# THE KEADBY 3 LOW CARBON GAS POWER STATION PROJECT

PINS Ref: EN010114

The Keadby 3 Low-Carbon Gas Power Station Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

# Preliminary Environmental Information (PEI) Report
# Non-Technical Summary

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: SSE Generation Limited

Date: November 2020

## DOCUMENT HISTORY

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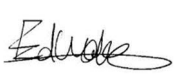
| Signed |  | Date | November 2020 |
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## GLOSSARY

| Abbreviation | Description |
|---|---|
| AEP | Annual Exceedance Probability - in relation to flooding, the 100-year flood (a flood likely to occur once every 100 years) can be expressed as the 1% AEP flood, which has a 1% chance of being exceeded in any year. |
| AGI | Above Ground Installation - installations used to connect gas pipelines to supply infrastructure; above ground installations are needed at the start and end of a pipeline and potentially at intervals along the route. |
| AIL | Abnormal Indivisible Load - a load that cannot be broken down into smaller loads for transport without undue expense or risk of damage. It may also be a load that exceeds certain parameters for weight, length and width. |
| ALARP | As Low as Reasonably Practicable – the level to which the risk is expected to be controlled. |
| AOD | Above Ordnance Datum - a spot height (an exact point on a map) with an elevation recorded beside it that represents its height above a given datum. |
| AQMA | Air Quality Management Area - an area designated by the local authority to be managed, through the implementation |

| Abbreviation | Description |
|---|---|
| | of a Local Air Quality Management Area, to ensure that it meets national air quality objectives. |
| AQS | Air Quality Objectives - the target date on which exceedances of an air quality standard must not exceed a specified number. |
| BGL | Below Ground Level – groundwater level. |
| BGS | British Geological Survey - provider of objective and authoritative geoscientific data, information and knowledge for the UK. |
| CAMS | Catchment Abstraction Management Strategy - assess the amount of water available in each river catchment. |
| CCP | Carbon Capture Plant – plant used to capture carbon dioxide ($CO_2$) emissions produced from the use of fossil fuels in electricity generation and industrial processes. |
| CCGT | Combined Cycle Gas Turbine - a highly efficient form of energy generation technology. A gas turbine burns gas to drive a turbine to generate electricity. Surplus heat from the turbine is used to generate steam that is used to generate further electricity. |
| CCR | Carbon Capture Resilience - the resilience of a development to projections for climate change, including how the development design would be adapted to take account for the projected impacts of climate change. |
| CCR | Carbon Capture Readiness – a power station is Carbon Capture Ready where it has been demonstrated that: sufficient space is available on or near the site to accommodate carbon capture equipment in the future; retrofitting carbon capture technology is technically feasible; that a suitable area of deep geological storage exists for the storage of captured $CO_2$; transporting $CO_2$ to the storage location is technically feasible and carbon capture and storage is likely to be economically feasible. |
| CO | Carbon Monoxide - a colourless, odourless and tasteless gas slightly less dense than air. |
| $CO_2$ | Carbon Dioxide - an inorganic chemical compound with a wide range of commercial uses. |

| Abbreviation | Description |
|---|---|
| CWTP | Framework Construction Workers' Travel Plan – outlines travel plans for construction workers for example public transport, cycling and car sharing. |
| DCO | Development Consent Order - made by the relevant Secretary of State pursuant to The Planning Act 2008 to authorise a Nationally Significant Infrastructure Project. A DCO can incorporate or remove the need for a range of consents which would otherwise be required for a development. A DCO can also include rights of compulsory acquisition. |
| EA | Environment Agency - a non-departmental public body sponsored by the United Kingdom government's Department for Environment, Food and Rural Affairs (DEFRA), with responsibilities relating to the protection and enhancement of the environment in England. |
| EIA | Environmental Impact Assessment - a term used for the assessment of environmental consequences (positive or negative) of a plan, policy, program or project prior to the decision to move forward with the proposed action. |
| ES | Environmental Statement - a report in which the process and results of an Environment Impact Assessment are documented. |
| FRA | Flood Risk Assessment - an assessment of the flood risk from all sources of flooding for a development |
| GHG | Greenhouse Gases - atmospheric gases such as carbon dioxide, methane, chlorofluorocarbons, nitrous oxide, ozone, and water vapour that absorb and emit infrared radiation emitted by the Earth's surface, the atmosphere and clouds. |
| HE | Historic England - an executive non-departmental body of the British Government tasked with protecting the historical environment of England. |
| HER | Historic Environment Record - information services that provide access to comprehensive and dynamic resources relating to the archaeology and historic built environment of a defined geographic area. |

| Abbreviation | Description |
|---|---|
| HGV | Heavy Goods Vehicle - vehicles with a gross weight in excess of 3.5 tonnes. |
| HRSG | Heat Recovery Steam Generator - an energy recovery heat exchanger that recovers heat from a hot gas stream. It produces steam that can be used in a process (cogeneration) or used to drive a steam turbine (combined cycle). |
| HRA | Habitats Regulations Assessment - the assessment of the impacts of implementing a plan or policy on a Natura 2000 site required under the Habitats Directive. |
| ICCI | In-Combination Climate Change Impact - the in-combination effects of a changing climate. |
| IED | Industrial Emissions Directive – European Union Directive committing member states to control and reduce the impact of industrial emissions on the environment. |
| INNS | Invasive Non-native Species - species that have occurred outside of their natural range. Invasive species have the potential to hinder or prevent survival of others within the ecosystem. |
| kV | Kilovolt - unit of voltage. |
| LBMEP | Landscaping and Biodiversity Management and Enhancement Plan |
| LCA | Landscape Character Area - areas of homogenous landscape or townscape character. Typical components defining character include landform, land cover, settlement pattern, form and enclosure. |
| LWS | Local Wildlife Site - defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species with a national, region. |
| MA&D | Major Accidents and Disasters - events, including natural and manmade hazards/external hazards, that may cause immediate or delayed serious environmental effects to human health, welfare and/ or the environment |

| Abbreviation | Description |
|---|---|
| MPS | Marine Policy Statements - the framework for preparing Marine Plans and taking decisions affecting the marine environment. |
| MW | Megawatt - unit of power. |
| NCA | National Character Area - a natural subdivision of England based on a combination of landscape, biodiversity, geodiversity and economic activity. |
| NGR | National Grid Reference - system of geographical grid references. |
| NIA | Nature Improvement Area - established to create joined up and resilient ecological networks at a landscape scale. |
| NIC | National Infrastructure Commission - provides the government with advice on major long-term infrastructure challenges |
| NIP | National Infrastructure Plan - sets out a vision for the development of infrastructure within the UK. |
| NLC | North Lincolnshire Council |
| NPPF | National Planning Policy Framework - The NPPF is part of the Government's reform of the planning system intended to make it less complex, to protect the environment and to promote sustainable growth. It does not contain any specific policies on Nationally Significant Infrastructure Projects, but its policies may be taken into account in decisions on DCO if the Secretary of State considers them to be both important and relevant. |
| NPS | National Policy Statement - Statements produced by Government under the Planning Act 2008 providing the policy framework for Nationally Significant Infrastructure Projects. They include the Government's view of the need for and objectives for the development of Nationally Significant Infrastructure Projects in a particular sector such as energy and are used to determine applications for such development. |
| NRMM | Non-Road Mobile Machinery - machinery typically used off the road, such as construction machinery. |

| Abbreviation | Description |
|---|---|
| NSIP | Nationally Significant Infrastructure Project - defined by the Planning Act 2008 and cover projects relating to energy (including generating stations, electric lines and pipelines); transport (including trunk roads and motorways, airports, harbour facilities, railways and rail freight interchanges); water (dams and reservoirs, and the transfer of water resources); waste water treatment plants and hazardous waste facilities. These projects are only defined as nationally significant if they satisfy a statutory threshold in terms of their scale or effect. |
| NSR | Noise Sensitive Receptor - locations or areas where dwelling units or other fixed, developed sites of frequent human use occur which may be sensitive to noise impacts. |
| NTS | Non-Technical Summary - a summary of the Environmental Statement written in non-technical language for ease of understanding. |
| OS | Ordnance Survey - the national mapping agency for Great Britain. |
| PEA | Preliminary Ecological Appraisal - an ecological assessment method which evaluates the existing ecological value of a site. |
| PEI | Preliminary Environmental Information - an initial statement of the main environmental information available for a study area. |
| Photomontage/ photowires | Inserting an image of a proposed development onto a photograph for the purposes of creating an illustrative representation of potential changes to existing views. |
| PINS | Planning Inspectorate – executive agency of the Ministry of Housing, Communities and Local Government of the United Kingdom Government. |
| Planning Act 2008 | An Act of Parliament in the UK intended to speed up the process of approving major new infrastructure projects. |
| Keadby Power Station Site | The existing Keadby Power Station site, comprising the land owned by the Applicant. |
| PRoW | Public Right of Way - A highway where the public has the right to walk. It can be a footpath (used for walking), a |

| Abbreviation | Description |
|---|---|
| | bridleway (used for walking, riding a horse and cycling), or a byway that is open to all traffic (including motor vehicles). |
| Ramsar | Wetland sites that are of international importance, as designated under Article 2(1) of the Convention on Wetlands of International Importance. |
| Receptor | A component of the natural or built environment (e.g. population, fauna and flora, a building or waterbody) that has potential to be affected by a project. |
| Residual Effect | The predicted consequential change on the environment from the impacts of a development, after mitigation. |
| Resource | A defined and generally collective environmental feature usually associated with soil, water, air, climatic factors, landscape, material assets, including the architectural and archaeological heritage that has potential to be affected by a project. |
| Rochdale Envelope | An approach to consenting and environmental impact assessment, (EIA) named after a UK planning law case, which allows the promoters of development projects to broadly define their schemes within agreed parameters to retain flexibility of design. |
| SAC | Special Area of Conservation – high quality conservation sites that are protected under the European Union Habitats Directive, due to their contribution to conserving those habitat types that are considered to be most in need of conservation. |
| Scoping | The process of identifying the issues to be addressed by the Environmental Impact Assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered to be not significant. |
| Scoping Opinion | The written opinion of the relevant authority, following a request from the applicant, as to the information to be provided in an Environmental Statement. |
| Scoping Report | A report which records the outcomes of the scoping process and is typically submitted as part of a formal request for a Scoping Opinion. |

| Abbreviation | Description |
|---|---|
| SCR | Selective Catalytic Reduction – a means of converting nitrogen oxides with the aid of a catalyst into diatomic nitrogen and water. |
| Secondary Aquifer | There are two types of secondary aquifer designations:<br>Secondary A: permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers; and<br>Secondary B: predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers. |
| SM | Scheduled Monuments – an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. Scheduled monuments are protected by the Ancient Monuments and Archaeological Areas Act 1979. |
| SOAEL | Significant Observed Adverse Effect Level – the level of noise exposure above which significant adverse effects on health and quality of life occur. |
| SoS | The Secretary of State – the decision maker for DCO applications and head of Government department. In this case, the SoS for the Department for Business, Energy and Industrial Strategy (formerly the Department for Energy and Climate Change). |
| SSSI | Site of Special Scientific Interest - nationally designated Sites of Special Scientific Interest, an area designated for protection under the Wildlife and Countryside Act 1981 (as amended), due to its value as a wildlife and/or geological site. |
| Stakeholder | An organisation or individual with a particular interest in a development project. |

| Abbreviation | Description |
|---|---|
| Study area | The area within which environmental effects which may be classed as significant are assessed (i.e. extending a distance from the project footprint). |
| SWMP | Site Waste Management Plan – a plan setting out how resources will be managed, and waste controlled at all stages during a construction project. |
| TTWA | Travel to Work Area – statistical tool used by UK Government agencies and local authorities to indicate an area where the population would generally commute to a larger town or city for employment purposes. |
| Visual Amenity | The enjoyment or benefit that people (individually or as a group) gain from a particular view that may change as a consequence of a proposed development during its construction, operation or decommissioning. |
| WFD | Water Framework Directive – European Union directive which commits member states to achieve good qualitative and quantitative status of all water bodies. |
| Worst-case assumption (or scenario) | An assumption adopted within an environmental impact assessment which identifies a scenario or parameter that would likely result in the maximum environmental effect (termed the worst-case). This is typically applied where uncertainty exists over the detail of a particular development component or approach to project delivery, for which a basis of assessment is needed. |
| WSI | Written Scheme of Investigation – documents which set out the approach to undertaking archaeological monitoring of ground investigation works. |
| ZCH | Zero Carbon Humber Partnership - SSE Thermal is part of the Zero Carbon Humber Partnership, working with other leading companies in the Humber area to decarbonise industry and power generation in the region. |

| Abbreviation | Description |
|---|---|
| ZTV | Zone of Theoretical Visibility – a computer generated tool to identify the likely (or theoretical) extent of visibility of a development. |

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## TABLES



## FIGURES

# 1.0 NON-TECHNICAL SUMMARY

## 1.1 Introduction

1.1.1 This document presents a Non-Technical Summary (NTS) of the Preliminary Environmental Information (PEI) Report that has been prepared in support of a formal pre-application consultation for the construction and operation (including maintenance) of a proposed low carbon Combined Cycle Gas Turbine (CCGT) Power Station within the site of the existing Keadby Power Station, near Scunthorpe, North Lincolnshire. In this NTS, and throughout the PEI Report, this is referred to as the 'Proposed Development'.

1.1.2 An initial (Stage 1) consultation period was undertaken in May 2020. This second (Stage 2) consultation is being undertaken in advance of the proposed submission of an application for development consent in early 2021.

1.1.3 The Proposed Development and land within the application boundary (referred to as the 'Proposed Development Site') are described in this NTS. The location and Proposed Development Site boundary is shown on Figure NTS1.

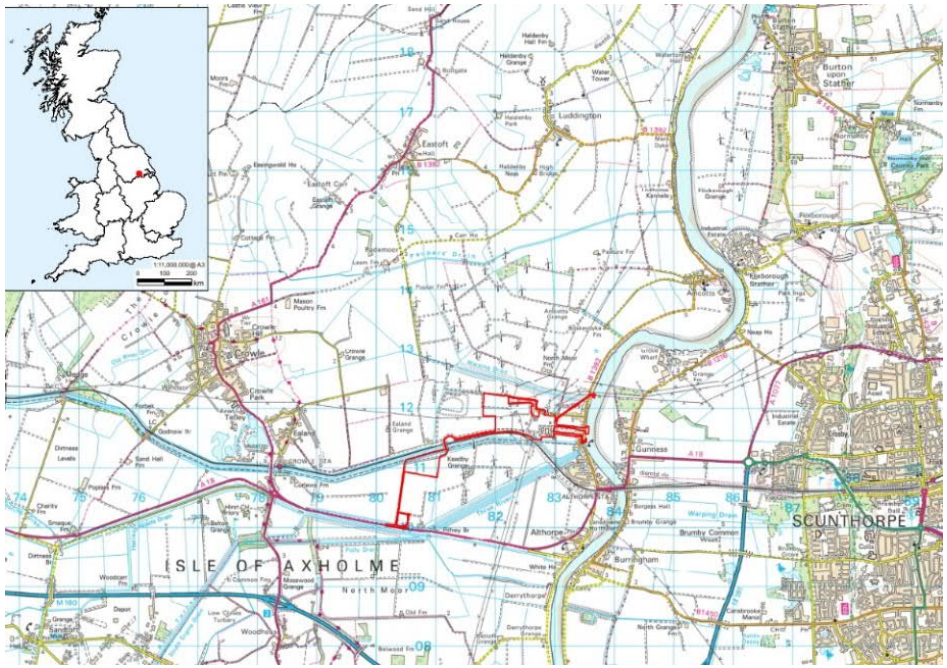



Figure NTS1: Proposed Development Site Location Plan

1.1.4 The NTS provides a summary of the PEI Report which has been prepared for the Stage 2 consultation. The NTS describes the Proposed Development and provide an overview of the key findings of the PEI Report. Technical details are provided in the PEI Report (Volume I – Main Report,

Volume II – Technical Appendices, and Volume III – Figures).

1.1.5 The PEI Report has been prepared to comply with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ('the EIA Regulations'). An Environmental Statement (ES) recording the completed Environmental Impact Assessment (EIA) will be submitted with the application for development consent.

## 1.2 The Applicant

1.2.1 The Applicant is part of the FTSE-listed SSE plc, one of the UK's largest and broadest-based energy companies, and the country's leading generator of renewable energy. Over the last 20 years, the SSE Group has invested over £20bn to deliver industry-leading offshore wind, onshore wind, CCGT, energy from-waste, biomass, energy networks and gas storage projects. The Applicant owns and operates the adjacent Keadby 1 Power Station and is in the process of constructing Keadby 2 Power Station. SSE Renewables also operates the Keadby Windfarm which lies to the north and south of the Proposed Development Site and generates renewable energy from 34 turbines, with a total installed generation capacity of 68MW.

1.2.1 The Applicant has produced a 'Greenprint' document (SSE, 2020) that sets out a clear commitment to investment in low carbon power infrastructure, which includes investment in flexible sources of electricity generation and storage for times of low renewable output which will complement other renewable generating sources, either using low-carbon fuels and/ or capturing and storing carbon emissions.

1.2.2 The design of the Proposed Development represents one component within a clear route to decarbonisation and is consistent with SSE's commitment to reduce carbon emissions by 50% by 2030, based on a 2018 baseline.

# 2.0 ASSESSMENT METHODOLOGY

## 2.1 Environmental Impact Assessment Methodology

2.1.1 An EIA is an environmental assessment process to ensure that consenting decisions are made with knowledge of the likely significant effects of a future development. The EIA process presented in the PEI Report (Volume I-III) follows a standard EIA methodology, which is summarised in this section and illustrated in Figure NTS2.

2.1.2 The objective of the EIA process is to anticipate the changes (or 'impacts') that may occur to the environment as a result of a proposed development. The changes are compared to the environmental conditions that would have occurred without the proposed development (defined as 'the baseline conditions').

2.1.3 The EIA process identifies potentially sensitive 'receptors' that may be affected by these changes (e.g. people living near the development, local flora and fauna) and defines the extent to which these receptors may be affected by the predicted changes (i.e. whether or not the receptors are likely to experience a 'significant effect').

2.1.4 Where possible, the EIA uses standard methodologies, based on legislation, defined standards and accepted industry criteria. This is set out in detail in each technical chapter of the PEI Report (Volume I).

2.1.5 For the purpose of the PEI Report, adverse and beneficial effects are described as 'significant' or 'not significant'. Where the EIA predicts a significant adverse effect on one or more receptors, mitigation measures are identified where possible to avoid or minimise the effect, or to reduce the likelihood of it happening. The use of such mitigation in the case of the Proposed Development will be secured through requirements (similar to planning conditions) included within the draft DCO or through other legislation and consenting regimes. Details of the EIA Assessment Methodology are provided within Chapter 2: Assessment Methodology (PEI Report, Volume I).

2.1.6 In general, the classification of an effect is based on the magnitude of the impact and sensitivity or importance of the receptor, using the matrix shown

in Table NTS1. Moderate and major effects are considered to be 'significant' for the purposes of the EIA Regulations in accordance with standard EIA practice.

2.1.7 The environmental impacts and effects of the Proposed Development are assessed at key stages in its construction and operation (including maintenance and use), and where possible and relevant, its eventual decommissioning. A summary of significant effects is outlined in Chapter 20: Summary of Significant Effects (PEI Report Volume I).

### Table NTS1: Classification of effects

| Magnitude of Impact | Sensitivity/Importance of Receptor | | | |
|---|---|---|---|---|
| | High | Medium | Low | Very Low |
| High | Major | Major | Moderate | Minor |
| Medium | Major | Moderate | Minor | Negligible |
| Low | Moderate | Minor | Negligible | Negligible |
| Very Low | Minor | Negligible | Negligible | Negligible |

## 2.2 EIA Scoping

2.2.1 EIA Scoping is a process that is designed to identify relevant topics that should be included in the EIA and reported in the PEI Report and the subsequent Environmental Statement (ES).

2.2.2 An EIA Scoping Report and a request for an EIA Scoping Opinion, under Regulation 10 of the EIA Regulations, was submitted to the Planning Inspectorate (PINS) and relevant consultees on 15th May 2020. The EIA Scoping exercise has provided an opportunity for PINS and consultees to comment on the extent and approach to the environmental assessments proposed to be undertaken. A copy of the Scoping Report is provided within Appendix 1A: Scoping Report (PEI Report Volume I).

2.2.3 A Scoping Opinion was received from PINS on 26 June 2020 and is presented within Appendix 1B: Scoping Opinion (PEI Report Volume II).

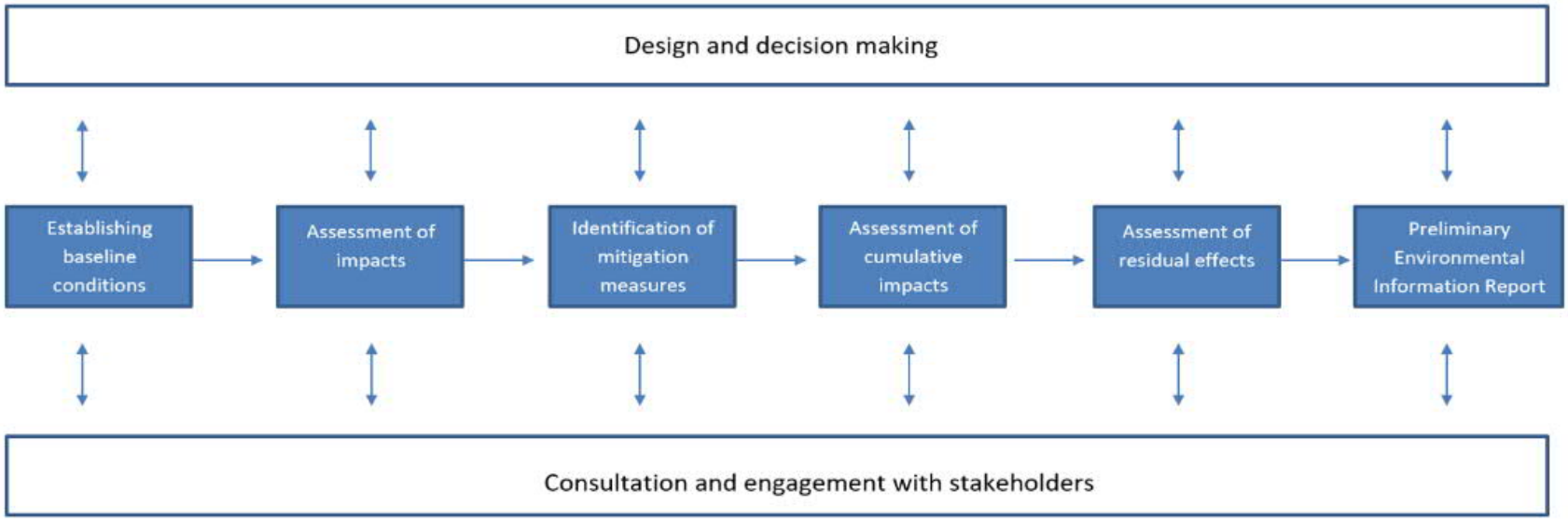



Figure NTS2: EIA Methodology

## 2.3 PEI Report

2.3.1 Following the completion of an EIA Scoping Report and publication of PINS' Scoping Opinion, the environmental information for a DCO application is reported in two stages. The PEI Report is prepared to inform statutory consultation with the public and other stakeholders about the proposed development, based on the preliminary environmental information available at the time of consultation.

2.3.2 Following the statutory consultation period, the ES is then prepared to accompany the DCO application and includes the EIA of the proposed development, taking account of any design evolution that has taken place, as well as feedback received during consultation.

2.3.3 The PEI Report for the Proposed Development includes assessments of the following environmental topics:

- Chapter 8: Air Quality;
- Chapter 9: Noise and Vibration;

- Chapter 10: Traffic and Transport;
- Chapter 11: Biodiversity and Nature Conservation;
- Chapter 12: Water Resources and Flood Risk;
- Chapter 13: Geology, Hydrogeology and Land Contamination;
- Chapter 14: Landscape and Visual Amenity;
- Chapter 15: Cultural Heritage;
- Chapter 16: Socio-economics;
- Chapter 17: Climate Change and Sustainability; and
- Chapter 18: Major Accidents and Disasters; and
- Chapter 19: Cumulative and Combined Effects.

2.3.4 The PEI Report comprises three volumes, along with this non-technical summary, and largely reflects the proposed format of the final ES as outlined in Table NTS2.

## Table NTS2: PEI Report Contents

| PEI Report Volume | Content |
|---|---|
| Volume I | This Volume of the PEI Report is structured into Chapters.<br><br>Chapters 1 and 2 presents an introduction to the Keadby 3 Low Carbon Gas Power Station project and EIA assessment methodology.<br><br>Chapters 3 to 6 present a description of the Proposed Development Site; the components of the Proposed Development and their construction and decommissioning, including programme and the alternatives considered.<br><br>Chapter 7 presents the planning policy context.<br><br>Chapters 8 – 18 present the preliminary findings of the environmental assessments for the Proposed Development, including likely significant effects identified at this stage.<br><br>Chapter 19 provides a preliminary assessment of the potential for cumulative and combined effects to occur as a result of the Proposed Development.<br><br>Chapter 20 provides a summary of the identified potential significant ``environmental effects identified |
| 2 - Appendices | Presents additional information to support the preliminary assessments of the Proposed Development outlined in Volume I. |
| 3 - Figures | Presents figures that accompany chapters in Volume I and II of the PEI Report. |
| 4 – Non-Technical Summary | A stand-alone summary of the PEI Report volumes listed below in non-technical language. |

# 3.0 DESCRIPTION OF EXISTING ENVIRONMENT

## 3.1 The Existing Site and Surroundings

3.1.1 The Proposed Development Site is located within the boundary of the existing Keadby Power Station site near Scunthorpe, Lincolnshire. The majority of the land is within the ownership of the Applicant, and is centred on national grid reference 482351, 411796.

3.1.2 The Keadby Power Station site currently encompasses the operational Keadby site and the site for Keadby 2 Power Station, which is under construction. It falls within the administrative area of North Lincolnshire Council (NLC).

3.1.3 The Proposed Development Site is located west of Keadby 2 Power Station and encompasses an area of approximately 88.1 hectares (ha), as shown in Figure NTS3. This area includes land adjacent to both Keadby 1 and Keadby 2 Power Stations and the National Grid 400kV Substation, for the purposes of facilitating connections to the Proposed Development for gas, electricity, water and other necessary infrastructure.

Figure NTS3: View south-east across the Proposed Development Site

3.1.4 Beyond the current Keadby Power Station site, land use is almost entirely low lying arable land interspersed with scattered villages, however, the immediate site surroundings have been developed in recent years with power related infrastructure, including the pylons associated with the existing National Grid 400kV Substation located within the Proposed Development Site and the operational Keadby Windfarm to the north and east of the Proposed Development Site.

## 3.2 Parts of the Proposed Development Site

3.2.1 For the purposes of the PEI Report, the naming conventions given to components of the Proposed Development (described in section 4) are used to describe parts of the Proposed Development Site, including:

- Proposed Power and Carbon Capture Site ('Proposed PCC Site');
- Electrical Connection Area to National Grid 400 kilovolt (kV) Substation;
- Emergency Vehicle Access Road and Potential Electrical Connection to 132KV Substation;
- Land within the Keadby Power Station site for the purposes of facilitating connections to the Proposed Development for natural gas supply, and other necessary infrastructure (including 'Gas Connection Corridor');
- Water Connection Corridors (two potential abstraction options are under consideration – the 'River Water Abstraction Option' and the 'Canal Water Abstraction Option'; and a 'Water Discharge Corridor' will be required);
- Waterborne Transport Offloading Area;
- Additional Abnormal Indivisible Load Route;
- Indicative Construction Laydown Areas;
- Construction and Operational Access Route; and
- A18 junction improvement option.

3.2.2 An indicative layout for the Proposed Development Site is shown in Figure NTS4.

3.2.3 The Proposed PCC Site, shown on Figure NTS4, covers an area of approximately 19ha of the Keadby Power Station site that is located within Keadby Common. Of this 19ha, the CCGT and post-combustion carbon capture and compression plant (CCP) cover approximately 14ha in the north (referred to as the 'Main Site' in the PEI Report).

3.2.4 An overhead electricity transmission line associated with the existing National Grid 400kV Substation crosses the Proposed PCC Site. To the south of the overhead lines, the Proposed PCC Site includes a further 5ha of ancillary development including administration facilities, a control room, warehouse buildings and car parking areas.

3.2.5 Adjacent and to the east of the Proposed PCC Site, approximately 5ha of land will be used for the

maintenance and turnaround facilities for Keadby 2 Power Station and the Proposed Development. The approximate central point of the area where the main operational components of the Proposed Development would be sited in the Proposed PCC Site is at National Grid reference 482019, 412027.

3.2.6 At this preliminary stage in the design and development process, all layouts and areas shown are illustrative. It is envisaged that the areas of the Proposed Development Site will be further refined throughout the EIA process leading up to the submission of the DCO Application.

## 3.3 Potential Sensitive Receptors

3.3.1 A number of environmental receptors have been identified within and outside the boundary of the Proposed Development Site and are described in more detail in Chapter 3: The Site and Surrounding Area (PEI Report Volume I). Distances are provided as the shortest distance between the receptor and the closest point of the boundary of the Proposed Development Site and/or the Proposed PCC Site (including Main Site).

3.3.2 Key receptors for each topic area have been identified as part of the assessment process and details are included in the relevant technical chapters (Chapters 8 to 19, PEI Report Volume I). A brief summary is also provided below.

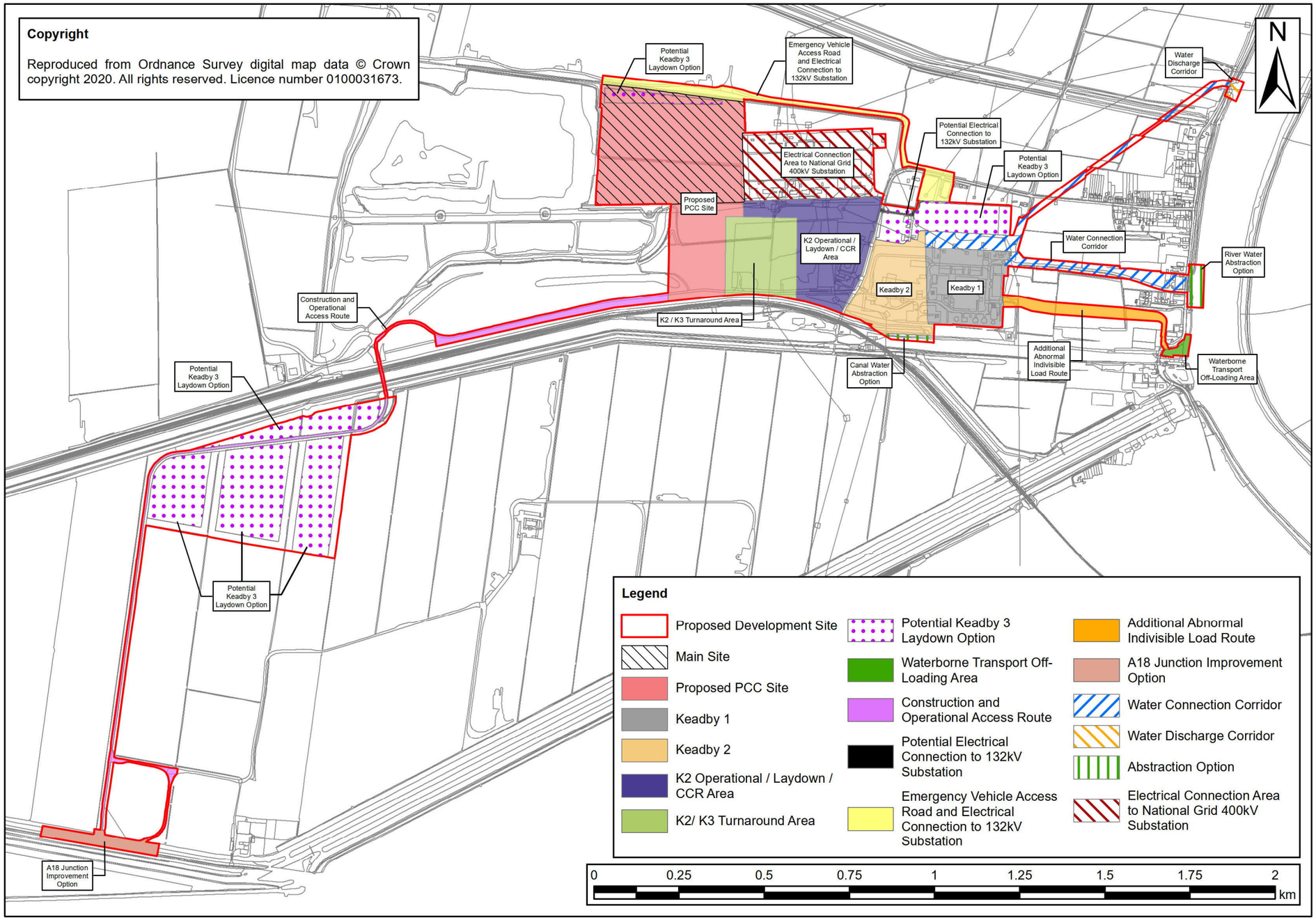



Figure NTS4: Indicative Site Layout Plan

Residential Receptors

3.3.3 The nearest settlement is the village of Keadby which is located immediately adjacent to the Water Discharge Corridor and approximately 1km east from the Proposed PCC Site at its closest point.

3.3.4 Other settlements nearby include: Gunness (580m) to the east on the eastern bank of the River Trent; Althorpe (1.7km) to the south-east (shown in Figure NTS5); Ealand (2.2km) to the west; and Crowle (3.6km) to the west. Closer to the Proposed PCC Site are a small number of residential areas and individual residential properties including:

- a pair of semi-detached residential properties 'Holly House' and 'Hawthorn House' located adjacent to and west of the Water Discharge Corridor;
- properties along Chapel Lane, located close to the Water Discharge Corridor;
- properties along Trent Road including No. 7 and 8 Mariners Arms Flats which are located to the south of the Water Connection Corridor (River Water Abstraction Option);
- property north of the former Auld South Yorkshire Inn on Trentside (the B1392), close to the Additional Abnormal Indivisible Load Route;
- an isolated property at Vazon Bridge, south of the Proposed Development Site boundary, adjacent to the Stainforth and Keadby Canal;
- Keadby Grange, in proximity to the east of the potential laydown areas under consideration within the agricultural fields north of A18;
- Pilfrey Farm, in proximity to the east of the skew construction access road from the A18;
- farms along Bonnyhale Road including Ealand Warpings and North Pilfrey Farm to the north-west of the Construction and Operational Access Route;
- Ealand Poultry Farm, located on Bonnyhale Moor Road, at a distance from the Proposed PCC Site; and
- North Moor Farm located at a distance from the Potential Electrical Connection to 132kV Substation.

Ecological Receptors

3.3.5 There are no statutory designated sites within the Proposed PCC Site. The River Trent, which is part of the Humber Special Area of Conservation (SAC), Ramsar site and Site of Special Scientific Interest (SSSI), is located within the Proposed Development Site where it intersects the Water Discharge Corridor and River Water Abstraction Option, as well as the Waterborne Transport Off-loading Area - components of the Proposed Development described below in Section 4.1.

3.3.6 The nationally designated Crowle Borrow Pits SSSI is located 1.2km to the west of the Proposed Development Site. There are additional statutory nature conservation designations located beyond this within the 15km study area; this is presented in Table 3-1 of Chapter 3: The Site and Surrounding Area (PEI Report Volume I).

3.3.7 There are no non-statutory designated ecological sites within the Proposed PCC Site although Keadby Boundary Drain Local Wildlife Site (LWS) is directly adjacent. Within the wider Proposed Development Site, the Canal Water Abstraction Option intersects the Stainforth and Keadby Canal Corridor LWS, which may provide the cooling water supply for the Proposed Development. The Hatfield Waste Drain LWS is crossed by the existing access road off the A18 and may be affected by the Proposed Development given that existing bridge over the LWS may need to be upgrade and the A18 junction into the Proposed Development improved.

3.3.8 While the Proposed Development is unlikely to affect the integrity of these designations, there remains potential for localised impacts and effects. An assessment of this is presented in Chapter 11: Biodiversity and Nature Conservation (PEI Report Volume I) supported by Appendix 11C: Preliminary Ecological Appraisal (PEI Report Volume II). Due to the proximity of statutory designated sites, an assessment under the Conservation of Habitats and Species Regulations (2017) will be required. A signposting report to inform a Habitat Regulations Assessment (HRA) will be provided to accompany the DCO Application which will address the relevant Natura 2000 sites.

Local Transport Receptors including Public Rights of Way

3.3.9 The preferred access to the Proposed Development Site during the construction and operation of the Proposed Development would be via the existing tarmacadam access road from the A18, as shown in Figure NTS6 below. The existing access to the wider Keadby Power Station site from the B1392, a single-carriageway road that serves the village of Keadby, is not proposed to be used for the Proposed Development during construction or operation.

3.3.10 A section of Chapel Lane is included in the Proposed Development Site where it incorporates the potential Electrical Connection to the existing Northern Powergrid 132kV Substation. This section of Chapel Lane will not be used by general construction traffic or staff during construction of the Proposed Development. Chapel Lane continues as an adopted highway, bisecting the existing Keadby Power Station Site within the Proposed Development Site.

Figure NTS5: View towards Proposed Development Site from King George V Bridge, Keadby

3.3.11 The Proposed Development Site intersects a number of other transport routes (Stainforth and Keadby Canal, River Trent and Scunthorpe to Doncaster passenger rail line).

3.3.12 No public rights of way (PRoW) are located within the Proposed Development Site. The nearest PRoW are:

- KEAD 10: a bridleway which runs north-south from Chapel Lane to a point north of Warping

Drain. The southernmost point of this footpath is approximately 40m from the Water Discharge Corridor;

- Footpath CROW11 located along Bonnyhale Road, approximately 250m north-west of the access road for the Proposed Development Site; and
- Footpath KEAD 9 which runs parallel to Warping Drain east-west from the northern terminus of Footpath KEAD 10 approximately 500m north of the Proposed PCC Site. Footpath LUDD9 joins Footpath KEAD 10.

Figure NTS6: View of the preferred access to the Proposed Development Site from the A18

3.3.13 A permissive 'traffic-free cycle route' south of the Stainforth and Keadby Canal is also noted together with a number of other PRoW located within the wider surrounding areas.

Hydrogeology and Flood Risk

3.3.14 The Proposed Development Site and the surrounding 1km study area are located within the extensive floodplain of the River Trent within the Isle of Axholme. Land is generally low lying at elevations below 10m Above Ordnance Datum (mAOD) and with very shallow gradients.

3.3.15 The land is particularly fertile due to its history of annual flooding from the Trent and peat soil. The Water Connection Corridor extends across the village of Keadby to the east of the existing power station, and the construction access route extends to the southwest of the existing Keadby 1 Power Station, crossing numerous watercourses including the Sheffield and South Yorkshire Navigation – Stainforth and Keadby Canal, North Soak Drain and South Soak Drain. In total, there are 16 surface water features ('waterbodies') within the Proposed Development Site or the 1km study area.

3.3.16 The Proposed Development Site is underlain by bedrock of the Mercia Mudstone Group. Above this,

superficial deposits consist mainly of Warp (sand and silt) with Alluvium (clay, sand, silt, and gravel) along the course and immediate margins of the River Trent.

3.3.17 The River Trent is considered tidal from the Humber Estuary to Keadby Bridge, just upstream of the Proposed PCC Site. The Environment Agency's 'Flood Map for Planning' illustrates that the entire Proposed Development Site and surrounding environs (other than a small, slightly elevated area between Keadby Common in the east, Keadby Boundary Drain in the west, and the canal to the south, and around Crowle) is within the Environment Agency's indicative Flood Zone 3. Flood Zone 3 is land assessed as having a 1 in 100 or greater annual probability of river flooding (>1% Annual Exceedance Probability or AEP), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5% AEP) in any year. However, land north of the canal benefits from flood defences (embankments) along the River Trent.

3.3.18 A preliminary assessment of Flood Risk has been undertaken and is presented within Appendix 12A: Flood Risk Assessment (PEI Report Volume II). A Conceptual Drainage Strategy has also been prepared to consider how drainage will be managed within the Proposed Development Site; this is provided within Appendix 12A (Section 5 – 6): Conceptual Drainage Strategy (PEI Report Volume II).

Cultural Heritage

3.3.19 There are no World Heritage Sites, scheduled monuments, grade I or II* listed buildings, conservation areas, registered parks and gardens, registered battlefields or protected wreck sites within the Proposed Development Site. A number of non-designated heritage assets are recorded in the North Lincolnshire Historic Environment Record (HER) within the Proposed Development Site.

3.3.20 Outside of the Proposed Development Site boundary, the closest assets are the scheduled monument (also a grade II listed building) at Keadby Lock on the Stainforth and Keadby Canal, located adjacent to the Waterborne Transport Offloading Area.

Figure NTS7: View east along Keadby Lock [1005204; 1342734] at its exit to the River Trent, adjacent to the Waterborne Transport Offloading Area

Figure NTS8: Waterborne Transport Offloading Area to the north of Keadby Lock which will be used during construction of the Proposed Development

3.3.21 One further scheduled monument lies approximately 4.4km north-east of the Proposed Development Site at Flixborough Saxon Nunnery and Site of All Saints Medieval Church and Burial Ground.

3.3.22 The closest listed building to the Proposed Development Site is the Grade II listed Keadby Lock, noted above. Other listed buildings in the study area are concentrated in settlements at Keadby, Althorpe, Gunness, Ealand and Crowle, as well as features

associated with land improvement such as late-18th to early-19th century drainage syphons and sluices

3.3.23 The nearest conservation area is located in Crowle approximately 2km west of the Proposed Development Site and provides the context and setting for some a number of listed buildings including the Grade I listed Church of St Oswald.

3.3.24 The non-designated Isle of Axholme area of Special Historic Landscape Interest (saved policy LC14 of the North Lincolnshire Local Plan) lies 2km south of the Proposed Development Site.

3.3.25 A number of non-designated standing buildings are identified within 1km of the Proposed Development Site and a number of non-designated below-ground heritage assets are recorded within the Proposed Development Site in the North Lincolnshire HER.

3.3.26 An assessment of these receptors has been undertaken and is reported within Chapter 15: Cultural Heritage (PEI Report Volume I). This is supported with Appendix 15A: Cultural Heritage Desk Based Assessment (PEI Report Volume II).

# 4.0 THE PROPOSED DEVELOPMENT

## 4.1 Components of the Proposed Development

4.1.1 The Proposed Development comprises a low carbon CCGT power station with a capacity[1] of up to 910MW electrical output.

4.1.2 At this stage, the final technology selection cannot yet be made as it will be determined by various technical and economic considerations and will be influenced by future UK Government policy. The design of the Proposed Development therefore incorporates a necessary degree of flexibility to allow for the future selection of the preferred technology in the light of prevailing policy and market conditions once a DCO is granted.

4.1.3 The Applicant is progressing concept design work on the preferred low carbon option using post-combustion CCP, having initially also considered an alternative low carbon technology pathway using hydrogen firing at the EIA Scoping Stage.

4.1.4 The Proposed Development will be designed to operate as a CCGT power station with a post-combustion CCP installed such that it can be operated as a dispatchable low carbon power station. The Proposed Development therefore incorporates equipment required for the capture and compression of carbon dioxide ($CO_2$) emissions from the power station for onward transport by a pipeline connecting at the Site to the Zero Carbon Humber (ZCH) Partnership infrastructure for subsequent compression and transport to offshore geological storage site.

4.1.5 The Applicant will be responsible for the construction, operation (including maintenance) and decommissioning of the Proposed Development including the equipment required within the Proposed Development Site for the capture of $CO_2$ emissions from the power station. ZCH Partnership would be responsible for the construction, operation and decommissioning of the $CO_2$ gathering network from onshore industrial facilities including the Proposed Development in the Humber Region. The

[1] The electrical generation capacity will be lower under normal operations when the emissions of $CO_2$ from the CCGT are captured in the Carbon Capture Plant. Further information regarding the operation of the Proposed Development is provided within Chapter 4: The Proposed Development (PEI Report Volume I).

$CO_2$ export pipeline will not form part of the Applicant's DCO Application but will be the subject of separate consent applications by third parties. Notwithstanding, it will still be necessary for the EIA in support of this DCO application to consider the potential in-combination and cumulative effects of these activities taking place; this is assessed in Chapter 19: Cumulative and In-Combination Effects (PEI Report Volume I).

4.1.6 A schematic of the Proposed Development is shown in Figure NTS9. The components of the Proposed Development include:

- a CCGT unit with associated CCP including compression equipment and associated utilities and cooling infrastructure;
- chemical storage facilities and other minor infrastructure/ services (at the Proposed PCC Site);
- Water Connection Corridors including a potential water intake from the Stainforth and Keadby Canal for cooling water and makeup water (Canal Water Abstraction Option) or a potential water intake from the River Trent (River Water Abstraction Option) which would be used in the event that the canal is either not available or does not have sufficient capacity for the Proposed Development. Used cooling water will be disposed to the River Trent (Water Discharge Corridor) and a towns water connection pipeline is proposed from the existing water supply within the Keadby Power Station for potable water;
- an Above Ground Installation (AGI) for connection to the National Grid gas supply infrastructure within Proposed Development Site;
- an Above Ground Installation (AGI) for connection to the third-party $CO_2$ export infrastructure, including compression facilities within the Proposed Development Site;
- new permanent access to the Proposed Development Site from the A18 and means of permanent emergency access via Chapel Lane; and
- a new surface water drainage system.

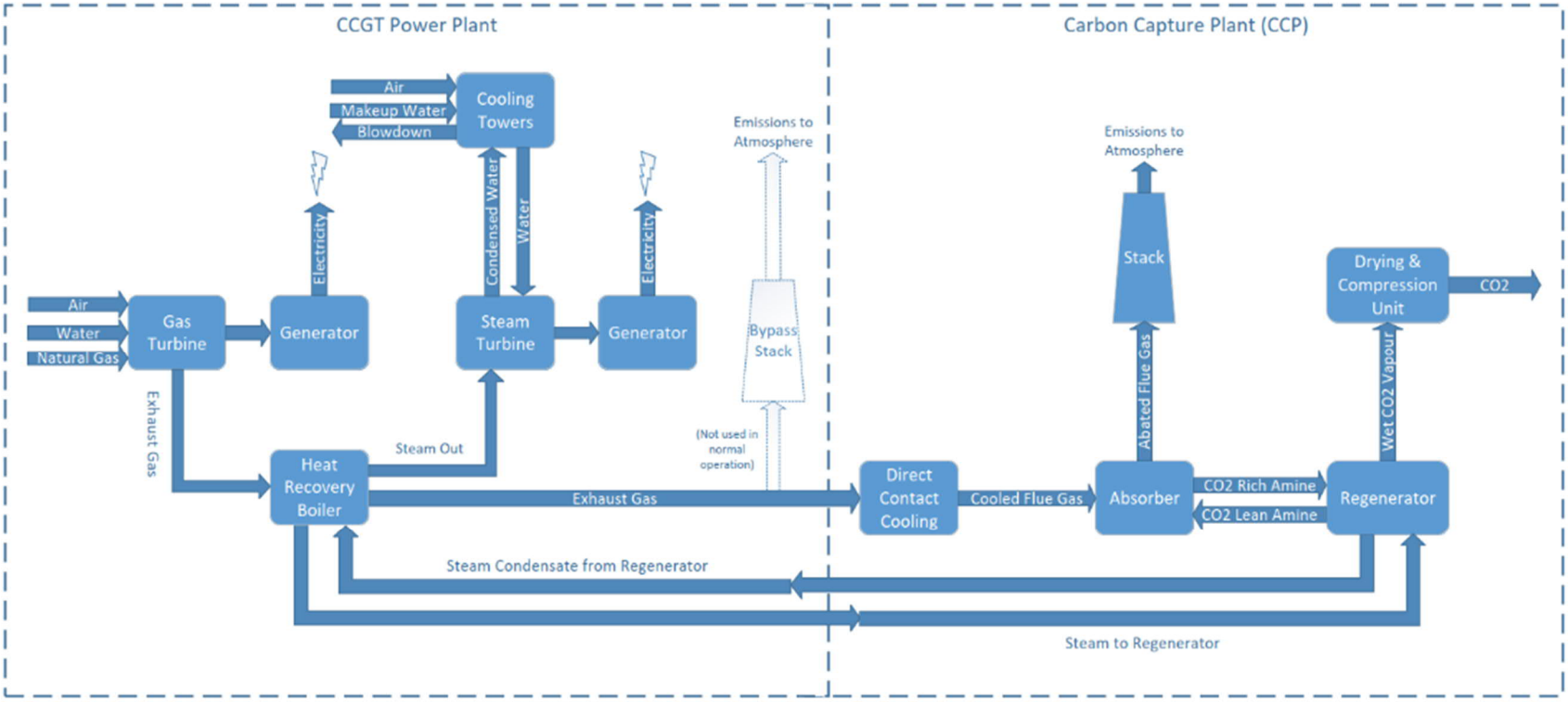



Figure NTS9: Schematic of Proposed Development

4.1.7 Associated development proposed includes:

- temporary construction and laydown areas including contractor facilities and parking;
- use of an existing Waterborne Transport Offloading Area and temporary Additional Abnormal Indivisible Load (AIL) Route;
- landscaping and biodiversity enhancement areas, internal access roads, roadways and footpaths;
- a permanent laydown and turnaround area for maintenance of the Proposed Development;
- security and fencing; and
- lighting.

Power Generation and Carbon Capture Plant

4.1.8 Natural gas that has been conditioned to the required temperature and pressure will be combusted in the CCGT. The gas turbine selected will be provided with burner technology to minimise the formation of nitrogen oxides ($NO_x$).

4.1.9 Following combustion, the hot product gases enter the gas turbine where they will expand across the blades of the turbine causing it to rotate and drive an electrical generator. The gas turbine exhaust gases are passed through the Heat Recovery Steam Generator (HRSG) to recover the useful heat in order to produce steam (at various pressures) to generate further power via a separate steam turbine, and for heating of process streams within the CCP.

4.1.10 Flue gases will be treated with Selective Catalytic Reduction (SCR) to further remove $NO_x$ to the required emission limits as prescribed by an Environmental Permit for the Proposed Development. Although it will be possible to discharge exhaust gases through a dedicated stack above the HRSG building (for example during outages of the CCP), during normal operation, this will not happen. Instead, the hot flue gases will enter the integrated CCP as shown in Figure NTS9.

4.1.11 The CCP will be capable of capturing up to 95% of the $CO_2$ emitted from the power station. The benefits of the Proposed Development will be to supply low-carbon electricity to the UK electricity supply grid and therefore displace higher carbon intensity grid electricity (or other power generation sources).

4.1.12 The CCP will include a $CO_2$ absorption column (absorber) and associated stack(s), a $CO_2$ removal column (stripper/ regenerator) and associated ancillary equipment including chemical storage (solvent) that will remove the $CO_2$ from the gas stream. The solvent to be used is the subject of ongoing technical studies but is assumed to be a solution of amines which have alkaline properties to which selectively absorb acidic gases such as $CO_2$.

4.1.13 The captured $CO_2$ will be treated in a gas conditioning and compression facility prior to export to the ZCH Partnership $CO_2$ pipeline to remove traces of oxygen.

4.1.14 Figure NTS10 shows an indicative layout of the Proposed PCC Site. Depending on the final technology selection and subject to detailed design,

the stack(s) could be located anywhere within a defined area within the Proposed PCC Site; at this stage the stack(s) location(s) cannot be fixed

4.1.15 Each of the main components of the Proposed PCC Site are described in detail in Chapter 4: The Proposed Development (PEI Report Volume I).

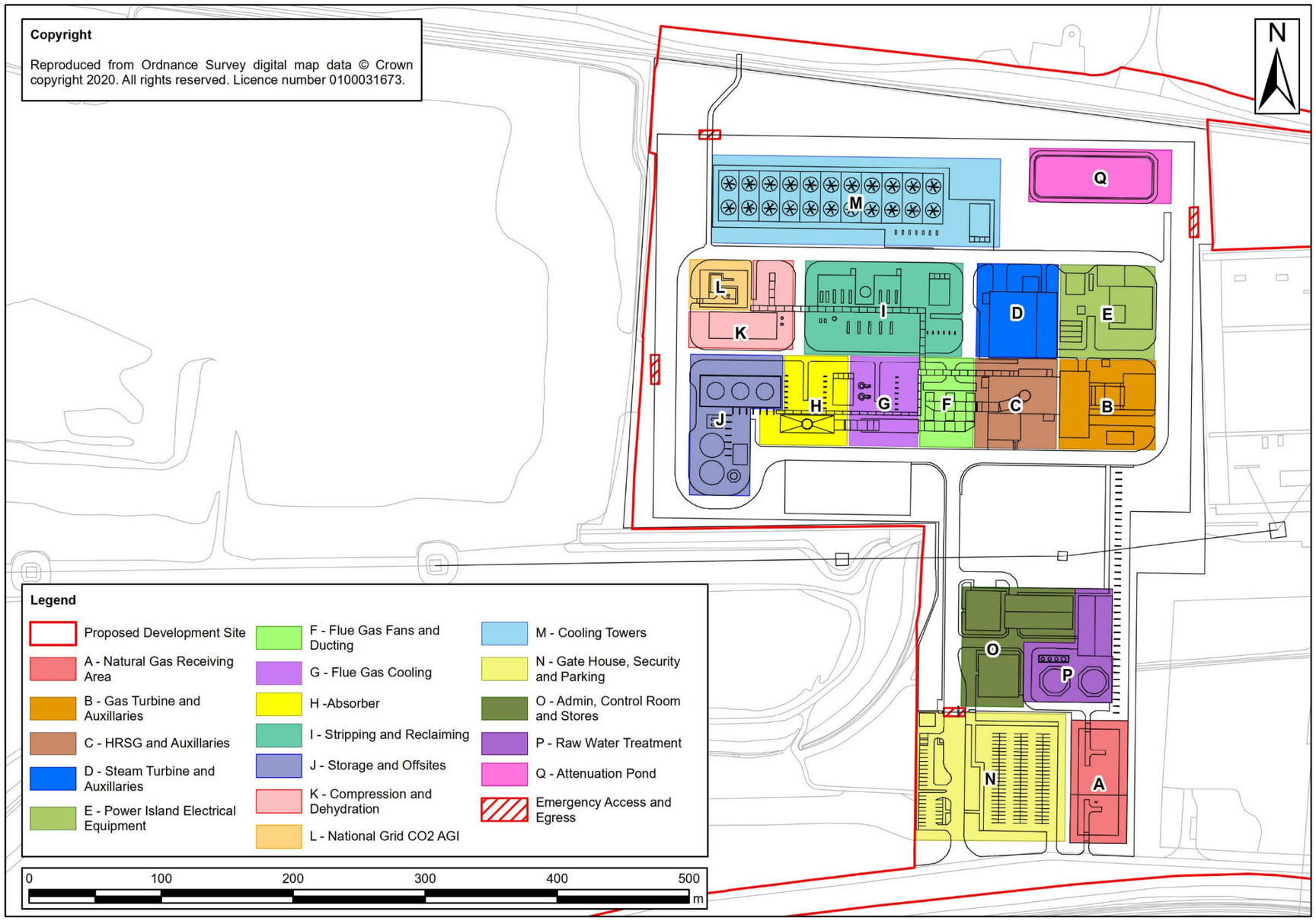



Figure NTS10: Indicative Proposed PCC Site Layout

## 4.2 Design Parameters

4.2.1 The design of the Proposed Development is following an iterative process, based on preliminary environmental assessments and consultation with statutory and non-statutory consultees.

4.2.2 A number of the design aspects and features of the Proposed Development cannot be confirmed until the tendering process for the design and construction of the power station has been completed, as it will depend on the contractor(s) selected and their specific configuration and selection of plant. Where design details cannot yet be finalised, a conservative approach has been adopted whereby the option that gives rise to the worst-case potential environmental impact has been assessed in the PEI Report. This is known as the 'Rochdale Envelope' approach.

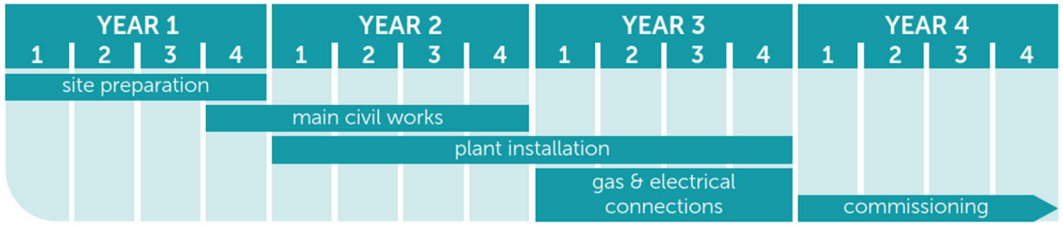
## 4.3 Proposed Development Construction

4.3.1 The Applicant would appoint one or more contractors for the construction of the Proposed Development. The Applicant is committed to ensuring the safe working environment for all its employees and contractors.

4.3.2 Construction of the Proposed Development could (subject to the necessary consents being granted and an investment decision being made) potentially start as early as Quarter 3 2022 when it is anticipated the consent would be granted. Following the discharge of any DCO requirements, construction activities are expected to be completed within three years, followed by commissioning.

4.3.3 An indicative construction programme is outlined in Table NTS3 below.

### Table NTS3: Indicative construction programme




4.3.4 The DCO Application would seek consent for commencement of the Proposed Development to take place up to seven years from the date of granting of the DCO to enable the Proposed

Development to be commenced at the most appropriate time to meet prevailing market needs and policy frameworks to enable its financing. For this reason, a scenario where construction commences later in the programme, up to 2029 (seven years after the DCO could be granted) has also been assumed as a reasonable worst-case for some technical assessments in the PEI Report.

4.3.5 During the construction phase, earthworks may be required to re-profile the Proposed Development Site, to produce a level platform, excavate foundations, import engineering fill material and/ or remove surplus material or remediate contaminated soils. A material cut and fill balance would be used to minimise waste arisings where reasonably practicable, although it is anticipated that some excess material will be generated that will require transportation off-site and some additional fill material may need to be imported to improve the ground conditions.

4.3.6 Any excess spoil generated during construction will be managed through the Site Waste Management Plan (SWMP) that would form part of the final Construction Environmental Management Plan (CEMP) prepared prior to construction. The submission, approval and implementation of this will be secured by a requirement of the draft DCO. A framework CEMP will be prepared as part of the ES to support the DCO application, which will set out the key measures to be employed during construction to control and minimise the impacts on the environment.

4.3.7 Construction laydown areas and a contractor's compound will be required. Figure NTS4 above shows the indicative areas of land that are under consideration for construction laydown and contractors' compound(s).

4.3.8 The preliminary works required are the subject of on-going studies but are likely to include:

- erection of site fencing and notices;
- environmental surveys and ground investigations including remedial work, if required;
- earthworks and site clearance; and
- diversion and laying of services.

4.3.9 The contractor will prepare and level the Proposed PCC Site, followed by piling (if required) and excavation for main foundations, e.g. absorber stack, HRSG and turbine hall. Plant and equipment will be pre-fabricated where practicable, however, it is anticipated that certain larger items of plant may need to be fabricated and erected on-site due to their anticipated size or weight.

4.3.10 A new gas connection pipeline would link into the existing Keadby 1 and Keadby 2 gas supply infrastructure at a location within the Proposed PCC Site.

Figure NTS11: Typical example of excavation of an existing gas pipeline in advance of a new connection

4.3.11 Depending on the cooling water option selected, either a new intake would be constructed adjacent to the intake for Keadby 2 Power Station within the Stainforth and Keadby Canal, or, should this not be feasible, the existing water abstraction infrastructure for Keadby 1 Power Station within the River Trent would be upgraded.

4.3.12 In order to undertake works safely, a temporary cofferdam would extend into either the canal or river in order to allow installation of a new abstraction structure or a refurbishment of existing infrastructure. This which would include a concrete apron extending from the bank of the watercourse and sheet piling (Figure NTS12) or similar construction techniques; this would be similar to the recent works at Keadby 2 (Figure NTS13)

Figure NTS12: Sheet piling techniques may be used in construction of any cofferdams

4.3.13 A pipeline would be constructed from the intake into the Proposed PCC Site from the new intake structure on the Stainforth and Keadby Canal, if selected. It is proposed that the intake would be located adjacent to the intake for Keadby 2 Power Station, as shown in Figure NTS13. The chosen method(s) will depend on a number of technical and environmental factors and may include open cut methods.

Figure NTS13: Typical cofferdam that would be required on the canal, adjacent to the intake for Keadby 2 Power Station

4.3.14 In the event that the preferred abstraction from the Stainforth and Keadby Canal is not feasible, the Proposed Development would utilise the River Water Abstraction option located at the existing intake from the River Trent, as shown in Figure NTS14. Some of the existing pipework that runs along Trent Road may be able to be re-used but this will need to be extended to the Proposed PCC Site.

4.3.15 The construction of any works within the (tidal) River Trent would be controlled by the Marine Management Organisation under the conditions of a Marine Licence. There may also be a requirement for a Flood Risk Activity Permit (FRAP) owing to the proximity of works to a watercourse – the River Trent.

4.3.16 It is assumed that the construction workforce would peak at circa 1,300 personnel per day. In order to manage travel to the Proposed Development Site, a Framework Construction Worker's Travel Plan (CWTP) will be produced as part of the ES to support the DCO application.

Figure NTS14: River Water Abstraction Option on River Trent

4.3.17 Core construction working hours would be 07:00 to 19:00 Monday to Friday and 08:00 to 13:00 on Saturdays. However, it is likely that some construction activities may need to be undertaken outside of these core working hours, subject to agreement with North Lincolnshire Council.

4.3.18 Access to the Proposed Development Site during construction would be from the A18, using the existing purpose-built road that serves Keadby Windfarm. This access road is used by all construction traffic for the Keadby 2 Power Station construction project.

4.3.19 Abnormal Indivisible Loads (AIL) which arrive at the Waterborne Transport Off-Loading Area would be offloaded using either the existing lifting equipment (or upgraded, larger cranes) and enter the Proposed Development Site via the Additional AIL Route currently being used in the construction of Keadby 2 Power Station. Section 7.4 of this NTS describes alternative abnormal load routes and these are shown in Figure NTS16 and Figure NTS17.

## 4.4 Proposed Development Operation

4.4.1 Operation of the Proposed Development is anticipated to create up to circa 50 operational roles. Temporary and contractor employees associated with maintenance activities would also be employed, as required.

4.4.2 The operation of the Proposed Development would be regulated by the Environment Agency through an Environmental Permit. This permit would be used to control normal emissions to the environment from the plant and would also consider potential abnormal operation scenarios and prevention or minimisation of accidents, through the use of management procedures and process monitoring. The Proposed Development would also comply with the Industrial Emissions Directive (IED) so that the impact of emissions to air, soil, surface and ground water, to the environment and human health would be minimised.

## 4.5 Proposed Development Decommissioning

4.5.1 It is envisaged that the power generation and carbon capture elements of the Proposed Development would have a design and operational life of circa 25 years; therefore, decommissioning activities are currently anticipated to not commence until after 2050. At the end of operation, it is expected that the Proposed Development will have some residual life remaining and an investment decision would then be made based on the market conditions

prevailing at that time. If the operating life were to be extended, the Proposed Development would be upgraded in line with the legislative requirements at that time.

# 5.0 CONSIDERATION OF ALTERNATIVES

## 5.1 Introduction

5.1.1 The EIA Regulations state that an ES should include a description of reasonable and relevant alternatives studied by an applicant and the main reasons for selecting the chosen development, taking into account the environmental effects. Chapter 6: Consideration of Alternatives (PEI Report Volume I) provides this information in respect of the Proposed Development.

5.1.2 At this stage, the design of the Proposed Development is at an early phase and will continue to evolve up to the point of the DCO application submission in response to consultation feedback and with reference to any ongoing surveys and technical studies.

## 5.2 Alternatives considered

5.2.1 In summary, alternatives have been considered during the evolution of the Proposed Development including:

- alternative technologies;
- alternative sites; and
- alternative layouts and design options within the Proposed Development Site.

5.2.2 The Proposed PCC Site was identified as being the most suitable for the following key reasons:

- The Proposed PCC Site is within the control of the Applicant, is brownfield land and is adjacent to an existing power station;
- sufficient space is available within the plot to accommodate the power generation and carbon capture equipment, without encroaching on the exclusion areas for the Keadby Wind Farm turbines to the north and the existing overhead lines to the south and east;
- the Proposed Development Site enables connections to be developed to electrical, gas and, in the future, $CO_2$ pipeline infrastructure;
- There is an absence of major structures requiring demolition, treatment and removal on the main (CCGT) site footprint;
- the plot minimises interference with the Landscape and Conservation Plan for Keadby

2 Power Station and specifically, the Habitat Management Areas secured via Planning Conditions 31-34 inclusive of the Keadby 2 Power Station consent. It also avoids areas of highest biodiversity value within the wider site; and

- adequate supplies of cooling water can be provided via the nearby Stainforth and Keadby Canal or River Trent, whilst existing infrastructure for discharge of the treated effluent into the River Trent can also be utilised.

5.2.3 The Proposed Development includes an appropriate degree of flexibility for a number of technical parameters that have yet to be finalised.

# 6.0 PLANNING POLICY CONTEXT

## 6.1 Legislative Context

6.1.1 The Proposed Development falls within the definition of a 'Nationally Significant Infrastructure Project' (NSIP) under Section 14(1)(a) and 15(2) of the 2008 Planning Act ('the 2008 Act'), as it is a 'generating station exceeding 50 MW'.

6.1.2 An application for development consent must therefore be prepared in accordance with the requirements of the 2008 Act and before a NSIP can proceed, a DCO must be granted for that project.

6.1.3 The DCO Application for the Proposed Development will be submitted to the Planning Inspectorate (PINS) acting on behalf of the Secretary of State. Subject to the Application being accepted, which will be notified by PINS within a period of 28 days following receipt of the Application, PINS will then examine the Application and make a recommendation to the relevant Secretary of State, who will then decide whether to grant a DCO.

6.1.4 The 2008 Act requires that decisions on NSIP applications must be made in accordance with the relevant National Policy Statement (NPS), except to the extent that to do so would:

- lead to the UK being in breach of its international obligations;
- be in breach of any statutory duty that applies;
- be unlawful;
- result in adverse impacts from the development outweighing the benefits; or
- be contrary to regulations about how decisions are to be taken.

6.1.5 Section 104 of the 2008 Act states that the decision maker must have regard to any local impact reports within the prescribed deadline and any other matters that are considered both important and relevant to their decision.

6.1.6 The Secretary of State must take into consideration any relevant NPS and must decide applications in accordance with them. Both potential benefits and adverse impacts should be considered.

## 6.2 Policy Context

6.2.1 National policy for NSIP is set out in a number of NPS. The NPS and Marine Policy Statements (MPS) of most relevance to the Proposed Development are identified as:

- Overarching NPS for Energy (NPS EN-1);
- NPS for Fossil Fuel Electricity Generating Infrastructure (NPS EN-2);
- NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (NPS EN-4); and
- NPS for Electricity Networks Infrastructure (NPS EN-5).

6.2.2 Paragraph 4.1.2 of EN-1 emphasises the requirement for the Secretary of State, given the level and urgency of need for the infrastructure covered by NPS EN-1, to start with a presumption in favour of granting consent for applications for energy NSIP.

6.2.3 Section 58 of the Marine and Coastal Access Act 2009 (Marine Management Organisation, 2009) sets out the legislative framework for the application of Marine Plans to relevant planning decisions in the UK Marine Area. In the context of the Proposed Development, the East Inshore and East Offshore Marine Plans (Department for Environment, Food and Rural Affairs, 2014) are the relevant Marine Policy Documents for the riverine location of the Proposed Development Site, as described in relevant chapters of the PEI Report (Volume I).

6.2.4 In making decisions on applications for NSIP, Section 104 of the 2008 Act states that the Secretary of State must also have regard to any other matters that they consider to be both 'important and relevant' to their decision. Matters include the National Planning Policy Framework (NPPF) and relevant North Lincolnshire Local Development Framework (LDF) documents.

6.2.5 In addition, the National Infrastructure Plan (HM Treasury, 2014) (the 'NIP 14'), the Clean Growth Strategy – Leading the way to a low carbon future (Department for Business, Energy & Industrial Strategy, 2017) ('the CGS'), Clean Growth - The UK Carbon Capture Usage and Storage deployment pathway - An Action Plan (Department for Business, Energy & Industrial

Strategy, 2017), 'Net Zero – Opportunities for the Power Sector' (National Infrastructure Commission), and the Climate Change Act 2008 (2050 Target Amendment) Order, as outlined above, demonstrate the continued relevance and urgency of the need case set out in EN-1.

6.2.6 Given the prevailing policy context, the Applicant has made a commitment to a net zero emissions future. This means that The Proposed Development will only be built with a clear route to decarbonisation.


6.2.7 Further details on the legislative context and planning policy is provided in Chapter 7: Legislative Context and Planning Policy (PEI Report Volume I).

# 7.0 RESULTS OF THE PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

## 7.1 Overview

7.1.1 This section provides a summary of the likely environmental effects predicted to occur as a result of the construction, operation including maintenance of the Proposed Development. The likely significant environmental effects of the Proposed Development are fully described within PEI Report, Volume I.

## 7.2 Air Quality

7.2.1 An air quality assessment has been undertaken and is presented in Chapter 8: Air Quality (PEI Report Volume I).

7.2.2 The potential emissions to air from construction and operation of the Proposed Development have been determined or estimated, and key local receptors have been identified, together with the current local ambient air quality.

7.2.3 The potential pollutant concentrations resulting from the projected emissions arising from the construction and operational phases of the Proposed Development have been predicted using atmospheric dispersion modelling techniques where appropriate, to assess the impacts associated with the Proposed Development on the existing local ambient air quality and in particular, on the identified sensitive human and ecological receptors.

7.2.4 Emissions assessed include:

- construction dust;
- exhaust emissions from construction site plant or Non-Road Mobile Machinery (NRMM);
- exhaust emissions from road vehicles; and
- process emissions from the operational plant.

7.2.5 Existing air quality conditions in the vicinity of the Proposed Development Site have been evaluated through a review of Local Authority air quality management reports, Defra published data and other sources. The key pollutants of concern resulting from construction and operation of the Proposed Development and that have potentially elevated background concentrations from other sources are oxides of

nitrogen ($NO_x$), nitrogen dioxide ($NO_2$), carbon monoxide (CO), ammonia, and particulate matter ($PM_{10}$ and $PM_{2.5}$). Therefore, the assessment in Chapter 8: Air Quality (PEI Report Volume I) considers these pollutants.

7.2.6 North Lincolnshire Council undertakes pollutant monitoring at sites within their administrative area. For all relevant pollutants, baseline concentrations at human health receptors are well below all national objective values, indicating that there are no potential breaches of the standards in the vicinity of the Proposed Development.

7.2.7 Baseline $NO_x$ pollutant concentrations and acid and nutrient nitrogen deposition rates at the identified statutory designation ecological receptors have also been used from available databases.

Likely Impacts and Effects

7.2.8 Construction activities can give rise to emissions of dust and particulate matter – in particular long-term earthworks and movement of materials can create dust. A construction dust assessment has been undertaken which considers that unmitigated, dust impacts present a 'low to medium risk' for human health receptors, and 'medium risk' for ecological receptors. Therefore, mitigation measures appropriate to the scale of the Proposed Development will be included as part of the Framework CEMP submitted with the DCO application. This will form the basis of the CEMP to be used by the construction contractors to control and minimise environmental impacts during construction of the Proposed Development.

7.2.9 The impact of changes in traffic flows due to construction traffic on human health and ecological receptors is considered negligible and not significant. Similarly, the potential for Non Road Mobile Machinery emissions to result in air quality impacts on local human health receptors is considered negligible (not significant).

7.2.10 The River Trent which forms part of the Humber Estuary Ramsar, SAC and SSSI is connected to by the Proposed Development Site. However, due to the limited number of site plant and NRMM anticipated to be required for construction works

in and adjacent to the river, and the distance between the river and locations within the Proposed Development Site where NRMM will primarily be used, it is considered that any impact on the designations in the River Trent as a result of the site plant and NRMM emissions are likely to be negligible (not significant).

7.2.11 The environmental effects on air quality from construction of the Proposed Development have therefore been identified as not significant.

7.2.12 An assessment of operational effects of the Proposed Development has been undertaken using atmospheric dispersion modelling and taking into account a number of conservative assumptions.

7.2.13 The majority of pollutant species released would result in negligible adverse impacts at human health and ecological receptors. Based on screening assessments, potentially significant air impacts could occur from the release or formation of amine degradation products, although no air quality standards or guidelines are predicted to be exceeded.

7.2.14 Ammonia emissions from the process are proposed to be controlled to prevent significant effects although cannot at this stage be screened out as insignificant. However, although no significant adverse effects are considered likely.

7.2.15 Work is ongoing to determine the level of significance of effects and whether additional mitigation is required. This will be established prior to submission of the DCO application.

## 7.3 Noise and Vibration

7.3.1 A noise and vibration assessment has been undertaken and is presented in Chapter 9: Noise and Vibration (PEI Report Volume I).

7.3.2 The COVID-19 outbreak has presented challenges in obtaining representative additional baseline sound levels because typical transport activities have been reduced. To inform the assessment, sound level data from the sound survey undertaken for the Keadby 2 Power Station Section 36 consent has been used. This survey data incudes times when Keadby 1 Power Station was both operational/ not operational and has been agreed as representative with

North Lincolnshire Council. Analysis of the datasets has been undertaken to ensure a conservative approach by using the lower of the ambient and background sound level data in the noise and vibration assessment.

7.3.3 Key noise sensitive receptor (NSR) locations have been selected which are considered to be representative of the nearest and potentially most sensitive existing receptors in all directions around the Proposed Development. It is considered that if noise and vibration levels are suitably controlled at the NSR identified, then noise and vibration levels will be suitably controlled at other sensitive receptors in the surrounding area.

Likely Impacts and Effects

7.3.4 Noise is likely to be generated throughout the construction phase through works such as initial site preparation, earthworks and excavation, construction of buildings and infrastructure, operation of temporary facilities, land restoration and removal of temporary facilities, as well as from construction traffic.

7.3.5 The preferred approach for controlling construction noise and vibration is to reduce levels at the source, using Best Practicable Means (BPM), as far as reasonably practicable. A range of control measures are proposed to mitigate noise and vibration effects from construction works, including:

- abiding by agreed construction noise limits at nearby NSR;
- ensuring that modern plant is used, complying with the latest applicable noise emission requirements and selection of inherently quiet plant where possible;
- use of hydraulic techniques for breaking in preference to percussive techniques where reasonably practicable; and
- all plant and equipment being used for the works to be properly maintained, silenced (where appropriate), operated to prevent excessive noise and switched off when not in use.

7.3.6 Furthermore, contractors would be required to implement good practice measures to minimise noise and vibration impacts, set out in the CEMP.

7.3.7 Construction noise effects at all residential NSR during construction of the Main Site within core hours are predicted to be minor adverse or negligible (not significant) due largely to the distances between the works and NSR.

7.3.8 It may be necessary for some construction activities to take place continuously over day, evening and night periods during peak construction times of the Proposed Development, although the exact nature of the works is unknown.

7.3.9 If not properly managed, construction effects at certain residential receptors may be significant adverse for certain noisier activities, particularly at night-time should such works be required. However, through appropriate scheduling of construction activities, and restrictions on those activities taking place outside core working hours so they do not exceed the relevant limits, significant adverse effects can be avoided, and effects are therefore be considered as having a minor adverse (not significant) effect.

7.3.10 It is anticipated that there will be either no change or a very low change in road traffic noise due to traffic flows along the construction traffic routes of the Proposed Development. Therefore, effects at local residential NSR are predicted to be negligible (not significant).

7.3.11 During operation, the Proposed Development will include a CCGT and other plant and equipment that is similar to the Keadby 2 Power Station, together with a CCP for capture of $CO_2$ emissions. Modelling software has been used to undertake an assessment of the likely effects of operational noise at a number of NSR around which are considered representative of other properties or receptors locally. Conservative assumptions have been used to ensure a robust assessment.

7.3.12 Without mitigation, effects at NSR are anticipated to be not significant at a number of properties but could be significant at others. Potential design mitigation options are being considered to reduce noise levels at a number of receptors towards the desired level (no greater than +5 dB when the assessment rating level is compared to the background sound level), such that residual effects are considered not significant. Mitigation

measures will be determined prior to submission of the DCO Application and presented in the ES.

7.3.13 The effects of eventual decommissioning are considered to be comparable to, or less than, those assessed for construction activities and are therefore considered to be not significant.

## 7.4 Traffic and Transport

7.4.1 An assessment has been undertaken which considers the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on traffic and transport; this is presented within Chapter 10: Traffic and Transportation (PEI Report Volume I) and is supported by Appendix 10A: Transport Assessment (PEI Report Volume II).

7.4.2 The study area for the assessment was defined following relevant guidelines and includes the road links shown in Figure NTS15 where automatic traffic counts data has been obtained:

- A18 (west of construction site access to Keadby 2 Power Station) (ATC 1);
- A161 (between M180 Jct 2 and the A18) (ATC 2);
- A18 Station Road (immediately to the west of King George V Bridge) (ATC 3); and
- A18 High Levels Bank (east of Tudworth Roundabout) (ATC 4).

7.4.3 Although counts on some of these links are 3 years or older, due to the COVID-19 pandemic, it has been agreed with North Lincolnshire Council Highways during scoping that these are the most representative data available for the purposes of this assessment.

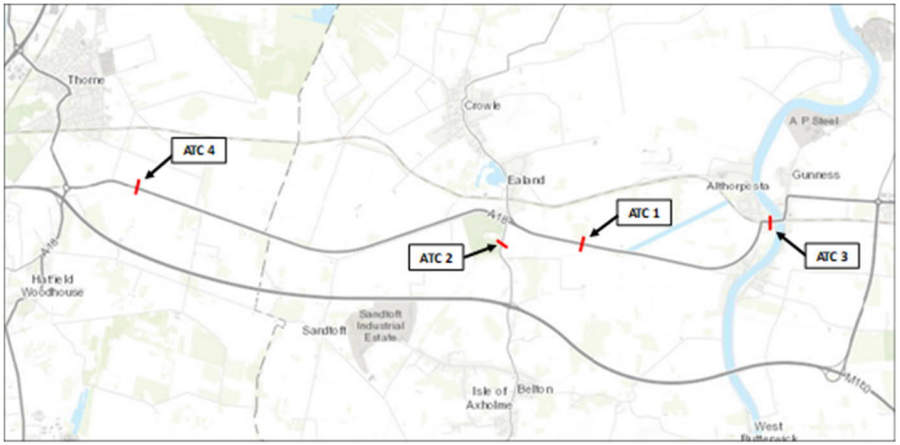



Figure NTS15: Road links identified within study area

7.4.4 PRoW, including footpaths and cycle route networks, that cross roads within the study area have also been considered and have helped define the sensitivity of the road links.

Access routes

7.4.5 The existing main site access to Keady 1 Power Station is from the B1392, named Station Road in the vicinity of the Proposed Development Site, although this is not proposed to be used for access to the Proposed Development during construction or operation.

7.4.6 The preferred access to the Proposed Development Site during construction and operation is from A18, where the junction may be subject to improvement (carriageway widening) for permanent access. Access would then be via the existing access road, built for construction vehicles during the building of the Keadby Wind Farm and currently used by vehicles associated with the construction of Keady 2 Power Station. Where the access road passes over the Hatfield Waste Drain, the bridge is likely to be replaced. The road also passes over the Stainforth and Keadby Canal and rail line via Pilfrey Bridge where it links to Bonnyhale Road and into the Proposed PCC Site as shown on Figure NTS16.

7.4.7 A skewed access road from the A18 would also be used during construction where required, for certain oversized abnormal roads – consistent with construction on Keadby 2 Power Station.

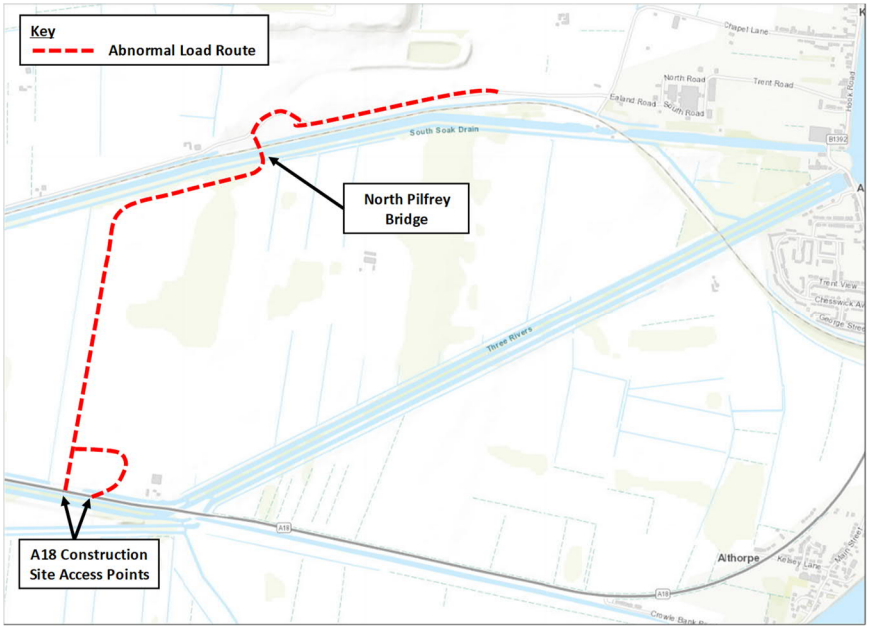



Figure NTS16: Proposed access route for abnormal loads

7.4.8 An alternative access route for certain abnormal loads that cannot pass over Pilfrey Bridge and that has been used during construction of Keadby 2 Power Station is via Bonnyhale Road. This route is shown in Figure NTS17.

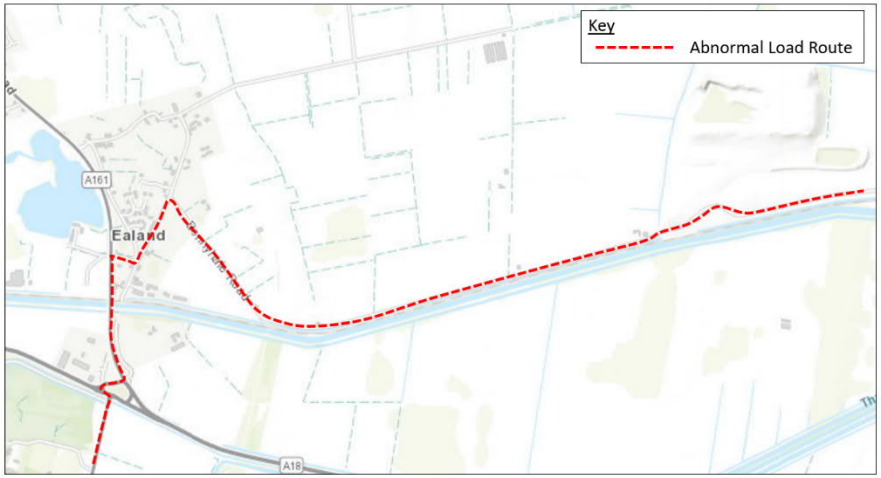



Figure NTS17: Alternative proposed access route for certain abnormal loads (avoiding Pilfrey Bridge)

7.4.9 The largest AIL components will arrive at site by barge at the Waterborne Transport and Offloading Area, consistent with construction of Keadby 2 Power Station. Access to the Proposed Development across a short section of the B1392 will be undertaken using temporary traffic management ('stop/go signs') and then components will enter the Proposed Development Site via the temporary haul road to the east of PD Port Services freight yard, and through an agricultural field (owned by the Applicant).

7.4.10 Heavy goods vehicles (HGV) delivering construction materials would access the Proposed Development Site from the existing Keadby 2 construction site entrance located off the A18, with all HGV arriving and departing to/ from the west via the A18, A161 and onwards to the M180 Junction 2.

## Likely Impacts and Effects

7.4.11 As baseline traffic flows on the road network are projected to increase year on year, to undertake a worst-case assessment, a future year for baseline traffic flows of 2031 has been modelled. This is the anticipated 'peak construction' year for traffic if the DCO consent was not implemented until 7 years after being granted (2022).

7.4.12 As part of the assessment, the potential effects on transport during the construction phase have been considered. The additional traffic due to Proposed Development construction activities would result in temporary increases of traffic flows, including HGV, on the roads leading to the Proposed Development Site. The effects of construction traffic on pedestrian amenity, severance, fear and intimidation, highway safety, driver delay and hazardous loads have been assessed using relevant guidance. Effects at all road sections and junctions within the study area are anticipated to be negligible and thus not significant.

7.4.13 A number of traffic management measures would be implemented during the Proposed Development construction phase to minimise traffic impacts upon the local road network. This would include both a Construction Traffic Management Plan and Construction Workers' Travel Plan that the appointed contractors would need to adhere to – framework versions of these documents will be prepared and submitted with the DCO Application. In addition, as with the construction of Keadby 2 Power Station, it is anticipated that a Temporary Traffic Regulation Order (TTRO) is likely to be sought via the DCO to reduce speed on the A18 in the vicinity of the Proposed Development during construction.

7.4.14 During the operational phase of the Proposed Development, up to circa 50 permanent jobs would be created. and additional HGV traffic would also be generated by deliveries associated with operations and maintenance plant/ equipment.

7.4.15 Traffic flows during operation would be considerably lower than those during construction and overall, traffic effects during operation would be negligible (not significant).

7.4.16 The assessment has considered all relevant materials (including chemicals) likely to be required at the Proposed Development Site, including those that may be classified as hazardous (refer to Chapter 4: The Proposed Development). These will be transported in compliance with applicable regulations including the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG Regs) (as amended).

7.4.17 The effects of decommissioning traffic would be no greater than that of the construction traffic and are, therefore, anticipated to be negligible and not significant.

## 7.5 Biodiversity and Nature Conservation

7.5.1 An assessment has been undertaken of the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on biodiversity and nature conservation in Chapter 11: Biodiversity and Nature Conservation (PEI Report Volume I).

7.5.2 The baseline information has been determined through a combination of desk studies and field surveys, detailed within Appendices 11C to 11G (PEI Report Volume II).

7.5.3 There are six international and 23 national statutory nature conservation and biodiversity designations within the overall 15km study area. A further 11 local non-statutory nature conservation designations are relevant within the local study area (up to 2km from the Proposed Development Site). The Proposed Development Site is located within a landscape identified as the Humberhead Levels Nature Improvement Area (NIA), one of 12 NIA chosen by the Government to create joined up and resilient ecological networks at a landscape scale.

7.5.4 The scope of works for necessary habitat and protected species surveys was confirmed through a Phase 1 Habitat survey and Preliminary Ecological Appraisal (PEA); this is provided within Appendix 11C: PEA (PEI Report Volume II))

7.5.5 An impact assessment was undertaken on all relevant habitats and species including:

- hedgerows
- plantation broad-leaved woodland
- scrub (dense and scattered)
- watercourses including field drains
- invertebrates (aquatic)
- invertebrates (terrestrial)
- reptiles (grass snake)
- water vole
- Open Mosaic Habitats

- acid grassland
- flora (notable species)
- fish
- bats (foraging)
- breeding birds

Likely Impacts and Effects

Statutory and non-statutory designations

7.5.6 Construction of the Proposed Development has the potential to affect the designated biodiversity features of interest of the Humber Estuary SAC, Ramsar site and SSSI. As is required, an assessment of the likely significant effects of the Proposed Development on these sites will therefore be prepared and submitted with the DCO Application to inform the appropriate assessment under the Habitats Regulations.

7.5.7 The Water Connection Corridor for the Proposed Development is located in the River Trent at a location used by migrating fish species within the Humber Estuary. Based on the current ongoing design work and assessment, and given existing regulatory regimes and permit requirements, it is considered that the potential construction effect on migratory and fish species is minor adverse (not significant). Any construction works within the (tidal) River Trent would be controlled by a Marine Management Organisation (MMO) Marine Licence.

7.5.8 As described in Section 7.3, an assessment of operational effects of the Proposed Development on sensitive ecological receptors has been undertaken using atmospheric dispersion modelling and taking into account a number of conservative assumptions. Work is ongoing to determine the level of significance of effects for ecological receptors and whether additional mitigation is required. This will be established prior to submission of the DCO application.

7.5.9 There are no likely significant direct or indirect construction impacts and effects on any other statutory nature conservation designations.

7.5.10 The preferred Canal Water Abstraction Option for cooling water will be constructed within the Stainforth and Keady Canal Corridor LWS, designated for its aquatic and wetland plant interest. The impacts on the LWS include loss of

approximately 30m of bank vegetation and temporary disturbance of habitats similar to works associated with the construction of the intake for Keadby 2 Power Station. These effects on the LWS are assessed as minor adverse (not significant). Similarly, the construction effects on Hatfield Waste Drain LWS during works associated with the A18 junction improvement, including any replacement of the existing bridge crossing over the LWS are not predicted to adversely affect the LWS nature conservation status and are assessed as not significant.

Habitats

7.5.11 The design of the Proposed Development, including temporary laydown areas under consideration, has evolved to avoid significant effects. The most important habitats within the Proposed Development Site (open mosaic habitat (OMH) and acid grassland) have been avoided, as far as reasonably practicable. Small-scale loss of scattered scrub (bramble, hawthorn and dog-rose) may occur as a result of site clearance which is assessed as being of neutral significant (not significant).

7.5.12 Construction of the Main Site (within the northern area of the Proposed PCC Site) would result in the loss of field drains which are of local biodiversity and nature conservation value. The loss of drains and additional localised and relatively small-scale permanent construction impacts on other drains would not affect the wider nature conservation status of drain habitats. Therefore, the impact is assessed as minor adverse (not significant).

Species

7.5.13 Baseline surveys have recorded very low levels of bat activity within the Main Site. There would be no impact on bat roosts as a result of construction of the Proposed Development as no suitable trees or buildings are present within areas that would be affected by construction activities. The potential construction effect on bats is therefore considered as neutral (not significant).

7.5.14 Baseline surveys have recorded limited evidence of water vole within the Main Site. Based on current levels of water vole activity, there would be no likely impact on the nature conservation

status of water vole and the potential effect is assessed as neutral (not significant).

7.5.15 In relation to other species, the potential construction effect on:

- badger is assessed as neutral (not significant);
- grass snake is assessed as neutral (not significant);
- breeding birds is assessed as neutral (not significant); and
- aquatic invertebrates and their habitats is assessed as neutral (not significant).

7.5.16 There is limited potential for construction of the Proposed Development to cause the spread of plant and animal invasive non-native species (INNS). There is a requirement for mitigation to be applied effectively to provide legal compliance. On this basis, therefore there are no construction pathways likely to result in a significant adverse effect on biodiversity and nature conservation.

7.5.17 Potential impacts during the operational phase that could result in effects on ecological features include:

- air quality impacts – air pollution from stack emissions, potentially leading to adverse effects on sensitive habitats, including nature conservation designations, through increased ammonia, nitrogen and acid deposition; and
- disturbance impacts – external operational lighting and noise as potential to affect bats where it coincides with their foraging and commuting habitats.

7.5.18 Based on the findings of preliminary atmospheric dispersion modelling, there is some potential for adverse air quality effects on habitats containing species sensitive to ammonia, where levels at these sites are already above relevant thresholds. Work is ongoing to determine the level of significance of effect and whether additional mitigation is required although based on the results established to date the risk of significant effects is low.

7.5.19 Within the Water Discharge Corridor, it is anticipated that the volume of discharge from the

Proposed Development will be within the parameters permitted for Keadby 1 Power Station and controlled by an Environmental Permit.

7.5.20 Cooling water abstraction volumes would be controlled under an Abstraction Licence from the Environment Agency and/ or relevant agreements with the Canal and River Trust, depending on the option selected. Where required, works would be undertaken at either intake screen to ensure compliance with the Eels Regulations. Given the requirements of existing statutory regulatory and permitting regimes, it is considered that there are no impact pathways likely to result in an adverse operational effect on the conservation status of fish populations in either the River Trent or the Stainforth and Keadby Canal. The potential effect is therefore assessed as neutral (not significant).

7.5.21 Given the existing very low levels of bat activity in association with the Main Site and the commitment to sensitive design of external artificial lighting, the effect on bats from external lighting required for operation of the Proposed Development is assessed as neutral (not significant).

7.5.22 No likely significant effects from plant and animal INNS are anticipated as a result of operation of the Proposed Development.

7.5.23 No other significant residual operational effects are predicted on habitats or species as a result of operation of the Proposed Development and no significant residual effects are predicted as a result of decommissioning of the Proposed Development.

## 7.6 Water Resources and Flood Risk

7.6.1 An assessment has been undertaken which considers the potential effects of the Proposed Development on the water environment and flood risk, presented in Chapter 12: Water Resources and Flood Risk (PEI Report Volume I).

7.6.2 The Proposed Development Site and the surrounding 1km study area lies within the extensive floodplain of the River Trent within the Isle of Axholme. Land is generally low lying at elevations below 10m Above Ordnance Datum (mAOD) and with very shallow gradients.

Likely Impacts and Effects

7.6.3 Potential impacts on the Water Framework Directive status of the Proposed Development have been considered and are detailed in Appendix 12B: Water Framework Directive Screening Assessment (PEI Report Volume II).

7.6.4 Potential impacts on flooding, including the current and future (with climate change) risk of flooding from all sources including tidal, fluvial, surface water, groundwater, artificial sources and drainage infrastructure has also been undertaken, detailed in Appendix 12A: Flood Risk Assessment (PEI Report Volume II).

7.6.5 Construction activities such as earthworks, excavations, site preparation, levelling and grading operations can result in the disturbance of soils, and changes to groundwater and surface water runoff and flows which result in impacts upon groundwater and surface water resources. There is a risk that leaks and spillages of hazardous substances could pollute nearby surface watercourses if their use is not carefully controlled and spillages enter existing waterbodies. Given the mitigation measures to be implemented, including water quality monitoring and use of best practice measures, the effect on waterbodies is considered not significant.

7.6.6 The localised and temporary impacts on the morphology (shape) of the River Trent and Stainforth and Keadby Canal habitats has been assessed during construction. There is expected to be a neutral (not significant) effect on the River Trent should a cofferdam need to be installed. The impact on the Stainforth and Keadby Canal would be minor adverse (not significant) given the slower probable recovery of the bed.

7.6.7 Where physical works to watercourses are required, such as the need for new crossings, localised, temporary minor adverse impacts (not significant) are predicted.

7.6.8 Prior to commencement of construction works, a CEMP will be prepared outlining the measures necessary to avoid, prevent and reduce adverse effects upon the local surface water (and groundwater) environment and to mitigate flood risk during construction. Implementation of temporary site drainage systems will be

described in the CEMP, which will also include relevant measures such as a Flood Emergency Response Plan and safe access and egress routes for workers. Through the use of a CEMP and embedded mitigation, no significant adverse effects are predicted for the water environment during construction.

7.6.9 Cooling water from the Proposed Development Site will discharge to the River Trent under an Environmental Permit, regulated by the Environment Agency. The effects of thermal discharges (i.e. cooling water not being sufficiently cooled) have been considered in the design evolution of the Proposed Development. Owing to the nature of the likely cooling technology to be adopted, the increases in temperature are expected to be very low and within the existing parameters of the Keadby 1 Power Station. Further assessment will be undertaken within the ES, but it is considered that the effect of thermal discharges will be slight/ negligible (not significant).

7.6.10 As discharges will be regulated under the Environmental Permit, it is considered that there is limited potential for changes to the WFD classifications for the Trent waterbody.

7.6.11 During operation, measures will be implemented to prevent accidental discharge of pollutants to surface watercourses such that effects of pollution on surface water quality are considered to be not significant.

7.6.12 Two small drainage ditches would be lost, culverted or realigned to allow for the Proposed PCC Site. This will result in permanent loss of low quality bed and bank habitats. Waterbodies directly to the west and north-west of the Proposed Development Site, including Keadby Boundary Drain LWS, would not be affected by the loss, culverting or realignment of drains within the Proposed PCC Site. Through the implementation of habitat creation opportunities, including use of sustainable urban drainage systems (SuDS) within the surface water collection system, the predicted effects are minor adverse (not significant).

7.6.13 Availability of sufficient cooling water within the overall catchment has been considered as part of the design and work is ongoing to confirm the

availability of water within the preferred Canal Water Abstraction Option. Considering the high levels of regulatory control, a negligible impact is predicted on water availability from either the Canal or River Trent.

7.6.14 Connections into existing infrastructure within the Proposed Development Site will be made for foul water which is transferred off-Site to a local Anglian Water wastewater treatment plant. The impact of foul water discharge is therefore considered to be neutral (not significant).

7.6.15 Flood risk from fluvial, surface water, ground water and artificial sources has been considered in Appendix 12A: Flood Risk Assessment (PEI Report Volume II)).

7.6.16 Currently, the Proposed Development Site is at a 'low' risk of flooding from tidal sources with the defences in place. During a future scenario resulting from climate change up to 2067, the residual risk of flooding from 'overtopping' of the tidal defences increases the risk to 'high', using the conservative assumption that there would be no raising of the Trent tidal defences by third parties to mitigate this increased risk due to the wider area due to climate change. As the Proposed Development cannot rely on such works being undertaken by third parties, appropriate mitigation measures would be implemented at the Proposed Development Site to mitigate this residual risk of flood defence breach. These include incorporation of flood resistance and resilience measures in the detailed design, implementation of a Flood Emergency Response Plan, use of flood warnings and alerts, clear emergency access and egress arrangements to and from the Proposed Development Site, and an identified place of refuge in case of flooding.

7.6.17 Such measures would ensure that workers are safe and critical equipment can continue to function at the Proposed Development Site in the event of such inundation.

7.6.18 Decommissioning impacts are expected to be limited to waterbodies in close proximity to the Proposed Development Site and will be similar to the impacts reported for the construction phase. A detailed Decommissioning Environmental Management Plan will be prepared to identify required measures to prevent pollution during

this phase of the development, based on the detailed decommissioning plan.

## 7.7 Geology, Hydrogeology and Land Contamination

7.7.1 An assessment has been undertaken which considers the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on geology, geo-environmental ground conditions and groundwater and is presented in Chapter 13: Geology, Hydrogeology and Land Contamination (PEI Report Volume I).

7.7.2 Soils at the Proposed Development Site are typically loamy and clayey and underlain by made in parts. Superficial deposits comprising warp (sand and silt) with alluvium (clay, sand, silt, and gravel) occur beneath the Proposed Development Site and along the course and immediate margins of the River Trent. These are classified as a Secondary A Aquifer. Bedrock geology of the Mercia Mudstone Group (classified as Secondary B aquifer) is present at an approximate depth of 14m below ground level.

7.7.3 The Proposed Development Site is located in an area with a naturally high groundwater table and it is anticipated that groundwater is likely to be present near surface (1m to 3m below ground level) within the superficial deposits. Groundwater vulnerability to pollution is classified as medium-high and there is one licenced groundwater abstraction recorded within the Proposed Development Site.

7.7.4 There are numerous surface water features located within and surrounding the Proposed Development Site and the Proposed Development Site and study area are located within a nitrate vulnerable zone for surface water.

### Likely Impacts and Effects

7.7.5 The construction phase may introduce new sources of contamination due to leaks and spillages and could disturb and mobilise existing contamination within soils. Historical and current areas of potential contamination have been identified and areas of higher risk will be subject to further assessment.

7.7.6 An initial ground investigation will be undertaken to inform the development of the preliminary design in order to validate assumptions made in the initial risk assessment contained within Appendix 13A: Phase 1 Desk-based Assessment (PEI Report Volume II).

7.7.7 Best practice measures would be adopted to minimise pollution risks including the adoption of working methods to manage contamination risk to soils, groundwater, surface water, implementation of appropriate pollution incident control plans and procedures and the safe storage of fuel, oils and equipment. In addition, a drainage strategy will be prepared that includes measures to prevent the pollution of groundwater and surface water runoff from the construction site. The CEMP will set out the expectations with regards to how construction works will be delivered, and specific requirements associated with dealing with any land contamination, soil and groundwater management.

7.7.8 The operation of the Proposed Development will be undertaken in accordance with the controls of an Environmental Permit. Handling, storage and disposal of hazardous substances and wastes would be managed in accordance with relevant permit requirements and any other consents and licences.

7.7.9 During the decommissioning of the Proposed Development, a Decommissioning Plan (including Decommissioning Environmental Management Plan) would be which would consider in detail potential environmental risks and control how risks should be removed or mitigated.

## 7.8 Landscape and Visual Amenity

7.8.1 An assessment has been undertaken which considers the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on landscape character and visual amenity and is presented in Chapter 14: Landscape and Visual Amenity (PEI Report Volume I).

7.8.2 Baseline data has been gathered through desk study, review of aerial photography, consultation

and site visits, including obtaining photography from key viewpoints.

7.8.3 Visibility within the study area is generally widespread. Tree and shrub cover within the study area is generally sparse and the topography is low lying and flat. Due to the limited intervening vegetation, there are frequent, open views in the north-west and east towards the Proposed Development Site. Visibility from the south and south-west is restricted due to the extent of built form and topography.

7.8.4 A 10km radius study area has been defined using a computer model which shows the 'Zone of Theoretical Visibility' or ZTV for the Proposed Development considering the tallest structure (absorber stack(s) at up to 105m above ground level) to determine potential visibility. This helps to identify locations within the study area which have potential views of the Proposed Development and those where visibility would be unlikely. Potential viewpoints and sensitive receptors were identified through these methods.

7.8.5 The study area includes a number of areas designated locally for their landscape character and/ or perceived qualities/ tranquillity, whilst being heavily influenced by industrial developments, residential areas and transport corridors and is assigned a 'medium' sensitivity in the assessment of impacts on landscape character. The study area includes a proposed extension to the Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB) which is assessed to be of high scenic value and landscape quality.

7.8.6 The Proposed Development Site and immediate surrounding area is heavily influenced by power related industrial structures and is assessed to be of low sensitivity.

Likely Impacts and Effects

7.8.7 The potential landscape impacts of the Proposed Development primarily relate to the visibility of proposed structures (temporary and permanent), including how this affects the overall landscape character of the area.

7.8.8 The Proposed Development would result in increased built form and structures within the existing Keadby Power Station site. The Proposed Development is assessed as likely to result in a low or very low impact on landscape character during construction, opening and operation. This is because the additional built form being introduced is similar in form to that already within the Keadby Power Station site. These effects are assessed to be minor or negligible adverse and not significant.

7.8.9 Changes in views may give rise to adverse or beneficial visual effects, through obstruction in views, alteration of the parts of the view and the opening up of new views by removal of screening. Potential visual effects arising from the construction activities include:

- the introduction of stationary and moving construction machinery;
- the introduction of low level construction operations, including heavy plant movements, welfare facilities, laydown and storage areas;
- construction vehicles entering and leaving the Proposed Development Site;
- the progressive construction of tall structures; and
- construction lighting.

7.8.10 Potential visual effects of the Proposed Development in comparison with the future baseline visual context are considered by reference to representative viewpoints and photowires (Figures 14.19 to 14.24 in PEI Report, Volume III) which illustrate the likely visibility of the Proposed Development at four of the assessed viewpoints.

7.8.11 Photowires illustrating the existing baseline and representations of the Proposed Development are illustrated for the assessed viewpoints in Figure NTS18 - Figure NTS21 below.


Figure NTS18: Viewpoint 1 Chapel Lane West, Keadby,- Baseline View


Figure NTS19: Viewpoint 1 Chapel Lane West, Keadby, Proposed Development


Figure NTS20: Viewpoint 4 - PRoW (KEAD9, KEAD10), north of Keadby - Baseline View


Figure NTS21: Viewpoint 4 - PRoW (KEAD9, KEAD10), north of Keadby - View with Proposed Development

7.8.12 It has been assessed that the majority of visual receptors would experience a low or very low magnitude of impact during construction and operation of the Proposed Development, resulting in a negligible or minor adverse effect that is not significant. However, receptors at Viewpoint 1 (Chapel Lane West, Keadby), Viewpoint 2 (Gate Keepers Residence, Keadby) and Viewpoint 3 (PRoW KEAD9 and KEAD10), north of Keadby would experience a medium magnitude of impact due to the introduction of built structures against the skyline, making them more prominent and extending the amount of the view which includes large scale development. This would result in a moderate adverse effect on receptors at these locations during construction, operation and decommissioning that is considered to be significant

7.8.13 No potential mitigation has been identified for Viewpoints 1, 2, and 4 due to the proximity to the Proposed Development and the scale of the structures. It is considered that the addition of landscape features such as trees and woodland would not be effective in reducing these effects on visual amenity. A Landscape and Biodiversity Management and Enhancement Plan (LBMEP) will be prepared to accompany the DCO application which will present proposals for landscape planting, including within the construction laydown areas, although such planting would not reduce visual effects at these locations.

## 7.9 Cultural Heritage

7.9.1 This assessment addresses the potential effects of the Proposed Development on cultural heritage assets. It identifies the location, type and significance of cultural heritage assets and their setting, and reports on the predicted impacts of the Proposed Development on these resources. The assessment considers the likely significance of effects upon cultural heritage assets by reference to their significance and the magnitude of any impacts and is presented in Chapter 15: Cultural Heritage (PEI Report Volume I).

7.9.2 The baseline for the assessment was established through desk-based research, a site visit and visual appraisal of heritage assets within the study area. There are no designated assets

within the Proposed Development Site. Within the study area there are 41 designated heritage assets including two scheduled monuments, 37 listed buildings, including three grade I listed buildings, the remainder being grade II listed buildings, and one conservation area. Eight known non-designated assets are recorded within the Proposed Development Site, with a total of 64 non-designated assets located within the study area.

7.9.3 Designated assets and non-designated heritage assets are detailed in Appendix 15A: Cultural Heritage Desk Based Assessment (PEI Report Volume II).

Likely Impacts and Effects

7.9.4 Construction effects consider the setting impacts on above ground scheduled monuments and built heritage, as the buildings and structures of the Proposed Development are installed and constructed. They also consider potential effects on below-ground archaeology.

7.9.5 Impacts on built heritage for a range of receptors have been assessed. Impacts to the setting of Keadby Lock (scheduled monument and grade II listed) and other designated assets are generally assessed as neutral or minor adverse (not significant). The impact to the Isle of Axholme Area of Special Historic Landscape Interest (non-designated heritage asset) as a consequence of the works proposed at the junction from the A18, including a site cabin and formalised parking are assessed as minor adverse (not significant). Photowires illustrating the existing baseline and representations of the Proposed Development from Belton Field are presented as Figure NTS22 and Figure NTS23.


Figure NTS22: Views from PRoW BELT30/BELT34 - Isle of Axholme (Baseline)


Figure NTS23: Views from PRoW BELT30/BELT34 - Isle of Axholme (Proposed Development)

7.9.6 Significant adverse effects could occur from piling and any ground remediation which may result in the partial removal of prehistoric peat deposits in areas of the Proposed PCC Site. Further appraisal of the likely presence and extent of such deposits will be undertaken with the aim of agreeing the strategy for further investigation and impact avoidance measures. The appraisal will be undertaken in accordance with an approved Written Scheme of Investigation (WSI), based on an Outline WSI which will be presented with the DCO Application. Engagement with relevant stakeholders, including is proposed to inform the scope and timing of this investigation. It is anticipated that with appropriate mitigation, residual effects are likely to be not significant.

7.9.7 Operational effects can result from elements such as lighting and noise. No effects upon archaeology or built heritage assets are considered to result from the operational or decommissioning phases of the Proposed Development that are above or beyond those that have been assessed for construction impacts.

## 7.10 Socio-economics

7.10.1 An assessment has been undertaken of the potential socio-economic impacts of the Proposed Development. which considers the potential effects of construction and operation of the Proposed Development on aspects including employment opportunities and the wider implications of the associated demand on local services. The assessment is presented in Chapter 16: Socio-economics (PEI Report Volume I) and supported by Appendix 16A: Human Health signposting (PEI Report Volume II: Appendices)

### Likely Impacts and Effects

7.10.2 The construction, operation and decommissioning of the Proposed Development would be supportive of the local economy, through the creation of jobs.

7.10.3 Chapter 4: The Proposed Development (PEI Report Volume 1) describes the measures that have been incorporated in order to ‘design-out’ potential impacts that may affect health. The choice and design of plant and equipment will

comply with standard industry guidelines set to protect human health, including construction workers and operational staff.

7.10.4 The Proposed Development would represent an opportunity to create a range of jobs during the construction phase, both directly and indirectly, and across a wide range of sectors and skills. Based on experience of similar projects, the Proposed Development is anticipated to create an average of approximately 776 temporary construction jobs, with a peak of circa 1,300 during the construction period

7.10.5 Although these jobs are temporary, they would provide a positive economic impact. The direct expenditure involved in the construction phase would lead to increased output generated in the local (Scunthorpe Travel to work Area (TTWA) economy.

7.10.6 The magnitude of impact associated with the creation of short-term employment during the construction phase is considered to be high, as employment relating to the Proposed Development would represent around 12% of the TTWA existing construction workforce. The direct, indirect and induced employment created by the construction phase of the Proposed Development is therefore likely to have a major short-term beneficial effect, which would be significant in terms of the Scunthorpe TTWA economy.

7.10.7 During the Proposed Development operational phase, employment would be generated in operative, management and maintenance roles. Operation of the Proposed Development is anticipated to create up to circa 50 operational roles. Temporary and contractor employees associated with maintenance activities would also be employed as required. Such an operational effect is assessed as beneficial, although, not significant.

7.10.8 There are not anticipated to be any impacts on businesses from the operation of the Proposed Development. The businesses in the area are currently located within close proximity to the existing Keadby Power Station and it is not anticipated they would experience any change from their current interaction with the wider Keadby site. The impact would be negligible (non-significant).

## 7.11 Climate Change and Sustainability

7.11.1 The assessment presented in Chapter 17: Climate Change and Sustainability (PEI Report Volume I) addresses the potential effects of the Proposed Development on climate change and sustainability and addresses four separate aspects:

- lifecycle greenhouse gas (GHG) impact assessment;
- in-combination climate change impact (ICCI) assessment;
- climate change resilience (CCR) assessment; and
- sustainability review.

7.11.2 The design, construction and operation of the Proposed Development would seek to mitigate the causes of climate change by contributing to reducing greenhouse gas (GHG) emissions associated with electricity generation, assisting in decarbonisation of the electricity supplied to the national grid and adapting to the predicted impacts of climate change.

### Likely Impacts and Effects

7.11.3 The Climate Change Act 2008 (UK Government, 2008) provides a framework for the UK to meet its GHG emission reduction goals through legally binding national carbon emission caps within five-year periods (carbon budgets). The Act was amended in 2019 to legislate for 'net zero' emissions by 2050 – this means that by 2050 in the UK, carbon emissions will have to be avoided completely or off-set by removal from the atmosphere and/ or traded in carbon units.

7.11.4 As the receptor for the GHG assessment for the Proposed Development is the global climate, the UK's published carbon budgets are used as a proxy to assess the impacts to this receptor. The UK has declared its 5th carbon budget up until 2032 (Committee on Climate Change, 2017). The UK's 6th carbon budget up to 2037, due to be published in autumn 2020, has been delayed due to the impact of COVID-19 and is expected later this year.

7.11.5 The Proposed Development is for a low carbon power station capturing more than 90% of the carbon that would otherwise be emitted. The

residual GHG emissions from the Proposed Development are calculated and estimated as a percentage of the relevant 5 year UK carbon budget period in which they arise. Emissions equal to or more than 1% of the relevant carbon budget would result in an impact magnitude considered 'high' whilst less than 1% would be considered 'low'.

7.11.6 The assessment findings for the Proposed Development conclude that the impact magnitude is 'low' in relation to the published UK carbon budgets and the overall significance of effect is considered as minor adverse (not significant). The residual GHG emissions from the Proposed Development are therefore not expected to affect the UK in meeting its current carbon budgets and in fact this development is intended to be an enabler to help the UK achieve the net zero commitments. The assessment findings are and will be updated in the final ES.

7.11.7 In combination climate change impacts (ICCI) refer to the combined likely significant effects of the Proposed Development and potential climate change impacts on the receiving environment and community. The climate change resilience (CCR) assessment relates to the resilience of the Proposed Development to climate change impacts. Both assessments use current published UK climate projections 2018 (UKCP18) relating to general changes in climate conditions, and high-level assessment of acute events.

7.11.8 Existing design measures incorporated into the Proposed Development provide measures that reduce the likelihood of an ICCI effect occurring and increase the resilience of the Proposed Development to future climate change hazards. No potentially significant ICCI or CCR effects during construction, operation or decommissioning of the Proposed Development have been identified, taking into account measures to mitigate potentially significant residual flood risk. These assessments will be updated, if required during the ES.

## 7.12 Major Accidents and Disasters

7.12.1 Chapter 18: Major Accidents and Disasters (MA&D) (PEI Report Volume I) presents the assessment of major accidents and disasters which considers the vulnerability of the Proposed Development to existing hazards and

assesses the potential for the Proposed Development to cause significant environmental effects as a result of a major accident.

7.12.2 Major accidents are incidents such as fires and explosions that could result in serious harm to people. They also have the potential to cause widespread damage to property and the environment. Disasters can be naturally occurring events, such as earthquakes, landslides and flooding. The impact of MA&D can be very significant, but the likelihood of occurrence is low.

Likely Impacts and Effects

7.12.3 A number of MA&D scenarios were identified for the Proposed Development which could have significant consequences to people and the environment, but a low probability of occurrence. These scenarios include (but are not limited to) fire/ explosion and release of harmful gas, major spillage/ leak of chemicals or pollutants, extreme weather, vandalism, ground collapse, major road traffic accident, aircraft/ drone impact and domino effects from impacts at neighbouring facilities.

7.12.4 The engineering design, construction and operation of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of MA&D to an acceptable level, i.e. as low as is reasonably practicable (ALARP), which is the standard expected by the Regulatory Authorities (Health and Safety Executive and Environment Agency).

7.12.5 It is anticipated that through implementation of appropriate mitigation measures to reduce risks to ALARP (described in Chapter 18: Major Accidents and Disasters - PEI Report, Volume I), no significant residual effects on sensitive receptors are considered likely.

7.12.6 Risks during the decommissioning phase have not specifically been included since the hazards are anticipated to be similar to those addressed within the construction and operational phases. No additional decommissioning hazards have been identified that could give rise to potential significant effects.

## 7.13 Cumulative and Combined Effects

7.13.1 The purpose of Chapter 19: Cumulative and Combined Effects (PEI Report, Volume I) is to provide an assessment of the potential for cumulative and combined effects to occur as a result of the Proposed Development.

7.13.2 A number of other proposed developments that are also likely to be constructed and operated in future, and that have the potential to generate cumulative environmental effects together with the Proposed Development, have been identified in the short-list presented in Table 19-2 of Chapter 19: Cumulative and Combined Assessment (PEI Report, Volume I. These include (but are not limited to) the construction and operation of the proposed ZCH Partnership pipeline which the Proposed Development will connect to, but which will be separately consented. Figure NTS24 below indicates the current pipeline routing plans.

7.13.3 Significant cumulative effects may be possible due to the nature of these developments (e.g. the potential for the Proposed Development and other developments to release emissions to air in the vicinity of the receptors) or their location (e.g. close enough to affect the same receptors). The cumulative effects assessment follows a four-stage process as set out by guidance produced by the Planning Inspectorate:

- Stage 1: Establishing the long list of 'other existing development and/or approved development';
- Stage 2: Establishing a shortlist of 'other existing development and/or approved development';
- Stage 3: Information Gathering; and
- Stage 4: Assessment.

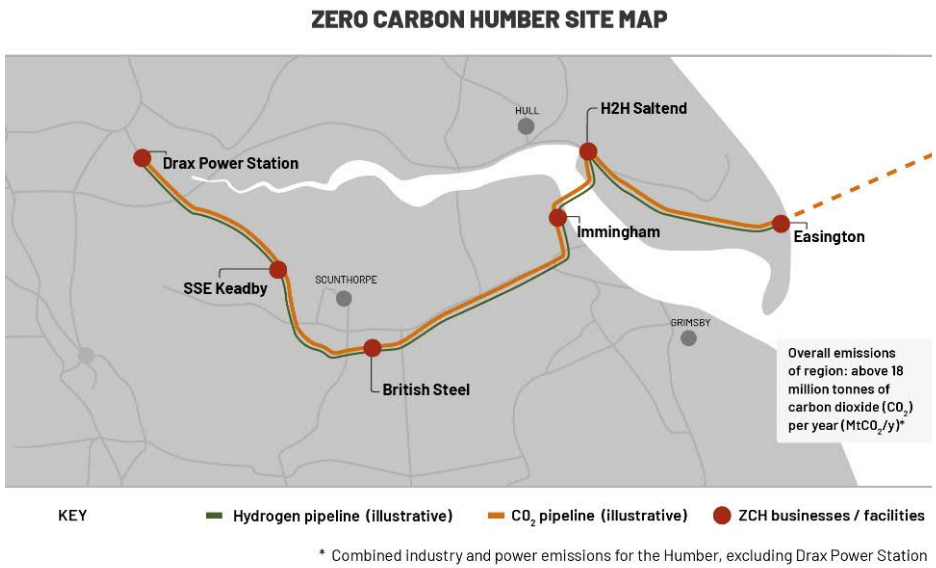



Figure NTS24: Indicative Zero Carbon Humber Routing

7.13.4 The assessment included within the PEI Report (see Chapter 19 in PEI Report, Volume I) is currently at Stage 3 and has established a preliminary short list of developments for the purposes of information gathering. The full list is available in Table 19-2 of Chapter 19: Cumulative and Combined Assessment (PEI Report, Volume I).

7.13.5 Following consultation with North Lincolnshire Council on this list, Stages 3-4 will be completed and only those developments considered to have the potential to generate potential significant cumulative effects will be scoped into the assessment presented within the final ES.

## 8.0 SUMMARY AND CONCLUSIONS

8.1.1 This NTS and PEI Report present an assessment of the preliminary potential environmental impacts and effects of the Proposed Development during construction, commissioning, operation (including maintenance) and decommissioning phases.

8.1.2 The Proposed Development is set within the existing Keadby Power Station site and has been sited and will be designed to be in keeping with the surrounding infrastructure. This has helped to minimise the potential for significant adverse environmental effects.

8.1.3 Section 7 of this NTS and Chapters 8-18 of the PEI Report (Volume I) have considered the potential environmental impacts and effects of the Proposed Development, including the identification of potential adverse and beneficial environmental effects that could be considered significant (i.e. moderate and major effects) both before, and after mitigation and enhancement measures are taken into account. the assessment has been undertaken on the basis of the Rochdale Envelope principle where worst case assumptions have been used for any aspects where the final design selection has not yet been made.

8.1.4 A range of environmental impact avoidance, design and mitigation measures have been identified to mitigate and control environmental effects during construction, operation and decommissioning phases of the Proposed Development. Where these are not embedded in the design of the Proposed Development, it is envisaged that they would be secured through a number of 'requirements' (similar to planning conditions attaching to a planning permission) contained within the draft DCO submitted with the Application.

8.1.5 The PEI Report indicates that potentially significant adverse residual effects (i.e. after mitigation has been taken into account) and potentially significant beneficial effects of the Proposed Development would include:

- based on screening assessments, potentially significant air impacts could occur from the release or formation of amine degradation products although no air quality standards or

guidelines are predicted to be exceeded. There is also some potential for adverse air quality effects on habitats containing species sensitive to ammonia, where levels at these sites are already above relevant thresholds. Work is ongoing to determine the level of significance of effect and whether additional mitigation is required. This will be established prior to submission of the DCO application;

- a moderate adverse visual amenity effect during Proposed Development construction, operation and decommissioning on Viewpoint 1 (Chapel Lane West, Keadby), Viewpoint 2 (Gate Keepers Residence, Keadby) and Viewpoint 3 (PRoW KEAD9 and KEAD10), north of Keadby which would experience a medium magnitude of impact due to the introduction of built structures against the skyline, making them more prominent and extending the amount of the view which includes large scale development. Such adverse effects cannot be mitigated further, for example by additional planting, as the visual effects relate to the height and massing of the structures that comprise the Proposed Development; and
- a significant beneficial effect related to direct and indirect employment created by the construction phase of the Proposed Development is predicted on the economy.

8.1.6 For certain topics (e.g. noise and vibration and cultural heritage), work is ongoing to establish appropriate impact avoidance measures and mitigation strategies. On completion of this work, no other significant residual effects are envisaged as likely to result from the Proposed Development.

# 9.0 REFERENCES

Department of Energy and Climate Change, Overarching National Policy Statement for Energy (EN-1) (London, The Stationery Office, 2011)

Department of Energy and Climate Change, National Policy Statement for Fossil Fuel Electricity Generating Infrastructure (EN-2) (London, The Stationery Office, 2011)

Department of Energy and Climate Change, National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (London, The Stationery Office, 2011)

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Planning Inspectorate (PINS) (2020) Scoping Opinion: Proposed Keadby 3 Low Carbon Gas Power Station Development

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