 Any works within or alongside watercourses will be designed to ensure no significant detrimental impact on flow conveyance and no localised or catchment wide impacts on flood risk; this will include any watercourse diversions, or any culverting required as a result of the permanent works.

6.11.30 Any permanent watercourse diversions will be designed to ensure continuity of conveyance such

that there is no significant detrimental impact on the wider catchment.

6.11.31 A surface water and groundwater monitoring plan will be developed, or an existing plan amended as appropriate, if any permanent works (such as a water treatment plant discharge) could affect quality or quantity of surface waters, groundwater aquifers or water dependant waterbodies or habitats.

Scope of Assessment

6.11.32 Qualitative assessment of the potential construction impacts on groundwater and surface water receptors will be undertaken to inform the control measures outlined in the Outline CEMP.

6.11.33 An assessment of the impacts of the Proposed Development on the WFD status and future objectives of the WFD surface and groundwater bodies with the potential to be impacted by the Proposed Development will be undertaken. In the first instance, a screening assessment will be undertaken that will identify the need for any further assessment. The screening assessment will then be followed by a scoping assessment which determine the level of detail required for any further WFD Compliance Assessment. These steps will be discussed and agreed with the EA and Local Authority. The WFD Compliance Assessment will be completed alongside the ES.

6.11.34 As the majority of the Proposed Development is within Flood Zone 2 and 3, a Flood Risk Assessment (FRA) will be undertaken utilising the existing modelled flood levels from the EA. An FRA has been undertaken and approved as part of the wider DCO for the North Killingholme Power Project, which will be taken into consideration, where appropriate, in the design and assessment.

6.11.35 Engagement with the EA, NLC and IDB, as necessary, will focus on ensuring the flood risk considerations are fully understood and accounted for in the assessment process. Furthermore, NLC will be consulted regarding the identification, naming and classification of watercourses to ensure they are in agreement.

Proposed scope of assessment

6.11.36 Table 6-37 summarises the aspects of the water resources and flood risk assessment that will be scoped in/ out of the EIA.

Table 6-37: Scoping summary for the water resources and flood risk assessment

Receptor	Construction	Operation	Decommissioning
Flood risk	Scoped in	Scoped in	Scoped out
Surface water quantity and quality	Scoped in	Scoped in	Scoped out
Groundwater quantity and quality	Scoped in	Scoped in	Scoped out
WFD waterbodies	Scoped in	Scoped in	Scoped out

6.12 Major accidents and disasters

Relevant legislation, policy and guidance

6.12.1 A brief overview of the policy, legislative and guidance relevant to Major Accidents and Disasters have been reviewed and summarised below.

Legislation

6.12.2 The following legislation is relevant to the major accidents and disasters assessment:

- Health and Safety at Work Act, 1974[155];
- The Management of Health and Safety at Work Regulations 1999 [156];
- CDM[157];
- The Workplace (Health, Safety and Welfare) (WHSW) Regulations 1992[158];
- Seveso III Directive 2015[159];
- The Dangerous Substances and Explosive Atmosphere Regulations 2002[160];
- Civil Contingencies Act 2004[161]; and
- Control of Major Accidents and Hazards (COMAH) Regulations 2015[162].

Policy

Overarching National Policy Statement for Energy[163];

- NPPF[4];
- North Lincolnshire Core Strategy (2011)[164]; and

[155] HM Government (1974). Health and Safety at Work etc. Act 1974. Available at: https://www.legislation.gov.uk/ukpga/1974/37/contents [Accessed: 10/07/2024]

[156] HM Government (1999). The Management of Health and Safety at Work Regulations 1999. Available at: https://www.legislation.gov.uk/uksi/1999/3242/contents/made [Accessed: 10/07/2024]

[157] HM Government (2015). The Construction (Design and Management) Regulations 2015. Available at: https://www.legislation.gov.uk/uksi/2015/51/contents/made [Accessed: 10/07/2024]

[158] HM Government (1992). The Workplace (Health, Safety and Welfare) Regulations 1992. Available at: https://www.legislation.gov.uk/uksi/1992/3004/contents/made [Accessed: 10/07/2024]

[159]European Union [2008]. Seveso III Directive. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:353:0001:1355:en:PDF [Accessed: 10/07/2024]

[160] Health and Safety Executive (2002). The Dangerous Substances and Explosive Atmospheres Regulations. Available at: https://www.hse.gov.uk/fireandexplosion/dsear-regulations.htm [Accessed: 10/07/2024]

[161]HM Government (2004). Civil Contingencies Act. Available at: https://www.legislation.gov.uk/ukpga/2004/36/contents

[162] HM Government (2015). The Control of Major Accident Hazards Regulations 2015. Available at: https://www.legislation.gov.uk/uksi/2015/483/contents/made [Accessed: 10/07/2024]

[163] HM Government. Overarching National Statement for Energy. Available at: https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf [Accessed: 10/07/2024]

[164] North Lincolnshire Council (2011) North Lincolnshire Core Strategy. Available at: https://m.northlincs.gov.uk/public/planningreports/corestratergy/adopteddpd/FullCoreStrategy.pdf

- North Lincolnshire Submission Local Plan (2022)[165].

Guidance

- National Risk Register[166]; and
- IEMA Major Accidents in EIA Primer[167].

Baseline conditions

Existing baseline

6.12.3 As stated in the EIA Regulations, existing sources of risk assessment are typically taken as informing the baseline of any major accident and disaster assessment. As such, the National Risk Register (NRR)[168], Humber Local Resilience Forum[169] and Health and Safety (HSE) Control of COMAH Site Register[170] have been used to inform the baseline for the Site. A summary of the baseline is detailed below. For full baseline details, see Appendix A3 Risk Identification.

Flooding

6.12.4 Section 6.11 Water Resources and Flood Risk states that the Site is mapped in an area of high fluvial and coastal flood risk, with the majority of the Site in Flood Zone 2 or 3. The areas at highest risk are associated with the minor watercourse/drains within the Site. Chalk bedrock beneath the Site is in the order of 14 to 18m below ground level.

Fire

6.12.5 In North Lincolnshire, 220 non-dwelling fires were attended by the Humber Fire and Rescue Service in 2023/24.

Severe weather

6.12.6 Average temperatures in Lincolnshire for the 2023 period were 4.39°C during the winter and 15.53°C during the summer. Rainfall reached an average of 159.6mm during the winter and 232mm during the summer.

System failures

6.12.7 A worst-case assumption has been made that the Site will have existing infrastructure including sewer, gas and electricity systems. This will be verified when the utilities information is

[165] North Lincolnshire Council (2022) Proposed Submission North Lincolnshire Local Plan. Available at: https://m.northlincs.gov.uk/public/localplan/examination/North%20Lincolnshire%20Local%20Plan%20-%20Submission%202022.pdf

[166] HM Government (2023). National Risk Register. Available at: https://assets.publishing.service.gov.uk/media/64ca1dfe19f5622669f3c1b1/2023_NATIONAL_RISK_REGISTER_NRR.pdf [Accessed: 12/01/2024]

[167] Institute of Environmental Management and Assessment (2020c). Major Accidents and Disasters in EIA: A Primer. Available at: https://www.iema.net/resources/reading-room/2020/09/28/major-accidents-and-disasters-in-eia-an-iema-primer [Accessed 12/01/2024]

[168] Gov.UK, National Risk Register 2023. Available at: https://www.gov.uk/government/publications/national-risk-register-2023 [Accessed 12/01/2024]

[169]Lincolnshire Local Resilience Forum. Available at: https://www.lincolnshireresilienceforum.org/risks/ [Accessed: 09/07/2024]

[170] Health and Safety Executive. COMAH 2015 Public Information Search. Available at: https://notifications.hse.gov.uk/COMAH2015/Search.aspx [Accessed 12/01/2024]

available.

Transport accidents

6.12.8 Section 6.10 Traffic and Transport states that the Main Site is situated north of Haven Road and west of Clough Lane. NLC holds the responsibility for both Planning and Highways matters. The movement of HGVs delivering construction materials and plant to the Site are anticipated to result in temporary impacts on the surrounding road network and nearby receptors. It is anticipated there will be a peak workforce of around 500 employees per day.

Industrial accidents

6.12.9 There are five COMAH sites within 4.8km of the Main Site's postcode (DN40 3NR) that are subject to the COMAH Regulations: Immingham Prax Lindsay Oil Refinery, Killingholme PSD, Humber Refinery: Humber LPG terminal and Rosper Road – VPI Immingham LLP.

Vandalism and attacks

6.12.10 For the North Killingholme area, the largest number of crimes committed fall within the violence and sexual offences category (19 reported crimes in the last year), followed by other theft offences (10). There were 657 crimes reported in the area in total last year.

UXO

6.12.11 The Site is considered to have a low Bomb Risk based on Zetica historical risk maps. Former Luftwaffe targets nearby include Dock Ports Killingholme and formed RAF Goxhill Airbase.

Future baseline

6.12.12 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

Potential impacts

6.12.13 Appendix A3 Risk Identification sets out the potential risks and their associated impact pathways. The risks have been identified from the National Risk Register, Lincolnshire Local Resilience Forum and information shared on the design and by other topic chapters highlighting some project specific risks. The appendix details the baseline, source, receptor and pathway to the receptor for each risk, identifying the potential impact and any mitigation. It then summarises whether or not a major accident or disaster could take place with the mitigation in place. For full details see Appendix A3 Risk Identification.

6.12.14 The construction risks which have been scoped in are: flooding, fire, severe weather, system failures, industrial accidents, pollution incidents, vandalism and attacks and UXO. For full details on the baseline for these risks and reasons why they have been scoped in see Appendix A3 Risk Identification.

6.12.15 The operational risks which have been scoped in are: flooding, fire, severe weather, industrial accidents, pollution incidents and vandalism and attacks. For full details on the baseline for these risks and reasons why they have been scoped in see Appendix A3 Risk Identification.

Decommissioning

6.12.16 The potential risks for major accidents and disasters resulting from or affecting the decommissioning of the Proposed Development, will not be separately evaluated in this EIA major accidents and disasters assessment. A further assessment of any decommissioning-related impacts will be conducted at the time of decommissioning, adhering to the relevant guidance and regulations in place at that time. This requirement will be secured through a DEMP, as detailed in Section 3.7.3.

Design and control measures

6.12.17 Through compliance with health and safety legislation, risks to employees will be mitigated to As Low As Reasonably Practicable (ALARP).

6.12.18 A CEMP will be produced in line with an Outline CEMP to be submitted with the planning application. It will detail the best practice mitigation measures which will be adhered to throughout the construction phase including pollution prevention and responses and fire prevention and management.

Scope of the Assessment

6.12.19 Major accidents are defined within the IEMA Major Accidents in EIA Primer as "*Events that threaten immediate or delayed serious environmental effects to human health, welfare and/ or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events*."[171].

6.12.20 The impact of major accidents can be significant, with the potential to impact people both on and off-site, assets and property on and off-site, and the surrounding environment. Disasters can be natural hazards, such as earthquakes, landslides and flooding or can be man-made hazards (e.g. caused by accidental loss of containment) or external hazards (e.g. act of terrorism) which result in consequences for people or the environment.

6.12.21 The IEMA Primer states that the major accidents and disasters topic can be scoped out of the EIA if the chapter can demonstrate:

- there is no source-pathway-receptor linkage of a hazard that could trigger a major accident and/or disaster or potential for the scheme to lead to a significant environmental effect; or
- all possible major accidents and/or disasters are adequately covered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice.

6.12.22 However, if the above cannot be demonstrated then the topic must be scoped in. In order to assess the above, a risk identification exercise has been undertaken. The Risk Identification assessment, set out in Appendix A3, considers the source-pathway-receptor model in terms of risks to environmental receptors such as designated environmental sites, residents local to the Proposed Development, users of the Proposed Development and workers on and in proximity to the Site, during construction and operation of the Proposed Development. It considers the baseline for each risk and whether, through embedded and additional mitigation, the risk can be said to be ALARP and therefore scoped out of further assessment. If this is not possible then the

[171]Institute of Environmental Management and Assessment (2020c). Major Accidents and Disasters in EIA: A Primer. Available at: https://www.iema.net/resources/reading-room/2020/09/28/major-accidents-and-disasters-in-eia-an-iema-primer [Accessed 03/07/2024]

risk is scoped in.

6.12.23 To determine the risk of a significant effect the likelihood of an event is taken into consideration, followed by the potential consequence should the event occur. In examining the consequence, the following is considered:

- the geographic extent of the effects of the risks. Effects beyond the Site boundary of the Proposed Development are more likely to be considered significant;
- the duration of the effects from the risks. Effects which are permanent (i.e. irreversible) or long lasting are more likely to be considered significant;
- the severity of the effects in terms of number, degree of harm to those impacted and the response effort required. Effects which trigger the mobilisation of substantial civil emergency response effort are more likely to be considered significant;
- the sensitivity of the identified receptors; and
- the effort required to restore the environment. Effects requiring substantial clean-up or restoration efforts are more likely to be considered significant.

6.12.24 In addition, any embedded mitigation measures within the Proposed Development will be taken into consideration to determine if, through them, the risk is mitigated.

6.12.25 The Primer also identifies significance, based on criteria adopted from Annex VI of the Seveso III Directive[159], a Directive which details the general classifications and labelling requirements of dangerous substances and preparations.

6.12.26 Using this reference, the significance threshold for the Proposed Development is set at anything which causes loss of life or permanent injury and/or long-lasting damage to an environmental receptor.

6.12.27 Risks which cannot be scoped out during the Risk Identification exercise will be scoped into the Environmental Statement. The second stage of the assessment will then take place where discussions with the design team and other topic teams will develop and inform the additional mitigation required to reduce all risks to ALARP.

Proposed scope of assessment

6.12.28 Table 6-38 presents a summary of the risks identified in Appendix A3 and whether they are scoped in or out of further assessment.

Table 6-38: Scoping summary for the major accidents and disasters assessment

Risk	Construction	Operation	Decommissioning
Flooding	Scoped in	Scoped in	Scoped out
Fire	Scoped in	Scoped in	Scoped out
Severe weather	Scoped in	Scoped in	Scoped out
System failures	Scoped in	Scoped out	Scoped out
Transport accidents	Scoped out	Scoped out	Scoped out
Industrial accidents	Scoped in	Scoped in	Scoped out
Pollution incidents	Scoped in	Scoped in	Scoped out
Vandalism and attacks	Scoped in	Scoped in	Scoped out
UXO	Scoped in	Scoped out	Scoped out

6.13 Climate change resilience

Introduction

6.13.1 This chapter outlines the scope and methodology for the assessment of the likely significant effects arising from the Proposed Development in respect of Climate Change Resilience and In-Combination Climate Change Impacts. The GHG assessment scoping can be found in Section 6.3.

Relevant legislation, policy and guidance

6.13.2 The methodology for the CCR and ICCI assessments have been developed in accordance with relevant legislation, policy, and industry guidance, as shown in Table 6-39.

Table 6-39: Legislation, policy and industry guidance

Document	Relevance to assessment
Legislation	
The Kyoto Protocol[172]	The Kyoto Protocol is an international treaty which extends the UNFCCC and commits state parties to reduce GHG emissions.
The Paris Agreement[173]	The Paris Agreement is a legally binding treaty that pledges to limit the increase in global average temperature to well below 2 degrees Celsius (°C), and to aim for 1.5°C, above pre-industrial levels.
Environmental Impact Assessment (EIA) Directive (2014/52/EU) [174]	An update to the EIA directive, includes climate change (both mitigation of GHGs and adaptation/vulnerability of projects) within assessment and decision-making processes.
EIA Regulations[175]	These regulations apply the amended EU EIA directive to the planning system in England. The 2017 Regulations are an update on the 2009 version, and for the first time introduces a requirement to consider the impacts of a project on climate.
The Climate Change Act 2008, as amended by the Climate Change Act (2050 Target Amendment) Order 2019[176]	The Climate Change Act commits the UK to GHG emissions reductions and reporting. The Act requires the setting of five-yearly Carbon Budgets that are not to be exceeded. The amendment Order updates the Climate Change Act, stating the UK's net zero target by 2050.
UK Climate Change Risk Assessment 2017[177]	The Climate Change Act also established a requirement for UK Government to undertake a climate change risk assessment (CCRA) for every five-year period and develop a programme for adaptation action in response to the risks identified. The UK Government's second UK CCRA was published in

[172] United Nations Framework Convention on Climate Change (1997) *The Kyoto Protocol.* Available at: Kyoto Protocol to the United Nations Framework Convention on Climate Change. | UNFCCC (Accessed September 2024)

[173] United Nations Framework Convention on Climate Change (2016) *The Paris Agreement.* Available at: ADOPTION OF THE PARIS AGREEMENT - Paris Agreement text English (unfccc.int) (Accessed September 2024)

[174] The European Parliament and The Council of the European Union (2014) *Directive 2014/52/EU.* Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052 (Accessed September 2024)

[175] HM Government (2017) *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*. Available at: The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (legislation.gov.uk) (Accessed September 2024)

[176] HM Government (2019) *The Climate Change Act 2008 (2050 Target Amendment) Order 2019.* Available at: The Climate Change Act 2008 (2050 Target Amendment) Order 2019 (legislation.gov.uk) (Accessed September 2024)

[177] Betts, R.A. and Brown, K.(2021) Introduction. In: The Third UK Climate Change Risk Assessment Technical Report [Betts, R.A.,Haward, A.B. and Pearson, K.V.(eds.)]. Prepared for the Climate Change Committee, London, available at: https://www.ukclimaterisk.org/wpcontent/uploads/2021/06/CCRA3-Technical-Report-Introduction-FINAL.pdf

Document	Relevance to assessment
	2022. It is based on the independent evidence report published by the Committee on Climate Change (CCC). It establishes six priority risk areas for action over the following five years: • flooding and coastal change; • health and well-being from high temperatures; • water shortages; • natural capital; • food production and trade; and • pests, diseases and invasive non-native species.
Policy	
NPPF[4]	Sets out the Government's planning policies for England and provides a framework within which locally prepared plans can be produced and applications for planning permission can be assessed. The NPPF sets out requirements for projects to improve future resilience.
A Green Future: Our 25 Year Plan to Improve the Environment[178]	Sets goals and targets for improving the environment for the next 25 years, with Goal 7 on 'mitigating and adapting to climate change'
The Third National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting (2023 – 2028)[179]	The National Adaptation Programme (NAP) sets the actions that government and others will take to adapt to the challenges of climate change in the UK. It sets out key actions for the next 5 years.
Standards and Guidance	
Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation[180]	The IEMA guidance sets out the methodology required to conduct climate change resilience assessment for EIA.
UKCP18 Headline findings[181]	This document presents the key findings of the UKCP18 climate projections. Providing a summary of the changes to climate and climatic hazards.

Baseline conditions

6.13.3 The following source of information have been used to inform the current and future baseline:

- Met Offices HadUK-Grid - Gridded climate observations for the UK have been used to establish the historical baseline climate conditions.
- Future climate conditions and associated climate hazards have been established using projected climate data from the UKCP18 projections. Regional projections have been used to obtain information on key climate variables. Information on projected sea level risk[182] has also been gathered using UKCP18 data.

6.13.4 Table 6-40 presents expected changes in climate conditions, such as temperature and precipitation for the period 2050 to 2079[183]. Table 6-41 presents changes in extreme weather for

[178] Department for Environment, Food and Rural Affairs (2018), A Green Future: Our 25 Year Plan to Improve the Environment. Available at: https://assets.publishing.service.gov.uk/media/5ab3a67840f0b65bb584297e/25-year-environment-plan.pdf

[179] UK Government (2023), The Third National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting. Available at: https://assets.publishing.service.gov.uk/media/64ba74102059dc00125d27a7/The_Third_National_Adaptation_Programme.pdf

[180] Institute of Environmental Management and Assessment (IEMA), EIA Guide to: Climate Change Resilience and Adaptation 2020, Available at: https://www.iema.net/resources/reading-room/2020/06/26/iema-eia-guide-to-climate-change-resilience-and-adaptation-2020

[181] Met Office, UKCP18 Headline Findings. Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-headline-findings-2.pdf

[182] Projected extreme still water levels for the year 2070

[183] These dates have been used on the assumption that the life of the Proposed Development is 25 years. They, therefore, represent the period in which the Proposed Development is anticipated to be operational.

the 2050 to 2079, and Table 6-42 presents extreme sea level data for the year 2070 at various return periods.

Table 6-40: UKCP18 climate change projections for average climate variables for the local area (12km grid square) for the time period 2050-2079 (under the RCP 8.5 high emissions scenario)

	Baseline (1980-2010)	Future climate (2050-2079)		
		10th Percentile Result	50th Percentile Result	90th Percentile Result
Summer mean temperature (°C)	15.6	19.1	19.8	20.1
Winter mean temperature (°C)	4.2	5.9	6.8	7.3
Average summer precipitation (mm/day)	1.85	1.22	1.37	1.50
Average winter precipitation (mm/day)	1.69	1.82	2.03	2.12

Table 6-41: UKCP18 climate change projections for extreme weather events for the local area (12-kilometre grid square) for the time period 2050-2079 (under the RCP 8.5 high emission scenario)

	Baseline (1980-2010)	Future Climate (2050-2079)		
		Min Model Result	Median Model Result	Max Model Result
Number of hot days (daily maximum temperature higher than 25°C)(days per year)	9.3	40.1	51.8	59.4
Average annual hottest day (˚C)	28.5	34.2	34.5	35.9
Average number of consecutive hot days per year (3 days above 25˚C) (occurrences/year)	0.9	5.0	6.6	7.3
Number of dry spells in 10 day period (occurrences/year)	3.3	3.7	4.0	4.5
Number of days where precipitation exceeds 20.0mm (days per year)	2.2	2.0	2.7	2.9

Table 6-42: Extreme Sea Level data for current and under future extreme climate change scenarios (RCP 8.5) at various return periods

Return period	Extreme Still Water Level (m AOD) Year 2017	Extreme Still Water Level (m AOD) Year 2070 RCP8.5		
		5th percentile	50th percentile	95th percentile
Annual	4.17	4.40	4.54	4.73
1 in 5 year	4.42	4.65	4.79	4.98
1 in 10 year	4.53	4.76	4.90	5.09
1 in 25 year	4.68	4.91	5.05	5.24
1 in 50 year	4.80	5.03	5.17	5.36
1 in 100 year	4.93	5.16	5.30	5.49
1 in 200 year	5.06	5.29	5.43	5.62
1 in 1000 year	5.38	5.61	5.75	5.94
1 in 10000 year	5.92	6.15	6.29	6.48

6.13.5 The projections indicate a potentially large increase in extreme heat. The hottest day is expected to reach 35.9°C, and the number of hot days (those exceeding 25°C) is projected to rise from fewer than 10 days over the three summer months to more than half the days in summer.

6.13.6 Drought risk is also likely to increase, with the number of 10-day dry spells anticipated to rise by around 23%. Additionally, average summer rainfall is expected to decrease by 26%.

6.13.7 Flood risk may increase due to changes in precipitation patterns. Average winter precipitation is projected to increase by 20%, and the number of heavy rainfall days is expected to rise by 22%.

6.13.8 Water levels and associated coastal flood risks are projected to increase. For instance, a present-day 1 in 10-year extreme water level of 4.53m AOD currently occurs on average once annually in 2070 (at the 50th percentile). It is also projected that the 1 in 200-year extreme water level in 2070 of 5.43m AOD at present only has approximately a 1 in 1000-year return period.

Potential impacts

Construction

6.13.9 As the construction of the Proposed Development is anticipated to take place in the next three years at time of writing, it is not considered that climate change will significantly increase the vulnerability of the Proposed Development during the construction period. It is likely that typical construction practices will provide appropriate mitigation measures to remove risk of significant impact and therefore remove the need for a CCR assessment at construction.

6.13.10 Opportunities to manage impacts from extreme weather during construction include:

- ensuring construction materials are covered when stored;
- pro-active construction planning which accounts for the possibility of extreme weather events;
- use of extreme weather alert systems; and
- site-level management mitigation measures provided by the contractor, e.g. those relating to construction methods and site management methods.

Operation

6.13.11 From the anticipated changes to the UK climate presented in the section above, four resultant hazards have been identified as relevant to the Proposed Development. These climate hazards along with the possible impacts on operation are presented in Table 6-43.

Table 6-43: Summary of climate hazards and potential impacts on the Proposed Development during operation.

Climate hazard	Impact on operation
Increased likelihood of extreme hot weather	Extreme high temperature causing asset failure and or decrease in lifespan. Reduced efficiency of cooling systems. Sustained periods of hotter temperatures impacting upon carbon capture processes. Heat health impacts on workforce.
Increased likelihood of intense rainfall *(resulting in surface or river flooding)*	Surface flooding on site or at key access points. Fluvial flooding causing access disruption. Cascading impacts from disruptions caused by flooding in the supply chain.
Sea level rise	

Climate hazard	Impact on operation
Possible future increase in drought events – caused by changes to seasonal rainfall (less rain in summer) and increase in dry periods, combined with increasing hot weather events.	Possible water restrictions which could halt or slow down processes, particularly water intensive processes (i.e. cooling).
Storms / high winds / lightning	Direct damage to assets from high winds Indirect damage to assets from high winds e.g., debris blown into assets. Lightning strikes causing asset damage, particularly electrical equipment. Damage or blocking of access routes. Cascading impacts from disruption to supply chain and/or market areas.

Design and control measures

6.13.12 A detailed exploration of mitigation measures and enhancement measures has not been undertaken as part of the scoping assessment. The outcome of identification of appropriate mitigation measures will be presented in the EIA Report. This process will inform mitigation measures and further design of the Proposed Development.

Assessment methodology

Study Area

CCR assessment

6.13.13 The CCR assessment is defined by the Proposed Development's footprint. The study area includes the construction and operation of the Proposed Development. For the purpose of the CCR assessment, it has been assumed that operational life of the Proposed Development will begin in 2030 and that it will have an anticipated lifespan of 25 years.

ICCI assessment

6.13.14 The study area for the ICCI assessment is the same as the study area for each relevant environmental discipline as described in each individual topic section.

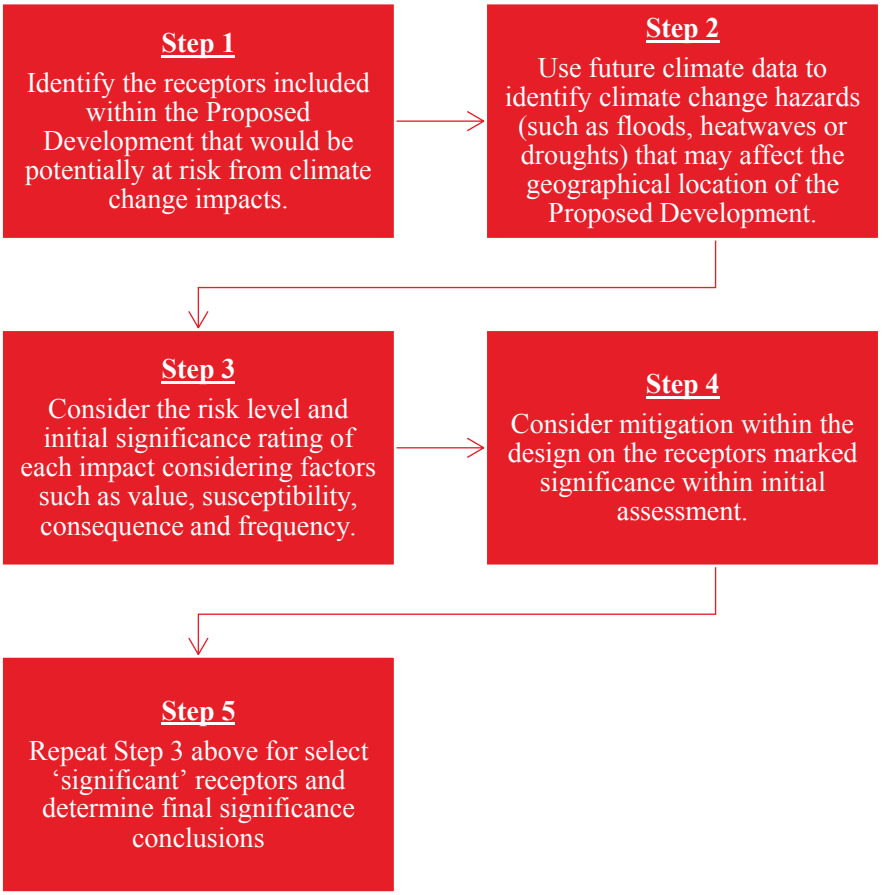
Approach

CCR assessment

6.13.15 The approach to determining the potential impacts and risks of climate change on the Proposed Development has been developed to align with the recommendations set out in IEMA's Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation.

6.13.16 This approach, shown in Picture 2, uses climate projections to identify potential impacts, and then assesses the likely **Sensitivity** (considering the value and susceptibility of assets) and **Magnitude** (considering frequency and consequence of interruption) of these impacts on the Proposed Development.

6.13.17 A summary of the impact assessment process is in Table 6-44. The definitions used to inform consideration of risk levels etc will consider, and potentially build on, existing risk frameworks used within the wider power generation industry.



Picture 2: CCR assessment methodology

Table 6-44: Significance matrix

		Magnitude[184]			
		High	Medium	Low	Negligible
Sensitivity[185]	High	Major (S)[186]	Major/Moderate (S)	Moderate/Minor (NS)	Minor/Negligible (NS)
	Medium	Major/Moderate (S)	Moderate (NS)	Minor (NS)	Negligible (NS)
	Low	Moderate/Minor (NS)	Minor (NS)	Minor (NS)	Negligible (NS)
	Negligible	Minor/Negligible (NS)	Negligible (NS)	Negligible (NS)	Negligible (NS)

ICCI assessment

6.13.18 The ICCI assessment follows the same approach to assessing impacts, identifying receptors, and determining significance as for each of the individual environmental topics, but with the added consideration of future climate change projections.

[184] Combination of consequence and frequency.

[185] Combination of value and susceptibility

[186] S = Significant, NS = Not Significant

6.13.19 Please refer to the methodology sections for the respective topics for further information on the relevant receptors, study areas, and assessment methodologies that will be used within each topic for the ICCI assessment.

6.13.20 Different topics use different criteria for determining significance, and as such there is no single approach to determining the significance of an ICCI. The effect of an ICCI is typically considered significant if:

- an effect which was previously not significant becomes significant in terms of the significance criteria used by the ES topic owing to the influence of climate change (for example, an increase in consequence of effect or an increase in scale of change); and/or
- an existing significant effect is exacerbated in terms of the significance criteria used by the ES topic owing to the influence of climate change (for example, a further increase in the consequence of effect or a further increase in scale of change).

Proposed scope of assessment

6.13.21 The scope of the CCR and ICCI assessment is set out in Table 6-45.

Table 6-45: Scoping Summary for the CCR and ICCI assessment

Climate hazard	Construction	Operation	Decommissioning
Increased likelihood of extreme hot weather	Scoped out	Scoped in	Scoped out
Increased likelihood of intense rainfall *(resulting in surface or river flooding)*	Scoped out	Scoped in	Scoped out
Possible future increase in drought events – caused by changes to seasonal rainfall (less rain in summer) and increase in dry periods, combined with increasing hot weather events.	Scoped out	Scoped in	Scoped out
Storms/ high winds/ lightning	Scoped out	Scoped in	Scoped out

6.14 Materials and waste

Introduction

6.14.1 The scoping of the materials and waste topic has been undertaken in accordance with the assessment methodologies described within the IEMA guide to Materials and Waste in EIA[187].

Baseline conditions

Existing baseline

6.14.2 Baseline conditions relevant to the materials and waste assessment include:

- the available capacity for managing waste from the Proposed Development, at an appropriate scale (regional for inert and non-hazardous waste, and national for hazardous waste);
- analysis of relevant waste management polices at national, regional and local level;
- locations of sites currently used, or safeguarded in planning policies, for waste management or minerals extraction and processing;
- availability of key materials required by the Proposed Development; and
- relevant waste management policies at national, regional and local level.

6.14.3 Based on data published by the Environment Agency[188], the landfill capacities for inert waste landfill and non-hazardous waste landfill in Lincolnshire and East Midlands in 2022, and hazardous waste landfill in England in 2022 are shown in Table 6-46.

Table 6-46: Landfill capacity in Lincolnshire, East Midlands and England in 2022

Facility type	Lincs (tonnes)	East Midlands (tonnes)	England (tonnes)
Inert waste landfill	142,830	28,028,192	-
Non-hazardous waste landfill	6,947,427	26,425,679	-
Hazardous waste landfill	-	-	12,945,000

Future baseline

6.14.4 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

6.14.5 Based on EA[188] data, the future landfill capacities for inert waste landfill and non-hazardous waste landfill in the East Midlands, and hazardous waste landfill in England are shown in Table 6-47.

[187] Institute of Environmental Management & Assessment (2020), IEMA guide to: Materials and Waste in Environmental Impact Assessment - Guidance for a proportionate approach. Available at: https://www.iema.net/media/0t5fwyhj/iema-materials-and-waste-in-eia-march-2020.pdf

[188] Environment Agency (2023) Waste Management Information 2022 Former East Midlands Planning Region

Table 6-47: Future landfill capacity in East Midlands and England between 2023 and 2028

Facility type	Estimated Capacity (tonnes)					
	2023	2024	2025	2026	2027	2028
Inert waste landfill (East Midlands)	31,644,305	35,726,959	40,336,344	45,540,419	**51,415,909**	58,049,436
Non-hazardous waste landfill (East Midlands)	26,560,890	26,696,792	26,833,390	26,970,686	**27,108,685**	27,247,390
Hazardous waste landfill (England)	15,228,000	12,542,000	10,330,000	8,508,000	**7,007,000**	5,771,000

Potential impacts

Construction

6.14.6 Subject to being granted consent, it is anticipated that construction will commence in 2027. Construction of the Proposed Development is anticipated to take approximately 33 months.

Materials

6.14.7 Materials required during construction would likely include primary raw materials, including metals, aggregate, pavement, concrete and soils. Materials will also be required to operate and maintain the Proposed Development such as lubricants and chemicals.

6.14.8 Likely impacts would be associated with the extraction of primary raw materials and the production of materials required for construction and operation of the Proposed Development. In addition, the Proposed Development has the potential to constrain existing or future use and extraction of materials.

Waste

6.14.9 Waste is defined as per the Waste Framework Directive (2008/98/EC) as '*any substance or object that the holder discards or intends or is obligated to discard*'. This definition is implemented into law in England and Wales through the Waste (England and Wales) Regulations 2011.

6.14.10 There is no demolition required for construction of the CCP. While the pipeline alignment and construction methodology are yet to be determined, the materials consumed, and the type and volume of waste generated during construction are expected to be minimal. If the pipeline is constructed underground, excavation will be required; however, the majority of the excavated material is likely to be re-used as backfill, significantly reducing the amount of waste requiring recycling, treatment and disposal.

6.14.11 Given the indicative nature of the spur pipeline, information on the site history and potential presence of contaminants has not yet been obtained but will be included within the Phase 1 Geoenvironmental Desk Study Report that will be prepared for the Site. Made Ground is anticipated in areas of current and historical development along the pipeline route. Consequently, the type and quantities of potential contaminants within excavated material remain unknown at this stage. However, given the expected minimal excavation required for either underground or above-ground pipeline construction, it is not anticipated to significantly impact landfill capacity. The management of any potentially contaminated excavated material will be further assessed during the ES.

6.14.12 Likely impacts from construction of the Proposed Development could therefore include the temporary use of waste management facilities capacity during treatment and a permanent

decrease in landfill capacity during disposal. Landfill is a finite resource and the ongoing disposal of waste puts pressure on the existing facilities or requires new sites to be developed. Similarly, waste management and waste treatment facilities have limits on processing capacity, therefore there is the potential for the Proposed Development to utilise a proportion of the remaining available capacity.

6.14.13 The estimated quantities of construction waste generated from the Main Site are based on a preliminary design and the best available information which is subject to change as the design progresses. The estimated construction waste generated during the construction of the Main Site is shown in Table 6-48.

Table 6-48: Estimated quantities of construction waste generated from the Main Site

Waste Type	Source	Quantities (tonnes)
Surplus excavated soil	Excavation and piling	14,000
Municipal waste	Site offices and staff welfare facilities	17
Non-hazardous and inert construction waste	General construction activities, packaging from material deliveries, damaged/ surplus materials, etc.	454
Hazardous construction waste	Construction plant maintenance and use of chemicals	1.7

6.14.14 Historically, part of the Main Site was a former gas production plant which suggests there may be contaminants in the soil and groundwater. It is therefore assumed that some excavated material will be classed as hazardous. For the purpose of this scoping exercise a precautionary assumption of 30% has been made.

6.14.15 The forecasted waste to be generated has been considered against the landfill capacity in the proposed construction years (i.e. 2027). The total quantity of non-hazardous waste expected to require off-site disposal is 10,110 tonnes, which would occupy approximately 0.03% of the non-hazardous landfill capacity in the East Midlands in 2027. The total quantity of hazardous waste forecast to require off-site disposal is 4,330 tonnes, which would occupy approximately 0.06% of the hazardous landfill capacity in England in 2027.

Operation

6.14.16 During operation, the Proposed Development will generate various process waste streams from the carbon capture process, some of which are likely to be classified as hazardous. The specific types and quantities of waste to be generated will be reported in the ES.

Decommissioning

6.14.17 As the Proposed Development has a relatively long design life it is not possible to accurately predict the decommissioning requirements, and infrastructure needs far into the future. A DEMP, as detailed in Section 3.7.3, would consider in detail to address all potential environmental risks on the Proposed Development site and contain guidance on how risks can be removed or mitigated. Further assessment of any impacts on materials and waste will be undertaken at the time of decommissioning in line with the applicable guidance and regulations at the time.

Design and control measures

Materials

6.14.18 Depending on the design, there may be an opportunity to retain and re-use materials on Site, reducing pressures on local waste management infrastructure. Measures will be taken to establish acceptable re-use and import criteria and procedures defined for ensuring the suitability of material.

6.14.19 In addition, certain construction methods can also reduce waste, such as pre-fabricating sections offsite and importing them for construction. This will be managed throughout construction by the contractor through the implementation of sustainable procurement, resource efficiency (including Designing out Waste) and Circular Economy measures.

6.14.20 In addition, a MMP will be developed to demonstrate how excavated materials would be managed and re-used on Site.

Waste

6.14.21 The potential impacts of waste generated can be mitigated through the implementation of a construction SWMP produced by the contractor. The SWMP will outline the measures that must be implemented for Site waste management and will reduce the likelihood of the Proposed Development having significant adverse effects on waste.

Scope of the assessment

6.14.22 The scoping of the waste topic has been undertaken in accordance with the assessment methodologies described within the IEMA guide to: Materials and Waste in EIA[189].

Construction

6.14.23 During the construction stage, the estimated quantity of non-hazardous waste generated from the Proposed Development would occupy approximately 0.03% of the non-hazardous landfill capacity in the East Midlands in 2027. The estimated quantity of hazardous waste would occupy approximately 0.06% of the hazardous landfill capacity in England in 2027. When compared to the sensitivity and magnitude of impact criteria in the IEMA Guide to Materials and Waste in EIA, it can be considered that the Proposed Development would have neutral or slight effect for non-hazardous and low to medium effect for hazardous waste. It is therefore proposed to scope construction effects on materials and waste out of the EIA.

Operation

6.14.24 During operation of the Proposed Development, it is anticipated that there will be no significant changes in material demand as the materials required for operation of the carbon capture plant, such as solvents or sorbents, may be used in a stable and long-term cycle. Therefore, it is considered changes in demand for materials during operation phase is scoped out.

Proposed scope of assessment

6.14.25 Table 6-49 summarises the aspects of the materials and waste assessment that will be scoped in/ out of the EIA.

[189] Institute of Environmental Management & Assessment (2020), IEMA guide to: Materials and Waste in Environmental Impact Assessment - Guidance for a proportionate approach. Available at: https://www.iema.net/media/0t5fwyhj/iema-materials-and-waste-in-eia-march-2020.pdf

Table 6-49: Scoping summary for the materials and waste assessment

Material and waste aspect	Construction	Operation	Decommissioning
Changes in demand for materials	Scoped out	Scoped out	Scoped out
Changes in baseline waste arisings	Scoped out	Scoped in	Scoped out
Changes in the available landfill capacity	Scoped out	Scoped in	Scoped out

6.15 Human Health

Relevant legislation, policy and guidance

6.15.1 The following guidance and information have been used to inform this human health EIA scoping assessment:

- Institute of Environmental Management and Assessment (IEMA), Guide to Effective Scoping of Human Health in Environmental Impact Assessment, 2022; and
- IEMA Guide to Determining Significance for Human Health in Environmental Impact Assessment, 2022.

6.15.2 This scoping report uses a broad definition of health, defined by the World Health Organisation as *'a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirmity'*[190]. The identification of potential health effects is based on the 'wider determinants of health' model, which recognises that health is influenced by a range of social, economic and environmental factors, known as health determinants. These include factors such as access to health and education services, availability of training and employment opportunities, access to green space, opportunities for physical activity and the quality of the built and natural environment.

Baseline conditions

Existing conditions

6.15.3 Public Health England produces data at the local authority level and publishes health profiles. These profiles provide a snapshot of public health in an area and help local government and health service providers to understand local community health needs and priorities.

6.15.4 Baseline information has been obtained from the following sources:

- Public Health England Health Profiles[191];
- ONS Health Index for England 2015–2018[192]; and
- Index of Multiple Deprivation (IMD) 2019[193].

6.15.5 Table 6-50 shows health and wellbeing indicators for the wider study area compared to the regional and national averages.

Table 6-50: Health and wellbeing indicators for the wider study area

	'Very good' or 'Good' self-rated general health (%)	'Bad' or 'Very bad' self-rated general health (%)	Income deprivation score	Life expectancy (male/years)	Life expectancy (female/years)
North Lincolnshire	79	6	106	77.9	83.1
Yorkshire and The Humber	80	6	-	78.1	82.0
England	82	5	-	79.3	83.2

[190] https://www.who.int/about/accountability/governance/constitution

[191] PHE, 2021. Public Health Profiles. Available at: Local Authority Health Profiles - Data - OHID (phe.org.uk)

[192] ONS 2021 Census, Dataset TS037 – General Health. Available at: https://www.nomisweb.co.uk/datasets/c2021ts037

[193] ONS, 2019. Indices of Multiple Deprivation. Available at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019

Potential impacts

Construction

6.15.6 The impacts on health determinants and potential effects on population health during the construction phase are considered below.

6.15.7 As stated in the IEMA Guide to Determining Significance, a 'population health' approach should be taken when assessing health effects in EIA. Population health refers to the health outcomes of a group of individuals, including the distribution of such outcomes within the group. Health effects on individuals are therefore not considered.

Environmental Health Determinants

6.15.8 Environmental amenity: combined environmental and traffic impacts have the potential to result in an overall effect on local amenity. This has the potential to affect people's quality of life through changes to their perceptions of their local environment.

6.15.9 The health assessment considers community-wide effects, whereas environmental effects on individual receptors (taking into account health and wellbeing outcomes) are considered in the relevant environmental topic assessments. The factors potentially affecting environmental amenity during construction are considered below:

- Traffic: It is anticipated that the construction phase would result in additional HGV movements, peaking at 6-7 additional movements per hour across a five-day week, over a six-month period, as referenced within the traffic assessment. In addition, there would be some light commercial vehicle traffic. Construction vehicles would use Haven Road, Clough Lane, Chase Hill Road, Rosper Road, East Halton Road, Station Road and Marsh Lane to access the Site from the Docks to the north-east and from the main road network (Humber Road/A160 and A180/M180) to the south. Construction traffic and its associated impacts are unlikely to result in any changes to environmental amenity and quality of life, due to the nature of the construction roads, the likely minor increase in the number of HGV journeys and the relatively short duration (33-months) of the construction phase.
- Air quality: The construction of the Proposed Development may give rise to potential fugitive emissions of dust from construction works and emissions from plant equipment. However, due to the distance of the site from sensitive receptors and the implementation of best practice control measures, the impacts are expected to be negligible, as described in Section 6.2. The construction traffic routes pass through largely unpopulated areas and traffic is therefore not considered to have the potential to impact on population health. Effects on sensitive receptors from construction traffic emissions will be assessed within the air quality assessment (Section 6.2).
- Noise and vibration: Construction site noise affecting human receptors and vibration created by construction activities may impact isolated receptors within 300m of construction works to install the spur pipeline, as described in Section 6.8. This will be assessed and mitigated within the Noise chapter and does not have the potential to cause significant impacts on population health. Noise and vibration from construction traffic may impact receptors along construction traffic routes, as described in Section 6.8. However, this does not have the potential to cause significant impacts on population health.
- Landscape and visual: The landscape and visual assessment (Section 6.7) has identified potential effects on views for local communities and users of PRoWs, including temporary changes to landscape features and views of increased freight, heavy goods and construction vehicles in and out of the Site. The assessment of impact on visual amenity on residential

receptors will take into account the wellbeing of the occupants of properties and users of PRoW. This will not constitute a health effect at population level. Effects on PRoW are considered under Lifestyle health determinants.

6.15.10 The Site and construction traffic routes are located in industrial and agricultural land. The nearest residential areas are in East Halton and North Killingholme, approximately 1.2 km west and 2 km south-west, respectively. There are residential properties along East Halton Road and Chase Hill Road and footpaths adjacent to the construction traffic routes. One runs along East Halton Road and the other along Rosper Road, starting south of Marsh Lane and continuing to the intersection with the A160 road. There are two PRoWs: PRoW 77 and PRoW 100.

6.15.11 PRoW 77 ends at the Main Site and will likely be impacted by construction activities. It is a narrow path between borders of farms and industrial areas. It connects with other PRoWs at its west end, over 2km from the Main Site. It does not connect to other PRoWs, footpaths, residences or social infrastructure on its east end. Due to its distance from residential areas and its lack of connection at its east end, it is unlikely the PRoW is well used, either for access or as a rural recreational route, and therefore it is not considered to be sensitive to amenity impacts. It is considered that there is no potential for adverse effects on quality of life at a community level as a result of impacts on this PRoW.

6.15.12 PRoW 100 is a narrow and disjointed path between borders of farms and industrial areas. It is east of the Main Site and connects with PRoW 50 on its northeastern end, forming a pathway along the coast of the Humber Estuary. Its southwestern end runs towards the Main Site, where it terminates. The southwestern end will likely be impacted by construction activities. The coastal section of this PRoW will not be affected. It is unlikely that the affected section of PRoW 100 is used as an access or rural recreational route, as it does not connect to other PRoWs, footpaths, residences or social infrastructure at its southwestern end, and it is disjointed, not easily accessed and within a heavily industrialised area. Therefore PRoW 100 is not considered to be sensitive to amenity impacts. It is considered that there is no potential for adverse effects on quality of life at a community level as a result of impacts on this PRoW.

6.15.13 Ground and water contamination effects will be assessed and mitigated by design and control measures to avoid adverse effects on human health, as described in Section 6.6.

Access and Connectivity Health Determinants

6.15.14 It is anticipated that PRoW 77 which intercepts the north end of the Main Site will be diverted. As described in 6.15.10, it is unlikely that PRoW 77 is used as a rural recreational route. Therefore, diversions on the eastern end of PRoW 77 are unlikely to impact access and connectivity. It is not anticipated that there will be any impacts on community facilities during the construction of the Proposed Development due to closures and diversions of roads or PRoWs. Construction traffic has the potential to increase severance, for example by increasing traffic congestion and journey times or by making the roads less usable for pedestrians and non-motorised users. As set out in Section 6.10, the scope of the traffic and transport assessment will consider health and wellbeing determinants, including: severance of communities; driver and passenger delay; impacts on non-motorised users (walkers, cyclists and horse riders); fear, intimidation and safety. However, given the rural / industrial nature of the construction traffic routes, no potential health effects associated with adverse impacts on access and connectivity are identified.

Social and Economic Health Determinants

6.15.15 Employment and economics: Construction of the Proposed Development will create construction-related employment opportunities within the area (see Section 6.9). This is expected to have a beneficial effect on the local labour market and economy, as described in Section 6.9.

However, it is unlikely this will give rise to effects on population health and wellbeing due to the relatively short duration of the construction phase, which is anticipated to last 33 months. Effects on employment and income and enhancement measures to increase the beneficial effects will be considered in the socio-economic assessment as described in Section 6.9.

6.15.16 Education and training: Construction of the Proposed Development may create opportunities for construction-related training and apprenticeships. Whilst this is currently unknown, it is expected to be an insignificant number of training and apprenticeship places from a population health perspective.

Lifestyle Health Determinants

6.15.17 Active travel: There are footpaths that run alongside East Halton Road from East Halton to South Killingholme and alongside Rosper Road, both of which are construction traffic routes. It is assumed due to the industrial nature of the area that many of the vehicles currently using these roads are HGVs and therefore the presence of 6-7 additional HGVs every hour would not be noticeable by users of these footpaths. Due to the nature and location of these footpaths, it is considered unlikely that they are well used by the local community either for access or recreation. The additional traffic alongside these footpaths is therefore unlikely to deter their use due to reduced amenity or safety concerns and will not result in effects on health and wellbeing. There are two PRoWs which intersects the Site and will likely be impacted by construction activities. Due to its distance from residential areas and its lack of connection on its west end, it is unlikely the PRoWs are used as a rural recreational route, and therefore any impacts on the PRoWs are unlikely to result in effects on active travel.

6.15.18 Access to green space: The Site is located in an industrial and agricultural area. There is no publicly accessible green space within 0.5km of the Site, nor are there rural recreational routes. Therefore, there are no impacts on access to green space as a result of the Proposed Development.

Operation

6.15.19 The impacts on health determinants and potential effects on population health during the operational phase are considered below.

6.15.20 As stated in the IEMA Guide to Determining Significance, a ‘population health’ approach should be taken when assessing health effects in EIA. Population health refers to the health outcomes of a group of individuals, including the distribution of such outcomes within the group. Health effects on individuals are therefore not considered.

Environmental Health Determinants

6.15.21 The factors potentially affecting environmental amenity during construction are considered below:

- Noise and vibration: Potential adverse effects on individual receptors from noise and vibration during the operation of the Proposed Development have been scoped in for further assessment (see section 6.8).
- Air quality: Potential for adverse impacts on nearby sensitive human receptors during the operation of the Proposed Development have been scoped in for further assessment (see section 6.2)
- Traffic, transport and connectivity: Operational traffic is expected to be minimal, with the majority of trips being made by cars or vans. For this reason, traffic, transport and connectivity during operation has been scoped out for further assessment (see section 6.10).

- Landscape and visual: The landscape and visual assessment (Section 6.7) has identified potential effects on some local views. The assessment of visual effects on residential receptors will take into account the wellbeing of the occupants of properties and users of PRoWs. This will not constitute a health effect at population level.

6.15.22 It is considered that there are no potential changes to environmental amenity which could impact overall quality of life for local communities and impact health at a population level. Impacts on individual residential receptors (e.g. air quality impacts) will be assessed in the relevant environmental topic assessments. Therefore, no potential effects on health and wellbeing associated with environmental amenity have been identified.

6.15.23 Ground and water contamination effects will be assessed and mitigated by design and control measures to avoid adverse effects on human health, as described in Section 6.6.

Access and Connectivity Health Determinants

6.15.24 There will be no direct impacts on the local road network, PRoWs or community facilities. Operational traffic is expected to be minimal, with the majority of trips being made by cars or vans. For this reason, no health effects relating to impacts on access and connectivity are predicted.

Social and Economic Health Determinants

6.15.25 Employment and economics: The operational employment is not anticipated to be significant (approximately 20 new jobs), however the numbers are yet to be confirmed. There is a potential for beneficial effects on income and associated health and wellbeing, which will be considered in the socio-economic section as described in Section 6.9.

6.15.26 Education and training: Operation of the Proposed Development may create opportunities for operation-related training and apprenticeships. Whilst this is currently unknown, itis expected to be an insignificant number of training and apprenticeship places from a population health perspective.

Lifestyle Health Determinants

6.15.27 Active travel: It is anticipated that PRoW 77 which runs through the Main Site would need to be diverted. This will be considered as the design progresses. Once operational, traffic is expected to be minimal with the majority of trips being made by car or van. For this reason, it is considered there will be no impact on the identified roadside footpaths due to operational traffic. During operation, there may be visual impacts on the PRoW which ends at the Site. However, as it is unlikely that it is used recreationally, no impacts on health and wellbeing related to active travel are anticipated.

6.15.28 Access to green space: The Site is located in an industrial and agricultural area. There is no publicly accessible green space within 0.5km of the Site, nor are there rural recreational routes. Therefore, there are no impacts on access to green space as a result of the Proposed Development.

Decommissioning

6.15.29 Potential impacts on human health, as a result of decommissioning the Proposed Development, will not be separately assessed as part of this EIA human health assessment. Further assessment of any impacts on human health associated with decommissioning will be undertaken at the time of decommissioning in line with the applicable guidance and regulations at the time. This will be

secured through a DEMP, detailed in Section 3.7.3.

Design and Control Measures

6.15.30 Mitigation measures identified by the following topics in this EIA Scoping Report are relevant to the health assessment:

- air quality;
- noise;
- traffic and transport;
- socio-economics;
- landscape and visual amenity;
- water resources, flood risk and land contamination.

Scope of Assessment

6.15.31 The noise and air quality assessments will consider impacts on individual receptors, taking into account health effects. As stated above, it is expected that the scale of potential impacts on health determinants will not give rise to effects on human health at the population level. Required mitigations, such as for water resources, flood risk and land contamination, would control the effects on human health to non-significant levels. Therefore, based on the scale of likely impacts and the implementation of relevant mitigation measures as detailed in above-mentioned chapters, health effects will not be significant and therefore are proposed to be scoped out of EIA.

Proposed scope of assessment

6.15.32 Table 6-51 summarises the aspects of the human health assessment that will be scoped in/ out of the EIA.

Table 6-51: Scoping summary for the human health assessment

	Construction	Operation	Decommissioning
Environmental health determinants			
Environmental amenity (combined noise, air quality, visual and traffic effects)	Scoped out	Scoped out	Scoped out
Ground water and contamination			
Access and connectivity health determinants	Scoped out	Scoped out	Scoped out
Social and economic health determinants			
Employment and economics	Scoped out	Scoped out	Scoped out
Education and training			
Lifestyle health determinants			
Active travel	Scoped out	Scoped out	Scoped out
Access to green space			

6.16 Aviation

6.16.1 The height of the CCP absorber stack will be determined on the basis of air dispersion modelling results to ensure compliance with the relevant air quality standards or Environmental Assessment Levels. It is anticipated that the height of the stack and buildings associated with the Proposed Development are comparable to the heights of structures and stacks within the wider industrial context in the area. Therefore, it is considered appropriate to scope out impacts on aviation.

6.16.2 The Civil Aviation Authority will however be consulted on the Proposed Development to review any requirements for aviation lighting on the stack(s) and enable the Proposed Development to be charted in future. Should taller stacks or cranes be required than currently expected the need for an aviation assessment will be reviewed accordingly.

6.16.3 Table 6-52 summarises the aspects of the aviation assessment that will be scoped in/ out of the EIA.

Table 6-52: Scoping summary for the aviation assessment

	Construction	Operation	Decommissioning
Aviation	Scoped out	Scoped out	Scoped out

6.17 Cumulative and combined effects

6.17.1 This section outlines the proposed methodology for the assessment of cumulative and intra-project effects arising from the Proposed Development.

6.17.2 Cumulative and intra-project effects are usually additive or interactive (synergistic). They are a result of multiple actions on environmental receptors or resources over time. Two categories of effects will be considered:

- Intra project effects (also known as combined effects) – the intra-project effect of multiple aspects of the Proposed Development. For example, noise, dust and visual effects on one particular receptor; and
- Inter project effects (also known as cumulative effects) - where one receptor is impacted by the Proposed Development and other projects or plans which could result in a greater effect.

Intra project effects

6.17.3 The assessment methodology for combined effects involves the identification of environmental resources and receptors where there is potential for more than one impact to be experienced and therefore potential for interactions between these. This enables the identification of the overall combined environmental effects of the Proposed Development.

Inter project effects

6.17.4 In accordance with the EIA Regulations, consideration will also be given to the potential for cumulative impacts to arise. Cumulative impacts are those that accrue over time and space from a number of development activities. The impact of the Proposed Development will be considered in conjunction with the potential impacts from other projects or activities which are both reasonably foreseeable in terms of delivery (e.g. have planning consent) and are located within a relevant geographical scope where environmental impacts could act together to create a more significant overall effect.

6.17.5 A number of other proposed developments have already been identified in the vicinity of the Proposed Development that could potentially result in cumulative impacts during its construction and operation – these are listed in Table 6-53. However, consultation with NLC will be undertaken in respect of identifying additional proposals and planning applications submitted under the TCPA 1990 or applications made for development consent under the Planning Act 2008 that may also have the potential to produce significant cumulative environmental impacts.

6.17.6 An assessment of potentially significant cumulative effects with other proposed developments in the vicinity of the Proposed Development will be undertaken for each of the topics described within this Scoping Report and reported in the ES. The Applicant will consult with NLC and neighbouring LPAs in order to define the full list of current and future developments/ projects to be considered for the potential cumulative impacts. The current known developments are shown in Table 6-53.

Table 6-53: Planned developments in the vicinity of the Proposed Development

Project Name	Approximate Distance from Proposed Development	Information available	Project Details
North Killingholme Power Project	Within Site	Development consent granted on 11 September 2014.	A 470 megawatt (MW) CCGT electrical generating station with provision for carbon capture (subject of this EIA Scoping Report).

Project Name	Approximate Distance from Proposed Development	Information available	Project Details
			Construction and operation would take place at the same time as the Proposed Development.
Humber H2ub (Green)® Project	Immediate west	Scoping opinion from North Lincolnshire Council issued in Nov 2024.	Construction and operation of Hydrogen Production Facility (HPF) and associated utilities. The green hydrogen production capability will have an initial capacity of up to 120 MW, with the potential for future expansion by an additional 200 MW or more. The hydrogen would be used to replace refinery fuel gas in industrial-scale fired heaters as part of Phillips 66 Limited's plans to reduce their Humber Refinery's scope 1 operational emissions.
Humber Zero – Phillips 66 and VPI Developments (Ref. PA/2023/421 and PA/2023/422)	Immediate south-west	Consultation completed in June 2024 and applicant is currently addressing comments from local authorities.	Construction and operation of a post-combustion carbon capture plant, including carbon dioxide compressor and metering, cooling equipment, stacks, substations, internal roads, partial ditch realignment, new and modified services, connections, accesses, maintenance and laydown areas
Viking CCS Pipeline (Ref. PA/SCO/2022/5)	Immediate south-west	Decision stage with the Planning Inspectorate, with a completion date set for 5 March 2025.	The development of a 53km buried pipeline, which will enable CO_2 captured by emitters in Immingham to be transported to the former Theddlethorpe Gas Terminal Site (TGT), for onward transportation within the existing offshore Lincolnshire Offshore Gas Gathering system (LOGGS) Pipeline and a newly installed spur pipeline, to the offshore injection facilities for permanent storage.
Humber Carbon Capture Pipeline	Immediate west	Scoping Report submitted in January 2025.	An onshore underground CO_2 pipeline, along with associated above-ground infrastructure, will transport captured carbon dioxide from selected emitters in the Humber region. These emitters will be identified by the UK Government as part of the Carbon Capture Usage and Storage Cluster Sequencing process. The pipeline will extend from Drax in North Yorkshire to Easington on the East Riding of Yorkshire coast, where it will connect to a secure offshore storage site in the North Sea. The offshore storage facility and its associated transportation pipeline will be subject to a separate DCO.
VPI Immingham OCGT	Immediate south-west	Development consent granted on 7 August 2020.	The construction and operation of a new Open Cycle Gas Turbine (OCGT) Power Station of up to 299 megawatts gross output and associated development including gas and electrical connections.
Able Monopile Manufacturing Facility (Ref. PA/2021/1525)	1.1km east	Approve with conditions on 9 August 2022.	The development of a monopile manufacturing facility for producing components of offshore wind turbine structures. The facility will fabricate large steel columns, known as monopiles, using advanced welding techniques and heavy steel plates. Once completed, they will be painted and prepared for use in offshore wind installations.
Site Enabling Works, Land East of Rosper Road, Killingholme (Ref. PA/2023/502)	0.3km east	ES submitted in April 2024 and supporting document submitted in April 2024.	Construction of new 33kV substation and associated works, such as installation of ground drainage, road widening, diversion of existing underground pipeline and construction of new rail sidings.

Project Name	Approximate Distance from Proposed Development	Information available	Project Details
Humber Tech Park Data Centre (Ref. PA/2024/584)	2.6km west	Approve with conditions on 28 August 2024	Construction of a data centre complex of up to 309,000m² (Gross External Area) across three buildings. The development includes ancillary offices, internal plant and equipment, emergency backup generators with associated fuel storage, and other key infrastructure. Additional works include internal roads, footpaths, cycle and car parking, landscaping, security fencing, lighting, drainage, an electricity substation, a district heating unit, and a horticultural glasshouse.
Port of Immingham Wind Turbines (Ref. PA/2024/397)	0.2km south-east	ES submitted in May 2024	Construction and operation of one wind turbine and associated and ancillary infrastructure.
Able Marine Energy Park	0.7km east	Development consent granted on 18 December 2013	Construction of a solid quay on the south bank of the River Humber, accompanied by an ecological compensation scheme with temporary and permanent habitat creation on the opposite bank. Associated works include dredging, land reclamation, and onshore facilities for manufacturing, assembling, and storing marine energy installation components.

7. Summary of significant environmental effects

7.1.1 This Scoping Report has been prepared on the basis that the Applicant intends to undertake an EIA in respect of the Proposed Development and to produce an ES to report the findings of the EIA. The Scoping Report provides the information required to accompany a request for a Scoping Opinion, in accordance with Regulation 15 of the EIA Regulations.

7.1.2 This report has identified the environmental effects that are considered to have the potential to be significant and proposes the approach to be used in assessments that will be undertaken for the EIA to characterise and understand the significance of these effects.

7.1.3 For clarity, Table 7-1 presents a summary of the proposed scope of the technical topics to be included in the ES, i.e. scoped in. It also identifies those elements that it is proposed are scoped out of the EIA, on the basis that these would not result in significant effects.

Table 7-1: Summary of the proposed scope of the technical topics to be included in the ES

Environmental topic		Scoped in	Scoped out
Air quality	Construction	Construction dust	Vehicle movements
	Operation	Operational phase plant emissions	Vehicle movements
	Decommissioning	-	Dust generation Vehicle movements
Greenhouse gas emissions	Construction	GHG assessment	-
	Operation	GHG assessment	-
	Decommissioning	GHG assessment	-
Cultural heritage	Construction	Buried archaeology Built heritage assets	-
	Operation	Built heritage assets	Buried archaeology
	Decommissioning	-	Buried archaeology Built heritage assets
Ecology and nature conservation	Construction	Impacts on designated sites Permanent loss of habitat Temporary degradation of habitat Permanent and temporary loss of a feature/habitat used by protected species Disturbance to protected species Creation and/or enhancement of existing habitats	-
	Operation	Impacts on designated sites Permanent and temporary loss of a feature/habitat used by protected species Disturbance to protected species Creation and/or enhancement of existing habitats	Permanent loss of habitat Temporary degradation of habitat
	Decommissioning	-	Impacts on designated sites Permanent loss of habitat Temporary degradation of habitat Permanent and temporary loss of a feature/habitat used by protected species Disturbance to protected species Creation and/or enhancement of existing habitats

Environmental topic		Scoped in	Scoped out
Geology, hydrology and Land contamination	Construction	Effects from contamination on surface water and groundwater resources Effects from UXO on human health/built environment Effects on agricultural land	Effects on geology Effects from contamination on human health/built environment
	Operation	-	Effects on geology Effects from contamination on surface water and groundwater resources Effects from contamination on human health/built environment Effects on agricultural land Effects from UXO on human health/built environment Effects on agricultural land
	Decommissioning	-	Effects on geology Effects from contamination on surface water and groundwater resources Effects from contamination on human health/built environment Effects on agricultural land Effects from UXO on human health/built environment Effects on agricultural land
Landscape and visual amenity	Construction	Views and visual amenity for local communities in neighbouring towns and villages Views and visual amenity for recreational users of inland PRoWs around East Halton	District landscape character areas (NCA 41) District landscape character areas (NCA 42) North Lincolnshire Landscape Character Assessment: Humber Estuary character area North Lincolnshire Landscape Character Assessment: Lincolnshire Drift character area Site specific character
	Operation	Views and visual amenity for local communities in neighbouring towns and villages Views and visual amenity for recreational users of inland PRoWs around East Halton	District landscape character areas (NCA 41) District landscape character areas (NCA 42) North Lincolnshire Landscape Character Assessment: Humber Estuary character area North Lincolnshire Landscape Character Assessment: Lincolnshire Drift character area Site specific character
	Decommissioning	-	District landscape character areas (NCA 41) District landscape character areas (NCA 42) North Lincolnshire Landscape Character Assessment: Humber Estuary character area North Lincolnshire Landscape Character Assessment: Lincolnshire Drift character area Site specific character Views and visual amenity for local communities in neighbouring towns and villages Views and visual amenity for recreational users of inland PRoWs around East Halton
Noise and vibration	Construction	Construction site noise affecting human receptors Construction site noise affecting ecological receptors Construction traffic noise and vibration	

Environmental topic		Scoped in	Scoped out
		Construction site vibration	
	Operation	Operational noise affecting human receptors Operational noise affecting ecological receptors	Operational traffic noise Operational vibration
	Decommissioning	-	Noise produced during on-site works Vibration produced during on-site works
Socio-economics	Construction	Employment generation Access to accommodation Local community impacts	Wider economic impacts (catalytic effects)
	Operation	Employment generation Local community impacts Wider economic impacts (catalytic effects)	Access to accommodation
	Decommissioning	-	Employment generation Access to accommodation Local community impacts Wider economic impacts (catalytic effects)
Traffic and transport	Construction	Severance Road vehicle driver and passenger delay Non-motorised user delay Non-motorised user amenity Fear and Intimidation Hazardous/large loads	Road user and pedestrian safety Road Safety Audits
	Operation	-	Severance Road vehicle driver and passenger delay Non-motorised user delay Non-motorised user amenity Fear and Intimidation Hazardous/large loads Road user and pedestrian safety Road Safety Audits
	Decommissioning	-	Severance Road vehicle driver and passenger delay Non-motorised user delay Non-motorised user amenity Fear and Intimidation Hazardous/large loads Road user and pedestrian safety Road Safety Audits
Water resources and flood risk	Construction	Flood risk Surface water quantity and quality Groundwater quantity and quality WFD waterbodies	-
	Operation	Flood risk Surface water quantity and quality Groundwater quantity and quality WFD waterbodies	-
	Decommissioning	-	Flood risk Surface water quantity and quality Groundwater quantity and quality

Environmental topic		Scoped in	Scoped out
			WFD waterbodies
Major accidents and disasters	Construction	Flooding Fire Severe weather System failures Industrial accidents Pollution incidents Vandalism and attacks UXO	Transport accidents
	Operation	Flooding Fire Severe weather Industrial accidents Pollution incidents Vandalism and attacks	System failures Transport accidents UXO
	Decommissioning	-	Flooding Fire Severe weather System failures Transport accidents Industrial accidents Pollution incidents Vandalism and attacks UXO
Climate change resilience	Construction	-	-
	Operation	Increased likelihood of extreme hot weather Increased likelihood of intense rainfall (resulting in surface or river flooding) Possible future increase in drought events – caused by changes to seasonal rainfall (less rain in summer) and increase in dry periods, combined with increasing hot weather events. Storms/ high winds/ lightning	-
	Decommissioning	-	-
Human health	Construction	-	Environmental health determinants Social and economic health determinants Lifestyle health determinants
	Operation	-	
	Decommissioning	-	
Materials and waste	Construction	-	Changes in demand for materials Changes in baseline waste arisings Changes in the available landfill capacity
	Operation	Changes in baseline waste arisings Changes in the available landfill capacity	Changes in demand for materials
	Decommissioning	-	Changes in demand for materials Changes in baseline waste arisings Changes in the available landfill capacity
Aviation	Construction	-	Aviation
	Operation	-	Aviation
	Decommissioning	-	Aviation

8. The EIA process

8.1 EIA methodology and reporting

8.1.1 The EIA will be carried out in accordance with the requirements defined by the EIA Regulations.

8.1.2 The ES will set out the process followed during the EIA including the methods used for the collection of data and for the identification and assessment of impacts and effects. Any assumptions made or limitations on the assessments will be clearly identified.

8.1.3 The EIA process is designed to be capable of considering, and sensitive to, changes that occur as a result of changes to the design, including any mitigation measures that are incorporated during the EIA. This will be particularly important for the Proposed Development as the design and layout is still being refined and minor changes are likely to be made following submission of this EIA Scoping Report.

8.1.4 The EIA is based on a number of related activities, as follows:

- establishing existing baseline conditions;
- consultation with statutory and non-statutory consultees throughout the pre-planning application process;
- consideration of relevant local, regional and national planning policies, guidelines and legislation relevant to EIA;
- consideration of technical standards for the development of significance criteria;
- consideration of alternatives;
- review of secondary information, previous environmental studies and publicly-available information and databases;
- physical surveys and monitoring;
- desk-top studies;
- computer modelling, such as the air dispersion modelling and computer noise model;
- reference to current legislation and guidance; and
- expert opinion.

8.1.5 Impacts will be considered on the basis of their magnitude, duration and reversibility. Cumulative and combined effects will also be considered where appropriate. Significance will be evaluated on the basis of the scale of the impact and the importance or sensitivity of the receptors, in accordance with standard assessment methodologies (major, moderate, minor and negligible).

8.1.6 Where likely significant environmental effects are identified in the assessment process, measures to mitigate these effects will be put forward in the form of recommendations to be undertaken as part of the Proposed Development.

8.2 Structure of the Environmental Statement

8.2.1 The ES will comprise the following set of documents:

- Non-Technical Summary (NTS): this document will provide a summary of the key issues and findings of the EIA in non-technical language.
- Volume I: Environmental Statement main text. This will contain the full text of the EIA with the proposed chapter headings as follows:

1. Introduction and EIA methodology
2. Site and surroundings
3. Project description, need and alternatives considered
4. Construction programme and management
5. Policy context
6. Air quality
7. Greenhouse gas emissions
8. Cultural heritage
9. Ecology and nature conservation
10. Geology, hydrogeology and land contamination
11. Landscape and visual amenity
12. Noise and vibration
13. Socio-economics
14. Traffic and transport
15. Water resources and flood risk
16. Major accidents and disasters
17. Climate change resilience
18. Materials and waste
19. Cumulative and combined effects
20. Summary of significant environmental effects.

- Volume II: Figures
- Volume III: Technical appendices: These will provide supplementary details of the environmental studies conducted during the EIA including relevant data tables, figures and photographs. The Technical Appendices will include but will not be limited to the Transport Assessment, the Flood Risk Assessment, the Phase 1 Geo-environmental Desk Study, the Habitat Regulations Assessment, the Biodiversity Net Gain assessment, Preliminary Ecological Assessment (PEA), Water Framework Directive Screening assessment and Heritage Desk-based Assessment (DBA).

8.3 Structure of the technical chapters

8.3.1 Technical chapters 6 to 18 of the ES will be structured based on the following subheadings:

Introduction

8.3.2 The Introduction will describe the format of the assessment presented within the chapter.

Legislation and planning policy context

8.3.3 The Legislation and Planning Policy Context section of the technical chapters will provide a brief overview of the relevant legislation, planning policy and technical guidance relevant to the assessment.

Consultation and Scope of Assessment

8.3.4 The assessment method will incorporate feedback from consultation that has been undertaken throughout all stages of the project, including the scoping opinion. The ES will highlight key

issues that have arisen from consultation (including this scoping exercise) that have been specifically addressed within the EIA. In addition, the scope of assessment will be outlined, detailing the parameters and criteria used in the assessment for each technical chapter.

Assessment methodology and significance criteria

8.3.5 The assessment methods used in undertaking the technical study will be outlined in this section with references to published standards, guidelines and relevant significance criteria.

8.3.6 The significance of effects before and after mitigation will be evaluated with reference to definitive standards, accepted criteria and legislation where available. Where it is not possible to quantify impacts, qualitative assessments will be carried out, based on available knowledge and professional judgment. Where uncertainty exists, this will be noted in the relevant technical assessment chapter.

8.3.7 Specific criteria for each technical assessment will be developed, giving due regard to the following:

- extent and magnitude of the impact;
- impact duration (whether short, medium or long term);
- impact nature (whether direct or indirect, reversible or irreversible);
- whether the impact occurs in isolation, is cumulative or interactive;
- performance against environmental quality standards where relevant;
- sensitivity of the receptor; and
- compatibility with environmental policies and standards.

8.3.8 For issues where definitive quality standards do not exist, significance will be based on the:

- local, district, regional or national scale or value of the resource affected;
- number of receptors affected;
- sensitivity of these receptors; and
- duration of the impact.

8.3.9 In order to provide a consistent approach to expressing the outcomes of the various studies undertaken as part of the EIA and thereby enable comparison between effects upon different environmental components, the following matrix (Table 8-1) will be applied throughout the ES to define effects, unless otherwise specified and explained.

Table 8-1: Significance of effects matrix

Magnitude of impact	Sensitivity of receptor				
	Very High	**High**	**Medium**	**Low**	**Negligible**
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

8.3.10 The effects will be described as significant or not significant, and beneficial, neutral or adverse and will encompass all types of effects required by the EIA Regulations (direct, indirect, secondary etc.). For the purpose of this EIA, moderate and major effects (shaded grey in the matrix above) will be deemed 'significant', and where possible mitigation measures will be identified to reduce the residual effects to 'not significant'.

8.3.11 Each of the technical chapters will provide the criteria, including sources and justifications, for quantifying the different levels of residual effect. Where possible, this has been based upon quantitative and accepted criteria (for example, the National Air Quality Strategy objectives or noise assessment guidelines in BS 5228:2009+A1), together with the use of value judgment and expert interpretation to establish to the scale of an effect.

Study Areas

8.3.12 The study areas for the Proposed Development are defined separately for each environmental topic, considering the location and extent of possible impacts on affected areas and the specific guidelines for each topic.

Baseline conditions (including future baseline)

8.3.13 In order to assess the potential impacts and effects of the Proposed Development, it is necessary to determine the environmental conditions that currently exist on site and in the surrounding area, for comparison. These are known as the existing baseline conditions.

8.3.14 Baseline conditions are determined using the results of site surveys and investigations or desk-based data searches, or a combination of these, as appropriate. It is also relevant for the EIA to consider future baseline conditions taking account of any planned or likely changes to the existing baseline.

8.3.15 The future baseline will be presented in the ES and will consider natural changes from the existing baseline scenario without implementation of the Proposed Development. Should the future baseline conditions at the Site have changed from the existing conditions due to the CCGT, this will be considered as necessary.

Development design and impact avoidance

8.3.16 Measures that have been integrated into the Proposed Development in order to avoid or reduce adverse environmental effects will be described. Such measures may include refinement of the design and layout of the Proposed Development to avoid impacts on sensitive receptors, implementation of Environmental Management Plans, and adherence of relevant legislation, guidance and best practice. The assessment of impacts and effects in the next section takes account of these measures already being in place.

Likely impact and effects of the Proposed Development

8.3.17 This section will identify the likely impacts and effects resulting from the Proposed Development. The likely impacts and effects associated with the Proposed Development will be assessed separately as well as together (project-wide) to provide transparency and clarity to the planning process.

8.3.18 The magnitude of impacts will be defined with reference to the relevant baseline conditions (existing or future, as appropriate), and effects will be determined in accordance with the identified methodology.

8.3.19 The technical assessments will identify the environmental impacts of the Proposed Development at key stages in its construction, operation (including maintenance) and eventual decommissioning.

8.3.20 There are several scenarios being considered for the construction of the Proposed Development. The assessment scenarios that will be considered for the purposes of the EIA (and considered in the ES) are as follows:

- Existing baseline without the Proposed Development - the year that the baseline data has been collected;
- Future baseline without the Proposed Development - for comparison respectively with the construction and operation scenarios described below;
- Construction of the Proposed Development;
- Opening and/or operation (including maintenance) of the Proposed Development - where opening represents the start of operation;
- Decommissioning of the Proposed Development; and
- Cumulative impacts from other committed developments.

Mitigation and enhancement measures

8.3.21 The Mitigation and Enhancement Measures section will describe the measures that will be implemented by the Applicants to reduce any significant adverse effects identified by the assessment and enhance beneficial effects during construction and operation of the Proposed Development.

Residual effects and conclusions

8.3.22 Effects of the Proposed Development remaining following the implementation of available mitigation measures are known as ‘residual effects. These will be discussed for each of the potential effects, and their significance level identified.

8.3.23 As for the ‘before mitigation’ effects, residual effects associated with the Proposed Development will be assessed separately as well as together (project-wide) to provide transparency and clarity to the planning process.

Appendices

A.1 Figures

Indicative Proposed Development Scoping Boundary (the Site)

A4

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Coordinate System: British National Grid

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Meters

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Rev	Date	By	Chkd	Appd	Authd
P05	03/02/2025	RY	JS	JJ	RL

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www.arup.com

Client

Uniper

Project Name

Proposed Carbon Capture Plant for Killingholme Low Carbon Power

Drawing Title

Figure 2.1: Indicative Proposed Development Scoping Boundary (the Site)

Scale at A4

1:20,000

Role

EIA Scoping Report

Suitability

Final

Project Number

305719-40

Rev

P05

Drawing Name

Figure 2.1

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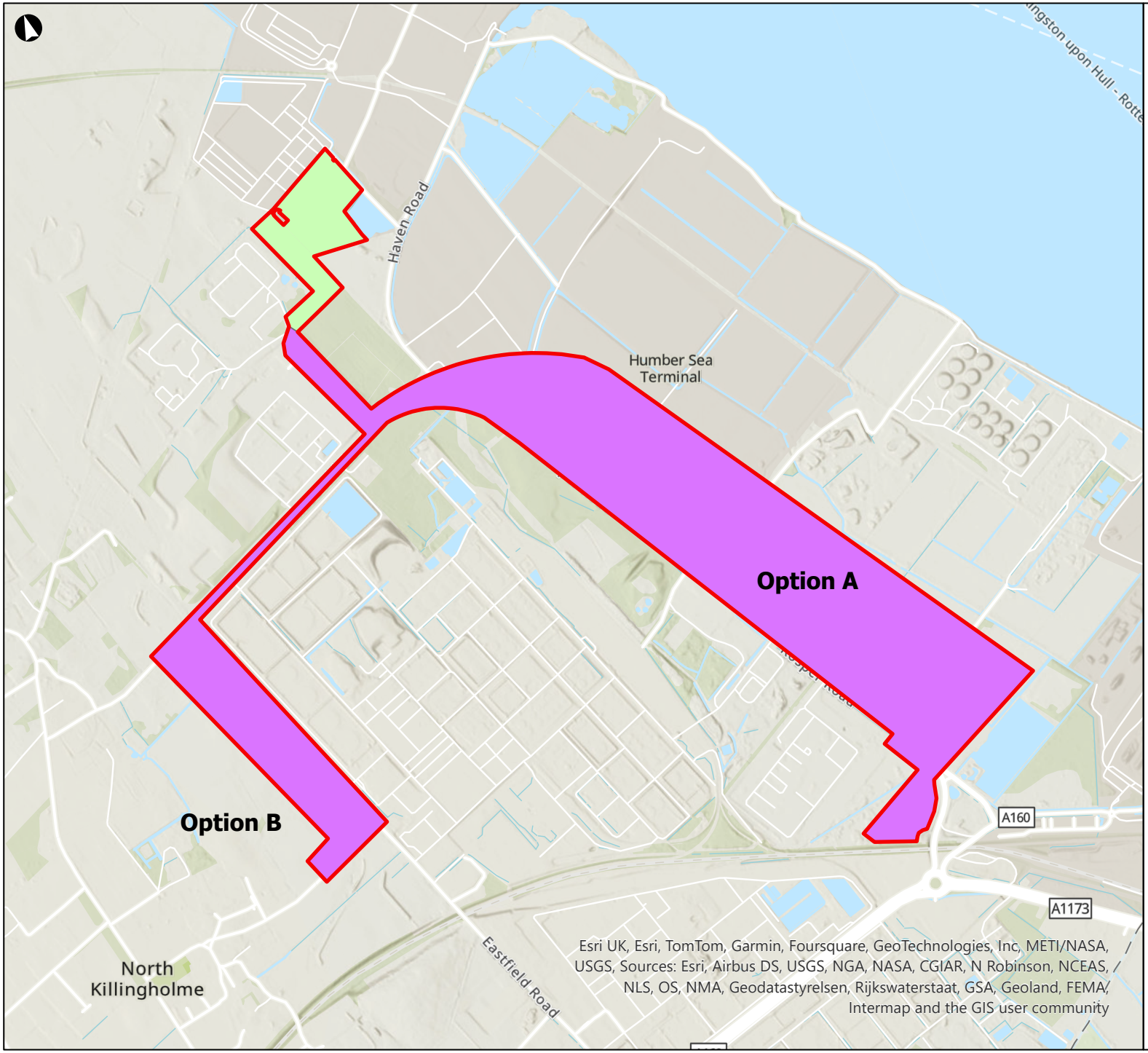

Indicative Proposed Development Scoping Boundary (the Site)

A4

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Anticipated Use

Main Site

Pipeline

Coordinate System: British National Grid

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Meters

0 500 1,000

Rev	Date	By	Chkd	Appd	Authd
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Client

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Project Name

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Drawing Title

Figure 2.2: Indicative Proposed Development anticipated uses

Scale at A4

1:20,000

Role

EIA Scoping Report

Suitability

Final

Project Number

305719-40

Rev

P05

Drawing Name

Figure 2.2

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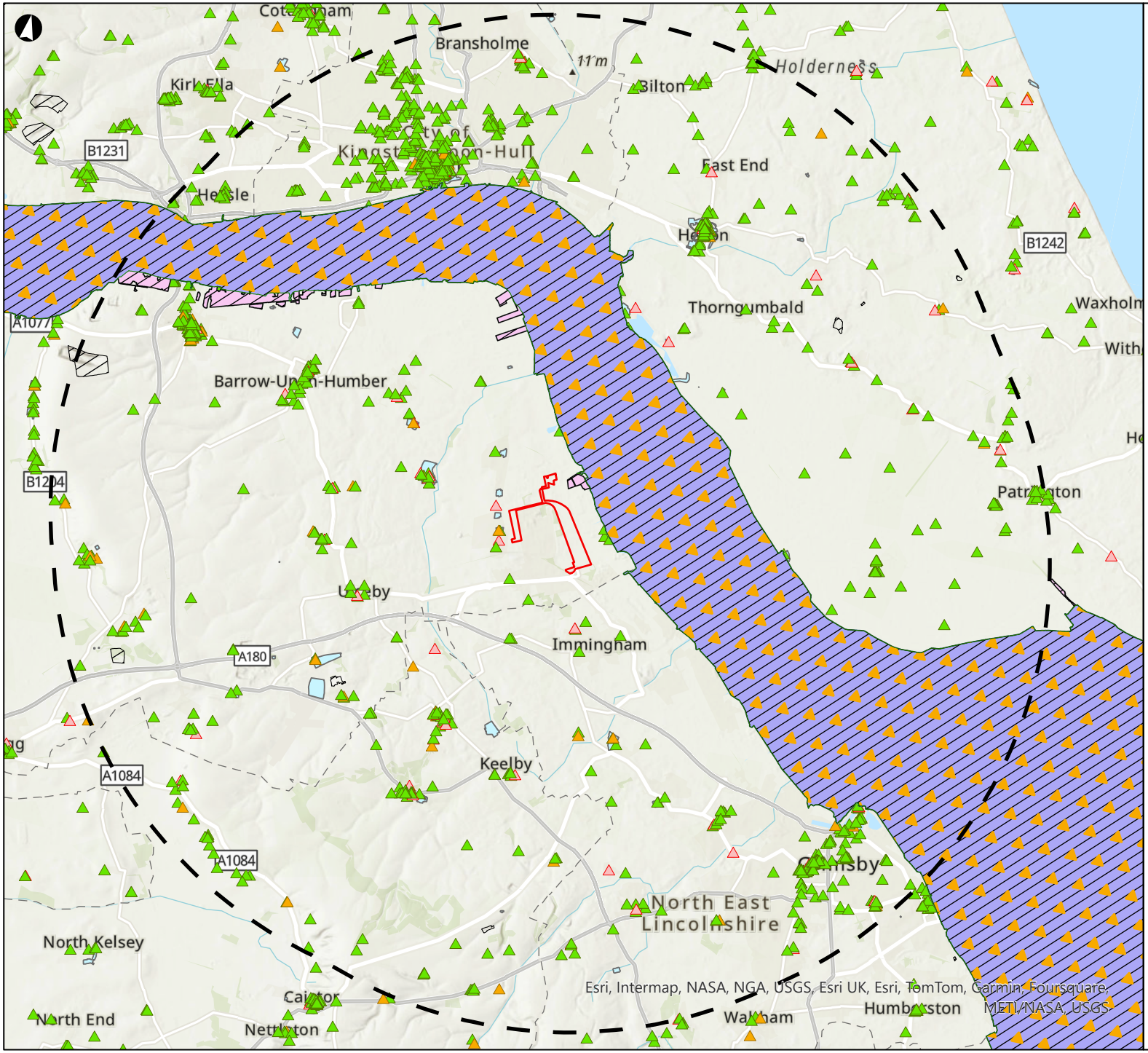

Indicative Proposed Development Scoping Boundary (the Site)

15km buffer

Scheduled Monuments

Ramsar Site

Special Area of Conservation (SAC)

Special Protection Area (SPA)

Sites of Special Scientific Interest (SSSI)

Listed Buildings

I

II*

II

Coordinate System: British National Grid

Meters

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A4

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Rev	Date	By	Chkd	Appd	Authd
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Drawing Title

Figure 2.3: Environmental Designations Map

Scale at A4

1:180,000

Role

EIA Scoping Report

Suitability

Final

Project Number

305719-40

Rev

P05

Drawing Name

Figure 2.3

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Indicative Proposed Development Scoping Boundary (the Site)

Flood Zone 2

Flood Zone 3

Coordinate System: British National Grid

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Rev	Date	By	Chkd	Appd	Authd
P05	03/02/2025	RY	JS	JJ	RL

Meters

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Project Name
Proposed Carbon Capture Plant for Killingholme Low Carbon Power

Drawing Title
Figure 2.4: Flood Risk Map

Scale at A4
1:40,000

Role
EIA Scoping Report

Suitability
Final

Project Number
216198-53

Rev
P05

Drawing Name
Figure 2.4

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A4

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Study Area (1km)

Indicative Proposed Development Scoping Boundary (the Site)

Risk of Flooding from Surface Water

Flood Likelihood Category

- High
- Medium
- Low

Coordinate System: British National Grid

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Kilometers

0 0.75 1.5

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Project Name

North Killingholme EIA

Drawing Title

Pluvial Flood Risk

Scale at A4

1:30,000

Role

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Suitability

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Project Number

216198-53

Rev

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Drawing Name

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A.2 Preliminary Ecological Appraisal

ARUP

Uniper UK Limited

Proposed Carbon Capture Plant for the Killingholme Low Carbon Power project

Preliminary Ecological Appraisal

Reference: KIL-ARP-ZZ-ZZ-RP-EC-0002

P03 | 28 February 2025

Job number 305719-40

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Attachments

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Appendices

Executive Summary

Ove Arup and Partners Ltd. was commissioned by Uniper UK Limited to undertake a Preliminary Ecological Appraisal in relation to support a request for a Scoping Opinion for a proposed carbon capture plant (CCP) and a spur pipeline. The indicative red line boundary (RLB) for EIA Scoping includes an area for the proposed CCP and an associated construction laydown (hereafter referred to as the 'Main Site') and two additional areas, the extent of which is to be refined, for a spur pipeline for the export of CO_2. The combination of the Main Site and spur pipeline options is defined as the whole project area and is hereafter referred to as the 'Site'.

This report outlines recommendations for the Site and forms preliminary recommendations and considerations for the proposed works. Key findings include:

- **Designated sites**: Five statutory designated sites exist within 2km of the Site, the closest of these is the Humber Estuary Ramsar/Special Protection Area (SPA) and the North Killingholme Haven Pits Site of Special Scientific Interest (SSSI), all of which are located approximately 0.4km to the east of the Site.
- **Non-Statutory Sites**: Six Local Wildlife Sites (LWS) and one Wildlife Trust Reserve (WTR) exist within 2km of the Site, the closest of these is Burkinshaw's Covert LWS, located within the RLB.
- **Habitats**: The Main Site boundary includes mixed scrub, buildings, artificial unvegetated, unsealed surface, other developed land, sparsely vegetated land and other rivers and streams.
- **Bats**: The Main Site boundary is suitable for foraging and commuting bats. A single building was also assessed as having moderate roosting potential. It is therefore recommended that two activity surveys are undertaken.
- **Water vole**: No evidence of water vole recorded during the field survey although suitable habitat exists within the Main Site. A full water vole survey to confirm the presence or inform the likely absence of water vole is recommended.
- **Birds**: The Main Site supports habitat for breeding, wintering and passage bird species. The desk study found numerous records and species, and the field survey identified the presence of Schedule 1 Wildlife and Countryside Act (1981) as amended species, Cetti's warbler. To avoid damaging bird nests during proposed works (i.e. vegetation clearance), work should occur outside the nesting season (March to August). If not possible, a nesting bird survey by a qualified ecologist is recommended. Breeding, bird surveys are recommended (April-July). The surveys should also include targeted surveys for Cetti's warbler due to their confirmed presence within the Main Site. Wintering and passage bird surveys are also recommended, focusing on Humber estuary SPA bird species.
- **Amphibians**: No evidence of amphibians were recorded during the field survey. However, 64 great crested newt records were obtained from Lincolnshire Environmental Records Centre (LERC) within 2km of the Main Site and a confirmed population at Swinster Lane Field LWS. As a result, eDNA surveys (April-June) are recommended for waterbodies within 250m of the Site.

1. Introduction

1.1 Overview

Ove Arup & Partners Limited (Arup) was commissioned by Uniper UK Limited (hereafter referred to as 'the Applicant') to undertake a Preliminary Ecological Appraisal (PEA) in relation to support a request for a Scoping Opinion for a proposed carbon capture plant (CCP) and a spur pipeline (hereafter referred to as 'the Proposed Development'). The proposed CCP will be located in close proximity to the already consented North Killingholme Power Project. The location of the power station platform is centred at Ordnance Survey National Grid Reference TA 157 198 (see **A.1, Appendix A**). In addition to the proposed CCP, the Proposed Development includes two options for a spur pipeline that could connect CCP to a carbon dioxide transport and storage infrastructure project, which would be developed by a third party. Option A extend 3.7km south from the Main Site to connect with the Viking Carbon Capture and Storage (CCS) Pipeline at the Immingham Above Ground Infrastructure (AGI). Option B extends 2.7km south-west from the Main Site to connect with the Humber Carbon Capture Pipeline at the North Killingholme AGI.

The indicative red line boundary (RLB) for EIA Scoping includes an area for the proposed CCP and an associated construction laydown (hereafter referred to as the 'Main Site') and the spur pipeline options. The combination of the Main Site and spur pipeline options is defined as the whole project area and is hereafter referred to as the 'Site'.

The Site is located within the administrative boundary of North Lincolnshire Council, within the Humber region of England.

The North Killingholme Power Project is located approximately 5km north-west of Immingham Docks and on land adjacent to the C.RO Ports Killingholme Ltd (CPK) Terminal at North Killingholme, North Lincolnshire.

The Main Site is predominantly brownfield land that is currently largely covered by stockpiled inert crushed material being used to raise land on other parts of the port development. An area of hardstanding exists to the north of the Main Site which is predominantly used for port related purposes including the storage of vehicles.

The area surrounding the Site is predominantly characterised by industrial activities and transportation infrastructure, including roads, railways, and a port. Further to the north, west and south of the Site, beyond the neighbouring Killingholme Power Station and Hornsea substation, lies agricultural land.

1.2 The need for the Proposed Development

According to the UK's independent advisor on climate change, the Climate Change Committee (CCC), demand for electricity is forecast to increase by 50% by 2035[1]. To meet this increasing demand and achieve the UK's decarbonisation goals, the CCC has also advised that a range of different technologies with both renewables and decarbonised generation, such as gas with carbon capture and storage (CCS), will be needed to maintain a secure and stable supply of electricity[2].

An application was made by a third party for a Development Consent Order (DCO) in April 2013 to construct and operate the North Killingholme Power Project; a new 470 megawatt (MW) electrical generating station and associated development. On 11 September 2014, the Secretary of State for Energy and Climate Change granted development consent by way of a DCO, amended by correction order on 26 October 2015 and a further amendment to the Order which was granted in 2021. Land required for the North Killingholme Power Project was acquired by the Applicant in 2024 and the Applicant has been transferred the benefit of the DCO accordingly.

[1] Sixth Carbon Budget (2020), Available at: https://www.theccc.org.uk/publication/sixth-carbon-budget/ [Accessed February 2025]

[2] The Sixth Carbon Budget Electricity Generation, Available at: *CC Sixth Carbon Budget electricity generation sector summary* Sector-summary-Electricity-generation.pdf (theccc.org.uk) [Accessed February 2025]

The DCO for the North Killingholme Power Project grants development consent to construct and operate the Combined Cycle Gas Turbine (CCGT). Initially this CCGT was proposed to be linked to a solid fuel gasifier project but there are no plans to develop the solid fuel handling or gasification parts of that DCO and the most recent DCO amendment in 2021 included compliance with the DCO requirements to demonstrate that post combustion carbon capture equipment could be retrofitted to the CCGT, if required. The DCO however did not extend to granting permission to construct and operate any such CCP, therefore an application is being made to seek consent for the construction, operation (including maintenance) and decommissioning of the Proposed Development.

Through the inclusion of the Proposed Development, carbon dioxide (CO_2) emissions will be captured and emissions to the atmosphere reduced while continuing to meet the UK's energy requirements. Therefore, there is a need for the Proposed Development to decarbonise the North Killingholme Power Project; this will bring it in line with the Applicant's strategy to become completely carbon neutral by 2040 and for its installed power generating capacity to be more than 80% zero-carbon by the early 2030s. The Applicant is therefore seeking to develop the North Killingholme Power Project as a carbon capture and storage enabled plant (collectively known as the 'Killingholme Low Carbon Power project'), recognising that the operation of the plant will require carbon dioxide transport and storage infrastructure to be developed by a third party to enable the captured emissions to be permanently stored.

1.3 Purpose of this Appraisal

This appraisal aims to:

- establish baseline habitat types and conditions within the Main Site boundary;
- identify key ecological constraints in the Main Site;
- identify the presence of invasive non-native plant species (INNS); and
- inform any further ecological surveys needed to inform the proposed works.

The scope of this assessment has been determined with due consideration for best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM)[3] and the British Standard BS42020:2013 Biodiversity Code of Practice for Planning and Development[4]. Biodiversity Net Gain (BNG) baseline data was collected during the PEA in line with the statutory biodiversity metric[5].

1.4 Report Structure

This report includes:

- Section 2: Legislation, Planning Policy and Guidance.
- Section 3: Methodology.
- Section 4: Baseline Ecological Conditions.
- Section 5: Discussion and Recommendations.

1.5 Limitations of this Appraisal

This appraisal can be used as a scoping report but should not be submitted as part of a planning application unless it can be determined that the project would have no significant ecological effects, no mitigation is

[3] Chartered Institute of Ecology and Environmental Management, 2017. Guidelines for Preliminary Ecological Appraisal. 2nd ed. Winchester: CIEEM.

[4] British Standards Institution, (2013) Biodiversity - Code of Practice for planning and development. BS 42020:2013, 31 Aug 2013.

[5] Department for Environment, Food & Rural Affairs (2024). Statutory biodiversity metric condition assessments. Available at: https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides#:~:text=These%20provide%20condition%20assessment%20criteria%20for%20all%20relevant

required, and no further surveys are necessary; with the exception of such cases, it should be superseded by an Ecological Impact Assessment (EcIA).

The findings of all habitat and faunal surveys will be combined to inform an EcIA or Environmental Impact Assessment (EIA) Ecology Chapter to accompany the subsequent planning application.

It should be noted that the field survey was undertaken in May 2024 using the red line boundary that encompasses the Main Site only. The additional area for spur pipeline will require a field survey to determine the habitats present and confirm the requirements for any further surveys. This is proposed to be undertaken once the area for the spur pipeline is refined and will be a requirement as part of the EcIA. **Appendix A.2** details the area of the Site that was subject to the field survey and the Area Not Surveyed.

2. Legislation, Planning Policy and Guidance

There is a comprehensive system of legislation, both domestic and international, which aims to protect biodiversity at the landscape, habitat and species level. Much of the legislation pertaining to biodiversity exists within, and independently of, the planning process.

Legislation relevant to this appraisal comprises:

- Wildlife and Countryside Act 1981 (WCA) (as amended) [6];
- Countryside and Rights of Way Act 2000[7];
- Natural Environment and Rural Communities (NERC) Act 2006[8];
- The Protection of Badgers Act 1992[9];
- The Wild Mammals (Protection) Act 1996[10]
- Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019[11];
- Birds Directive (2009/147/EC)[12];
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[13];
- Invasive Alien Species (Enforcement and Permitting) Order 2019[14]; and
- The Environment Act 2021[15].

Planning policy relevant to this appraisal comprises:

- Biodiversity Net Gain[16];
- National Planning Policy Framework[17];
- Non-Statutory Local Sites; and

[6] Wildlife and Countryside Act 1981. Available at: https://www.legislation.gov.uk/ukpga/1981/69/section/9 (Accessed: December 2024).

[7] Countryside and Rights of Way Act 2000. Available at: https://www.legislation.gov.uk/ukpga/2000/37/notes/division/1 (Accessed: December 2024).

[8] Natural Environment and Rural Communities Act 2006. Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents (Accessed: December 2024).

[9] The Protection of Badgers Act 1992. Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents (Accessed: December 2024).

[10] Wild Mammals (Protection) Act 1996. Available at: https://www.legislation.gov.uk/ukpga/1996/3/contents (Accessed: December 2024).

[11] Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573 (Accessed: December 2024).

[12] Birds Directive (2009/147/EC). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0147 (Accessed: December 2024).

[13] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made (Accessed: December 2024).

[14] Invasive Alien Species (Enforcement and Permitting) Order 2019. Available at: https://www.legislation.gov.uk/uksi/2019/527/made (Accessed: December 2024).

[15] Environment Act 2021. Legislation.gov.uk. Available at https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted (Accessed: December 2024).

[16] Biodiversity Net Gain. Available at: https://www.gov.uk/government/collections/biodiversity-net-gain (Accessed: December 2024).

[17] National Planning Policy Framework 2024. Available at: https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf (Accessed: December 2024).

- North Lincolnshire Local Development Framework[18].

Guidance relevant to this appraisal comprises:

- Lincolnshire Biodiversity Action Plan 2011-2020 (3rd edition)[19];
- Birds of Conservation Concern 5 (BoCC)[20];
- UK BAP Priority Species and Habitats[21];
- UK Post-2010 Biodiversity Framework[22];
- Habitats and species of principal importance in England[23];

Detail on the relevance of this legislation, planning policy and guidance is given in **Appendix B**.

[18] North Lincolnshire Local Development Framework. Available at: https://www.northlincs.gov.uk/planning-and-environment/planning-policy-local-development-framework/#1591178700859-b856fc83-069c (Accessed: December 2024).

[19] Lincolnshire Biodiversity Action Plan 2011-2020 (3rd edition). Available at: https://www.nelincs.gov.uk/wp-content/uploads/2016/02/201110-LincolnshireBAP-3rd-edition.pdf (Accessed: December 2024).

[20] Birds of Conservation Concern 5 (BoCC). Available at: https://www.bto.org/sites/default/files/publications/bocc-5-a5-4pp-single-pages.pdf (Accessed: December 2024).

[21] Joint Nature Conservation Committee (2023). The UK Biodiversity Action Plan (UK BAP): 1992–2012. Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents (Accessed: December 2024).

[22] Joint Nature Conservation Committee & Department for Environment Food and Rural Affairs (2012). UK Post-2010 Biodiversity Framework. Available at: https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/ (Accessed: December 2024).

[23] Department for Environment Food & Rural Affairs and Natural England (2022). Habitats and species of principal importance in England. Available at: https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england (Accessed: December 2024).

3. Methodology

3.1 Desk Study

A desk study was undertaken to identify any existing ecological information relating to the Site. A review of the Multi-Agency Geographic Information for the Countryside (MAGIC) website[24] was conducted in December 2024 to identify the following designations:

- International/European statutory designations including Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar Sites within 2km of the Site;
- National statutory designations including Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), and Local Nature Reserves (LNR) within 2km of the Site;
- Non-statutory Local Wildlife Sites (LWS) within 2km of the Site;
- Ancient Woodland Inventory (AWI)[25] within 2km of the Site;
- Previous granted EPS licences within 2km of the Site;
- S41 Habitats of Principal Importance (NERC Act 2006) within the Site; and
- SSSI Impact Risk Zones (IRZ) which extend onto the Site. The Risk Zones have been developed to guide planners on whether a development would impact on a SSSI/SAC/SPA/Ramsar site.

In addition, 1:10,000 Ordnance Survey maps were assessed to identify any waterbodies within 250m of the Site.

3.1.1 Biological Records

Records of protected and notable species and non-statutory designated sites within 2km of the Main Site were obtained from Lincolnshire Environmental Records Centre (LERC) in May 2024.

Records dated within ten years of this assessment have been assessed within the context of the Main Site. Due to the transient nature of ecology, records older than ten years are no longer considered a reliable source of information upon which to inform current baseline conditions.

Any identified designations were reviewed with respect to their reason for designation, connectivity and distance from the Site in order to determine whether any of the designated sites are within the likely Zone of Influence (ZoI).

3.2 Field Survey

3.2.1 UK Habitat Classification

A UK Habitat (UKHab) survey of land within the Main Site boundary was carried out across two days between April and May 2024, during dry weather conditions. The area for spur pipeline was not mapped and requires further survey (see hatched area within **A.2, Appendix A**). Habitat types were identified and mapped in accordance with UKHab[26] and CIEEM[3] guidelines.

[24] Defra MAGIC. Available at: www.magic.gov.uk (Accessed December 2024).

[25] Ancient Woodland Inventory (2014). Available at: https://www.nature.scot/doc/guide-understanding-scottish-ancient-woodland-inventory-awi (Accessed December 2024).

[26] UKHab Ltd (2023). UK Habitat Classification Version 2.0. Available at: https://www.ukhab.org (Accessed December 2024).

The UKHab survey comprised:

- Mapping the habitats within the Main Site in accordance with the UKHab Classification habitat definitions[26] and recording characteristic plant species, to identify areas of interest or concern;
- Habitat Condition Assessment was assessed against the perceived 'ecological optimum' for their relevant habitat type in accordance with the Statutory Biodiversity Metric[5];
- Recording of INNS[27] listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended); and
- Assessment of features using CIEEM guidelines[3] to identify the presence of or features with the potential to support protected and/or notable species as well as priority habitats and species which are listed under the UK Post-2010 Biodiversity Framework[28] which allowed further species-specific surveys to be recommended, as required.

3.2.2 Great Crested Newt Habitat Suitability Index

In compliance with current guidance[29], suitable waterbodies within 250m of the Main Site were assessed as to their potential to support a breeding population of great crested newt (GCN) *Triturus cristatus*. This assessment was undertaken using the Habitat Suitability Index (HSI) developed by Oldham *et al*. (2000)[30] which considers several habitat/ecological parameters. Habitat variables measured include geographic location, pond area, permanence, water quality, shade, waterfowl, fish, pond count within 1km, macrophyte cover, and terrestrial habitat. A value is recorded for each parameter and combined to determine an index of breeding suitability for GCN. The HSI is represented by a value from 0 to 1; the higher the value the more likely it is that the waterbody may support breeding GCN.

3.2.3 Bat Roost Suitability Assessment

An external bat roost suitability assessment of accessible structures and trees within the Main Site was undertaken to determine their suitability for supporting bat roosts. The survey followed standard methodology detailed within the Bat Conservation Trust (BCT) Good Practice Guidelines[31]. Where accessible, structures and trees were inspected for signs of bat presence including:

- bat droppings;
- scratch and grease marks;
- live or dead bats; and
- noises of bats calling from within the roost.

Features searched for on structures included:

- cracked or missing bricks;
- missing mortar between bricks; and
- any cracks or gaps at least 10mm in size.

Features searched for on trees included:

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[27] INNS are defined as any non-native plant introduced outside its natural past or present distribution which can cause damage to the environment. All flora listed within Schedule 9 of the Wildlife and Countryside Act (1981) as amended, are considered INNS.

[28] Joint Nature Conservation Committee & Department for Environment Food and Rural Affairs (2012). UK Post-2010 Biodiversity Framework. Available at: https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/

[29] English Nature (2001) Great Crested Newt Mitigation Guidelines. Peterborough: English Nature.

[30] Oldham, R.S., Keeble, J., Swan, M.J., and Jeffcote, M., (2000) 'Evaluating the suitability of habitats for great crested newt (Triturus cristatus)', Herpetological Journal 10: pp143-15.

[31] Collins, J. (2023). Bat Surveys: Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn.). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6.

- cavities or splits in trunks/branches;
- woodpecker holes;
- loose bark; and
- dense ivy covering (may be covering up potential roosting opportunities).

Each accessible tree and structure were then awarded a level of suitability to support roosting bats at different times of the year. An assessment of habitats in relation to commuting and foraging bats was also undertaken. The assessment categories used are detailed in **Table 1** and **Table 2**.

Table 1. Bat habitat suitability categories.

Habitat Value	Roosting Habitats	Commuting and Foraging Habitats
High suitability	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flightpaths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses, and grazed parkland. Site is close to and connected to known roosts.
Moderate suitability	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flightpaths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low suitability	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats).	Habitat that could be used by small numbers of bats as flightpaths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Negligible suitability	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flightpaths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).

Table 2: Assessing the suitability of trees on proposed development sites for bats.

Potential suitability	Description
NONE	Either no Potential Roost Features (PRFs) in the tree or highly unlikely to be any.
FAR	Further assessment required to establish if PRFs are present in the tree.
PRF-I	PRF only suitable for individual bats of very small numbers of bats either due to size or lack of suitable surrounding habitats.
PRF-M	PRF is suitable for multiple bats and may therefore be used as a maternity colony.

3.2.4 Biodiversity Net Gain (BNG)

The NPPF states that planning decisions should minimise impacts and provide net gains for biodiversity. The Environment Act 2021 mandated BNG into legislation which came into force in February 2024.

The Environment Act sets out the following key components to mandatory BNG:

- minimum 10% gain required, to be calculated using a Biodiversity Metric;
- metric results to be accompanied by a BNG plan securing created/enhanced habitats for at least 30 years via obligations/conservation covenant;
- habitat can be delivered on-site, off-site or via statutory biodiversity credits;
- there will be a national register for net gain delivery sites; and
- the mitigation hierarchy of avoidance, mitigation and compensation for biodiversity loss must still be applied.

The BNG Metric provides a proxy value for biodiversity in the form of Habitat Units, Hedgerow Units and Watercourse Units. River habitats are considered separately to terrestrial habitats within BNG, with baseline river biodiversity units (RBU) calculated through the rivers and streams metric. The field survey element of the rivers and streams metric follows the Modular River Physical Survey (MoRPh) method. Baseline BNG data was collected during the field survey in conformance with the statutory biodiversity metric[5], including UKHab habitats, condition assessment data, and MoRPh data. This data and subsequent analysis is not presented within this report; however, a full BNG assessment report will be produced once detailed design, and a RLB are finalised.

3.3 Assumptions and Limitations

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. Therefore, the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, professional judgement allows for the likely presence of these species to be predicted with sufficient certainty to not significantly limit the validity of these findings.

Access restrictions prevented Arup ecologists from entering certain areas of the Main Site due to large steel fencing and dangerously steep banks along the watercourse to the south. To ensure the health and safety of surveyors, it was decided that these areas would be surveyed from a vantage point. This is considered to be sufficient to identify the habitats present and potential suitability for protected species.

With regard to the desk study data provided by LERC, it should be noted that species records in 2020-2022 were severely impacted by COVID-19 lockdowns, and so absence of species records should be treated with caution as there may be much larger gaps in coverage than in a normal year. Desk study data only reflects those notable and/or protected species found within 2km of the Main Site. As this is 3rd party data Arup is not responsible for the quality or accuracy of this data.

Any grid references provided within this report are approximate (obtained through handheld GPS devices) and are to be used as a guide only.

4. Baseline Ecological Conditions

4.1 Desk Study

4.1.1 Statutory Designated Sites

The data search identified three European statutory designated sites within 2km of the Site. The closest of these were the Humber Estuary SPA and Ramsar, located approximately 0.4km east of the Site (see **A.3, Appendix A**) (details in **Table 3**).

Table 3. Statutory designated sites within 2km of the Site.

Site Name	Designation	Location	Reason for Designation
Humber Estuary	Ramsar	0.4km east	The Humber Estuary qualifies as a Ramsar site under Ramsar criterion 1, 3, 5, 6, and 8. The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. It is also known to regularly support internationally important numbers of waterfowl in winter and nationally important breeding populations in summer including shelduck *Tadorna tadorna*, golden plover *Pluvialis apricaria*, knot *Calidris canutus*, dunlin *Calidris alpina*, black-tailed godwit *Limosa limosa*, bar-tailed godwit *Limosa lapponica*, and redshank *Tringa totanus*. It also supports breeding colonies of grey seals *Halichoerus grypus* and natterjack toad *Bufo calamita.*
Humber Estuary	SPA	0.4km east	The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season: • avocet *Recurvirostra avosetta*[WB]; • bittern *Botaurus stellaris* [WB]; • hen harrier *Circus cyaneus* [W]; • golden plover[W]; • bar-tailed godwit[W]; • ruff *Philomachus pugna*[P]; • little tern *Sterna albifrons*[B]; and • marsh harrier *Circus aeruginosus*[B]. The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season: • shelduck[WP]; • knot[WP]; • dunlin[WP]; • black-tailed godwit[WP]; and • redshank[WP]. The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season. In the non-breeding season, the area regularly supports 153,934 individual waterbirds including dark-bellied brent goose *Branta bernicla bernicla*, shelduck, wigeon *Anas Penelope*, teal *Anas crecca*, mallard *Anas platyrhynchos*, pochard *Aythya farina*, scaup *Aythya marila*, goldeneye *Bucephala clangula*, bittern, oystercatcher *Haematopus ostralegus*, avocet, ringed plover *Charadrius hiaticula*, golden plover, grey plover *Pluvialis squatarola*, lapwing *Vanellus vanellus*, knot, sanderling *Calidris alba*, dunlin,

Site Name	Designation	Location	Reason for Designation
			ruff, black-tailed godwit, bar-tailed godwit, whimbrel *Numenius phaeopus*, curlew *Numenius arquata*, redshank, greenshank *Tringa nebularia* and turnstone *Arenaria interpres*.
Humber Estuary	SAC	0.7km east	The Site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I: • Atlantic salt meadows (Glauco-Puccinellietalia maritimae); • Coastal lagoons*; • Dunes with Hippophae rhamnoides; • Embryonic shifting dunes; • Estuaries; • Mudflats and sandflats not covered by seawater at low tide; • Fixed dunes with herbaceous vegetation (`grey dunes`)*; • Salicornia and other annuals colonising mud and sand; • Sandbanks which are slightly covered by sea water all the time; and • Shifting dunes along the shoreline with Ammophila arenaria (`white dunes'). The Site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II: • Grey seal; • River lamprey *Lampetra fluviatilis*; and • Sea lamprey *Petromyzon marinus*.

[W] Wintering populations, [P] Passage species, [B] Breeding populations, Annex 1 priority habitats are denoted by a *.

4.1.2 National Statutory Designated Sites

The data search identified two national statutory designated sites within 2km of the Site, both of which were located 0.3km east of the Site (see **A.4, Appendix A**) (details in **Table 4** below).

Table 4. National statutory designations within 2km of The Site.

Site Name	Designation	Location	Reason for Designation
North Killingholme Haven Pits	SSSI	0.4km east	The main reasons for notification of these pits are their importance as large saline lagoons with an exceptionally rich fauna, and their significance as roosting and feeding grounds for waterfowl, which occur in internationally important numbers in the Humber Estuary in winter. Nine species of specialist lagoonal species recorded from the pits include the polychaete worm *Alkmaria romijni*, prawn *Palaemonetes varians*, the molluscs *Hydrobia ventrosa* and *Hydrobia neglecta* and the bryzoan *Conopium seurati*. Water levels within the lagoons vary and provide expanses of open mud for visiting waterfowl, especially waders. Amongst these are nationally important numbers of black-tailed godwits, which have visited the site in increasing numbers since the late 1980's. There are also occasional visits by large flocks of roosting redshank. These visitors indicate that North Killingholme Haven Pits form an integral part of the estuarine feeding and roosting opportunities for the internationally important populations of winter waterfowl for which the Humber Estuary is noted. The lagoons are fringed with common reed *Phragmites australis* and sea club-rush *Scirpus maritimus* and this fringe provide valuable feeding and breeding grounds for a range of bird species including reed warbler *Acrocephalus scirpaceus*,

Site Name	Designation	Location	Reason for Designation
			sedge warbler *Acrocephalus schoenobaenus,* bearded tit *Panurus biarmicus* and bittern. Hawthorn *Crataegus monogyna* scrub also provided important bird habitat, including a roost of up to five long-eared owls *Asio otus* which also breed here and are of particular local importance.
Humber Estuary - 2000480	SSSI	0.7km east	The Humber Estuary is a nationally important site with a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The estuary supports nationally important numbers of breeding grey seals, river lamprey and sea lamprey, as well as a vascular plant and invertebrate assemblage (especially the Coleoptera and Lepidoptera). The estuary also supports 22 wintering waterfowl, nine passage waders and a nationally important assemblage of breeding birds of lowland open waters and their margins. These are: • bittern[WB]; • dark-bellied brent goose[W]; • shelduck [WB]; • wigeon[W]; • teal[W]; • pochard[WB]; • scaup[W]; • goldeneye[W]; • oystercatcher[W]; • avocet[WB]; • ringed plover[WP]; • golden plover[W]; • grey plover[WP]; • lapwing[W]; • knot[W]; • sanderling[WP]; • dunlin[WP]; • black-tailed godwit[WP]; • bar-tailed godwit[W]; • curlew[W]; • redshank [WPB]; • turnstone[W]; • ruff [P]; • whimbrel[P]; • greenshank[P]; • marsh harrier[B]; • bearded tit[B]; • little grebe *Tachybaptus ruficollis*[B];

Site Name	Designation	Location	Reason for Designation
			• great crested grebe *Podiceps cristatus*[B]; • mute swan *Cygnus olor*[B]; • gadwall *Anas strepera*[B]; • shoveler *Anas clypeata*[B]; • tufted duck *Aythya fuligula*[B]; • water rail *Rallus aquaticus*[B]; • little ringed plover *Charadrius dubius*[B]; • snipe *Gallinago gallinago*[B]; • common tern *Sterna hirundo*[B]; • cuckoo *Cuculus canorus*[B]; • kingfisher *Alcedo atthis*[B]; • yellow wagtail *Motacilla flava*[B]; • grasshopper warbler *Locustella naevia*[B]; • sedge warbler[B]; • reed warbler[B]; and reed bunting *Emberiza schoeniclus*[B].

[W] Wintering populations, [P] Passage species, [B] Breeding populations, Annex 1 priority habitats are denoted by a *.

4.1.3 Non-Statutory Designated Sites

Records obtained from LERC identified six Local Wildlife Sites (LWS) and one Lincolnshire Wildlife Trust Reserve (WTR) within 2km of the Main Site (see **A.5, Appendix A**) (details in **Table 5** below).

Table 5. Non-statutory designated sites within 2km of the Main Site.

Site Name	Designation	Location	Description
Chase Hill Wood	LWS	Small section with the Site (spur pipeline)	This is a moderately-sized, rectangular wood on almost flat land, lying between the 5m and 10m contours. Most of the canopy consists of even-aged trees that have not yet reached maturity. Ash *Fraxinus excelsior* is the most numerous canopy tree, with smaller numbers of sycamore *Acer pseudoplatanus*, Norway maple *Acer platanoides*, beech *Fagus sylvatica*, oak *Quercus robur* and pine *pinus* sp. The ground flora is dominated by ivy *Hedera helix*, but many other species of interest are present, including enchanter's nightshade *Circaea lutetiana*, wood avens *Geum urbanum*, dog-violet *Viola riviniana*, common spotted-orchid *Dactylorhiza fuchsii*, red campion *Silene dioica* and large numbers of early-purple orchid *Orchis mascula*. The site supports a range of common woodland birds, for example blackcap *Sylvia atricapilla*, chiffchaff *Phylloscopus collybita* and great spotted woodpecker *Dendrocopos major*.
Killingholme Haven Pits	WTR	0.4km east	A complex of four flooded clay pits with associated rough grassland and scrub. Islands and promontories in the two larger lagoons, together with controlled water-levels, attract a variety and good numbers of waders and wildfowl. The reserve is important for its saline lagoon habitat, which supports several rare invertebrate species. The two smaller lagoons have deeper water and are fringed with reed and sedges; they provide suitable habitat for diving ducks, such as pochard, tufted duck and, occasionally, scaup. Breeding species include little grebe, and reed, sedge, willow warbler *Phylloscopus trochilus* and grasshopper warblers *Locustella naevia*. The ruddy duck *Oxyura jamaicensis* has also been known to breed here. It is the two large shallow pits, however, that are of the greatest importance for birds, particularly for migrant waders in spring and autumn. Spotted redshank

Site Name	Designation	Location	Description
			Tringa erythropus, dunlin, greenshank, common sandpiper *Actitis hypoleucos*, little ringed plover, ruff and black-tailed godwit, the latter often in large numbers, are regular visitors. The list of scarce and rare species is long and includes spoonbill *Platalea leucorodia*, avocet, little egret *Egretta garzetta*, little stint *Calidris minuta*, Temminck's stint *Calidris temminckii*, red-necked phalarope *Phalaropus lobatus*, curlew, pectoral sandpiper *Calidris melanotos*, Baird's sandpiper *Calidris bairdii* and white-rumped sandpiper *Calidris fuscicollis*.
Burkinshaw's Covert	LWS	Bordering the Site (spur pipeline)	A large, fairly flat wood lying at approximately 5m above sea level. It is crossed by a series of deep, old drains and a very recently erected set of electricity transmission lines. The lack of ancient semi-natural woodland is reflected in the plant populations. Indeed, apart from a moderately interesting ground flora mostly restricted to the central section, the main interest is in the open and/or wet habitats, including the wide strip of cleared land along the electricity line corridor. Damp or wet habitat with little shading under the powerlines supports a rapidly changing flora that is currently dominated by tall-growing species such as water figwort *Scrophularia auriculata*, marsh thistle *Cirsium palustre*, angelica *Angelica archangelica*, common fleabane *Erigeron philadelphicus*, great willowherb *Epilobium hirsutum*, hard rush *Juncus inflexus*, soft rush *Juncus effusus* and compact rush *Juncus conglomeratus*. There is a good range of common woodland birds, including blackcap and willow tit *Poecile montanus*.
Halton Marsh Clay Pits	LWS	0.9km north	This is a large area where clay extraction used to take place. Today the main features are a large fishing lake, a smaller lake to the south, several pools, damp pasture, ungrazed wetland, and developing scrub and planted woodland. The whole complex of habitats is important for breeding, wintering and migrating birds and also has much potential for invertebrates and other fauna. Aquatic plants include common duckweed *Lemna minor*, ivy-leaved duckweed *Lemna trisulca*, water-starwort *Callitriche stagnalis*, fan-leaved water-crowfoot *Ranunculus circinatus*, spiked watermilfoil *Myriophyllum spicatum* and at least one species of pondweed *Potamogeton* sp.
Swinster Lane Field	LWS	1.6km north west	Site supports moderately interesting grassland, two small ponds and boundary hedges. A large fishing lake with two small ponds was also created in 1994, stocked with roach *Rutilus rutilus*, bream *Abramis brama*, rudd *Scardinius erythrophthalmus*, carp *Cyprinus carpio* and pike *Esox lucius* for fishing, but all three native newt species were recorded in June 2006 (smooth *Lissotriton vulgaris*, palmate *Lissotriton helveticus* and GCN), while one of the ponds held palmate and GCN. Wetland plants include sea club-rush, fool's water-cress *Apium nodiflorum*, yellow iris *Iris pseudacorus*, common reed, common spike-rush *Eleocharis palustris*, water-cress *Nasturtium officinale*, floating sweet-grass *Glyceria fluitans*, common duckweed and fat duckweed *Lemna gibba*. A few interesting grassland plants are common spotted-orchid, common bird's-foot trefoil *Lotus corniculatus*, meadow vetchling *Lathyrus pratensis*, lesser trefoil *Trifolium dubium*, meadow barley *Hordeum secalinum*, yellow oat-grass *Trisetum flavescens* and meadow fescue *Festuca pratensis*.
Scrub Lane East Field	LWS	1.4km north west	The site is a rectangular field of neutral grassland, with ridge-and-furrow aligned north-south. Overgrown dense hedges surround the field. The flora is typical of somewhat neglected neutral grassland that may have received some applications of artificial fertiliser. Only relatively small areas are herb-rich, but common knapweed *Centaurea nigra* is prominent on ridges.

Site Name	Designation	Location	Description
East View Meadow	LWS	1.9km north west	This is a fairly small field of neutral grassland on ridge-and-furrow, surrounded by thick un-managed hedges to the north and west. Botanically rich dry grassland on the ridges is characterised by common knapweed, common bird's foot-trefoil, pignut *Conopodium majus*, oxeye daisy *Leucanthemum vulgare*, meadow vetchling, common sorrel *Rumex acetosa*, ribwort plantain *Plantago lanceolata*, sweet vernal-grass *Anthoxanthum odoratum*, common bent fescue *Agrostis capillaris* and red fescue *Festuca rubra.* Hedges add considerably to the biodiversity of the site. Woody species are ash, elm *Ulmus procera*, blackthorn *Prunus spinosa*, hawthorn, elder *Prunus spinosa*, dog-rose *Rosa canina*, bramble *Rubus fruticosus*, ivy, and at least one bush of the uncommon Midland hawthorn *Crataegus laevigata*. A range of woodland and woodland-edge ground flora species here include wood dock *Rumex sanguineus*, cow parsley *Anthriscus sylvestris*, ground ivy *Glechoma hederacea* and hairy-brome *Bromus ramosus*.

4.1.4 S41 Habitats of Principal Importance

There are ten S41 Habitats of Principal Importance within 2km of The Site, five of these S41 Habitats are found within the Site boundary (detailed in **Table 6**).

Table 6. S41 Priority Habitats of Principal Importance within 2km of the Site.

Habitat	Location
Coastal saltmarsh	10 areas, the nearest located approximately 0.9km east of the Site.
Mudflats	Nine areas, the nearest located approximately 0.7km east of the Site.
Saline lagoons	12 areas, the nearest located approximately 0.4km east of the Site.
Coastal and floodplain grazing marsh	39 areas, the nearest is within the Site boundary towards the south.
Good quality semi improved grassland	11 areas, the nearest is within the Site boundary towards the south.
Lowland calcareous grassland	One area, located approximately 1.4km west of the Site.
Lowland fens	One area, the nearest is within the Site boundary running south alongside Rosper Road.
Deciduous woodland	44 areas, the nearest is within the Site boundary towards the north (Chase Hill Wood).
Traditional orchard	Two areas, the nearest is within the Site boundary towards the south.
Reedbeds	Two areas, the nearest located approximately 0.9km east of the Site.

4.1.5 Ancient Woodland Sites

No woodlands within 2km of the Site are mapped as Ancient Woodland sites.

4.1.6 SSSI Impact Risk Zone (IRZ)

The Site falls within two SSSI IRZs. These comprise North Killingholme Haven Pits SSSI and Humber Estuary SSSI. The Site falls within all planning applications therefore the Local Planning Authority (LPA) will be required to consult with Natural England on likely risks from the development.

4.1.7 Protected and Notable Species Records

Records of protected and/or notable species within 2km of the Main Site were obtained from LERC, details are provided in **Table 7**. Only those records from the past ten years (2014 onwards) are described, unless the historic records are worth noting, in which case the age of the data is highlighted within the table.

Table 7. Protected and notable species within 2km of the Main Site.

Species Group	Common Name	Latin Name	Total Number of Records	Most Recent Record	Designation
Amphibian	Great crested newt	*Triturus cristatus*	64	2022	WCA, S41
	Smooth newt	*Lissotriton vulgaris*	8	2021	Schedule 5 WCA
	Common frog	*Rana temporaria*	4	2021	Schedule 5 WCA
	Common toad	*Bufo bufo*	2	2021	Schedule 5 WCA, S41
Bird	Avocet	*Recurvirostra avosetta*	252	2022	Schedule 1 WCA,
	Barn owl	*Tyto alba*	42	2022	Schedule 1 WCA
	Bearded tit	*Panurus biarmicus*	13	2019	Schedule 1 WCA
	Bittern	*Botaurus stellaris*	6	2022	Schedule 1 WCA, S41
	Black redstart	*Phoenicurus ochruros*	1	2022	Schedule 1 WCA
	Black tern	*Chlidonias niger*	1	2019	Schedule 1 WCA
	Black-tailed godwit	*Limosa limosa*	385	2022	Schedule 1 WCA, S41, Ramsar, SPA, SSSI
	Bluethroat	*Luscinia svecica*	1	2018	Schedule 1 WCA
	Brambling	*Fringilla montifringilla*	2	2021	Schedule 1 WCA
	Brent goose	*Branta bernicla*	11	2022	S41, SPA, SSSI
	Bullfinch	*Pyrrhula pyrrhula*	45	2022	S41
	Cetti's warbler	*Cettia cetti*	209	2022	Schedule 1 WCA
	Common scoter	*Melanitta nigra*	30	2022	Schedule 1 WCA & S41
	Corn bunting	*Emberiza calandra*	1	2022	S41
	Corncrake	*Crex crex*	1	2018	Schedule 1 WCA & S41
	Cuckoo	*Cuculus canorus*	22	2022	S41, SSSI
	Curlew	*Numenius arquata*	485	2022	S41, SPA, SSSI
	Dotterel	*Charadrius morinellus*	8	2019	Schedule 1 WCA

Species Group	Common Name	Latin Name	Total Number of Records	Most Recent Record	Designation
Bird (continued)	Dunnock	*Prunella modularis*	1	2022	S41
	European white-fronted goose	*Anser albifrons*	18	2022	S41
	Fieldfare	*Turdus pilaris*	52	2022	Schedule 1 WCA
	Firecrest	*Regulus ignicapilla*	1	2016	Schedule 1 WCA
	Garganey	*Spatula querquedula*	5	2016	Schedule 1 WCA
	Goldeneye	*Bucephala clangula*	66	2022	SPA, SSSI
	Great northern diver	*Gavia immer*	1	2022	Schedule 1 WCA
	Greenshank	*Tringa nebularia*	34	2022	Schedule 1 WCA, SPA, SSSI
	Grey partridge	*Perdix perdix*	18	2022	S41
	Hen harrier	*Circus cyaneus*	14	2022	Schedule 1 WCA, S41, SPA
	Hobby	*Falco subbuteo*	11	2022	Schedule 1 WCA
	House sparrow	*Passer domesticus*	22	2023	S41
	Kingfisher	*Alcedo atthis*	35	2022	Schedule 1 WCA, SSSI
	Lapland bunting	*Calcarius lapponicus*	3	2022	Schedule 1 WCA
	Lapwing	*Vanellus vanellus*	358	2022	S41, SPA, SSSI
	Leach's storm petrel	*Hydrobates leucorhous*	1	2016	Schedule 1 WCA
	Lesser redpoll	*Acanthis cabaret*	5	2022	S41
	Linnet	*Linaria cannabina*	152	2022	S41
	Little gull	*Hydrocoloeus minutus*	2	2022	Schedule 1 WCA
	Little ringed plover	*Charadrius dubius*	38	2022	Schedule 1 WCA, SSSI
	Long-tailed duck	*Clangula hyemalis*	3	2021	Schedule 1 WCA
	Marsh harrier	*Circus aeruginosus*	241	2022	Schedule 1 WCA, SPA, SSSI
	Mediterranean gull	*Ichthyaetus melanocephalus*	27	2022	Schedule 1 WCA
	Merlin	*Falco columbarius*	26	2022	Schedule 1 WCA

Species Group	Common Name	Latin Name	Total Number of Records	Most Recent Record	Designation
Bird (continued)	Osprey	*Pandion haliaetus*	2	2020	Schedule 1 WCA
	Peregrine	*Falco peregrinus*	40	2022	Schedule 1 WCA
	Purple sandpiper	*Calidris maritima*	2	2021	Schedule 1 WCA
	Red kite	*Milvus milvus*	7	2021	Schedule 1 WCA
	Red-throated diver	*Gavia stellata*	4	2022	Schedule 1 WCA
	Redshank	*Tringa totanus*	442	2022	Ramsar, SPA, SSSI
	Redwing	*Turdus iliacus*	68	2022	Schedule 1 WCA
	Reed bunting	*Emberiza schoeniclus*	233	2022	S41, SSSI
	Ring ouzel	*Turdus torquatus*	3	2022	S41
	Ruff	*Calidris pugnax*	66	2022	Schedule 1 WCA, SPA, SSSI
	Scaup	*Aythya marila*	15	2022	Schedule 1 WCA, S41, SPA, SSSI
	Skylark	*Alauda arvensis*	95	2022	S41
	Snipe	*Gallinago gallinago*	156	2022	SSSI
	Snow bunting	*Plectrophenax nivalis*	3	2022	Schedule 1 WCA
	Song thrush	*Turdus philomelos*	135	2023	S41
	Spoonbill	*Platalea leucorodia*	12	2021	Schedule 1 WCA
	Starling	*Sturnus vulgaris*	172	2022	S41
	Tree pipit	*Anthus trivialis*	2	2017	S41
	Tree sparrow	*Passer montanus*	12	2022	S41
	Turtle dove	*Streptopelia turtur*	1	2015	S41
	Whimbrel	*Numenius phaeopus*	67	2022	Schedule 1 WCA, SPA, SSSI
	Whooper swan	*Cygnus cygnus*	21	2022	Schedule 1 WCA
	Wood sandpiper	*Tringa glareola*	23	2022	Schedule 1 WCA
	Yellow wagtail	*Motacilla flava*	53	2022	S41, SSSI
	Yellowhammer	*Emberiza citrinella*	96	2022	S41
Insect	Small heath	*Coenonympha pamphilus*	3	2022	S41

Species Group	Common Name	Latin Name	Total Number of Records	Most Recent Record	Designation
Insect (continued)	White-letter hairstreak	*Satyrium w-album*	1	2022	S41
	Sea aster bee	*Colletes halophilus*	2	2021	S41
	Blood-vein	*Timandra comae*	2	2016	S41
	Cinnabar	*Tyria jacobaeae*	2	2016	S41
	Shaded broad bar	*Scotopteryx chenopodiata*	3	2023	S41
Mammal	Brown hare	*Lepus europaeus*	7	2021	S41
	Harvest mouse	*Micromys minutus*	3	2014	S41
	West european hedgehog	*Erinaceus europaeus*	1	2022	Schedule 6 WCA, S41
	Common pipistrelle	*Pipistrellus pipistrellus*	1	2015	S41
	Soprano pipistrelle	*Pipistrellus pygmaeus*	1	2015	S41

4.1.8 Previous EPS Licenses

The desk study identified six previously granted EPS licenses within 2km of the Site, three of these licenses were located within the Site (see **Table 8**).

Table 8. Previously granted EPS licenses within 2km of the Site.

Species	Date	License Activity	Location
GCN	04/07/2014 - 30/07/2020	Possible impact on a hibernation site	Within the area for spur pipeline
GCN	19/05/2016 - 31/07/2020	Possible impact on a hibernation site	Within the area for spur pipeline
GCN	15/02/2017 - 31/07/2020	Possible impact on a hibernation site	Within the area for spur pipeline
GCN	15/03/2017 - 30/06/2019	Damage/destruction of a resting place	2km west of the Site
GCN	02/11/2020 - 30/07/2031	Damage/destruction of a resting place	1.3km south west of the Site
GCN	02/11/2020 - 31/12/2021	Damage/destruction of a resting place	1.3km south west of the Site

4.2 Field Survey

The results of the field surveys undertaken in April and May 2024 within the Main Site boundary are described below.

4.2.1 Habitats

The habitats recorded within the Main Site are listed in **Table 9** with UKHab Classification codes provided in brackets. A UKHab map detailing the findings of the habitat survey is detailed in **A.2, Appendix A** (note the hatched area represents land that requires further survey).

Table 9. Description of UK Habitat Classification types present within the Main Site.

UK Habitat Type (code)	Description and Secondary Codes
Mixed scrub (h3h)	Two areas of dense mixed scrub were identified during the field survey. One along the north western edge (see **Photograph 1**, **Appendix C**) and one along the north eastern edge which contained scattered trees. Species comprised: hawthorn *Crataegus monogyna* (D), blackthorn *Prunus spinosa* and elder *Sambucus nigra.* Secondary code: 32 (scattered trees)
Buildings (u1b5)	A single derelict building in poor condition was identified during the field survey to the north of the Main Site boundary and is operational 24 hours a day.
Other developed land (u1b6)	A series of tracks were identified within the Main Site.
Artificial unvegetated, unsealed surface (u1c)	Four areas of artificial unvegetated, unsealed surface were identified during the field survey. All of these were located to the north of the Main Site. One of these areas contained large earth piles of crushed aggregate (see **Photograph 3, Appendix C**). Secondary code: 112 (earth bank)
Sparsely vegetated land (u1f)	Five areas of sparsely vegetated land were identified during the field survey towards the centre of the Main Site. Scattered bramble scrub was present within one of these areas towards the northern extent (see **Photograph 4, Appendix C**). Habitat comprised mostly of bare ground with patches of vegetation present. Species included ribwort plantain *Plantago lanceolata*, forget-me-not *Myosotis* sp., narrow leaved ragwort *Senecio inaequidens*, broad leaved dock *Rumex obtusifolius*, mouse ear chickweed *Cerastium fontanum* and common nettle *Urtica dioica*. Colonising plant flora comprised of early ephemerals such as teasel *Dipsacus fullonum*, woundwort *Stachys sylvatica*, hoary mustard *Hirschfeldia incana*, prickly sow thistle *Sonchus asper*, creeping thistle *Cirsium arvense*, cow parsley *Anthriscus sylvestris* and groundsel *Senecio vulgaris*. Secondary code: 10 (scattered scrub)
Other rivers and streams (r2b)	Three ditches were identified during the field survey towards the south of the Main Site. One wet ditch was present alongside the area of scrub habitat associated with the western edge of the Main Site (see **Photograph 5, Appendix C**). The second was dry at the time of survey and was identified running alongside two field boundaries. The third was wet but couldn't be easily surveyed due to inaccessible steep bank sides obscured by overgrown vegetation in places (see **Photograph 6, Appendix C**). Channel width was 1-2m and banks made up of earth and stones, the flow was considered to be sluggish. The final wet ditch connected with the previous ditch and had similar access issues due to steep banks and overgrown vegetation (see **Photograph 7, Appendix C**).

*(D) Dominant

4.2.2 Protected and Notable Species

4.2.2.1 Badger

Due to the sensitivity of badgers, any data and recommendations for further survey have been included within a confidential badger Appendix (**Appendix D**) and should not be made publicly available.

4.2.2.2 Bats

The data search provided two records of bats within 2km of the Main Site over the last ten years. Both of which were recorded in 2015 and were of common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus,* summarised in **Table 7**.

A Preliminary Bat Roost Assessment (PBRA) was conducted on a single building (approximate Grid Reference TA 1568619657) considered to have moderate roosting potential after several potential external roosting features were identified. These comprised of gaps in concrete slabs and top of building, crevices in brickwork at front and rear elevations which were considered to only provide opportunities for crevice dwelling species. A dead tree (approximate Grid Reference TA 1582719622) was also assessed as having low roosting potential. There is also potential for bats to use areas of standing water within the Site to forage as these features can sustain large invertebrate communities. However, the Main Site has a substantial amount of artificial lighting present, considered to cause high disturbance to commuting or foraging bats.

4.2.2.3 Otter

Although a detailed species survey was not undertaken, no evidence of otter *Lutra lutra* was observed during the field survey and no records were identified within 2km of the Main Site.

The two wet ditches present were not considered to provide suitable habitat for otter, due to limited connectivity to the wider riparian corridor or potential resting places and holts. As such, otter are not considered any further within this report.

4.2.2.4 Water Vole

Although a detailed species survey was not undertaken, no evidence of water vole *Arvicola amphibius* was observed during the field survey and no records were identified within 2km of the Main Site. However, two wet ditches were present and considered suitable habitat to support water vole, due to the slow flow, varied vegetation present and steep banks in areas suitable for burrowing and foraging water vole.

4.2.2.5 Birds

The data search returned records of 67 species of bird within 2km of the Main Site over the last 10 years (see **Table 7**).

Areas of rough ground and hardstanding within the Main Site boundary may provide limited potential for roosting by wader species outside the breeding bird season, particularly during periods of high water on the Humber Estuary in the winter period (i.e. high tide roosts), and also potentially by gull species during the winter.

The area of dense scrub (h3h) within the Main Site is considered to provide nesting opportunities for breeding birds. Evidence of foraging, perching and singing was recorded during the PEA survey from several bird species within this area of scrub, one of which was a WCA 1981 Schedule 1 listed species, Cetti's warbler *Cettia cetti*:

- Chaffinch *Fringilla coelebs*;
- Robin *Erithacus rubecula*;
- Swallow *Hirundo rustica*;
- Goldfinch *Carduelis carduelis;*
- Moorhen *Gallinula chloropus;*

- Kestrel *Falco sparverius;*
- Great tit *Parus major;*
- Blue tit *Cyanistes caeruleus;*
- Willow warbler *Phylloscopus trochilus*; and
- Reed warbler *Acrocephalus scirpaceus.*

Areas of wet grassland and fields north west, west and south of the Main Site boundary, some of which may be utilised as lay-down areas during the construction period, were considered suitable for foraging and nesting by wader species during high water conditions on the Humber Estuary outside the breeding bird season. Areas within and adjacent to the Site are therefore considered suitable to support an important population of notable and breeding bird species.

4.2.2.6 Amphibians

The data search returned records of four species of amphibian within 2km of the Main Site over the last 10 years (see **Table 7**).

No amphibians were recorded during the field survey. As a result of limited availability of suitable terrestrial habitats for amphibians within the Main Site boundary, and the dominance of urban habitats. However, habitats such as dense scrub (h3h) are likely to provide terrestrial opportunities for foraging, commuting, and over-wintering amphibians (e.g. common frog *Rana temporaria*, common toad *Bufo bufo* and newt species). Swinster Lane Field LWS, situated approximately 1.6km north west of the Site, is confirmed to support GCN. 133 waterbodies (1 inland river, 68 surface water; linear features and 64 surface water; area features) were recorded on maps within 250m of the Site (see **A.6, Appendix A**). However, only four of these waterbodies were assessed for GCN within the Main Site and the results of the HSI assessments are provided in **Table 10**.

Table 10. Habitat Suitability Index assessments of waterbodies within 250m of the Main Site.

Waterbody	Grid Reference	Description	HSI Result	Location
WB1	TA 15920 19566	Large waterbody with dense vegetation around the perimeter of the waterbody. Located adjacent to a small woodland.	0.32 (Poor)	58m south
WB2	TA 15582 20174	Large artificial waterbody. Some evidence of reed colonisation.	0.58 (Below Average)	342m north
WB3	TA 15540 19462	Medium sized pond surrounded by scrub and grassland.	0.70 (Good)	35m west
WB4	TA 15567 19430	Small pond surrounded by scrub and grassland	0.63 (Below average)	30m west

4.2.2.7 Reptiles

The majority of the Main site is made up of urban and sparsely vegetated habitats, providing limited foraging opportunities for reptile species including grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*. Dense scrub habitats (h3h) within the Main Site provide some opportunities for over-wintering reptile species. However, it is considered unlikely that reptiles utilise the Main Site. Although a detailed species survey was not undertaken, no evidence of reptiles were observed during the field survey and no records were identified within 2km of the Main Site. As such, reptiles are not considered any further within this report.

4.2.2.8 Invertebrates

The data search provided records of six notable invertebrate species listed on the S41, found within 2km of the Main Site (see **Table 7**).

Habitats within the Main Site are not considered to be sufficiently complex or diverse to provide habitats for invertebrates, beyond common and widespread species. As such, they are not considered any further within this report. However, adjacent habitats including standing water, grassland and field drain have potential to support a small population of invertebrate species.

4.2.2.9 Other mammals

No incidences of other mammal species or field evidence was recorded during the field survey.

The data search provided records of three other notable terrestrial mammal species within 2km of the Main Site, 7 records of brown hare *Lepus europaeus,* three records of harvest mouse *Micromys minutus*, and one record of West European hedgehog *Erinaceus europaeus*.

4.2.2.10 Invasive Non-native Species

No records of INNS were returned from within 2km of the Main Site and no INNS were recorded during the field survey.

5. Discussion and Recommendations

This section considers the potential for effects on designated sites, habitats, protected and notable species and INNS as a consequence of development within the Site. Where further surveys or detailed assessment of potential effects are required to design suitable mitigation measures, this is identified.

5.1 Designated Sites

5.1.1 Statutory Designated Sites

Five statutory designated sites were identified within 2km of the Site. North Killingholme Haven Pits SSSI (0.4km east), Humber Estuary - 2000480 SSSI (0.7km east), Humber Estuary Ramsar/SPA (0.4km east)/SAC (0.7km east). the Site also falls within two SSSI IRZs. These comprise North Killingholme Haven Pits SSSI and Humber Estuary SSSI. Due to the nature and location of the development which falls within all planning applications, the LPA will be required to consult with Natural England on likely risks from the development.

It is recommended that all work on the Site should be undertaken in accordance with the Environment Agency Safety, Health, Environment and Wellbeing (SHEW) Code of Practice (CoP)[32], to reduce any risk of indirect impacts on statutory designated sites.

Screening for a Habitat Regulations Assessment (HRA) will be required by the LPA due to the proximity of the Site to the Humber Estuary SAC/SPA/Ramsar and the potential for the Site to support functionally linked habitat for qualifying species of the SPA. The Habitats Regulations require the competent authority, before authorising a project likely to have a significant effect on an internationally designated site, to undertake an Appropriate Assessment (AA) of the implications on the Site's conservation objectives. Anyone applying for development consent must provide the competent authority with such information as may reasonably be required for the purposes of the AA or to determine whether an AA is required. This information takes the form of a HRA Report.

5.1.2 Non-Statutory Designated Sites

Seven non-statutory designated sites were identified within 2km of the Main Site. These comprised six LWS and one WTR. Chase Hill Wood LWS (within RLB), Burkinshaw's Covert LWS (bordering the Site), Halton Marsh Clay Pits LWS (0.9km north), Swinster Lane Field LWS (1.6km north west), Scrub Lane East Field LWS (1.4km north west), East View Meadow LWS (1.9km north west), Killingholme Haven Pits WTR (0.4km east). There are no hydrological pathways or contiguous habitats connecting the Main Site with these LWS/WTR designations. Whilst some habitats within the Main Site boundary may support similar species (e.g. bird and bat species associated with the Site), the habitats within the Main Site boundary are of limited value and isolated from the wider landscape. To prevent any indirect impacts resulting from dust or changes in air quality, all works within the Site should be undertaken in accordance with industry best practice and guidelines for pollution prevention[33].

5.2 Habitats

Urban habitats dominate the Main Site boundary and comprise of one building, artificial unvegetated, unsealed surface, other developed land and sparsely vegetated land.

A BNG baseline assessment has been undertaken for the Main Site and will be presented within a separate BNG report. This will include proposals for habitat retention, enhancement and creation which deliver biodiversity units within the Site. Where a 10% gain in Biodiversity Units cannot be achieved within the Site

[32] Environment Agency SHEW COP. Constructing a Better Environment. May 2018. Available at: https://www.ada.org.uk/wp-content/uploads/2018/08/EA_Constructing_a_Better_Environment-May_2018.pdf (Accessed: December 2024).

[33] Guidance for Pollution Prevention documents available at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/ (Accessed: December 2024).

boundary, opportunities for habitat creation and enhancement off-site should be considered. As a final resort, purchase of statutory Biodiversity Credits can be used to offset any residual deficit in biodiversity units.

5.3 Protected and Notable Species

The results of the desk study, UKHab survey and protected species suitability assessment highlighted the presence and potential presence of several protected and notable species within the Main Site. The legal protection afforded to these species is outlined in **Table 11**. The requirement for further survey and/or mitigation and recommendations to eliminate risk and impact to such species is also outlined. Full details of applicable legislation is included in **Appendix B**.

Table 11. Protected species legislation, potential impacts and further assessment requirements.

Species/group	Legal Protection	Discussion	Recommendations
Bats	Bats are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), providing them with full protection. This legislation makes it illegal to: • Intentionally kill, injure, or take a bat. • Damage, destroy, or obstruct access to any structure or place that a bat uses for shelter or protection (this includes bat roosts, even if they are not currently occupied). • Disturb a bat while it is occupying a roost. Note: A bat roost is legally protected regardless of whether bats are present or not. Bats are listed as a European Protected Species (EPS) under Annex IV of the EU Habitats Directive, which is transposed into UK law through these regulations. Bats are listed as species of principal importance for biodiversity under Section 41 of this Act. This imposes a duty on public bodies to consider the conservation of bat populations in their planning and decision-making processes.	Bats are likely to use the Site for commuting and foraging. One building with roosting potential was identified within the Main Site. A PBRA was undertaken as part of the PEA survey and the building to the north of the Main Site was assessed as having moderate bat roost suitability, containing roosting and entrance features such as gaps in concrete slabs and top of building, crevices in brickwork at front and rear elevations. It is anticipated this building will be demolished or be subject to excessive levels of disturbance to facilitate the works.	Two bat activity (two dusk emergence using night time visual aids) surveys should be completed in accordance with BCT Good Practice Guidelines[31] to determine if bats are using the building to roost prior to the proposed works commencing. Dusk emergence surveys commence 15 minutes before sunset and continue for 1.5 to 2 hours after sunset, or until it is considered that all bats will have emerged. If a bat roost is identified and will be disturbed by the proposed works, then a mitigation licence will be required from Natural England prior to the commencement of works. Natural England take a minimum of 30 working days to process a licence application. In order to obtain a bat licence, appropriate mitigation will need to be developed and implemented; works may also be seasonally restricted.
Water vole	Water voles are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This provides them with protection under the following specific offenses: • It is illegal to intentionally or recklessly damage, destroy, or obstruct access to any structure or place used by water voles for shelter or protection (this includes their burrows). • It is also illegal to disturb water voles while they are occupying such a place.	Suitable burrowing and foraging habitat for water vole is present along the ditches within the Main Site. While it is unlikely that the Site will impact water vole burrows, the incoming change in habitats may displace water vole from the Site.	A water vole survey to confirm the presence, or inform the likely absence of water vole, including the identification of identify any burrows within 30m of the Main Site in areas of suitable habitat. The suitability of habitat for water vole may change markedly over the course of the breeding season affecting the distribution and apparent population size. In line with current guidance[34], two survey visits are required. One visit is undertaken in the first half of the survey season (mid-April to the end

[34] Dean, M., Strachen, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

Species/group	Legal Protection	Discussion	Recommendations
	Note: The protection under this Act is focused on the places water voles use for shelter rather than on the animals themselves. This means that water vole burrows and habitats are protected even if the animals are not present at the time. Water vole are listed as a species of principal importance for the purpose of conserving biodiversity in England under Section 41. This imposes a duty on public bodies to consider otter conservation in decision-making processes and planning.		of June) and one in the second half of the season (July to September inclusive). If water voles are found to be utilising the watercourses and they are to be affected by the proposed works, mitigation and a licence from Natural England will be required.
Birds	Under the Wildlife and Countryside Act 1981 (as amended), all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.	The predominant habitat of sparsely vegetated land is sub-optimal for supporting notable populations of birds. Habitats including dense scrub, ditches, areas of wet grassland and fields north west, west and south of the Site boundary were considered suitable for foraging and nesting by wader species during high water conditions on the Humber Estuary outside the breeding bird season.	It is recommended that any work with the potential to damage a breeding bird nest, such as vegetation clearance, be undertaken outside the bird nesting season (March to August inclusive). If this is not possible, a nesting bird survey should be conducted by a suitably qualified ecologist (SQE) immediately prior to the commencement of clearance works to ensure no bird nests or eggs are harmed by the Site. If an active bird nest is discovered, an appropriate exclusion zone, as determined by the SQE, must be implemented until the young have fledged. It is recommended that breeding bird surveys are undertaken within the Main Site plus an appropriate buffer for disturbance. Six visits should be undertaken between April and July using amended Common Birds Census (CBC) methodology (Bibby et al., 1992)[35]. The surveys should also include targeted surveys for Cetti's warbler due to their confirmed presence within the Main Site. Wintering and passage bird surveys are also recommended, focusing on Humber estuary SPA bird species.

[35] Bibby, C.J., Burgess, N.D. & Hill, D.A. (1992) Bird census techniques. Academic Press Limited, London, UK.

Species/group	Legal Protection	Discussion	Recommendations
Amphibian	Great crested newt are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This provides them with protection under the following specific offenses: • Intentionally kill, injure, or capture a great crested newt. • Damage, destroy, or obstruct access to any place used by great crested newts for shelter or protection (i.e., breeding ponds, terrestrial habitats). • Disturb a great crested newt while it is in a place of shelter or protection. Great crested newt are listed as a European Protected Species (EPS) under Annex IV of the EU Habitats Directive, which is transposed into UK law through these regulations. Great crested newt are listed as a species of principal importance for the purpose of conserving biodiversity in England under Section 41. This imposes a duty on public bodies to consider otter conservation in decision-making processes and planning.	133 waterbodies (1 inland river, 68 surface water; linear features and 64 surface water; area features) were recorded on maps within 250m of the Site (see **A.6, Appendix A**). However, only four of these waterbodies were assessed for GCN within the Main Site. There is also a confirmed GCN population in Swinster Lane Field LWS located approximately 1.6km north west of the Site.	Waterbodies assessed as being good or excellent are more likely to be occupied by GCN and therefore further survey work would be required to determine their presence or likely absence. In this case it is recommended that an environmental DNA (eDNA)[36] survey is undertaken on the waterbodies that produce high HSI scores. An eDNA survey entails the collection of water samples from the waterbody which is then sent to a laboratory to test for the presence of GCN DNA. The eDNA survey may be undertaken 15 April – 30 June. If great crested newt DNA is recorded, a licence from Natural England may be required for the works.

[36] s J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., Wilkinson J., Arnett A., Williams P. and Dunn F. (2014) Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

Disclaimer

This report is the result of survey work undertaken in April and May 2024. This report refers, within the limitations stated, to the condition or works within the Site at the time of the inspections. Changes in legislation, guidance, best practice, etc. may necessitate a re-assessment/survey. It is also advised that if there is a delay of over a year in undertaking the works, a re-survey may be required. No warranty is given as to the possibility of future changes in the condition of the Site.

This report is produced solely for the benefit of Uniper UK Limited, and no liability is accepted for any reliance placed on it by any other party. This report is prepared for the proposed uses stated in the report and should not be used in a different context.

Appendix A

Maps

A.1 Proposed Red Line Boundary

Red Line Boundary

2km Buffer of Red Line Boundary

Ccordinate System: British National Grid

Ccntains OS data © Crown copyright and database rights 2024.
OS Open Background Tile Layer: Contains OS data © Crown Copyright and database right 2020
OS Open Carto Tile Layer: Contains OS data © Crown Copyright and database right 2020

Metres

0 500 1,000

Rev	Date	By	Chkd	Appd	Authd
P01	03/02/25	CESL	ACAR	YYL	FMAX

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Client

uniper

Project Name
North Killingholme Carbon Capture Plant

Drawing Title
Proposed Red Line Boundary

Scale
1:30,000

Role
GEN

Suitability
Issued

Project Number
305719-00

Rev
P01

Figure Number
NKCC_ENV_ARP_FIG_002

A.2 UKHabitat Classification

Red Line Boundary

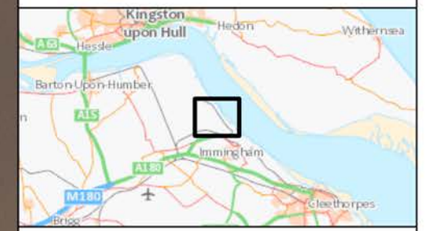
Habitat Classification (UKHAB v2.0)

108 Secondary Code

- r2 - Rivers and streams
- h3h - Mixed scrub
- u1b5 - Buildings
- u1b6 - Other developed land
- u1c - Artificial unvegetated, unsealed surface
- u1f - Sparsely vegetated urban land
- Area Not Surveyed

Ccordinate System: British National Grid

Metres
0 360 720



Rev	Date	By	Chkd	Appd	Authd
P01	03/02/25	CWILL	CESL	YYL	FMAX

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Project Name
North Killingholme Carbon Capture Plant

Drawing Title
Habitat Classification

Scale
1:15,000

Role
GEN

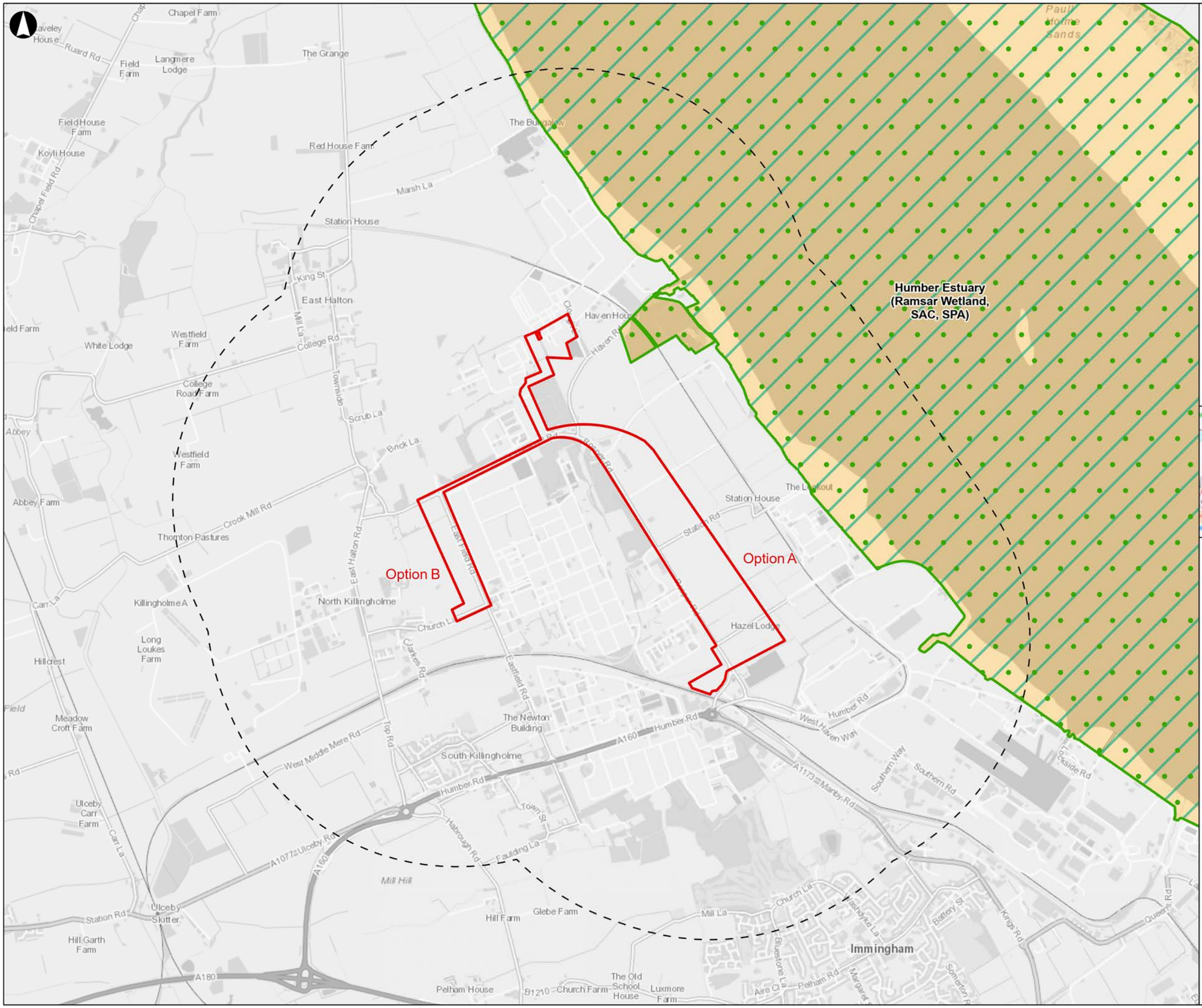
Suitability
Issued

Project Number
305719-00

Rev
P01

Figure Number
NKCC_ENV_ARP_FIG_003

A.3 International and European Designated Sites within 2km



Red Line Boundary

2km Buffer of Red Line Boundary

Designated Sites

Ramsar Wetland

Special Area of Conservation (SAC)

Special Protection Area (SPA)

Ccordinate System: British National Grid

Metres

0 500 1,000

Rev	Date	By	Chkd	Appd	Authd
P01	03/02/25	CESL	ACAR	YYL	FMAX

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Project Name

North Killingholme Carbon Capture Plant

Drawing Title

International and European Statutory Designated Sites within 2km

Scale

1:30,000

Role

GEN

Suitability

Issued

Project Number

305719-00

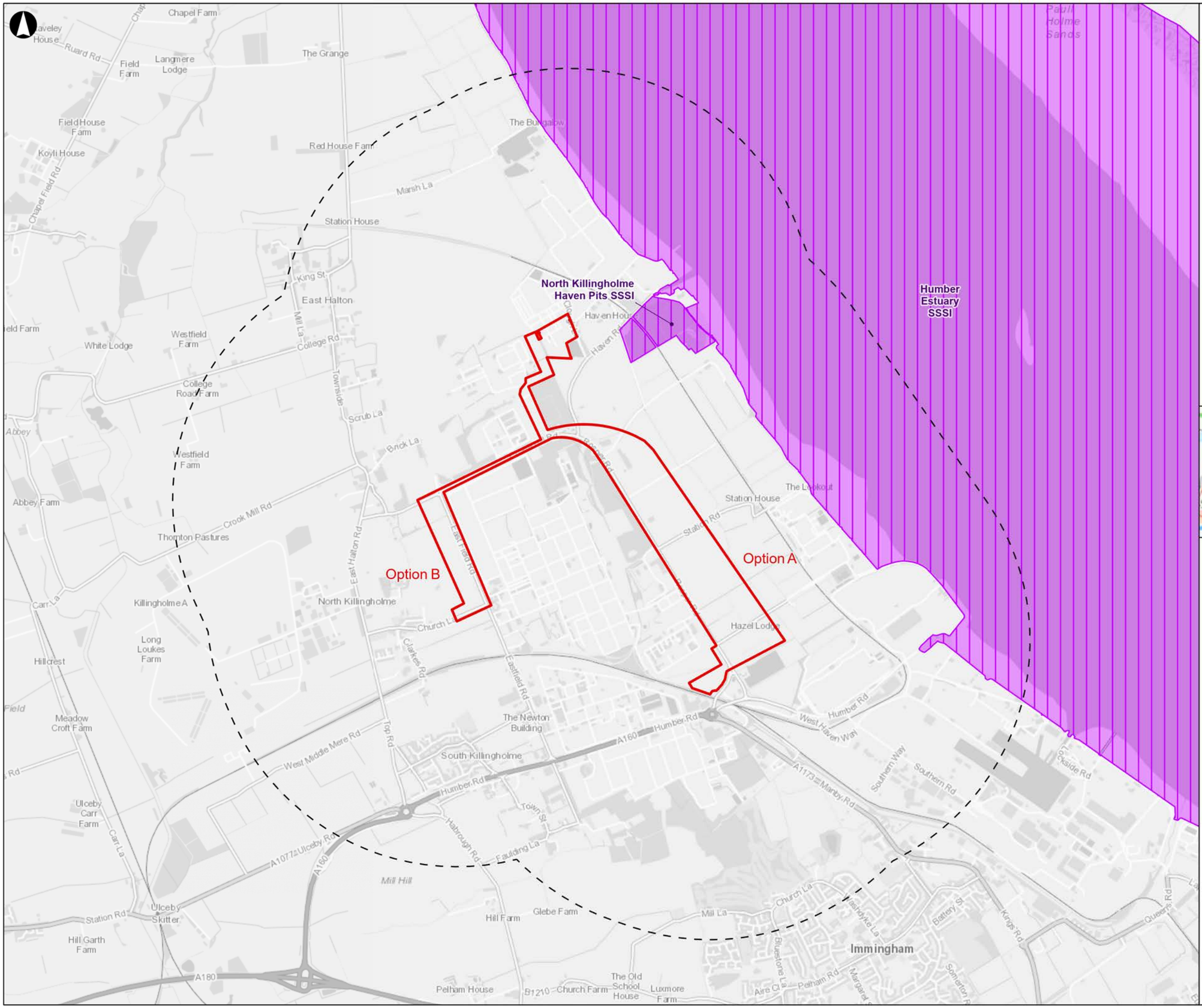
Rev

P01

Figure Number

NKCC_ENV_ARP_FIG_004

A.4 National Designated Sites within 2km



Rev	Date	By	Chkd	Appd	Authd
P01	03/02/25	CESL	ACAR	YYL	FMAX

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Project Name
North Killingholme Carbon Capture Plant

Drawing Title
National Statutory Designated Sites within 2km

Scale
1:30,000

Role
GEN

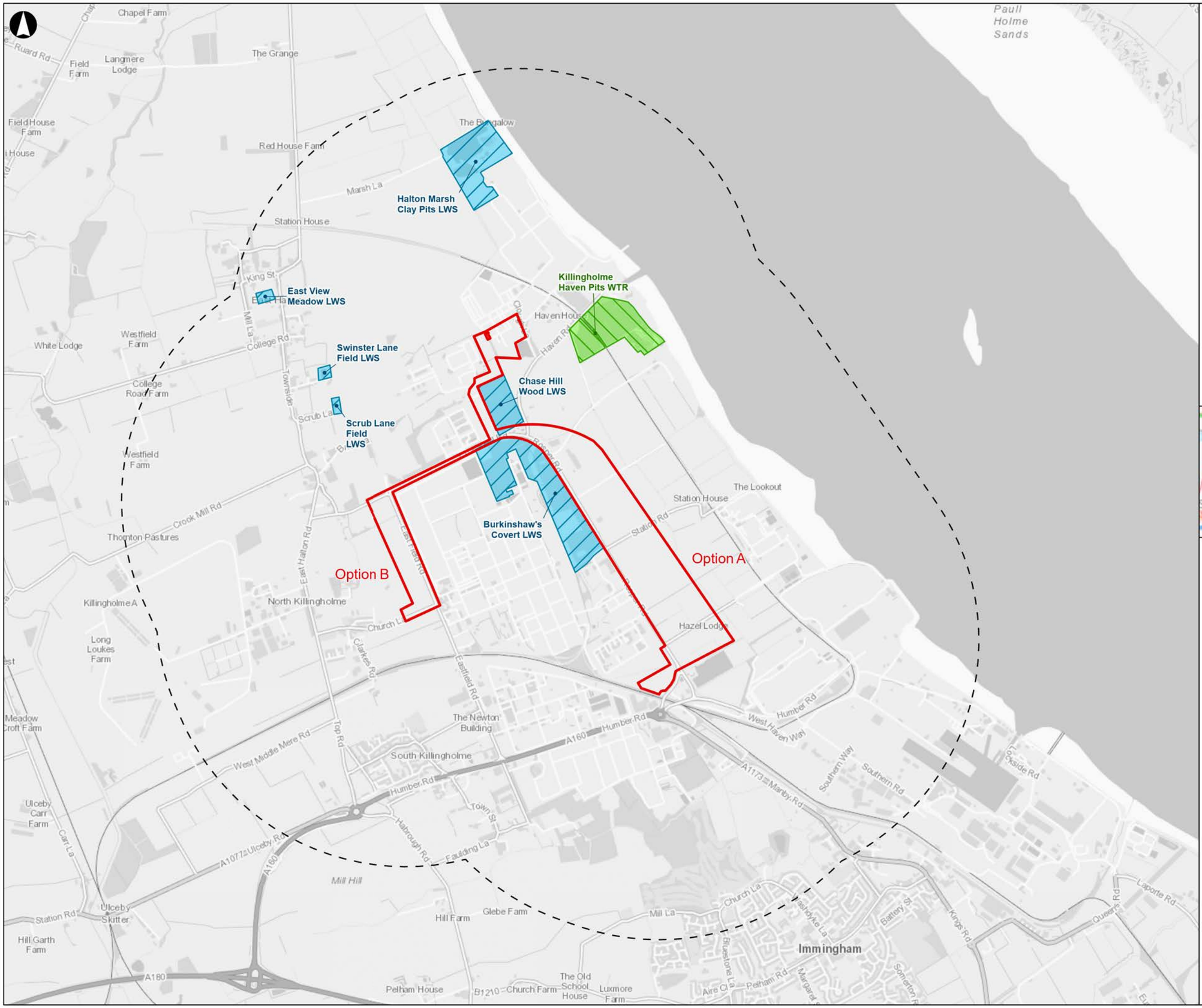
Suitability
Issued

Project Number
305719-00

Rev
P01

Figure Number
NKCC_ENV_ARP_FIG_005

A.5 Non-statutory Designated Sites within 2km



Red Line Boundary

2km Buffer of Red Line Boundary

Non-Statutory Designations[1]

Lincolnshire Wildlife Trust Reserve (WTR)

Local Wildlife Site (LWS)

Nctes

1. Non-Statutory Designations within 2km were provided in a report by Lincolnshire Environmental Records Centre published on 17 May 2024 using a previous iteration of the Red Line Boundary. Additional non-statutory sites may be located within the current study area.

Ccordinate System: British National Grid

Metres

0 500 1,000

Rev	Date	By	Chkd	Appd	Authd
P01	03/02/25	CWILL	CESL	YYL	FMAX

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Client: uniper

Project Name: **North Killingholme Carbon Capture Plant**

Drawing Title: **Non-statutory Designated Sites within 2km**

Scale: **1:30,000**

Role: **GEN**

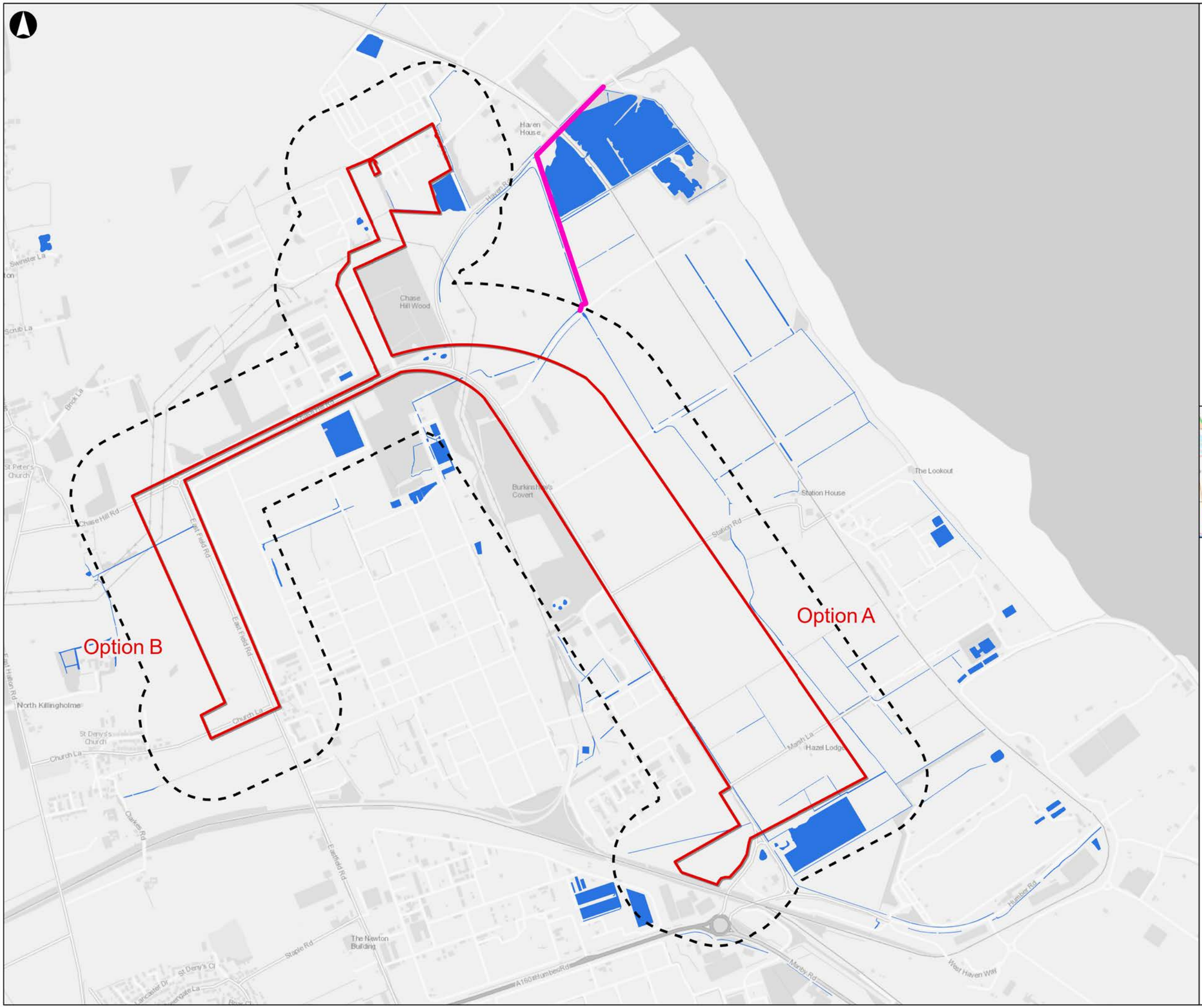
Suitability: **Issued**

Project Number: **305719-00**

Rev: **P01**

Figure Number: **NKCC_ENV_ARP_FIG_006**

A.6 Waterbodies within 250m



Rev	Date	By	Chkd	Appd	Authd
P01	04/02/25	CWILL	CESL	YYL	FMAX

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Client

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Project Name
North Killingholme Carbon Capture Plant

Drawing Title
Water Bodies within 250m

Scale
1:15,000

Role
GEN

Suitability
Issued

Project Number
305719-00

Rev
P01

Figure Number
NKCC_ENV_ARP_FIG_007

Appendix B

Legislation, Planning Policy and Guidance

B.1 Legislation

B.1.1 Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act (WCA) 1981 (as amended) is the primary legislation covering endangered species in England and sets out the framework for the designation of Sites of Special Scientific Interest (SSSIs). It confers differing levels of protection on species themselves, their habitats, or both, depending on their conservation status. Species offered protection by the Act are listed in a series of schedules. These Schedules are subject to a rolling review on a five-yearly basis. Protected species are listed under Section 1 (birds), Schedule 5 (animals other than birds and invertebrates) and Schedule 8 (plants).

B.1.2 Countryside and Rights of Way Act 2000

The Countryside and Rights of Way Act 2000 affords a greater level of protection to SSSIs, provides enhanced management arrangements for Areas of Outstanding Natural Beauty (AONBs), and strengthens wildlife enforcement legislation. This Act has amended the WCA 1981 (as amended) by the addition of the term 'recklessly' to Section 1(5) and Section 9(4) which has resulted in additional obligations with respect to protected species. As such, it is now an offence to intentionally or recklessly disturb protected species listed on the relevant Schedules of the WCA 1981 (as amended).

B.1.3 Natural Environment and Rural Communities (NERC) Act 2006

The Natural Environment and Rural Communities (NERC) Act 2006 is designed to help achieve a rich and diverse natural environment and thriving rural communities. Under Section 41 there is a Duty to conserve biodiversity; specifically, Subsection (1) states "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity." Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40.

B.1.4 The Protection of Badgers Act 1992

This Act brings together all the legislation that is specific to badger (*Meles meles*), except for their inclusion on Schedule 6 of the WCA 1981, (which prohibits certain methods of taking or capture). The Act makes it an offence to intentionally kill or ill-treat a badger, and destroy, disturb, or obstruct a sett. Specifically, it imposes restrictions on works carried out within certain distances of badger setts. Any works that will directly impact on an existing sett are only permitted subject to approval through the issue of a licence from Natural England.

B.1.5 The Wild Mammals (Protection) Act 1996

This Act provides protection for wild mammals from acts of cruelty. An offence is committed if any person mutilates, kicks, beats, nails, or otherwise impales, stabs, burns, stones, crushes, drowns, drags or asphyxiates any wild mammal with intent to inflict unnecessary suffering.

B.1.6 Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019

The Habitats Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna provides legal protection for habitats and species of European importance. This Directive was transposed into UK law by the Conservation of Habitats and Species Regulations 2017.

The Regulations for the protection of European Protected Species (EPS) have been amended and consolidated with key changes including the removal of most of the defences from regulation 40 and regulation 43 including the removal of the 'incidental result of an otherwise lawful operation' defence, and the increase in the threshold for the offence of deliberately disturbing an EPS. Proposals that will affect EPS may require a licence from Natural England to allow an otherwise unlawful act. In 2009 a new offence of

'breaching condition of an EPS licence' was added to the regulations. The licensing process is separate from the planning process.

B.1.6.1 Brexit Implications

To ensure continued protection of these habitats and species, the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019 came into force on 1 January 2021. The EU Exit Regulations amend the 2017 Habitats Regulations, primarily to enable the transfer of functions from the European Commission to the appropriate authorities in England and Wales, and to ensure the 2017 Habitats Regulations continue to be operable. The Government's Explanatory Memorandum to these regulations states:

"*This instrument provides changes to those parts of the 2017 and 2001 Regulations which would no longer work when the UK leaves the EU... The intention is to ensure habitats and species protection, and standards as set out under the Nature Directives are implemented in the same way or an equivalent way when the UK exits the EU. There is no change to policy*."

The EU Exit Regulations therefore ensure that habitat and species protections and standards as derived from EU law will continue to apply now that the UK has left the EU. As a result, the obligations of a competent authority in relation to the protection of European sites or species have not changed. Within this report, reference to the 'Habitats Regulations' should be taken to mean the 2017 Habitats Regulations as amended by the EU Exit Regulations.

B.1.7 Birds Directive (2009/147/EC)

The European Union meets its obligations for bird species under the Bern Convention and Bonn Convention and more generally by means of Directive 2009/147/EC (Birds Directive) on the conservation of wild birds. In the UK, the provisions of the Birds Directive are implemented through the WCA 1981 (as amended) and the Habitats Regulations (as well as other legislation related to land and sea).

The main provisions of the Directive include: the maintenance of populations of all wild bird species across their natural range; the establishment of a general scheme of protection for all wild birds; requirements to ensure that introduction of non-native birds do not threaten other biodiversity; and the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4). Together with Special Areas of Conservation (SACs) designated under the Habitats Directive, SPAs form a network of European protected areas known as Natura 2000.

B.1.8 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

The Water Framework Directive (WFD) introduced a comprehensive river basin management planning system to help protect and improve the ecological health of our rivers, lakes, estuaries and coastal and groundwaters. This is underpinned by the use of environmental standards to help assess risks to the ecological quality of the water environment and to identify the scale of improvements that would be needed to bring waters under pressure back into a good condition. WFD requires that for any activity which may negatively affect the water environment, there is a low risk that the activity will cause deterioration in status/potential or prevent good status/potential being achieved.

B.1.9 Invasive Alien Species (Enforcement and Permitting) Order 2019

The Invasive Alien Species Order (IASO) 2019 transposes EU legislation (Regulation (EU) No 1143/2014), which was introduced into UK law on the 1 December 2019. Listed in the Order are species of concern that are banned from being imported, transported, sold, used, kept, bred/grown, or released into the environment or allowed to reproduce.

Signal crayfish, amongst other invasive non-native crayfish species, are included in the Order. Transport of live invasive crayfish species from any site is illegal under the legislation. Management, development, maintenance, or other works at sites which have invasive crayfish species present therefore require practical and legal consideration that may have associated cost implications. These also extend to conservation actions surrounding the eradication of invasive crayfish species present at site. Regarding crayfish, the legislation superseded the 'The Prohibition of Keeping of Live Fish (Crayfish) Order 1996.' Regulation of the legislation is enforced by Natural England in England.

Eight plant species are identified within IASO (2019) as being widely spread in England and Wales and therefore require management. This includes, but is not limited to Nuttall's waterweed, Himalayan balsam, curly waterweed (*Lagarosiphon major*), and floating pennywort (*Hydrocotyle ranunculoides*). This has implications for works at any site where such invasive plant species are present, and appropriate management controls are required.

B.1.10 The Environment Act 2021

The Environment Act (2021) includes the mandatory requirement for new developments to provide Biodiversity Net Gain (BNG). This will require planning applicants to demonstrate that proposals will achieve at least a 10% increase in the level of biodiversity after the development, when compared to the level of biodiversity predevelopment. This mandate came into effect in England on the 12th of February 2024 through an amendment to the Town and Country Planning Act (1990). Delivery of 10% BNG is therefore now mandatory for developments requiring planning permission (unless exempt).

B.2 Planning Policy

B.2.1 Biodiversity Net Gain

The Environment Act received Royal Assent on 09 November 2021. Mandatory biodiversity net gain as set out in Schedule 14 of the Environment Act 2021 will apply in England only, through amendments in the Town and Country Planning Act 1990. The Government's response to the 2018 consultation on biodiversity net gain set out that there would be a 2-year implementation period from when the Environment Bill received Royal Assent. The mandatory aspect has been in place since 12 February 2024 and will include a minimum 10% gain calculated using the Defra Biodiversity Metric 3.1[37]. Habitats will need to be secured for at least 30 years and secured on site, off site or via a new statutory biodiversity credit scheme. Any biodiversity net gain claimed on projects must be in adherence with the good practice principles.

B.2.2 National Planning Policy Framework

The revised National Planning Policy Framework (NPPF) was published in December 2024 and is a material consideration in all planning decisions. NPPF refers to the responsibilities of the local authorities to conserve the natural environment. The NPPF outlines the UK Government's planning policies for England, emphasizing sustainable development through economic, social, and environmental objectives. It promotes a plan-led system with community engagement, proactive decision-making, and a presumption in favour of sustainable development. Key areas include boosting housing supply, supporting economic growth, enhancing town centres, promoting healthy communities, ensuring effective land use, protecting the environment, and addressing climate change. The framework also highlights the importance of conserving heritage assets and facilitating the sustainable use of minerals. All public bodies including local planning authorities are to consider habitats and species of Principal Importance listed in S41 of the NERC Act 2006 and Priority Species/Habitats within Biodiversity Action Plans when considering a planning application.

B.2.3 Non-Statutory Local Sites

Non-statutory local sites are referred to as Local Wildlife Sites (LWS) within the region. These sites are of county importance for their wildlife value. They have no statutory protection but are recognised by Local Authorities and statutory agencies and their presence is fully considered when determining planning applications.

B.2.4 North Lincolnshire Local Development Framework

The North Lincolnshire Local Development Framework is a suite of Development Plan Documents (DPDs) which set out the local planning policy for the area. These documents include:

- The core strategy, chapters and supporting documents:

- Adopted in June 2011, this document outlines the long-term vision for North Lincolnshire and provides a blueprint for managing growth and development in the area up to 2026;

- Housing and employment land allocations DPD:

- This document identifies specific areas for housing and employment land within North Lincolnshire;

- Lincolnshire lakes area action plan:

- A planning policy document that focuses on the Lincolnshire Lakes area, addressing development, infrastructure, and environmental considerations; and

- Other adopted planning policy documents:

[37] Natural England (2022). The Biodiversity Metric 3.1: Auditing and Accounting for Biodiversity Value: Technical Supplement (Accessed: June 2024).

- These include additional policies and guidelines related to various aspects of development and land use.

B.3 Guidance

B.3.1 Lincolnshire Biodiversity Action Plan 2011-2020 (3rd edition)

Local BAPs raise awareness of biodiversity issues by focusing on species and habitats with local relevance and are a mechanism to enable national targets to be delivered at a local level. They identify local priorities for biodiversity conservation, and work to deliver agreed actions and targets for priority habitats and species and locally important wildlife and sites . Local BAPs contribute to the delivery of the UK BAP, the England and EU Biodiversity Strategies and the global commitments made by the UK at Nagoya in 2010.

By working in partnership towards this vision, identifying priorities for action, and engaging with local stakeholders BAP Partners aim to:

- *Conserve and enhance Lincolnshire's biodiversity; recreating habitats on a landscape scale and developing networks of interlinked natural areas – a 'living landscape' of which wildlife is an integral part, not confined to specially protected sites;*
- *Ensure that biodiversity is recognised as an essential element of life in the historic county of Lincolnshire: including its contributions to health and wellbeing; the economy, recreation and tourism; and provision of ecosystem services (such as flood protection, retention of water resources, carbon storage and crop pollination);*
- *Ensure biodiversity conservation is sustainable; the benefits are felt by society, the economy and the environment; and*
- *Provide and gather biodiversity information to monitor progress and enable individuals and organisations to make decisions based on sound evidence.*

B.3.2 Birds of Conservation Concern 5 (BoCC)

Birds of Conservation Concern 5 (BoCC) are lists compiled by a coalition of the UK's leading bird conservation and monitoring organisations, reviewing the status of all regularly occurring birds in the UK, Channel Islands and Isle of Man.

There are three BoCC Lists which can be summarised as follows:

- Red List: species that are globally threatened, whose population or range has declined rapidly in recent years, and those whose populations have declined historically and not exhibited any signs of recovery. Species that have experienced a population decline of >50%;
- Amber List: species with an unfavourable conservation status in Europe, whose populations have declined moderately in recent years. This includes species that show a historical decline but whose populations have shown a substantial increase, species that are rare with localised populations and species that have experienced a population decline or breeding range decline of 25% to 49%; and
- Green List: All regularly occurring species that do not qualify under any of the red or amber criteria are green listed. The green list also includes those species listed as recovering from historical decline in the last review that have continued to recover and do not qualify under any of the other criteria.

B.3.3 UK BAP Priority Species and Habitats

The UK BAP is a list of animals, plants, and habitats consider to be of principal importance for biodiversity conservation in the United Kingdom. By identifying the species and habitats that are of the highest priority for biodiversity conservation, the UK BAP helps public bodies apply their biodiversity duty.
UK BAP priority species and habitats were those that were identified as being the most threatened and requiring conservation action under the UK BAP. The original lists of UK BAP priority species and habitats were created between 1995 and 1999, and were subsequently updated in 2007, following a 2-year review of UK BAP processes and priorities, which included a review of the UK priority species and habitats lists.

B.3.4 UK Post-2010 Biodiversity Framework

As a result of new drivers and requirements, the 'UK Post-2010 Biodiversity Framework', published in July 2012, has succeeded the UK BAP. In particular, due to devolution and the creation of country-level biodiversity strategies, much of the work previously carried out under the UK BAP is now focussed at a country level.

The UK BAP lists of priority species and habitats remain, however, important and valuable reference sources. Notably, they have been used to help draw up statutory lists of priority species and habitats in England, Scotland, Wales and Northern Ireland (see NI species and NI habitats lists), as required under:

• Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (England);

• Section 7 of the Environment Act (Wales);

• Section 2(4) of the Nature Conservation (Scotland) Act 2004; and

• Section 3(1) of the Wildlife and Natural Environment Act (Northern Ireland) 2011.

B.3.5 Habitats and species of principal importance in England

The list of habitats and species of principal importance in England includes 56 habitats and 943 species first identified as priority habitats and species in the UK Biodiversity Action Plan (UK BAP). Publishing the list is a legal duty under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The list was last updated 10 November 2022.

The list is for:

- public bodies – to help them meet their 'biodiversity duty' to be aware of biodiversity conservation in their policy or decision making;
- landowners – to inform their nature recovery planning, action and funding applications; and
- funding bodies – to support suitable nature recovery.

Appendix C

Site Photographs

Photograph 1. Area of dense mixed scrub along north western boundary of the Main Site.

Photograph 2. Derelict building identified within the Main Site.

Photograph 3. Area of artificial unvegetated, unsealed surface containing crushed aggregate earth banks.

Photograph 4. Area of sparsely vegetated land with small area of bramble scrub.

Photograph 5. Wet ditch present alongside area of mixed scrub towards north western boundary.

Photograph 6. Wet ditch with steep earth banks and overgrown vegetation.

Photograph 7. Wet ditch with steep earth banks and overgrown vegetation.

Appendix D

Confidential Badger Appendix

Appendix D

Confidential Badger Appendix (To be redacted before publication)

Results

The data search provided no records of badger *Meles meles* within 2km of the Main Site over the last 10 years. Habitats within the Main Site including mixed scrub (h3h), and other semi-natural habitats adjacent to the Main Site provide suitable habitat for commuting, foraging and sett construction. The ditches present within the Main Site are likely used as a commuting corridor.

During the field survey, a seven-entrance partially used subsidiary sett was recorded within the area of dense mixed scrub located to the north of the Main Site (see **A.1**). Several active dung pits, a well-used mammal pathway, latrines and snuffle holes were also recorded in close range to the sett (approximate central Grid Reference TA 1583919626).

Discussion and Recommendations

The legal protection afforded to badger is outlined in **Table 1**. Recommendations for further survey requirements are also included. Full details of applicable legislation are included in **Appendix B** within the main report.

Table 1. Protected species legislation, potential impacts and further assessment requirements

Species/group	Legal Protection	Discussion	Recommendations
Badger	The Protection of Badgers Act (1992)[1] defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger.' Under The Protection of Badgers Act (1992) it is an offence to wilfully take, kill, injure, possess or ill-treat a badger. Their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. These protections are in place to ensure the conservation and welfare of badgers, which face various threats including habitat loss and persecution. If impacts to badgers or their setts are unavoidable then authorised sett disturbance requires a licence.	Badgers are likely to use the Main Site for foraging, commuting and sett construction. A seven-entrance sett was identified. As a result, there remains a risk that the works associated with the Main Site may cause disturbance to badger foraging and commuting. If works are required within 30m of the sett entrance, there is also the potential for works to damage/destroy the sett.	Proposed development Due to evidence of badgers being identified within 10m of the Main Site, a camera trap survey is recommended to ascertain the activity levels of the sett and to monitor behaviour, following current guidance[2]. All impacts to the recorded sett should be avoided in the first instance by keeping works outside 30m. If this is not possible, any further surveys and mitigation/licencing should be reviewed once the levels of activity at the sett and works that may impact the sett are determined. If it is found the sett is likely to be directly impacted following this review, it would have to be closed under licence from Natural England. The findings of the camera trap survey will be required to determine the need for any necessary licensing and mitigation measures.

[1] The Protection of Badgers Act 1992. Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents

[2] Van Berkel, T. (2014) Expedition Field Techniques Camera Trapping for Wildlife Conservation. Royal Geographical Society Available at https://www.rgs.org/CMSPages/GetFile.aspx?nodeguid=8b5f8856-9572-4a11-8066-e4bf6ec57a97&lang=en-GB

A.1 Badger Sett Location

Photograph 1. One of seven badger sett entrances identified.

Red Line Boundary

Badger Sett

30m Buffer of Badger Sett

Ccordinate System: British National Grid

Metres

0 360 720

Rev	Date	By	Chkd	Appd	Authd
P01	03/02/25	CWILL	CESL	YYL	FMAX

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Client

uniper

Project Name

North Killingholme Carbon Capture Plant

Drawing Title

Badger Sett [CONFIDENTIAL]

Scale

1:15,000

Role

GEN

Suitability

Issued

Project Number

305719-00

Rev

P01

Figure Number

NKCC_ENV_ARP_FIG_008

A.3 Risk identification

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
Construction stage risk								
Flooding	Extreme weather event Flash Flooding	Pollution event in hydrologically connected watercourse caused by flooding	Environmental designations Local community	Section 6.11 Water Resources and Flood Risk states that the Main Site is mapped in an area of high fluvial and coastal flood risk, with the majority of the Site in Flood Zone 2 or 3. The Site is mapped at risk of surface water flooding (pluvial flooding) in a number of areas for 1 in 30 (high risk), 1 in 100 (medium risk) and 1 in 1000 year scenarios (low risk). The areas at highest risk are associated with the minor watercourse/drain that flows along the southern boundary of the Site. The Site and study area are mapped as being underlain by the Burnham Chalk Formation, which is designated as a Principal Aquifer. Historical ground investigation data from boreholes in the area indicates that the Chalk bedrock beneath the site is in the order of 14 to 18m below ground level.	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	Best practice pollution prevention and response actions will be detailed in the Outline Construction Environment Management Plan (CEMP). Further details on mitigation of the pollution risk during construction will be outlined at the next stage.	Unknown at this stage	Scoped in
Fire	Wildfire	Wildfire caused by drought, heatwave or	Environmental designations	In North Lincolnshire, 220 non-dwelling fires were attended by the	Fatality / injury to public	Best practice fire prevention and response actions	Unknown at this stage	Scoped in

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
	Fire caused by construction machinery incident	lightning strike and spread to construction machinery and fuel storage Fire from construction machinery spreading to other buildings and machinery and the surrounding environment	Local community	Humber Fire and Rescue Service in 2023/24. The UK Fire Severity Index produces a map forecast (up to five days ahead) showing the risk of fire in locations across the UK, based on measurements including humidity and precipitation.	Damage to infrastructure Damage to habitats and injury/fatality of species individuals	will be detailed in the Outline CEMP. Further details on mitigation of the fire risk during construction will be outlined at the next stage.		
Severe weather	Localised flooding Heatwaves Drought	Pollution event in hydrologically connected watercourse caused by flooding Wildfire caused by drought, heatwave or lightning strike and spreading to construction machinery, fuel storage and the	Environmental designations Local community	Average temperatures in Lincolnshire for the 2023 period were 4.39°C during the winter and 15.53°C during the summer. Rainfall reached an average of 159.6mm during the winter and 232mm during the summer.[1] See Section 6.11 for flooding baseline.	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	**Pollution** Best practice pollution prevention and response actions will be detailed in the Outline CEMP. Further details on mitigation of the pollution risk during construction will be outlined at the next stage.	Unknown at this stage	Scoped in

[1]Website: Lincolnshire County Council Average Rainfall and Temperature data. Published March 19 2024 https://lincolnshire.ckan.io/dataset/average-rainfall-temperature/resource/99d2a520-c8a1-4d82-832c-fdc33291e954 [Accessed 9th July 2024]

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
		surrounding environment				**Fire** Best practice fire prevention and response actions will be detailed in the Outline CEMP. Further details on mitigation of the fire risk during construction will be outlined at the next stage.		
System failures	Damage to major sewer/gas pipe by construction machinery leading to the pollution of a watercourse or habitat Damage to an electricity cable by machinery	Pollution event caused by damage to storm or foul water drainage or gas mains Disruption or prevention of supply of electricity and/or gas to Site and surrounding area Falling of pylons and live wires onto local roads	Environmental designations Local community and businesses	Utilities plans were not available at the time of writing but a worst case assumption has been made that the Site will have existing infrastructure including sewer, gas and electricity systems. This will be verified when the utilities information is available.	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	**Pollution** Best practice pollution prevention and response actions will be detailed in the Outline CEMP. Further details on mitigation of the pollution risk during construction will be outlined at the next stage. **Disruption to supply** Further details on mitigation of the supply disruption	Unknown at this stage	Scoped in

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
						risk during construction will be outlined at the next stage. **Falling of pylons** Further details on mitigation of the electricity infrastructure damage risk during construction will be outlined at the next stage.		
Transport accidents	Transport accidents involving construction vehicles	Collision between construction vehicles and/or non-site related vehicles	Local community	Section 6.10 Traffic and Transport states that the Proposed Development is situated north of Haven Road and west of Clough Lane, falling within the administrative boundary of North Lincolnshire Council (NLC). NLC holds the responsibility for both Planning and Highways matters in this administrative area. The movement of HGVs delivering construction materials and plant to the Site are anticipated to result in temporary impacts on the surrounding	Fatality / injury to public	Section 6.10 Traffic and Transport states the Proposed Development is not expected to result in changes which could significantly affect accidents and safety during construction because it is an explicit requirement of the highway authorities that any planning application proposals do not	No	Scoped out

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
				road network and nearby receptors. It is anticipated there will be a peak workforce of around 500 employees per day.		unacceptably increase safety risks. Accidents and safety is therefore scoped out of further assessment and will not be considered in the ES.		
Industrial accidents	Construction incident leading to knock-on effect on nearby COMAH sites	Construction machinery fire spreading to nearby COMAH sites and causing an explosion Explosion at a COMAH site causing a fire and/or explosion at the Proposed Development	Environmental designations Local community	There are five COMAH sites within 4.8km of the proposed development's postcode (DN40 3NR) that are subject to the COMAH Regulations: a. Immingham Prax Lindsay Oil Refinery is an Upper Tier Oil Refinery site located 1.3km to the west of the Proposed Development. Petroleum products and alternative fuels are held on site which pose a fire and/or explosion risk. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	It is assumed that the COMAH sites would have strict emergency response plans in place to mitigate the risk of an incident, as well as the potential impacts from an incident. Best practice fire prevention and response actions will be detailed in the Outline CEMP. Further details on mitigation of the fire risk during construction will be outlined at the next stage.	Unknown at this stage	Scoped in

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
				and aquatic environment. b. Killingholme PSD, an Upper Tier site involved in fuel storage and distribution located 0.8km to the east of the Proposed Development. Flammable liquids and gases are held onsite which could result in fires and/or explosions. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment. c. Humber Refinery is an Upper Tier Petrochemical and oil refinery site located immediate west of the Proposed Development. Petroleum products and alternative fuels are held on site which pose a fire and/or explosion risk.				

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
				Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment. d. Humber LPG terminal, an Upper Tier site involved in fuel storage and distribution located 1.2km to the east of the Proposed Development. Flammable liquids and gases are held onsite which could result in fires and/or explosions. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment. e. Rosper Road – VPI Immingham LLP is a Lower Tier Power generation, supply and distribution site				

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
				located 0.3 km to the south-east of the Proposed Development. Flammable liquids and gases are held onsite which could result in fires and/or explosions. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment.				
Pollution incidents	Pollution of watercourse Ground contamination	Pollution of a watercourse, groundwater and surface water receptors from construction fuel spillage or disturbance of existing contaminated land on site	Environmental designations Local community	See section for 'flooding' above.	Injury to public Damage to habitats and injury/fatality of species individuals	See section for 'flooding' above.	Unknown at this stage	Scoped in
Vandalism and attacks	Attacks on infrastructure during construction	Explosion at Site caused by Improvised Explosive Device (IED) or	Environmental designations Local community	For the North Killingholme area, the largest number of crimes committed fall within the violence and sexual offences	Fatality / injury to public Damage to infrastructure	Site security details during construction will be defined at the next stage.	Unknown at this stage	Scoped in

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
		other explosive substance		category (19 reported crimes in the last year), followed by other theft offences (10). There were 657 crimes reported in the area in total last year.	Damage to habitats and injury/fatality of species individuals			
UXO	Disturbance of unknown UXO because of construction activity leading to explosion	Explosion of UXO caused by disturbance during construction works	Environmental designations Local community	The site of the Proposed Development (DN40 3NR) is considered to have a low Bomb Risk based on Zetica historical risk maps[2]. The Site is in area with nearby historical Luftwaffe targets. These include: • Dock Ports Killingholme, 1.9km to the east of the Proposed Development; and • The former RAF Goxhill airbase, 3.6km to the north-west. UXO have been found at the old RAF Goxhill airbase.	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	Confirmation of the need for a UXO survey and associated mitigation will be provided at the next stage.	Unknown at this stage	Scoped in

[2]Zetica Risk Maps. Available from: https://zeticauxo.com/guidance/risk-maps/ [Last accessed: 03/07/2024]

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
Operation stage risk								
Flooding	Extreme weather event Flash Flooding	Pollution event in hydrologically connected watercourse caused by flooding	Environmental designations Local community	Section 6.11 Water Resources and Flood Risk states that the Main Site is mapped in an area of high fluvial and coastal flood risk, with the majority of the Site in Flood Zone 2 or 3. The Site is mapped at risk of surface water flooding (pluvial flooding) in a number of areas for 1 in 30 (high risk), 1 in 100 (medium risk) and 1 in 1000 year scenarios (low risk). The areas at highest risk are associated with the minor watercourse/drain that flows along the southern boundary of the Site. The Site and study area are mapped as being underlain by the Burnham Chalk Formation, which is designated as a Principal Aquifer. Historical ground investigation data from boreholes in the area indicates that the Chalk bedrock beneath the site is in the order of 14 to 18m below ground level.	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	Best practice pollution prevention and response actions will be detailed in an operational management plan. Further details on mitigation of the pollution risk during operation will be outlined at the next stage.	Unknown at this stage	Scoped in
Fire	Wildfire	Wildfire caused by drought, heatwave or	Environmental designations	In North Lincolnshire, 220 non-dwelling fires were attended by the Humber	Fatality / injury to public	Further information of the fire	Unknown at this stage	Scoped in

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
	Fire caused by construction machinery incident	lightning strike and spread to construction machinery and fuel storage	Local community	Fire and Rescue Service in 2023/24. The UK Fire Severity Index produces a map forecast (up to five days ahead) showing the risk of fire in locations across the UK, based on measurements including humidity and precipitation.	Damage to infrastructure Damage to habitats and injury/fatality of species individuals	management plan that will be developed for use during operation will be provided at the next stage.		
Severe weather	Heatwaves Drought	Wildfire caused by drought, heatwave or lightning strike and spreading to, fuel storage and the surrounding environment	Environmental designations Local community	Average temperatures in Lincolnshire for the 2023 period were 4.39°C during the winter and 15.53°C during the summer. Rainfall reached an average of 159.6mm during the winter and 232mm during the summer. See flooding section for flooding baseline.	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	Further information of the fire management plan that will be developed for use during operation will be provided at the next stage.	Unknown at this stage	Scoped in
System failures	System failures have been scoped out of the operation of the Proposed Development as the likelihood of them being impacted by the operation of the Proposed Development is considered to be ALARP.							
Transport accidents	Section 6.10 Traffic and Transport has scoped out the risk of transport accidents during operation of the Proposed Development as the increased number of vehicles travelling to and from the Site are not anticipated to take the total above significant levels and the impact on the local highway network is considered to be negligible.							
Industrial accidents	Dangerous goods and hazardous	Explosions on Site caused by damage to	Environmental designations	It is assumed hazardous substances, including amines, will be used as part of the operation of the Proposed Development.	Fatality / injury to public	Further information on the management plan to prevent industrial	Unknown at this stage	Scoped in

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
	substances stored on Site. High pressure systems	dangerous goods. Fire spreading to nearby COMAH sites and causing an explosion or pollution incidents. Spillage of hazardous substances	Local community	Further details are not available at Scoping stage. There are five COMAH sites within 4.8km of the Proposed Development's postcode (DN40 3NR) that are subject to the COMAH Regulations: a. Humber LPG terminal, an Upper Tier site involved in fuel storage and distribution located 1.2km to the -east of the Proposed Development. Flammable liquids and gases are held onsite which could result in fires and/or explosions. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment. b. Humber Refinery is an Upper Tier Petrochemical and oil refinery site located immediate west of the Proposed Development. Petroleum products and	Damage to infrastructure Damage to habitats and injury/fatality of species individuals	accidents during operation will be provided at the next stage.		

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
				alternative fuels are held on site which pose a fire and/or explosion risk. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment. c. Immingham Prax Lindsay Oil Refinery is an Upper Tier Oil Refinery site located 1.3km to the west of the Proposed Development Petroleum products and alternative fuels are held on site which pose a fire and/or explosion risk. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment. d. Killingholme PSD, an Upper Tier site involved in fuel storage and distribution located 0.8kmkm to the east of the				

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
				Proposed Development. Flammable liquids and gases are held onsite which could result in fires and/or explosions. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment. e. Rosper Road – VPI Immingham LLP is a Lower Tier Power generation, supply and distribution site located 0.3km to the south-east of the Proposed Development. Flammable liquids and gases are held onsite which could result in fires and/or explosions. Accidental release of hazardous substances used and stored on site could be toxic to aquatic life and aquatic environment.				
Pollution incidents	Dangerous goods and hazardous substances stored on Site.	Spillage of hazardous substances	Environmental designations	It is assumed hazardous substances, including amines, will be used as part of the operation of the Proposed Development.	Damage to habitats and injury/fatality of species individuals	Further information on the management plan to prevent industrial	Unknown at this stage	Scoped in

Appendix A3 Risk identification

Risk event	Source	Pathway	Receptor	Baseline information	Reasonable worst consequence if event did occur	Mitigation	Could this lead to a major accident and/or natural disaster with existing mitigation in place?	Scoped in or out
				Further details are not available at Scoping stage.		accidents, including pollution, during operation will be provided at the next stage.		
Vandalism and attacks	Attacks on infrastructure during construction	Explosion at Site caused by Improvised Explosive Device (IED) or other explosive substance	Environmental designations Local community	For the North Killingholme area, the largest number of crimes committed fall within the Violence and sexual offences category (19 reported crimes in the last year), followed by other theft offences (10). There were 657 crimes reported in the area in total last year.	Fatality / injury to public Damage to infrastructure Damage to habitats and injury/fatality of species individuals	Further details on the security details during operation will be provided at the next stage.	Unknown at this stage	Scoped in
UXO	UXO has been scoped out of the operation of the Proposed Development as the likelihood of it being impacted by the operation of the Proposed Development is considered to be ALARP.							Scope out