



Drax Power Limited

DRAX REPOWER PROJECT

Preliminary Environmental Information
Report Volume 1





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Preliminary Environmental Information Report Volume 1

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ABBREVIATIONS / GLOSSARY

Abbreviation	Term in full
AADF	Annual Average Daily Flow
AIL	Abnormal Indivisible Load
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AQAL	Air Quality Assessment Level
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BAT	Best Available Techniques
BCT	Bat Conservation Trust
BGS	British Geological Survey
BMV	Best and Most Versatile (agricultural land)
BRE	Building Research Establishment
BTO	British Trust for Ornithology
CA	Conservation Area
CCGT	Combined Cycle Gas Turbine
CCR	Carbon Capture Readiness
CCS	Carbon Capture and Storage
CD&E	Construction, Demolition & Excavation
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
CIEEM	Chartered Institute for Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
COMAH	Control of Major Accidents and Hazards
COSHH	Control of Substances Hazardous to Health
CS	Selby District Core Strategy
CTMP	Construction Traffic Management Plan
dB	Decibel
dB(A)	A-weighted Decibel

Abbreviation	Term in full
DBA	Desk-based Assessment
DBEIS	Department for Business, Energy and Industrial Strategy
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
Defra	Department for Environment, Food and Rural Affairs
DMBC	Doncaster Metropolitan Borough Council
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EC	European Commission
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
EMP	Environmental Management Plan
EMR	Electricity Market Reform
EPI	Environmental Performance Indicator
EPS	European Protected Species
EPUK	Environmental Protection UK
ERoY	East Riding of Yorkshire Council
ES	Environmental Statement
FEP	Flood Evacuation Plan
FGD	Flue Gas Desulphurisation
FRA	Flood Risk Assessment
GCN	Great Crested Newt
GHG	Greenhouse Gas
GIA	Gross Internal Area
GIS	Gas Insulated Switchgear
GIS	Geographical Information Systems
GLVIA 3	Guidelines for Landscape and Visual Impact Assessment, Third Edition
GRF	Gas Receiving Facility
HA	Heritage Asset

Abbreviation	Term in full
HE	Highways England
HE	Historic England
HER	Historic Environment Record
HGV	Heavy Goods Vehicle
HPI	Habitats of Principal Importance
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executive
IAQM	Institute of Air Quality Management
IDB	Internal Drainage Board
IED	Industrial Emissions Directive
IEF	Important Ecological Features
IEMA	Institute of Environmental Management
ILAs	Important Landscape Areas
JNCC	Joint Nature Conservation Committee
LA90 dB	Background Sound
LAeq, T dB	Equivalent Continuous Sound Level
LAQM	Local Air Quality Management
LB	Listed Building
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Areas
LCPD	Large Combustion Plant Directive
LCT	Landscape Character Type
LGV	Light Goods Vehicle
LLFA	Lead Local Flood Authority
Lmax	Highest Measured Sound Pressure Level
Lmin	Lowest Measured Sound Pressure Level
LNRR	Local Nature Reserve
LOAEL	Lowest Observed Adverse Effect Level
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site

Abbreviation	Term in full
MAGIC	Multi Agency Geographic Information for the Countryside
MOC	Minimum Offtake Connection
MS	Method Statement
MW	Megawatts
NE	Natural England
NERC	Natural Environment And Rural Communities
NERP	National Emissions Reduction Plan
NEWP	Natural Environment White Paper (2012)
NGR	National Grid Reference
NH ₃	Ammonia
NNR	National Nature Reserve
NO ₂	Nitrogen dioxide
NOEL	No Observed Effect Level
NO _x	Nitrogen oxides
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NPSE	Noise Policy Statement for England
NSIP	Nationally Significant Infrastructure Project
NSR	Noise Sensitive Receptor
NTS	National Transmission System
NYCC	North Yorkshire County Council
YES	North Yorkshire Ecology Service
ONS	Office of National Statistics
OS	Ordinance Survey
PA	Principal Archaeologist
PA 2008	Planning Act 2008 (as amended)
PC	Process Contribution – the contribution of the Proposed Scheme, to pollutant concentrations and/or pollutant deposition
PEA	Preliminary Ecological Appraisal
PEC	Predicted Environmental Concentrations – the Process Contribution plus Background concentrations (including the Existing Drax Power Station Complex)

Abbreviation	Term in full
PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
PGLRA	Preliminary Ground Level Roost Assessment for trees
PIG	Pipeline Inspection Gauge
PINS	Planning Inspectorate
PLU	Primary Landscape Unit
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres
PPE	Personal Protective Equipment
PPG	Planning Practice Guidance
PPS	Planning Policy Statement
PRA	Preliminary Risk Assessment
PRF	Potential Roost Feature
PRMS	Pressure Reduction and Metering Station
PRoW	Public Rights of Way
PTF	PIG Trap Facility
RIGS	Regionally Important Geological Site
RSPB	The Royal Society for the Protection of Birds
rWFD	revised Waste Framework Directive
SAC	Special Area of Conservation
SCR	Selective Catalytic Reduction
SDC	Selby District Council
SDLP	Selby District Local Plan
SINC	Site of Importance for Nature Conservation
SM	Scheduled Monument
SOAEL	Significant Observed Adverse Effect Level
SoS	Secretary of State
SPA	Special Protection Area
SPL	Sound Pressure Level
SPZ	Source Protection Zone
SRN	Strategic Road Network

Abbreviation	Term in full
SSG	Sherwood Sandstone Group
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
SWL	Sound Power Level
SWMP	Site Waste Management Plan
TCPA	Town and Country Planning Act 1990 (as amended)
UK	United Kingdom
WFD	Waste Framework Directive
WFD	Water Framework Directive
ZOI	Zone of Influence
ZTV	Zone of Theoretical Visibility

GLOSSARY

Term	Definition
µg/m ³ microgrammes per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m ³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
Abnormal Indivisible Load	An 'abnormal Indivisible load' (AIL) is a vehicle that has any of the following: a weight of more than 44,000 kilograms, an axle load of more than 10,000 kilograms for a single non-driving axle and 11,500 kilograms for a single driving axle, a width of more than 2.9 metres, a rigid length of more than 18.65 metres.
Above-Ground Heritage Asset	Above-Ground Heritage Assets can include earthworks, historic buildings and structures, historic landscapes and hedgerows.
Agricultural Land Classification (ALC)	A framework for determining the physical quality of the land at national, regional and local levels. This is based on the long term physical limitations of land for agricultural use. There are a number of factors that affect the grade and the main ones are climate, site and soil characteristics, and the interactions between them.
Ambient Sound	The totally encompassing sound in a given situation, at a given time, including sound from any source in any direction.
Ancient Woodland	Ancient woodland is defined as an area that has been wooded continuously since at least 1600 AD. Ancient Woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Both types are classed as ancient woods.
A-weighting	The human ear can detect sound over a wide range of frequencies, from 20 Hz to 20 kHz, but it is more sensitive to some frequencies than others. Generally, the ear is most sensitive to sounds with frequencies in the range 1 to 4 kHz. The A-weighting is a filter that can be applied to measured SPL at varying frequencies, to mimic the frequency response (or sensitivity) of the human ear, and therefore better represent the likely perceived loudness of the sound. SPL readings with the A-weighting applied are represented in dB(A).
Background Sound	A component of the residual sound, comprising the steady sounds underlying sources that fluctuate in

Term	Definition
	level within a period of consideration. This can be evaluated using the LA90 metric.
Baseline	A reference level of existing environmental conditions against which a project is measured and controlled.
Baseline Studies	Work done to determine and describe the environmental conditions against which any future changes can be measured or predicted and assessed
Below-Ground Heritage Asset	Below-Ground Heritage Assets include both known and hitherto unknown buried archaeological remains.
Best and most versatile agricultural land (BMV)	Defined as Grades 1, 2 and 3a by the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG). This is the land which is determined to be most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. Grades 3b, 4, and 5 are used to classify land that is of moderate quality to very poor quality.
Biodiversity	Abbreviated form of 'biological diversity' referring to variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part.
Biodiversity Action Plan (BAP)	Plans which set specific, measurable, achievable, realistic and time bound conservation targets for species and habitats. The UK BAP is the UK Government's response to the Convention on Biological Diversity (CBD) signed in 1992. More information is available at www.ukbap.org.uk .
Birds Directive	Direction 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
Breeding Bird Survey (BBS)	The main scheme coordinated by the BTO/JNCC/RSPB for monitoring the population changes of the UK changes of the UK's common breeding birds. Commonly used in commercial ecological consultancy to survey for birds.
British Geological Survey	Provider of objective and authoritative geoscientific data, information and knowledge for the UK.

Term	Definition
Characterisation	The process of identifying areas of similar landscape character, classifying and mapping them and describing their character.
Characteristics	Elements, or combinations of elements, which make a contribution to distinctive landscape character.
Chartered Institute of Ecology and Environmental Management (CIEEM)	The professional membership body representing and supporting Ecologists and Environmental professionals in the UK, Ireland and abroad. Previously known as Institute of Ecology and Environmental Management (IEEM).
Climate Change	Large scale, long term shift in the planet's weather patterns or average temperature.
Combined Cycle Gas Turbine (CCGT)	A combined cycle gas turbine is an assembly of turbines that convert heat into mechanical energy. Combustion of a fuel within a gas turbine produces hot gases that expand over a complex series of blades that cause the turbine to rotate which in turn drives an electrical generator. The principle of combined cycle is that the exhaust gases from the turbine is used as a heat source in a heat recovery steam generator (HRSG), increasing the system's overall efficiency by utilising energy from the fuel that would otherwise be wasted.
Combined Heat and Power (CHP)	Combined Heat and Power is the simultaneous generation of electrical power and usable heat in a single process, and is also known as co-generation. A CHP station may either supply steam direct to customers or capture heat from low-pressure steam after it has been used to drive electricity generating turbines for hot water or space heating purposes.
Compensation	Measures devised to offset or compensate for residual adverse effects which cannot be prevented/avoided or further reduced.
Construction Environmental Management Plan (CEMP)	Document setting out methods to avoid, minimise and mitigate environmental impacts on the environment and surrounding area and the protocols to be followed in implementing these measures in accordance with environmental commitments during construction.

Term	Definition
Cultural Heritage Significance	The value of a Heritage Asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a Heritage Asset's physical presence, but also from its setting.
Cumulative effects	The summation of effects that result from changes caused by a development in conjunction with other reasonably foreseeable development that is either consented but not yet constructed or is in the process of seeking consent.
DCO Application	The application for a DCO in respect of the Proposed Scheme.
Decibel (dB)	The decibel scale is used in relation to sound because it is a logarithmic rather than a linear scale. The decibel scale compares the level of a sound relative to another. The human ear can detect a wide range of sound pressures, typically between 2×10^{-5} and 200 Pa, so the logarithmic scale is used to quantify these levels using a more manageable range of values.
Department for Environment, Food and Rural Affairs (DEFRA)	The UK Government department responsible for the environment, food and rural affairs.
Designated Heritage Assets	For the purposes of this assessment, Scheduled Monuments, Listed Buildings and Conservation Areas are designated under the relevant legislation.
Designated Landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.
Development Consent Order (DCO)	A Development Consent Order (DCO) is made by the Secretary of State (SoS) pursuant to the Planning Act 2008 (PA 2008) to authorise a Nationally Significant Infrastructure Project (NSIP).
Direct effect	An effect that is directly attributable to the Proposed Development.
Direct employment	Refers to the initial injection of expenditure, i.e. people employed in the construction of the Proposed Scheme (direct and contracted employment) and expenditure of goods, services and capital for the construction.

Term	Definition
Displacement	Refers to a reduction in economic activity elsewhere within the local / regional levels due to an increase in activity caused by the Proposed Scheme. This includes jobs which are located elsewhere within the local / regional levels which are likely to move directly into the Proposed Scheme when it becomes operational, jobs which are replaced by the Proposed Scheme and jobs which may be created in the absence of the Proposed Scheme.
'Do nothing' situation	Continued change or evolution in the landscape in the absence of the Proposed Scheme.
Dust	Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials.
Ecological Impact Assessment (EcIA)	A recommended procedure for the ecological component of Environmental Impact Assessment.
Economically Active	Individuals in employment or actively seeking employment.
Effect	The consequence of an impact on the environment.
Elements	Individual parts which make up the landscape, such as, for example, trees, hedges, and buildings.
Emission	A material that is expelled or released to the environment. Usually applied to gaseous or odorous discharges to the atmosphere.
Emission rate	The quantity of a pollutant released from a source over a given period of time.
Enhancement	Proposals that seek to improve the landscape resource and the visual amenity of the Proposed Development site and its wider setting, over and above its baseline condition.
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.
Environmental Impact Assessment (EIA)	A systematic means of assessing a development project's likely significant environmental effects undertaken in accordance with the Infrastructure

Term	Definition
	Planning (Environmental Impact Assessment) Regulations 2017.
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Environmental Statement	A statement that includes the information that is reasonably required to assess the environmental effects of a development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but that includes at least the information required in the EIA Regulations and which is prepared in accordance with the latest Scoping Opinion adopted by the Secretary of State (where relevant).
Equivalent Continuous Level (LAeq, T)	The Equivalent Continuous Level represents a theoretical continuous Sound Pressure Level, over a stated time period, T, which contains the same amount of energy as a number of sound events occurring within that time, or a source that fluctuates in level. It is essentially the average noise level over a specified time period. For example, a noise source with an SPL of 80 dB(A) operating for two hours during an eight-hour working day, has an equivalent A-weighted continuous level over eight hours of 74 dB, or LAeq,8hrs = 74 dB. The time period over which the LAeq is calculated should always be stated.
European Commission (EC)	The executive body of the European Union responsible for proposing legislation, enforcing European law, setting objectives and priorities for action, negotiating trade agreements and managing implementing European Union policies and the budget.
European Protected Species (EPS)	European Protected Species are animals and plants that receive protection under the Conservation of Habitats and Species Regulations 2017, in addition to the Wildlife and Countryside Act 1981 (as amended).
European Protected Species (EPS) Derogation License	A license issued to permit an activity affecting European Protected Species that would otherwise be an offence under the Habitats Regulations.

Term	Definition
Exceedance	A period of time where the concentrations of a pollutant is greater than the appropriate air quality standard.
Existing Drax Power Station Complex	Land and facilities comprising the existing Drax Power Station.
Feature	Particularly prominent or eye-catching elements in the landscape, such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.
Flood Map for Planning	Defines flood zones based on annual probability of flooding from fluvial and tidal sources to inform development planning and flood risk assessment. Nationally consistent delineation of 'high', 'medium' and 'low' flood risk updated by the Environment Agency as deemed appropriate, typically on a quarterly basis.
Flood Zone 1	This zone comprises land assessed as having less than a 1 in 1000 (0.1%) annual probability of flooding from rivers or the sea in any year.
Flood Zone 2	This zone comprises land assessed as having between a 1 in 100 (1%) and 1 in 1000 (0.1%) annual probability of flooding from rivers, or between a 1 in 200 (0.5%) and 1 in 1000 (0.1%) annual probability of flooding from the sea in any year.
Flood Zone 3a	This zone comprises land assessed as having a 1 in 100 (1%) or greater annual probability of flooding from rivers or a 1 in 200 (0.5%) or greater annual probability of flooding from the sea in any year.
Flood Zone 3b	This zone comprises land where water has to flow or be stored in times of flood.
Fluvial	Of, or relating to, or inhabiting a river or stream.
Free Field Conditions	In free field conditions sound behaves as if in open air without reflecting surfaces to interfere with its propagation.

Term	Definition
Gas Turbine	Gas turbines produce electricity. Air is drawn into the compressor of the gas turbine and is compressed. The fuel is then injected into the combustion chamber. The mixture of fuel and compressed air is ignited, producing gases at high temperatures. As the gas expands, it rotates the turbine to produce electricity.
Geographical Information System	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database
Greenhouse Gas (GHG)	Greenhouse gases are gases that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. The six main GHGs whose emissions are human-caused are: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons perfluorocarbon and sulphur hexafluoride. In combination, these GHG emissions are commonly expressed in terms of 'carbon dioxide equivalents' (CO ₂ e) according to their relative global warming potential. For this reason the shorthand 'carbon' may be used to refer to GHGs.
Groundwater Source Protection Zone	Source Protection Zones (SPZs), defined for 2000 groundwater sources such as wells, boreholes and springs used for public drinking water supply, show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. The maps show three main zones (inner, outer and total catchment) and a fourth zone of special interest, which the Environment Agency occasionally apply, to a groundwater source.
Habitat	The environment in which populations or individual species live or grow.
Habitats Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna.
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017 .
Habitats Regulations Assessment (HRA)	The Habitats Regulations are used to implement the Habitats Directive and require a Habitats Regulations Assessment for Nationally Significant Infrastructure Projects (NSIPs).

Term	Definition
Harm	Change for the worse, here primarily referring to the effect of inappropriate interventions on the heritage values of a Heritage Asset.
Heat Recovery Steam Generators (HRSG)	HRSGs recover the hot flue gases from the gas turbines. The heat is used to produce steam that will drive the existing steam turbines. HRSGs are required where the generating station is a CCGT plant.
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions
Heritage Asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage Assets include Designated Heritage Assets and Non-Designated Heritage Assets.
Hydrology	The movement, distribution and quality of water throughout the earth.
Impact	A physical or measurable change to the environment attributable to the Proposed Scheme.
Important Ecological Features	Species and habitats present within the zone of influence of the Proposed Scheme that are of sufficiently high value that an effect upon them as a result of the Proposed Scheme could be considered to be significant.
Indices of Multiple Deprivation	The indices of deprivation, measure relative deprivation in local authorities across England. The index of multiple deprivation is the most widely used of these indices.
Indirect effects	Effects that result indirectly from the proposed project, in this case the Proposed Scheme, as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects
Indirect employment	Refers to the subsequent rounds of expenditure generated throughout the supply chain by the initial expenditure on goods, services and capital.

Term	Definition
Invasive Non-Native Species	Non-native UK animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live.
Iterative design process	The process by which project design is amended and improved by successive stages of refinement which respond to growing understanding of environmental issues
Joint Nature Conservancy Committee (JNCC)	A public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place
L90 or LA90 and other percentile measures	This represents the SPL which is exceeded 90% of the time, expressed in dB or dB(A). LA90 is used to quantify background noise levels (see Background Sound above). Other percentiles exist and are used for various types of noise assessment. These include L01, L10, L50, L99.
Land Cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to, but not the same as, Land use
Land use	What land is used for, based on broad categories of functional land cover, such as urban and infrastructure use and the different types of agricultural and forestry.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes
Landscape	An area, as perceived by people, the character of which is a result of the action and interaction of natural and/or human factors
Landscape and Visual Impact Assessment	A tool used to identify and assess the likely significant effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another

Term	Definition
Landscape Character Areas	These are single unique areas which are the discrete geographical areas of a particular landscape type
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make a landscape distinctive. The process results in the production of a Landscape Character Assessment
Landscape Character Types	These are distinct types of landscape that are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement patterns, and perceptual and aesthetic attributes
Landscape Effects	Effects on the landscape as a resource in its own right
Landscape Receptors	Defined aspects of the landscape resource that have the potential to be effected by a proposal
Laydown Area	Areas that will be used during construction for the temporary locating of construction offices, warehouses, workshops, open air storage areas and car parking.
Lead Local Flood Authority	Local Authority responsible to taking the lead on local flood risk management as defined within the Flood and Water Management Act.
Leakage	Refers to the proportion of the Proposed Scheme's benefits that accrue outside the local / regional study area.
Lmax and Lmin	The Lmax or Lmaximum represents the highest measured sound pressure level during a measurement period T. The Lmin or Lminimum represents the lowest measured sound pressure level during a measurement period T.
Local Biodiversity Action Plan (LBAP)	A strategy and set of objectives aimed at conserving, monitoring and raising awareness of the fauna, flora

Term	Definition
	and habitats- collectively referred to as biodiversity- usually along local authority boundary lines.
Local Development Plan (LDP)	The set of documents and plans that sets out the local authority's policies and proposals for the development and use of land in their area. The Local Development Plan for Selby District Council is the CS and the SDLP.
Local Nature Reserve (LNR)	A site of importance for wildlife, geology, education or public enjoyment. Some are also nationally important Sites of Special Scientific Interest. Local Nature Reserves must be controlled by the local authority through ownership, lease or agreement with the owner.
Local Planning Authority (LPA)	The local authority or council that is empowered by law to exercise statutory town planning functions for a particular area of the United Kingdom.
Lower Super Output Area (LSOA)	A geographic unit used for statistical purposes
Lowest Observed Adverse Effect Level	The level above which adverse effects on health and quality of life can be detected.
Made Ground	Areas where material is known to have been placed by people on the pre-existing (natural or artificial) land surface (including engineered fill).
Magnitude	A combination of the scale, extent and duration of an effect.
Main river	Main rivers are usually larger streams and rivers, but also include smaller watercourses of strategic drainage importance. A main river is defined as a watercourse shown as such on the Flood Map for Planning (Rivers and Sea), and can include any structure or appliance for controlling or regulating the flow of water in, into or out of a main river. Main rivers are under the jurisdiction of the Environment Agency who have powers to carry out flood defence works to main rivers.
Mitigation Hierarchy	The mitigation hierarchy is to first try to avoid, then prevent and then reduce likely significant adverse effects on the environment and, if possible, offset likely significant adverse effects on the environment.

Term	Definition
Mitigation Measures	Actions proposed to prevent, reduce and where possible offset significant adverse effects arising from the whole or specific elements of a development.
Multi Agency Geographic Information for the Countryside (MAGIC)	Authoritative geographic information about the natural environment from across government.
National Nature Reserve (NNR)	Established to protect sensitive features and to provide 'outdoor laboratories' for research.
National Planning Policy Framework (NPPF)	A document that sets out government's planning policies for England and how these are expected to be applied.
National Policy Statement (NPS)	Overarching policy designated under the PA 2008 concerning the planning and consenting of NSIPs in the UK.
Nationally Significant Infrastructure Project (NSIP)	The Proposed Scheme constitutes a Nationally Significant Infrastructure Project (NSIP) by virtue of s.14(1)(a) and s.15 of the PA 2008 which include within the definition of a NSIP any onshore generating station (except wind) in England of 50 MW capacity or more.
Natural Environment White Paper (NEWP)	This document outlines the government's vision for the natural environment over the next 50 years. It also describes the actions that will be taken to deliver that goal.
No Observed Effect Level	The level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
Noise	A noise can be described as an unwanted sound. Noise can cause nuisance.
Noise Sensitive Receptors	Any identified receptor likely to be affected by noise. These are generally human receptors, and may include residential dwellings, work places, schools, hospitals, community facilities, places of worship, recreational spaces and ecological receptors.
NOMIS	Official labour market statistics provided by the Office for National Statistics (ONS).
Non Designated Heritage Assets	Assets identified by the local planning authority either through the development plan making process or on the basis of clear evidence that the assets have a heritage significance that merits consideration in planning decisions, even though those assets are of

Term	Definition
	lesser value than Designated Heritage Assets. Non designated assets include those that have been identified in the Historic Environment Record, in a local plan, through local listing or through the assessment process.
North Yorkshire Council Ecology Service (NYCES)	Ecological department of North Yorkshire County Council, part of the heritage services team. NYCES helps to protect the county's habitats and wildlife by providing ecological planning guidance.
Open Cycle Gas Turbine (OCGT)	An open cycle gas turbine converts heat into mechanical energy. Combustion of a fuel within a gas turbine produces hot gases that expand over a complex series of blades that cause the turbine to rotate which in turn drives an electrical generator.
Ordinary watercourse	An ordinary watercourse is every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows that does not form part of a main river. The Lead Local Flood Authority, or Internal Drainage Board where relevant, has powers for ordinary watercourses that are similar to those held by the Environment Agency for main rivers.
Ordnance Survey (OS)	Great Britain's national mapping agency
Parameters	A limit or boundary which defines the scope of a particular process or activity.
Phase 1 Habitat Survey	An ecological survey technique that provides a standardised system to record vegetation and wildlife habitats. It enables a basic assessment of habitat type and its potential importance for nature conservation.
Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.
Pipeline Study Area	The land under consideration for the pipeline
Planning Inspectorate (PINS)	The government agency responsible for examining planning applications for NSIPs under the Planning Act 2008 on behalf of the SoS.
Potential Roost Feature (PRF)	Any feature within a building or tree that has potential for a bat to roost in.

Term	Definition
Power Station Site	Areas within the Drax Power Station Complex where development is proposed.
Preliminary Ecological Appraisal (PEA)	Preliminary ecological surveys have a range of purposes; one key use is to gather data on existing conditions, often with the intention of conducting a preliminary assessment of likely impacts of development schemes or establishing the baseline for future monitoring. As a precursor to a proposed project, some evaluation is usually made within these appraisals of the ecological features present, as well as scoping for notable species or habitats, identification of potential constraints to proposed development schemes and recommendations for mitigation.
Preliminary Ground Level Roost Assessment for trees (PGLRA)	A detailed inspection of the exterior of the tree from ground level to look for features that bats could use for roosting (PRFs). The aim of this survey is to determine the actual or potential presence of bats and the need for further survey and/or mitigation.
Principal Aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, Principal Aquifers are aquifers previously designated as major aquifer.
Proposed Scheme	Drax Power Limited is proposing to repower up to two existing coal-fired units (known as unit 5 and unit 6) with gas. Each unit would comprise CCGT and OCGT technology and have a capacity of up to 1,800MW. Each unit would also have a battery storage capability of up to 100MW (subject to technology and commercial considerations). Should both units be repowered, the new gas-fired units would have a combined capacity of 3,600 MW and a combined battery storage capacity of 200 MW. Drax is seeking consent for the flexibility to either repower one unit (with 1,800MW generating capacity and a 100MW battery storage capacity) or to repower two units (two single units each with a 1,800MW generating capacity and each with its own 100MW battery storage capacity, totalling a capacity of up to 3,800MW). The decision as to whether Drax repowers two units as opposed to a single unit is a

Term	Definition
	commercial decision that can only be taken post any consent being granted. In order to repower to gas, a new gas pipeline needs to be constructed from Drax Power Station to the NTS. Drax's Proposed Scheme is described in more detail in Chapter 3 (Site and Project Description) of this PEIR.
Ramsar Site	Wetlands of international importance, designated under the Ramsar Convention 1971.
Rating Level	As part of the BS4142 assessment method the Rating Level is the sum of the Specific Sound and any acoustic feature corrections, which may be applied for tonal, impulsive or intermittent characteristics. Acoustic feature corrections are added linearly to the Specific Sound and can range from 2 dB to 5 dB, depending on the characteristic.
Receptor	A component of the natural, created or built environment such as a human being, water, air, a building, or a plant that has the potential to be affected by the Proposed Scheme.
Residual Effects	Those effects of a development that cannot be mitigated following implementation of mitigation proposals.
Residual Sound	Another component of the ambient sound, associated with any sources other than the specific source(s) under consideration.
Scoping	An exercise undertaken pursuant to regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 to determine the topics to be addressed within the Environmental Statement.
Secondary Aquifer	These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary Aquifers are subdivided into two types: 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;

Term	Definition
	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. The term “Secondary Undifferentiated” is also used in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Selby District Core Strategy Local Plan 2013 (CS)	The first part of the replacement for the 2005 Selby District Local Plan. This sets out the high level strategic policies for the District for the period 2012 - 2028. The policies in the Core Strategy replace much of the SDLP policies.
Selby District Local Plan 2005 (SDLP)	A suite of local plan policies that was implemented in 2005. Some policies have been saved for joint consideration with the Selby District Core Strategy Local Plan 2013. Others have been deleted and replaced with new policies in the Core Strategy.
Selective Catalytic Reduction (SCR)	A NO _x abatement technology.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor
Sequential	Where two or more features are not present in views from the same point on a route and cannot therefore ever be seen at the same time even if the arc of view experienced by the observer changes. The observer must move to another point along the same route to see the second or more of them and then they appear in a sequence. Sequential views often occur when moving along a linear route as the observer moves from one point to another and may occur in both directions
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic

Term	Definition
Significant Observed Adverse Effect Level	The level above which significant adverse effects on health and quality of life occur.
Site	The Site refers to both the Power Station Site and the Pipeline Study Area, within which the Proposed Scheme is proposed to be located.
Site Boundary	The Site Boundary refers to the outer perimeter of the Site.
Site of Importance for Nature Conservation (SINC)	Sites of Importance for Nature Conservation are usually selected within a local authority area and support both locally and nationally threatened wildlife. Many sites will contain habitats and species that are priorities under the county or UK Biodiversity Action Plans (BAP).
Site of Special Scientific Interest (SSSI)	A site statutorily notified under the Wildlife and Countryside Act 1981 (as amended) as being of special nature conservation or geological interest. SSSIs include wildlife habitats, geological features and landforms.
Site Reconfiguration Works	The Site Reconfiguration Works refer to various works described below that are in the ordinary course of site reconfiguration works for Drax Power Station. The works comprise: 1. Demolition of the private squash court (no replacement), Learning Centre (consolidated into existing facilities); and 2. Demolition of and reconstruction of car parking, Turbine Outage Stores, contractor's compounds and welfare facilities. In addition, a cooling water spray screen will be built between relocated facilities and the southern cooling towers. The Site Reconfiguration Works may be consented by either: A separate TCPA application, applied for in 2018; or As part of the DCO Application.
Sound Power Level (SWL)	The Sound Power Level defines the rate at which sound energy is emitted by a source, and is also expressed in dB. It is defined as follows: $SWL (dB) = 10 \log_{10}(W/W_{ref})$ where

Term	Definition
	W = Sound Power (in Watts) Wref = Reference Power 1 picoWat A few approximate examples of point source SWL are provided as follows; A very quiet ticking watch 30 dBw Quiet communication in a library 50 dBw An alarm clock: 70 dBw Loud shouting: 90 dBw A jackhammer: 130 dBw
Sound Pressure Level (SPL)	The Sound Pressure Level has units of decibels, and compares the level of a sound to the smallest sound pressure generally perceptible by the human ear, or the reference pressure. It is defined as follows: $\text{SPL (dB)} = 10 \log_{10}(P/P_{\text{ref}})^2$ where P = RMS Sound Pressure (in Pa) Pref = Reference Pressure 2×10^{-5} Pa An SPL of 0 dB suggests the Sound Pressure of a sound is equal to the reference pressure. This is known as the threshold of hearing. An SPL of 140 dB represents the threshold of pain.
Source Protection Zone (SPZ)	Designated zones around public water supply abstractions and other sensitive receptors that sign there are particular risks to the groundwater source they protect.
Special Area of Conservation (SAC)	Areas of protected habitats and species as defined in the European Union's Habitats Directive (92/43/EEC).
Special Protection Area (SPA)	Sites classified in accordance with Article 4 of the EC Birds Directive (79/409/EEC) which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex 1 of the Directive), and for regularly occurring migratory species.
Species	A group of interbreeding organisms that seldom or never interbreed with individuals in other such

Term	Definition
	groups, under natural conditions; most species are made up of subspecies or populations.
Specific Sound	A component of the ambient sound, associated with a specific source/s under consideration.
Standard of Protection (SoP)	The SoP that a flood defence offers is expressed in terms of the likelihood of a particular flood event (or level) being equalled or exceeded in any given year. Therefore, if a flood defence offers a SoP of 1 in 50, it will take a 1 in 50 (or greater) flood event to overtop it.
Substitution	Where a firm substitutes one activity for a similar activity (e.g. to take advantage of public sector assistance).
Susceptibility	The ability of a defined landscape or visual receptor to accommodate the Proposed Scheme without undue negative consequences.
The applicant	Drax Power Limited. Referred to in this PEIR as the applicant or 'Drax'.
Townscape	The character and composition of the built environment including the buildings and the relationships between them, the different types of open urban space, including green spaces, and the relationship between buildings and open spaces.
Trial trenching	Archaeological intrusive evaluative technique.
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through the area.
Visual Effects	Effects on specific views and on the general visual amenity experienced by people.
Visual Receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a development.
Waste Hierarchy	Sets out the priorities that must be applied when managing waste.

Term	Definition
Water Framework Directive	European Union directive which commits member states to achieve good qualitative status of all water bodies.
Waterbody	A discrete body of water forming a physical feature.
Wildlife and Countryside Act 1981 (as amended)	The principal piece of UK legislation relating to the protection of wildlife.
Zone of Theoretical Visibility	A map, digitally produced, showing areas of land within which a development is theoretically visible.

1 INTRODUCTION

- 1.1.1. This Preliminary Environmental Information Report (PEIR) has been prepared by WSP on behalf of Drax Power Limited.

1.2 THE APPLICANT

- 1.2.1. The applicant is Drax Power Limited ('Drax'). Drax Power Station is owned and managed by the applicant, who is part of the Drax Group Plc, one of the UK's largest energy producers.

1.3 BACKGROUND

- 1.3.1. Drax Power Station is located near Selby, North Yorkshire.
- 1.3.2. Drax Power Station began generating electricity after its first 660 MW coal fired unit was commissioned in 1974. In 1975, the Power Station was officially opened, with three coal fired units and a total generating capacity of just under 2,000 MW. Eleven years later, in 1986, the Power Station doubled in size and became the largest power station in the UK. There are now six units at Drax Power Station which include three units converted to biomass (units 1-3) in 2003. The Power Station now has the capacity to meet 8% of the UK's electricity need and employs 830 people directly throughout the year. A further 4,500 jobs depend on Drax throughout Yorkshire and the Humber¹.
- 1.3.3. Land uses within the Power Station Site are predominantly associated with the operation of the Power Station. This includes a coal stock yard, hard standing, contractors' compounds, car parks, access/service roads and a riverside loading / unloading jetty, which is linked to the River Ouse to the east. Other land uses within the Power Station Site not directly related to the operation of the Power Station comprise open grassland, scrub and farmland.

1.4 THE PROPOSED SCHEME

- 1.4.1. Drax is proposing to repower up to two existing coal-fired units (known as unit 5 and unit 6) with gas. Each unit would comprise combined cycle gas turbine (CCGT) and open cycle gas turbine (OCGT) technology and have a capacity of up to 1,800 MW. Each unit would also have a battery storage capability of up to 100 MW (subject to technology and commercial considerations). Should both units be repowered, the new gas-fired units would have a combined capacity of 3,600 MW and a combined battery storage capacity of 200 MW (totalling a capacity of up to 3,800 MW). Drax is seeking consent for the flexibility to either repower one unit (with 1,800 MW generating capacity and a 100 MW battery storage capacity) or to repower two units (two single units each with a 1,800 MW generating capacity and each with its own 100 MW battery storage capacity). The decision as to whether Drax repowers two units as opposed to a single unit is a commercial decision that can only be taken post any consent being granted.
- 1.4.2. In order to repower to gas, a new gas pipeline needs to be constructed from Drax Power Station to the National Gas Transmission System (NTS).
- 1.4.3. Drax's Proposed Scheme is described in more detail in Chapter 3 (Site and Project Description) of this PEIR.

¹ <https://www.drax.com/about-us/our-businesses-and-projects/>

- 1.4.4. The Proposed Scheme includes the construction of a generating station with a capacity of more than 50 MW and accordingly meets the criteria given in the Planning Act 2008 (as amended) (PA 2008) for being a Nationally Significant Infrastructure Project (NSIP).
- 1.4.5. As a NSIP, the Proposed Scheme therefore requires a Development Consent Order (DCO) from the Secretary of State (SoS).
- 1.4.6. The process for applying for a DCO and the policy and legislation with which the Proposed Scheme must comply is described in more detail below.
- 1.4.7. The location of the Proposed Scheme is shown in Figure 1.1, an aerial view is shown in Figure 1.2 and the current and proposed land uses are shown in Figure 1.3. A more detailed description of the Proposed Scheme is provided in Chapter 3 (Site and Project Description).

1.5 CONSULTATION

- 1.5.1. North Yorkshire County Council (NYCC) and Selby District Council (SDC) were introduced to the Proposed Scheme by the applicant and WSP in a meeting on 23 August 2017.
- 1.5.2. They were briefed on the background to, and the details of, the Proposed Scheme, options being considered for the gas pipeline, environmental constraints, the programme, consultation and engagement, and next steps.
- 1.5.3. Engagement events, open to the public and aimed at introducing the Proposed Scheme ahead of this statutory consultation, took place in November 2017:
 - Wednesday 8 November 2017, 13:00-20:00, Selby Town Hall, York St, Selby, YO8 4AJ.
 - Thursday 9 November 2017, 11:00-16:30, Drax Sports and Social Club, Main Road, Drax, YO8 8PJ.
 - Saturday 11 November 2017, 10:30-13:30, Junction, Paradise Place, Goole, DN14 5DL.
- 1.5.4. The events were attended by 126 people and comments were received using feedback forms at the events (5%) and using an on-line form (95%). Of the responses received, 71% were supportive and 7% opposed. The remainder were either neutral or expressed no opinion.
- 1.5.5. This PEIR forms part of the current statutory consultation being undertaken, as required by the PA 2008, and the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations 2017).
- 1.5.6. Consultation events open to the public are scheduled for the following dates and times:
 - Saturday 20 January 2018, 10:00-16:00, Selby Town Hall, York St, Selby, YO8 4AJ.
 - Tuesday 23 January 2018, 15:00-20:00, Drax Sports & Social Club, Main Road, Drax, YO8 8PJ.
 - Wednesday 24 January 2018, 14:00-19:00, Junction, Paradise Place, Goole, DN14 5DL.
 - Thursday 1 February 2018, 10:00-16:00, Selby Town Hall, York St, Selby, YO8 4AJ.
 - Friday 2 February 2018, 09.30-13.30, Hemingbrough Methodist Church Hall, 2 Main St, Hemingbrough, Selby YO8 6QE.
- 1.5.7. Technical and procedural consultation has been ongoing, and will continue with statutory bodies such as NYCC, SDC, Natural England, the Environment Agency and the Internal Drainage Board.
- 1.5.8. A summary of consultation undertaken to date is provided in each of the technical chapters.

1.6 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

THE NEED FOR EIA

- 1.6.1. The Proposed Scheme is considered to be “Schedule 1 Development” under the EIA Regulations 2017. The Proposed Scheme, therefore, requires an environmental impact assessment (EIA) and a Screening Opinion on this matter was not needed from the SoS.
- 1.6.2. The Proposed Scheme falls under the category of “Thermal power stations and other combustion installations with a heat output of 300 megawatts or more”.
- 1.6.3. The application for a DCO will therefore be supported by an Environmental Statement (ES), following an EIA.
- 1.6.4. The EIA Regulations 2017 set out a procedure for assessing, consulting on, and coming to a decision on projects that are likely to have significant environmental effects.
- 1.6.5. An EIA is currently ongoing and is considering the environmental effects resulting from the construction, operation (including maintenance) and decommissioning phases of the Proposed Scheme.

THE SCOPE OF THE EIA

- 1.6.6. An opinion from the Planning Inspectorate (PINS) on behalf of the SoS as to the scope and level of detail of the information to be provided in the ES was requested on 13 September 2017 (Scoping Opinion).
- 1.6.7. A report setting out what the applicant considered should be the scope of the ES was also provided to PINS in the form of a Scoping Report. The Scoping Report is attached at Appendix A.1.
- 1.6.8. The Scoping Opinion was received by the applicant from PINS (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The Scoping Opinion is attached at Appendix A.2.
- 1.6.9. Key issues raised in the Scoping Opinion are summarised at the start of each technical chapter of this report. All issues raised in the Scoping Opinion are being considered during the EIA. Where sufficient information is available at this time, this PEIR will address the issues raised in the Scoping Opinion.

PRELIMINARY ENVIRONMENTAL INFORMATION

- 1.6.10. Preliminary environmental information (PEI) is produced to inform the public and stakeholders of the likely significant environmental effects of a proposed development, on which they are being consulted.
- 1.6.11. PEI is required by the EIA Regulations 2017 and defined in Regulation 12(2) as information referred to in Reg 14(2), which:
 - Has been compiled by the applicant.
 - Is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of a development (and of any associated development).
- 1.6.12. Regulation 14(2) specifies what environmental information must include (subject to it being reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects). A summary of the information required is given in Table 1 below.

Table 1 - Information for Inclusion in the ES

Location in EIA Regulations 2017	Requirement	PEIR Reference
Reg 14(2) (a) and Schedule 4 (1)	A description of the proposed development comprising information on the site, design, size and other relevant features of the development. A description of the development, including in particular— a description of the location of the development; a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.	Chapter 3 (Site and Project Description) Chapter 13 (Waste)
Reg 14(2) (b) Schedule 4(4) Schedule 4(6)	A description of the likely significant effects of the proposed development on the environment. A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic	Chapters 5-14

Location in EIA Regulations 2017	Requirement	PEIR Reference
	matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	
Schedule 4(3)	A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Chapter 5-14
Reg 14(2) (c) Schedule 4(7)	A description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the	Chapters 5-14

Location in EIA Regulations 2017	Requirement	PEIR Reference
	preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	
Reg 14(2) (d) Schedule 4(2)	A description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Chapter 4 (Consideration of Alternatives)
Reg 14(2) (e) Schedule 4(9)	A non-technical summary of the information referred to in sub-paragraphs (a) to (d) A non-technical summary of the information provided under paragraphs 1 to 8.	PEIR Non-Technical Summary
Schedule(4)(10)	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	Chapters 1-15
Reg 14(2) (f)	Any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development	Chapters 5-14

Location in EIA Regulations 2017	Requirement	PEIR Reference
	and to the environmental features likely to be significantly affected.	
Schedule 4 (5)(a)	A description of the likely significant effects of the development resulting from - The construction and existence of the development, including, where relevant, demolition works.	Chapter 5-14
Schedule 4 (5)(b)	A description of the likely significant effects of the development resulting from - The use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources.	Chapter 9 (Biodiversity) Chapter 11 (Ground conditions and contamination) Chapter 12 (Water resources)
Schedule 4 (5)(c)	A description of the likely significant effects of the development resulting from - The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	Chapter 6 (Air quality and Climate) Chapter 7 (Noise and vibration) Chapter 9 (Biodiversity) Chapter 13 (Waste)
Schedule 4 (5)(d) Schedule 4 (8)	A description of the likely significant effects of the development resulting from - The risks to human health, cultural heritage or the environment (for example due to accidents or disasters) A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council(3) or	Chapter 3 (Site and Project Description) Chapter 6 (Air quality and Climate) Chapter 7 (Noise and vibration) Chapter 8 Cultural Heritage) Chapter 11 (Ground conditions and contamination) Chapter 15 (Cumulative effects)

Location in EIA Regulations 2017	Requirement	PEIR Reference
	Council Directive 2009/71/Euratom(4) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	
Schedule 4 (5)(e)	A description of the likely significant effects of the development resulting from - The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Chapter 15 (Cumulative effects)
Schedule 4 (5)(f)	A description of the likely significant effects of the development resulting from - The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Chapter 3 (Site and Project Description) Chapter 6 (Air quality and Climate)
Schedule 4 (5)(g)	A description of the likely significant effects of the development resulting from - The technologies and the substances used	Chapter 3 (Site and Project Description) Chapters 5-14 (all technical topics)

THE ENVIRONMENTAL STATEMENT

- 1.6.13. The results of the EIA will be presented in an ES, which is produced so the SoS can take account of the environmental effects of the Proposed Scheme, when deciding whether or not to grant the DCO.
- 1.6.14. The ES will identify and set out any likely significant environmental effects, as well as any measures needed to mitigate likely significant adverse environmental effects, taking account

of the Mitigation Hierarchy. The Mitigation Hierarchy is to first try to avoid, then prevent and then reduce likely significant adverse effects on the environment and, if possible, offset likely significant adverse effects on the environment.

- 1.6.15. The ES will also identify residual effects. Residual effects are the effect a proposed development is likely to have after mitigation measures are implemented.
- 1.6.16. The ES will also take account of the potential cumulative effects of the Proposed Scheme in combination with other relevant, known, proposed or consented schemes, as well as the combined effects resulting from the interrelationship of the various environmental effects caused by the Proposed Scheme.
- 1.6.17. The ES will be produced in accordance with Regulation 14 of the EIA Regulations 2017, including all necessary information in order to satisfy Regulation 14(2)(a)-(f) and Schedule 4.

2 PLANNING POLICY

- 2.1.1. The EIA currently being undertaken is taking account of requirements set out in relevant planning policy.
- 2.1.2. The ES will support the DCO Application by providing environmental information and evidence to enable the SoS to understand the likely significant environmental effects of the Proposed Scheme and whether it complies with environmental planning policy and legislation. This is important as the SoS needs to weigh in the overall planning balance, the environmental effects of the Proposed Scheme in determining whether or not the SoS should grant a DCO for the Proposed Scheme.
- 2.1.3. The DCO Application will also be supported by a Planning Statement that will use information in the ES to demonstrate how the Proposed Scheme complies with the relevant national and local planning policies set out below. The Planning Statement will weigh the identified environmental effects in the planning balance, along with other relevant and important considerations, to assist the SoS in reaching his decision.

2.2 NATIONAL PLANNING POLICY

NATIONAL POLICY STATEMENTS

- 2.2.1. National Policy Statements (NPSs) are the primary policy used by the SoS to examine and determine applications for Nationally Significant Infrastructure Projects (NSIPs).
- 2.2.2. The Department for Energy and Climate Change (DECC), now the Department for Business, Energy and Industrial Strategy (DBEIS), has published several NPSs relevant to energy infrastructure.
- 2.2.3. Those relevant to the Proposed Scheme are listed below, along with some relevant content:
 - Overarching National Policy Statement For Energy: EN-1 (NPS EN-1, July 2011):
 - This sets out national policy for energy infrastructure. All other energy NPSs sit under the policy framework provided by this NPS.
 - It provides the primary basis for determining if development consent should be granted. All other energy NPSs (listed below) are used together with this NPS.
 - It contains a presumption in favour of granting consent for applications for energy NSIPs (NPS EN-1 Paragraph 4.1.2).
 - When deciding whether to grant development consent, the SoS will take into account the Proposed Scheme's potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits and the Proposed Scheme's potential adverse impacts, including any long-term and cumulative adverse impacts, as well as measures to avoid, reduce or compensate for any adverse impacts. In doing so, the SoS will take account of national, regional and local level impacts and effects. (NPS EN-1 Paragraphs 4.1.3-4.14).
 - Part 4 details additional matters relevant to the ES, including: whether the Proposed Scheme would have a significant effect on a European Site; the consideration of alternatives; "good design"; consideration of Combined Heat and Power (CHP); Carbon Capture and Storage (CCS) and Carbon Capture Readiness (CCR) requirements; and climate change adaptation; grid connection; pollution control; safety; health and security considerations.

- Part 5 is concerned with impacts generic to most energy infrastructure schemes, some of which are assessed as part of EIA. It sets out what is required for each generic impact in terms of “applicant’s assessment”, “decision making” and “mitigation”.
- National Policy Statement for Fossil Fuel Generating Infrastructure: EN-2 (NPS EN-2, July 2011):
- This sets out policies specific to determining development consent applications for fossil fuel electricity generating stations of over 50 MW generating capacity.
 - It contains policy on the potential impacts of fossil fuel generating stations from air emissions, noise and vibration, water quality, and on landscape and views. All are being considered as part of the applicant's EIA.
 - NPS EN-2 Paragraph 2.5.3 states that a range of mitigation measures are required to minimise NOx and other emissions to meet the requirements of the Large Combustion Plant Directive (LCPD) and the Industrial Emissions Directive (IED). These emissions will be regulated through an Environmental Permit from the Environment Agency.
- National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (NPS EN-4, July 2011):
- This provides the basis for determining if development consent should be granted for gas supply infrastructure and gas and oil pipelines.
 - The pipeline comprised in the Proposed Scheme does not meet the thresholds in the PA 2008 for being a NSIP in its own right. However, pipelines which are not NSIPs may be included in an application for a DCO where that pipeline is necessary for the generating station NSIP on the basis that it is “associated development.” In this case, the pipeline is necessary to transport gas to the gas turbine generating units, without which the generating units would have no fuel. The pipeline is therefore classed as “associated development”, given its direct relationship to the proposed NSIP (being the up to two gas turbine generating units).
 - Alternatively, a separate planning permission for the “associated development” elements of a proposed development may be obtained from the local planning authority (LPA), under the Town and Country Planning Act 1990 (as amended) (TCPA). The LPA will determine the application in accordance with the development plan and any other material considerations, such as NPS EN-4.
 - At this stage, we envisage that the gas pipeline element of the Proposed Scheme will be applied for as part of the DCO Application, but should the applicant decide to seek a TCPA planning permission for the gas pipeline, then the DCO Application would still seek any necessary compulsory acquisition powers for the pipeline route.
 - The EIA being carried out for the Proposed Scheme is considering effects associated with the factors set out in NPS EN-4 (including noise and vibration, biodiversity, landscape and visual, water quality and resources, soils and geology).
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5, July 2011):
- This sets out policy specific to determining development consent applications for transmission and distribution systems.

- It also covers above ground electricity lines with a voltage of 132kV or above and applies to electricity infrastructure considered as associated development to a NSIP, for which consent is being sought.
- NPS EN-5 will therefore be relevant to the associated electricity infrastructure required for the Proposed Scheme.
- It sets out additional technology specific considerations for the assessment of electricity networks in relation to biodiversity and geological conservation, landscape and visual and noise and vibration.

2.3 NATIONAL PLANNING POLICY FRAMEWORK AND PLANNING PRACTICE GUIDANCE

- 2.3.1. The National Planning Policy Framework (NPPF) (Department of Communities and Local Government (DCLG), 2012) provides a framework upon which local authorities make development plans. It is also a material consideration for LPAs when making planning decisions for development under the TCPA.
- 2.3.2. The policies contained within the NPPF are supported by national 'Planning Practice Guidance' (PPG) (2014 and updated regularly).
- 2.3.3. Both the NPPF and the PPG are likely to be important and relevant considerations in decisions on NSIPs, but only to the extent relevant to that project.
- 2.3.4. NPPF Paragraph 3 makes it clear that the document does not contain specific policies for NSIPs, where particular considerations can apply. It also states that matters considered to be both important and relevant to NSIPs, may include the NPPF and the policies within it.

2.4 LOCAL PLANNING POLICY

- 2.4.1. NPS EN-1 states that planning policy outside of the NPSs can be important and relevant considerations to the SoS's decision and that these may include development plan documents or other documents in the local development framework (NPS EN-1 Paragraph 4.1.5).
- 2.4.2. The development aspects of the Proposed Scheme are solely within Selby District and North Yorkshire County. The applicant may seek various highway powers along highways both within the administrative areas of Selby District Council and East Riding of Yorkshire Council, such as the temporary closure of highways and/or the removal of barriers on the highway, to enable construction materials to arrive at the Site unhindered. However, such powers are not authorising development and hence references to the development for East Riding of Yorkshire Council are not included.

THE SELBY DISTRICT CORE STRATEGY LOCAL PLAN (ADOPTED OCTOBER 2013)

- 2.4.3. Relevant policies include:
 - SP 1 Presumption in Favour of Sustainable Development.
 - SP 15 Sustainable Development and Climate Change.
 - SP 16 Improving Resource Efficiency.
 - SP 18 Protecting and Enhancing the Environment.
 - SP 19 Design Quality.

THE 'SAVED' POLICIES OF THE SELBY DISTRICT LOCAL PLAN (ADOPTED FEBRUARY 2005)

- 2.4.4. Relevant saved policies include:

- ENV1 Control of Development.
- ENV2 Environmental Pollution and Contamination.
- ENV3 Light Pollution.
- ENV4 Hazardous Substances;
- ENV9 Sites of Importance for Nature Conservation Importance.
- ENV27 Scheduled Monuments and Important Archaeological Sites.
- ENV28 Other Archaeological Sites.
- EMP10 Additional Industrial Development at Drax and Eggborough Power Stations.
- T 1 Development in Relation to the Highway Network.
- T2 Access to Roads.
- T8 Public Rights of Way.

PLAN SELBY

- 2.4.5. This is the emerging Sites and Policies Local Plan, which SDC is developing to deliver the strategic vision outlined in the Core Strategy (2013). When PLAN Selby is adopted it will form part of the Local Plan for the District against which planning applications will be assessed.
- 2.4.6. Between October and November 2017, SDC consulted on a "Pool of Sites" for views on a wide range of sites. The next stage of the process is for the full Draft Site Allocations Local Plan to be published in 2018 for consultation. Accordingly, PLAN Selby will not be considered further for the purposes of the EIA.

MINERALS AND WASTE PLANS

- 2.4.7. As minerals and waste planning authorities, NYCC, the City of York Council and the North York Moors National Park Authority are producing a minerals and waste joint plan; the 'North Yorkshire Minerals and Waste Plan'. Once adopted, it will replace the 'Waste Local Plan' and the 'Minerals Local Plan'.
- 2.4.8. Until then, the 'Saved Policies' of the 'Waste Local Plan' and the 'Minerals Local Plan' will continue to form part of the statutory development plan and provide the local policy framework.
- 2.4.9. The minerals and waste joint plan will, once finalised, set out new planning policies for minerals and waste developments across all three areas which will guide decisions on planning applications up to 31 December 2030. The proposed plan is due for submission in November 2017 and expected to be adopted in March 2018.

THE 'SAVED' NORTH YORKSHIRE WASTE LOCAL PLAN (ADOPTED 2006)

- 2.4.10. In particular, Policy 5/1 – Waste Minimisation.

THE 'SAVED' NORTH YORKSHIRE MINERALS LOCAL PLAN 1997

- 2.4.11. In particular, Policy 7/8 Gathering Stations.

2.5 CLIMATE CHANGE AND CARBON REDUCTION

- 2.5.1. The Large Combustion Plants Directive (LCPD) is a European directive that entered into force in November 2001 and includes provision for a national emission reduction plan (NERP) that achieves overall reductions in pollutants from combustion plants having thermal capacity of 50 MW or greater. It applies to fossil fuel power stations.
- 2.5.2. In 2010 the Industrial Emissions Directive (Directive 2010/75/EU) was introduced by the European Parliament, committing European Union members to control and reduce the

impact of industrial emission on the environment. The directive uses a polluter pays approach and is based on the 'best available technology' to help reach the goals of the directive.

- 2.5.3. In July 2006 the Government published 'The Energy Challenge Energy Review Report'. In this report, the Government highlights two challenges the country faces, energy security and climate change. The report highlights the need for a balanced approach to put the UK on a path to cut carbon dioxide emissions by some 60% by about 2050, with real progress by 2020 and to maintain reliable energy supplies².
- 2.5.4. In May 2007 the Government published 'Meeting the Energy Challenge a White Paper on Energy', which emphasises the need for cleaner large scale electricity generation and support for a diverse mix of power stations that over time move towards a low carbon mix.
- 2.5.5. The above sets a framework of policy that new energy generation must comply with to meet European and UK standards on carbon reduction and industrial emissions.
- 2.5.6. The UK Government introduced the Electricity Market Reform (EMR) to incentivise investment in secure, low- carbon electricity whilst improving the security of the UK's electricity supply and improving affordability to customers. The reformed electricity market is intended to transform the UK electricity sector to one in which low-carbon generation can compete with conventional, fossil-fuel generation – ensuring a cleaner, more sustainable energy mix. Nevertheless, gas generation is still required to meet demand. It also contributes to the objective of reducing national carbon dioxide (CO₂) emissions. Generating electricity from gas is more efficient and has a lower carbon intensity than coal, resulting in significantly lower CO₂ emissions per generated MW. The Proposed Scheme will be part of the mix that helps the UK energy industry to move from a coal dependent energy production industry to a more efficient, lower carbon form of energy production.
- 2.5.7. The NPSs referred to above include an explanation of how Government takes account of Policy relating to the mitigation of, and adaptation to climate change, including how gas generation power stations align with the objectives of the UK Government to reduce carbon emissions and can contribute in assisting the UK in meeting the obligations set out in European Directives. NPS EN-1 establishes the need for a mix of new energy generation technologies, of which gas generation is one.

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/272376/6887.pdf, Pg10.

3 SITE AND PROJECT DESCRIPTION

3.1 SITE DESCRIPTION

DRAX POWER STATION

- 3.1.1. Drax Power Station is a large power station, comprising originally of six coal-fired units, three of which are now converted to biomass (units 1-3). Drax Power Station was originally built, owned and operated by the Central Electricity Board and was initially designed to burn only coal. It had a capacity of just under 2,000 MW when Phase 1 was completed in 1975 and 4,000 MW after the construction of Phase 2 in 1986.

PIPELINE

- 3.1.2. Two routes for the gas pipeline are currently being considered by the applicant, called Option A and Option B. Both options are approximately 3 km in length and cross agricultural land to the east of the Existing Drax Power Station Complex. The land under consideration for the pipeline (the Pipeline Study Area) currently comprises approximately 163 ha. Each route option is approximately 250 m wide. Our expectation is that the DCO Application will identify one route option for the pipeline, resulting in a smaller Site Boundary than currently shown.
- 3.1.3. Since the Scoping Report was issued to the SoS, the pipeline route options have been refined to run south of Carr Lane in order to connect to a revised location for the Gas Receiving Facility (GRF) adjacent to the Existing Power Station Complex. Further refinement of the pipeline routes and the design of above ground infrastructure is expected in order to minimise impacts on assets such as trees, hedgerows and heritage features identified during the assessment where possible, in a process known as micro-siting. Any changes made will be reported in the ES.

SITE BOUNDARY

- 3.1.4. The Site is defined as the Power Station Site and the Pipeline Study Area, within which the Proposed Scheme would be located. The Power Station Site and Pipeline Study Area are discussed further below.
- 3.1.5. The Site Boundary for the Proposed Scheme currently comprises approximately 233 ha of land, 70 ha lies predominantly within the existing boundary of Existing Drax Power Station Complex (the Power Station Site part of the Site), and 163 ha lies to its east, where two potential routes for the gas pipeline are currently being considered (the Pipeline Study Area part of the Site). The Site Boundary (depicted with a red line in Figure 1.1) represents the maximum extent of all potential permanent and temporary works required as part of the Proposed Scheme. This may be refined and reduced as the design progresses, taking account of environmental assessment and mitigation, and feedback from the public and consultees.
- 3.1.6. The final Site Boundary, the subject of the DCO Application, may therefore be refined from the current Site Boundary; for example by removing one of the route options for the gas pipeline.
- 3.1.7. The Power Station Site has been divided into a number of Development Parcels shown on Figure 1.3. The current land use at these development parcels are described in Table 2 below.

Table 2 - Description of Development Parcels within the Power Station Site

Development Parcel	Description
A	Agricultural land owned by the applicant and leased to third parties for agricultural purposes.
B	Scrub land within the curtilage of the Existing Drax Power Station Complex.
C	Former business park and wood yard within the curtilage of the Existing Drax Power Station Complex.
D	Roadway from North Gate Entrance.
E	Scrub land within the curtilage of the Existing Drax Power Station Complex.
F	Unit 5 and 6 (including, associated infrastructure), stores, contractors facilities (including, car park), sludge lagoon and National Grid substation within the curtilage of the Existing Drax Power Station Complex.
G	Riverside jetty owned by the applicant.
H	Hardstanding, fuel oil store, grassland and other infrastructure within the curtilage of the Existing Drax Power Station Complex.

3.1.8. The Site lies approximately 6 m Above Ordnance Datum (AOD).

SURROUNDING AREA AND FEATURES WITHIN THE SITE

- 3.1.9. Drax Power Station is surrounded by the villages of Drax approximately 700 m to the South of the Power Station Site, Long Drax 900 m North East, Hemingbrough approximately 2 km North and Camblesforth approximately 1 km South West. Larger towns in the vicinity of the Existing Drax Power Station Complex are Selby approximately 5 km North West and Goole approximately 7.5 km South East.
- 3.1.10. Rusholme Wind Farm is located approximately 3.8 km to the East of the Power Station Site and Drax Golf Club just across the A645 to the South. There is an industrial site immediately adjacent to the Power Station Site to the South West. Drax Skylark Centre and Nature Reserve are adjacent to the North West of the Power Station Site.
- 3.1.11. There is an area of probable Roman activity in a field immediately north of the Power Station Site where ditch remains and associated pottery were recovered. Scurff Hall moated site is a scheduled monument within the Site Boundary. There are also records of Iron Age/Romano British activity in the vicinity of the Pipeline Study Area. There are a further three scheduled monuments within 2 km.
- 3.1.12. The nearest major surface water feature is the River Ouse, located approximately 1.5 km north east of the Existing Drax Power Station Complex. Approximately 3.5 km downstream of the Power Station Site, the River Ouse forms part of the Humber Estuary Ramsar site, Special Area of Conservation (SAC), Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI). River Derwent is the closest SAC being approximately 0.7 km to

the north of the Power Station Site. There are various other sites designated for their biodiversity value within the area.

- 3.1.13. Public Rights of Way (PRoW) run immediately adjacent to the western and northern borders of the Power Station Site, and through Development Parcel A. A PRoW network extends across much of the surrounding area (see **Figure 3.1c**), with a high concentration between the village of Drax and the River Ouse to the north. The Trans-Pennine Trail long distance path and Sustrans Route 65 run on the eastern bank of the River Ouse. Further details can be found in Chapter 5 (Traffic and Transport).
- 3.1.14. The road network adjacent to the Power Station Site and within the Pipeline Study Area includes the A1041 and the A645, which connect the Existing Drax Power Station Complex to the wider road network including the M62 (J32) approximately 6 km south. Minor roads connect the Existing Drax Power Station Complex to the towns of Drax, Newland and isolated properties.
- 3.1.15. Staff and visitors access the Existing Power Station Complex via the 'South Gate' on the A645. Contractors, deliveries and all HGV traffic use site entrances off New Road. Deliveries of coal to the Power Station are made by rail.
- 3.1.16. Existing development at the Power Station Site is mainly associated with the operation of the Existing Power Station Complex. This includes: a coal stock yard; hard standing; contractors' compounds; car parks; access/service roads and a riverside loading / unloading jetty, which is linked to the River Ouse to the east. The Drax jetty is currently unused and potentially inaccessible by vessel without regular dredging. The use of the jetty is assessed in this PEIR, but as the need to dredge is not yet confirmed, we have not carried out environmental studies on dredging. Should it be decided that even with dredging and other works to the jetty it is preferable to use the jetty over the highway network, then we will carry out such studies for the Environmental Statement with the DCO Application.
- 3.1.17. Other land within the Power Station Site includes open grassland, scrub and agricultural land. The Pipeline Study Area is mainly in agricultural use and includes land classified as Grade I 'Excellent' and Grade II 'Very Good' in the Agricultural Land Classification's (ALC) high level dataset³. A full description of environmental features both within the Site and in the surrounding area is given within the chapters dealing with specific environmental topics and are shown in Figures 3.1a and 3.1b.

3.2 PROJECT DESCRIPTION—THE PROPOSED SCHEME

- 3.2.1. The Proposed Scheme is to repower up to two existing coal-powered generating units (units 5 and 6) at the Existing Drax Power Station Complex with new gas turbines that can operate in both combined cycle and open cycle modes. The repowered units would have a new combined capacity of up to 3,600 MW (1,800 MW each), replacing existing units with a combined capacity to generate up to 1,320 MW (660 MW each).
- 3.2.2. Each repowered generating unit would have up to two gas turbines, with each gas turbine powering a dedicated generator of up to 600 MW in capacity. The gas turbines in each unit, therefore, would have a combined capacity of up to 1,200 MW. The gas turbines in each

³ The Ministry of Food and Fisheries (MAFF) provisional Agricultural Land Classification mapping (Pre-1988 and Post 1988)

unit, in combined cycle mode, would provide steam to the existing steam turbine (through Heat Recovery Steam Generators (HRSGs)) which would generate up to 600 MW per unit. Each unit would have up to two HRSGs. This results in a capacity for each repowered unit of up to 1,800 MW and, should both units be repowered, a combined capacity of up to 3,600 MW. The new gas turbine generating units have been designated the terms "Unit X" and "Unit Y".

- 3.2.3. The proposed site layout for the repowering of one unit is shown in Figure 3.2 and the layout for the repowering of two units is shown in Figure 3.3.
- 3.2.4. Each unit would have (subject to technology and commercial considerations) a battery energy storage facility which would have a capacity of up to 100 MW per unit, resulting in a combined battery energy storage capacity of up to 200 MW.
- 3.2.5. The total combined capacity of two repower units and two battery storage facilities (i.e. the total combined capacity of the Proposed Scheme) is therefore 3,800 MW.
- 3.2.6. At present there are two potential options under consideration:
 - Repowering of either unit 5 or 6 and construction of Unit X.
 - Repowering of both units 5 and 6 and construction of Unit X and Unit Y.
- 3.2.7. In the event that a single unit is repowered, up to two gas turbines and up to two HRSGs and (subject to technology and commercial considerations) a 100 MW battery energy storage facility would be constructed. The size of the battery storage facility would not change but the fuel gas station and gas insulated switchgear would be smaller.
- 3.2.8. If both units are repowered then works would be undertaken consecutively rather than concurrently with a gap, assumed to be one year, between construction periods.
- 3.2.9. In order to repower to gas, a new gas pipeline needs to be constructed from the Existing Drax Power Station Complex to the NTS. A gas receiving facility and gas compressor building are proposed south of woodland to the east of New Road.
- 3.2.10. Further detail is provided below in relation to the development proposed on the Power Station Site and the Pipeline Study Area.

POWER STATION SITE

- 3.2.11. The new gas turbine generating units will be constructed on land in Development Parcel F currently occupied by contractor outage cabins and car parking, the Turbine Outage Store (TOS), the Learning Centre, sludge lagoons and other ancillary buildings including the purge water chamber and switchgear building along the western boundary of the Power Station Site.
- 3.2.12. The main elements of the gas turbine generating units are described below.
 - **Gas turbines** - It is proposed to construct up to four separate gas turbines (up to two per repowered generating unit). Air will be drawn into the compressor of the gas turbine and compressed. Fuel is injected into the combustion chamber. The mixture of fuel and compressed air is ignited, producing gases at a high temperatures. As the gas expands, it rotates the turbine to produce electricity.
 - **Heat Recovery Steam Generators** - It is proposed to construct up to four HRSGs (up to two per repowered generating unit). When operating in CCGT mode, the HRSGs recover the heat from hot flue gases from the gas turbines. The heat is used to produce steam that will drive the existing steam turbines. Each HRSG will have a main stack,

expected to be up to 120 m in height. When operating in open cycle, the HRSG will be bypassed and the exhaust gas from the gas turbine will be sent direct to the atmosphere through a bypass stack of up to 120 m in height. Accordingly, the gas turbine generating units will each have up to four stacks (a total of up to eight stacks if both units are repowered).

- **NOx abatement technology** – An assessment of Best Available Techniques (BAT) will be undertaken for the Proposed Scheme as part of the applicant's application for an environmental permit. This will determine whether NOx abatement technology, such as Selective Catalytic Reduction (SCR), will be built into the facility to reduce emissions of nitrogen oxides from the plant or whether BAT can be achieved without SCR. We have therefore assessed the effect of the Proposed Scheme with and without SCR.
- **Cooling solution** - Cooling for the new gas turbine generating units will be provided by the existing condensers for the steam turbines and existing cooling water infrastructure including reuse of the existing northern group of cooling towers, cooling water make-up intake and cooling water outfall and other associated infrastructure. Drax currently uses hyperbolic (natural draught) cooling towers to transfer heat and condense steam from the existing units; heat is expelled to the atmosphere. River water is abstracted from the River Ouse and pumped to the station where it is treated to remove solids and other material. The treated river water is then to be used in the cooling water circuit to remove heat from the steam cycle and condense the pure water generated in the steam cycle, so it can be re-used.
- **Operation/maintenance and control** - The gas turbine generating units would be operated and controlled from the current Drax control room, which is situated onsite. The proposed generating equipment would be capable of responding to requests from National Grid to provide short-term additional generating capacity, as well as selling electricity into the market and other ancillary grid services. Gas generation allows the new units to respond rapidly to changing demands of the electricity market.
- **Battery storage** - Each new gas turbine generating unit would (subject to technology and commercial considerations) be connected to its own battery energy storage facility, which would have a capacity of up to 100 MW and which would support the repowered units in providing fast and flexible electricity export and other ancillary services to the NTS.

3.2.13. Works on the Power Station Site also include the following:

ELECTRICAL CONNECTION

- 3.2.14. It is proposed that each generating unit and its battery energy storage facility will be connected to the existing National Grid 400 kV substation.
- 3.2.15. For Unit X the output from each generating unit would be banked using Gas Insulated Switchgear (GIS) housed in a new building close to the generating units (shown in Figure 3.2). Connection from the GIS banking building to the existing National Grid 400 kV substation would be by underground cable for Unit X.
- 3.2.16. For Unit Y the output from each generating unit would be banked using GIS housed in a new building close to the generating units (shown in Figure 3.3). Connection from the GIS banking building to the existing National Grid 400 kV substation would be by either:
- An underground cable (as described above for Unit X); or

- An underground cable that terminates in a new cable sealing end compound outside of the boundary of the existing National Grid 400 kV substation and is connected to the existing equipment using overhead conductors.

- 3.2.17. The cable end sealing compound will be fenced to form either an individual compound or the existing substation fence will be extended to include the new equipment.

DEVELOPMENT OF SWITCHYARD AND TRANSMISSION PLANT WORKS IN EXISTING 400 KV NATIONAL GRID SWITCHYARD

- 3.2.18. Works will be required within the existing 400 kV National Grid switchyard in order to accommodate the new connections. These works will include the installation of new equipment similar in scale to the existing switchgear and equipment in order to make the new connections. As these works are within the switchyard which is owned and operated by National Grid, they may be undertaken by National Grid, but are currently included in the proposed Site Boundary and have been assumed to be part of the Proposed Scheme for the purposes of this assessment.
- 3.2.19. It may be necessary for additional works to be carried out outside the limit of the DCO such as reinforcement works at remote substations and/or re-stringing of existing overhead power lines during construction. If required, these works will be led by National Grid. No significant cumulative effects are anticipated as a result of such works, but if any are identified they will be considered in the ES.

CARBON CAPTURE READINESS

- 3.2.20. The gas turbine generating units will be designed to be carbon capture ready and a suitable area of land has been identified for the installation of carbon capture equipment (Development Parcels A and B as shown in Figure 1.3) in the future if required. In addition, suitable connection corridors for exhaust gas ductwork from the gas turbine generating units have been identified if necessary.
- 3.2.21. If viable in the future, Drax would need to apply for a separate consent for a carbon capture facility on Development Parcels A and B. However, the DCO Application for the Proposed Scheme will include a Carbon Capture Readiness report, which will set out the feasibility of the technology, along with high level effects.

COMBINED HEAT AND POWER

- 3.2.22. Efficient combined heat and power (CHP) plants are usually designed to meet the demands of an identified heat load. Electrical power generation is utilised, where applicable, for local process plant, and the balance exported to the grid. The heat demands of industrial processes are usually continuous, and district heating demands are also usually continuous (albeit on a seasonal basis).
- 3.2.23. A CHP Readiness study is currently being carried out to assess the viability of CHP at this site and the presence of an existing suitable heat demand. The CHP readiness assessment will be an appendix to the ES submitted as part of the DCO Application.

OTHER NECESSARY WORKS

- 3.2.24. Other works which may be required as part of the Proposed Scheme (and which have therefore been assumed as being carried out for the purpose of this assessment) include:
- Provision of security infrastructure, including cameras and perimeter fencing.
 - Site lighting infrastructure, including lighting columns.

- Site drainage.
- Electricity, water, waste water and telecommunications and other services.
- Boundary treatments such as landscaping and ecological mitigation as necessary.

3.2.25. Further information regarding these additional works will be available in the ES.

PIPELINE STUDY AREA

3.2.26. The gas turbine generating units will require a new gas connection from the NTS. The connection will comprise a new pipeline approximately 3 km in length extending eastwards with a diameter of up to 600 mm nominal bore, a Minimum Offtake Connection (MOC) and Pipeline Inspection Gauge (PIG), PIG Trap Facility (PTF) and on site Pressure Reduction and Metering Station (PRMS). These facilities will be located adjacent to the NTS gas pipeline. However, their final location within the Site Boundary will be determined based on local constraints to minimise potential impacts.

3.2.27. The two pipeline route options under consideration are shown in Figure 1.3. Ultimately, only one pipeline route will be required and the choice of route will follow a detailed route selection exercise, taking into account environmental and engineering issues. Environmental constraints identified during the EIA process will be taken into account in determining the final route of the pipeline within the identified corridors along with feedback from the statutory consultation.

PIPELINE ROUTE OPTION A

3.2.28. The pipeline begins at NTS feeder gas pipeline, Feeder 7, south of the River Ouse, adjacent to the existing National Grid Drax Above Ground Installation (AGI). This connection will go into a new AGI which will be located next to the existing National Grid facility. The pipeline route heads west away from the NTS before turning north to cross Rusholme Lane. The route then turns to the west again where it crosses a field drain, a farm track and then the NTS Feeder 29.

3.2.29. It would also be possible to connect to NTS feeder 29 with a new AGI south of Rusholme Lane via Option A.

3.2.30. The route continues west where it crosses a stream, before continuing west up to Main Road. The route turns north west to crossing the road, followed immediately by a field drain. The route continues north west to avoid Woodcock Wood before turning west to cross the dismantled railway followed immediately by a field drain. The route continues west, south of Carr Lane, crosses Wren Hall Lane and connects to a new gas receiving facility east of New Road.

PIPELINE ROUTE OPTION B

3.2.31. The pipeline begins at NTS Feeder 29, east of Brier Lane, at a new AGI and heads north where it crosses two field drains consecutively. The route continues north before turning to the North West to cross “Willow Row” field drain and Rusholme Lane.

3.2.32. After crossing Rusholme Lane the route continues in a north westerly direction until it crosses Main Road followed immediately by a field drain. The route continues north west to avoid Woodcock Wood before turning west to cross the dismantled railway followed immediately by a field drain. The route continues west, south of Carr Lane, crosses Wren Hall Lane and connects to a new gas receiving facility east of New Road (as for route Option A).

ROUTE SELECTION

- 3.2.33. The applicant has not selected a preferred route option at this stage. Environmental constraints associated with both pipeline options are still being assessed and a preferred route will only be selected once relevant environmental surveys are completed. Known constraints and issues are presented in Table 3.

Table 3 – Comparison of Gas Pipeline Route Options

Constraint	Option A (Connection to Feeder 7 with an Above Ground Installation off Rusholme Lane)	Option A (Connection to Feeder 29 with an Above Ground Installation off Rusholme Lane)	Option B (Connection to Feeder 29 with an Above Ground Installation off Brier Lane)	Comparison
Land use of gas pipeline route	Predominantly arable with semi improved grassland	Predominantly arable with semi improved grassland	Predominantly arable	No difference
Hedgerows affected?	Yes	Yes	Yes	Option B (Feeder 29) will potentially result in the loss of more intact and species rich hedgerow
Ordinary watercourses / ditches affected?	Yes	Yes	Yes	No difference
Landscape and visual impact of the proposed Above Ground Installations	Yes	Yes	Yes	The Above Ground Installation within Option B (Feeder 29) may be visible from a greater number of residential properties
Public Rights of Way	Yes	Yes	Yes	No difference

Constraint	Option A (Connection to Feeder 7 with an Above Ground Installation off Rusholme Lane)	Option A (Connection to Feeder 29 with an Above Ground Installation off Rusholme Lane)	Option B (Connection to Feeder 29 with an Above Ground Installation off Brier Lane)	Comparison
Trees to be lost?	Likely	Likely	Likely	Option B (Feeder 29) may potentially result in the loss of trees with suitability for roosting bats
Heritage assets affected?	Potentially	Potentially	Potentially	Option B (Feeder 29) has greater potential for buried remains based on preliminary surveys and effects an additional historic field boundary
Construction suitability of the proposed Above Ground Installations	Likely to be more health and safety issues due to proximity to the existing National Grid Above Ground Installation on Rusholme Lane.	Good – open field location, but will require a long construction and permanent access road off Rusholme Lane.	Good – open field location, with direct access off Brier Lane.	Option B (Feeder 29) and Option A (Feeder 29) more favourable.
Gas capacity, responsiveness and resilience	Feeder 7 is a smaller pipeline and already supplies a number of major	Feeder 29 is most likely to deliver the capacity of gas and the gas pressures	Feeder 29 is most likely to deliver the capacity of gas, or the gas pressures	Option B (Feeder 29) and Option A (Feeder 29) are more favourable

Constraint	Option A (Connection to Feeder 7 with an Above Ground Installation off Rusholme Lane)	Option A (Connection to Feeder 29 with an Above Ground Installation off Rusholme Lane)	Option B (Connection to Feeder 29 with an Above Ground Installation off Brier Lane)	Comparison
	gas connections. It is highly unlikely that Feeder 7 can deliver the capacity of gas, or the gas pressures required for the Repower project to meet the need for flexible and responsive electricity generation.	required for the Repower project to meet the need for flexible and responsive electricity generation. Feeder 29 is also potentially more resilient as it connects to strategic gas reserves of both the east coast (Easington) and north west (Barrow) fields.	required for the Repower project to meet the need for flexible and responsive electricity generation. Feeder 29 is also potentially more resilient as it connects to strategic gas reserves of both the east coast (Easington) and north west (Barrow) gas fields.	gas connections in terms of ensuring resilience of the gas supply in all demand conditions.

GAS RECEIVING FACILITY

3.2.34. A GRF will be installed on currently arable land to the east of New Road, as shown in Figure 3.2. This is required to receive the natural gas from the proposed pipeline routes. The GRF should contain the following equipment:

- Emergency control valve.
- Filtration.
- Custody transfer metering stream.
- Preheating boilers.
- Heat exchangers.
- Pressure regulations.
- Gas compression.

3.2.35. The location of the GRF will not vary depending on which gas pipeline route is selected.

3.3 CONSTRUCTION

SITE RECONFIGURATION WORKS

- 3.3.1. In order to construct the gas turbine generating units and associated facilities on the Power Station Site, it is proposed to demolish, remove and relocate existing facilities at the Power Station Site.
- 3.3.2. The private squash court will be demolished and not replaced, while the Learning Centre will be demolished and its functions consolidated into existing facilities.
- 3.3.3. Other facilities will be demolished and relocated as shown in Figure 3.2 and Figure 3.3, including car parking, Turbine Outage Stores, contractor's compounds and welfare facilities. In addition, a cooling water spray screen will be built between relocated facilities and the southern cooling towers.
- 3.3.4. The Site Reconfiguration Works may be consented by either of the two options listed below:
 - A TCPA application, applied for in 2018.
 - As part of the DCO Application.
- 3.3.5. The EIA will assess two scenarios with regards to the Site Reconfiguration Works:
 - The Site Reconfiguration Works being carried out when the DCO Application is implemented. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and not carried out until the DCO is being implemented, or a situation in which the Site Reconfiguration Works are consented by the DCO. This scenario therefore assesses the Site Reconfiguration Works as being part of the Proposed Scheme.
 - The Site Reconfiguration Works implemented in 2018/2019 in advance of the implementation of the DCO Application. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and carried out prior to the DCO being implemented. This scenario therefore treats the completed Site Reconfiguration Works as being part of the baseline.

SLUDGE LAGOONS

- 3.3.6. For the construction of Unit X, one existing but disused sludge lagoon would be brought back into operation to serve the existing coal fired units, while the southern sludge lagoon would be decommissioned and filled in, allowing the area to be used for construction laydown.
- 3.3.7. If a second unit was repowered, all existing sludge lagoons to the east of the northern cooling towers would be decommissioned and filled in to allow gas turbine Unit Y to be built. New lagoons would be built in Area E (See Figure 3.3).

CONSTRUCTION AREAS AND LAYDOWN

- 3.3.8. Several areas within the Power Station Site have been identified for use as construction laydown (Areas A, B and H as shown in Figure 1.3). These areas will be used during construction for the temporary locating of construction offices, warehouses, workshops, open air storage areas and car parking. Post construction, Areas A and B will be safeguarded for carbon capture equipment as explained above.
- 3.3.9. Area A is separated from land within the current curtilage of the Existing Drax Power Station Complex by New Road, which is a public highway. To avoid staff crossing this road on foot, a temporary pedestrian bridge will be constructed.

- 3.3.10. For the construction of the gas pipeline, a contractors' compound approximately 100 m x 100 m and a pipe storage yard approximately 150 m x 60 m is also required. The locations of these are not yet confirmed; however they will be provided within the Site Boundary.

CONSTRUCTION PROGRAMME

- 3.3.11. The gas turbine generating units will be constructed in phases, with construction of each taking approximately 34 months followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme. The battery storage would be installed in two phases of 100 MW as each unit is repowered.
- 3.3.12. It is assumed that construction of the first unit will commence in 2019 with OCGT capability by 2022 and CCGT ready by 2023. If two units are built, the construction of the second unit would commence in 2024 and be completed in 2027.
- 3.3.13. The peak period for construction traffic is anticipated to be between months 19 and 22, with up to around 400 car trips per day. A second, lower, peak is anticipated between months 65 and 68, with more than 350 car trips per day.

CONSTRUCTION OF GAS PIPELINE

- 3.3.14. Either route Option A or B would be likely to be constructed using primarily open cut construction techniques, as is standard for high pressure cross country pipelines. Areas containing constraints which must be crossed by the pipeline will consider the use of trenchless crossing techniques.
- 3.3.15. All construction activities would be undertaken within a temporarily fenced-off strip of land, which is referred to as the "working width". The working width will typically be around 30 m wide, with the gas pipeline offset from the centre line to allow for construction access.
- 3.3.16. The exact nature of the working width (size and distance from edge to pipeline centreline) will be decided in conjunction with the principal contractor. At this stage, the Pipeline Study Area includes sufficient land for both the area in which the pipeline would be installed, and a working width. The working width may not be the same width along the whole of the pipeline route. There may be a need to have a wider working width adjacent to special crossings (i.e. road crossings / rail crossings/ river crossings) to provide additional working areas and / or storage for construction materials / construction equipment / construction plant. Conversely, the working width can be reduced in size in exceptional areas such as areas of environmental sensitivity or in close proximity to existing buildings, services and utilities. A working width of 24 m may be sufficient for the open cut sections of the pipeline route. Around trenchless crossings and other key assets the working width may be expanded up to 100 m wide to accommodate necessary supplementary equipment and storage areas.
- 3.3.17. Following the construction of the pipeline, agricultural activities can continue above the pipeline. However, there will be some restrictions surrounding activities including deep ploughing and the planting of trees.

CONSTRUCTION WORKING HOURS

- 3.3.18. During the construction phases, it is expected that standard working hours will be Mondays to Fridays with the working day beginning at 07:00 and ending at 19:00, whereby all personnel will work a 9 hour period within this timeframe. Therefore, all construction worker

related trips will arrive on site between 6.00 and 10.00 and depart the site between 16:00 and 20:00. On Saturdays, working hours will be 07:00 and 13:00. Working hours outside of these periods, including bank holidays, would be agreed in advance with SDC.

- 3.3.19. It is likely that some construction activities and deliveries will be required to be 24 hours at certain times. Where work is required outside of core construction hours this will be agreed in advance with the Local Planning Authority (LPA).

CONSTRUCTION DELIVERY AND ACCESS

- 3.3.20. Two options are currently being assessed for the delivery of construction materials to the Site. These are as follows:

- Transportation of all construction materials using the road network from Junction 32 of M62.
- Transportation of large plant and equipment via the jetty, up to its current rating of 200 tonnes. The remaining materials will be transported via the road network.

- 3.3.21. Some works may be required to enable the transfer of large plant and equipment from river barges to land transport. These works may comprise: location of at least one mobile crane landside of the jetty, associated security lighting, fencing and storage and welfare facilities and laydown areas. Accordingly, these works have been assessed in this PEIR and will be included in the EIA. Initial feasibility studies also indicate that dredging may be required for use of the jetty, which would not be Drax's preferred choice given the environmental effects and cost prohibitive. As the need for dredging is still being determined, dredging is not included in this PEIR on the basis that if dredging is necessary, this could make the use of the jetty environmentally unacceptable compared to the use of the highway.

- 3.3.22. Based on the initial feasibility studies indicating that dredging may be required along with other works described above, Drax's current preferred option is to bring material to site via the highway network. Given the size of some of the Heavy Goods Vehicles (HGV) and Abnormal Indivisible Loads (AILs), Drax may require certain highway powers in order to, for example, remove barriers on the high (such as street furniture) and temporarily close part of the highway to allow the HGV / AIL to pass. The land would be reinstated to its former condition / reopened once the HGVs / AILs have delivered the construction materials. The possible construction transport routes for HGVs and AILs are shown in Figure 5.2, Figure 5.3 and Figure 5.4, and it is along these routes that Drax would seek various highway powers, including temporary closure of the road and/or powers to remove barriers on the highway to enable the HGVs / AILs to pass unhindered.

- 3.3.23. It is assumed that no new access to the Site will be required.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

- 3.3.24. The construction contractor will be required to prepare and implement a Construction Environmental Management Plan (CEMP).

- 3.3.25. The purpose of the CEMP is to:

- Provide a mechanism for ensuring that measures to prevent, reduce and, where possible, offset potentially adverse environmental impacts identified in the final ES are implemented.
- Ensure that good construction practices are adopted and maintained throughout the construction of the Proposed Scheme.
- Provide a framework for mitigating unexpected impacts during construction.

- Provide assurance to third parties that their requirements with respect to environmental performance will be met.
- Provide a mechanism for ensuring compliance with environmental legislation and statutory consents.
- Provide a framework against which to monitor and audit environmental performance.

3.3.26. As such, the CEMP will ensure work is completed in accordance with:

- The requirements of the DCO for the Proposed Scheme (the DCO will require the applicant to carry out the construction work in accordance with certain mitigation measures).
- The applicant's contractual requirements.
- Any environmental or other codes of conduct the applicant is required to comply with.
- Relevant site-specific mitigation measures.
- Current / prevailing best practices.

3.3.27. The implementation of the CEMP is a form of tertiary mitigation and has therefore been assumed as an inherent part of the Proposed Scheme in the assessment of environmental effects. A draft of the CEMP will accompany the ES as part of the DCO Application.

3.4 OPERATION AND MAINTENANCE

OPERATIONAL LIGHTING

- 3.4.1. Road and area lighting will be provided to ensure the safety of staff and effective visibility for the CCTV system. New lighting will seek to minimise any offsite effects and use specifically designed lighting equipment that reduces the upward spread of light and minimises glare.
- 3.4.2. Existing lighting arrangements are in place at the Existing Drax Power Station Complex. It is assumed that any new lighting will comply with the same standards. The need for lighting outside of the Existing Drax Power Station Complex, at the gas receiving facility for example, is currently being determined. If necessary, this will be assessed and considered in the ES.

HOURS OF WORKING

- 3.4.3. The Proposed Scheme will be designed to operate 24 hours per day, 7 days per week with programmed offline periods for maintenance.

SITE STAFF

- 3.4.4. No change to staff numbers is anticipated as a result of the Proposed Scheme.

HAZARD PREVENTION AND EMERGENCY PLANNING

- 3.4.5. Drax is regulated under the Control of Major Accident Hazards (COMAH) Regulations 2015 as a Lower Tier site. As such, Drax has a duty to take all measures necessary to prevent major accidents and to limit their consequences for human health and the environment.
- 3.4.6. The COMAH management system and its associated documentation and will be reviewed and updated accordingly to account for the change in inventory associated with the Repower project.
- 3.4.7. The ES will address the risk of major accidents and/or disasters relevant to the Proposed Scheme. If risks are identified that have the potential to result in a likely significant environmental effect, these will be assessed within the ES, taking into account existing procedures and the measures required under legislation to prevent and control such matters.

3.5 DECOMMISSIONING

- 3.5.1. The Proposed Scheme will be designed to operate for up to 25 years after which the continued operation infrastructure will be reviewed. If it is not appropriate to continue operation, the plant will be decommissioned. It is expected that all above ground plant structures will be removed, while the pipeline would remain in situ.
- 3.5.2. The decommissioning phase is likely to take place over several months.
- 3.5.3. A full Environmental Departure Audit will be carried out prior to decommissioning. This will examine, in detail, all potential environmental risks existing at the Power Station Site and make comprehensive recommendations for any remedial action required to remove such risks. Following completion of the demolition, a Final Environmental Departure Audit will be carried out to ensure that all remedial work has been completed successfully; the audit reports will be made available to any future users of the Power Station Site.
- 3.5.4. Decommissioning will be in accordance with the requirement of the Environmental Permit for the Proposed Scheme under the Environmental Permitting (England and Wales) Regulations 2016 (or subsequent replacement legislation). Details of the decommissioning will be included in the Site Closure Plan which has to be included as part of the application for an Environmental Permit, which will be submitted to the Environment Agency (EA).
- 3.5.5. Prior to decommissioning, the EA will be notified as to the date of the closure and the results of the Environmental Departure Audit will be submitted for consultation on the proposed decommissioning methodology.
- 3.5.6. For the purpose of the EIA, decommissioning impacts are anticipated to be no worse than those during the construction phase following the implementation of an Environmental Management Plan for the works.

3.6 DESIGN PARAMETERS

- 3.6.1. The design of the Proposed Scheme is being developed using an iterative process which will take into account the following information as it becomes available:
 - Environmental assessment information.
 - Statutory consultee responses.
 - Non-statutory consultee responses.
 - Design and build contract tender award.
- 3.6.2. For the purposes of the environmental assessment a Rochdale Envelope Approach has therefore been adopted, meaning maximum parameters have been provided. It is expected that these will be further refined in the ES, but will be no more or no greater than the maximum parameters set out in the tables below. Dimensions for some facilities to be relocated or required only during construction are still to be confirmed.

Table 4 - Maximum Dimensions of Buildings to be Relocated

Component	Number	Maximum Length (m)	Maximum Width (m)	Maximum Height (m)	Maximum footprint (m ²)
Turbine outage storage	1	113	43	18	4,859

Component	Number	Maximum Length (m)	Maximum Width (m)	Maximum Height (m)	Maximum footprint (m ²)
Modular buildings (contractors facilities)	TBC	TBC	TBC	5	TBC
Riggers store and drawing archive	TBC	TBC	TBC	3	TBC

Table 5 - Maximum Dimensions of Temporary Structures during Construction

Component	Number	Maximum Length (m)	Maximum Width (m)	Maximum Height (m)	Maximum footprint (m ²)
Temporary crane (on the jetty)	TBC	TBC	TBC	TBC	TBC
Temporary car park	TBC	TBC	TBC	TBC	TBC
Temporary bridge	TBC	TBC	TBC	TBC	TBC

Table 6 – Maximum Dimensions of Main Building Parameters when Repowering One Unit

Component	Number	Maximum Length (m)	Maximum Width (m)	Maximum Height (m)	Maximum footprint (m ²)
Turbine building	1	92	22	28	2,024
HRSG building	2	48	23	37.5	1,104
Air inlet filter house	1	16	19	36	304
Fuel gas stations (two stations within one fence)	2	66	25	3	1,650
Power control centres	TBC	30	17	6	510
Transformer area	-	36	17	11	612
Bypass stack	2	N/A	N/A	Up to 120	N/A
HRSG stack	2	N/A	N/A	Up to 120	N/A

Component	Number	Maximum Length (m)	Maximum Width (m)	Maximum Height (m)	Maximum footprint (m ²)
Gas compressor building	1	50	75	10	3,750
GIS banking building	1	59	16	10	944
Main piperack	-	11	11	8 to underside of rack	121
Battery storage building	1	180	60	10	10,800
Gas receiving facility	1	35	75	8.5	2,625
Turbine outage storage	1	113	43	18	4,859
Spray wall around southern cooling towers	1	TBC	TBC	6	TBC
Sludge lagoon	1	82	55	0 (3m deep)	4,510

Table 7 - Maximum Dimensions of Main Building Parameters when Repowering Two Units

Component	Number	Maximum Length (m)	Maximum Width (m)	Maximum Height (m)	Maximum footprint (m ²)
Turbine building	1	92	22	28	2,024
HRSG building	4	48	23	37.5	1,104
Air inlet filter house	1	16	19	36	304
Fuel gas stations (four stations within one fence)	4	66	25	3	1,650
Power control centres	?	30	17	6	510
Transformer area	-	36	17	11	612
Bypass stack	4	23	19	Up to 120	N/A
HRSG stack	4	N/A	N/A	up to 120	N/A

Component	Number	Maximum Length (m)	Maximum Width (m)	Maximum Height (m)	Maximum footprint (m ²)
Gas compressor building	1	50	75	10	3,750
GIS banking building	1	59	16	10	944
Main piperack	-	11	11	8 to underside of rack	121
Battery storage building	1	180	60	10	10,800
Gas receiving facility	1	35	75	8.5	2,625
Turbine outage storage	1	113	43	18	4,859
Spray wall around southern cooling towers	1	TBC	TBC	6	TBC
Sludge lagoon	2	82	55	0 (3m deep)	4,510

3.7 SCENARIOS ASSESSED

- 3.7.1. A number of options are currently under consideration for the Proposed Scheme. In order to ensure that these are adequately addressed, a range of scenarios have been considered in this PEIR, as shown in Table 8.
- 3.7.2. Options that have been considered and discounted are described in Chapter 4 (Consideration of Alternatives).

Table 8 - Scenarios Assessment as Part of the PEIR

Element	Scenario
Consent for up to two gas turbine generating units (OCGT or CCGT)	Repowering of unit 5 or 6 and construction of Unit X.
	Repowering of both units 5 and 6 and construction of Units X and Y.
Site Reconfiguration Works	Site Reconfiguration Works that would be carried out under the DCO powers if granted.
	Site Reconfiguration Works that would be carried out under a planning permission in 2018/19 and so would be complete if the DCO is granted.
Gas Pipeline	Route Option A

Element	Scenario
	Route Option B
Air quality mitigation	No NOx abatement technology
	Installation of Selective Catalytic Reduction (SCR)
Construction transport	Transportation of all construction materials using the road network.
	Transportation of large plant and equipment via the jetty, up to its current rating of 200 tonnes. The remaining materials will be transported via the road network. This scenario assumes no dredging of the River Ouse.
Electrical connection for Unit Y	An underground cable from the GIS banking building to the existing National Grid 400 kV substation.
	An underground cable that terminates in a new cable sealing end compound outside of the boundary of the existing National Grid 400 kV substation and is connected to the existing equipment using overhead conductors.

- 3.7.3. For some topics of the PEIR, there is no difference in the effects resulting from the assessment between scenarios referred to in the table. Where this is the case, only one scenario is assessed to represent a realistic worst case, and this is explained in the relevant chapter.

4 CONSIDERATION OF ALTERNATIVES

- 4.1.1. This chapter sets out the consideration of alternatives in line with Regulation 14(2)(d) of the EIA Regulations 2017 which states that an ES should include:
- “A description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment”.*
- 4.1.2. The Proposed Scheme has gone through several iterations and evolutions in its design. The following alternatives have been considered for the Proposed Scheme:
- Do nothing scenario.
 - Alternative development sites.
 - Alternative layouts.
 - Alternative technologies.
 - Alternative emissions abatement.
 - Alternative stack heights.
 - Alternative fuels for electricity generation.
 - Alternative options for the gas pipeline.
- 4.1.3. Design options that are still under consideration are discussed in Section 3.7; options that have been considered and discounted are described here.

4.2 DO NOTHING SCENARIO

- 4.2.1. The ‘Do Nothing’ scenario is expected to require the closure of the existing coal-fired generating units at the Existing Drax Power Station Complex, leaving the biomass units and a reduction in generating capacity of 1,860 MW. This would be in line with the UK Government’s November 2015 announcement on plans to close all coal-fired power stations by 2025 and restrict their use by 2023.⁴ Generating capacity would need to be developed elsewhere to meet national demand, requiring the construction of additional infrastructure, such as cooling towers and electrical connections, already present at Drax.
- 4.2.2. It is considered that the ‘Do Nothing’ scenario is not appropriate given the established national need for new energy and clean energy generation as set out in Chapter 2 (Planning Policy).
- 4.2.3. Further, the ‘Do Nothing’ scenario would have the additional disadvantage of a lack of additional investment in the local economy and loss of employment opportunities.
- 4.2.4. Whilst it is likely coal fired power stations will go off stream by 2025, there is the potential for the ‘Do Nothing’ scenario to also comprise Drax’s existing three coal fired units remaining in operation. In that scenario, the Proposed Scheme would also be preferable over the ‘Do Nothing’ scenario. This scenario will be explored further in Chapter 6 (Air Quality and Climate) and Chapter 9 (Biodiversity) Chapters of the ES.

⁴ <https://www.gov.uk/government/news/government-announces-plans-to-close-coal-power-stations-by-2025>

4.3 ALTERNATIVE DEVELOPMENT SITES

- 4.3.1. Given the nature of the Proposed Scheme, i.e. retrofitting existing infrastructure, geographically distant alternative Power Station Sites were not considered viable.
- 4.3.2. Drax Power Limited has previously considered developments adjacent to the Existing Drax Power Station Complex, for example the White Rose Carbon Capture Project to the north of the Existing Drax Power Station Complex and a new gas-fired power station on land to the east of the Existing Drax Power Station Complex, for which no application was submitted. These sites were not considered appropriate for the Proposed Scheme and the Power Station Site was selected by the applicant on the basis of the following:
- The majority of the site is currently in the ownership of the applicant.
 - There is a long history of power generation on this site and the site is currently used for this purpose, meaning there will be little material change to the land use.
 - The majority of the site is brownfield, meaning sterilisation of currently agricultural land will be minimised.
 - The site has existing electrical and transport connections.
 - It allows for the reuse of existing infrastructure, such as steam turbines, therefore reducing the cost of the Proposed Scheme.
 - It allows for the reuse of the existing cooling technology therefore reducing the cost of the Proposed Scheme.
 - It is in close proximity to the NTS.
 - Utilising the existing 400 kV substation, which has two spare bays, will avoid the need for a new substation.

4.4 ALTERNATIVE LAYOUTS

LAYOUT OPTIONS

- 4.4.1. The new gas turbine units were placed as close as possible to the existing steam turbines. This was required to minimise the length of main stream pipework runs, as the length of these runs has a direct impact on the efficiency of the new units, and to allow the continued, unaffected, operation of Drax's existing units.
- 4.4.2. Only areas that were not currently occupied or that could accommodate the new units with minimal disruption to ongoing operations were considered as locations for the units. Areas considered and discounted are discussed in Table 9 below.

Table 9 - Areas within the Drax Power Station Site Considered and Discounted

Location	Comments
Main storage building between turbine houses and 400 kV substation.	Close to the old units but discounted due to the amount of demolition required and the lack of space to construct new units.
Absorber buildings units 4-6, north fuel tank farm.	This was a potential location for the battery storage facilities or one gas turbine unit but was discounted due to the amount of demolition required and the impact on operational plant.

4.5 ALTERNATIVE TECHNOLOGIES

GAS TURBINE SELECTION

- 4.5.1. Drax and Siemens are working in partnership to install Siemens gas turbines and battery technology at the site. The new gas turbines will likely be Siemens SGT5-9000HL machines. This is a new generation gas turbine, which operates at a higher temperature than machines currently in operation in the UK. This results in higher efficiency electricity production and lower emissions of CO₂ per MW, particularly when used in conjunction with the existing steam turbines in combined cycle mode. However, emissions of nitrogen oxides (NO_x) are increased at these higher temperatures.
- 4.5.2. Previous generations of gas turbine, such as the Siemens SGT5-8000H, are not considered suitable for the Proposed Scheme. The lower combustion temperature results in less efficient combustion and would be insufficient to drive the existing steam turbines.
- 4.5.3. Siemens was selected as a supplier to this project on the basis of its expertise with the existing Drax steam turbines, which are an intrinsic part of the Proposed Scheme.

HEAT RECOVERY STEAM GENERATORS

- 4.5.4. The Proposed Scheme will make use of vertical type HRSGs; vertical HRSGs offer a number of benefits to the project when compared to horizontal type units. The primary benefit is that a vertical boiler is compact and has a much smaller footprint. This allows the plant layout to be optimised and the new generating units to be located close to the existing steam turbines. Proximity to the steam turbines increases the overall efficiency of the plant: reducing its environmental impact and improving its commercial competitiveness and ability to operate in the market. In conjunction with their once-through design the HRSGs selected for the project will allow the plant to provide fast, flexible and responsive energy to the market.

4.6 ALTERNATIVE EMISSIONS ABATEMENT AND STACK HEIGHTS

- 4.6.1. A variety of measures can be employed to reduce NO_x emissions from gas fired power stations. The following measures have been discounted:
 - Flue gas recirculation. Flue gas recirculation requires additional equipment capable of dealing with significantly larger flue gas volumes; this may result in the concentration decreasing but would not change the mass load of NO_x being generated. It would also reduce efficiency due to the parasitic load.
 - Low NO_x burners. Low NO_x burners operate using staged combustion, resulting in lower NO_x emissions. However, in order to generate high efficiency, Low NO_x burners will not completely mitigate thermal NO_x generation.
 - Selective non-catalytic reduction (SNCR). SNCR would require a significant volume of ammonia and without a catalyst would result in a greater ammonia slip than would SCR.
 - Steam injection. Steam injection has a high cost and negatively affects efficiency by lowering combustion temperature.
- 4.6.2. Due to the high firing temperatures required to achieve the desired high efficiency of the new turbines, SCR is currently being considered. However, use of this technology also leads to emissions of ammonia (NH₃). The preferred NO_x abatement technology is not yet confirmed. All other options have been discounted at this stage.

4.7 ALTERNATIVE STACK HEIGHTS

- 4.7.1. The EIA Scoping Report for the Proposed Scheme stated that each unit would require main and bypass stacks of up to 70 m. However, preliminary stack height sensitivity modelling has now been carried out to investigate the air quality impact of the Proposed Scheme. This has identified that, although no air quality objectives would be exceeded with the proposed stack height of 70 m, air quality impacts would be minimised by increasing the stack height to up to 120 m. This compares to a height of 259 m for the existing stack and 114 m for the existing cooling towers.
- 4.7.2. Stack heights of greater than 120 m are not structurally possible with the proposed vertical HRSGs. As noted above, the alternative horizontal HRSGs that would be required for greater stack heights are not considered viable for the Proposed Scheme as there is insufficient space for them.
- 4.7.3. Informal consultation has been undertaken and comments have been received from North Yorkshire County Council, Selby District Council, Doncaster Council and East Riding of Yorkshire Council on this change, particularly in terms of visual impact and the setting of heritage assets. Comments on the assessment approach will be incorporated into the ES but the overall the assessment approach described in the Scoping Report remains valid (See Section 7.4.4 for Historic Environment and Section 7.6.4 for Landscape and Visual). Further air quality modelling will also be carried out to refine the final heights of both main and bypass stacks in combination with other approaches to manage emissions to air.
- 4.7.4. The applicant has also considered whether it would be viable to connect the new units to the existing 259 m main stack. This has been discounted as it not possible with the proposed vertical HRSGs. Even if a solution could be found to connect the units to the main stack, the exhaust flue would have to be over 1000 m in length, which would cause significant temperature and pressure drops by the time it reached the main stack. This would affect the gas buoyancy and velocity, adversely affecting the units and making dispersion of gases from the main stack less effective.

4.8 ALTERNATIVE FUELS FOR ELECTRICITY GENERATION

- 4.8.1. Alternative fuel types which would allow the reuse of existing infrastructure on the Existing Drax Power Station Complex to be utilised were considered.
- 4.8.2. As discussed above, in November 2015 the UK Government announced plans to close all coal-fired power stations by 2025 and restrict their use by 2023. Based on this announcement the applicant has been assessing options for future generation at the Existing Drax Power Station Complex which do not include coal.
- 4.8.3. Drax assessed alternative fuel types which would allow the reuse of existing infrastructure on the Existing Drax Power Station Complex. These alternative fuel types were limited to biomass and natural gas.
- 4.8.4. Biomass was found not to be viable for the remaining coal fired units, as in 2015 the UK government removed the guaranteed level of subsidy for biomass conversions and co-firing projects for the duration of the renewable obligation, known as grandfathering. This meant biomass was not an economically viable option.
- 4.8.5. Natural gas was assessed as an economically viable fuel choice. Further, gas-fired power generation is in line with national planning policy as described in Chapter 2 (Planning Policy).

4.9 ALTERNATIVE OPTIONS FOR GAS PIPELINE

- 4.9.1. Two gas pipeline routes, route Option A and route Option B, are currently being considered. These can be seen in Figure 1.3.
- 4.9.2. Six pipeline routes were originally considered and these were subject to a gas pipeline feasibility study. These are shown on Figure 4.1. The feasibility study considered the following constraints, amongst others:
- Major and minor road crossings.
 - Rail crossings.
 - Major and minor water crossings.
 - Overhead and buried utilities.
 - Ecological constraints.
 - Archaeological constraints.
 - Flood risks.
- 4.9.3. Two options were dismissed early on in the study as they were not considered feasible. The first route was dismissed as the route utilised, in part, a narrow corridor owned by Drax which contains existing Drax Power Station utilities. This would incur extra construction cost by significantly reducing the constructability of the pipeline. The second option was dismissed for the following reasons:
- It had significant parallelisms with existing overhead lines.
 - It required a large trenchless crossing of the River Aire.
 - It connected to the feeder station close to Newlands AGI, where there were complicated land ownership issues.
 - It required a crossing of Feeder 29.
 - It was in close proximity to residential receptors.
- 4.9.4. A further two feasible options were discounted later in the study due to construction risks associated with areas of the route running parallel to existing overhead lines. The two options taken forward for consultation have significant advantages over the discounted options.

5 TRANSPORT

5.1 INTRODUCTION

- 5.1.1. This chapter provides the preliminary traffic, transport and access environmental impact assessment of the Proposed Scheme. The assessment of environmental impacts is ongoing at this stage and full findings will be presented with the Environmental Statement.
- 5.1.2. The Proposed Scheme is set out in Chapter 3 (Site and Project Description) and forms the basis for the assessment.
- 5.1.3. Embedded mitigation included within the assessment of traffic, transport and access will consist of a Construction Traffic Management Plan (CTMP) and Travel Plan (TP) for construction workers (both of which will be secured by requirements attached to the Development Consent Order). These documents aim to mitigate the impact of vehicular trips on the local road network and will form part of the DCO submission. These plans will be agreed by North Yorkshire County Council.

5.2 POLICY, LEGISLATION AND GUIDANCE

- 5.2.1. This assessment has taken into consideration the current guidance and legislation relevant to transport and traffic. National, regional and local guidance has been reviewed.

NATIONAL

- Department for Energy and Climate Change (2011) Overarching National Policy Statement for Energy (NPS EN-1) which sets out the Government's national policy priorities for energy and infrastructure. It affects decisions made by the Infrastructure Planning Commission (IPC) on applications for energy developments.
- Department for Energy and Climate Change (2011) National Policy Statement for Fossil Fuel Electricity Generating Infrastructure (NPS EN-2) which provides the primary basis for decisions by the IPC on applications for nationally significant fossil fuel electricity generating stations.
- Department for Energy and Climate Change (NPS 2011) National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) which provides the primary basis for decisions by the IPC on applications it receives for gas supply infrastructure, as well as gas and oil pipelines.
- Department for Energy and Climate Change (2011) National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) which provides the primary basis for decisions made by the IPC on applications it receives for electricity networks infrastructure.
- Highways England (2015) Planning for the Future: guide to working with Highways England on planning matters. This document outlines the approach which Highways England takes in terms of engaging in the planning system, as well as the key issues they consider when assessing planning documents and applications. The policy applies to the entire Strategic Road Network (SRN). This is of relevance as Highways England (HE) is a key consultee when examining traffic and transport issues, and developing possible solutions.
- HM Treasury (2010 / 2016) National Infrastructure Plan / Delivery Plan. The Infrastructure Plan brings together the government's plans for economic infrastructure over the next five years with those to support delivery of both housing and social infrastructure. It outlines details of £483 billion of investment in over 600 infrastructure

projects and programmes in multiple sectors across the UK, to 2020-21 and beyond. The policy is of relevance as it highlights the need to improve infrastructure in areas such as traffic and transport, as well as the Government's strategic infrastructure priorities.

- Department for Transport & Highways England (2014) Road Investment Strategy. The Strategy outlines a long-term programme for motorways and major roads, as well as a requirement for stable funding to assist with the planning process. The Strategy is comprised of a long-term vision for motorways and major roads, a multi-year investment plan and a series of high level objectives for the period 2015 to 2020. The Road Investment Strategy is of relevance as it will have clear impact in the areas of both transport and traffic levels in future, and it must be consider when examining the potential for modifications to the existing road network.
- Department for Communities and Local Government (2012) National Planning Policy Framework (NPPF) which sets out:
 - The Government's planning policies for England and how these should be applied.
 - The need for sustainable development and details how there a three dimensions in this regard; and economic role, social role and environmental role.
 - The guidance for managing traffic, and outlines the need to actively manage patterns of growth as well as how to encourage greater use of sustainable and active travel modes.
- Department for Communities and Local Government Planning Practice Guidance Travel Plans, Transport Assessments and Statements (2014).
 - Provides guidance and overarching principles relating to Travel Plans, Transport Assessment and Statements, particularly in relation to decision making. The guidance include advice on when assessments and statements are required, as well as what they should contain.
 - The Planning Practice Guidance is of relevance as it specifically relates to the effective planning of transport, incorporating key issues such as traffic stemming from developments.
- Institute of Environmental Management and Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic.
 - The Guidelines provides a range of key guidance in areas including environmental issues, traffic issues, determining the magnitude of environmental impacts, alternative and mitigation, and preparing environmental statements.
 - They are of relevance as they provide key information pertaining to assessing traffic issues and associated environmental impacts.

REGIONAL

- North Yorkshire County Council (2015) Strategic Transport Prospectus which sets out the strategic transport priorities within the North Yorkshire area, as well as key issues around transport and traffic.
- North Yorkshire County Council (2016) North Yorkshire County Council Local Transport Plan (2016-2046) which set outs key transport aims and priorities for the North Yorkshire area. This document includes key information on transport and traffic issues.

LOCAL

- Selby District Council (2015) Fifth Local Development Scheme 2013 – 2017 which aims to ensure that the policies and proposals of the Core Strategy are brought forward in such a way that ensures the highest priority areas are tackled first.
 - Selby District Council (2005) Selby District Local Plan (SDLP). The Local Plan provides a comprehensive land-use framework for the Selby District in terms of promoting, co-ordinating and controlling future development in the area. The Local Plan is of relevance as it is important to consider the transport and traffic-based impacts associated with the scale, nature and type of new developments.
- Scoping opinion and Consultation

5.3 SCOPING OPINION AND CONSULTATION

- 5.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to traffic and transport, and how those requirements should be addressed by the applicant, are set out below in Table 10.

Table 10 - Scoping Opinion Summary Table

Section	Applicants proposed matter	Planning Inspectorate's Comments	Response
7.1.2	Impacts from traffic during operation	The Scoping Report states at section 7.1.2 that there would be no additional trips to facilitate operation and maintenance. However, section 7.1.5 goes on to state that it is an 'assumption' that additional staff/deliveries/trips would be negligible during operation. The Inspectorate does not consider that the Scoping Report includes sufficient certainty regarding the absence of an increase in operational traffic movements, although this does seem likely. The ES should confirm and justify that there is no discernible increase to operational traffic movements. If this can be demonstrated, the Inspectorate agrees that this can be scoped out.	The operational phase of development will see a reduction in heavy goods vehicle (HGV) movements to and from the Site (following the construction phase) and also no increase in staffing levels. Information will be provided to support this within the ES submission.
7.1.2	Impacts from the use of the existing jetty and waterways to transport	The Scoping Report does not justify why this is not considered to be significant. It is not clear from the Scoping Report how frequently the jetty would be utilised for transporting abnormal loads/plant equipment, its operational hours, or the route that would be used to transport	Information will be provided with regards to the intended use of the jetty in the ES Chapter

Section	Applicants proposed matter	Planning Inspectorate's Comments	Response
	abnormal Loads/plant equipment	goods to the Power Station Site. The Inspectorate does not agree that this can be scoped out. Furthermore, as the use of the jetty is to be relied upon for the construction phase, the Inspectorate considers the potential effects of its use should be assessed within the ES	
7.1.1	Sensitive receptors	The applicant should discuss and agree with the relevant local authorities what are the sensitive receptors for the purpose of the assessment.	The applicant is carrying out this discussion with the relevant local authorities as part of the ES scope.
7.1.2	Abnormal loads	The ES should explain the frequency of transporting abnormal loads/plant equipment from the jetty to the application site and the types of vehicles required.	Information will be provided with regards to the intended use of the jetty in the ES Chapter
7.1.4	Study area	The Scoping Report notes that a 'suitably defined study area' would be identified for the assessment, but does not indicate what this would be. The ES should clearly identify the study area used in the assessment. This should be discussed and agreed with Highways England and North Yorkshire County Council.	Discussions are being undertaken with North Yorkshire County Council (NYCC) and HE to identify and agree the study area.
7.1.4	Transport assessment	The ES should describe the predicted distribution of traffic movements across the study area during the construction phase. The applicant is advised to discuss the input parameters for the construction phase assessment with Highways England and North Yorkshire County Council.	Discussions are being undertaken with NYCC and HE to agree the parameters for construction phase traffic assessment

Section	Applicants proposed matter	Planning Inspectorate's Comments	Response
General	Management Plans	The Inspectorate recommends that a construction traffic management plan is prepared to manage traffic during demolition and construction. A draft of this document should be provided with the DCO application. It should be clear how the implementation of such a plan would be secured in the DCO. The Inspectorate notes the comments from Highways England regarding the detail that should be provided in such a plan and agrees that the following information should be included: hours of operation of the site; the timing of deliveries; routing of HGV and abnormal road traffic to/from the site; and measures that will manage down the sites trip generation during the peak hours.	A CTMP will be submitted as part of the DCO application.
General	Impacts on navigation	The Inspectorate advises that potential impacts on navigation of the River Ouse should be assessed. This should be discussed with the Environment Agency (EA) and the Canal and River Trust. (See also Table 12: Water Resource, Quality and Hydrology)	Information will be included within the ES with regards to the use of the River Ouse.

CONSULTATION

- 5.3.2. Discussions with NYCC, East Riding of Yorkshire Council (ERoY) and HE are currently being progressed to confirm the study area and sensitive receptors in relation to traffic, transport and access. These discussions will inform the ongoing study and will be presented in the ES to be submitted with the application.
- 5.3.3. Whilst discussions are ongoing with North Yorkshire County Council, ERoY and HE, the proposed highway study area is assumed to cover the following junctions (and highway links between junctions) as shown in Figure 5.1:
- M62 Dumbbell junction (Junction 36).
 - A645 / A1041 3 arm roundabout.
 - A1041 / A63 4 arm roundabout.
 - A63 / A19 4 arm roundabout.
 - A63 / A1238 3 arm roundabout.
 - A63 / A162 4 arm roundabout.

5.4 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

PEIR ASSESSMENT METHODOLOGY

- 5.4.1. A preliminary assessment has been undertaken of the likely impacts of the Proposed Scheme on the transport network study area. The PEIR assessment has considered the potential impacts of the worst case traffic forecasts (detailed in Table 12 below) for the Proposed Scheme on the highway network. ES methodology and where necessary, professional judgement has been used to assess the likely effect of these impacts in terms of significance at this preliminary assessment stage. These are detailed in the ES methodology sections below (Tables 11 and 13 respectively).
- 5.4.2. The assessment conducted within this PEIR Chapter is based on the following assumptions:
- In terms of the assessment scenarios set out in Chapter 3, this assessment assumes:
 - The Site Reconfiguration Works will be carried out as part of the Proposed Scheme. This scenario has higher traffic flows, and therefore greater impacts are to be expected. This would represent the worst case scenario of the two scenarios.
 - Repowering of both units. This would represent the worst case scenario of the two scenarios.
 - In terms of construction transport, both scenarios are assessed, as follows:
 - Option 1 – Abnormal Indivisible Loads delivered by the local and strategic network – at the time of preparing this PEIR the proposed route is from the Port of Goole travelling along Goole Bypass, M62 and then A645 to Drax. This preliminary route is shown in Figure 5.2. The preliminary AIL route has been defined on the basis of a preliminary assessment of route suitability, including swept path analysis and visual inspection. Structural and topographical surveys have yet to be undertaken to confirm the suitability of these routes. There may be a need to temporarily close highways or remove street furniture in order to facilitate this option; and
 - Option 2 – Abnormal Indivisible Loads (AIL) delivered via the River Ouse and unloaded via crane at the existing jetty at Long Drax. This preliminary route is shown in Figure 5.3. The preliminary AIL route has been defined on the basis of a preliminary assessment of route suitability. Structural and topographical surveys have yet to be undertaken to confirm the suitability of these routes.
 - In terms of the pipeline, both route options have been assessed. The effects are the same for each option unless otherwise stated.
 - In terms of the electrical connection scenarios, there is no difference in the effects for each scenario.
 - In terms of the air quality mitigation scenarios, there is no difference in the effects for each scenario.
 - Construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.

- 5.4.3. The PEIR assessment considers the transportation environmental impacts of construction, operation and decommissioning.
- 5.4.4. The construction element of any of the two scenarios is considered to generate the most additional traffic and abnormal loads within the study area.
- 5.4.5. The assessment of effects is presented by specific project elements (the works in relation to the generating stations and the electrical connection and the gas pipeline works), and therefore provides a preliminary assessment of effects for the Proposed Scheme as a whole.
- 5.4.6. Embedded mitigation has been assumed for the purpose of the assessment as follows:
- A TP will be developed and adopted in which sustainable transport will be promoted throughout the life cycle of the Proposed Scheme. This embedded mitigation will help control the impact of travel by construction staff during the construction period by suggesting, and where necessary enforcing, more sustainable travel options to be employed.
 - A CTMP will be produced as a basis to manage the traffic associated with the construction phase/decommissioning phase of the Proposed Scheme including the following measures (as necessary):
 - Route diversions will be put in place to divert traffic from temporary road closures (or alternatively temporary road signals will be deployed).
 - Abnormal load routing will be agreed with NYCC, EROY and HE Officers. This will ensure planned routes are agreed and adhered to and any street furniture is removed prior to arrival.
 - If the jetty is used, AIL routing will be assessed and agreed with NYCC, HE, Environment Agency (EA) and the Canals and Rivers Trust where necessary.
 - Route diversions in relation to short term road closures on minor local roads.
 - HGVs will be required to use the existing HGV route agreement which is in place at the existing Drax Power Station (the agreed routing from M62 Junction 36 to Drax via the A645 is shown in Figure 5.4).
- 5.4.7. The preliminary assessments are presented in Section 5.9.

ENVIRONMENTAL STATEMENT ASSESSMENT METHODOLOGY

- 5.4.8. Discussions are on-going with HE and NYCC in order to agree the available data sources to assist with the assessment of potential impacts of the Proposed Scheme.
- 5.4.9. The assessment in the ES will follow industry standard guidance including the Design Manual for Roads and Bridges (DMRB) and the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic (1993).
- 5.4.10. In addition, the ES chapter will present the findings of trip estimates from the Proposed Scheme, the mode split of all trips, and the likely distribution across the transport network. Forecasting of baseline traffic data will be carried out, using industry standard traffic forecasting software TEMPRO, to establish a 'do minimum' scenario for a future assessment year (worst case year of peak construction).
- 5.4.11. The impact of the Proposed Scheme will be established by adding trips associated with the Proposed Scheme to the 'do minimum' future baseline assessment year scenario to create a 'do something' scenario and the likely significant effects will be presented in the ES chapter. The cumulative effects of all other development within the study area will also be

assessed. If necessary, mitigation measures will be proposed to reduce the number of trips, or provide capacity to cater for additional trips.

- 5.4.12. A TP will be developed and adopted in which sustainable transport will be promoted throughout the life cycle of the Proposed Scheme. This embedded mitigation will help control the impact of travel by construction staff during the construction period by suggesting, and where necessary enforcing, more sustainable travel options to be employed. A draft of the TP will be included in the application for the DCO, and will be secured via a requirement attached to the DCO.
- 5.4.13. Additionally, an outline CTMP will be produced as a basis to manage the traffic associated with the construction/decommissioning phase of the Proposed Scheme. A draft of the CTMP will be included in the application for the DCO, and will be secured via a requirement attached to the DCO.
- 5.4.14. The Proposed Scheme may cause potential effects to both motorised and non-motorised users (receptors). It will be ensured that effects for all modes of transport are considered in the ES and appropriate mitigation put in place.
- 5.4.15. As further work is progressed, the transport related environmental effects (as defined by IEMA guidelines) are being assessed for the following factors:
- Delay.
 - Road safety.
 - Intimidation and fear.
 - Severance.
 - Pedestrian amenity.
- 5.4.16. The effects of traffic in relation to noise and vibration, and air quality are considered in the relevant sections of this PEIR.

ES METHODOLOGY – SIGNIFICANCE CRITERIA

- 5.4.17. The overall significance of the effect is based on the sensitivity of the receptor and the magnitude of change as shown in Table 11. For many effects, there are no simple rules or formulae which define thresholds of significance and there is a need for interpretation and judgement on part of the assessor, backed-up by data or quantified information wherever possible. Consultation with stakeholders will enable determination of the sensitivity of each receptor.
- 5.4.18. The positive or negative effect of changes may therefore vary across receptors, with some receptors experiencing a beneficial effect or being of low sensitivity, whereas others may have high sensitivity and high magnitude of impact and these will be identified accordingly. Table 11 shows the matrix for determining significance of effect.

Table 11 - Matrix for Determining Significance of Effect

		Sensitivity (Value / Importance)			
		High	Medium	Low	Negligible
Magnitude of change	Large	Major	Moderate – Major	Minor – Moderate	Negligible
	Medium	Moderate – Major	Moderate	Minor	Negligible
	Small	Minor – Moderate	Minor	Negligible – Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

ES METHODOLOGY – PROPOSED SCHEME TRAFFIC FLOWS

- 5.4.19. The changes in traffic flow will be assessed in terms of impacts on key junctions and links surrounding the Site. These locations are being discussed with HE, NYCC & ERYC but the study area is likely to include (as shown in Figure 5.1):
- M62 Dumbbell junction (Junction 36).
 - A645 / A1041 3 arm roundabout.
 - A1041 / A63 4 arm roundabout.
 - A63 / A19 4 arm roundabout.
 - A63 / A1238 3 arm roundabout.
 - A63 / A162 4 arm roundabout.
- 5.4.20. The impact of flow changes at these locations will be assessed for the traffic related to the worst case scenario, which is the construction phase. The operational and decommissioning phases will have fewer vehicle movements and workforce than the construction phase and they are therefore considered to not exceed the impacts of the construction phase. Mitigation, if required, will be provided for the construction phase impacts and therefore will also be in place for operation and decommissioning.
- 5.4.21. The traffic figures for the construction phase of the Proposed Scheme, which have been used as part of this assessment are set out in Table 12 below. These figures have been developed by the design team. These figures also include trip generation associated with the proposed Site Reconfiguration Works being undertaken as part of the Proposed Scheme. This is considered to represent the worst case traffic figures for the Proposed Scheme.
- 5.4.22. It is proposed that the two generating units will be constructed separately, with Unit X constructed in months 1-34, followed by a 12 month break in construction, within which the Unit X will be commissioned. Then the construction and commissioning of Unit Y will commence in month 48-83. Construction work will occur in a total of 68 months.
- 5.4.23. The combined worst case site traffic flows are given in Table 12 below (this also includes all gas pipeline and electrical works).

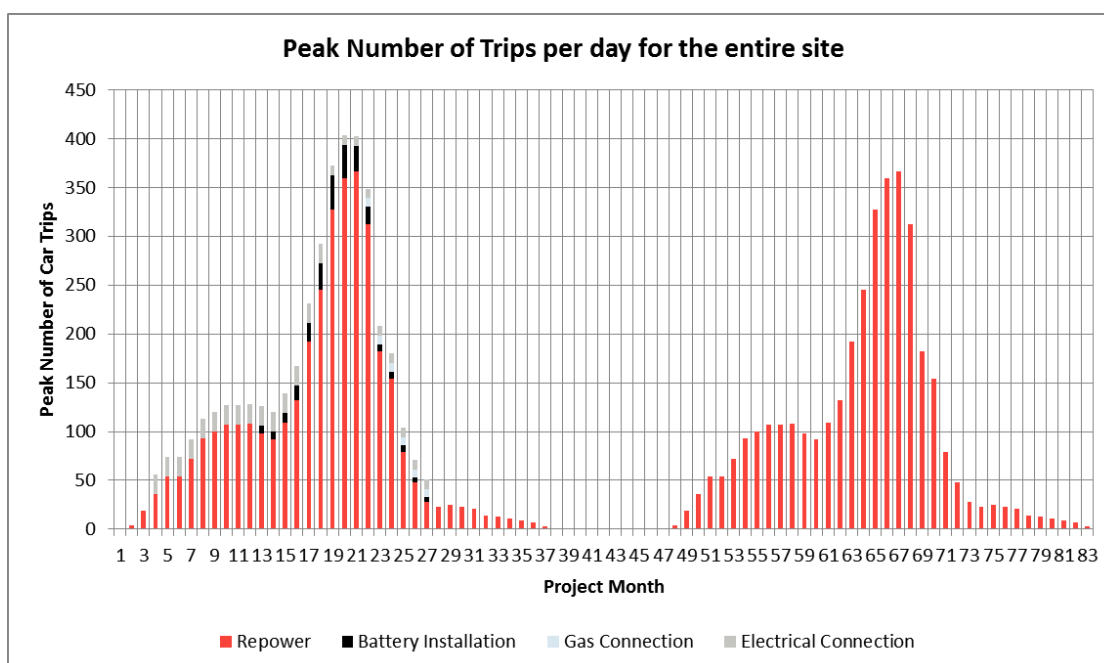
Table 12 - Peak/Daily Number of Cars and HGVs and the Project Month of Occurrence

	Maximum number per hour (2way arrival and departure)	Maximum number per day (2way arrival and departure)	Project month
Car Trips	412*	824	20
HGVs	14	140	13

*Assumes no construction peak spreading (all construction workers arriving in same hour)

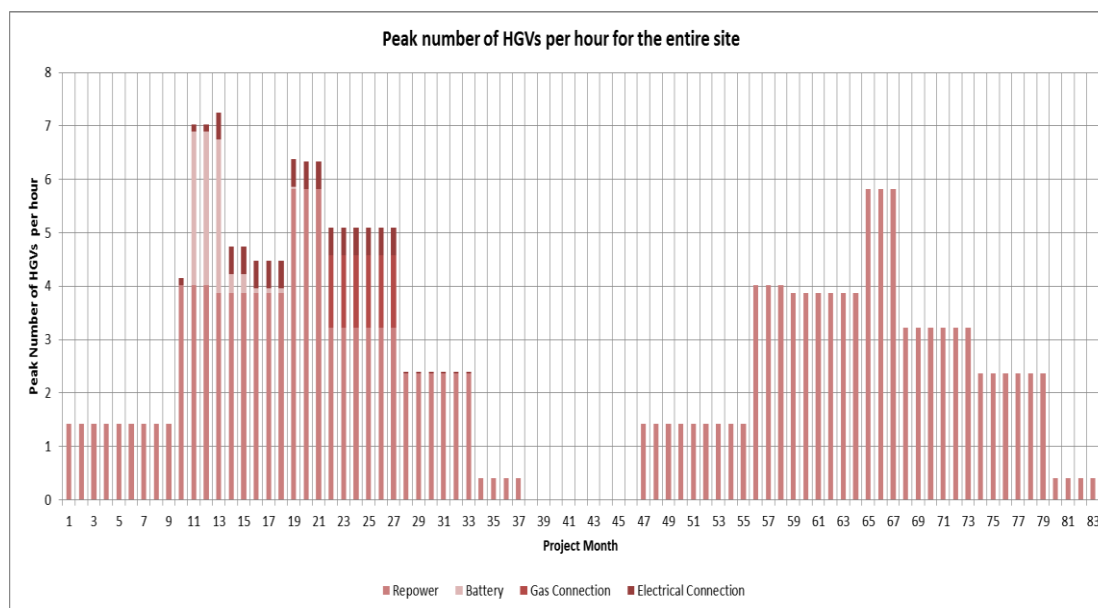
5.4.24. The construction worker traffic profile over the duration of the construction period is shown in Chart 1 below and illustrates the peak construction assessment period (Month 21) as the worst case for construction worker trips to and from the site.

Chart 1 - Construction Worker Profile



5.4.25. HGV traffic flow profile over the duration of the construction period is shown in Chart 2 below which illustrates the maximum HGV flow per hour during each month of the construction period. The worst case HGV flow occurs in Month 13.

Chart 2 - Construction HGV Profile



- 5.4.26. During the operational period, it is anticipated that no additional workers would be required above existing workforce levels as staff would be redeployed from existing operations within the Existing Drax Power Station Complex and that HGV flows will reduce due to some fuel being provided by pipeline rather than HGV deliveries. There will also be a further reduction as a result of fewer raw material deliveries and exports (including limestone, ash and gypsum for example). Therefore the impact of the operational phase will not be significant in transportation terms.
- 5.4.27. The construction phase has the largest impact in terms of traffic generation and the impacts of this scenario on the surrounding road network will be assessed in the ES.
- 5.4.28. The ES will assess how the predicted traffic flows impact on the transport network in the two assessment scenarios, which will inform the impact on the receptors.
- 5.4.29. IEMA provides guidance on how the magnitude of changes in traffic flow should be determined, as shown in Table 13.

Table 13 - Criteria Defining Magnitude of Change in Traffic Flow

Magnitude	Criteria
High	Considerable change in condition (90+%)
Medium	Readily apparent change in conditions (60-90%)
Low	Perceptible change in conditions (30-60%)
Very low	No discernible change in conditions (0-30%)

- 5.4.30. The magnitude of change in traffic flow will be used to determine the impacts upon receptors.
- 5.4.31. Traffic surveys will, where necessary, be commissioned to determine the demand on the transport network.

ES METHODOLOGY - DELAY

- 5.4.32. The change in delay resulting from the change in traffic flow will be presented in the ES and the percentage increase reported. The change in delay will be assessed through the assessment of delay at key junctions in the vicinity of the Site.

ES METHODOLOGY - ROAD SAFETY

- 5.4.33. An analysis of traffic collisions over a five-year period will be undertaken in the ES to identify any significant patterns or clusters in the vicinity of the Site. The collision history at each of the junctions identified for traffic assessment will be reported in the ES.

ES METHODOLOGY - INTIMIDATION AND FEAR

- 5.4.34. Intimidation and fear can be caused by location, highway layout, level of crime, and driver stress. As discussed in the IEMA guidelines, there are no commonly agreed thresholds for estimating these from other measurable factors.
- 5.4.35. Therefore a qualitative judgement, based on content of the ES chapter including a site audit and non-motorised user assessment will be used to determine the intimidation and fear effect of the Proposed Scheme.

ES METHODOLOGY - SEVERANCE

- 5.4.36. Severance of Non-Motorised Road Users (NMRU) will be assessed in the ES in relation to the increase in traffic flow. A qualitative assessment will be provided based on traffic volumes, and impacts on footways and Public Right of Way (PRoW) (including impacts in relation to nuisance and disruption to users).

ES METHODOLOGY - PEDESTRIAN AMENITY

- 5.4.37. Pedestrian amenity is defined within the IEMA guidelines as the “relative pleasantness of a journey”. This is affected by traffic flow, traffic composition, pavement width and separation from traffic.
- 5.4.38. There are no commonly agreed thresholds for quantifying the significance of changes in pedestrian amenity, although in this case the traffic flow will be assessed for the increase in the proportion of HGVs. If the proportion of HGVs double, a significant effect is likely to arise. A qualitative assessment of the effect of the Proposed Scheme on pedestrian amenity will then be undertaken.

5.5 BASELINE CONDITIONS

HIGHWAY NETWORK

- 5.5.1. Drax Power Station is located in North Yorkshire. The Power Station Site is located to the south of the town of Selby, it is accessed from the A645 to the south of the Site. The A1041 and the A645 serve to connect the power station to the wider road network. The Strategic Road Network is accessed at J36 M62, via A645 and A614 approximately 6 km south.
- 5.5.2. At present, staff and visitors access the Existing Drax Power Station Complex via the ‘South Gate’ on the A645, whereas, site contractors, deliveries and HGV traffic make use of the site entrances on New Road to the eastern boundary of the Site, known formally as ‘North Entrance’.
- 5.5.3. The Existing Drax Power Station Complex is also currently served by rail for deliveries of fuel and access to the River Ouse via a jetty located off Redhouse Lane.

- 5.5.4. For access to the Power Station Site within the Existing Drax Power Station Complex, operational related traffic, including HGV and abnormal loads, will use the North Entrance, which is of a suitable standard to accommodate both LGVs and HGVs. This access is currently barrier controlled.
- 5.5.5. The Proposed Scheme lies to the north of the M62, with access via Junction 32 and the A614, A645, and New Road, which are single carriageways and adopt the national speed limit. The A1041 lies adjacent to the Site connecting to the town of Selby to the North and Snaith in the South.
- 5.5.6. There are a number of unclassified roads within close proximity to the Proposed Scheme, with Main Road and Carr Lane providing access to neighbouring villages such as Drax and Long Drax, in a west-east direction. Main Road is of varying width alternating from a single carriageway on approach to Drax village but converts to a narrow rural road. Through the settlement the road has a speed limit of 30 mph but increases to the national speed limit along the rural road between Drax and the Redhouse Lane.

TRAFFIC FLOWS

- 5.5.7. Traffic flow data has been collected from the Department for Transport's (DfT) website for Annual Average Daily Flow (AADF) and is shown in Table 14 below. A plan in Figure 5.5 shows the AADF counter locations.
- 5.5.8. As the flows are taken from 2016, they provide a realistic representation of the existing conditions in 2017.

Table 14 - AADF Flows

Count Point Number	Description	2011	2016	Vehicle Increase
73458	A645 between M62 and Drax Village	7557	8331	774
99718	A1041 between Snaith and A645	7720	8435	715
80719	A1041 between Selby and A645	70969	12748	1779
80916	A19 between A645 and A63	10038	10171	133
26619	A63 between M62 and A19	8227	8250	23
58447	A19 between Askem and M62 J34	5967	5972	5
37473	A645 between Eggborough and Snaith	4388	4854	466
74006	M62 at West of Junction 34	58962	64293	5331
73460	M62 at East of Junction 34	45501	50781	5280

ROAD SAFETY AND COLLISIONS

- 5.5.9. The locations of available collision data are shown in Figure 5.6 for the A645 and the wider road network. In the five year period 2011 to 2015 there were 15 collisions on the A645, of which two were fatal and three serious. A cluster of collisions is identified at the A645/ New Road/Main Road junction to the south of the Site. The collision data details will be obtained and assessed within the ES.

PEDESTRIAN AND CYCLE FACILITIES

- 5.5.10. There is a pedestrian footway on one side of New Road along the eastern boundary of the Existing Drax Power Station Complex, with additional footways along the A645 westbound towards A1041. PRow are shown on the plan in Figure 3.1.c.
- 5.5.11. There is no cycling infrastructure in place within the vicinity of the Proposed Scheme. National Cycle Route 62 is on the A1041 approximately 2.5 miles south west of the Site which travels along Hirst Road on and off road towards Selby and further afield, York as shown in Figure 5.7.

BUS SERVICES

- 5.5.12. There is one bus route, as shown in Figure 5.8, which is within close proximity to the Proposed Scheme with an additional route serving the village of Camblesforth.
- 5.5.13. The nearest bus stop is located on the A645 within close proximity to the Existing Drax Power Station Complex entrance. An additional service can be accessed at Brigg Lane, Camblesforth less than 1 mile from the Existing Drax Power Station Complex, both stops are served by Route 8 which is operated by Transdev York linking Drax Village to Selby Town Centre. All bus routes serving Camblesforth are detailed in Table 15 below.

Table 15 - Bus Services

Service	Operator	Route	Frequency	First Service	Last Service
8	Transdev York	Drax - Selby	Irregular	0940	1635
		Selby - Drax		0847	1625
400/401	Arriva	Selby - Goole	Irregular	0630	1810
		Goole - Selby		0702	1910

RAIL SERVICES

- 5.5.14. The nearest railway station is Snaith which lies 4.3 miles south west of the Existing Drax Power Station Complex. This railway station is served by Northern Rail operating only limited services to Leeds and Goole, and is accessible by private car via the A1041 and A645. Alternatively, Selby railway station lies 7 miles northwest of the Existing Drax Power Station Complex, provides a wider range of rail connection services and is easily accessible via bus Route 8.
- 5.5.15. There are four routes that serve Selby, these are operated by Hull Trains, Northern, Transpennine Express and Virgin East Coast. There are 10 daily services between Hull and Doncaster; 36 services between York and Hull; 48 services between Selby and Leeds; 24 services between Hull and Manchester.

5.6 PRELIMINARY ASSESSMENT OF LIKELY SIGNIFICANT IMPACTS AND EFFECTS

- 5.6.1. In this PEIR, the Proposed Scheme has been preliminarily assessed based on the scenario which assumes the Site Reconfiguration Works are part of the Proposed Scheme (rather than being already carried out at the time the Proposed Scheme is implemented). It is in this scenario, that higher traffic flows, and therefore greater impacts are to be expected. This

would represent the worst case scenario of the two. The impacts of the scenario in which the Site Reconfiguration Works have already been carried out ahead of the Proposed Scheme can be considered to be less than the impacts of the Proposed Scheme including those works. The impacts and significance detailed in Tables 16 to 21 are therefore applicable to both scenarios.

- 5.6.2. Tables 16 to 21 set out the preliminary assessment of effects of the elements of the Proposed Scheme identified above, for construction, operation and decommissioning phases. The tables then set out whether any additional mitigation is proposed, and confirm the residual effect. The final column of each table details what further work will be carried out for the ES.

POWER STATION SITE WORKS CONSTRUCTION

- 5.6.3. Table 16 provides a summary of the likely effects of the peak construction period of the Power Station Site (including electrical connection).

Table 16 - Findings of Preliminary Assessment of Likely Significant Effects of the Power Station Site during construction

Description of impacts	Preliminary Assessment of Effects	Potential Mitigation	Potential Residual Effects	Further assessments and consultation to be undertaken
Impact of increased traffic on the local and strategic highway network as a result of construction worker traffic, consisting of cars and LGVs travelling to and from the Power Station Site on all receptors.	Construction workforce (particularly at peak construction) is the largest anticipated transportation impact although is still likely to be less than 30% magnitude of change. Likely significance of effect is slight given the low percentage increases on the existing network	No further mitigation identified at this stage of assessment	Negligible	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES.
Impact of HGV construction	Very low increases in	No further mitigation	Minor disruption to	Further trip estimate,

delivery traffic travelling to and from Proposed Scheme (140 2way HGV) anticipated per day during worst case construction period (Q7) on all receptors	additional traffic as a result of anticipated HGV flows are likely to have a minor adverse effect	identified at this stage of assessment	the road network. Negligible residual effect.	junction and link capacity assessment work will be undertaken in the ES.
Option 1: Impact of delivering AIL to the Proposed Scheme by SRN and local highway networks on all receptors	Obstruction for normal vehicles and potential impact on street furniture is likely to have a minor adverse effect	Abnormal load routing will be agreed with NYCC, EYRC and HE officers. This will ensure planned routes are agreed and adhered to and any street furniture is removed prior to arrival.	Minor adverse effect due to the slight disruption to the road network during off peak times (typically in the early hours of the morning when network flows are low).	Access routes for the delivery of AIL will be fully assessed for inclusion in the CTMP.
Option 2: Impact of AIL deliveries to the Proposed Scheme by River Ouse jetty & local highway network on all receptors	Minor adverse effect of increased AIL traffic levels on Redhouse Lane which may delay traffic using this local route.	Abnormal load routing will be agreed with NYCC, EYRC and HE Officers. This will ensure planned routes are agreed and adhered to and any street furniture is removed prior to arrival.	Minor adverse effect	Access routes for the delivery of AIL will be fully assessed for inclusion in the CTMP.
Impact on cycling access in the vicinity of the Power Station Site	Negligible effect. Existing cyclists will need to share road with increased levels of construction traffic which are anticipated to be low in the	No mitigation is likely to be required.	Negligible	No further assessment

	context of existing traffic flows.			
Impact on public transport services and possible delays	Construction vehicles will travel along A645 which is also the main bus route to the site. Impact is negligible	No mitigation is likely to be required.	Negligible	No further assessment

OPERATION

- 5.6.4. There is likely to be minimal impacts during the operation of the Proposed Scheme as operational staff numbers are not expected to increase from existing employee numbers.

Table 17 - Findings of Preliminary Assessment of Likely Significant Effects of the Power Station Site during Operation

Description of impacts	Preliminary Assessment of Effects	Potential Mitigation	Potential Residual Effects	Further assessments and consultation to be undertaken
Impact of Operational worker traffic travelling to and from the Existing Drax Power Station Complex on all receptors	No increase in employee numbers expected. The effect will therefore be negligible.	No mitigation is likely to be required.	Negligible	Confirmation of proposed operational staffing will be provided by the applicant.

DECOMMISSIONING

- 5.6.5. Table 18 provides a summary of the likely effects of the decommissioning of the Proposed Scheme. Decommissioning is likely to cause the same effects as that of construction, but goods are taken away from site rather than to site, therefore the impacts are no greater than construction. Decommissioning is also considered within the CMTTP embedded mitigation.

Table 18 - Findings of Preliminary Assessment of Likely Significant Effects of works on the Power Station Site during Decommissioning

Description of impacts	Preliminary Assessment of Effects	Potential Mitigation	Potential Residual Effects	Further assessments and consultation to be undertaken
Impact of increased traffic on the local and strategic highway network as a result of decommissioning worker traffic, consisting of cars and LGVs travelling to and from the Power Station Site on all receptors	Decommissioning workforce is likely to be less than 30% magnitude of change therefore the likely significance of effect will be slight adverse effect.	None	Slight adverse effect	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES.
HGV decommissioning traffic travelling to and from Power Station Site	Very low increases in additional traffic as a result of anticipated HGV flows are likely to have a minor adverse effect.	None	Minor adverse	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES
Impact on cycling access in the vicinity of the Power Station Site	Negligible effect. Existing cyclists will need to share road with increased levels of decommissioning traffic which are anticipated to be low in the context of existing traffic flows.	No mitigation is likely to be required.	Negligible	No further assessment
Public Transport services and possible delays.	Decommissioning vehicles will likely travel along A645 which is also the main bus route to the Power Station Site. Effect is negligible.	No mitigation is likely to be required.	Negligible	No further assessment

GAS PIPELINE ASSESSMENT

- 5.6.6. There are two proposed gas pipeline routes (Options A & B), however ultimately only one route will be constructed. The impact of constructing either route is the same in transportation terms for the preliminary assessments. Once the route is confirmed, detailed assessments of the impact on the road network will be assessed as part of the ES.
- 5.6.7. The number of construction workers required to construct the pipeline is low (as shown in Chart 1 and 2) in relation to those required for the construction works within the Power Station Site. As such, there is likely to be limited impacts associated with additional trips on the network. There will be some additional traffic caused by the arrival and departure of construction workers and HGVs delivering and removing goods from the Pipeline Study Area, however, this is anticipated to be low.
- 5.6.8. The CTMP will require material laydown areas and construction worker parking to be identified. These laydown and parking areas will be located within the Proposed Scheme.
- 5.6.9. There will be no impact on the highway during the operational phase.

CONSTRUCTION

Table 19 - Findings of Preliminary Assessment of Effects of the Gas Pipeline during Construction

Description of impacts	Preliminary Assessment of Effects	Potential Mitigation	Potential Residual Effects	Further assessments and consultation to be undertaken
Gas pipeline (Effects are for applicable to Option A or B)				
Impact of increased construction worker traffic travelling to and from the Pipeline Study Area on receptors	Minor adverse effect increased car and LGV traffic levels on the local highway.	No additional mitigation	Minor adverse effect.	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES.
HGV construction delivery traffic increasing impact on receptors	Increased HGV traffic levels on local roads in the vicinity of the Pipeline Study Area are considered as a minor adverse effect.	No mitigation is likely to be required.	Minor disruption to the road network – minor adverse effect	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES.

Temporary road closures and diversions as a result of works at the Pipeline Study Area	Short term road closures on minor local roads will be mitigated, where practicable, via route diversions (included in the CTMP) and are considered as a minor adverse effect.	No additional mitigation	Minor adverse effect of localised temporary queuing	Further details of anticipated road closures will be provided in the CTMP.

OPERATION

- 5.6.10. Maintenance vehicles are expected to be very infrequent and are not anticipated to cause detrimental effect to the local transport network. Table 20 identifies likely impacts associated with the operation of the pipeline.

Table 20 - Findings of Preliminary Assessment of Likely Significant Effects of the Gas Pipeline during Operation

Description of impacts	Preliminary Assessment of Effects	Potential Mitigation	Potential Residual Effects	Further assessments and consultation to be undertaken
Maintenance vehicles expected to be infrequent on the local highway network	Very low additional traffic on the network and the effect will therefore be Negligible	No mitigation is likely to be required.	Negligible effect	Further work to identify frequency of maintenance will be provided in the ES

DECOMMISSIONING

- 5.6.11. The pipeline is assumed to remain in situ during/following decommissioning and therefore will have no impact or significant effects during the decommissioning stage.

PROPOSED SCHEME

- 5.6.12. The likely combined significant effects of the Proposed Scheme are shown in Table 21 below

Table 21 - Findings of Preliminary Assessment of Likely Significant Effects of the Proposed Scheme

Description of impacts	Preliminary Assessment of Effects	Potential Mitigation	Potential Residual Effects	Further assessments and consultation to be undertaken
Construction				
Impact of increased traffic on the local and SRN as a result of construction worker traffic, consisting of cars and LGVs travelling to and from the Proposed Scheme on all receptors.	The construction workforce (particularly at peak construction) is the largest anticipated transportation impact although is still likely to be less than 30% magnitude of change. The likely significance of effect is slight given the low percentage increases on the existing network.	No further mitigation identified at this stage of assessment.	Negligible	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES.
Impact of HGV construction delivery traffic travelling to and from Proposed Scheme (140 2way HGV) anticipated per day during worst case construction period (Q7) on all receptors	Very low increases in additional traffic as a result of anticipated HGV flows are likely to have a minor adverse effect.	No further mitigation identified at this stage of assessment.	Minor disruption to the road network. negligible residual effect.	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES.
Option 1: Impact of delivering AIL to the Proposed Scheme by the SRN and local highway networks on all receptors	Obstruction for normal vehicles and potential impact on street furniture is likely to have a minor adverse effect.	Abnormal load routing will be agreed with NYCC, EYRC and HE officers. This will ensure planned	Minor adverse effect due to the slight disruption to the road network during off peak times	Access routes for the delivery of AIL will be fully assessed for inclusion in the CTMP.

		routes are agreed and adhered to and any street furniture is removed prior to arrival.	(typically in the early hours of the morning when network flows are low).	
Option 2: Impact of AIL deliveries to the Proposed Scheme by River Ouse jetty & local highway Network on all receptors	Minor adverse effect of increased AIL traffic levels on Redhouse lane which may delay traffic using this local route.	Abnormal load routing will be agreed with NYCC, EYRC and HE officers. This will ensure planned routes are agreed and adhered to and any street furniture is removed prior to arrival.	Minor adverse effect	Access routes for the delivery of AIL will be fully assessed for inclusion in the CTMP.
Impact on cycling access in the vicinity of the Proposed Scheme	Negligible effect existing cyclists will need to share road with increased levels of construction traffic which are anticipated to be low in the context of existing traffic flows.	No mitigation is likely to be required.	Negligible	No further assessment
Impact on Public Transport services and possible delays	Construction vehicles will travel along A645 which is also the main bus route to the site. Impact is negligible	No mitigation is likely to be required.	Negligible	No further assessment.
Temporary road closures and diversions as a result of works at the Pipeline Study Area	Short term road closures on minor local roads will be mitigated, where practicable, via route diversions (included in the CTMP) and are	No additional mitigation	Minor adverse effect of localised temporary queuing	Further details of anticipated road closures will be

	considered as a Minor adverse effect.			provided in the CTMP.
Operation				
Maintenance vehicles expected to be infrequent on the local highway network	Very low additional traffic on the network and the effect will therefore be negligible.	No mitigation is likely to be required.	Negligible effect	Further work to identify frequency of maintenance will be provided in the ES.
Impact of Operational worker traffic travelling to and from the Existing Drax Power Station Complex on all receptors	No increase in employee numbers expected. Effect will therefore be negligible.	No mitigation is likely to be required.	Negligible effect	Confirmation of proposed operational staffing will be provided by the applicant.
Decommissioning				
Impact of increased traffic on the local and strategic highway network as a result of decommissioning worker traffic, consisting of cars and LGVs travelling to and from the Power Station Site on all receptors	Decommissioning workforce is likely to be less than 30% magnitude of change therefore the likely significance of effect will be slight adverse effect.	None	Slight adverse effect	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES.
HGV decommissioning traffic travelling to and from Power Station Site	Very low increases in additional traffic as a result of anticipated HGV flows are likely to have a minor adverse effect	None	Minor adverse	Further trip estimate, junction and link capacity assessment work will be undertaken in the ES
Impact on cycling access in the vicinity of the	Negligible effect existing cyclists will need to share road with increased levels of decommissioning	No mitigation is likely to be required.	Negligible	No further assessment

Power Station Site	traffic which are anticipated to be low in the context of existing traffic flows.			
Public transport services and possible delays.	Decommissioning vehicles will likely travel along A645 which is also the main bus route to the Power Station Site. The impact is negligible.	No mitigation is likely to be required.	Negligible	No further assessment

5.7 MITIGATION

5.7.1. No additional mitigation is proposed beyond the embedded mitigation.

5.8 RESIDUAL EFFECTS

5.8.1. Residual effects are the same as potential effects.

5.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

5.9.1. The PEIR has the following limitations that will be covered further in the ES:

- Professional judgement has been used to assess impacts of the Proposed Scheme for the PEIR. The preliminary assessments will be refined and supported with modelling data in the ES.
- The information presented in this chapter is 'preliminary'; there will be the opportunity for both the design of the Proposed Scheme and the EIA to take into consideration any comments received through consultation.
- The report is based on the most up to date information available at the time of preparing the PEIR.
- The final calculation of trips generated by construction vehicles and construction workers are not yet available.
- Discussions are being undertaken to agree the scope of required highway network assessments with NYCC, ERYC and HE.
- Surveys to determine the existing traffic flows on the surrounding highway network have not yet been defined or undertaken.
- The theoretical capacity of existing junctions was not assessed or modelled.
- Flood risk assessment is not yet complete which may or may not result in the need for import of fill for land raising. HGV traffic associated with any required landfill has not been considered at this stage.
- The preliminary AIL route has been defined on the basis of a preliminary assessment of route suitability, including swept path analysis and visual inspection. Structural and topographical surveys have yet to be undertaken to confirm the suitability of these routes

5.10 NEXT STEPS

5.10.1. The ES in relation to traffic, transport and access, will continue, with discussions on-going regarding the scope of the ES with NYCC, ERYC and HE.

6 AIR QUALITY & CLIMATE CHANGE

6.1 INTRODUCTION

- 6.1.1. This Chapter reports the preliminary assessment of likely significant effects of the Proposed Scheme on air quality and climate change and describes:
- Relevant policy, legislation and guidance.
 - Consultation undertaken to date.
 - Potential effects of the construction phase from emissions of dust and particulate matter generated during construction (including demolition) activities, for example, site clearance, stockpiling, materials transport and trenching.
 - Potential effects of the operation of the Proposed Scheme from stack emissions.
 - Any relevant mitigation measures and residual effects from the Proposed Scheme;
 - Climate change resilience and adaptation is not considered in this chapter but will be considered in the ES.
- 6.1.2. For both human and ecological receptors, air quality impacts can occur as a result of direct exposure to pollution in ambient air, but also as a result of the deposition of pollutants on the surface of the ground and ecological receptors.
- 6.1.3. The preliminary air quality impact assessment presents an overview of the proposed methodology as well as potential impacts on sensitive receptors during construction and operation. It is anticipated that the ES, following a risk based approach, will assess potential impacts due to dust and particulate matter emissions from construction qualitatively and operational impacts quantitatively.
- 6.1.4. The chapter presents an overview of the approach to assessing operational impacts and specifically the scenarios under consideration in the ongoing air dispersion modelling work. This is a preliminary assessment that will be finalised after consultation with Selby District Council (SDC), the Environment Agency and Natural England and further detailed modelling is undertaken as part of the ES.
- 6.1.5. The impacts of GHGs relate to their contribution to global warming and climate change. These impacts are global and cumulative in nature, with every tonne of GHGs contributing to climate change impacts upon natural and human systems. The preliminary assessment presents an overview of the selected approach as well as the potential magnitude of emissions during construction and operation.

6.2 POLICY, LEGISLATION AND GUIDANCE

- 6.2.1. A summary of the international, national and local planning policy relevant to the Proposed Scheme and air quality and climate change is provided below.

INTERNATIONAL CLIMATE CHANGE POLICY

- 6.2.2. The UK is a signatory of the United Nations Framework Convention on Climate Change (UNFCCC) which drives international action on climate change. The UK has pledged to reduce GHG emissions under the Paris Agreement, as a part of a joint pledge by members of the European Union (EU). This provides an overarching commitment by the UK.

NATIONAL PLANNING POLICY

NATIONAL POLICY STATEMENTS (NPS)

- 6.2.3. DECC has published six National Policy Statements (NPS) for Energy in 2011 (see Chapter 2). Whilst EN-4 and EN-5 are relevant to the Proposed Scheme, EN-1 and EN-2 are the most relevant in regards to air quality.
- 6.2.4. Paragraphs 4.10.1 and 4.10.2 of NPS EN-1 state that *"Issues relating to discharges or emissions from a proposed project which affect air quality...may be subject to separate regulation under the pollution control framework or other consenting and licensing regimes. The planning and pollution control systems are separate but complementary. The planning system controls the development and use of and in the public interest."*
- 6.2.5. Paragraph 4.10.3 goes on to make clear that the SoS *"should focus on whether the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves. The [SoS] should work on the assumption that the relevant pollution control regime and environmental regulatory regimes, will be properly applied and enforced by the relevant regulator."*
- 6.2.6. Paragraph 4.10.8 makes it clear that the SoS *"should not refuse consent on the basis of pollution impacts unless it has good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted."*
- 6.2.7. Accordingly, it is not for the DCO process to control the emissions from the Proposed Scheme, rather it is for the DCO Application to demonstrate that the emissions from the Proposed Scheme are acceptable in planning terms and that there is no reason why the EA would not grant an Environmental Permit for the Proposed Scheme. For this reason, the applicant is engaging early with the EA.
- 6.2.8. NPS EN-1 supports the use of Combined Heat and Power (CHP) as using *"less fuel to generate the same amount of heat and power reduces emissions, particularly CO₂."* Paragraph 4.6.7 states that *"developers should consider the opportunities for CHP"*.
- 6.2.9. NPS1 EN-1 also supports the use of Carbon Capture and Storage (CCS) and paragraph 4.7.5 states that *"All commercial scale fossil fuelled generating stations have to be carbon capture ready."* Further, paragraph 4.7.10 states that *"To ensure that no foreseeable barriers exist to retrofitting carbon capture and storage (CCS) equipment on combustion generating stations, all applications for new combustion plant which are of generating capacity at or over 300 MW and of a type covered by the EU's Large Combustion Plant Directive (LCPD) 88 should demonstrate that the plant is "Carbon Capture Ready" (CCR) before consent may be given."*
- 6.2.10. Part 5 of NPS EN-1 details the potential impacts of energy infrastructure including air quality and emissions. Paragraph 5.2.1 of NPS EN-1 advises that the construction, operation and decommissioning of infrastructure development can *"involve emissions to air which could lead to adverse impacts on health, on protected species and habitats, or on the wider countryside."* Paragraph 5.2.7 of NPS EN-1 states that an assessment should be undertaken, as part of the ES, detailing:
 - *"Any significant air emissions, their mitigation and any residual effects distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;*

- *The predicted absolute emission levels of the proposed project, after mitigation methods have been applied;*
- *Existing air quality levels and the relative change in air quality from existing levels; and*
- *Any potential eutrophication impacts."*

6.2.11. Paragraph 2.3.16 of NPS EN-2 states that, "Applicants should demonstrate good design particularly in respect of landscape and visual amenity ...and in the design of the project to mitigate impacts such as ... air emissions." Section 2.4 of NPS EN-2 details policy requirements for assessing the potential impacts of energy infrastructure projects for fossil fuel generating stations including air emissions. Section 2.5 of NPS EN-2 sets out specific considerations on air quality that apply to fossil fuel generating stations. Paragraphs 2.5.3 and 2.5.4 state that fossil fuel generating stations are likely to emit NO_x but that these emissions are regulated by the EA through the Environmental Permit Regulations.

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

- 6.2.12. The Government's overall planning policies for England are described in the NPPF⁵. The core underpinning principle of the NPPF is the presumption in favour of sustainable development, defined as:
- 6.2.13. *"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*
- 6.2.14. One of the 12 core planning principles in the NPPF is that planning should *"contribute to conserving and enhancing the natural environment and reducing pollution."*
- 6.2.15. In relation to air quality, the following paragraphs in the document are relevant:
- Paragraph 109, which states *"The planning system should contribute to and enhance the natural and local environment by:...preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water, or noise pollution."*
 - Paragraph 110, which states *"In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity values, where consistent with other policies in this Framework."*
 - Paragraph 122, which states *"...local planning authorities should focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes. Local planning authorities should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."*
 - Paragraph 124, which states *"Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any*

⁵ Department for Communities and Local Government (2012). National Planning Policy Framework.

new development in Air Quality Management Areas is consistent with the local air quality action plan."

- Paragraph 203, which states "*Local Planning Authorities should consider where otherwise unacceptable development could be made acceptable though the use of conditions or planning obligations. Planning Obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.*"

6.2.16. Planning Practice Guidance (PPG) has been published alongside the NPPF, and is regularly updated, to provide guidance on the implementation of the planning policies. This is discussed further below.

LOCAL PLANNING POLICY

SELBY DISTRICT COUNCIL LOCAL PLAN 2013

6.2.17. In SDC's Local Plan⁶, Policy SP18 Protecting and Enhancing the Environment, states that:

6.2.18. "*The main elements of the diverse range of assets that exist in the District (and which Policy SP18 seeks to protect and enhance) are: Air quality*".

6.2.19. A number of saved policies from the 2005 Selby District Local Plan⁷ have been retained, including Policy ENV2 Environmental pollution and Contaminated land that states:

"Proposals for development which would give rise to, or would be affected by, unacceptable levels of noise, nuisance, contamination or other environmental pollution including groundwater pollution will not be permitted unless satisfactory remedial or preventative measures are incorporated as an integral element in the scheme."

SELBY AIR QUALITY: PLANNING GUIDANCE NOTE

6.2.20. SDC has published an air quality planning guidance note⁸ to support developers when preparing air quality assessments. The guidance includes a checklist that enables applicants to check all relevant information have been included in detailed air quality impact assessment.

LEGISLATION

UK AIR QUALITY STRATEGY

6.2.21. The Government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)⁹. The AQS provides a framework for reducing air pollution in the UK with the aim of meeting the requirements of European Union legislation.

6.2.22. The AQS also sets standards and objectives for nine key air pollutants to protect health, vegetation and ecosystems. The standards and objectives for the pollutants considered in this assessment are given in Table 22.

⁶ SDC (2013). Selby District Core Strategy Local Plan, Adoption Version 22 October 2013. Available at: http://www.selby.gov.uk/sites/default/files/Documents/CS_Adoption_Ver_OCT_2013_REDUCED.pdf

⁷ SDC (2008) Saved Policies and Directions

⁸ SDC (2014). Selby District Council's Air Quality: Planning Guidance Note, April 2014. Available at: http://www.selby.gov.uk/sites/default/files/Documents/Selby_AQ_Guidance_Note_May14.pdf

⁹ Department for Environment, Food and Rural Affairs (Defra) and the Devolved Administrations (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2)

Table 22 - Air Quality Objectives Relevant to the Air Quality Assessment of Impacts from the Proposed Scheme

Pollutant	Objective	Measured AS	Set for
Nitrogen dioxide (NO ₂)	200µg/m ³	1-hour mean, not to be exceeded more than 18 times a year	Human Health
	40µg/m ³	Annual mean	Human Health
Particulate Matter (PM ₁₀) (gravimetric)	40µg/m ³		Human Health
	50µg/m ³	24 hour mean, not to be exceeded more than 35 times a year	Human Health
Particulate Matter (PM _{2.5})	25µg/m ³	annual mean	Human Health
Carbon Monoxide (CO)	10,000µg/m ³	8 hr mean	Human Health
Nitrogen Oxides (NO _x)	30 µg/m ³	annual mean	Ecosystems
	75 µg/m ³	24 hr mean	Ecosystems ¹
¹ From the EA Guidance: Risk Assessments for specific activities: Environmental permits			

- 6.2.23. The air quality standards are levels recommended by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO) with regards to current scientific knowledge about the effects of each pollutant on health and the environment.
- 6.2.24. The air quality objectives are medium-term policy based targets set by the Government, which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedances of the standard over a given period.
- 6.2.25. For the pollutants considered in this assessment, there are both long-term (annual mean) and short-term standards (hourly). In the case of NO₂, the short-term standard is for a 1-hour averaging period, whereas for PM₁₀ it is for a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants, for example temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road.
- 6.2.26. The AQS contains a framework for considering the effects of a finer group of particles known as 'PM_{2.5}' as there is increasing evidence that this size of particles can be more closely associated with observed adverse health effects than PM₁₀. Local Authorities are required to work towards reducing emissions/concentrations of particulate matter within their administrative area. However, there is no statutory objective given in the AQS for PM_{2.5} at this time.

UK CLIMATE CHANGE ACT

6.2.27. The Climate Change Act 2008 established the world's first long term legally binding framework to tackle the dangers of climate change¹⁰. A key provision was the setting of legally binding targets for GHG emission reductions of at least 80% by 2050 and at least 26% by 2020, against a 1990 baseline. The Act also created the Committee on Climate Change, with responsibility for:

- Setting 5 year Carbon Budgets covering successive periods of emissions reduction to 2050.
- Advising and scrutinising the UK Government's associated climate change adaptation programmes.
- Producing a National Adaptation Plan for the UK Government to implement.

AIR QUALITY REGULATIONS

6.2.28. Many of the objectives in the AQS have been made statutory in England with the Air Quality (England) Regulations 2000¹¹ and the Air Quality (England) (Amendment) Regulations 2002¹² for the purpose of Local Air Quality Management (LAQM).

6.2.29. These Regulations require that likely exceedances of the AQS objectives are assessed in relation to: *"...the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present..."*

6.2.30. The Air Quality Standards (Amendment) Regulations 2016 amend the Air Quality Standards Regulations 2010. These Regulations transpose Directive 2008/50/EC on ambient air quality and Directive 2004/107/EC relating to the concentration of certain heavy metals and polycyclic aromatic hydrocarbons in ambient air. Both Directives were amended by Commission Directive 2015/1480 and the 2016 Amendment Regulations amends the definition of "Directive 2008/50/EC" so that each reference to the Directive in the Regulations is a reference to the Directive as amended by Commission Directive 2015/1480.

6.2.31. Directive 2008/50/EC sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as PM₁₀, PM_{2.5} and NO₂. The limit values for NO₂ and PM₁₀ are the same concentration levels as the relevant AQS objectives and the limit value for PM_{2.5} is a concentration of 25µg/m³.

ENVIRONMENTAL PROTECTION ACT 1990 - CONTROL OF DUST AND PARTICULATES ASSOCIATED WITH CONSTRUCTION

6.2.32. Section 79 of the Environmental Protection Act 1990 (as amended) gives the following definitions of statutory nuisance relevant to dust and particles:

"Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance"; and

¹⁰ Further details on the Climate Change Act and UK regulations: <http://www.theccc.org.uk/tackling-climate-change/thelegal-landscape/global-action-on-climate-change>

¹¹ The Air Quality (England) Regulations 2000 - Statutory Instrument 2000 No.928

¹² The Air Quality (England) (Amendment) Regulations 2002- Statutory Instrument 2002 No.3043

“Any accumulation or deposit which is prejudicial to health or a nuisance”.

- 6.2.33. Following this, Section 80 says that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.
- 6.2.34. There are no statutory limit values for dust deposition above which ‘nuisance’ is deemed to exist. Nuisance is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred.

ENVIRONMENT ACT 1995

- 6.2.35. Under Part IV of the Environment Act 1995 (as amended), local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the air quality objectives defined in the Air Quality Regulations. Where the objectives are not likely to be achieved, an authority is required to designate an Air Quality Management Area (AQMA). For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it intends to work towards achieving air quality standards in the future.

INDUSTRIAL EMISSIONS DIRECTIVE (IED)

- 6.2.36. Directive 2010/75/EU on industrial emissions (IED) recast seven earlier EU directives related to industrial emissions, in particular Directive 2008/1/EC of 15 January 2008 concerning integrated pollution prevention and control (the Integrated Pollution Prevention and Control (IPPC) Directive) and Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants (the Large Combustion Plant Directive (LCPD)), into a single legislative instrument to improve the permitting, compliance and enforcement regimes adopted by Member States.
- 6.2.37. IED requires that permit conditions for new plant shall be set with reference to the latest reference documents on Best Available Techniques (BAT), and the associated BAT conclusions, and that existing permits shall be regularly reviewed in light of updated BAT conclusions.
- 6.2.38. The latest BAT conclusions for large combustion plants were adopted on 31 July 2017 (Commission Implementing Decision (EU) 2017/1442). For the purpose of this report, it is assumed that permit conditions for the existing plant will be set to meet the 2017 BAT conclusions. Conditions for the new plant will be the subject of further consultation with the Environment Agency.

GUIDANCE

- 6.2.39. A summary of the publications referred to in the undertaking of this assessment is provided below.
- 6.2.40. **Local Air Quality Management Review and Assessment Technical Guidance** - The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their review and assessment work¹³. This guidance,

¹³ Defra (2016) Part IV The Environment Act 1995 and Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG16

referred to in this document as LAQM.TG16, has been used where appropriate in the assessment presented herein.

- 6.2.41. **Land-use Planning & Development Control: Planning for Air Quality** - Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance¹⁴ that offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.
- 6.2.42. **Guidance on the Assessment of Dust from Demolition and Construction** - This document¹⁵ published by the IAQM was produced to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM₁₀ impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.
- 6.2.43. **National Planning Practice Guidance – Air Quality** - This guidance¹⁶ provides a number of guiding principles on how the planning process can take into account the impact of new development on air quality, and explains how much detail air quality assessments need to include for proposed developments, and how impacts on air quality can be mitigated. It also provides information on how air quality is taken into account by Local Authorities in both the wider planning context of Local Plans and neighbourhood planning, and in individual cases where air quality is a consideration in a planning decision.
- 6.2.44. **Environment Agency: Risk Assessments for specific activities: Environmental permits** - The Air Emissions section¹⁷ of this Environment Agency Guidance has been referred to in the assessment of emissions to air.
- 6.2.45. **IEMA's EIA guide to Assessing Greenhouse Gas emissions** - Publication by the Institute of Environmental Management and Assessment¹⁸ which sets out the general principles and procedures for the assessment of GHGs and evaluating their significance as part of an Environmental Impact Assessment.

6.3 SCOPING OPINION AND CONSULTATION

- 6.3.1. As explained in Chapter 1 of this PEIR, a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to climate and air quality, and how those requirements should be addressed by the applicant, are set out below in Table 23, along with responses to the scoping opinion

¹⁴ Environmental Protection UK and Institute of Air Quality Management (Version 1.2 Updated January 2017). Land Use Planning & Development Control: Planning for Air Quality

¹⁵ Institute of Air Quality Management (Version 1.1 Updated June 2016). Guidance on the Assessment of Dust from Demolition and Construction

¹⁶ Department of Communities and Local Government (DCLG) (March 2014). National Planning Practice Guidance

¹⁷ <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit> (March 2016)

¹⁸ IEMA (2017) EIA guide to Assessing GHG emissions and evaluating their significance <https://www.iema.net/policy/ghg-in-eia-2017.pdf>

comments. Consultation with SDC is being undertaken to confirm the scope and approach to the air quality and climate assessment.

Table 23 - Scoping Opinion Summary Table

Section	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of response
6.11	Effects on climate change	The Inspectorate does not agree that the impact of the project on climate during operation can be scoped out	The assessment of impact of the project on climate is now included.
6.11	Carbon emissions against carbon budgets	The EIA Regulations do not specifically require an assessment of carbon emissions against carbon budgets. This approach to the assessment can be scoped out.	This approach to climate assessment is now scoped out.
6.11	Emissions	The terminology used within the Scoping Report [around "emissions intensity"] is vague. This should be clearly explained within the ES.	A more detailed quantitative assessment is included in the PEIR and will be further assessed in the ES.
7.2.2	Emissions to air associated with operation of the gas pipeline	The Inspectorate agrees that the operation of the gas pipeline is not likely to result in any significant effects in terms of emissions to air and that this matter can be scoped out of consideration in the ES	-
7.2.2	Emissions to air resulting from operational traffic	Scoping out of operational traffic	The evidence presented in the Traffic chapter confirms that operational traffic has been scoped out.
7.2.3	Dust during operation	Section 7.2.3 of the Scoping Report notes that nuisance from dust will only be assessed during construction. No reference is made to the operational phase. However, having regard to the nature of the Proposed Development and	-

Section	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of response
		activities of the operational phase, the Inspectorate does not consider there would be any likely significant effects and agrees that effects from dust during operation do not need to be assessed within the ES. Section 7.2.3 of the Scoping Report notes that nuisance from dust will only be assessed during construction. No reference is made to the operational phase. However, having regard to the nature of the Proposed Development and activities of the operational phase, the Inspectorate does not consider there would be any likely significant effects and agrees that effects from dust during operation do not need to be assessed within the ES.	
n/a	Study area	Defining the Study Area after consultation with SDC and NE	The PEIR defines the assessment area by referring to distance criteria referenced in relevant guidance. The ES will update the study area based on comments received after consultation with SDC, NE and EA
7.2.1	Sensitive receptors	Justify selected receptors and consult with SDC	The PEIR includes key sensitive receptors. The ES will include all relevant sensitive receptors based on comments received after consultation

Section	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of response
			with SDC, NE and EA
7.2.3	AQMA	Include impacts on AQMA as part of the Assessment	The ES will include an assessment of potential impacts on the AQMA.
7.2.4	Air dispersion modelling	Clearly define the relationship between the stack height and dispersion on the discharge of emissions. Justification of the modelled parameters and the 'worst case' scenario assessed.	The assessment defines the worst case operational scenario and the selection of model inputs. It also includes a stack sensitivity assessment that demonstrates that the selected stack height will ensure adequate dispersion of pollutants.
7.2.4	Baseline	Background data selection and consultation with SDC	The selection of background data is being discussed with a view to being agreed with SDC as part of the ES.
7.2.4	Deposition levels	The Scoping Report explains that impacts from nitrogen and acid deposition at ecological receptors will be assessed using background deposition levels taken from the Air Pollution Information System (APIS) website. The Inspectorate is content with this approach.	-
7.2.1 and 7.2.4	Impacts in ecological sites resulting from nitrogen and acid deposition	Potential impacts on ecological receptors in regards to the cumulative assessment.	The cumulative assessment will include any relevant neighbouring projects that need to be considered and

Section	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of response
			their potential impact on air quality and particularly on the sensitive receptors selected for the Drax repowering ES.
n/a	Mitigation	Inclusion of mitigation	The ES will provide a number of mitigation measures depending on the outcomes of the assessment. It is anticipated that a management plan will be implemented.
n/a	Air quality monitoring	The ES should set out long term air quality monitoring that would be undertaken as part of conditions in the environment permit.	The need for monitoring will be determined during pre-application discussions with the EA. The ES will reference any agreed monitoring at the time of submission.

6.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

AIR QUALITY

- 6.4.1. The assessment methodology is being agreed in consultation with the Environmental Health Officer (EHO) at SDC.
- 6.4.2. The scope of the air quality assessment includes the following:
- Qualitative assessment of construction dust and emissions from mobile plant from construction and decommissioning activities. The construction dust assessment is based on the assumption that the site configuration works are carried out as part of the DCO. This approach ensures that the worst case scenario is assessed.
 - Quantitative assessment of emissions to air (nitrogen oxides (NO_x), carbon monoxide (CO) and ammonia (NH₃) if SCR is included as part of the design) from the operation of the Proposed Scheme. The quantitative assessment of emissions to air will consider both open and combined cycle operations. However as the combined cycle is the more likely operating scenario, the core scenarios are based on assumed operation at all times in this mode.

STUDY AREA

- 6.4.3. Specific study areas are being defined separately for the operational and construction (including demolition) phases. Impacts during decommissioning are considered to mirror construction impacts and the study area is as defined for the construction phase.
- 6.4.4. In relation to construction and demolition and decommissioning impacts, whilst small particles ($<10\mu\text{m}$) can travel distances in excess of 1 km, the majority of large dust particles generated by construction activities (greater than $30\mu\text{m}$) are deposited within 100 m of sources, and intermediate sized particles ($10\text{-}30\mu\text{m}$) are likely to travel up to 200-500 m. However, as the particles are transported downwind, their concentration reduces rapidly due to the action of atmospheric dispersion.
- 6.4.5. Following the IAQM guidance on the assessment of construction dust, impacts on human receptors need only be considered within 350 m of potential dust sources and ecological receptors need only be considered within 50 m of activities. The potential dust sources include areas of specific construction activities, including the construction of the gas pipeline, but also roads within 500 m of the Site Boundary. Beyond these distances, it is reasonable to conclude that construction impacts will be negligible.
- 6.4.6. In relation to operational impacts, the study area extends 15 km in all directions from the Power Station Site. This distance conforms to the EA guidance¹⁹.

RECEPTORS

- 6.4.7. The assessment of operational impacts considers impacts on sensitive human receptors and includes key receptors such as:
 - Wren Hall.
 - Pear Tree Avenue.
 - Old Lodge.
 - East Yorkshire Caravan Salvage.
 - Drax Abbey Farm.
 - The Read School.
 - Foreman's Cottage.
 - Drax Sports and Social Club.
 - Grange Cottages.
- 6.4.8. In terms of ecological receptors, following EA guidance¹⁹, the assessment of operational impacts considers the following:
 - Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites (protected wetlands) within 15 km of the Power Station Site.
 - Sites of Special Scientific Interest (SSSIs) and local nature sites within 2 km of the Power Station Site.
- 6.4.9. The following ecological receptors have been identified based on the above criteria:
 - Humber Estuary – SPA, SAC.
 - Lower Derwent Valley – SPA, SAC.

¹⁹ Environment Agency. Air emissions risk assessment for your environmental permit. Available at: <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

- River Derwent – SAC, SSSI.
- Skipwith Common- SAC, National Nature Reserve (NNR).
- Thorne & Hatfield Moors – SPA.
- Thorne Moor- SAC, SSSI.
- Meadow East of Orchard Farm – SINC.

6.4.10. These sites are shown in Figures 9.1 and 9.2. However, distances for the purposes of the air quality assessment are measured from the main stacks associated with the Proposed Scheme, rather than from the Site boundary.

CONSTRUCTION PHASE

- 6.4.11. Dust comprises particles typically in the size range 1-75 micrometres (μm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust therefore, is unlikely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused, which is usually temporary.
- 6.4.12. The smaller particles of dust (less than $10\mu\text{m}$ in aerodynamic diameter) are known as particulate matter (PM_{10}) and represent only a small proportion of total dust released; this includes a finer fraction, known as $\text{PM}_{2.5}$ (with an aerodynamic diameter less than $2.5\mu\text{m}$). As these particles are at the smaller end of the size range of dust particles they remain suspended in the atmosphere for a longer period of time than the larger dust particles, and can therefore be transported by wind over a wider area. PM_{10} and $\text{PM}_{2.5}$ are small enough to be drawn into the lungs during breathing, which in sensitive members of the public could have a potential impact on health.
- 6.4.13. An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM_{10} during the construction phase will be undertaken as part of the ES submission using the relevant assessment methodology published by the IAQM, the available information for the Proposed Scheme and professional judgement.
- 6.4.14. The IAQM methodology assesses the risk of potential dust and PM_{10} impacts from the following four sources: demolition; earthworks; general construction activities and track-out. It takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM_{10} levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined. A summary of the IAQM assessment methodology is provided in Appendix B.1
- 6.4.15. In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the construction areas. A qualitative assessment of their impact on local air quality is being undertaken using professional judgement and by considering the following:
- The number and type of construction traffic and plant likely to be generated by this phase of the Proposed Scheme.
 - The number and proximity of sensitive receptors to the Site and along the likely routes to be used by construction vehicles.

- The likely duration of the construction phase and the nature of the construction activities undertaken.

SIGNIFICANCE CRITERIA

- 6.4.16. The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place (refer to Appendix 7.1). The IAQM states:
- 6.4.17. *“For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be ‘not significant’.”*
- 6.4.18. There are no special conditions at the location of the Proposed Scheme to constrain the implementation of effective mitigation. Therefore, residual effects are expected to be not significant. It is anticipated that emissions associated with construction activities would be controlled through the implementation of a CEMP, a draft of which will be submitted in conjunction with the ES. The construction dust assessment, following the IAQM guidance, will inform the measures required as part of CEMP.
- 6.4.19. For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles accessing and leaving the construction areas on local concentrations of NO₂ and particulate matter, the significance of effects would be determined using professional judgement and the principles outlined in the EPUK/IAQM guidance. It is anticipated that the proposed embedded mitigation will mitigate any potential impacts and therefore residual effects are expected to be not significant.

OPERATIONAL

- 6.4.20. The air quality assessment for the operational phase follows the EA guidance. The conversion of NO_x to NO₂, as applicable for the protection of human health under the UK Air Quality Standards Regulations 2010, will adopt the approach outlined in the AQMAU Guidance Note ‘Conversion Ratios for NO_x and NO₂’ (2006)²⁰.
- 6.4.21. The atmospheric dispersion modelling is performed using the Cambridge Environmental Research Consultants (CERC) Air Dispersion Modelling Software (ADMS 5.2). An air dispersion model is set up that considers the effects of buildings (as appropriate to the location of the Power Station Site), together with the most recent available meteorological data covering a consecutive five year period (e.g. 2011 to 2015, inclusive for data from RAF Waddington) in accordance with current guidance.
- 6.4.22. Operation of the Proposed Scheme is considered in both open and combined cycle operations for both one and two unit repower scenarios. To ensure a worst case scenario, the generating units are assumed to run at full load continuously. Combined cycle is the more likely operating scenario and the core scenarios assume operation at all times in this mode. The atmospheric emissions from the operation of the Proposed Scheme is quantified by obtaining information from relevant plant suppliers.
- 6.4.23. The results of the detailed dispersion modelling will be presented as isopleths in the ES, and compared with background levels and relevant standards and guidelines (i.e. the Air

²⁰ Environment Agency Air Quality Modelling and Assessment Unit (2006) Guidance Note ‘Conversion Ratios for NO_x and NO₂’

Quality Standards Regulations 2010). Direct comparison will be made between the long-term and short-term process contributions from the Power Station Site, the predicted environmental concentrations of relevant substances (i.e. process contribution plus background levels) and the limits and objectives within the relevant Air Quality Standards Regulations 2010.

- 6.4.24. Changes in air quality levels for NO_x are assessed with respect to ecology for the relevant European, nationally and locally designated habitat sites within the study area, identified above as receptors. An assessment of the increased deposition of both nutrient nitrogen and acid due to nitrogen is being carried out in accordance with the methodologies described in the Environment Agency AQMAU 'AQTAG06 Technical Guidance on detailed modelling approach for an appropriate assessment for emissions to air'²¹.
- 6.4.25. The abatement of emissions will be discussed in the ES in relation to application of Best Available Techniques (BAT), in accordance with the Environment Agency Sector Guidance Note for Combustion Activities (EPR 1.01)²² and the UK's position with regards to the latest review of the EU IPPC Reference Document on BAT for Large Combustion Plants²³. Should additional mitigation prove to be necessary, the severity of impact, frequency of emissions and the resultant environmental risk associated with any residual impact will be examined in the ES.

ONGOING AIR DISPERSION MODELLING

- 6.4.26. Defining the core scenarios for the air quality assessment is part of the ongoing air dispersion modelling work. It is anticipated that these will be presented in the ES.
- 6.4.27. Initial screening runs of the dispersion model have been undertaken to determine an acceptable stack height suitable for adequate dispersion based on predicted maximum short term and long term ground level concentrations. These runs have demonstrated that the interaction of the existing cooling towers and the plumes from the new plant may result in the downwash of the plumes to ground level. The cooling towers are 115 m in height. As a result, the proposed maximum height of the new plant stacks (8 in total should both units be repowered: 4 main stacks and 4 bypass stacks, with a maximum of 4 in use at any time) has been increased from 70m to 120m. Further increases in stack height provide little benefit in terms of ground level impacts at sensitive receptors. Additional information on the assessment of alternatives, including stack height, is provided in Chapter 4.
- 6.4.28. Further detailed atmospheric dispersion modelling will be undertaken, in consultation with EA, on the basis of a stack height of 120m.
- 6.4.29. The initial modelling assessment estimated the mass concentration of NO_x and NO₂ at sensitive receptors using the emission limits as specified in Table 24 of the July 2017 BAT Conclusions and data provided by the plant suppliers.

²¹ Environment Agency AQMAU (October 2011) AQTAG06 Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air

²² Environment Agency (March 2009) How to comply with your environment permit. Additional guidance for Combustion Activities (EPR 1.01)

²³ European Commission (June 2017) Integrated Pollution Prevention and Control, Reference Document on Best Available Techniques for Large Combustion Plants, Final Draft

- 6.4.30. The assessment work is ongoing to establish whether the Proposed Scheme is likely to have a significant effect on the designated sites detailed above. It is acknowledged that the Proposed Scheme could contribute to nitrogen deposition, but the magnitude of the impacts will depend on whether the installation of SCR to abate emissions of NO_x results in a net environmental disbenefit due to the effects of ‘ammonia slip’ (the emission of unreacted ammonia due to the incomplete reaction of the NO_x and the urea reagent used with SCR). The current air dispersion modelling work is considering the potential impact of emissions from Proposed Scheme with and without SCR. The decision on whether SCR represents BAT for the Proposed Scheme will be agreed with the EA as part of the Environmental Permitting process.

ASSESSMENT CRITERIA

- 6.4.31. In relation to ambient pollutant concentration, the criteria used for the assessment of operational impacts are the air quality objectives and limit values set out in Table 22. For deposition, no comparable regulated standards exist and the impacts are assessed against critical loads. Critical loads are set for effects due to eutrophication (nitrogen deposition) and acidification (combined action of sulphur and nitrogen deposition). It is reiterated that the critical loads are set at levels below which significant harmful effects do not occur.
- 6.4.32. Critical loads are assigned to habitat classes of the European Nature Information System (EUNIS) to enable consistency of habitat terminology and understanding across Europe. They are given as ranges (e.g. 10-20 kgN/ha/yr) which reflect variations in ecosystem response and soil types across Europe. In the assessment, a conservative approach will be adopted and impacts will be compared to the lower limit of the specified range.
- 6.4.33. For acidification, the critical loads are specified through the definition of a critical load function (CLF) which identifies the combinations of sulphur and nitrogen deposition that will not cause harmful effects. The critical loads for the assessment will be taken from the Air Pollution Information System (APIS) website, using the facility to extract site-specific relevant critical loads²⁴. For any local designated sites, critical loads will be extracted using the search by location tool and the designated feature for the site.

SIGNIFICANCE CRITERIA

- 6.4.34. The approach provided in the EPUK/IAQM guidance has been used within this assessment to assist in describing the air quality effects of emissions by the Proposed Scheme once operational.

HUMAN RECEPTORS

- 6.4.35. This guidance recommends that the degree of an impact is described by expressing the magnitude of incremental change in pollution concentration as a proportion of the relevant assessment level and examining this change in the context of the new total concentration and its relationship with the assessment criterion, as summarised in Table 24. Based on the impact descriptors, impacts are considered not significant (refer to bold and italics in Table 24) when:

→ Impacts are classed as negligible or slight;

²⁴ <http://www.apis.ac.uk/>

- Where there is a low risk of exceedance of an air quality objective, the magnitude of the changes in concentrations should be medium or less (<10% of any standard) everywhere or else total pollutant concentrations should be well below any assessment standard.

Table 24 - Impact Descriptors for Individual Human Receptors

Long term average concentration at receptors in assessment year	% Change in Concentration Relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	<i>Negligible</i>	<i>Negligible</i>	<i>Slight</i>	<i>Moderate</i>
76-94% AQAL	<i>Negligible</i>	<i>Slight</i>	Moderate	Moderate
95-102% of AQAL	<i>Slight</i>	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Notes
 AQAL = Air Quality Assessment Level, which for this assessment related to the UK Air Quality Strategy objectives.
 Where the %change in concentrations is <0.5%, the change is described as 'Negligible' regardless of the concentration.
 When defining the concentration as a percentage of the AQAL, 'without scheme' concentration should be used where there is a decrease in pollutant concentration and the 'with scheme;' concentration where there is an increase.
 Where concentrations increase, the impact is described as adverse, and where it decreases as beneficial.

ECOLOGICAL RECEPTORS

- 6.4.36. With regard to the significance of changes in deposition rates on designated ecological sites, an impact is considered to be insignificant where the change in process contribution (PC) is 1% (or less) of the long term Critical Load for the ecological site under consideration, following EA guidance. The guidance further states that the 1% threshold is based on the judgement that it is unlikely that an emission at this level will make a significant contribution to air quality since PCs will be small in comparison to background levels, even if a standard is exceeded. The use of 1% of the Critical Load is also outlined within the IAQM's position statement²⁵ which suggests that 1% of the Critical Load should be used to determine either where further assessment is required or to screen out effects that are not likely to be significant.

²⁵ IAQM (2016) Position Statement: Use of a Criterion for the Determination of an Insignificant Effect of Air Quality Impacts on Sensitive Habitats http://www.iaqm.co.uk/text/position_statements/aq_impacts_sensitive_habitats.pdf

- 6.4.37. In terms of NO_x concentrations, the assessment references the EA guidance, where total Predicted Environmental Concentrations ((PEC) PC plus background concentrations) do not exceed 70% of the long term standard, or 20% of the headroom between short term standard and short term background concentrations, the impact is likely to be acceptable, with no significant effects. In the event that impacts exceed the criteria set out above, the this information along with changes in nutrient nitrogen deposition and NO_x concentrations are provided to the Proposed Scheme ecologist to determine the significance of effects based on their professional judgment.
- 6.4.38. The recommended height for the stacks is 120m and has been set with a view to minimising environmental impacts (including visual impacts) whilst ensuring that no significant effects result from emissions to air. The approach is in line with the EPUK and EA guidance.

CLIMATE

STUDY AREA

- 6.4.39. The GHG assessment is not restricted by geographical area but instead includes any increase or decrease in emissions as a result of the Proposed Scheme. This includes construction and decommissioning emissions in the Proposed Scheme's footprint but also related to the transport of materials to and from the Site, their manufacturing and disposal (wherever that may be). It also includes operational emissions resulting from the Proposed Scheme (fuel combustion within the Proposed Scheme's footprint).

RECEPTORS

- 6.4.40. The assessment of impacts upon climate considers the extent of GHG emissions which contribute to global warming. These impacts are global and cumulative in nature, with every tonne of GHGs contributing to impacts on natural and human receptors. The sensitivity and impact upon these receptors is the same, regardless of where or when the GHG emissions occur.

SCOPE AND CALCULATION

- 6.4.41. The scope of the GHG assessment includes the likely magnitude of GHG emissions (or avoided emissions) in comparison to the 'do nothing' baseline scenario (no re-powering of the existing turbine units). It potentially considers emissions throughout the lifecycle of the Proposed Scheme including:
- Construction stage e.g. embodied emissions associated with materials, transportation of materials to site and waste/arising from site, and the construction process;
 - Operation e.g. relative emissions from power generation through combustion of fossil fuels (gas-powered or coal powered), fuel/electricity consumption for operational processes and delivery of raw materials; and
 - End of life (decommissioning) stage e.g. deconstruction and management of materials, arising and waste.
- 6.4.42. Further detail of the potential sources of GHG emissions at each lifecycle stage are presented in Table 25.

Table 25 - Key Emissions Sources During the Project Lifespan

Lifecycle stage		Potential sources of emissions
Construction	Product stage ('cradle to gate')	Manufacture of all raw materials/components for the new turbine units, housing, gas pipeline, battery storage.
	Construction process stage	Decommissioning, removal and disposal of existing structures and plant. Site enabling works, transport and disposal of arisings. Transport of all raw materials/components to site. Construction process.
	Land use, land use change and forestry	Loss of agricultural land and loss/planting of urban trees.
Operation	Operation	Net change in emissions for power generation, compared to the baseline scenario. Other minor fuel/power consumption for operation of the plant.
	Maintenance, refurbishment	Fuel, power and emissions embodied in materials for maintenance and refurbishment.
Decommissioning	End of life decommissioning process	Decommissioning process for structures and plant. Transport and disposal of materials/arising

- 6.4.43. The emissions at the construction and operation stage will be calculated by multiplying the emission activity (e.g. tonnes of concrete, cubic meters of natural gas consumption) by an appropriate emissions factor (kgCO₂e per unit of emissions activity). Emissions factors will be sourced from reliable industry-standard sources such as;
- Greenhouse gas conversion factors for company reporting (BEIS, 2017). Government issued emissions factors for fossil fuels, transport, materials manufacturing and disposal.
 - Bath University Inventory of Carbon and Energy. Embodied carbon emissions factors for a wider variety of construction materials.
 - Environmental Product Declarations for construction materials.
 - Life Cycle Assessment databases e.g. Ecoinvent.
- 6.4.44. Two scenarios will be assessed for the construction stage; Site Reconfiguration Works being carried out before the DCO and as part of the DCO. For the operational stage, the different scenarios will be assessed for the re-powering of one or both turbine units.
- 6.4.45. The emissions at the decommissioning stage will not be assessed as there is very little certainty surrounding the likelihood and timing of this activity and the processes and emissions generating activity which will occur, so far into the future.

SIGNIFICANCE

- 6.4.46. There is currently no agreed approach or thresholds for defining the significance of climate impacts in EIA resulting from GHG emissions. Climate change is global and GHG emissions lead to the same impacts wherever and whenever they occur. The sensitivity of receptors is also a constant (i.e. it is the same for all GHG emissions and schemes) therefore the significance of climate impacts purely relates to the magnitude of emissions.
- 6.4.47. The significance of climate impacts resulting from GHG emissions for the Proposed Scheme will be considered based on a comparison to other schemes within and beyond the electricity generation industry.

6.5 BASELINE CONDITIONS

AIR QUALITY

- 6.5.1. The Proposed Scheme is located in an area where air quality is mainly influenced by emissions from the Existing Drax Power Station Complex, followed by traffic emissions from vehicles using the local road network, including the M62 motorway. There are a number of industrial pollution sources in the surrounding area that influence air quality, including the Eggborough Power Station.
- 6.5.2. According to their latest Air Quality Annual Status Report²⁶ from SDC, the air quality objectives are met throughout the District, apart from exceedances of the annual mean NO₂ objective in Selby Town. As a result of these exceedances SDC designated an AQMA in 2016. The Proposed Scheme lies approximately 6km to the southeast of the AQMA. SDC is currently preparing a draft Air Quality Action Plan (AQAP) to address air quality issues within its area of jurisdiction.
- 6.5.3. SDC does not monitor air quality in the vicinity of the Proposed Scheme, there are, however, historic monitoring undertaken as part of the Aire Valley Power Stations Joint Environment Programme (JEP). In addition on site monitoring has been undertaken as part of permitting requirements for the Existing Power Station Complex to demonstrate compliance with the air quality objectives. No exceedances were reported between 2005 and 2015 and the monitoring requirements ceased when tighter emission limits were introduced as part of the IED in 2016. In addition, background pollutant concentrations are available from the national maps provided on the Department for Environment, Food & Rural Affairs (Defra) website²⁷, where background concentrations of those pollutants included within the Air Quality Strategy (AQS) have been mapped at a grid resolution of 1x1km for the whole of the UK. Estimated concentrations are available for all years between 2013 and 2030.
- 6.5.4. Table 26 summarises the relevant background pollutant concentrations in the vicinity of the Proposed Scheme in 2017. The available data indicate that concentrations are well below the relevant air quality objectives.

²⁶ SDC (2016) Air Quality Annual Status Report, June 2016

²⁷<https://uk-air.defra.gov.uk/data/laqm-background-home>

Table 26 - Pollutant Concentrations ($\mu\text{g}/\text{m}^3$)

Source	NO ₂	PM ₁₀	PM _{2.5}
Defra Background maps 2017 ¹	10.2 – 12.3	14.1 – 16.3	9.7 -11.1
JEP - Hemingbrough Landing ²	16.9	n/a	n/a
JEP - Downes Ground Farm ²	16.2	n/a	n/a
JEP - West Farm ²	16.4	n/a	n/a
JEP - Smeathalls Farm ²	20.4	n/a	n/a

¹The range covers concentrations at grid squares within 2 km from the Site
²2007-2013 average taken from the White Rose Carbon Capture ES

- 6.5.5. Background levels of acid and nitrogen (N) deposition at ecological receptors will be taken from the APIS website. The available local and background air quality data are considered appropriate for use in this assessment and no site specific air quality monitoring will be undertaken.
- 6.5.6. An initial review of existing pollutant concentrations and deposition rates over the identified designated sites (European sites) has shown that NO_x concentrations are well within the critical level ($30\mu\text{g}/\text{m}^3$) but that ammonia concentrations are likely to exceed the critical levels ($1\mu\text{g}/\text{m}^3$ for lower plants; 2- $4\mu\text{g}/\text{m}^3$ for higher plants) (Table 7.6). NO_x concentrations over the Humber Estuary exceed the critical level in places (Immingham) but these areas are well outside the study area for the Proposed Scheme impacts (~50km from the Site). Nitrogen deposition is also likely to exceed relevant critical loads, or at least the lower range of the critical loads (typically 10kgN/ha/yr) for the habitats in the designated sites, and 5kgN/ha/yr for Thorne Moor SAC and Thorne and Hatfield Moors SPA).

Table 27 - Pollutant Concentrations ($\mu\text{g}/\text{m}^3$), Nitrogen Deposition (kgN/ha/yr) over Designated Sites (SAC/SPA) and Nitrogen Deposition Critical Loads (kgN/ha/yr)

Source	Critical Load ¹	NO _x	NH ₃	N Deposition
Humber Estuary SPA, SAC	8	12.8 – 23.2	0.4 – 2.2	11 - 20
Lower Derwent Valley SPA, SAC	20	12.4 – 15.3	1.8 – 5.4	18 – 42 grassland / 30 – 76 woodland
River Derwent SAC	Not set	9.0 – 16.3	1.8 – 3.1	10 - 14
Skipwith Common SAC	20	13.8 – 14.8	2.0 – 2.0	19
Thorne and Hatfield Moors SPA	5	15.1 – 17.5	1.2 – 2.2	15 – 20 heath / 24 – 40 woodland

Source	Critical Load ¹	NO _x	NH ₃	N Deposition
Thorne Moor SAC	5	15.1 – 18.6	1.2 – 2.0	15 - 20
2012-2015 average taken from the www.magic.gov.uk The range covers concentrations and depositions within the designated sites within 15km from the Site ¹ these are the most conservative critical loads and are the subject to ongoing review and in consultation with the Proposed Scheme ecologists.				

CLIMATE

- 6.5.7. In the baseline scenario (no re-powering of turbines), GHG emissions occur constantly and widely as a result of human and natural activity including energy consumption (fuel, power), industrial processes, land use and land use change. The GHG assessment is not restricted and will consider where the Proposed Scheme results in changes to emissions in comparison to the baseline scenario.
- 6.5.8. Construction emissions are considered to be entirely additional and therefore they do not occur in the baseline scenario.
- 6.5.9. In the baseline scenario, the two existing turbine units which would be re-powered in the Proposed Scheme will continue to generate 1,320MW using coal until at least 2025.

6.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

AIR QUALITY

CONSTRUCTION

A preliminary assessment of potential air quality impacts from the Power Station Site and the Pipeline Study Area during construction/ decommissioning is presented in Table 28. No ecological receptors have been identified within 50 m from the boundary of the Power Station Site and the Pipeline Study Area.

Table 28 - Preliminary Air Quality Assessment during Construction/Decommissioning for the Proposed Scheme

Receptor name and description	Preliminary Assessment of Impacts	Potential Specific Mitigation	Potential Effects	Further assessments and consultation to be undertaken
Power Station Site and Laydown Area				
Human receptors within 350 m of the Power Station Site and Laydown Area	Impacts due to dust generating activities such as site preparation and construction and due to vehicle and plant exhaust emissions.	No additional mitigation measures are expected.	Impacts are anticipated to be negligible. No significance is assigned as embedded mitigation is	A detailed qualitative assessment using the IAQM guidance is being undertaken to identify the

(Residents along New Road, Main Road, A645)	Impacts will be temporary and localised in nature and are considered negligible after implementation of embedded mitigation.		designed to ensure impacts are not significant.	measures to be included in CEMP.
Pipeline Study Area				
Human receptors within 350 m of the Pipeline Study Area (Residents along Carr Lane, Redhouse Lane, Wren Hall Lane, Brier Lane, Rusholme Lane)	Impacts due to dust generating activities such as site preparation and construction and due to vehicle and plant exhaust emissions. Impacts will be temporary and localised in nature and are considered negligible after implementation of embedded mitigation.	No additional mitigation measures are expected.	Impacts are anticipated to be negligible. No significance is assigned as embedded mitigation is designed to ensure impacts are not significant.	A detailed qualitative assessment using the IAQM guidance is being undertaken.

OPERATION

- 6.6.1. A preliminary assessment of potential air quality impacts on human and ecological receptors from the operation of the Power Station Site is presented in Table 29. No significant emissions to air quality are associated with the operation of the Pipeline Study Area and therefore it has been scoped out of the assessment.

Table 29 - Preliminary Air Quality Assessment during Operation of the Power Station Site

Receptor name and description	Preliminary Assessment of Impacts	Potential Specific Mitigation	Potential Effects	Further assessments and consultation to be undertaken
Power Station Site				
Human receptors along New Road, Main Road, A645 along New	Minor impacts from emissions	No additional mitigation beyond stack heights set at 120m;	Impacts are anticipated to be minor and therefore not significant, based on the	A detailed quantitative assessment using ADMS 5 air dispersion model will be undertaken.

Road, Main Road, A645		emissions in line with BAT	EPUK and EA criteria.	
Ecological sites within 15 km from the stacks	Potential Moderate/Substantial Impact on European Sites (Derwent SSSI, River Derwent and Thorne Moors)	Investigate potential for reduction in NOx and/or ammonia emissions; ecological mitigation	Assessment is ongoing including a review of the effectiveness of potential mitigation measures.	Detailed quantitative assessment of required mitigation and ecological impacts

CLIMATE

6.6.2. A summary of the timeline for construction and operation of generator units in the Baseline Scenario and the Proposed Scheme is presented in Table 30.

Table 30 - Timeline of Proposed Scheme and Baseline Scenario

Year	Baseline (no re-powering)	Proposed Scheme		
2020	Continued operation of existing coal-powered generator units (1,320MW per year output)	Construction of unit 1 to re-power with gas		
2021				
2022				
2023		Operation of re-powered unit X (1,800MW per year output, gas)		Construction of unit 2 to re-power with gas
2024				
2025				
2026	De-commissioning of coal fired generating units 5 and 6 (2025 or later).		Operation of re-powered unit Y (1,800MW per year output, gas)	
2027				
2028				
		Assumed no replacement generation at Drax.		
2047				
2048				
2049				
2050				
2051		De-commissioning of first coal fired generating unit (assumed no replacement)		
			De-commissioning of second coal fired generating unit	

CONSTRUCTION

- 6.6.3. Detailed information is not currently available on the construction of the Proposed Scheme (e.g. quantities/source of construction materials, construction process, disposal of arisings). While these are likely to be of minor significance in comparison the operational emissions, the construction is of a significant scale and opportunities are likely to exist for mitigation. The construction emissions are being assessed and will be presented in the ES with further consideration given to their significance.

OPERATION

- 6.6.4. The operational emissions relate principally to the generation of electricity for the national grid from two turbine units which will be re-powered for the Proposed Scheme; shifting from coal to combined and open cycle gas turbines.
- 6.6.5. The Proposed Scheme will result in the generation of up to 3,600 MW from the new gas generating units when operating in CCGT mode and 2,400 MW when in OCGT mode (with 200 MW battery storage facility which will not result in operational GHG emissions). This will replace 1,320 MW of existing coal-powered generation, a much less efficient and higher emissions process, which is set to continue until at least 2025 in the baseline scenario. Until at least 2025, there will be a climate benefit (net reduction in GHG emissions) in relation to the shift of 1,320MW of existing coal-powered generation to gas. However, the Proposed Scheme will also provide a 2,280 MW increase in generation capacity, in compassion with the “Do Nothing Scenario” which will result in a net increase in GHG emissions and therefore negative climate impacts. The magnitude of emissions will be assessed further as part of the ES and consideration given to the significance of the climate impact. Given the scale of additional gas-powered generation and the lifespan of the Proposed Scheme, this impact is likely to be significant.

6.7 MITIGATION AND ENHANCEMENT MEASURES

CONSTRUCTION PHASE

- 6.7.1. It is anticipated that mitigation measures will be implemented as part of a CEMP to address potential impacts during construction at the Power Station Site and the Pipeline Study Area. The level of air quality mitigation needed will depend on the outcome of the construction dust assessment. A detailed list of mitigation measures will be included in the ES, including GHG emissions mitigation opportunities. These mitigation measures are considered part of embedded mitigation and therefore no additional mitigation measures are anticipated.

OPERATIONAL PHASE

- 6.7.2. Work to identify the achievable emissions and associated mitigation measures for the Proposed Scheme and the resulting environmental impacts is ongoing. The options under consideration include the abatement of NO_x emissions using SCR (meeting the July 2017 BAT Conclusions limits) and other options to minimise NO_x emissions without the corresponding large increase in ammonia emissions. However, in assessing the need for SCR the effect on European designated sites is being assessed to determine whether SCR actually delivers net benefits in the context of BAT, or whether the effects on European designated sites is such that SCR is not considered to be BAT.

6.8 RESIDUAL EFFECTS

- 6.8.1. With the stack height set to 120 m, no exceedances of air quality objectives or limit values for the protection of human health are modelled. As such, no residual significant effects are expected on human health.
- 6.8.2. With the 120 m stack, no exceedance of critical levels or significant residual effects due to increased exposure to NO_x are expected at sites designated for nature conservation.
- 6.8.3. With the use of SCR and the inherent risk of ammonia slip, it is possible that existing exceedances of the critical level (non-statutory) for ammonia over the designated sites will be significantly worsened and/or new exceedances generated. Accordingly, SCR may not be considered to be BAT and discussions are being progressed with the EA.
- 6.8.4. Emissions of NO_x and ammonia will contribute to nitrogen and acid deposition over the designated sites, including sites where the critical loads for nitrogen and acid are currently exceeded.

6.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

- 6.9.1. This assessment has the following limitations and assumptions:
 - The background concentrations considered in this assessment are based on existing data sources, as no site-specific monitoring is available. The existing data are robust and provide reliable and up to date baseline information. The 2017 Defra background pollution maps were used as the basis of the assessment.
 - Dispersion modelling has inherent uncertainties, particularly the use of meteorological data and their effect on dispersion. These are taken into account through the use of five years' data.

6.10 NEXT STEPS

- 6.10.1. The ES will present the qualitative construction dust assessment and will include a comprehensive list of mitigation measures, including a CEMP. The quantitative assessment of potential impacts from the operation of the Power Station Site will be presented in the ES. It will present predicted impacts on the identified human and ecological receptors. Depending on the outcome of the quantitative assessment, mitigation measures that may be required will also be presented.
- 6.10.2. The ES will present a detailed assessment of the climate impacts (GHG emissions) during the construction and operation of the Proposed Scheme. The scope and approach to the air quality assessment is being discussed with SDC, EA and NE

7 NOISE AND VIBRATION

7.1 INTRODUCTION

- 7.1.1. This Chapter reports the preliminary assessment of the likely significant effects of the Proposed Scheme in terms of noise and vibration and describes:
- Relevant policy, legislation and guidance.
 - Consultation undertaken to date.
 - Potential effects of the construction phase, including a noise and vibration assessment of the construction of all components of the Proposed Scheme – all works on the Power Station Site and the gas pipeline within the Pipeline Study Area.
 - Potential effects of the operation (including maintenance) of the Proposed Scheme, including noise and vibration from the Proposed Scheme on the Power Station Site, operation of the gas pipeline within the Pipeline Study Area to include above ground installations and noise from transport networks. If needed, options for noise and vibration mitigation will be explored and residual effects reported following mitigation.
 - Potential noise and vibration effects during the decommissioning phase.
- 7.1.2. This chapter provides a preliminary noise and vibration assessment for the Proposed Scheme and is based on the best available information at the time of writing. It is noted that at the PEIR stage, the full detailed design of the Proposed Scheme is still under development. As such, some assumptions, which are based on previous similar power project experience, have been used to enable predictions of noise and vibration. Where assumptions have been used in this chapter the justification and rationale is discussed.
- 7.1.3. This chapter aims to provide an outline assessment suitable to inform the PEIR stage on the potential for noise and vibration effects during the construction, operation (including maintenance), and decommissioning phases of the Proposed Scheme.
- 7.1.4. Cumulative effects of the Proposed Scheme are assessed within Chapter 15 Cumulative Effects.

7.2 POLICY, LEGISLATION AND GUIDANCE

POLICY

NATIONAL POLICY STATEMENT

- 7.2.1. The NPS EN-1 (Overarching National Policy Statement for Energy) sets out the assessment principles to which the SoS will have regard to in the examination of an energy NSIP, and explains the generic noise and vibration impacts with regard to energy infrastructure. Specific considerations for fossil fuel generating stations are provided in the NPS for Fossil Fuel Generating Infrastructure (EN-2).
- 7.2.2. NPS EN-1 sets out the requirements for a noise assessment of an energy NSIP and also outlines the approach that the SoS should adopt when considering noise assessments. Paragraph 5.11.9 requires the SoS to be satisfied that the proposals will:
- Avoid significant adverse impacts on health and quality of life from noise.
 - Mitigate and minimise other adverse impacts on health and quality of life from noise.
 - Where possible, contribute to improvements to health and quality of life through the effective management and control of noise.

- 7.2.3. NPS EN-2 sets out assessment principles in respect of fossil fuel energy generation NSIPs. It states that the SoS must be satisfied that the principles set out at paragraph 5.11.9 of NPS EN-1 have been satisfied, and notes that mitigation for noise for such proposals is likely to be primarily through good design (i.e. enclosures, exhaust attenuation to turbines) and refers to the use of requirements attached to the DCO to secure relevant mitigation.
- 7.2.4. The NPSs for Gas and Oil Pipelines (EN-4) and Electricity Networks Infrastructure (EN-5) provide specific considerations potentially relevant to the proposed scheme.

NATIONAL PLANNING POLICY FRAMEWORK

- 7.2.5. Whilst the Planning Act 2008 is clear as to the primacy of the relevant NPSs, other national and local planning policy can be considered important and relevant by the SoS in the determination of an energy NSIP.
- 7.2.6. The National Planning Policy Framework (NPPF, DCLG 2012) states that planning policies and decisions should aim to:
- Avoid noise that gives rise to significant adverse impacts on health and quality of life as a result of new development.
 - Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.
 - Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
 - Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.
- 7.2.7. In order to deliver sustainable development, the NPPF states “*to help economic growth, local planning authorities should plan proactively to meet the development needs of business and support an economy fit for the 21st century*” (paragraph 20, page 6). Planning Practice Guidance (PPG) has been published alongside the NPPF, and is regularly updated, to provide guidance on the implementation of the planning policies.
- 7.2.8. The PPG on noise provides guidance on the effects of noise exposure. The PPG sets out that sensitivity to noise is proportional to the level of noise they are exposed to. The PPG sets out the concepts of NOEL, and as exposure increases, LOAEL and SOAEL.

NOISE POLICY STATEMENT FOR ENGLAND

- 7.2.9. The Noise Policy Statement for England 2010 (NPSE) sets out the Government’s guiding principles and noise policy aims, the first of which is:
- 7.2.10. “*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*
- *Avoid significant adverse impacts on health and quality of life.*
 - *Mitigate and minimise adverse impacts on health and quality of life.*
 - *Where possible, contribute to the improvement of health and quality of life.”*
- 7.2.11. The NPSE uses two established concepts from toxicology currently applied to noise impacts, which are as follows:

- No Observed Effect Level (NOEL) - the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- Lowest Observed Adverse Effect Level (LOAEL) - the level above which adverse effects on health and quality of life can be detected.

The NPSE extends these to the concept of a Significant Observed Adverse Effect Level (SOAEL):

- SOAEL - The level above which significant adverse effects on health and quality of life occur.

7.2.12. The driving aim of the NPSE is to mitigate and minimise adverse impacts on health and quality of life, it refers to the situation where such impacts lie somewhere between LOAEL and SOAEL:

“...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into account the guiding principles of sustainable development...”

7.2.13. The Government's noise policy notes that it is not appropriate to implement a single noise threshold that defines SOAEL that is applicable to all situations. The application of the SOAEL threshold should be specific to the noise source being considered, taking account of different sources of exposure, receptor sensitivity and context.

7.2.14. This is consistent with consideration of Best Available Techniques (BAT) or appropriate measures under Environmental Permitting regulations. Importantly, this would mean that any time noise levels could be above LOAEL, there would be a requirement to demonstrate the noise mitigation that has been considered, and a cost/benefit demonstration as to why other measures are not being implemented.

7.2.15. The noise and vibration significance criteria framework used for this study has been based around these concepts. These concepts and how they are used in this study are discussed further in Section 7.4.

SELBY DISTRICT LOCAL PLAN

SUITABILITY OF USE – SECTION 4.14

7.2.16. The type of use proposed will be an important factor in determining whether a proposal is compatible with the location. This does not mean that all non-residential uses will be resisted within predominantly residential areas. For instance, the Use Classes Order specifically refers to business uses which may be “carried out in any residential area without detriment to the amenity of that area by reason of noise, vibration...”

EFFECT ON NEIGHBOURING PROPERTIES AND THE SURROUNDING AREA – SECTION 4.15

7.2.17. The extent to which proposals would impact on the character of an area and the amenity of adjoining occupiers is an important consideration. Particular attention will be paid to the effects of increased vehicular and pedestrian movements and associated car parking. There may also be occasions when otherwise compatible uses would not be acceptable because of the likely effects of noise and other forms of pollution. Where appropriate, the District Council will make a careful assessment of potential noise levels and other sources of pollution before determining planning applications. Conditions may be imposed to help regulate and minimise the impact.

ENVIRONMENTAL POLLUTION AND CONTAMINATED LAND - SECTION 4.38

- 7.2.18. Industrial, agricultural and other commercial activities can give rise to environmental problems associated with noise. The Plan area contains a number of existing and potential sources of pollution ranging from noisy activities associated with airfields to dust/emissions attributable to the Selby Coalfield and coal fired power station.
- 7.2.19. The District Council attaches great importance to controlling and minimising pollution under available Environmental Health legislation and through the planning system. Where appropriate, the advice of relevant pollution control agencies, including the Environment Agency, will be sought. Development proposals likely to give rise to an unacceptable level of environmental pollution will be resisted, unless it can be demonstrated that adequate, enforceable measures will be taken to ensure environmental acceptability.

LEGISLATION

- 7.2.20. Relevant legislation includes;

→ The Control of Pollution Act (CoPA) 1974 (Sections 60 to 61). Requirements for a Section 61 consent are defined in the CoPA as follows:

‘At the planning stages of the construction programme and the setting up of the site, the contractor needs to demonstrate that the impact of noise and vibration has been properly considered when choosing plant and equipment and also, where possible, in the layout of the site and the scheduling of works. To this end the consent identifies methods of work and noise reducing measures required to minimise the noise impact’.

→ The Environmental Permitting (England and Wales) Regulations (EPR) 2010. The EPR 2010 require regulators to control certain activities which could harm the environment or human health. The control of noise is dealt with under the Pollution, Prevention and Control (PPC) application.

GUIDANCE

- 7.2.21. The other key documents that were used to inform the assessment methodology for the noise and vibration impacts are based on the application of a number of British Standards and guidance documents. These British Standards and guidance documents determine the types of data to be collected, the methodology to be applied and the associated significance/compliance criteria to be used. The British Standards used in the assessment include:

- BS 7445 (2003): Description and Measurement of Environmental Noise. This Standard defines parameters, procedures and instrumentation required for noise measurement and analysis.
- BS 5228, Parts 1&2 (2009) + A1 (2014): Noise and Vibration Control on Construction and Open Sites. This Standard provides an industry-accepted guide for noise and vibration control, and includes Sound Power Level (SWL) data and measured noise data at 10 m for individual plant, as well as a calculation method for noise from construction activities. This Standard also provides practical information on noise reduction measures, suggested noise limits and promotes a 'best practicable means' approach to control noise and vibration during construction activities.
- BS 6472 (2008): Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hertz (Hz) to 80 Hz). This Standard presents recommended frequency weighted vibration spectra (for continuous vibration) and Vibration Dose Values (VDV) (for

intermittent vibration), above which adverse impacts are likely to occur in residential properties.

- BS 7385 (1993) Part 2: Evaluation and Measurement for Vibration in Buildings. This Standard establishes the basic principles for carrying out vibration measurements and processing the data with regard to evaluating vibration impacts on buildings. In addition, this Standard presents guide values or limits for transient vibration, above which there is a likelihood of cosmetic damage.
- BS 4142 (2014): Methods for rating and assessing industrial and commercial sound. This Standard can be used for assessing the impact of noise from industrial processes and plant items. The method compares the difference between the 'rating level' of the new noise with the measured 'background level' at receptor positions.
- BS 8233 (2014): Guidance on sound insulation and noise reduction for buildings. BS 8233 provides guidance for the control of noise in and around buildings. This Standard draws on the results of research and experience to provide information on the design of buildings, internal acoustic environments appropriate to their functions, and suitable external limits for amenity areas. It deals with control of external plant noise from outside of buildings and noise from plant and services within buildings.

ADDITIONAL GUIDANCE

7.2.22. Other guidance used in the assessment includes:

- The DfT (Welsh Office Memorandum): Calculation of Road Traffic Noise (1988). This Memorandum describes procedures for traffic noise calculations and is suitable for environmental assessments of schemes (including in England) where road traffic noise may have an impact.
- The Design Manual for Roads and Bridges (DMRB) produced by the Highways Agency (Volume 11, Section 3, Part 7, HA 213/11, 2011). This Manual provides guidance on the assessment of road traffic noise. It presents a means of assessing road traffic noise, and provides advice on appropriate methodologies for assessment and potential impacts.
- The World Health Organisation (WHO) Guidelines for Community Noise (1999). These Guidelines discuss noise impacts generally and recommend guideline noise limits for community noise.
- The World Health Organisation - Night Time Noise Guidelines for Europe: 2009.
- Institute of Environmental Management & Assessment (IEMA) - Guidelines for Environmental Noise Impact Assessment 2014. The IEMA Guidelines are applicable to noise impact assessment and include core principles to achieve integration with the Environmental Impact Assessment (EIA) process. These Guidelines provide the minimum requirements for the scoping of the assessment, establishing an effective noise baseline, identifying the noise impacts and describing their consequential effects.

7.3 SCOPING OPINION AND CONSULTATION

- 7.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to noise and vibration, and how those requirements should be addressed by the applicant, are set out below in Table 31.

Table 31 - Summary of the Scoping Response for Noise and Vibration

Section	Applicants proposed matter	Planning Inspectorate's Comments	Summary of response
7.3.2	Operational ground borne vibration from power generating equipment and associated infrastructure	The Scoping Report does not provide details of the manufacturer's specifications for rotating and reciprocating plant which would be utilised so that ground borne vibration would not be perceptible at sensitive receptor locations. Nevertheless, given that the plant would be located within the curtilage of an existing power station and given the nature of the development, the Inspectorate agrees that this can be scoped out of the ES.	Agreed, no further action needed.
7.3.2	Noise and vibration during operation of the gas pipeline	Taking into account the nature and characteristics of the Proposed Scheme, the Inspectorate agrees that noise and vibration during operation of the gas pipeline itself is unlikely to be significant. However, no information has been provided as to the location of the above ground installation structures and their proximity to any sensitive receptors. As such, the Inspectorate does not agree impacts from these elements can be scoped out.	A preliminary assessment of the AGI is included in this PEIR, a detailed assessment will be undertaken at the ES stage when full design information is available.
7.3.1	Sensitive Receptors	The noise and vibration chapter has only identified human sensitive noise receptors. The Inspectorate expects that the assessment should appropriately cross refer to the assessment of biodiversity within the ES. The Applicant's attention is also drawn to the comments of the MMO and the need to provide further detail of the works required in order to scope out	The assessment is cross referenced with the Ecology chapter in this PEIR (and will also be for the ES) to ensure that potential noise and vibration impact on biodiversity is considered.

Section	Applicants proposed matter	Planning Inspectorate's Comments	Summary of response
		the River Ouse and the River Derwent from the assessment.	
7.3.3	Study Area	Section 7.3.3 of the Scoping Report refers to the study area, but does not indicate what this would be. The ES should clearly identify the study area used in the assessment, which should be relevant to the extent of the likely effects. This should be discussed and agreed with relevant consultees.	A consultation was held with the SDC, it was agreed that the study area would be proportional to the level of noise impact predicted. The study area used in the assessment is flexible and will be based on the results of the noise model. Based on previous similar studies the study area is not expected to exceed 2 km from the Site Boundary.
7.3.4	Assessment	The ES should assess any potential likely significant noise effects resulting from the operation of the jetty and crane.	Noise from the Jetty crane during the construction phase has been included in the assessment.
7.3.4	Assessment Methodology	In referring to standards applicable to the assessment, the Scoping Report identifies in part the dates of the relevant standards. The applicant should ensure that the most up to date version of the standards are utilised.	The most up to date versions of all relevant standards have been used and referred to in this chapter.

Section	Applicants proposed matter	Planning Inspectorate's Comments	Summary of response
7.3.5	Limitation and Assumptions	The applicant is advised to discuss and agree with the local authority the approach to be applied for noise measurements during unsuitable weather conditions.	This point was discussed with the local authority, and it was agreed that noise measurements would not be undertaken during unsuitable weather conditions.

7.3.2. Table 32 provides a summary of the consultations undertaken to inform the noise and vibration assessment during the scoping and PEIR stages.

Table 32 - Summary of the Consultations

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
Environmental Health Officer (EHO) – Selby District Council	11 August 2017 (email)	Ambient noise survey methodology. The EHO has written an email to confirm that they have reviewed the WSP ambient noise survey methodology and are happy for us to proceed with the survey.	Agreement is welcome.
EHO – Selby District Council	06 September 2017 (email)	The EHO has written to confirm that in principle, Selby District Council are happy for WSP to use previous available baseline noise data, (measured for the Drax White Rose project) to inform the study, provided that WSP set out the reasons for the suitability/usage of the data in the assessment.	A confirmation email was sent (06 Sept 2017) to agree that reasons for the suitability/usage of the data that will be set out in the PEIR and ES.
EHO – Selby District Council	27 October 2017 (email)	The EHO has written to confirm that the minimum recommendation for the noise study area will be informed by	For the PEIR the study area will be flexible depending on the

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
		the noise levels produced by the Proposed Scheme and the existing background noise level at noise sensitive receptors.	results of the assessment, however, it is not anticipated to extend beyond 2 km from the Site Boundary.
EHO – Selby District Council	02 January 2018 (email)	Consultation with Selby District Council undertaken to finalise the assessment methodology and noise mitigation strategy – discussions with SDC are ongoing.	Consultation with Selby District Council undertaken to finalise the assessment methodology and noise mitigation strategy – discussions with SDC are ongoing.

7.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

GENERAL

- 7.4.1. For noise and vibration, the predicted level of impact and significance has been determined on the basis of the potential change from baseline levels as a result of the Proposed Scheme and the sensitivity of receptors, with residential receptors considered as highly sensitive.

ASSUMPTIONS

- 7.4.2. The assessment conducted within this PEIR Chapter is based on the following assumptions:

- In terms of the assessment scenarios set out in Chapter 3, this assessment assumes:
- In terms of the Site Reconfiguration Works, the Proposed Scheme has been assessed on the two scenarios, described as follows:
 - The current baseline, which is the existing background noise levels measured at NSR locations. The Proposed Scheme (including the carrying out of the Site Reconfiguration Works) will then be assessed against this baseline.
 - The future baseline will be the scenario when the identified Site Reconfiguration Works are complete.
 - Repowering of both units;
 - In terms of the construction transport scenarios, this Chapter assesses the highway only scenario (that is, not the jetty scenario), as this represents the preferred option for Drax given the potential need limited window in which the jetty could be utilised and the environmental effects of dredging the River;
 - Both pipeline options are assessed, and where the effects differ for each option that is made clear;

- In terms of the electrical connection scenarios, there is no difference in the effects for each scenario;
- Construction period will be approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.

EMBEDDED MITIGATION - CONSTRUCTION

7.4.3. The Proposed Scheme has been designed from the outset to ensure its impacts are minimised. This includes mitigation that is embedded into the design of the Proposed Scheme and industry standard methods and procedures to ensure impacts from construction, operation and decommissioning are minimised.

7.4.4. For the construction phase, while planning noise limits will be agreed with the SDC, the applicant will aim to better these limits and reduce noise emissions wherever practicable. It is proposed to seek to agree the following measures with SDC to minimise the impact of construction noise from the Proposed Scheme:

- Since tonal or impulsive noises are considered more annoying than continuous noise sources, plant items will, where practicable, be silenced or otherwise controlled through regular maintenance.
- Inherently quiet plant items will be selected, wherever practicable. Acoustic lagging and low noise trims will be fitted to all pipe-work and noise generating valves.
- High performance acoustic enclosures will be considered for all plant items where practicable, not overlooking smaller plant items such as compressors and pumps.
- When non-normal and emergency operations lead to noise levels in excess of the agreed planning limits, the operator will inform the local authority and residents as soon as practicable of the reasons for these operations, and the anticipated emergency period.
- During decommissioning, similar mitigation measures to those described above for construction will be implemented.

EMBEDDED MITIGATION - OPERATION

7.4.5. Embedded mitigation for the operation of the Proposed Scheme includes the following:

- The gas turbines and major compressors are to be housed in individual acoustic enclosures, of heavy construction, specified at 85 dB (A) Sound Pressure Level at 1 m.
- Turbine filter and ventilation apertures are to be fitted with high performance silencers, and designed such that all sensitive receptors benefit from screening and/or directivity corrections.
- High performance silencers will be installed in the outlet duct(s) between the gas turbines. Due to the impracticality of screening stack noise, discharge noise will be controlled using these silencers that will be tuned to attenuate low frequencies from the gas turbine exhausts.
- Unit transformers and generator transformers will be housed in an appropriate enclosure or three sided pen, to provide full screening to NSRs.

- 7.4.6. In addition to the traditional assessment of significance, government policy dictates that noise and vibration as a result of the Proposed Scheme is also assessed and defined using guidance from the NPSE.
- 7.4.7. The noise and vibration significance criteria framework used for this study has been based around the PPG requirements, discussed in the policy / guidance Section 6.5.

METHODOLOGY – BASELINE NOISE SURVEY

- 7.4.8. The noise and vibration impact assessment focuses on 23 Noise Sensitive Receptor (NSR) locations, (10 residential NSRs and 13 ecological NSRs), which are identified in Section 7.8 and shown in Figures 7-2 and 7-3.

2013 BASELINE

- 7.4.9. The baseline noise conditions at NSR locations 1 to 7 have been determined by way of an attended noise survey commissioned by the applicant in 2013 to support the White Rose Carbon Capture Project. WSP has undertaken a review of the 2013 baseline survey methodology and can confirm that the survey was undertaken to the appropriate standards and requirements of BS 7445. It is noted that baseline noise conditions at the NSR locations are not anticipated to have changed significantly since 2013, as there has been no significant noise producing development in the area around the Drax Power Station in the intervening period. As such, WSP is satisfied that the 2013 baseline noise data is representative of the current baseline noise levels at the NSR locations used in this study.
- 7.4.10. A consultation was held with SDC to confirm the use of the 2013 baseline noise data to inform this assessment, and to agree a study area for the assessment. It was agreed with SDC that 2013 baseline data could be used for the purposes of the PEIR and ES assessment, and that a study area extending 2km beyond the Power Station Site would be appropriate (see the consultation responses from SDC are detailed in Table 32).

2017 BASELINE

- 7.4.11. WSP has undertaken a supplementary baseline noise survey at three additional locations situated east of the Site, to include NSR locations that may be affected by the construction and operation of the gas pipeline (and which were not covered as part of the 2013 noise survey).
- 7.4.12. The supplementary baseline noise survey was undertaken using short term sampling measurements to determine the spread of noise in the area around NSR locations eight, nine and ten (shown in Figure 7.2). The baseline noise survey was completed over a period of 24 hours during 14 and 15 September 2017.
- 7.4.13. Weather conditions were conducive to successful monitoring with wind speeds less than 5 m/s. Roads were dry, and there was no precipitation at the time of measurement. The measurement microphones were positioned in Free Field at 1.4 m above ground level and well away from any vertical reflective facades. A wind-shield was used to minimise the effects of wind noise.
- 7.4.14. Each measurement recorded the same five statistical parameters (L90, Leq, Lmax, L10, Lmin.) with the overall figure reported using the A-weighted frequency network.
- 7.4.15. All monitoring was conducted using Class 1 Sound Level Meters. A field calibrator was used to calibrate and check the meter before and after the measurement period with no change in level recorded. Specific details of the equipment used, including serial numbers and calibration level is provided in Appendix C1.

METHODOLOGY – CONSTRUCTION NOISE

- 7.4.16. The likely construction noise levels have been predicted using the methodology set out in BS5228 in conjunction with general information regarding proposed activities.
- 7.4.17. The construction noise assessment procedure, as set out in BS5228 is described below:
- 7.4.18. Stage 1: Obtain an activity LAeq by direct measurement of similar plant in the same mode of operation, or use the indicative plant noise sound pressure values provided in Annexes C and D of BS 5228, these values have been measured at a distance of 10 m.
- 7.4.19. Stage 2: If the distance R, in metres (m) from the point of interest to the geometric centre of the plant or activity is further away than 10 m subtract from the LAeq obtained in stage 1 using the following equation:

$$L_2 = L_1 - 20 \log_{10} \frac{R}{10}$$

Where:

L1 = Measured plant noise level at 10m distance

L2 = Predicted plant noise level at assessment location (NSR)

R = Distance between geometrical centre of noise source and assessment location (NSR).

- 7.4.20. The equation identified in stage 2 of the BS5228 construction noise assessment method has been used to calculate each separate identified plant noise source. This method predicts the total potential Sound Pressure Level at each NSR as a result of construction activities. Each plant noise source has been calculated as being the shortest distance between the Site Boundary and each NSR.
- 7.4.21. Construction noise predictions are based on the methodology outlined in BS5228: Part 1: 2009+A1 2014. Construction noise levels are predicted as a 'free-field' equivalent continuous noise level averaged over a one-hour period (LAeq,1h), and then subsequently averaged over a 12-hour working day to account for the variations in noise due to plant-on/ plant-off time throughout a full working day, the final value is provided as an LAeq,12h.
- 7.4.22. The significance of construction noise effects is assessed on the category threshold for the NSR as required in the ABC assessment methodology set out by BS5228, shown in Table 33.

Table 33 - BS5228 ABC Construction Noise Assessment Categories

Evaluation Period	Assessment Category (dB LAeq)		
	A	B	C
Night-time (23:00-07:00)	45	50	55
Evening and Weekends*	55	60	65
Daytime (07:00-19:00)	65	70	75

Evaluation Period	Assessment Category (dB LAeq)		
	A	B	C
* 19:00-23:00 weekdays, 13:00-23:00 Saturdays and 07:00-23:00 Sundays. Category A: threshold values to use when ambient Noise levels (when rounded to the nearest 5 dB) are less than these values. Category B: threshold values to use when ambient Noise levels (when rounded to the nearest 5 dB) are the same as Category A values. Category C: threshold values to use when ambient Noise levels (when rounded to the nearest 5 dB) are higher than Category A values. The Category (A, B or C) is to be determined separately for each time period and the lowest Noise category is then used throughout the 24-hour cycle, e.g. a site which is category A by day and category B or C in the evening and night will be treated as category A for day, evening and night.			

- 7.4.23. The methodology identifies potential significant effects where forecast noise levels exceed Categories A and B. These categories consider the impact of construction in locations with lower existing ambient noise levels. Where construction noise levels are predicted to exceed the A or B Categories, but are less than the Category C threshold, then this is assessed as potentially significant in quieter areas.
- 7.4.24. When considering construction noise effects in terms of LOAEL and SOAEL, the LOAEL value is not fixed and will depend on the measured baseline noise level at each NSR location. The SOAEL value is aligned with the ABC assessment values.

METHODOLOGY - VIBRATION

- 7.4.25. Vibration from construction activities may impact on adjacent buildings. The criteria used in this assessment relate to the potential for cosmetic damage, not structural damage. The principal concern is generally transient vibration due to impact piling. Cosmetic damage is most likely to occur within the first 20 m of piling activities; damage is less likely to occur at greater distance. Likely levels of vibration at given distances can be predicted using empirical methods and existing piling vibration data. Due to the distances involved between the Site and NSR locations vibration from construction activities is unlikely to be subjectively noticeable, and will not approach the thresholds limits where structural damage to buildings may occur.
- 7.4.26. BS7385 establishes the basic principles for carrying out vibration measurements and processing the data with regard to evaluating vibration impacts on buildings. Table 34 provides recommended peak particle velocity (PPV) vibration limits for transient excitation for different types of buildings (as set out in BS7385: Part 2, 1993). The PPV values in Table 34 are given in two ranges as very low frequency vibration (between 4Hz to 15Hz) is potentially more damaging to light framed building structures, and therefore has a lower threshold.

Table 34 - Peak Particle Velocity (PPV) Limits for Cosmetic Damage²⁸

Type of Building	Peak component particle velocity in frequency range of predominant pulse	
Frequency, Hz	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures. Industrial and heavy commercial buildings.	50 mm/s at 4 Hz and above	50 mm/s at 4 Hz and above
Un-reinforced or light framed structures. Residential or light commercial type buildings ²⁹	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

METHODOLOGY – OPERATIONAL NOISE

- 7.4.27. The noise impacts during operation are predicted using CadnaA noise propagation modelling software, using typical values for the proposed plant items, and considering directional and screening effects.
- 7.4.28. The operational noise assessment has included the following noise generating items:
- The Proposed Scheme on the Power Station Site.
 - Gas pipeline - Above Ground Installations (AGI).
 - Electrical power storage battery - cooling units.
- 7.4.29. It is noted that the electrical power storage battery will have a mechanical cooling system that will generate noise. At the time of writing, the final design of the electrical storage battery is still under development, however, it is understood that external chiller units are likely to be used for cooling. To account for the potential noise created by the battery storage cooling infrastructure, the operational noise model has included external chiller units, situated along the south facing façade of the battery storage block.
- 7.4.30. The computer noise modelling software CadnaA (Version 4.6), which uses the ISO 9613 propagation algorithms, has been used to undertake detailed noise calculations of the generating infrastructure on the Power Station Site and the Above Ground Installations required for the gas pipeline. The model estimates the contribution to noise levels at each NSR location, and has been created using representative Sound Power Level information for typical plant items.
- 7.4.31. The model is intended to provide a noise prediction assessment for the operational phase of the Proposed Scheme on the Power Station Site and the AGI within the Pipeline Study Area. A noise contour plot to show the predicted spread of noise from the Power Station Site and AGI in 5 dB bands is included in Figure 7.1 for reference.

²⁸ Values referred to are at the base of the building.

²⁹ At frequencies below 4 Hz a maximum displacement of 0.6 mm (zero to peak) should not be exceeded.

METHODOLOGY FOR THE DAYTIME OPERATIONAL ASSESSMENT (0700-2300)

7.4.32. The methodology for the assessment of operational noise for the generating infrastructure on the Power Station Site and the AGI for the gas pipeline is BS4142:2014. The significance of the predicted operational impact can be assessed against the semantics of BS 4142. The method compares a rating of the noise from the specific source being assessed (that is, the noise source from the Proposed Scheme) with the Background Sound climate existing at relevant NSR in the absence of the source operation. The difference in levels established is taken as an indication of the magnitude of the noise impact, subject to contextual considerations [from BS 4142]:

“Typically, the greater this difference, the greater the magnitude of the impact.

7.4.33. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

7.4.34. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

7.4.35. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

7.4.36. It is clear from this guidance that context is an important consideration in the assessment. The examples included in BS 4142:2014 Annex A illustrate the contextual factors that may be of importance, e.g:

- The magnitude of the differences between Rating Level and Background Sound.
- The character of the existing noise environment at receptors.
- History of noise issues (e.g. complaints) associated with the operator or the site of the specific source under assessment.
- The diurnal period during which impacts are identified, and the relevance to the type of receptor.
- The location at which actual impacts on the receptor could occur, i.e. indoor or outdoor.

7.4.37. BS 4142:2014 provides guidance on minimising and reporting factors likely to contribute to uncertainty in the assessment. This includes following best practice guidance with regards to measurement of sound levels.

7.4.38. The WHO ‘Guidelines for Community Noise’ provides health-based guidance on suitable noise levels intended to avoid or minimise community annoyance by noise. The guidance provides guideline noise levels for both indoor and outdoor areas. Of significance to this assessment the guidance states:

7.4.39. *“During the daytime, few people are seriously annoyed by activities with LAeq levels below 55dB; or moderately annoyed with levels below 50dB. ...”*

7.4.40. Therefore, the significance criteria incorporating BS 4142 and WHO Guidelines for Community noise presented in Table 36 has been adopted for the purposes of the assessment of operational noise from the Proposed Scheme.

METHODOLOGY FOR THE NIGHT TIME OPERATIONAL ASSESSMENT (2300-0700)

7.4.41. The results of the ambient noise survey undertaken for the Proposed Scheme have identified that the background noise levels at a number of locations are below the threshold of suitability.

- 7.4.42. The use of the BS4142 methodology may not lead to a reliable conclusion in areas with very low levels of background noise. Where background noise levels at NSR locations have been measured below a threshold of 30 dB L₉₀, an alternative means of assessment for the operational impact has been used. At these locations the Proposed Scheme has been assessed using a combination of the guidance from BS8233 and the WHO - Guidelines for Community Noise document.
- 7.4.43. The guidance contained in BS8233 relates to indoor ambient noise levels in spaces when they are unoccupied. BS8233 recommends that it is desirable to achieve an internal ambient noise level that does not exceed 30 dB LAeq 8hrs.
- 7.4.44. An open ventilation window in a residential property can typically be expected to attenuate external noise levels by around 13 dB. Using a 13dB noise reduction through an open window it is possible to estimate the internal ambient noise level within a residential dwelling, given a free field noise level outside the property. For this assessment an external free field noise limit of 40 dB LAeq has been set, using this upper limits should comfortably provide the BS8233 desirable internal ambient noise sleeping conditions in bedrooms at night time.

METHODOLOGY – OPERATIONAL VIBRATION

- 7.4.45. It is understood that on site vibration sources will include the following:
- Balanced rotating equipment, such as turbines.
 - Wind induced vibrations in the stacks to be transmitted to the foundations.
- 7.4.46. All fixed reciprocating and rotating plant items will be seated on anti-vibration mounts to isolate mechanical vibration at source. Over the distances involved between the Power Station Site and the NSR locations, it is anticipated that the level of induced vibration will be imperceptible at the nearest sensitive receptor. As such, vibration impacts as a result of the operation of the Proposed Scheme, including the gas connection and AGI are scoped out of this study and are not discussed further, this is as agreed by the Planning Inspectorate in its Scoping Opinion.

SIGNIFICANCE CRITERIA

- 7.4.47. For noise and vibration, the predicted level of impact and significance has been determined on the basis of the potential change from baseline levels as a result of the Proposed Scheme and the sensitivity of receptors, with residential receptors considered as highly sensitive. The likely significant effect has been determined based on the concept LOAEL and SOAEL, These are described in the PPG as follows:

7.4.48. LOAEL Definition

"Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life."

7.4.49. SOAEL Definition

"Noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in

difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area."

7.4.50. The following sections provide the assessment methodology and significance criteria associated with noise and vibration from the construction, operation and decommissioning phases of the Proposed Scheme.

CONSTRUCTION/DECOMMISSIONING

7.4.51. The noise impacts of decommissioning will be similar to those that will be assessed for construction. The assessment will therefore be carried out on the same basis as that for those arising from construction activities. The assessment has assumed all residential NSR locations to have high sensitivity.

7.4.52. Significance criteria for construction noise and vibration have been derived from a review of appropriate British Standards, as follows:

- Construction noise thresholds at residential NSR locations have been informed by the guidance in BS5228, Example Method 1 – The ABC method, and;
- Construction vibration thresholds at residential NSR locations have been informed by the guidance in BS7385.

7.4.53. Based on the recommended noise and vibration thresholds set out in these Standards a scale for the description of the significance of construction noise and vibration is shown in Table 35.

Table 35 - Construction and Decommissioning Noise and Vibration – Significance Criteria

Level of Impact	Description	Significance of effect LOAEL and SOAEL thresholds
Negligible	Daytime noise levels < ambient LAeq Vibration levels < 0.15 mm/s	NOEL
Minor	Daytime noise levels > ambient LAeq but < 65 dB LAeq. Vibration levels > 0.15 mm/s, but < 1 mm/s.	LOAEL
Moderate	Daytime noise levels > 65 dB LAeq but < 75 dB LAeq. Vibration levels > 1 mm/s but < 5 mm/s.	SOAEL
Major	Daytime noise levels > 75 dB LAeq Vibration levels > 5 mm/s.	SOAEL

OPERATION

7.4.54. The significance criteria for operational noise has been based on a review of appropriate British Standards and guidance documents, as follows:

- Operational noise thresholds at residential NSR locations have been informed by the guidance in BS4142, and;
- Noise thresholds for external amenity areas have been informed by the WHO Guidelines for Community Noise document.

7.4.55. The assessment has assumed all residential NSR locations to have high sensitivity. All noise levels shown in Table 36 are intended as Free Field noise levels.

Table 36 - Operational Noise – Significance Criteria

Level of Impact	Daytime BS4142 Free Field Noise Level, dB(A)	Night time BS8233 Free Field Noise Level, dB LAeq	Who Guidelines External Amenity Noise, dB(A)	Significance of Effect LOAEL and SOAEL thresholds
Negligible	BS4142 noise rating level below the existing background noise.	10dB below background Noise	<50	NOEL
Minor	BS4142 noise rating level not more than 5 dB above existing background noise	Between 35 to 40 dB	50-55	LOAEL
Moderate	BS4142 noise rating level between 5 and 10 dB above existing background noise.	Between 40 to 45 dB	55-60	SOAEL
Major	BS4142 noise rating level more than 10 dB above the existing background noise	Between 45 to 50 dB	>60	SOAEL

7.5 BASELINE CONDITIONS

BASELINE CONDITIONS AND RECEPTORS – APPLIES TO BOTH THE CURRENT AND FUTURE BASELINE

- 7.5.1. This study has included both residential NSR locations and ecological NSR locations, both are classed as highly sensitive. Table 37 provides a summary of the residential NSR locations in relation to the Power Station Site. Figure 7.2 in the Appendix shows the Power Station Site, the Pipeline Study Area and the residential NSR locations.

Table 37 - Summary of the Residential NSR Locations

Measurement Location	Approx distance from site, m	Coordinates	
		X	Y
NSR 1 - Wren Hall	580	467273.78	427168.97
NSR 2 - Long Drax	1648	468154.27	428110.53
NSR 3 - Old Lodge	948	467529.8	428120.05
NSR 4 - Drax Abbey Farm	846	467049.27	428277.76
NSR 5 - Forman's Cottage	967	466831.24	428479.92
NSR 6 - Barlow	2000	464860.63	428370.24
NSR 7 - Camblesforth	1719	465325.79	426113.03
NSR 8 - Station Cottage - Hales Lane	1110	466694.48	426389.44
NSR 9 - Briden Bungalow - Main Road	1213	467775.16	426863.51
NSR 10 - Willow Row Drain - Residential	2171	468386.64	426176.81

- 7.5.2. Table 38 provides a summary of the ecological sensitive receptor locations in relation to the Power Station Site and the Pipeline Study Area. Figure 7.3 shows the ecological sensitive receptor locations.

Table 38 - Summary of the Ecological Sensitive Receptor Locations

Ecological Sensitive Receptor Locations	Approx distance from site (m)	Coordinates	
		X	Y
NSR 11 - River Ouse 1	1800	468494.1	428034.7
NSR 12 - River Ouse 2	1785	468595.4	427671.9
NSR 13 - Disused Railway SINC 2	850	467677.9	427493.1
NSR 14 - Woodland 1	550	467350	427581.6
NSR 15 - Woodland 2	800	467617.1	427173.4

Ecological Sensitive Receptor Locations	Approx distance from site (m)	Coordinates	
		X	Y
NSR 16 - Woodland 3	450	466755.2	426990.2
NSR 17 - Woodland 4	930	466536.8	426469.3
NSR 18 - Woodland 5	1250	465989	426460.9
NSR 19 - Development Parcel E	260	466637.6	427877.4
NSR 20 - Development Parcel B	420	466780.4	428011.8
NSR 21 - Disused Railway SINC 1	1200	468168.3	427921.1
NSR 22 - River Derwent 1	1640	467768.3	428714.7
NSR 23 - River Derwent 2	1620	468020.2	428632.2

- 7.5.3. The Power Station Site is within the Existing Drax Power Station Complex. The surrounding area is mainly open agricultural land with scattered residential dwellings. The village of Drax lies approximately 800 m to the south east of the site, the town of Camblesforth is approximately 1 km to the south west, Barlow is approximately 1 km to the west of the site and the village of Long Drax is approximately 1.5 km to the north east of the site.
- 7.5.4. There are currently two options for the gas pipeline, Option A and Option B. Both Options A and B run east from the Power Station Site for a distance of approximately 3 km through predominantly open agricultural land.
- 7.5.5. Heading east from the Site Boundary, both the Options A and B share the same corridor for approximately 1.2 km then diverge. Both the Options A and B pass within 50 m of NSR 9.
- 7.5.6. Baseline noise levels at NSR locations have been taken from a baseline noise survey undertaken in 2013 for the Drax White Rose Project.
- 7.5.7. Baseline noise data has been supplemented with an ambient noise survey undertaken by WSP during 14 and 15 September 2017. The supplementary WSP survey was undertaken primarily to include potential NSR locations along the proposed gas pipeline route Options A and B (i.e. the Pipeline Study Area).
- 7.5.8. During the 2017 survey it was observed that the noise climate in the area is largely dominated by road traffic during the daytime. During the night time when road traffic levels reduce a continuous low level noise is audible from the Existing Drax Power Station Complex.
- 7.5.9. Table 39 provides a summary of the residential NSR locations and shows the survey date and approximate distance from the Proposed Scheme.

Table 39 - Summary of Residential NSR Locations and Baseline Survey Dates

Measurement Location	Baseline Survey Date
NSR 1 - Wren Hall	2013
NSR 2 - Long Drax	2013

Measurement Location	Baseline Survey Date
NSR 3 - Old Lodge	2013
NSR 4 - Drax Abbey Farm	2013
NSR 5 - Forman's Cottage	2013
NSR 6 - Barlow	2013
NSR 7 - Camblesforth	2013
NSR 8 - Station Cottage - Hales Lane	2017
NSR 9 - Briden Bungalow - Main Road	2017
NSR 10 - Willow Row Drain - Residential	2017

- 7.5.10. Figure 7.2 shows the measurement locations for both the 2013 and 2017 baseline noise surveys.
- 7.5.11. The full results of the 2017 survey are provided in the noise monitoring forms in Appendix 7. The background noise levels used in the assessment have been derived by statistical analysis of both the 2013 and 2017 survey data. A summary of the typical day time and night time back ground noise levels at the NSR locations, is shown in Table 13.
- 7.5.12. As discussed, the Proposed Scheme will assess two scenarios:
- The first scenario assumes the Site Reconfiguration Works are part of the Proposed Scheme. This scenario is referred to as the "current baseline" as it reflects the existing situation in which the Site Reconfiguration Works have not been carried out.
 - The second scenario assumes the Site Reconfiguration Works have already been carried out at the time the Proposed Scheme is implemented. This scenario is referred to as the "future baseline" as it reflects a baseline at a future time when the Site Reconfiguration Works would have been completed.
- 7.5.13. The reconfiguration works include removal of modular office buildings, steel framed sheds, the visitors centre and stores buildings. These buildings are all below 18 m in height and therefore do not currently provide any acoustic screening from the existing major plant noise sources on site. Therefore, when these buildings are removed as part of the reconfiguration works there will be no change in the current baseline noise levels at NSR locations. As the "current baseline" and "future baseline" noise levels will be the same they are hereafter referred to simply as the baseline.
- 7.5.14. Table 40 provides a summary of the estimated baseline noise levels during the daytime and night time.

Table 40 - Summary of Baseline Noise Levels at NSR Locations

Measurement Location	Baseline Noise Level, dB L _{A90}	
	Daytime (0700-2300)	Night Time (2300-0700)
NSR 1 - Wren Hall	35	35
NSR 2 - Long Drax	32	26
NSR 3 - Old Lodge	32	27
NSR 4 - Drax Abbey Farm	35	24
NSR 5 - Forman's Cottage	35	28
NSR 6 - Barlow	35	24
NSR 7 - Camblesforth	43	40
NSR 8 - Station Cottage - Hales Lane	49	42
NSR 9 - Briden Bungalow - Main Road	43	37
NSR 10 - Willow Row Drain - Residential	42	35

7.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

THE PROJECT

- 7.6.1. For the purposes of this chapter, the assessments of the Proposed Scheme are presented together under the headings of Construction, Operation (including maintenance) and Decommissioning.

CONSTRUCTION

- 7.6.2. Construction activity inevitably leads to some degree of noise disturbance at locations in close proximity to the construction activities. It is, however, a temporary source of noise. The noise levels generated by construction activities would have the potential to impact upon nearby noise sensitive receptors. Noise levels at any one location will vary as different combinations of plant machinery are used and throughout the construction of the the Site Reconfiguration Works and the Proposed Scheme as the construction activities and locations change.
- 7.6.3. Table 41 presents the noise levels associated with typical construction activities, and predicts the likely noise level contributed by each item of plant at each NSR. The estimated Sound Pressure Levels shown are worst-case estimates based on distance attenuation only.
- 7.6.4. The assessment has considered noise from construction activities related to the following:
- Site Reconfiguration Works
 - Construction works on the Power Station Site
 - The Gas pipeline within the Pipeline Study Area
 - Battery Storage facility

- Unloading activities at Long Drax Jetty.
- Construction traffic using the surrounding road network.

- 7.6.5. It is reasonable to assume that similar construction activities, plant items and processes can be expected for the Proposed Scheme and the Site Reconfiguration Works. As such, Table 14 is representative of construction activity noise for both the Proposed Scheme and the Site Reconfiguration Works.
- 7.6.6. Table 41 provides a summary of results for the construction noise predictions, both individually and all together for the Proposed Scheme. The full calculations are provided in Appendix C2.

Table 41 - Predicted Noise Level at NSR from Each Construction Area, LAeq dB

Construction Area	NSR 1	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6	NSR 7	NSR 8	NSR 9	NSR 10
Power Station Site	57.9	48.9	53.7	54.7	53.5	47.2	48.5	52.3	51.5	46.5
Unloading from Long Drax Jetty	50.4	56.1	48.0	47.1	45.9	39.5	40.5	44.3	46.0	42.5
Gas pipeline Option A	70.8	47.3	56.3	52.8	49.4	41.9	42.7	48.9	64.0	43.3
Gas pipeline Option B	70.8	47.3	56.3	52.8	49.4	41.9	42.7	48.9	64.0	71.6
Total Noise Power Station Site + pipeline Option A	71.0	51.2	58.2	56.9	54.9	48.3	49.5	53.9	64.3	48.2
Total Noise Power Station Site + pipeline Option B	71.0	51.2	58.2	56.9	54.9	48.3	49.5	53.9	64.3	71.6

- 7.6.7. Table 41 shows that NSR 1 (Wren Hall) is predicted to experience a moderate adverse noise impact during the construction phase as a result of the construction of the pipeline Option A.
- 7.6.8. Table 41 shows that both NSR 1 (Wren Hall) and NSR 10 (residential properties at Willow Lane Drain) are predicted to experience a moderate adverse noise impact during the construction phase as a result of the construction of the pipeline Option B. In terms of effects, these sit within the SOAEL category. However, the construction noise impact will be temporary in duration. Construction noise impacts are also predicted as a worst case, where activities are at the closest point to any receptor. In reality, construction noise levels will reduce as progress is made along the length of the pipeline route and construction activities move further away from NSR locations so the temporary nature of the impact is less than 12 months.
- 7.6.9. All other NSR locations are predicted to have a minor adverse noise impact during the construction phase, this level of construction noise impact is between the LOAEL and SOAEL thresholds.

- 7.6.10. Best practicable means (BPM) to minimise construction noise impacts will be required, these are discussed further in Section 7.7 Mitigation.

CONSTRUCTION VIBRATION

- 7.6.11. The identified construction plant/equipment items used in this assessment are not recognised as sources of high levels of vibration. Indeed, even at a close distance of 10 m, PPV levels significantly less than 1 mm/s are generated. For example, a bulldozer would typically generate a PPV of approximately 0.6 mm/s and a 'heavy lorry on poor road surface' would generate a PPV of less than 0.1 mm/s. These values are well below limits at which cosmetic building damage becomes likely (15 mm/s). Over the distances involved between any construction activities and sensitive receptors the vibration impact is predicted to be negligible. In terms of effects this level of impact is in the NOEL category.

CONSTRUCTION TRAFFIC ASSESSMENT

- 7.6.12. Noise will be associated with construction traffic associated with the Proposed Scheme. Public roads will be used by such traffic as far as possible, although minor roads will also have to be used for access. Noise arising from these additional vehicles will potentially increase noise levels from the local roads, although the impact will be in the short term restricted to the duration of the construction period and will vary day to day as construction progress is made.
- 7.6.13. An assessment of the change in noise associated with increased construction traffic along existing local roads has been undertaken in accordance with the guidance contained within the Calculation of Road Traffic Noise (CRTN) 1988.
- 7.6.14. Table 42 presents the construction traffic assessment summary. The DMRB states '*In the period following a change in traffic flow, people may find benefits or disadvantages when the noise changes are as small as 1 dB(A) – equivalent to an increase in traffic flow of 25 % or a decrease in traffic flow of 20%*'.
- 7.6.15. At the time of writing, the estimated daily construction traffic movements have not been assigned to any specific construction traffic routes, however, it is likely most construction traffic will use the M62 and A645 as this is the most direct route from the Proposed Scheme to a major carriageway. To provide a reasonable worst case assessment, the total estimated daily construction traffic has been applied to all routes to cover all eventualities. This assessment method will be refined at the ES stage when detailed information on traffic flow is available.
- 7.6.16. At this stage it is the preferred option of utilising the highway network rather than the Drax Jetty, as such the construction traffic assessment assumes that all construction equipment will be transported by road.
- 7.6.17. It is reasonable to assume that similar levels of construction traffic can be expected for both the Site Reconfiguration works and the Proposed Scheme, as such, Table 42 is representative of both.

Table 42 - Summary of Construction Traffic Noise Assessment for the Proposed Scheme and Reconfiguration Works

Road Name	18hr AAWT baseline Traffic Flow (2016)	Estimated Daily Construction Traffic Movements	Percentage Change, %
M62 J34 Westbound	23,588	773	3
M62 J34 Eastbound	24,931	773	3
A645 Between M62 and Drax Village	7997	773	10
A1041 between Selby and A646	12110	773	6
A19 between A645 and A63	9601	773	8

7.6.18. The preliminary assessment predicts that the increase from construction traffic flow is below 25%, it can therefore be concluded that noise increase from construction traffic will be negligible. The predicted noise increase from baseline as a result of construction traffic is less than 1dB. As such, the cumulative noise increase (from construction activities on-site and HGV movements on the roads) will be imperceptible.

OPERATION

7.6.19. The current proposals for the Proposed Scheme are for two new gas turbine generating units, Unit X and Unit Y. Each unit would contain up to two gas turbines and up to two heat recovery steam generators (HRSG) contained within a turbine building. It is understood that the intention is to develop Unit X first, with Unit Y (if both units are repowered) coming online at a later date (as set out in Chapter 3). As a worst case approach, the noise predictions in this assessment assume both Unit X and Unit Y in operation.

OPEN CYCLE VS. COMBINED CYCLE

7.6.20. The Proposed Scheme will have the option to run in open cycle or combined cycle. During open cycle the HRSG is bypassed and only the gas turbine is in operation. During the combined cycle both the gas turbine and HRSG are in operation.

GAS CONNECTION AND AGI

7.6.21. The operation of the gas pipeline will not give rise to audible noise under normal conditions. Therefore, noise impacts from operation of the gas pipeline are considered to be negligible.

7.6.22. It is understood that there will be an AGI located where the gas pipeline connects to the NTS. The operation of the AGI may give rise to some audible noise during maintenance and inspection (i.e. when scheduled maintenance work is required / when small volumes of gas may need to be vented or re-compressed). Such maintenance and inspection operations will be infrequent and would be carried out during the daytime. There are two route options for the gas connection, Option A and Option B, so there are currently two potential locations for the AGI. Table 43 shows the approximate distances between the two possible AGI locations and the closest NSR locations.

Table 43 - NSR distances to proposed AGI locations

Pipeline Route Option	NSR	Distance to Closest Proposed AGI Location
Pipeline Route Option A	NSR 10 – Willow Row Drain	1200 m
	NSR 12 - River Ouse 2	1600 m
	NSR 15 - Woodland 2	2125 m
Pipeline Route Option B	NSR 10 – Willow Row Drain	400 m
	NSR 12 - River Ouse 2	1700 m
	NSR 15 - Woodland 2	1600 m

- 7.6.23. Based on the distances of the proposed AGI locations from the nearest NSR locations, noise impacts from operation of the AGIs are considered to be Negligible.

EXTERNAL AMENITY NOISE LEVELS

Table 44 - Predicted Operational Noise Levels at NSR Locations, LAeq dB

Location	NSR 1	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6	NSR 7	NSR 8	NSR 9	NSR 10
Predicted Operational Noise Level, LAeq dB	39.8	33.4	30.2	37.8	34.9	9	29.8	31.8	35.4	26.4

- 7.6.24. Table 44 shows noise levels at external amenity areas.

- 7.6.25. For external amenity areas the predicted operational noise impact at all NSR locations is negligible, in terms of effects this is in the NOEL category.

OPERATIONAL ASSESSMENT – DAYTIME

- 7.6.26. The operational noise assessment for daytime is based on the BS 4142 methodology, the Standard indicates that penalties could be applicable for noise characteristics such as intermittency, impulsivity and tonality, to reflect that these types of noise are considered more annoying than continuous noise sources. As noise from the proposed plant items is not yet present, establishing a penalty or rating for sound characteristics likely to increase distinctiveness (perception) or annoyance (response) requires professional judgement. Gas turbines are inherently tonal, as such a 3dB penalty has been applied to account for this (shown as the Acoustic Feature Correction in Tables 45 and 47 below). The Proposed Scheme on the Power Station Site will operate more or less continuously so is unlikely to have intermittent characteristics; as such no penalty has been applied for this. Impulsive noise characteristics have also been discounted from this assessment, as the main noise producing elements would be from gas turbines which will produce a steady noise with no impulsive characteristics.

- 7.6.27. The noise levels used in the model for the major noise sources are as follows:

- The gas turbine and generator housing will be limited to a Sound Pressure Level of 85 dB(A) at 1 m. Each unit would have up to two gas turbines.
- The gas turbine and HRSG will be contained within a turbine building. Each unit would have up to two HRSGs.
- Stack terminations modelled at a height of 120 m will be limited to a Sound Power Level of 111 dB(A) at 1 m during open cycle, and 98 dB(A) at 1 m during combined cycle.
- Electrical power storage battery - Cooling infrastructure modelled at ground level with Sound Power Level of 85 dB(A)

7.6.28. Tables 45 and 47 show the BS4142 assessment summary for daytime and night time, taking account of the penalty or Acoustic Feature Correction, which, when added to the predicted noise level, gives the combined noise level, referred to as the Rating Level.

Table 45 - BS 4142 Assessment Summary - Daytime

Location	NSR 1	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6	NSR 7	NSR 8	NSR 9	NSR 10
Predicted Operational Noise Level, LAeq dB	39.8	33.4	30.2	37.8	34.9	9	29.8	31.8	35.4	26.4
Acoustic Feature Correction, dB	3	3	3	3	3	3	3	3	3	3
Rating Level, dB(A)	42.8	36.4	33.2	40.8	37.9	12	32.8	34.8	38.4	29.4
Daytime Background Noise Level, LA90 dB	35	32	32	35	35	35	43	49	43	42
Difference, dB	7.8	4.4	1.2	5.8	2.9	-23	-10.2	-14.2	-4.6	-12.6

7.6.29. The results of the daytime BS4142 assessment show that NSR locations 1 and 4 are predicted to experience a moderate noise impact as a result of the operation of the Proposed Scheme. In terms of effects these are within the SOAEL category.

7.6.30. Daytime noise levels at NSR locations 2, 3 and 5 are predicted to experience a minor noise impact as a result of the operation of the Proposed Scheme. In terms of effects these are within the LOAEL category.

7.6.31. Operational noise impact at NSR locations 6, 7, 8, 9 and 10 is predicted to be negligible, in terms of effects this is in the NOEL category.

7.6.32. The results of the daytime operational noise assessment identifies that secondary mitigation will be needed to meet appropriate noise levels, this is discussed further in Section 7.7.

OPERATIONAL ASSESSMENT – NIGHT TIME

7.6.33. The operational noise assessment for the night time (2300-0700) is based on two approaches, depending on the level of background noise measured at each NSR location (discussed in methodology Section 7.4.42).

7.6.34. The results of the ambient noise survey undertaken for the Propose Scheme have identified that the background noise levels at a number of locations are below 30 dB LAeq during the night time, which is considered to be below the threshold of suitability for the BS4142 methodology. Table 46 shows the night time background noise levels measured at each NSR location and, based on these measured levels, which assessment methodology will be used for the night time assessment.

Table 46 - Night Time Background Noise - Methodology Approach

Location	NSR 1	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6	NSR 7	NSR 8	NSR 9	NSR 10
Night Time Background Noise Level, LA90 dB	35	26	27	24	28	24	40	42	37	35
Assessment methodology to be used	BS 4142	BS 8233	BS 8233	BS 8233	BS 8233	BS 8233	BS 4142	BS 4142	BS 4142	BS 4142

7.6.35. Table 46 identifies that NSR locations 1, 7, 8, 9 and 10 are suitable for assessment using the BS4142 methodology. Table 47 provides a summary of the operational noise assessment for the night time at these NSR locations.

Table 47 - BS4142 Assessment Summary Night Time

Location	NSR 1	NSR 7	NSR 8	NSR 9	NSR 10
Predicted Operational Noise Level, LAeq dB	39.8	29.8	31.8	35.4	26.4
Acoustic Feature Correction, dB	3	3	3	3	3
Rating Level, dB(A)	42.8	32.8	34.8	38.4	29.4
Night time Background Noise Level, LA90 dB	35	40	42	37	35
Difference, dB	7.8	-7.2	-7.2	1.4	-5.6

7.6.36. Table 47 shows that during the night time NSR 1 is predicted to experience a moderate noise impact, in terms of effects this within the SOAEL category. NSR 9 is predicted to experience a minor noise impact, in terms of effects this is within the LOAEL category. The remaining

NSR locations 7, 8 and 10 are predicted to experience negligible impact, in terms of effects this also negligible and in the NOEL category.

- 7.6.37. For NSR locations 2, 3, 4, 5, and 6, which are below the threshold of 30 dB LAeq during the night time, the assessment is based on meeting with an external free field noise limit of 40 dB LAeq between the night time hours of 2300-0700. Table 48 provides a summary of the NSR locations assessed using the BS8233 method.

Table 48 - BS8233 Assessment Summary– Night Time

Location	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6
Night Time Background Noise Level, LA90 dB	26	27	24	28	24
Predicted Operational Noise Level, LAeq dB	33.4	30.2	37.8	34.9	9
Free field Noise Limit of 40 dB LAeq Achieved?	Yes	Yes	Yes	Yes	Yes

- 7.6.38. Table 48 shows that during the night time, operational noise from the Proposed Scheme is predicted to be below 40 dB LAeq at all NSR locations. NSR locations 2, 3, 4 and 5 are predicted with a minor impact, in terms of effects this is in the LOAEL category. NSR 6 is predicted with a negligible impact, in terms of effects this is also negligible and in the NOEL category.

OPERATIONAL NOISE AT ECOLOGICAL SENSITIVE RECEPTORS

- 7.6.39. Table 49 shows the predicted operational noise levels at the identified ecological sensitive receptor locations. It is noted that the Ecological receptor locations were not included in the baseline noise survey. As such, baseline noise levels at the closest measurement location to each Ecological receptor have been extrapolated to provide an estimated baseline.

Table 49 - Predicted Operational Noise Levels at Ecological Sensitive Receptors

Ecological Sensitive Receptor Locations	Predicted Operational Noise Level, dB(A)	Daytime Baseline Noise Level, LA90 dB	Night Time Baseline Noise Level, LA90 dB
NSR 11 - River Ouse 1	27.4	32	26
NSR 12 - River Ouse 2	28.5	32	26
NSR 13 - Disused Railway SINC 2	36.8	35	35
NSR 14 - Woodland 1	39.5	35	35
NSR 15 - Woodland 2	37.0	35	35
NSR 16 - Woodland 3	41.3	49	42
NSR 17 - Woodland 4	36.9	49	42

NSR 18 - Woodland 5	14.8	49	42
NSR 19 - Development Parcel E	39.9	35	24
NSR 20 - Development Parcel B	37.5	35	24
NSR 21 - Disused Railway SINC 1	33.5	32	26
NSR 22 - River Derwent 1	32.3	32	26
NSR 23 - River Derwent 2	31.6	32	26

7.6.40. The level of noise impact as a result of the operation of the Proposed Scheme at the ecological sensitive receptors is discussed in the Chapter 9.

OPERATIONAL TRAFFIC ASSESSMENT

7.6.41. Noise will be associated with operational traffic associated with the Proposed Scheme. Noise arising from additional vehicles will potentially increase noise levels from the local roads. However, it is currently understood that there will be no increase in road traffic entering or leaving the Power Station Site as a result of the Proposed Scheme, to levels of Power Station Site traffic already present. As such, there will be no change in operational traffic noise level as a result of the Proposed Scheme. It can therefore be concluded that noise impact due to operational traffic will be negligible.

DECOMMISSIONING

7.6.42. For decommissioning it is reasonable to assume the same equipment will be used to demolish the Proposed Scheme on the Power Station Site and the AGIs.

7.6.43. The identified demolition plant/equipment items used in this assessment are not recognised as sources of high levels of vibration. Indeed, even at a close distance of 10 m, PPV levels significantly less than 1 mm/s are generated. For example, a bulldozer would typically generate a PPV of approximately 0.6 mm/s and a 'heavy lorry on poor road surface' would generate a PPV of less than 0.1 mm/s. These values are well below limits at which cosmetic building damage becomes likely (15 mm/s). Over the distances involved between any decommissioning activities and sensitive receptors the vibration impact is predicted to be negligible. In terms of effects this level of impact is in the NOEL category.

7.6.44. It is understood that the gas pipeline would be left in-situ, as such the moderate noise impacts identified in the construction noise assessment would not be repeated.

7.6.45. The noise impact at sensitive receptors from all decommissioning activities is anticipated to be minor adverse. In terms of effects this level of impact is between the LOAEL and SOAEL thresholds.

7.7 MITIGATION AND ENHANCEMENT MEASURES

SECONDARY MITIGATION - CONSTRUCTION NOISE

- 7.7.1. The construction noise assessment has identified that effects at the SOAEL are predicted at NSR 1 (Wren Hall) and NSR 10 (residential properties at Willow Lane Drain). These adverse effects would be as a result of the construction of the gas pipeline only, there are no significant effects predicted from the construction activities associated with the construction on the Power Station Site. It is recommended that localised noise screens are used where ever practicable during the construction phase of the pipeline. The noise screens will be required to block the line of sight between the pipeline construction activities and NSR locations and should provide a noise reduction of up to 10dB. However, for the noise screens to be effective it is critical that they are suitably managed, maintained and positioned by the contractor undertaking the works. It is recommended that a requirement for compliance with this noise mitigation is written into the construction environmental management plan (CEMP) and agreed with SDC.

SECONDARY MITIGATION – OPERATIONAL NOISE

- 7.7.2. Drax Power Ltd will develop an appropriate noise mitigation strategy for the Proposed Scheme in consultation with SDC. The operational noise mitigation strategy will be reported in the ES.

7.8 RESIDUAL EFFECTS

CONSTRUCTION NOISE

- 7.8.1. With the use of localised acoustic screens for the construction activities associated with the pipeline, Table 50 presents the results after mitigation. It is noted that the construction noise assessment covers all anticipate activities for the Proposed Scheme and the Site Reconfiguration Works.

Table 50 - Predicted Noise Level at NSR from each Construction Area, LAeq dB

Construction Area	NSR 1	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6	NSR 7	NSR 8	NSR 9	NSR 10
Power Station Site	57.9	48.9	53.7	54.7	53.5	47.2	48.5	52.3	51.5	46.5
Unloading from Long Drax Jetty	50.4	56.1	48.0	47.1	45.9	39.5	40.5	44.3	46.0	42.5
Gas pipeline Option A	60.8	47.3	56.3	52.8	49.4	41.9	42.7	48.9	64.0	43.3
Gas pipeline Option B	60.8	47.3	56.3	52.8	49.4	41.9	42.7	48.9	64.0	61.6
Without Secondary Mitigation Total Noise Power Station Site + pipeline Option A	71.0	51.2	58.2	56.9	54.9	48.3	49.5	53.9	64.3	48.2

Construction Area	NSR 1	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6	NSR 7	NSR 8	NSR 9	NSR 10
With Secondary Mitigation Total Noise Power Station Site + pipeline Option A	61.0	51.2	58.2	56.9	54.9	48.3	49.5	53.9	64.3	48.2
Without Secondary Mitigation Total Noise Power Station Site + pipeline Option B	71.0	51.2	58.2	56.9	54.9	48.3	49.5	53.9	64.3	71.6
With Secondary Mitigation Total Noise Power Station Site + pipeline Option B	61.0	51.2	58.2	56.9	54.9	48.3	49.5	53.9	64.3	61.6

- 7.8.2. Table 50 shows that with the identified mitigation in place, noise impacts during the construction phase of the Proposed Scheme are reduced to minor at all NSR locations, in terms of effects this is in the LOAEL category.

OPERATIONAL NOISE

- 7.8.3. The residual effects for operational noise will be reported in the ES when the detailed operational noise mitigation strategy for the Proposed Scheme has been developed with SDC.

7.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR CONSTRUCTION ASSESSMENT

- 7.9.1. At the time of writing, the detailed construction programme is under development. As such, the preliminary construction noise assessment has been developed based on the following assumptions:
- Noise data for plant items and activities taken from BS 5228.
 - Calculations have assumed that all construction plant items would be operational at the same time and in the same location to provide a reasonable worst case noise prediction.
 - Ground absorption has not been considered in the construction noise calculations.
 - Screening effects have not been considered in the construction noise calculations.
 - It is noted that whilst all information is currently not available, the approach taken in this study has used professional judgement and experience of assessing previous similar schemes to enable a preliminary assessment at this stage.

OPERATIONAL NOISE MODEL

7.9.2. The noise levels used in the model for the gas turbine housing and stack terminations are as follows:

- The gas turbine and generator housing will be limited to a Sound Pressure Level of 85 dB(A) at 1m.
- Stack terminations (Single Cycle) modelled at a height of 120 m are limited to a Sound Power Level of 111 dB(A).
- Stack terminations (Combined Cycle) modelled at a height of 120 m are limited to a Sound Power Level of 98 dB(A).
- The Proposed Scheme has been modelled running at open cycle as a worst case noise approach.
- Eight stacks are included in the noise model, however, it is noted that only four stacks would be operational at any one time dependent on the plant operational mode (Single Cycle /Combined Cycle).

7.10 NEXT STEPS

7.10.1. The next steps to be included in the ES are set out, as follows:

- A full construction noise assessment based on the detailed construction programme and works phasing.
- A detailed construction traffic noise assessment.
- An updated noise model based on the finalised layout for the Proposed Scheme.

8 HISTORIC ENVIRONMENT

8.1 INTRODUCTION

- 8.1.1. This Chapter reports the preliminary assessment of the likely significant effects of the Proposed Scheme on Historic Environment and describes:
- Relevant policy, legislation and guidance.
 - Consultation undertaken to date.
 - The methodology for the cultural heritage assessment and identifies those elements that have been scoped out of the PEIR and EIA.
 - Potential effects of the construction phase, including impacts on Above and Below-Ground heritage assets and on the significance of Heritage Assets and their settings.
 - Potential effects of the operation (and maintenance) of the Proposed Scheme including impacts on the significance of Heritage Assets and their settings.
 - Potential effects of the decommissioning phase on the significance of Heritage Assets and their settings.
 - Proposed mitigation strategies for the effects on Above and Below-Ground Heritage Assets and the setting of Heritage Assets.

8.2 POLICY, LEGISLATION AND GUIDANCE

NATIONAL

NATIONAL POLICY STATEMENT (NPS)

- 8.2.1. The relevant National Policy Statements (NPS) include the NPS for Fossil Fuel Electricity Generating (EN-2), NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) and NPS for Electricity Networks Infrastructure (EN-5), however it is Section 5.8 in the Overarching National Policy Statement for Energy (EN-1)³⁰ that is most relevant to cultural heritage and contains the following paragraphs:
- 8.2.2. Paragraph 5.8.1 of this policy states that the construction, operation and decommissioning of energy infrastructure has the potential to result in adverse impacts on the historic environment. The following paragraph (5.8.2) defines the historic environment as including *"all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, landscaped and planted or managed flora. Those elements of the historic environment that hold value to this and future generations because of their historic, archaeological, architectural or artistic interest are called "heritage assets".*" The policy defines a "heritage asset" as any building, monument, site, place, area or landscape, or any combination of these. The sum of the heritage interests that a Heritage Asset holds is referred to as its Cultural Heritage Significance (this is different to significance of effect in EIA terms).
- 8.2.3. Paragraph 5.8.4 highlights that there *"are heritage assets with archaeological interest that are not currently designated as scheduled monuments, but which are demonstrably of equivalent significance. These include:*

³⁰ Section 5.8 Historic Environment in the Department for Energy and Climate Change's (July 2011) Overarching National Policy Statement for Energy (NPS EN-1).

- *Those that have yet to be formally assessed for designation;*
- *Those that have been assessed as being designatable but which the Secretary of State has decided not to designate; and*
- *Those that are incapable of being designated by virtue of being outside the scope of the Ancient Monuments and Archaeological Areas Act 1979."*

- 8.2.4. Furthermore, in paragraph 5.8.5 the policy considers that the *"absence of designation for such heritage assets does not indicate lower significance. If the evidence before the IPC [now the Secretary of State] indicates to it that a non-designated heritage asset of the type described in 5.8.4 may be affected by the proposed development then the heritage asset should be considered subject to the same policy considerations as those that apply to statutory designated heritage assets."*
- 8.2.5. In paragraph 5.8.6 the section concludes that the Secretary of State *"should also consider the impacts on other non-designated heritage assets, as identified either through the development plan making process (local listing) or through the IPC's [Secretary of State's] decision making process on the basis of clear evidence that the assets have a heritage significance that merits consideration in its decisions, even though those assets are of lesser value than designated assets."*
- 8.2.6. The policy considers (Paragraph 5.8.8) that as part of the applicant's assessment *"the applicant should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on the heritage asset. As a minimum the applicant should have consulted the relevant Historic Environment Record and assessed the heritage assets themselves using expertise where necessary according to the proposed development's impact."*
- 8.2.7. Paragraph 5.8.9 is concerned with Heritage Assets with an archaeological interest and states that the *"applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation"*. Where proposed development will affect the setting of a Heritage Asset, representative visualisations may be necessary to explain the impact.
- 8.2.8. Paragraph 5.8.10 states that the applicant should ensure that the extent of the impact of the proposed development on the significance of any Heritage Assets affected can be adequately understood from the application and supporting documents.
- 8.2.9. Paragraph 5.8.14 considers that *"There should be a presumption in favour of the conservation of designated heritage assets and the more significant the designated heritage asset, the greater the presumption in favour of its conservation should be. Once lost heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Loss affecting any designated heritage asset should require clear and convincing justification. Substantial harm to or loss of a grade II listed building park or garden should be exceptional. Substantial harm to or loss of designated assets of the highest significance, including Scheduled Monuments; registered battlefields; grade I and II* listed buildings; grade I and II* registered parks and gardens; and World Heritage Sites, should be wholly exceptional."*

- 8.2.10. Paragraph 5.8.15 states that *"Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset the greater the justification will be needed for any loss. Where the application will lead to substantial harm to or total loss of significance of a designated heritage asset the IPC [Secretary of State] should refuse consent unless it can be demonstrated that the substantial harm to or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm."*
- 8.2.11. Paragraph 5.8.16 concludes that *"Not all elements of a...Conservation Area will necessarily contribute to its significance. The policies set out in paragraphs 5.8.9 to 5.8.15 above apply to those elements that do contribute to the significance. When considering proposals the IPC [Secretary of State] should take into account the relative significance of the element affected and its contribution to the significance of...the Conservation Area as a whole."*
- 8.2.12. Paragraph 5.8.17 considers that *"Where the loss of significance of any heritage asset is justified on the merits of the new development, the IPC [Secretary of State] should consider imposing a condition on the consent or requiring the applicant to enter into an obligation that will prevent the loss occurring until it is reasonably certain that the relevant part of the development is to proceed."*
- 8.2.13. Paragraph 5.8.18 states that *"When considering applications for development affecting the setting of a designated heritage asset, the IPC [Secretary of State] should treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of, the asset. When considering applications that do not do this, the IPC [Secretary of State] should weigh any negative effects against the wider benefits of the application. The greater the negative impact on the significance of the designated heritage asset, the greater the benefits that will be needed to justify approval."*

NATIONAL PLANNING POLICY FRAMEWORK (NPPF), SECTION 12 CONSERVING AND ENHANCING THE HISTORIC ENVIRONMENT

- 8.2.14. The NPPF does not contain specific policies for NSIPs³¹, but the NPPF may be considered important and relevant to the Secretary of State's decision on an NSIP. In respect of heritage:
- 8.2.15. Policy 126: *"Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance. In developing this strategy, local planning authorities should take into account:*
- *The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation.*
 - *The wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring.*

³¹ NPPF 2012 Section 12 Paragraphs 126-141

- *The desirability of new development making a positive contribution to local character and distinctiveness.*
- *Opportunities to draw on the contribution made by the historic environment to the character of a place."*

- 8.2.16. Policy 127: *"When considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest."*
- 8.2.17. Policy 128: *"In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation."*
- 8.2.18. Policy 129: *"Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal."*
- 8.2.19. Policy 130: *"Where there is evidence of deliberate neglect of or damage to a heritage asset the deteriorated state of the heritage asset should not be taken into account in any decision."*
- 8.2.20. Policy 131: *"In determining planning applications, local planning authorities should take account of:*
- *The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation.*
 - *The positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality.*
 - *The desirability of new development making a positive contribution to local character and distinctiveness."*
- 8.2.21. Policy 132: *"When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional."*

- 8.2.22. Policy 133: *"Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:*
- *The nature of the heritage asset prevents all reasonable uses of the site.*
 - *No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation.*
 - *Conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible.*
 - *The harm or loss is outweighed by the benefit of bringing the site back into use."*
- 8.2.23. Policy 134: *"Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use."*
- 8.2.24. Policy 135: *"The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset."*
- 8.2.25. Policy 136: *"Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred."*
- 8.2.26. Policy 137: *"Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably."*
- 8.2.27. Policy 138: *"Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 133 or less than substantial harm under paragraph 134, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole."*
- 8.2.28. Policy 139: *"Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets."*
- 8.2.29. Policy 140: *"Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies."*
- 8.2.30. Policy 141: *"Local planning authorities should make information about the significance of the historic environment gathered as part of plan-making or development management publicly accessible. They should also require developers to record and advance*

understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted."

- 8.2.31. Planning Practice Guidance (PPG) has been published by the Department for Communities and Local Government alongside the NPPF, and is regularly updated, to provide guidance on the implementation of the planning policies. The section with reference to cultural heritage is entitled Conserving and Enhancing the Historic Environment and was revised in 2014. It provides guidance to NPPF paragraphs 126 to 141.
- 8.2.32. The PPG states *"in determining whether works... constitute substantial harm, an important consideration would be whether the adverse impact seriously affects a key element of ...heritage interest. ... The harm may arise from works to the asset or from development within its setting.*
- 8.2.33. *While the impact of total destruction is obvious, partial destruction is likely to have a considerable impact but, depending on the circumstances, it may still be less than substantial harm or conceivably not harmful at all. ... Similarly, works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all. However, even minor works have the potential to cause substantial harm".*

LOCAL POLICY

SELBY DISTRICT LOCAL PLAN (SDLP) 2005

- 8.2.34. The following saved policies relevant to the Proposed Scheme are from the Selby District Local Plan (adopted February 2005)³²;

ENV22

- 8.2.35. *Development will not be permitted where it would have a detrimental effect on the character, fabric or setting of a listed building.*

ENV25

- 8.2.36. *Development within or affecting a conservation area will be permitted provided the proposal would preserve or enhance the character or appearance of the conservation area, and in particular:*
 - *The scale, form, position, design and materials of new buildings are appropriate to the historic context;*
 - *Features of townscape importance including open spaces, trees, verges, hedging and paving are retained;*
 - *The proposal would not adversely affect the setting of the area of significant views into or out of the area: and*
 - *The proposed use, external site works and boundary treatment are compatible with the character and appearance of the area.*

³² SDLP Section 4: The Built Environment, 61-70

ENV27

- 8.2.37. *Where scheduled monuments or other nationally important archaeological sites or their settings are affected by proposed development, there will be a presumption in favour of their physical preservation. In exceptional circumstances where the need for the development is clearly demonstrated, development will only be permitted where archaeological remains are preserved in-situ through sympathetic layout or design of the development.*

ENV28

- 8.2.38. *Where development proposals affect sites of known or possible archaeological interest, the District Council will require an archaeological assessment/evaluation to be submitted as part of the planning application.*
- 8.2.39. *Where development affecting archaeological remains is acceptable in principle, the Council will require that archaeological remains are preserved in situ through careful design and layout of new development.*
- 8.2.40. *Where preservation in-situ is not justified, the Council will require that arrangements are made by the developer to ensure that adequate time and resources are available to allow archaeological investigation and recording by competent archaeological organisation prior to or during development.*

THE SELBY DISTRICT CORE STRATEGY LOCAL PLAN 2013

- 8.2.41. The policy in the strategic local plan relevant to the Proposed Scheme is Policy SP18 Protecting and Enhancing the Environment which states that;
- 8.2.42. *The high quality and local distinctiveness of the natural and manmade environment will be sustained by:*
- *Safeguarding and, where possible, enhancing the historic and natural environment including the landscape character and setting of areas of acknowledged importance.*
 - *Conserving those historic assets which contribute most to the distinct character of the District and realising the potential contribution that they can make towards economic regeneration, tourism, education and quality of life.*

LEGISLATION

ANCIENT MONUMENTS AND ARCHAEOLOGICAL AREAS ACT (AMAAA) 1979 (as amended)

The Ancient Monuments and Archaeological Areas Act 1979 (as amended)³³ largely relates to Scheduled Monuments. Section 61 defines sites that warrant protection due to their being of national importance as 'ancient monuments'. A monument is defined by the Act as *"any building, structure or work above or below the surface of the land, any cave or excavation; any site comprising the remains of any such building, structure or work or any cave or excavation; and any site comprising or comprising the remains of any vehicle, vessel or aircraft or other movable structure or part thereof."*

³³ Ancient Monuments and Archaeological Areas Act 1979, c.12. Available at: <http://www.legislation.gov.uk/ukpga/1979/46> (Accessed: 09 October 2017).

- 8.2.43. Section 61 of the Ancient Monuments and Archaeological Areas Act states that deliberate damage to a monument is a criminal offence and any works taking place within one would require Scheduled Monument Consent from the SoS.

THE INFRASTRUCTURE PLANNING (DECISIONS) REGULATIONS 2010

- 8.2.44. Regulation 3 of the Infrastructure Planning (Decisions) Regulations 2010 sets out the obligations on the Secretary of State when deciding applications for development consent under the Planning Act 2008 affecting listed buildings (or their settings), conservation areas or scheduled monuments (or their settings). The obligations are:
- (1) When deciding an application which affects a listed building or its setting, the Secretary of State must have regard to the desirability of preserving the listed building or its setting or any features of special architectural or historic interest which it possesses.
 - (2) When deciding an application relating to a conservation area, the Secretary of State must have regard to the desirability of preserving or enhancing the character or appearance of that area.
 - (3) When deciding an application for development consent which affects or is likely to affect a scheduled monument or its setting, the Secretary of State must have regard to the desirability of preserving the scheduled monument or its setting.

HEDGEROW REGULATIONS ACT 1997

- 8.2.45. The Hedgerow Regulations Act 1997³⁴ presents the following criteria for determining important hedgerows (archaeology and history). The hedgerow, or the hedgerow of which it is a stretch has existed for 30 years or more and satisfies at least one of the below criteria:
- (1) The hedgerow marks the boundary, or part of the boundary, of at least one historic parish or township and for this purpose "historic" means existing before 1850.
 - (2) The hedgerow incorporates an archaeological feature which is: (a) included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979; or (b) recorded at the relevant date in a Sites and Monuments Record (Now Historic Environment Record (HER)).
 - (3) The hedgerow is: (a) is situated wholly or partly within an archaeological site included or recorded as mentioned in point 2 above or on land adjacent to and associated with such a site; and (b) is associated with any monument or feature on that site.
 - (4) The hedgerow: (a) marks the boundary of a pre-1600 AD estate or manor recorded at the relevant date in a Sites and Monuments Record or in a document held at that date at a Record Office; or (b) is visibly related to any building or other feature of such an estate or manor.
 - (5) The hedgerow is: (a) recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Enclosure Acts; or (b) is part of, or visibly related to, any building or other feature associated with such a system, and

³⁴ Hedgerow Regulations Act 1997 <http://www.legislation.gov.uk/uksi/1997/1160/contents/made> (Accessed: 24 October 2017)

that system is (i) substantially complete; or (ii) is of a pattern which is recorded in a document prepared before the relevant date by a local planning authority, within the meaning of the Planning (Listed Buildings and Conservation Areas) Act 1990 (9), for the purposes of development control within the authority's area, as a key landscape characteristic.

GUIDANCE

8.2.46. In addition to compliance with the NPPF this desk-based assessment (DBA) has been compiled in accordance with the following professional standards and guidance:

- Chartered Institute for Archaeologists (CIfA) 2014, Standard and Guidance for Historic Environment Desk-based Assessment;
- Historic England, 2015, The Setting of Heritage Assets, Historic Environment Good Practice in Planning: 3.

8.3 SCOPING OPINION AND CONSULTATION

SCOPING OPINION

8.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to cultural heritage, and how those requirements should be addressed by the applicant, are set out below in Table 51.

Table 51 - Scoping Opinion Table

Section of Scoping Report	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of Response
7.4.2	Potential effects on archaeological resource within the curtilage of Drax Power Station during demolition and construction.	The Inspectorate agrees that in those areas of the site where existing built development is/has been located, buried archaeological remains are unlikely to be present. However, the Inspectorate also notes from section 4.8 of the Scoping Report that there is ' <i>...the potential for remains of both the Romano British and Medieval Periods to be present within the Site and the wider area</i> '. Therefore, the	Site investigations that include geophysics and trial trenching have been discussed with the Principal Archaeologist at NYCC

Section of Scoping Report	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of Response
		potential effects on archaeological resource outside the curtilage of the power station should be assessed for the construction phase. The overall extent and approach to the archaeological surveys should be discussed and agreed with the local authority's archaeological advisors. The approach should be fully justified in the ES.	
7.4.2	Effects on the setting of designated heritage assets during operation of the gas pipeline.	The Inspectorate agrees that the operation of the buried gas pipeline is not likely to result in significant effects on the settings of heritage assets and that this can be scoped out of the ES. However, any impacts on setting from above ground structures associated with the gas pipeline should be identified and assessed where relevant.	Noted – scoped out of the assessment.
7.4.3	Loss or disturbance to known or unknown archaeological assets during operation of the pipeline.	Section 7.4.3 of the Scoping Report notes that effects will only be assessed during construction. No reference is	Noted – scoped out of the assessment.

Section of Scoping Report	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of Response
		made to the operational phase. However, given the nature of the project and the operational phase, the Inspectorate does not consider there would be likely significant effects and agrees that operational effects to archaeological assets do not need to be assessed within the ES.	
7.4.4	Study Area	Section 7.4.4 of the Scoping Report states that the desk based assessment would consider the application site and the immediate area within a 300m study area; however, it is noted that some of the sensitive receptors identified in section 7.4.1 are outside of this radius (according to section 4.8). The Applicant is advised to give due consideration to the Scheduled Monuments and listed buildings in proximity to the application site. The Applicant should consider using the Zone of Visual Influence (ZVI) developed for the	The setting assessment was carried out up to 10 km as per the ZTV and mitigation proposals have been included in the PEIR.

Section of Scoping Report	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of Response
		Landscape and Visual Assessment (LVIA) to identify the potential extent of impacts on the settings of heritage assets. The Applicant's attention is also drawn to the comments of Historic England in this regard. The study area should be agreed with Historic England and the local authority and should be clearly identified and fully justified within the ES. The Inspectorate assumes that the proposed approach to the study area would apply in respect to the pipeline development as well as the proposed power station site.	
7.4.4	Archaeological investigations	The Scoping Report explains that a site visit will be undertaken for the purposes of identifying any previously unrecorded archaeological assets. It is unclear whether this would comprise solely a site walkover or other methods to identify unknown	Site investigations that include geophysics and trial trenching have been discussed with the Principal Archaeologist at NYCC (see Table 52 below)

Section of Scoping Report	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of Response
		archaeology (for example, geophysical survey, trial trenching). The Inspectorate advises the Applicant to discuss and agree appropriate methods with the relevant consultees and directs the Applicant to the comments of North Yorkshire County Council and Selby District Council in this regard. It should be clear in the ES how the results of the desk-based assessment have informed the overall approach to the assessment and in identifying the need for any further investigation.	
7.4.4	Valuation of assets	The ES should set out in clear terms how value is assigned for each type of heritage assets considered and confirm whether professional judgement and/or relevant guidance has been used. In determining value of heritage assets the Applicant should seek agreement with the local authority's heritage team and Historic England.	Addressed in PEIR

Section of Scoping Report	Applicant's Proposed Matter	Planning Inspectorate's Comments	Summary of Response
n/a	Written scheme of investigation (WSI)	The Scoping Report has not identified whether the Applicant intends to undertake further archaeological investigations post-consent (in line with any WSI). If the Applicant does intend to do so, this should be secured by a suitably worded DCO requirement and a draft version of any WSI should be appended to the ES and agreed with relevant statutory consultees.	Addressed in PEIR

CONSULTATION

- 8.3.2. Table 52 below summarises the consultation undertaken to date with the statutory consultees that include Historic England (HE) and NYCC.

Table 52 - Consultation Summary Table

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
Historic England (HE)	Scoping Opinion	The ES should consider the potential impacts which the proposals might have upon designated and Non-Designated Heritage Assets (including buildings, historic open spaces, historic features, and the wider historic landscape)	Effects on these assets have been considered in this PEIR and will be assessed in the ES

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
Historic England	Scoping Opinion	The setting assessment should utilise a Zone of Theoretical Visibility (ZTV) to inform the extent of the study area, and includes consultation with relevant stakeholders.	The setting assessment will extend up to 10 km as per the extent of the ZTV produced by the landscape team.
Principal Archaeologist (PA) at NYCC	24 October 2017 (telephone call followed by email)	The PA recommended that a programme of trial trenching within the Pipeline Study Area will follow the geophysical survey. The extent of this investigation will be agreed pending the survey results.	The geophysical survey is currently underway, the results of which will be appended to the ES. A programme of trial trenching is likely to follow the survey, the timing of which is pending discussions with WSP and NYCC.
Historic England	28 November 2017 (Meeting held at Drax Group Offices)	HE confirmed that the ZTV should be utilised in the setting assessment and that the most appropriate mitigation strategy for Drax Augustinian priory (SM 1016857) should comprise enhancement measures such as signage.	The setting assessment was carried out up to 10 km as per the ZTV and mitigation proposals have been included in the PEIR.

8.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA ASSUMPTIONS

8.4.1. The assessment conducted within this PEIR Chapter is based on the following assumptions:

- In terms of the assessment scenarios set out in Chapter 3, this assessment assumes:
 - The Site Reconfiguration Works will be carried out as part of the Proposed Scheme, although effects are likely to be the same in either scenario.
 - Construction impacts assume the repowering of both units, and operational impacts consider scenarios where one and both units are repowered.
 - In terms of construction transport, effects are considered to be the same for both scenarios.
 - In terms of the gas pipeline routes, both options are assessed and where effects are only referable to one option this is made clear.
 - In terms of scenarios relating to the electrical connection and air quality mitigation, the effects on Heritage Assets are the same for each scenario.
 - Construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.

8.4.2. The following methodology was applied to the current baseline:

- The DBA (at Appendix D.1) includes a narrative of the archaeological and historical context of the Site and its immediate environs. A search for Designated Assets was undertaken up to 10 km from the Site (wider study area) and for all types of assets up to 300 m (inner study area). It includes the results of a site visit which was undertaken for the purposes of identifying any previously unrecorded archaeological assets, the condition of known assets, and for assessing the effect of the Proposed Scheme on the settings of Designated Assets. In accordance with NPS EN-1 (paragraph 5.8.8) the DBA presents the significance of assets on which there is a predicted impact from the Proposed Scheme using the prescribed NPS EN-1 and NPPF heritage values (aesthetic, archaeological, architectural and historical).
- The potential impact on known and unknown Below-Ground and Above-Ground Heritage Assets during the construction, operation and decommissioning stages of the Proposed Scheme has been assessed and considers the following items: the gas receiving facility, the gas compressor building, the two pipeline options and associated construction laydown areas (detailed in Chapter 3). The assessment has been undertaken in line with the principles set out in NPPF, based on the combination of the potential value of any assets identified and the magnitude of harm.
- The potential impact on the setting of Heritage Assets during the construction, operation and decommissioning stages of the Proposed Scheme has been assessed and considers the following items: the Heat Recovery Steam Generator, the gas compressor building, the temporary crane on the jetty and the two pipeline options (detailed in Chapter 3). The assessment has been undertaken in accordance with HE's The Setting of Heritage Assets.

- Assessments against all other elements of the Proposed Scheme have been scoped out as it is considered that there will be no impact on Heritage Assets resulting from the construction, operation and decommissioning of these structures.
- The assessment presents a strategy for further proportionate site investigation where necessary; and outlines suitable mitigation measures, where possible at this stage, to avoid, reduce, or remedy adverse impacts.
- This assessment has not been applied to the future baseline as no change to the cultural heritage baseline is anticipated other than as a direct result of the proposed Scheme. The Scheduled Monuments have statutory protection which prohibits harm or loss. This also applies to Listed Buildings and Conservation Areas although minor changes are permissible to the less significant elements.
- The buried heritage (archaeological remains) within the inner study area will be removed and recorded prior to the construction phase of the Proposed Scheme.

STANDARDS AND GUIDANCE

- 8.4.3. In addition to compliance with NPS EN-1 and NPPF, the assessment has been compiled in accordance with professional standards and guidance which include: Standard and Guidance for Historic Environment Desk-based Assessment³⁵, ClfA Code of Conduct³⁶, Standards and Guidance for Consultancy Advice³⁷ and The Setting of Heritage Assets, Historic Environment Good Practice in Planning: 338.

DATA COLLECTION

- 8.4.4. The primary sources of information consulted and collated for the DBA include:

- The North Yorkshire Historic Environment Record.
- The National Heritage List for England.
- Historic mapping including the Ordnance Survey.
- Online academic sources.
- Easily available secondary sources.

SIGNIFICANCE

- 8.4.5. The PPG relates heritage significance to the value of a Heritage Asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Therefore Cultural Heritage Significance cannot be quantified and is presented as a statement of significance for those assets or their settings that will be subject to significant harm by the Proposed Scheme in Section 8 of the DBA (Appendix D.1). However, the value of the assets contributes to their sensitivity or importance which ranges from very high to uncertain and by using the criteria presented in Table 53 below, is it possible to quantify this.

³⁵ Chartered Institute for Archaeologists 2014

³⁶ Chartered Institute for Archaeologists 2014

³⁷ Chartered Institute for Archaeologists 2014

³⁸ Historic England 2015

Table 53 - Criteria Used to Determine Sensitivity or Importance of Heritage Assets

Cultural Sensitivity or Importance	Criteria
Very high (international)	World Heritage Sites. Sites of International Importance.
High (National)	Scheduled Monuments. All statutory designated Listed Buildings. Registered Parks and Gardens. Archaeological Notification Areas. Non-Designated Heritage Assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments. Conservation Areas containing buildings that contributes significantly to its historic character.
Medium (Regional/ County)	Archaeological sites and remains which contribute to regional research objectives. Historic buildings/structures that contribute to regional character either through architectural interest or a specific function. Assets which contribute to regional or cultural understanding of the area.
Low (Local/ Borough)	Locally listed buildings. Archaeological sites and remains with a local or borough interest for education, cultural appreciation. Assets which contribute to local or cultural understanding of the area.
Negligible (Neighbourhood)	Relatively numerous types of remains, of some local importance. Isolated findspots with no context. Areas in which investigative techniques have revealed no, or minimal, evidence of archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated.
Uncertain/Potential	Potential archaeological sites for which there is little information. It may not be possible to determine the importance of the site based on current knowledge. Such sites are likely isolated findspots, place names or cropmarks identified on aerial photographs.

Source adapted from Table 5.1 Volume 11 Section 3 Part 2 DMRB

- 8.4.6. Table 53 above is a general guide to the sensitivity or importance of Heritage Assets based on their value, and it should be noted that not all the qualities listed need be present in every case and professional judgement is used in balancing the different criteria and levels of importance or sensitivity.

POTENTIAL IMPACT

- 8.4.7. Both NPS EN-1 and the NPPF consider the level of Harm (see glossary) to the Cultural Heritage Significance of a Heritage Asset as the basis of assessing impact. Key impacts have been identified as those that would potentially harm the Cultural Heritage Significance

(heritage interests) of the Heritage Asset. Each potential impact will be determined as the predicted deviation from the baseline conditions, in accordance with current knowledge of the Site and the scheme options.

- 8.4.8. The magnitude, or scale of an impact is often difficult to define, but will be termed as substantial harm, moderate harm, slight harm, or negligible, as defined in Table 54 below.

Table 54 - Criteria Used to Determine the Level of Harm (NPPF) Showing Equivalent Magnitude of Impact (DMRB)

Level of Harm (Magnitude)	Description
Substantial harm (Major adverse)	
Complete destruction of the asset or its setting (i.e. total loss of significance); change to the asset or its setting resulting in loss to significance which fundamentally changes our ability to understand and appreciate the resource. Minor works which adversely impact on heritage values which are intrinsic to the significance of the asset/setting have the potential to cause substantial harm.	
Less than substantial harm (Moderate adverse to negligible):	
Harm (Moderate adverse)	Change to the asset or setting (some loss of significance) resulting in an appreciable change in ability to understand and appreciate the resource. Some heritage interest remains unaffected.
Slight harm (Minor adverse)	Change to the asset or setting (some loss of significance) resulting in a slight change in ability to understand and appreciate the resource. Overall, the heritage interests remain unaffected.
Negligible	Negligible change or no material changes to the asset or setting. No real change in our ability to understand and appreciate the resource. The heritage interests remain unaffected.

*Level of harm criteria taken from the NPPF and magnitude of impact criteria taken from DMRB

- 8.4.9. The interaction between the sensitivity or importance of the Heritage Asset (Table 53) and the potential scale of harm (Table 54) produces the significance of the effect. This may be calculated using the matrix shown in Table 55 below. The matrix, which derives from DMRB, is applied to support a balanced approach to determining the significance of the effects and has been widely adopted throughout the profession.

Table 55 - Significance of Effects Matrix

Sensitivity of the heritage asset		No change	Negligible	Minor adverse	Moderate adverse	Major adverse
	Very high	Neutral	Slight	Moderate /Large	Large/Very large	Very large
	High	Neutral	Slight	Slight/ Moderate	Moderate/ Large	Large/Very large
	Medium	Neutral	Neutral/ slight	Slight	Moderate	Moderate/ Large
	Low	Neutral	Neutral/ slight	Neutral/ slight	Slight	Slight/ Moderate
	Negligible	Neutral	Neutral/ slight	Neutral/ slight	Neutral/slight	Slight
	Significance of the Effect					

SETTING

- 8.4.10. The definition of setting used in this document is taken from the NPPF which states; setting is *‘the surroundings in which an asset is experienced. Its extent is not fixed and may change as the asset and its surrounding evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral’*. Historic England in their Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning 3 considers that the importance of setting lies in what it contributes to the significance of the Heritage Asset. This depends on a wide range of physical elements within, as well as perceptual and associational attributes pertaining to, the Heritage Asset’s surroundings.

METHODOLOGY

- 8.4.11. Historic England discusses several other general considerations including: cumulative change; change over time; appreciating setting; buried assets and setting; designated settings; setting and urban design; and setting and economic and social viability and has provided a stepped approach to the assessment and importance of setting to Heritage Assets. Following Step 1, which is the initial identification of the Heritage Assets as presented in Section 5 of Appendix D.1 the subsequent steps comprise:
- Step 2: Assessing whether, how and to what degree the settings make a contribution to the Cultural Heritage Significance of the Heritage Assets.
 - Step 3: Assessing the effect of a proposed development on the setting, and the resulting implications for the Cultural Heritage Significance of the Heritage Asset(s).
 - Step 4: Maximising enhancement and minimising harm (mitigation).
- 8.4.12. Step 2: In assessing whether, how and to what degree the settings make a contribution to the Cultural Heritage Significance of the Heritage Assets, a number of potential attributes of a setting are considered. These attributes are presented in Appendix A within Appendix D.1 The Historic Environment Desk-based Assessment.

8.4.13. The attributes of settings contribute to its sensitivity and its contribution to the significance of the asset. Table 56 presents examples of definitions for the sensitivity of settings but these should not be seen as exhaustive.

Table 56 - Step 2 – Definitions of Sensitivity for the Settings of Heritage Assets

Examples of sensitivity of settings	Contribution to significance of the asset
A defined setting that is contemporary with and historically and functionally linked with the Heritage Asset, may contain other Heritage Assets of international or national importance, has a very high degree of intervisibility with the asset and makes a very substantial contribution to both the significance of the Heritage Asset and to the understanding and appreciation of the significance of the asset.	Very substantial (very high)
Contemporary with and historically and functionally linked with the Heritage Asset, with minor alterations (in extent and/or character), has a high degree of indivisibility with the asset and which makes a substantial contribution to both the significance of the Heritage Asset and to the understanding and appreciation of the significance of the asset.	Substantial (high)
Contemporary with and/or historically and/or functionally linked with the Heritage Asset but with alterations which may detract from the understanding of the Heritage Asset, and/or with a moderate degree of indivisibility with the asset and/or which makes a moderate contribution to the significance of the Heritage Asset and/or a moderate contribution to the understanding and appreciation of the significance of the asset.	Moderate (medium)
Largely altered so that there is very little evidence of contemporaneous and/or historic and/or functional links with the Heritage Asset, and/or with a low degree of indivisibility with the asset and/or which makes a minor contribution to both the significance of the Heritage Asset and to the understanding and appreciation of the significance of the asset.	Minor (low)

8.4.14. Step 3: Having assessed the contribution of the setting to the Cultural Heritage Significance of the asset, the effect of a proposed development on the setting can be determined by consideration of the potential attributes of a proposed development affecting setting. These attributes are presented in Appendix A within Appendix D.1 The Historic Environment Desk-based Assessment.

8.4.15. Once the sensitivity and contribution of the setting has been determined and the potential attributes of a proposed development identified, the level of harm or beneficial impact of a

proposed development needs to be evaluated. The criteria for assessing the level of harm or benefit to the contribution of the setting.

Table 57 - Step 3 – Criteria for Assessment of the Level of Harm / Benefit on the Setting of a Heritage Asset

Level of Harm or Benefit	Guideline Criteria
Major beneficial	The contribution of setting to the cultural Heritage Asset's significance is considerably enhanced as a result of the development; a lost relationship between the asset and its setting is restored, or the legibility of the relationship is greatly enhanced. Elements of the surroundings that detract from the asset's Cultural Heritage Significance or the appreciation of that significance are removed.
Moderate beneficial	The contribution of setting to the cultural Heritage Asset's significance is enhanced to a clearly appreciable extent as a result of the development; as a result the relationship between the asset and its setting is rendered more readily apparent. The negative effect of elements of the surroundings that detract from the asset's Cultural Heritage Significance or the appreciation of that significance is appreciably reduced.
Minor beneficial	The setting of the cultural Heritage Asset is slightly improved as a result of the development, slightly improving the degree to which the setting's relationship with the asset can be appreciated.
Negligible	The setting of the cultural Heritage Asset is changed by the development in ways that do not alter the contribution of setting to the asset's significance.
Less than substantial harm:	
Minor harm (Minor Adverse)	The contribution of the setting of the cultural Heritage Asset to its significance is slightly degraded as a result of the development, but without adversely affecting the interpretability of the asset and its setting; characteristics of historic value can still be appreciated, the changes do not strongly conflict with the character of the site, and could be easily reversed to approximate the pre-development conditions.
Harm (Moderate Adverse)	The contribution of the setting of the cultural Heritage Asset to its significance is reduced appreciably as a result of the development. Relevant setting characteristics can still be appreciated but less readily.

Level of Harm or Benefit	Guideline Criteria
Substantial harm (Major Adverse)	The contribution of the setting of the cultural Heritage Asset to its significance is effectively lost or substantially reduced as a result of the development, the relationship between the asset and its setting is no longer readily appreciable.

- 8.4.16. Changes may occur to the settings of an asset that neither affect their contribution to the Cultural Heritage Significance of the asset, nor the extent to which it's Cultural Heritage Significance can be experienced. In such instances it will be considered that there is no impact upon setting.
- 8.4.17. The interaction of the sensitivity of the setting (Table 56) and the impact on the setting (Table 57) produce the significance of effect. This may be calculated by using the matrix shown in Table 58, which is included to allow a subjective assessment to be presented.

Table 58 - Significance of Effect Matrix for Adverse Impact on Setting

Contribution of the setting		No change	Negligible	Minor adverse	Moderate adverse	Major adverse
	Very high	Neutral	Slight	Moderate/ Large	Large/Very large	Very large
	High	Neutral	Slight	Slight/ moderate	Moderate/ large	Large/Very large
	Moderate	Neutral	Neutral/ slight	Slight	Moderate	Moderate/ large
	Low	Neutral	Neutral/ slight	Neutral/slight	Slight	Slight/ moderate
	Negligible	Neutral	Neutral/ slight	Neutral/slight	Neutral/slight	Slight
		Significance of the Effect				

8.5 BASELINE CONDITIONS

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 8.5.1. Section 4.2 in Appendix D.1 presents a summary of the archaeological and historical background of the local environs of the Proposed Scheme. This has been compiled in order to place the study area into a wider archaeological context. Section 4.3 in Appendix D.1 presents details on archaeological interventions within or near the Site Boundary.

GAZETTEER OF HERITAGE ASSETS

- 8.5.2. A total of 515 Heritage Assets are present within the inner and wider study areas. Of these 487 are Designated Heritage Assets including 19 Scheduled Monuments, 11 Grade I, 17 Grade II* and 440 Grade II listed buildings in addition to 13 Conservation Areas. Of the 15 Non-Designated Heritage Assets present, three lie within the Pipeline Study Area and

include the possible site of a Romano-British landing stage (MNY10103) and two historical field boundaries. The field boundaries are also within the Pipeline Study Area.

- 8.5.3. A gazetteer is presented in Tables 59 to 64 below, and the locations of the Non-Designated Heritage Assets are presented on Figure 8.1 and the Designated Heritage Assets including conservation areas are presented on Figure 8.2. For ease of presentation, the Grade II buildings have been grouped according to location and the full list of these assets is presented in Appendix D.1.

Table 59 - Scheduled Monuments Within the 10 km Wider Study Area

HE Ref Number	Name	Archaeological / Historical Period
1004181	The Abbot's Staithes	Date Unknown
1005210	Wressle Castle	Late Medieval
1005226	Howden Church, ruined portions	Date Unknown
1005227	Bishop's Manor House	Date Unknown
1015304	Moated site at Manor Farm, Portington	Late Medieval
1015307	Kings Manor moated site, 450 m south of Little London	Late Medieval
1016857	Drax Augustinian priory	Late Medieval
1017455	Castle Hill moated site, 350 m south of St Peter and St Paul's Church	Late Medieval
1017460	Thorpe Hall moated monastic grange	Late Medieval
1017485	Scurff Hall moated site	Late Medieval
1017581	Warren Hall moated site	Late Medieval
1017822	Roman fort 600 m west of Roall Hall	Romano-British
1017823	Hall Garths moated site, immediately south of St Mary's Church	Late Medieval
1018403	Medieval settlement and early post-medieval garden earthworks around Barlow Hall	Multi-period
1018601	Round barrow on Skipwith Common, 810 m south of Skipwith Church	Prehistoric
1018602	Round barrow on Skipwith Common, 690 m north west of Horseshoe Pond	Prehistoric
1018603	Danes Hills square barrow cemetery, 300 m south of Adamson Farm	Prehistoric
1018604	Round barrow on Skipwith Common, 800 m south east of Adamson Farm	Prehistoric

HE Ref Number	Name	Archaeological / Historical Period
1018605	Round barrow on Skipwith Common, 830 m south east of Adamson Farm	Prehistoric

Table 60 - Grade I Listed Buildings within the 10 km Wider Study Area

HE Ref Number	Name	Archaeological / Historical Period
1083170	Ruins of Wessle Castle	Late Medieval
1083323	Cowick Hall	Multi-period
1132537	Church of St Wilfred	Late Medieval
1132591	Church of St Mary and St Germain (Selby Abbey)	Multi-period
1148397	Church of St Peter and St Paul	Multi-period
1148462	Church of St Mary the Virgin	Late Medieval
1160491	Minster Church of St Peter and St Paul and the Chapter House	Late Medieval
1161899	Church of St Lawrence	Late Medieval
1173983	Camblesforth Hall	Post-Medieval
1295955	Carlton Towers	Post-Medieval
1310699	Church of All Saints	Late Medieval

Table 61 - Grade II* Listed Buildings within the 10 km Wider Study Area

HE Ref Number	Name	Archaeological / Historical Period
1083181	The Bishop's Manor	Multi-period
1083182	The Langley Archway	Late Medieval
1083214	Boat House on south side of South Dock	Industrial Period
1083235	Knedlington Old Hall	Post-Medieval
1103307	Goole Hall	Industrial Period
1132559	Corunna House	Post-Medieval
1148399	Church of St Mary (Roman Catholic)	Industrial Period
1148401	The Red House	Industrial Period
1148486	Holmes House	Post-Medieval

HE Ref Number	Name	Archaeological / Historical Period
1160360	Church of St Mary	Multi-period
1160523	Howden Hall	Multi-period
1160652	The Bakehouse at Wressle Castle approximately 30 M north of ruins of Wressle Castle	Late Medieval
1167663	Abbots Staith buildings	Multi-period
1203298	Saltmarshe Hall	Modern Period
1295734	Church of St Paul	Industrial Period
1310687	Lowther Hotel	Industrial Period
1346710	Railway Swing Bridge over River Ouse	Industrial Period

Table 62 - Grade II Listed Buildings Within the 10 km Wider Study Area Presented by Location

Location	Number of Grade II listed buildings
Cliffe	13
Laxton	4
Howden	61
Spaldington	1
Wressle	7
Bubwith	14
Goole	27
Hook	2
Asselby	9
Barmby on the Marsh	10
Kilpin	2
Snaith and Cowick	50
Rawcliffe	9
Swinefleet	5
Eastrington	1
Reedness	3
Airmyn	6
Goole Fields	7

Location	Number of Grade II listed buildings
Pollington	5
Barlow	1
Thorpe Willoughby	2
Selby	144
Carlton	10
Brayton	3
Temple Hirst	2
Hensall	3
Hemingbrough	15
Barlby with Osgodby	6
Sykehouse, Doncaster	4
Thorne, Doncaster	2
Gowdall	3
Chapel Haddlesey	2
Drax	1
Newland	2
Kellington	2
Wistow	1
Gateforth	2
Burn	1
Camblesforth	1
West Haddlesey	1
Balne	1

Table 63 - Conservation Areas Within the 10 km wider Study Area

Conservation Area
Armoury Road and Brook Street Leeds Road Millgate Selby Town Brayton Hemingbrough Howden Airmyn

Conservation Area

Goole Town
Goole Hook Road
Rawcliffe
Snaith

Table 64 - Non-designated Heritage Assets Within the 300 m Inner Study Area

HER Ref Number	Name	Sensitivity	Archaeological / Historical Period	Inside or Outside of the Scheme Area
MNY10103	Hawday Lane, possible Roman Landing Stage	Regional	Romano-British	Inside
MNY10121	Rusholme Grange (Place Name Evidence)	Local	Late Medieval	Outside
MNY10085	Ha Ha feature to the South of Scurff Hall	Local	Industrial	Outside
MNY10091	Bank (Earthwork)	Local	Modern	Outside
MNY10104	Rusholme Hall	Local	Late Medieval	Outside
MNY10105	Ridge and Furrow South of Rusholme Hall	Regional	Late Medieval	Outside
MNY10089	Ridge and Furrow North of Scurff Hall	Regional	Unknown	Outside
MNY10090	Ridge and Furrow South of Scurff Hall	Regional	Unknown	Outside
MNY24803	Site of Drax Villa, Scurff Hall	Regional	Romano-British	Outside
MNY10116	Boundary Ditch, Long Drax	Local	Modern	Outside
MNY10115	Field Boundary, Barlow	Local	Modern	Outside
MNY10069	Field boundaries west of Drax Abbey Farm	Local	Unknown	Outside

HER Ref Number	Name	Sensitivity	Archaeological / Historical Period	Inside or Outside of the Scheme Area
MNY10070	Fishpond south of Drax Abbey Farm	Local	Unknown	Outside
N/A	Field boundary	Local	Unknown	Inside
N/A	Field boundary	Local	Unknown	Inside

8.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

IMPACTS DURING CONSTRUCTION

BELOW-GROUND HERITAGE ASSETS

- 8.6.1. Excavations associated with the instalment of pipeline Options A and B, the GRF, the gas compressor building and associated construction laydown areas are likely to disturb hitherto unknown Below-Ground Heritage Assets associated with the Prehistoric Period onwards.
- 8.6.2. All direct impacts on Below-Ground Heritage Assets will be permanent and irreversible. Works that have the potential to impact upon any remains present include ground levelling, topsoil stripping, the removal of existing road surfaces, construction of temporary compounds and haulage roads, and the installation of infrastructure items such as lighting columns, manholes, culverts or chambers, utilities cables, drainage pipes, balancing ponds and so forth. Any form of landscaping, including the planting of trees for screening, also has the potential to disturb buried archaeological remains.
- 8.6.3. Due to previous ground disturbance, no impacts are anticipated for construction related works proposed for within the curtilage of the Existing Drax Power Station Complex.
- 8.6.4. One recorded Heritage Asset is located in the Pipeline Study Area and comprises a possible Romano-British landing stage (MNY10103). As the predicted course of this asset follows the line of Hawday Lane which leads to an extant farmhouse, it is unlikely that this asset will be disturbed as a result of the construction works associated with the construction of the pipeline at this location.
- 8.6.5. A Phase 1 geophysical survey undertaken over part of the Pipeline Study Area has produced positive results for archaeology in the east end of pipeline Option B and initial interpretations suggest these results are evidence for a prehistoric settlement. Archaeological excavations undertaken as part of the Asselby to Aberford Pipeline project in the same area found clear evidence for an Iron Age / Romano British settlement which included enclosures, ditch, pits and postholes. Any ground disturbance associated with the instalment of the pipeline and associated structures such as PIG traps are likely to result in complete or partial loss of this potential Heritage Asset.
- 8.6.6. Neither the importance nor the Cultural Heritage Significance of hitherto unknown Below-Ground Heritage Assets can be determined prior to intrusive investigation such as trial trenching, which will be undertaken prior to construction.
- 8.6.7. The geophysical survey over the remaining areas within the Pipeline Study Area and the proposed GRF and gas compressor building is ongoing and therefore the results cannot be

presented at this time. An interim statement of results of the archaeological survey will be presented within the ES.

Table 65 - Significant Effects on Potential Below-Ground Heritage Assets during Construction

HA Name	Sensitivity of asset	Magnitude of Impact and Level of Harm	Significance of effect
Hitherto unknown Heritage Assets	Potentially regional (Medium)	Major Adverse	Large

ABOVE-GROUND HERITAGE ASSETS

- 8.6.8. Two field boundaries that are likely to be protected under the Hedgerows Regulations Act 1997 (Section 6.5) are present in the Pipeline Study Area. The boundaries have been identified on 1853 ordnance survey mapping and therefore may be part of ‘an integral part of a field system pre-dating the Enclosure Acts’³⁹. The boundaries comprise hedge-lined drains, the first is located at the eastern terminus of pipeline B and the second is parallel to Carr Lane where pipeline Options A and B join in the west (Figure 8.1). There is potential that ground moving activities associated with excavation of the pipeline trench will result in the loss of sections of these boundaries.

Table 66 - Significant Effects on Above-Ground Heritage Assets during Construction

HA Name	Sensitivity of asset	Magnitude of Impact and Level of Harm	Significance of effect
Historic field boundaries	Local (low)	Major Adverse	Moderate

IMPACTS DURING CONSTRUCTION

THE SETTING OF HERITAGE ASSETS

- 8.6.9. It is anticipated that the settings of Scurff Hall Moated Site (SM1017485), the Grade I listed Church of St Peter and St Paul (LB1148397) and associated cross base and shaft (LB1174116) will be slightly harmed during the construction period. The setting assessments for these assets are presented below.
- 8.6.10. Other elements during construction such as introduction of a temporary crane on the jetty, or temporary highways closures or removal of street furniture to enable the delivery of building materials are not anticipated to have an impact on the setting of Heritage Assets due to the distance and intervening development between these elements of the Proposed Scheme and the assets.

³⁹ Hedgerow Regulations Act 1997, Part 2

DRAX AUGUSTINIAN PRIORY (SM1016857)

- 8.6.11. A proposed construction laydown and/or contractor car parking area will be located to the south of the priory which will require the removal of part of a block of trees that contributes to the boundary division between the immediate setting of the asset and Drax power station. A belt of trees will be retained during the construction period that will maintain this soft boundary. The impact on the setting of this asset during the construction period is therefore considered to be negligible.

SCURFF HALL MOATED SITE (SM1017485)

- 8.6.12. This 13th century moated manor house comprises below-ground and earthwork remains which partially lie beneath an extant 18th century hall and associated farm buildings. The majority of moated sites in England served as prestigious aristocratic and seigneurial residences with the provision of a moat intended as a status symbol rather than a practical military defence. The asset is part of a group of nationally significant assets in the study area that were established in the Late Medieval Period and provide a good understanding of the use of the landscape during this time. These associated assets include the Grade I listed Church of St Peter and St Paul (LB1148397), Drax Augustinian Priory (SM1016857) and Castle Hill Moated Site (SM1107455).
- 8.6.13. The limits of the scheduled area are clearly defined by trees, hedgerows and Rusholme Lane, a single track asphalt road which follows a meandering course through an expanse of rural farmland. Through its definition in the landscape, the scale of the manor and its once elite status as a vill can be appreciated. Farmland envelops the monument creating the agricultural scene which dominates this setting. Power-related structures in the area are prevalent and include Rushholme Windfarm immediately east of the asset and high voltage electricity towers that string out across the flat terrain. Drax Power Station can be seen from the southern approach along Rusholme Lane, however views are long distance and as a consequence, this development does not dominate the wider setting. Rusholme Lane terminates at a holiday cottage and because of this there is a significant absence of through traffic which creates a relatively tranquil environment, although this changes during harvest time.
- 8.6.14. The addition of the HRSG stacks to the power station as part of the Proposed Scheme will act cumulatively with the existing cooling towers to create an increased massing of structures related to the power industry, as described in Chapter 10.
- 8.6.15. It is anticipated that during the construction period of pipeline Option A, construction related traffic is likely to use a route between the work area and the A645 via Rusholme Lane which also provides access to the scheduled monument. The introduction of construction related noise, lighting and movement will reduce the degree of tranquillity but not to the extent that it reduces the appreciation of the moated site. Any effects will be temporary and will last only for the duration of the pipeline instalment period.

ASSESSMENT

- 8.6.16. The moated site resides in a setting that largely retains its agricultural characteristics and has a strong sense of tranquillity and seclusion. The asset has a contemporary link to other nationally important assets in the wider area (Church of St Peter and St Paul (LB1148397), Drax Augustinian Priory (SM1016857) and Castle Hill Moated Site (SM1107455). These elements make a substantial (major) contribution to the Cultural Heritage Significance of the asset.

- 8.6.17. The addition of the stacks to the power station is unlikely to have a significant impact on the setting due distance and intervening agricultural land. It is anticipated that construction related impacts associated with the instalment of pipeline Option A will temporarily degrade the tranquillity of the setting but without adversely affecting the interpretability of the asset. It is therefore considered there will be minor harm (minor adverse) to the setting. The significance of the effect on the setting of the asset is considered to be slight.

THE GRADE I LISTED CHURCH OF ST PETER AND ST PAUL (LB1148397) AND THE GRADE II LISTED CROSS BASE AND SHAFT (LB1174116)

- 8.6.18. The Late Medieval period Church of St Peter and St Paul (LB1148397) and associated graveyard containing the cross base and shaft (LB1174116) are located within the heart of the village of Drax. The village itself includes a number of historic buildings, which coupled with the church, provide a sense of place and historical continuity. The curtilage of the church is defined by a brick boundary wall and a line of tall mature trees which provides seclusion, privacy and peacefulness when inside. The cooling towers of the Existing Drax Power Station Complex can be seen from the front of the church looking west and appear in stark contrast to the low lying and rural feel townscape. Heavy goods vehicles associated with the power station pass regularly through the village and in front of the church, creating a noisy dynamic that detracts from the appreciation of the church and the town in which it is situated.
- 8.6.19. The asset is part of a group of nationally significant assets in the wider study area that were established in the Late Medieval period and provide a good understanding of the use and appearance of the landscape during this time. These associated assets include the Drax Augustinian Priory (SM1016857), Scurff Hall Moated Site (SM1017485) and Castle Hill Moated Site (SM1107455). There is intervisibility from the approach to Castle Hill site and the spire of St Peter and St Paul which physically demonstrates the interconnection between secular and religious life in this period.
- 8.6.20. The addition of exhaust stacks to the power station as part of the Proposed Scheme will act cumulatively with the existing cooling towers to create a dense complex of structures related to the power industry. Construction traffic associated with the Proposed Scheme is likely to pass through Drax and will temporarily act cumulatively with the existing traffic leading to congestion and associated noise.

ASSESSMENT

- 8.6.21. The church and cross base are part of the historic townscape of Drax and have played a significant role shaping the structure of the community here since the Late Medieval period. The setting of these assets therefore makes a substantial (high) contribution to their significance.
- 8.6.22. It is considered that the contribution of the setting of LB1148397 and LB1174116 to their significance will only be slightly degraded as a result of the Proposed Scheme without adversely affecting the interpretability of the assets and their settings and characteristics of historic value can still be appreciated. It is considered there will be minor harm (minor adverse) to the setting although not substantial harm. The significance of the effect on the setting of the asset is considered to be slight.

IMPACTS DURING OPERATION

THE SETTING OF HERITAGE ASSETS

- 8.6.23. Impacts during operation are associated with harm to the settings of Designated Heritage Assets and have been assessed against the introduction of the Heat Recovery Steam Generators (HRSGs), the GRF and the gas compressor building, as part of the Proposed Scheme. The setting assessment has considered the two scenarios in terms of the number of units to be repowered and therefore the scale and size of the HRSGs.
- 8.6.24. Scenario 1 assumes the repowering of two existing coal-powered generating units (units X and Y, shown in Figure 3.3), which will include up to four HRSGs that will feature a total of four flues and four exhaust stacks. The flues and stacks will measure up to 120 m in height and will appear slightly taller than the 12 existing cooling towers that measure 115 m. Although the new stacks will be considerably smaller in diameter than the cooling towers, they will increase the massing of the Existing Drax Power Station Complex which already dominates the wider landscape and is in stark contrast to the expanse of low-lying farmland in which it is located.
- 8.6.25. Scenario 2 is based on the repowering of a single unit (that will include two HRSGs featuring a total of two flues and two exhaust stacks). It is considered there will be a negligible difference between the effects between Scenario 1 and Scenario 2 on the setting Heritage Assets in the 10 km wider study area. Scenario 2 would introduce a smaller mass of development and fewer structures compared to Scenario 1, however the four stacks (rather than eight) would protrude above the horizontal lines created by the tops of the cooling towers, and this would still form a strong contrast to the existing mass which is coherent in form. The stacks would visually “clutter” the top of the towers resulting in a slightly discordant view from certain angles.
- 8.6.26. In both scenarios, the proposed HRSGs will be located within the curtilage of the Existing Power Station Complex and will therefore not increase its extent. The diameters of the stacks will be considerably less than the existing cooling towers, which will remain the dominant structures in the landscape when viewed close up and at a distance. There will be no introduction of movement or changes in land use or open spaces that will be visible from any Designated Heritage Asset. The predicted impacts of the two scenarios are presented by types and groups of assets below.
- 8.6.27. The proposed GRF and the gas compressor building are anticipated to be low-lying and will therefore not be seen or heard from any Designated Heritage Asset. There will therefore be no change to the setting of any Designated Heritage Assets resulting from the introduction of these structures to the landscape.

SCHEDULED MONUMENTS

- 8.6.28. Out of the 19 Scheduled Monuments (SMS) identified in the 10 km wider study area, the setting of 13 SMS will be subject to no change as a result of the Proposed Scheme as the HRSG stacks will not be visible. These Heritage Assets are presented in tabulated form in Appendix D.1.
- 8.6.29. It is considered that a total of four scheduled monuments will be subject to a negligible level of harm as a result of the Proposed Scheme. Although the HRSG stacks are likely to be visible, the Proposed Scheme will not alter the contribution of setting to the Heritage Assets’ significance for the reasons presented for both scenarios above. These Heritage Assets are

presented in tabulated form in Appendix D.1. Those scheduled monuments that are likely to be subject to a level of harm greater than negligible have been assessed in detail below:

DRAX AUGUSTINIAN PRIORY (SM1016857)

- 8.6.30. The 12th century Drax Augustinian Priory (SM1016857) mostly survives below-ground and lies partially beneath Drax Abbey Farm. The asset is part of a group of nationally significant assets in the wider study area that were established in the Late Medieval period which can provide a good understanding of the use and a picture of the landscape during this time. The associated assets include the Grade I listed Church of St Peter and St Paul (LB1148397), Castle Hill Moated Site (SM1107455) and Scurff Hall Moated Site (SM1017485). The Priory, which originally comprised a church, cloister, infirmary, refectory, prior's chamber and dormitory, is situated on an island of high ground and sub-divided by a land drain connecting Carr Dyke and Lendall Drain. It has been suggested that the earlier line of Carr Dyke, which is the drain that lies just to the west of Drax Abbey Farm, may be the 'Karregote' mentioned in a document of 1410. Drainage works have converted the marsh into farmland, with the original island granted to the Augustinians now standing around 3 m to 4 m above the surrounding area.
- 8.6.31. Its immediate setting comprises a cluster of arable fields that intentionally respect the boundaries of SM and in doing so serve to protect its integrity. Although any remnants of field systems that are contemporary with the asset have since been replaced by modern fields, the use of land that borders the priory remains agricultural. Broken lines of tall mature trees within the SM provide some screening from the wider landscape, however far reaching views of the flat countryside are achieved in most directions.
- 8.6.32. The Priory is located immediately north of Drax Power Station, and the existing cooling towers dominate views north and restrict long distance views. A small plantation of trees on land thought to be the location of an old asbestos site helps to create a degree of visual separation between the Existing Drax Power Station Complex and the farmland in which the monument lies (Image 2). East of the priory is a large extraction site that is clearer visible and audible from the asset. At present, the asset cannot be easily interpreted by the public as there are no information boards, signposts or public access to it.
- 8.6.33. The addition of HRSG stacks will act cumulatively with the existing cooling towers to increase the massing of the Existing Drax Power Station Complex. A belt of trees will be retained during and following construction which will continue to provide screening between the energy infrastructure and farmland which forms part of the immediate setting of the Priory. Should the Carbon Capture Storage (CCS) facility become viable this would result in the loss of the retained belt of trees. In this event further landscape mitigation such as tree planning would be considered at the time an application for any CCS facility is submitted, and could be provided to maintain a soft boundary between the Power Station Site and the asset.

ASSESSMENT

- 8.6.34. The Priory resides in a setting that has been largely altered by large-scale infrastructure and modern field systems. Although the asset is historically linked to nationally important assets in the area, there is no intervisibility between them. The presence of the Existing Drax Power Station Complex and associated development in the immediate area detracts from the understanding of the asset as an isolated priory set in a rural context. It is therefore considered that the setting makes a minor contribution to the significance of the asset.

- 8.6.35. The contribution of the setting of the cultural Heritage Asset to its significance will be slightly degraded as a result of the Proposed Scheme. It is considered there will be minor harm (minor adverse) to the setting. The significance of the effect on the setting of the asset is considered to be slight.

GRADE I LISTED BUILDINGS

- 8.6.36. Of the 11 Grade I listed buildings identified in the 10 km wider study area, the settings of six will be subject to no change as a result of the Proposed Scheme as the HRSG stacks will not be visible. These Heritage Assets are presented in tabulated form in Appendix D.1.
- 8.6.37. Five Grade I listed buildings will be subject to a negligible level of harm as a result of the Proposed Scheme. Although the HRSG stacks are likely to be visible, the Proposed Scheme will not alter the contribution of setting to the Heritage Assets' significance for the reasons presented in Section 8.5. These Heritage Assets are presented in tabulated form in Appendix D.1.

GRADE II* LISTED BUILDINGS

- 8.6.38. Of the 17 Grade II* listed buildings identified in the 10 km wider study area, the settings of 15 will be subject to no change as a result of the Proposed Scheme as the HRSG stacks will not be visible. These Heritage Assets are presented in tabulated form in Appendix 6.1.
- 8.6.39. Two Grade II* listed buildings will be subject to a negligible level of harm as a result of the Proposed Scheme. Although the HRSG stacks are likely to be visible, the Proposed Scheme will not alter the contribution of setting to the Heritage Assets' significance for the reasons presented in Section 8.5. These Heritage Assets are presented in tabulated form in Appendix D.1.

GRADE II LISTED BUILDINGS

- 8.6.40. Out of the 440 Grade II listed buildings identified in the 10km wider study area, the settings of 408 will be subject to no change as a result of the Proposed Scheme as the HRSG stacks will not be visible. These Heritage Assets are presented in tabulated form in Appendix D.1.
- 8.6.41. It is considered that a total of 32 Grade II listed buildings will be subject to a negligible level of harm as a result of the Proposed Scheme. Although the HRSG stacks are likely to be visible, the Proposed Scheme will not alter the contribution of settings to the Heritage Assets' significance for the reasons presented in Section 8.5. These Heritage Assets are presented in tabulated form in Appendix D.1.

CONSERVATION AREAS

- 8.6.42. Of the nine Conservation Areas present in the 10 km wider study area, the setting of seven will be subject to no change as a result of the Proposed Scheme as the HRSG stacks will not be visible. These Heritage Assets are presented in tabulated form in Appendix D.1.
- 8.6.43. It is considered that a total of two conservation areas will be subject to a negligible level of harm as a result of the Proposed Scheme. Although the HRSG stacks are likely to be visible, the Proposed Scheme will not alter the contribution of setting to the Heritage Assets' significance for the reasons presented in Section 8.5. These Heritage Assets are presented in tabulated form in Appendix D.1.

IMPACTS DURING DECOMMISSIONING

- 8.6.44. It is not considered that there will be physical impacts on Below-Ground Heritage Assets or on the settings of Heritage Assets during this phase. Any Below-Ground Heritage Assets will have been impacted during the construction phase of works with no further impact anticipated during the decommissioning phase.

INVESTIGATIONS

POTENTIAL BELOW-GROUND HERITAGE ASSETS

- 8.6.45. Non-intrusive archaeological investigation in the form of a geophysical survey is currently underway within the Pipeline Study Area, and the areas within the Power Station Site where the Heat Recovery Steam Generator and the gas compressor building will be located. In accordance with consultation with the PA at NYCC, a programme of archaeological trial trenching will follow the geophysical survey. The PA has recommended that the trial trenching should be undertaken pre-submission as part of the ES. It is intended that archaeological trial trenching will take place prior to the commencement of construction works, further to the necessary access arrangements having been agreed.
- 8.6.46. As discussed in Section 8.4, there is strong evidence for an Iron Age/Romano British settlement at the east end of the pipeline Option B. If trial trenching in this area exposed remains associated with high status buildings or features, the scheme design would avoid locating facilities at these locations.
- 8.6.47. An archaeological watching brief will be required during any pre-construction geotechnical ground investigations trial pits / trenches.

8.7 MITIGATION AND ENHANCEMENT MEASURES

POTENTIAL BELOW-GROUND HERITAGE ASSETS

- 8.7.1. The results of the geophysical survey and archaeological trial trenching investigations described above will be used to devise a suitable programme of archaeological mitigation where applicable. Mitigation measures will be devised in consultation with the PA at NYCC. Although this cannot be determined prior to the results of the trial trenching mitigation for well-preserved, extensive archaeological remains would take the form of an open-area excavation or similar with subsequent post-excavation assessment and analysis through to publication and dissemination of the results.
- 8.7.2. Current legislation draws a distinction between archaeological remains of national or international importance and other remains considered to be of lesser importance. Those perceived to be of international or national importance may require preservation in situ, whilst those of lesser importance may undergo archive recording, where they are of Regional/County or Local/Borough importance. If trial trenching within the footprint of pipeline Option B exposed remains associated with high status buildings or features, the scheme design would avoid locating facilities at these locations, where possible.
- 8.7.3. No physical impacts are expected upon any known nationally important Below-Ground Heritage Assets as a result of the Proposed Scheme.

ABOVE-GROUND HERITAGE ASSETS

- 8.7.4. The Pipeline Study Area contains a number of field boundaries that fall under the Hedgerows Regulations Act 1997 (Section 6.5). These include a boundary at the eastern terminus of pipeline Option B and the fragmented remains of field boundaries where pipeline Options A and B join in the west. It is likely that the DCO include powers for allow

the removal of these sections of hedgerows and, therefore archaeological mitigation will be devised in consultation with the Principal Archaeologist at NYCC. This is likely to take the form of archaeologically excavated sections through the boundaries and the subsequent recording of these.

MITIGATION FOR SETTINGS

- 8.7.5. Historic England guidelines (2015) for mitigation of the impact of a development on the setting of a Heritage Asset suggest that in the first instance impacts are best mitigated for either by relocation of the development or changes to its design. Where relocation of the development is not possible, good design alone may be capable of reducing the harm.
- 8.7.6. For some developments affecting setting, the design of a development may not be capable of sufficient adjustment to avoid or significantly reduce the harm, for example where impacts are caused by fundamental issues such as the proximity, location, scale, prominence or noisiness of a development. In other cases, good design may reduce or remove the harm, or provide enhancement, and design quality may be the main consideration in determining the balance of harm and benefit⁴⁰. Enhancement may be achieved by a variety of actions a number of which are presented here.
- 8.7.7. Although no significant impacts are predicted on any settings of Heritage Assets as a result of the Proposed Scheme HE has expressed an interest in some form of wider mitigation for the Scheme that could include an interpretation panel on the PRoW passing between Drax Priory and the Proposed Scheme and in the visitors centre.
- 8.7.8. Any proposed landscaping in the fields lying between Drax Priory and the Power Station Site needs to consider the potential for previously unknown archaeological remains to be present, and therefore a suitable form of mitigation, such as an archaeological watching brief should be agreed for any major ground disturbance.

8.8 RESIDUAL EFFECTS

- 8.8.1. The mitigation for the below-ground archaeological resource will remove that resource and result in a site archive and publication. Therefore, the residual effects on these Heritage Assets will be negligible.
- 8.8.2. The field boundaries will have been recorded in section for those areas subject to removal by the Proposed Scheme. The full extent of the hedgerows will remain but as no removal is proposed for these lengths, the residual effects will be negligible.
- 8.8.3. The enhancement mitigation for the Drax Priory cannot reduce the impact from slight to neutral during construction and so there will be a slight residual effect.
- 8.8.4. For all other assets, no additional mitigation is proposed, and the residual effects will therefore be the same as already assessed above.

8.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

- 8.9.1. The findings within this chapter are based on the current desk-based assessment only and on the details of the Proposed Scheme as presented at the time of compiling this report.

⁴⁰ Historic England, 2015 The Setting of Heritage Assets, Historic Environment Good Practice in Planning: 3, 12

8.10 NEXT STEPS

- 8.10.1. An historic map regression analysis will be included in the Historic Environment Desk-based Assessment in support of the ES.
- 8.10.2. An initial phase of geophysical survey has been completed and a second phase remains to be undertaken in January 2018. The final interpretative report will be appended to the ES.
- 8.10.3. A programme of archaeological trial trenching is to be undertaken prior to the commencement of construction works.

9 BIODIVERSITY

9.1 INTRODUCTION

- 9.1.1. This chapter of the PEIR provides a preliminary assessment of the potential impacts of the Proposed Scheme and the likely significant effects on biodiversity and ecology that could arise. This chapter describes:
- Relevant policy, legislation and guidance.
 - Consultation with relevant bodies undertaken to date.
 - Potential effects of the construction, operational and decommissioning phases of the Proposed Scheme.
- 9.1.2. The report will set out both the existing and predicted future baselines of the ecology and nature conservation of the Site, the predicted significant effects of the Proposed Scheme on ecological receptors, and provides initial proposals for mitigation measures. A summary of further work recommended to inform the ES is also included. The information presented in this document is based upon all ecological assessments of the Site up until end of October 2017 and is prepared as per CIEEM's guidance for Ecological Impact Assessment⁴¹.

9.2 POLICY, LEGISLATION AND GUIDANCE

- 9.2.1. The following information provides a summary of the most appropriate and relevant legislation, planning policy and guidance documents pertaining to biodiversity and ecology. Appendix E.1 details the legislation in full.

NATIONAL POLICY STATEMENTS (NPS)

- 9.2.2. Section 5.3 of the overarching National Policy Statement (NPS) for Energy (EN-1) refers to biodiversity and states the applicant should clearly set out any effects of the development on internationally, nationally and locally designated site of nature conservation, on protected species and habitats and other species identified as being of principal importance for the conservation of biodiversity. The applicant should also show how the development has taken measures to conserve and enhance biodiversity.
- 9.2.3. The NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2) provides the primary basis for decisions by the Planning Inspectorate (PINS) on applications it receives for nationally significant fossil fuel electricity generating stations. EN-2 does not repeat the requirements in relation to biodiversity set out in EN-1, and is therefore of less general relevance to the ecological assessment of the Proposed Scheme. EN-2 reiterates the need, set out in EN-1, for the environmental effects of emissions to air to be assessed as part of any application.
- 9.2.4. The NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4), specifically section 2.21 refers to biodiversity, landscape and visual impacts from the construction of a pipeline. This policy statement provides additional considerations to the general principles outlined in EN-1. These considerations comprise the effect on components valuable to biodiversity typically grasslands, hedgerows/hedgebanks, trees, woodlands, waterbodies

⁴¹ CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

and watercourses that are located within and/or adjacent to the pipeline route. In regards to the Proposed Scheme, EN-4 relates primarily to the Pipeline Study Area and provides a set of assessment and mitigation measures to combat pipeline construction related impacts.

- 9.2.5. The NPS for Electricity Networks Infrastructure (EN-5) provides the primary basis for decisions by the Planning Inspectorate (PINS) on applications it receives for electricity networks infrastructure. EN-5 does not repeat the requirements in relation to biodiversity set out in EN-1, and is therefore of less general relevance to the ecological assessment of the Proposed Scheme. EN-5 provides specific advice on the risks of bird mortality arising from high voltage overhead lines (Section 2.7). As the Proposed Scheme does not include high voltage overhead lines, EN-5 is of limited relevance to the ecological assessment.

THE NATIONAL PLANNING POLICY FRAMEWORK (NPPF) 2012

- 9.2.6. The NPPF sets out the Government's planning policies for England. Although the NPPF does not contain specific policies for Nationally Significant Infrastructure Projects (NSIPs), such as the Proposed Scheme, it contains policies specific to ecology and nature conservation (most notably section 118). Moreover it sets out provisions for biodiversity, including protected sites and species for which local planning authorities (LPAs) must have regard. Planning Practice Guidance (PPG) has been published alongside the NPPF, and is regularly updated, to provide guidance on the implementation of the planning policies.
- 9.2.7. The natural environment elements of the PPG provide guidance on the key issues in implementing biodiversity aspects of the NPPF. This includes advice on minimising impacts on biodiversity and delivering net gain, and on how biodiversity should be considered in planning decisions.

SELBY DISTRICT LOCAL PLAN (SDLP) 2005

- 9.2.8. The Local Plan develops and underpins many of the aims and objectives of the LPA. It provides a comprehensive land-use framework for promoting, coordinating and controlling future development. Chapter 4 of the SDLP outlines local environmental policies; saved policies most relevant to biodiversity and the Proposed Scheme are listed below.
- 9.2.9. **Policy ENV9** relates to Sites of Importance for Nature Conservation (SINC) and Local Nature Reserves (LNR). It states:
- 9.2.10. *"Proposals for development which would harm a local nature reserve, a site of local importance for nature conservation or a regionally important geological/geomorphological site, will not be permitted unless there are no reasonable alternative means of meeting the development need and it can be demonstrated that there are reasons for the proposal which outweigh the need to safeguard the intrinsic local nature conservation value of the site or feature."*
- 9.2.11. **Policy ENV12** relates to rivers and stream corridors and states:
- "Proposals for development likely to harm the natural features of or access to river, stream and canal corridors will not be permitted unless the importance of the development outweighs these interests, and adequate compensatory measures are provided."*
- 9.2.12. **Policy ENV14** relates to protected species and states:
- "Development and other land use changes which may harm badgers and other species protected by Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981, as amended, or the EC Habitats and Species Directive will not be permitted. To avoid harm to the species*

the local planning authority may consider the use of conditions and planning obligations which seek to:

- 1) Facilitate the survival of individual members of the species;*
- 2) Reduce disturbance to a minimum; and*
- 3) Provide adequate alternative habitats to sustain at least the current levels of population.”*

9.2.13. Policies ENV7, ENV8, ENV10 of the SDLP (2005) have been replaced by Policy SP18 of the Selby District Core Strategy 2013, which is outlined below.

THE SELBY DISTRICT CORE STRATEGY LOCAL PLAN 2013 (CS)

9.2.14. This document is first part of the replacement for the 2005 Selby District Local Plan. This sets out the high level strategic policies for the District for the period 2012 - 2028. The policies in the Core Strategy Local Plan replace many of the SDLP policies.

9.2.15. **Policy SP18 – Protecting and Enhancing the Environment**

9.2.16. This policy takes on expired policies from the SDLP (2005) to provide rigorous protection mechanisms for the local environment. The policy, as detailed in the Core Strategy, sets out a number of measures to promote biodiversity and enhance the natural and manmade environment. The most relevant segment of this policy in relation to the Proposed Scheme is *“Promoting effective stewardship of the District’s Wildlife”*, defined by the following:

“a) Safeguarding international, national and locally protected sites for nature conservation, including SINCs, from inappropriate development

b) Ensuring developments retain, protect and enhance features of biological and geological interest and provide appropriate management of these features and that unavoidable impacts are appropriately mitigated and compensated for, on or off-site.

c) Ensuring development seeks to produce a net gain in biodiversity by designing-in wildlife and retaining the natural interest of a site where appropriate.

d) Supporting the identification, mapping, creation and restoration of habitats that contribute to habitat targets in the National and Regional biodiversity strategies and the local Biodiversity Action Plan.”

9.2.17. The full policy is detailed in Appendix E.1.

EUROPEAN UNION (EU) DIRECTIVES

9.2.18. The current EU directives relevant to the Proposed Scheme are:

- The Habitats Directive (92/43/EEC) sets the standard for nature conservation across the EU and enables all 28 Member States to work together within the same strong legislative framework in order to protect the most vulnerable species and habitat types across their entire natural range within the EU. Measures must be taken by Member States to maintain and restore, at favourable conservation status, natural habitats and species of wild fauna and flora of community interest. It is implemented within England and Wales through the Conservation of Habitats and Species Regulations (2017).
- The Birds Directive (2009/147/EC) provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. The directive places great emphasis on the protection of habitats suitable for supporting endangered and migratory species, introducing a system of Special Protection Areas

(SPA) designated to protect important habitats. The Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017 implement the requirements of the Birds Directive in England and Wales.

- The Water Framework Directive (2000/60/EC) provides a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and ground water. It introduced a comprehensive river basin management planning system to help protect and improve the ecological health of our rivers, lakes, estuaries and coastal and groundwater systems.

UNITED KINGDOM (UK) LEGISLATION

9.2.19. The current United Kingdom (UK) legislation and local guidance of particular relevance to the Proposed Scheme are listed below, further details of which are provided in Appendix E.1:

- The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations).
- The Wildlife and Countryside Act 1981 (as amended) (WCA).
- Countryside and Rights of Way Act 2000.
- The Natural Environment and Rural Communities (NERC) Act 2006.
- The Protection of Badgers Act 1992.
- The Hedgerow Regulations 1997.
- The Wild Mammals (Protection) Act 1996.

UK GOVERNMENT GUIDANCE AND FRAMEWORKS

9.2.20. A series of guidance documents and frameworks relating to biodiversity and enhancing the natural environment within the UK have been produced by DEFRA and the Government since 2010. These documents form a network of principles that urge the UK to strategically manage biodiversity and the natural environment for future generations whilst promoting sustainability. Key guidance for England relevant to the Proposed Scheme is outlined below:

- Natural Environment White Paper for England – The Natural Choice (NEWP).
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services (2011).
- Natural England Standing Advice and Guidance for Development Projects.
- The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012).
- UK Biodiversity Action Plan 1992-2012 (UK BAP)⁴².

9.2.21. The UK Post-2010 Biodiversity Framework gave rise to country specific conservation, enhancement and management protocols. Biodiversity 2020 in combination with NEWP underpin the Biodiversity Framework in England and provides an inventory of standards for maintaining wildlife. After the UK BAP was superseded by the Biodiversity Framework, UK BAP habitats and species were replaced by habitats and species of principal importance as identified via the provisions of Section 41 of the NERC Act.

SELBY LOCAL BIODIVERSITY ACTION PLAN, 2004.

9.2.22. The Selby Biodiversity Action Plan (BAP) is intended to raise awareness of the issues and problems facing a range of locally-occurring habitats and species. It identifies priority

⁴² The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant.

species and habitats within Selby District and outlines the threats to these species and habitats and the requirements needed for them to meet favourable conservation status.

9.3 SCOPING OPINION AND CONSULTATION

CONSULTATION

- 9.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from PINS (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from PINS in relation to biodiversity and ecology, and how those requirements should be addressed by the applicant, are set out below in Table 67, below.

Table 67 - PINS Scoping Opinion Responses

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
N/A	N/A	The study area/s utilised in the assessment should be agreed with the local authority, the EA and Natural England (NE) and clearly defined in the ES. The ES should avoid the use of imprecise terms such as 'in the vicinity of' (section 7.2.3).	The applicant has held initial consultations with Natural England (NE) and the Environment Agency (EA) regarding the study area for assessing air quality impacts on ecological designated sites. The applicant can confirm that they intend to agree the study area with NE and the EA, and to set this out clearly in the ES.
7.2.2	Sensitive receptors	The ES should justify the choice of human and ecological receptors selected and it is recommended that these are agreed with the local authority and NE respectively. The receptors should be identified on a plan accompanying the ES.	The applicant can confirm that a clear justification for the selection of ecological receptors will be included in the ES, with the identified ecological receptors identified on an accompanying plan. The applicant intends to agree the receptors with NE and the local authority.

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
7.2.4	Deposition levels	The Scoping Report explains that impacts from nitrogen and acid deposition at ecological receptors will be assessed using background deposition levels taken from the Air Pollution Information System (APIS) website. The Inspectorate is content with this approach.	Noted
7.2.1 and 7.2.4	Impacts on ecological sites resulting from nitrogen and acid deposition	The Inspectorate notes the potential for changes in emissions to air from operation of the Proposed Scheme to impact on ecological sites. The applicant is advised to also assess the effects of the Proposed Scheme cumulatively with other relevant plans and projects. The Inspectorate refers the applicant to its Advice Note seventeen (AN17) on Cumulative Effects Assessment, which provides advice in this regard. The applicant is advised to discuss	The applicant can confirm that the effects of the Proposed Scheme will be considered cumulatively with those from other relevant plans and projects, with reference to the PINS Advice Note 17 (AN17) on Cumulative Effects Assessment. The applicant will seek agreement to the approach to the ES and HRA assessment with Natural England.

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		and agree the approach to the ES assessment and the Habitual Regulations Assessment (HRA) with NE.	
7.3.1	Sensitive receptors	The noise and vibration chapter has only identified human sensitive noise receptors. The Inspectorate expects that The assessment should appropriately cross refer to the assessment of biodiversity within the ES. The applicant's attention is also drawn to the comments of MMO and the need to provide further detail of the works required in order to scope out the River Ouse and the River Derwent from the assessment.	Noise and vibration and biodiversity assessments within the ES will cross refer to each other where appropriate. In relation to the comments from the MMO, it is currently assumed the jetty will not be used. Effects on the River Ouse and River Derwent have not been considered further.
7.5.2	Applicant's proposed matters to scope out: Loss or disturbance of common and widespread habitats of negligible nature conservation importance	The Scoping Report does not explain which habitats this would encompass or how this would be determined. In the absence of this information, the Inspectorate cannot agree to scope this matter out. If there	At this stage in the design of the Proposed Scheme it is not possible to confirm precisely which habitats this approach would apply to. The approach to identifying important ecological features set out in the CIEEM EcIA guidance would be followed; where

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		are impacts to these features which could result in significant effects these should be assessed within the ES.	habitats are deemed not to be important ecological features following that approach, they would not be subject to detailed assessment.
7.5.3	Applicant's proposed matters to scope out: Temporary disturbance of common and widespread species of negligible nature conservation importance	The Scoping Report does not explain which species this would encompass or how this would be determined. In the absence of this information, the Inspectorate cannot agree to scope this matter out. If there are impacts to these features which could result in significant effects these should be assessed within the ES.	At this stage in the design of the Proposed Scheme it is not possible to confirm which species this approach would apply to. The approach to identifying important ecological features set out in the CIEEM EcIA guidance would be followed; where habitats are deemed not to be important ecological features following that approach, they would not be subject to detailed assessment.
7.5.2	Construction phase air quality impacts on designated sites	Section 7.5.2 of the Scoping Report states that construction-phase works are unlikely to generate significant air quality impacts in excess of 2km from the application site and that there are no statutory designated sites within 2km of the site. However, Table 4.4 identifies the River Derwent Special Area of Conservation (SAC) and Eskamhorn	Following the Institute of Air Quality Management (IAQM) guidance on the assessment of construction dust, impacts on ecological receptors need only be considered within 50m of dust-generating activities. The potential dust sources include areas of specific construction activities but also roads within 500m of the Site. Outside of the study area, it is reasonable to conclude that construction impacts will be negligible. The River Derwent SAC and

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		Meadows Site of Special Scientific Interest (SSSI) as being within 2km of the site. The Inspectorate therefore considers that construction phase air quality impacts on designated sites should be assessed in the ES.	Eskamhorn Meadows SSSI are located more than 500 m from the Site; the applicant therefore still considers that construction phase air quality impacts can be scoped out of the ecological assessment.
7.5.3	Operational effects for pipeline works	Section 7.5.3 of the Scoping Report notes that effects will be assessed for pipeline works during demolition and construction. No reference is made to the operational phase. However, given the nature of the project and the characteristics during the operational phase, the Inspectorate does not consider there would be likely significant effects and agrees that this does not need to be assessed within the ES.	Noted and agreed.
7.5.1	Designated Sites	With regard to statutory and non-statutory designated wildlife sites, the applicant is advised	The applicant has held initial consultations with Natural England (NE) and the Environment Agency (EA) regarding the study area for assessing air

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		to discuss and agree which sites should be assessed with relevant stakeholders including NE, the local authority and the EA.	quality impacts on ecological designated sites. The applicant can confirm that they intend to agree the designated wildlife sites that will be assessed with NE, the EA and North Yorkshire Ecology Service (NYES).
7.5.4	HRA	The Applicant proposes to carry out a HRA, considering the likely significant effects on European sites within 10km of the application site. The applicant is advised to discuss and agree the scope of the HRA assessment with NE, to ensure that all relevant European sites and potential impacts on those sites are appropriately addressed in the assessment.	The applicant has held initial consultations with Natural England and the Environment Agency (EA) regarding the study area for assessing air quality impacts on ecological designated sites. The applicant can confirm that they intend to agree the study area and scope for the HRA with NE (and the EA as appropriate).
7.5.4	Guidance	The Inspectorate notes that the CIEEM guidelines for Preliminary Ecological Appraisal referenced in this section were revised in 2012. The applicant should ensure that the most relevant and up-to-date versions of all guidance are used	The applicant notes PINS comments and can confirm that the reference to the 2008 Guidelines for Preliminary Ecological Appraisal was incorrect and that the 2012 Guidelines have and will be used as the reference source. The applicant can confirm that details of the guidance and methodologies followed

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		to inform the assessment and referenced in the ES. The ES/appendices should also include details of the guidance and methodologies followed for the protected species surveys.	for protected species surveys will be included in the ES and/or its supporting appendices.
7.5.5	Survey work	The Inspectorate notes from section 7.5.5 of the Scoping Report the potential for ecological data deficiencies to remain at the time of submission of the DCO application, which the applicant proposes to address through measures such as design amendments and precautionary mitigation. The applicant is advised to discuss and agree the approach with NE and the local authority. The applicant is reminded of the need to ensure that the ES provides an accurate assessment of the likely significant effects of the Proposed Scheme. The applicant should make every	The applicant notes the response from PINS and can confirm that they intend to agree the approach to addressing potential data omissions arising from incomplete or partial ecological survey data with NE and NYES. Ecological surveys will be completed prior to submission wherever possible, subject to the seasonal restrictions affecting some types of surveys.

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		effort to ensure that the necessary surveys are completed prior to submission.	
N/A	N/A	The applicant's attention is drawn to the comments of North Yorkshire County Council and Selby District Council regarding the need to assess impacts to grass snakes within the ES.	Noted
N/A	N/A	The Scoping Report has not identified the need for any marine-based surveys. The applicant's attention is drawn to the comments of the MMO and the need to consider marine-based surveys. The Inspectorate recommends that consultation is undertaken with the MMO to agree the need for any such surveys and any subsequent assessment that is required.	The applicant notes the comments from PINS and the MMO. It is currently assumed the jetty will not be used and further surveys will not be required.
N/A	N/A	The applicant's attention is drawn to paragraph 5.3.18 of NPS EN-1 and the need to demonstrate that	Proposed mitigation measures will be set out in the ES.

Section of Scoping Report	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		appropriate mitigation measures have been adopted for the Proposed Scheme. Any proposed mitigation measures should be clearly described within the ES.	
N/A	N/A	The ES should confirm whether any European Protected Species (EPS) licenses and/or mitigation licenses for other protected species would be required. If so, to provide the ExA with assurance that the necessary license(s) are likely to be obtained, the applicant should seek to obtain letters of no impediment (LoNI) from NE. These should be appended to the ES. The Applicant is referred to the Inspectorate's Advice Note eleven, Annex C in this regard.	If EPS or other mitigation licences for protected species are required, that LoNI will be sought from Natural England as suggested by PINS.

CONSULTATION

- 9.3.2. The table below sets out current consultation with relevant bodies including Natural England (NE) and the North Yorkshire Council Ecology Service (NYCES).

Table 68 - Consultation summary table

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
Natural England	09 September 2017 (email)	Natural England Lead Advisor confirms Discretionary Advice Service (DAS) request has been received	
	10 September 2017 (email)		The Applicant and NE now have a DAS Agreement in place, enabling NE to provide the Applicant with detailed advice.
	12 October 2017 (written comments in response to Applicant's Scoping Report)	Advice relating to EIA Scoping Requirements relating to the ecology and biodiversity of the site. Natural England summarise requirements to be implemented in the ES including an assessment of significant effects of the development on features of nature conservation interest. The assessments should include a thorough investigation of significant effects on internationally and nationally designated sites, regionally and locally important sites, European and nationally protected species, and habitats and species of principal importance (including those features within the local BAP). In relation to internationally designated sites, Natural England indicate an appropriate assessment should be undertaken should a Likely Significant Effect on a site be identified. Comments also include the implementation of appropriate mitigation within the ES which makes use of habitat creation and enhancement opportunities.	Agreed.

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
	01 December 2017 (meeting and Site visit)	A meeting to visit the Site and review ecological matters relevant to the ES was held between the applicant and James Walsh of NE. Key points covered in the meeting included: Broad agreement of the scope of ecological surveys between the applicant and NE; Discussion of potential air quality impacts on designated sites, the need for these to be considered in the Proposed Scheme Habitats Regulations Assessment (HRA) and initial discussions of the approach to assessing Proposed Scheme and cumulative air quality impacts; and Confirmation that NE would expect the Landscape and Visual Impact Assessment to meet the Landscape Institutes Guidelines for this topic. Discussion of the approach in relation to 'shadow' European Protected Species (EPS) licensing given the timing of ecological surveys in relation to the intended DCO submission date. NE agreed to discuss the approach internally with colleagues from the EPS licensing team.	
NYCES	10 September 2017 (email)		

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
		NYCES provides applicant with draft comments on EIA Scoping Report Ecology Section.	
	18 September 2017 (phone)	NYCES discussed survey programme with WSP highlighting the value of the previous ecology work commissioned for the White Rose Carbon Capture and Storage Project	WSP agreed with comments made by NYCES. A meeting between the applicant and NYCES was arranged for the 21 November.
	23 October 2017 (written comments in response to Applicant's Scoping Report)	Ecology comments in relation to EIA scoping report. NYCES agree with requirement for a HRA and the inclusion of ecological assessment of air quality impacts in EIA scope.	
	21 November 2017 (meeting and Site visit)	A meeting to visit the Site and review ecological matters relevant to the ES was held between the applicant and NYCES. Key points covered in the meeting included: Broad agreement of the scope of ecological surveys between the applicant and NYCES; Identification of designated sites and habitat loss in northern development parcels within the Power Station Site as key ecological considerations for the Proposed Scheme; and NYCES identified that non-significant effects on ecology (and other receptors) would be	

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
		considered in the NYCC Local Impact Report (LIR).	
Marine management Organisation (MMO)	23 October 2017 (written comments in response to Applicant's Scoping Report)	Biodiversity related comments on the Scoping Report were included in the MMO response. Key points made in relation to biodiversity included: Agreement with the baseline considerations in relation to designated sites (section 6.3); That the ES/HRA should give detailed consideration to the River Derwent SAC Section 6.4); and That depending on the scope of works associated with the potential use of the jetty, marine-based surveys could be required. The MMO highlighted that they would welcome further consultation to confirm marine assessment requirements once the scope of marine works is confirmed (Section 6.6, 6.8, 6.9, 6.11, 6.12).	If it is confirmed the jetty is required, the MMO will be re-consulted.

9.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

9.4.1. The assessment methodology used in this PEIR is based on the Site defined in Figure 1.3. This report details the initial analysis and assessment of likely significant effects predicted to arise from the Proposed Scheme on the following:

- Statutory designated sites of international, national and local importance.
- Non-statutory designated sites.
- European and nationally protected species.
- Habitats of Principal Importance (HPI) and Species of Principal Importance (SPI).

- Notable habitats and species listed on the Selby LBAP and/or listed under other conservation designations.
- The coherence and functioning of ecological networks as part of local green infrastructure.

DETERMINING BASELINE

- 9.4.2. A Preliminary Ecological Appraisal (PEA) has been completed based on the results of an extended Phase 1 habitat survey and a desk study. The extended Phase 1 habitat survey was carried out over several visits across a period of two months between August and September 2017 using JNCC methodology⁴³. The survey was carried out on accessible land within the Site including publicly accessible land and land controlled by the applicant.
- 9.4.3. A request for biological records was made to North and East Yorkshire Ecological Data Centre for protected sites and species within a 5 km buffer of the Site Boundary. The request included both statutory and non-statutory designated sites, ancient woodland and both habitats and species of principal importance (HPI/SPI), European and nationally protected species, species protected by planning policy and species of local conservation interest. WSP's in house GIS software 'iGIS' was used to search for European protected sites within 10 km of the Site Boundary.
- 9.4.4. As part of the extended Phase 1 habitat survey, a Preliminary Ground Level Roost Assessment for trees (PGLRA) within the Site and an external inspection of buildings (as per Bat Conservation Trust (BCT) guidelines⁴⁴) within the Existing Drax Power Station Complex was carried out. Findings of these integrated assessments have been produced in subsequent species reports with a summary of both outlined in the Preliminary Ecological Appraisal (PEA) report.
- 9.4.5. The PEA was finalised in October 2017 with regard to best practice CIEEM guidance⁴⁵. The PEA document provides an assessment of the baseline ecological conditions relevant to the Proposed Scheme. This has been used to identify those ecological features which could be subject to significant effects and hence are likely to be relevant to the Proposed Scheme.
- 9.4.6. To inform the assessment of impacts on biodiversity, further surveys and/or assessments have been recommended for the following:
- Bats.
 - European Otter, *Lutra lutra*.
 - Water vole, *Arvicola amphibius*.
 - Breeding and wintering birds.
 - Reptiles.
 - Great crested newt, *Triturus cristatus*.
 - Hedgerows.
 - Deciduous woodland.
 - Waterbodies (including rivers and ponds).

⁴³ Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. ISBN 0 86139 636 7.

⁴⁴ Collins, J (ed) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.

⁴⁵ Chartered Institute for Ecology and Environmental management (2013). *Guidelines for Preliminary Ecological Appraisal*.

- 9.4.7. Survey works will be completed with regard to best practice survey guidance with the results being outlined in a series of survey reports. Survey reports will be appended to the ES where available prior to submission of the DCO Application
- 9.4.8. Due to the timing of the DCO Application (submission in May 2018), some seasonally-restricted ecology surveys may need to be completed post-submission. However, for most habitats and species groups, anticipated, survey requirements will be complete or underway by the time of the DCO submission. To address any potential data deficiencies relating to incomplete ecological surveys, a conservative approach to the assessment will be undertaken. Under this approach, desk study information including previous ecological surveys of the Site and any preliminary survey results from 2017/18 will be used to identify a realistic worst-case baseline for relevant ecological features.

PRELIMINARY ECOLOGICAL IMPACT ASSESSMENT

- 9.4.9. The preliminary Ecological Impact Assessment presented in this PEIR is based on the Proposed Scheme description as presented in Chapter 3 (Site and Project Description) and with the following assumptions relating to the impacts of the Proposed Scheme:
- In terms of the assessment scenarios set out in Chapter 3, this assessment assumes:
 - As set out in Chapter 3, the Site Reconfiguration Works may be the subject of a separate application under the TCPA to be submitted during the course of 2018, with works anticipated either in 2018/2019 before implementation of the DCO, or at the same time the DCO is implemented. As explained in Chapter 3, the alternative is that the Site Reconfiguration Works may be consented as part of the DCO Application. As set out in Chapter 3, the EIA will assess two scenarios with regards to the Site Reconfiguration Works:
 - a) The Site Reconfiguration Works being carried out when the DCO Application is implemented. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and not carried out until the DCO is being implemented, or a situation in which the Site Reconfiguration Works are consented by the DCO. This scenario therefore assesses the Site Reconfiguration Works as being part of the Proposed Scheme; and
 - b) The Site Reconfiguration Works implemented in 2018/2019 in advance of the implementation of the DCO Application. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and carried out prior to the DCO being implemented. This scenario therefore treats the completed Site Reconfiguration Works as being part of the baseline.
 - For the purposes of the ecological assessment, it is considered that there are no significant differences between the two scenarios outlined above. This is because the Site Reconfiguration Works will take place across an area where the dominant land cover is hard-standing and buildings of negligible ecological importance. The Site Reconfiguration works are not therefore expected to result in significant effects on Important Ecological Features, with a correspondingly negligible effect on the ecological baseline;
 - The repowering of both units, which represents the worst case;

- That either Option A or Option B of the pipeline could be used; where effects are likely to be different for each route option, this is made clear in the discussion of the assessment conclusions.
- In terms of air quality mitigation, as set out below in relation to embedded mitigation, the assessment in this chapter has assumed that the design and operation of the Proposed Scheme will be delivered so as to minimise operational emissions of nitrogen. The two air quality mitigation scenarios (no NO_x abatement technology and installation of Selective Catalytic Reduction) will be assessed in the ES, following the completion of the air quality modelling;
- That as part of the electrical connection from Unit Y, habitat loss and disturbance will result from the cable route construction and implementation of new infrastructure. New infrastructure will be an individually fenced compound outside the existing National Grid 400 kv substation or an extension of the existing substation boundary. This chapter has assessed the impact of implementation of infrastructure on ecological receptors and the effect of habitat loss within the Power Station Site. The exact extent of loss from the electrical connection will be refined as construction requirements are made available and will be assessed fully in the ES
- Construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.
- In relation to the construction transportation scenarios, the transportation of large plant and equipment via the jetty, up to its current rating of 200 tonnes and the remaining materials transported via the road network has been considered. This scenario represents a worst case for ecology.
- That existing habitats within the Power Station Site will be removed or disturbed to such an extent that they are effectively removed during Construction.
- That semi-natural habitats within the Power Station Site will be permanently removed.
- That the majority of habitat loss and disturbance associated with construction of the gas connection will be temporary (with the only permanent loss associated with the Above Ground Installation), with existing habitats reinstated following construction.
- That installation of the gas pipeline will take place primarily between the months of April and September inclusive, avoiding the winter months.
- That no dredging or construction works will be required at the jetty (Development Parcel G) other than the construction of a concrete pad for siting the mobile crane; with this sited a minimum of five metres from the River Ouse channel (at mean highwater).

9.4.10. The initial ecological impact assessment (EcIA) presented in this PEIR has been carried out with regard to relevant legislation, planning policy and guidance, including the CIEEM Guidelines for EcIA, as identified above. In accordance with the CIEEM EcIA Guidelines (2016), an assessment will be carried out that collates relevant baseline information in order to predict the effects of the Proposed Scheme on Important Ecological Features.

9.4.11. A significant effect is defined as an effect that could have an impact upon the integrity or conservation status of a designated site, habitat/eco-system or species population where these are defined as Important Ecological Features.

- 9.4.12. Significant effects on important ecological features are assessed as either positive or negative. Where an effect is neither positive nor negative, this is assessed as not significant or negligible. Each significant effect is assessed based on a number of factors including the magnitude of impact (incorporating intensity, frequency and spatial range) and the susceptibility of habitats and species to developmental changes. Habitats and species, collectively assessed on their 'ecosystem' functioning, are assessed based on their resiliency to the effects of the Proposed Scheme and their relative importance.
- 9.4.13. The importance of an ecological feature is determined on a geographical scale as follows:
- International (within Europe).
 - National (relating to the UK, specifically England).
 - County (North Yorkshire).
 - District (Selby).
 - Local.
 - Site.
 - Negligible.
- 9.4.14. For the purposes of this assessment, ecological features of 'Site' importance or higher are assessed as being "Important Ecological Features" that can therefore experience significant effects. Ecological features of 'Negligible' importance are not considered sufficiently important to experience significant effects, and are not assessed as being Important Ecological Features.
- 9.4.15. The relative importance of a significant effect is determined based on the extent to which its integrity or conservation status is compromised and the geographical level at which the impact occurs.
- 9.4.16. At this time, there is limited information available in relation to some ecological features occurring within or close to the Site. This is because many ecology surveys can only be carried out in the spring/summer, and as such have not yet been started. Valuations of the importance of ecological features have therefore been based on a realistic worst-case judgement where full survey data is not yet available.
- 9.4.17. This PEIR therefore provides an initial assessment of the potential effects arising from the construction, operation and decommissioning phases of the Proposed Scheme on ecological features. A more detailed assessment will be presented in the biodiversity chapter of the ES, to be submitted with the DCO Application.
- 9.4.18. In addition, a screening exercise to assess the potential for Likely Significant Effects (LSE) on internationally designated sites is considered necessary. This is not presented in this PEIR and is being carried out separately in accordance with the requirements of the Conservation of Habitats and Species Regulations (2017) and NSIP Advice Note 10⁴⁶. The findings of this will be reported concurrently with the ES. The findings and assessment will be used to inform the assessment within the ES where relevant.
- 9.4.19. An initial assessment of the potential effects of the Proposed Scheme on internationally designated sites is included within this PEIR, in order to identify the impact pathways and

⁴⁶ The Planning Inspectorate (2017). Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects (version 8).

likely significant effects that will require consideration in the ES and HRA. Again, a conservative approach has been taken, in order to identify all impact pathways and associated effects that are likely to be relevant. The full scope of the HRA and Ecological Impact Assessment of statutory designated sites will be discussed with Natural England and agreement to the scope of the HRA sought.

EMBEDDED MITIGATION

- 9.4.20. The preliminary Ecological Impact Assessment in this PEIR has been completed assuming delivery of Primary and Tertiary Mitigation Measures as part of the Proposed Scheme. These assumed mitigation measures are set out in Table 69, below. It should be noted that a number of ecological surveys have yet to be completed due to seasonal restrictions on when they can be carried out. The identified mitigation is therefore provided on a precautionary basis. Completion of further ecological surveys may provide data confirming that some mitigation measures proposed below are not needed.
- 9.4.21. As per the Scoping Report (Appendix A.1), primary and tertiary mitigation are defined below:
- 9.4.22. Primary mitigation – modifications to the location or design of the Proposed Scheme made during the pre-application phase that are an inherent part of the Proposed Scheme.
- 9.4.23. Tertiary mitigation – actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects. These measures are treated as an inherent part of the Proposed Scheme.

Table 69 - Assumed Embedded Mitigation Measures

Measure	Primary or Tertiary	Description
Implementation of a Construction Environmental Management Plan (CEMP)	Tertiary	The construction phase environmental impacts of the Proposed Scheme will be managed through implementation of a CEMP. The applicant intends to submit a draft CEMP with the DCO Application. The draft CEMP will set out a series of measures, based on best-practice guidance, to control the environmental effects of construction of the Proposed Scheme. This will include (for example) measures aimed at controlling noise and light impacts, measures such as the use of fencing to demarcate the construction footprint and protect adjacent ecological features, methods for managing waste and methods for addressing pollution incidents, should they occur. These measures are expected to form an important part of efforts to control construction phase impacts on habitats and protected or otherwise notable species.

Measure	Primary or Tertiary	Description
Proposed Scheme will be designed to minimise operational emissions of nitrogen (NO _x , NH ₃)	Primary	The design and operation of the Proposed Scheme will be delivered so as to minimise operational emissions of nitrogen. Air quality modelling is ongoing so figures for emissions are not available for the PEIR, but it is intended that all practicable options to minimise emissions and hence impacts on designated ecological sites and the features for which they have been designated will be explored.
Retention of the existing Drax cooling water system	Primary	The existing Drax cooling water system would continue to be used for the Proposed Scheme. This includes an intake and return from / to the River Ouse. The Proposed Scheme would use the same cooling water system, with negligible changes in abstraction and return volumes or return temperatures of water to/from the River Ouse from existing.
Tailor Proposed Scheme layout to minimise land take of priority habitats.	Primary	The layout of the Proposed Scheme is still being developed. For the purposes of the PEIR it has been assumed that all habitats within the Power Station Site development parcels will be lost or disturbed. During the development of the layout, options to minimise landtake and disturbance within areas of Priority Habitats will be considered.
Tailor Proposed Scheme layout to minimise land take of possible bat foraging and roosting habitat.	Primary	The layout of the Proposed Scheme is still being developed. For the purposes of the PEIR it has been assumed that all habitats within the Power Station Site development parcels will be lost or disturbed. During the development of the layout, options to minimise landtake and disturbance within areas of potential bat foraging and commuting habitat will be considered. Several trees (see baseline section) within the gas connection (Options A and B) contain features suitable for use by roosting bats. The alignment of the chosen pipeline route will be micro-sited to avoid any trees which are subsequently determined to support roosting bats unless other environmental/engineering constraints mean this cannot be achieved.

Measure	Primary or Tertiary	Description
Tailor Proposed Scheme to minimise disturbance of otter riverine and aquatic habitats and removal of suitable terrestrial habitat.	Primary	Whichever pipeline Option (A or B) is chosen, the alignment will be micro-sited to minimise impacts on confirmed and potential otter habitat.
Tailor Proposed Scheme to minimise loss and disturbance of important breeding and wintering bird habitats.	Primary	For the purposes of the PEIR it has been assumed that all habitats within the Power Station Site development parcels will be lost or disturbed. During the development of the layout, options to minimise landtake and disturbance within important breeding and wintering bird habitats will be considered.
Tailor Proposed Scheme to minimise loss and disturbance of potential reptile habitat.	Primary	For the purposes of the PEIR it has been assumed that all habitats within the Power Station Site development parcels will be lost or disturbed. During the development of the layout, options to minimise landtake and disturbance within important reptile habitats will be considered.
Tailor Proposed Scheme to minimise loss and disturbance of potential amphibian aquatic and terrestrial habitat.	Primary	For the purposes of the PEIR it has been assumed that all habitats within the Power Station Site development parcels will be lost or disturbed. During the development of the layout, options to minimise landtake and disturbance within important amphibian habitats will be considered.
Include amphibian-friendly drainage measures in new road/infrastructure design, if subsequent surveys confirm the presence of important populations.	Primary	Amphibian surveys are planned for spring 2018. If these reveal important populations of amphibians may be at risk of operational road-related mortality, the Proposed Scheme will incorporate measures to minimise road-related mortality. These may include measures such as offsetting drainage gully pots and provision of dropped kerbs to allow amphibians to escape from new road alignments.
Tailor Proposed Scheme Design to avoid areas supporting invasive	Primary	Where practicable, the scheme layout will be altered to avoid affecting areas that support invasive non-native plant species.

Measure	Primary or Tertiary	Description
non-native species where practicable.		
Use of applications to minimise footprint of generating site	Primary	Technology including vertical Heat Recovery Steam Generators (HRSG) will be implemented in order to minimise the generating site's footprint and to ensure it is kept relatively small

9.5 BASELINE CONDITIONS

- 9.5.1. This section outlines current ecological information relevant to the Proposed Scheme identified to date. It should be noted that a range of ecological surveys are ongoing or planned to be completed in 2018. Where further survey data is being collected to inform the baseline, this is highlighted in the relevant sections below. Where further survey data on ecological features is being collected, a precautionary assessment of the potential importance of those features has been made.
- 9.5.2. The baseline presented takes into account potential changes to the ecological baseline between the current baseline years for ecological data collection (2017/2018) and the future baseline year (2025). No significant differences between the current and future baseline years are expected. This is due to the relatively short intervening period and because the Site Reconfiguration Works (if delivered in advance of the Proposed Scheme) are not expected to affect Important Ecological Features due to being located primarily in areas of hard-standing.

DESIGNATED SITES

- 9.5.3. Discussions are ongoing with NE and the EA to confirm the statutory designated sites that will require assessment. Six statutory designated sites with one or more international designations were identified within 10 km of the Site; six statutory sites designated at a national level within 5 km of the Site; and four non-statutory locally designated sites within 2 km. These sites are listed below in Tables 70, 71 and 72 below and shown on Figures 9.1 and 9.2. None of these designated sites are located within the Site. The closest statutory designated site is the River Derwent, located approximately 0.8 km north of the Site. The closest non-statutory designated site is the Disused Railway Embankment (deleted SINC) and is located less than 100 m to the north of the Pipeline Study Area.

Table 70 - Statutory designated sites of international importance within 10 km of the Site

Site Name	Designation	Distance to Power Station Site	Distance to pipeline study area
River Derwent	Ramsar, SAC	0.8 km to the north-east	1.1 km north-east
Lower Derwent Valley	Ramsar, SAC, SPA	5.1 km to north east	5.7 km to the north

Site Name	Designation	Distance to Power Station Site	Distance to pipeline study area
Humber Estuary	Ramsar, SAC, SPA	6.5 km to the east	3.0 km to the east
Derwent Ings	Ramsar, SPA	7.3 km to the north	7.8 km to the north
Skipwith Common	SAC	8.5 km to the north	8.0 km to the north
Thorne Moor	SAC	9.3 km to the south-east	7.6 km to the south-east

Table 71 - Nationally designated sites within 5 km of the Site

Site name	Designation	Distance to power station site	Distance pipeline study area
Brighton Meadows	SSSI (underpins Lower Derwent Valley SAC)	5.0 km to the north	5.6 km to the north
Eskamhorn Meadows	SSSI	2.6 km to the south-east	1.3 km to the south
Barn Hill Meadows	SSSI	6.0 km to the north-east	3.5 km to the north-east
Barlow Common	LNR	3.0 km to the north	3.6 km to the north-east
Sugar Mill Pond	LNR	6.1 km to the south	4.5 km to the south
Howden Marsh	LNR	7.2 km to the east	4.2 km to the north-east

Table 72 - Non statutory designated sites within 2 km of the Site

Site Name	Designations	Distance to Power Station Site	Distance to pipeline study area
Brockholes	SINC	1.9 km to the south-east	0.9 km to the north-east
Meadow East of Orchard Farm	SINC	1.9 km to the north-west	>2 km
Disused Railway Embankment	Deleted SINC	0.8 km to the east	0.1 km to the north

Barmby-on-the-Marsh	Candidate LWS	1.7 km to the east	1.1 km to the north

- 9.5.4. Internationally designated sites are valued as being of ‘international importance’. Nationally designated sites including SSSI and National Nature Reserves are valued as being of ‘national importance’. Local Nature Reserves are valued as being of ‘County’ importance, as are locally designated non-statutory sites. This reflects the geographical basis of the designations, i.e. European Sites support habitats and species that are deemed important at a European biogeographical level, whilst SSSI are designated on the basis of supporting the best examples of particular habitats, species and eco-systems at a national level.

HABITATS

- 9.5.5. The majority of the Power Station Site comprises hard standing and buildings with areas of amenity grassland and introduced shrub. Scattered broadleaved trees are present throughout and there is a pond surrounded by scrub habitat in the north. Land in the control of the applicant outside of the boundary fencing also forms part of the Power Station Site. These areas comprise an arable field bordered by hedgerows and drainage ditches as well as an area of mixed plantation woodland. A summary of the habitats present in each development parcel is provided in Table 73, with the development parcels shown on Figure 9.3.

Table 73 - A Summary of habitats present within each Development Parcel of the Power Station Site

Development Parcel (see Figure 9.3)	Habitats present	Approximate area (ha)
A	Broadleaved woodland (semi-natural), Parkland/ scattered trees (mixed), Tall ruderal, Standing water (wet ditch), Cultivated/ disturbed land (arable), Intact hedge (native species- rich), Defunct hedge (species- poor).	12
B	Broadleaved woodland (plantation), Mixed woodland (plantation), Scrub (dense), Improved grassland, Cultivated/ disturbed land (arable), Dry ditch	7
C	Broadleaved woodland (semi-natural), Parkland/ scattered trees (broadleaved) Neutral grassland (semi-improved),	7

Development Parcel (see Figure 9.3)	Habitats present	Approximate area (ha)
	Tall ruderal, Amenity grassland, Introduced shrub, Defunct hedge (species-poor).	
D	New Road between Drax Power Station and the arable field in Development Parcel A forms this parcel. The habitat present is hard standing.	1
E	Broadleaved woodland (semi-natural), Scrub (dense), Neutral grassland (semi-improved).	3
F	Parkland/scattered trees (broad-leaved), Amenity grassland, Introduced shrub.	27
G	Broadleaved woodland (semi-natural), Parkland/scattered trees (broad-leaved), Improved grassland, Tall ruderal, Marginal vegetation.	2
H	Parkland/scattered trees (broad-leaved), Tall ruderal, Amenity grassland, Intact hedge (species-poor).	10

- 9.5.6. The Pipeline Study Area is predominantly formed of arable fields with bordering hedgerows and ditches. Parcels of tall ruderal, dense scrub, improved- and semi-improved grasslands are present along with mixed and broadleaved woodlands and scattered trees. The River Ouse borders the northern edge of pipeline Option A.
- 9.5.7. Habitats of Principal Importance (HPI) (as identified via the provisions of Section 41 of the NERC Act (2006)), have been recorded within the Site, including both the Power Station Site and the Pipeline Study Area. These include deciduous woodland, rivers, ponds and hedgerows. Other HPIs are present within 100 m of the Site including deciduous woodland, rivers, ponds, hedgerows, traditional orchards and mudflats. All of the above mentioned HPIs are considered to be Important Ecological Features (IEFs) which could be subject to significant effects.

- 9.5.8. Given the extent and nature of these habitats within the Site, and the relative abundance of other similar habitats in the local, Selby and wider North Yorkshire areas, these habitats have potential to be an Important Ecological Feature at up to a District geographical scale.
- 9.5.9. Intensively managed and /or species-poor habitats such as improved grassland and arable farmland are considered important at up to a 'Site' geographical scale.

PROTECTED AND NOTABLE SPECIES

BATS

- 9.5.10. Several records of bat species were returned from the desk study element of the PEA.
- 9.5.11. Three buildings within the Power Station Site were assessed as having low suitability to support roosting bats during the extended Phase 1 habitat survey. Dusk emergence and dawn re-entry surveys were subsequently undertaken in line with best practice guidelines. No bats were recorded during these surveys and bats are therefore highly unlikely to be roosting within the Power Station Site (see Figure 9.4). Roosting bats have not therefore been identified as Important Ecological Features at the Power Station Site.
- 9.5.12. The land within the Power Station Site is largely hard standing with infrastructure that is well lit during the night. Accordingly, the area is largely unsuitable for foraging and commuting bats. The woodland, water bodies, scrub and grassland present in Development Parcels B, C & E could provide foraging and commuting opportunities for bats through the Power Station Site and into the wider area.
- 9.5.13. Thirteen trees with Potential Roost Features (PRF) that could be used by roosting bats were identified within the Pipeline Study Area. Three of these trees were assessed as having 'low' suitability for roosting bats in accordance with Best Practice Guidelines⁴⁷ and do not require further survey. Ten trees were identified with 'moderate' or 'high' suitability; five within Development Parcel B and five within Option B of the pipeline route. These will require further surveys if they are to be affected by the Proposed Scheme, which will depend on the type of construction works within Development Parcel B, whether Option A or Option B is used and on the detailed design and alignment of the selected pipeline option. At this stage it is not possible to determine whether bats roosting within trees will be an Important Ecological Feature requiring assessment in the ES, as it is not known whether they are present or if present whether they will be impacted such that significant effects may arise.
- 9.5.14. In accordance with the precautionary principle and taking a realistic worst-case scenario, it is assumed that up to two of the trees with PRFs will support a bat roost.
- 9.5.15. Woodland, water bodies, scrub and grassland provide foraging opportunities for bats along both route options within the Pipeline Study Area. The route options also lie within and alongside corridors of tree lines, hedgerows, scrub and woodland which, in combination with the River Ouse and its tributaries, provide suitable features to support commuting routes for bats. These features are typical of the local landscape and relatively common-place across

⁴⁷ Collins J. (ed.) (2016). Bat Surveys for Professional Ecologists, Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

Selby, North Yorkshire and the wider UK, although the Ouse is a substantial river of which there are relatively few of comparable size in Yorkshire.

- 9.5.16. In the absence of further survey data, it is assumed that bat populations at the Site will be an Important Ecological Feature at up to District geographical scale.

BADGER

- 9.5.17. Habitat suitable for supporting badger *Meles meles*, in the form of woodland and hedgerows was present within the Pipeline Study Area. Furthermore, signs of badger were recorded within the Power Station Site and the Pipeline Study Area, including badger setts, latrines and footprints. Badgers are common and widespread across the UK. Badger is not identified as a SPI or included on the Selby BAP. The legislation protecting them is in place largely for reasons of preventing animal cruelty rather than because they are considered a priority for conservation. As such, it is considered unlikely that badgers will be an Important Ecological Feature, although measures to ensure compliance with the legislation protecting them are likely to be required and hence they are included in the subsequent impact assessment set out overleaf.

OTTER

- 9.5.18. Numerous records of European otter were identified from the desk study. The River Ouse and various ditches and watercourses within the Site (primarily within the Pipeline Study Area) provide suitable habitat for otter. This species receives strict legal protection as set out in Appendix E.1.
- 9.5.19. Two old otter spraints were identified along Option A on a wooden bridge spanning a dry ditch, approximately 0.5 km from the River Ouse. The River Ouse was surveyed where it was located directly adjacent to the Site and confirmed to provide good quality foraging habitat for otter. Some areas of bankside habitats with vegetation cover within the Site may also be suitable for holt creation or use as resting/laying up sites. This includes areas of dense vegetation cover at the water's edge and features such as recesses beneath tree roots. Figure 9.5 provides a summary of the results. It is likely that otter are at least intermittently present within the Site, associated with the River Ouse and connecting watercourses. Further otter surveys are proposed to take place from within the River Ouse to determine the full extent of habitat usage.
- 9.5.20. Otter are identified as a qualifying feature of the River Derwent SAC and River Derwent SSSI. They are also identified as a SPI via the provisions of the NERC Act (2006). The Selby LBAP (2004) states that: 'The majority of recorded otter activity is on the lower Derwent and the Wharfe. There is some evidence of activity on the Aire and Went, with otters possibly resident in the Lower Aire. The Ouse and the Selby canal act as the main corridors linking the other river systems'.
- 9.5.21. The Rivers Ouse and Derwent are therefore likely to be of importance for local otter populations and are expected to be used by in excess of 1% of the otter populations within Selby, potentially by in excess of 1% of the North Yorkshire otter population. Given this, otters are considered an Important Ecological Feature at a County geographical scale.

WATER VOLE

- 9.5.22. Numerous records of European water vole were identified from the desk study. The closest desk study record was located 400 m from the Site, dating from 9 May 2011- 25 May 2011. Suitable habitat recorded on site during surveys in September 2017 includes ditches and

watercourses within the Pipeline Study Area, where these had a suitable bank structure for burrowing and/or supported lush vegetation e.g. grasses and rushes to provide a suitable food source. Targeted water vole surveys were completed in September 2017. A burrow of an appropriate size for water vole use was identified during the field survey, although no definitive evidence of the species was recorded here or anywhere else at the Site. On the basis of the survey results so far, water voles are likely to be absent from the Site and are not considered an important ecological feature, although further survey will be carried out in spring 2018 to confirm this assessment.

BREEDING BIRDS

- 9.5.23. Many protected and notable bird species records were identified from the desk study. A barn owl was recorded leaving a farm building immediately south of the red line boundary along Option A during the extended Phase 1 habitat survey on the 14 September 2017. A raptor pellet and barn owl feather were found along the River Ouse, immediately north of Option A, indicating that barn owl are likely to be foraging within this area also. The Site also contains trees and scrub suitable for supporting a range of nesting bird species; whilst grassland and arable farmland areas have the potential to support ground nesting birds such as skylark.
- 9.5.24. As outlined in Appendix A, all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the WCA meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.
- 9.5.25. The River Derwent SSSI includes assemblages of breeding birds as a notifiable feature. The Humber Estuary SPA & SSSI is notified in part for its internationally and nationally important numbers of 22 wintering waterfowl and nine passage waders and nationally important assemblage of breeding birds. Additionally, the Humber Estuary is a designated Ramsar site for internationally important numbers of waterfowl in winter and nationally important breeding populations in summer.
- 9.5.26. Whilst the River Derwent and the Humber Estuary are important for breeding birds at an international and national level, the Site itself is likely to play a relatively minor role in sustaining the designated bird populations. Given this, breeding and wintering birds are considered likely to be an Important Ecological Feature at most a County geographical scale.

REPTILES

- 9.5.27. Records of grass snake *Natrix helvetica*, were identified from the desk study. The mosaic of habitats within the Pipeline Study Area and the Development Parcels A, B, C & E (Figure 9.3) within the Power Station Site include rough grassland, scrub, woodland and waterbodies which provide potential sheltering, basking and foraging habitat for widespread reptile species such as grass snake, common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*. Additional features present such as dead wood, log piles and compost heaps could be utilised by widespread reptiles for shelter, foraging and breeding. Short and/or intensively managed habitats such as arable farmland and amenity grassland are of limited suitability. Previous surveys for reptiles have identified important populations of grass snake in the vicinity. Due to these findings, grass snake are assessed as being an ecological feature of up to District importance.

AMPHIBIANS

- 9.5.28. Records of great crested newt, smooth newt *Lissotriton vulgaris*, common toad *Bufo bufo* and common frog *Rana temporaria* were identified from the desk study. The closest desk study record for great crested newt was located 2.9 km from the Site. Seven waterbodies were identified within 250 m of the Pipeline Study Area and five waterbodies were identified within 250 m of the Power Station Site. These water bodies and surrounding grassland, scrub and woodland habitat have the potential to support widespread amphibians including great crested newt, providing opportunities for sheltering, foraging and breeding.
- 9.5.29. At present the status of great crested newt and other amphibian populations is unknown. Previous survey work completed for the White Rose CCS Project recorded no populations of great crested newt at the Site, although a small population of smooth newt were recorded. Populations can change over time, however, with amphibian species colonising new habitats. As such, amphibian populations that may be affected by the Proposed Scheme are assessed as being an ecological feature of up to District importance, as it is possible that great crested newts and other species could have colonised the Site since the CCS surveys, but it is unlikely that any exceptionally large populations are present.

FISH

- 9.5.30. The River Derwent SSSI includes outstanding assemblages of native fish as a notifiable feature. The citations for the River Derwent SAC and Humber Estuary SAC identify several fish species as being qualifying interests. These include sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, and bullhead *Cottus gobio*. The Site lies upstream of the Humber Estuary and downstream of the River Derwent and will therefore be used by fish species associated with both designated sites. Lamprey are migratory, and are likely to migrate past the site during seasonal movements to and from upstream breeding sites. The Rivers Ouse and Derwent will also support a range of other fish species, including salmonids.
- 9.5.31. The River Derwent and the Humber Estuary are important habitats for an assemblages of native fish. The River Ouse falls within the Site and is likely to be critical in sustaining populations of these species associated with the nearby designated sites. Given this, river lamprey, sea lamprey, bullhead and salmonids are considered an Important Ecological Feature at up to, at most an International geographical scale.

INVASIVE NON-NATIVE SPECIES

- 9.5.32. Stands of Himalayan balsam *Impatiens glandulifera* were present in Development Parcels C and G and ornamental *Cotoneaster* *Cotoneaster* sp. in a car park in Development Parcel C. These plants are invasive non-native species, listed on Schedule 9 of the WCA (1981, as amended). They are not considered an Important Ecological Feature, but measures may be required during construction to avoid infringing the legislation intended to prevent their spread by human activities.

9.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

- 9.6.1. Further ecological surveys and assessments of the Site will be completed to inform the DCO application. Tables 74 and 75 detail the preliminary assessment of predicted impacts and effects for the Power Station Site and the Pipeline Study Area (respectively and together). The information provides a general overview of the potential effects on likely ecological receptors of both the construction and operational stages. A summary of mitigation and enhancement measures specific to each Important Ecological Feature is then

outlined in section 9.10. The assessment of impacts assumes the implementation of the primary and tertiary mitigation measures set out in Table 74.

POWER STATION SITE INCLUDING ELECTRICAL CONNECTION

Table 74 - Preliminary Assessment of Impacts and Effects on Ecological Receptors from the Power Station Site

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
Statutory Designated Sites of International Importance	Pollution from the Proposed Scheme including emissions to air and accidental release of hazardous materials may have an impact on designated sites. Effects as a result of these impacts include alteration and/or degradation of habitats, specifically Annex 1 habitats and potential population declines of Annex 2 species. Effects from pollution incidents during construction and decommissioning could be greatest on the closest designated sites with reduced likelihood of significant effects with increasing distance from the Proposed Scheme. The closest designated site to the Proposed Scheme is the River Derwent SAC, SPA, SSSI which is ~0.8 km from the Power Station Site. With the proposed embedded mitigation, construction and decommissioning-phase effects on designated sites are expected to be negligible and hence not significant. Modelling of operational emissions to air and determination of Best Available Techniques is on-going, with the results of dispersion modelling in relation to designated sites subject to full ecological analysis once completed. In the absence of evidence to the contrary, it is possible that the Proposed Scheme could impact statutory designated sites as a result of operational emissions. Effects could include damage to vegetation as a result of increased ambient NO_x and NH₃ levels and eutrophication (increased nutrient levels) as a result of increased nitrogen deposition. At this preliminary stage, it is considered likely that there would be a likely significant effect on the identified Statutory Designated Sites of International Importance and a HRA will be undertaken to determine whether those effects would give rise to adverse effects on the	→ Construction → Operational → Decommissioning

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
	integrity of one or more European Site. See Chapter 6.	
Statutory Designated Sites of National Importance	Potential impacts on nationally designated sites are similar to those for internationally designated sites (described above). With the proposed embedded mitigation, construction and decommissioning-phase effects on designated sites are expected to be negligible and hence not significant. Operational emissions to air have the potential to result in similar effects to nationally designated sites as internationally designated sites. If realised, such effects could be significant at a National scale, if it is determined that they would lead to harm to one or more SSSI.	→ Construction → Operational → Decommissioning
Habitats of District importance (including HPI and LBAP habitats)	The installation of gas turbines and associated battery storage facility including the area required to expand the existing National Grid 400 kV substation and up to four Heat Recovery Steam Generators (HRSG) etc.) Will cause the permanent loss of both HPI and locally important habitats. Ponds, deciduous woodland and hedgerows are all HPI within and in close proximity to the Power Station Site that will be permanently lost following site clearance and construction. The exact extent of loss will be refined as more scheme design information is developed, for the purposes of this assessment loss or disturbance of all habitats within the Power Station Site is assumed. Equally, woodland, wood pasture, species rich hedgerows, arable farmland, ponds and ditches are LBAP habitats that will or may be permanently lost. Possible effects include the loss or reduction of importance of IEF within and adjacent to the Power Station Site. Effects on habitats are predicted to be significant at up to a District scale.	→ Construction → Operational → Decommissioning
Roosting bats (District importance)	Demolition and construction impacts of the Proposed Scheme include the removal of trees that may be suitable for roosting bats. Removal of suitable habitat could cause a minor reduction in the size of local bat populations due to	→ Construction

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
	mortality of individuals during construction and reduced breeding success during construction/operation due to reduced availability of roosting sites and foraging resources. This is likely to represent removal of only a small proportion of possible roost sites in the local and wider area, with other trees and buildings providing alternative sites. Impacts would occur during the construction stage although the removal of any roosts would be permanent. Effects are predicted to be significant at up to a District geographical scale.	
Foraging and commuting bats (District importance)	Linear habitats such as scattered trees, hedgerows, watercourses and scrub lines provide suitable commuting habitat for bats. Woodland, scrub, hedgerow and waterbodies provide suitable foraging habitat. These foraging and commuting habitats serve as features for bats and will be permanently lost from Site clearance. Effects of removal of these habitats could be a minor decrease in populations due to the reduction in availability of feeding grounds and ability of bats to commute to other important habitats. A similar outcome can be attributed to the effects of noise, vibration and visual disturbances which may discourage bats from using important parts of the landscape. Effects are predicted to be significant at up to Local geographical scale, given the abundance of similar habitat in the surrounding District and County areas.	→ Construction → Operational → Decommissioning
Badger	Site clearance needed to facilitate the Proposed Scheme within the Power Station Site will remove badger foraging habitat leading to a slight reduction in availability of feeding grounds and food availability. Construction activities including construction traffic/use of heavy plant machinery could lead to the destruction of badger setts and possibly mortality of individual badgers. A minor reduction in the size of local badger populations is predicted. Whilst the impacts would occur during construction the	→ Construction

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
	effects would be realised throughout the lifespan of the Project. These effects are not predicted to be significant given badgers have not been defined as an IES. Mitigation measures may nonetheless be required in relation to the legal protection afforded to badgers.	
Otter populations of County importance	Removal and disturbance of ditches, drains and watercourses suitable for commuting and foraging may cause displacement of territories and potential reduction in breeding success from habitat degradation. The effects of habitat removal/disturbance will be to reduce the suitability of these areas for the local otter population. Given the condition of these habitats as recorded during the extended Phase 1 and otter surveys, any such effects are expected to have a negligible effect on local otter populations and hence no significant effects are expected. Construction and removal of the pad for the jetty crane in Development Parcel G and subsequent use of the jetty for deliveries could lead to noise and visual disturbance of otters using the River Ouse. Otters are known to use the banks of the River Ouse under and around the jetty. Otters have large home ranges, and the tree-lined banks of the River Ouse and other watercourses provide abundant cover both up and downstream of the Site. Given this and that deliveries by boat would take place only infrequently, resulting effects are expected to be significant at up to a Local geographical scale. Impacts of the operational phase of the Proposed Scheme include emissions to air leading to alteration and degradation of habitats within the River Derwent SAC, SPA, SSSI of which otter is a qualifying and notifiable feature. Any effects of operational emissions to the features of the SAC that make it suitable for otters are expected to be limited and significant at up to at most a Local geographical scale.	→ Construction → Operational → Decommissioning
Breeding and	Woodland, scrub, hedgerows, scattered trees and agricultural land provide both foraging and	→ Construction → Decommissioning

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
wintering birds of County importance	nesting habitat for breeding birds and passage migrants. Aquatic habitats such as ponds, ditches and watercourses and farmland may provide habitat for specialist birds such as wildfowl and waders. These habitats will be removed and disturbed by demolition and construction activities including site clearance and construction traffic. The removal of these habitats could destroy breeding and foraging habitat used by a range of bird species. Destruction of nests and feeding grounds and disturbance as a result of site clearance including noise and vibration could lead to declines in breeding bird populations at and adjacent to the Site. On the basis of available information it is considered that these effects could be significant at up to County scale of geographical importance.	
Reptiles of District importance	Basking, breeding and foraging habitat within the Power Station Site includes a mosaic of scrub, hedgerows and grassland suitable for grass snake, common lizard and slow worm. Ponds and urban areas such as rubble piles also provide foraging and refuge sites. Permanent loss of these habitats from demolition and construction activities is likely to cause a minor reduction in population numbers due to reduction in available habitat and mortality of individual reptiles. Effects could be significant at up to a District scale.	→ Demolition → Construction → Operation
Amphibians of District importance	Suitable aquatic and terrestrial habitat for amphibians is present within the Power Station Site, although the extent of aquatic habitat that could be suitable for breeding is limited. These habitats will be permanently lost from site clearance to facilitate construction. The loss of these habitats could reduce the size of any amphibian populations present. Given the nature of the habitats present (with limited waterbodies suitable for breeding within the Site) and the availability of other suitable habitat in the wider local landscape, any such effects	→ Construction → Operation → Decommissioning

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
	would be significant at up to a Local geographical scale. Construction, operational and decommissioning traffic and associated activities could also result in the mortality of individual amphibians. Assuming the implementation of the embedded mitigation measures set out in Table 69 any such effects would be negligible and not significant.	
Fish	Entrainment (incidental capture) of native fish by the cooling water intakes and degradation effects on habitat from the operational phase of the Proposed Scheme could reduce the populations of fish using the River Derwent and River Ouse adjacent to the Site. Any such effects are likely to be relatively minimal. Given that the cooling water system for the Proposed Scheme is intended to use the existing system that is already in place (and therefore part of the baseline), effects are expected to be negligible overall and therefore not significant.	→ Operational
Invasive non-native species	Himalayan balsam and a Cotoneaster species were present within the Power Station Site. Demolition and construction activities using plant machinery to clear the Site may cause the disturbance of these species leading to their dispersal in breach of the Wildlife and Countryside Act. This could also detrimentally affect the condition of other ecological receptors. It is considered that any effects arising from the accidental spreading of invasive non-native species could be significant at up to a Local geographical scale.	→ Construction → Decommissioning

PIPELINE STUDY AREA

Table 75 - Preliminary Assessment of Likely Impacts and Effects on Ecological Receptors from the Pipeline

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
Statutory designated sites of	The Pipeline Study Area (Option A) is directly adjacent to the River Ouse which serves as a commuting corridor for migratory fish including	→ Construction → Decommissioning

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
International importance	species that are qualifying interests of the Humber Estuary SAC and River Derwent SAC. Temporary construction/decommissioning impacts in areas close to the River Ouse may alter riverine habitat and water quality and increase the difficulty of fish migration to the River Derwent SAC, SPA, SSSI which is an important spawning ground for migratory fish, some of which are qualifying features. Impacts are expected to be minor as the pipeline will need to be offset from the river for engineering and other practical reasons, and a CEMP will be in place during construction With these measures in places effects on designated site fish species as a result of construction and decommissioning works are predicted to be negligible and therefore not significant.	
Non-statutory designated sites	The Disused Railway Embankment LWS is located less than 0.1 km to the north of the Pipeline Study Area. This site comprises deciduous woodland which is a HPI and may be impacted by construction activities most notably construction traffic along roads adjacent to the LWS boundary. Noise and vibration of construction traffic and incidental dust generation may cause disturbance to vegetation and protected and or notable species within the LWS. These impacts are likely to be of an appreciable magnitude across only a small proportion of the LWS. Effects on the LWS are therefore predicted to be significant at up to a Local Geographical level, as they are not expected to compromise the integrity of the LWS, but could potentially alter the conservation status of some of the features for which it has been designated.	→ Construction → Decommissioning
Habitats of District importance (including HPI and LBAP habitats)	Works within the Pipeline Study Area will cause temporary loss of both HPI and LBAP habitats. Deciduous woodland and hedgerows are HPI within the Site boundary with traditional orchard, mudflats and river HPI located within 100 m of the boundary. Woodland, wood pasture, species rich hedgerows, arable farmland and ditches are	→ Construction → Operational

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
	LBAP habitats that could also be temporarily disturbed during installation of the gas connection. It is expected that physical disturbance of the majority of HPI (including areas of woodland) can be avoided by selecting a suitable alignment for the pipeline, with affected habitat reinstated after construction / decommissioning. These effects are predicted to be significant at up to a Local geographical scale.	
Roosting bats	Site clearance to facilitate the installation of pipeline Option B may require the removal of trees suitable for roosting bats. Removal of suitable roosting habitat would cause a minor reduction in population size of local bat populations due to mortality of individuals during construction and reduced breeding success during construction/operation due to reduced availability of breeding sites. It is however expected that it will be possible to align the pipeline route (if Option B is selected) so as to avoid trees with features suitable for roosting bats. As such, no significant effects are predicted to arise in relation to roosting bats	→ Construction → Decommissioning
Foraging and commuting bats	Linear habitats such as scattered trees, hedgerows, watercourses and scrub lines provide suitable commuting habitat for bats. Woodland, scrub, hedgerow and waterbodies provide suitable foraging habitat. A proportion of these habitats will be temporarily disturbed during construction and decommissioning. It is expected (as set out in Table 69) that the pipeline route (whichever option is selected) will be micro-sited to avoid the most sensitive features. There is nevertheless the potential for minor removal of foraging habitat and severance of commuting routes. This could impair the ability of bats to forage and commute in the local landscape, leading to minor reductions in local populations. These effects are predicted to be significant at up to a Local geographical scale.	→ Construction → Decommissioning

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
Badger	Temporary habitat removal as a result of Site clearance may cause the damage and/or destruction of outlier badger setts used by low numbers of badgers. This could also lead to mortality of individual badgers underground. Should this occur, this would breach the legislation protecting badgers and their setts. These impacts could lead to a minor short-term reduction in the local badger population, however, this is unlikely to lead to any perceptible long term changes in the status of local badger populations As such, no significant effects are predicted to arise in relation to badgers, although measures to ensure legal compliance and animal welfare will be required.	→ Construction → Decommissioning
Otter populations of County importance	Installation of the pipeline (both Options A and B) could lead to temporary disturbance of infrequently used otter commuting routes (dry and wet ditches). These impacts would occur for at most several months in one year. This could temporarily limit the ability of otters to commute and forage across the local landscape. Abundant more suitable habitat is present elsewhere in the local area. These effects are predicted to be significant at up to a Local geographical scale.	→ Construction → Decommissioning
Breeding and wintering birds of County importance	Habitats such as woodland, scrub, hedgerows, scattered trees and agricultural land provide both foraging and nesting habitat for breeding birds and passage migrants. Mudflats are also present adjacent to pipeline Option A on the banks of the River Ouse, which may be used by low numbers of wading birds as feeding grounds. These habitats will be temporarily removed or disturbed by pipeline installation. The removal of these habitats could destroy low numbers of active nests and may cause mortality of important breeding birds. Temporary habitat loss and noise and visual disturbance could temporarily displace birds that would otherwise use habitats within the Pipeline Study Area. The majority of the impacts would only be experienced during construction and	→ Construction → Decommissioning

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
	decommissioning, with habitats reinstated after pipeline works were complete. There would be a very minor extent of permanent habitat loss associated with the AGI. Birds using habitats including mudflats on the banks of the River Ouse are not expected to be disturbed, as there is a flood defence bund along the right bank of the river; this would provide visual and acoustic screening between the pipeline and river. Overall, the effects are predicted to be significant at up to a Local geographical scale.	
Reptiles of District importance	Construction and decommissioning of the pipeline will temporarily disturb limited extents of habitat suitable for reptiles. Low numbers of reptiles could potentially also be killed during Site clearance. Habitats will be reinstated following construction/decommissioning. These impacts could cause a minor short-term reduction in the local reptile population but this is likely to be such a low number of individuals that local populations will not experience perceptible declines. As such, no significant effects are predicted to arise in relation to reptiles, although measures may be required during construction/decommissioning to ensure legal compliance.	→ Construction → Decommissioning
Amphibians of District importance	Both aquatic and terrestrial habitat is present within the Pipeline Study Area, although no ponds suitable for breeding amphibians are expected to be physically disturbed by pipeline installation or decommissioning. A low number of ditches with limited suitability for breeding amphibians and some terrestrial habitat could be temporarily lost to facilitate pipeline installation. Fragmentation of habitats could also occur, with the construction footprint of the pipeline severing links between terrestrial and aquatic breeding habitat. This could lead to minor reductions in local amphibian populations. Impacts will be short term, occurring only during the years of construction and decommissioning.	→ Construction → Decommissioning

Ecological receptor	Preliminary assessment of impacts and effects	Applicable development phase
	Overall, the effects are predicted to be significant at up to a Local geographical scale.	

SUMMARY OF PREDICTED IMPACT AND EFFECTS

- 9.6.2. The combined effect of effects from the Power Station Site and the Pipeline Study Area have been considered, in order to assess the likely significant effects on ecological receptors from the Proposed Scheme as a whole. Table 76 below sets out the predicted combined effects arising from the combined elements of the Proposed Scheme. In every case, the combined effects are no greater than the effects assessed separately for the two areas of the Site.

Table 76 - Summary of Predicted Effects

Ecological receptor	Power Station predicted effects	Pipeline predicted effects	Combined predicted effects
Statutory Designated Sites of International Importance	Significant, international scale	Negligible, not significant	Significant, International scale
Statutory Designates Sites of National Importance	Significant, national scale	Significant, Local scale	Significant, National scale
Habitats of District importance (including HPI and LBAP habitats)	Significant, District scale	Significant, Local scale	Significant, District scale
Roosting bats	Significant, District scale	Negligible, not significant	Significant, District scale
Foraging and commuting bats	Significant, Local scale	Significant, Local scale	Significant, Local scale
Badger	Negligible, not significant	Negligible, not significant	Negligible, not significant
Otter populations of County importance	Significant, Local scale	Significant, Local scale	Significant, Local scale

Ecological receptor	Power Station predicted effects	Pipeline predicted effects	Combined predicted effects
Breeding and wintering birds of County importance	Significant, County scale	Significant, Local scale	Significant, County scale
Reptiles of District importance	Significant, District scale	Negligible, not significant	Significant, District scale
Amphibians of District importance	Significant, Local scale	Significant, Local scale	Significant, Local scale
Fish	Negligible, not significant	Negligible, not significant	Negligible, not significant
Invasive non-native species	Significant, Local scale	N/A, not recorded within Pipeline Study Area	Significant, Local scale

9.7 MITIGATION MEASURES

- 9.7.1. Section 9.6 identifies the predicted impacts and effects of the Proposed Scheme on Important Ecological Features, taking into account the embedded Primary and Tertiary Mitigation measures (see Table 69). This Section sets out the preliminary avoidance, mitigation and compensation measures likely to be required to address remaining significant effects on important ecological features as assessed above.
- 9.7.2. As per the Scoping Report, secondary mitigation is defined as actions that will require further activity in order to achieve the anticipated outcome. The effectiveness of such measures will be assessed within the ES and appropriate mitigation secured by the DCO.

DESIGNATED SITES

Table 77 – Mitigation for Designated Sites

Predicted impacts and effects	Proposed secondary mitigation
Emissions to air and accidental release of hazardous waste causing the alteration and degradation of designated site habitats Disturbance and consequent reduction in population numbers of otter	Pre-construction ecological checks. Targeted method statement for ecologically sensitive works under overarching Ecological Management Plan, secured by DCO Requirement

HABITATS OF PRINCIPAL AND LOCAL IMPORTANCE

Table 78 – Mitigation for Habitats of Principal and Local Importance

Predicted impacts and effects	Proposed secondary mitigation
Site clearance from construction activities leading to loss of priority habitats and reduction of priority habitats within the county.	Mitigation area for biodiversity offsetting for habitats that cannot be retained by scheme design. Designed in conjunction with landscape design, with delivery secured by landscaping proposals being included within Approved Plans and under overarching Ecological Management Plan, secured by DCO Requirement.

BATS

- 9.7.3. All UK species of bat are of European conservation importance requiring dedicated provisions to maintain their status nationwide. Bats are sensitive to habitat loss which consequently influences population size. The Proposed Scheme will remove suitable habitat for roosting, foraging and commuting.

Table 79 - Mitigation for Bats

Predicted impact and effect	Proposed secondary mitigation
Site clearance for Proposed Scheme leading to loss of suitable roosting areas in trees causing reduction in local bat population due to lower availability of roosting sites Site clearance for Proposed Scheme leading to loss of suitable foraging and commuting habitats for bats causing reduction in local bat populations due to a decrease in feeding grounds and removal of commuting routes	Provision of replacement foraging and commuting habitat through habitat loss offsetting in conjunction with Proposed Scheme landscaping. Details of this will need to be refined as more information on Scheme layout, associated habitat loss, and availability of land for landscaping and habitat provision becomes available. Should any roosts be lost replacement roosts to be provided with capture and exclusion operations if appropriate. The potential roosting sites are trees; replacement roosts are therefore likely to be comprised (if needed) of bat boxes mounted on retained trees within Drax land-holdings.

BADGER

Table 80 - Mitigation for Badgers

Predicted impact and effect	Proposed secondary mitigation
Accidental injury of badgers and/or destruction and damage of setts, which could contravene The Protection of Badgers Act (1992)	Pre-construction ecological checks. Targeted method statement for ecologically sensitive works. Potential for setts to need to be excluded under

Predicted impact and effect	Proposed secondary mitigation
	licence to Natural England if loss or damage of setts cannot be avoided.

OTTER

Table 81 - Mitigation for Otter

Predicted impact and effect	Proposed secondary mitigation
Removal and disturbance of aquatic habitat including ditches, drains and other watercourse will reduce the quantity and quality of feeding territories and commuting routes	Pre-construction ecological checks. Targeted method statement for ecologically sensitive works. Reinstatement and enhancement of watercourses affected by construction activities within Pipeline Study Area. In the event that lying up sites or a holt are discovered within or adjacent to the Site, that cannot be avoided, it is possible some scheme elements could need to proceed under licence to Natural England, although this is considered unlikely to be required on the basis of available scheme information.

BREEDING AND WINTERING BIRDS

Table 82 – Mitigation for Breeding and Wintering Birds

Predicted impact and effect	Proposed secondary mitigation
Site clearance of nesting and foraging habitat leading to reductions in breeding bird populations Risk of incidental mortality of nesting birds and destruction of eggs and nests during construction and decommissioning	Pre-construction ecological checks. Targeted method statement for ecologically sensitive works. Removal of vegetation with potential to be used by nesting birds carried out outside the nesting bird season wherever possible. Provision of replacement habitat through habitat loss offsetting in conjunction with Proposed Scheme landscaping. Details of this will need to be refined as more information on scheme layout, associated habitat loss, and availability of land for landscaping and habitat provision becomes available.

REPTILES

Table 83 – Mitigation for Reptiles

Predicted impact and effect	Proposed secondary mitigation
Site clearance impacts include the removal, destruction and fragmentation of habitat suitable for breeding, sheltering and hibernating. Construction activities causing mortality of individuals.	Provision of replacement habitat via biodiversity offsetting in conjunction with landscape design. Details of this will need to be refined as more information on scheme layout, associated habitat loss, and availability of land for landscaping and habitat provision becomes available. Where habitat supporting reptiles is lost or disturbed during construction or decommissioning, targeted mitigation measures to exclude reptiles from the footprint in advance of works commencing, under an overarching Ecological Management Plan secured by DCO Requirement

AMPHIBIANS

Table 84 - Mitigation for Amphibians

Predicted impact and effect	Proposed secondary mitigation
The loss of terrestrial and aquatic habitat types could reduce the availability of habitat in the local area causing a minor reduction of local amphibian populations. Construction and decommissioning traffic and associated activities may result in the mortality of individual amphibians.	Should GCN be present, targeted mitigation measures to provide replacement habitat and exclude individuals from the scheme footprint in advance of construction would be required. Delivery would be assured by inclusion under overarching Ecological Management Plan secured by DCO Requirement and a 'Shadow EPS Licence' submitted with the DCO application.

INVASIVE NON-NATIVE SPECIES

Table 85 - Mitigation for Invasive Non-Native Species

Predicted impact and effect	Proposed secondary mitigation
Demolition and construction activities using plant machinery to clear the Site may cause the disturbance of these species leading to their dispersal in the local area, in contravention of the Wildlife and Countryside Act (1981, as amended).	Targeted invasive non-native species management strategy, secured by DCO Requirement. This is likely to include measures relating to vegetation and soil-handling and disposal during construction and decommissioning operations.

9.8 RESIDUAL EFFECTS

- 9.8.1. There may be residual effects after mitigation has been applied. Further scheme design and ecological survey work will be completed prior to submission of the DCO application to more accurately determine potential impacts and effects and hence the scope and extent of mitigation required to address those effects.

Table 86 - below, sets out the current assessment of residual effects

Ecological receptor	Pre-mitigation predicted effect	Post-mitigation predicted effect	Summary of any significant residual effects
Statutory Designated Sites of International Importance	Significant, international scale	Significant, International scale	Potentially significant residual effects in relation to operational emissions to air and consequent deposition of nitrogen onto designated sites. Further assessment of potential impacts and effects will take place as air quality modelling for the Project is complete and Best Available Techniques for the project are determined.
Statutory Designated Sites of National Importance	Significant, national scale	Significant, national scale	Potentially significant residual effects in relation to operational emissions to air and consequent deposition of nitrogen onto designated sites. Further assessment of potential impacts and effects will take place as air quality modelling for the Project is completed.
Habitats of District importance (including HPI and LBAP habitats)	Significant, District scale	Not significant	N/A

Ecological receptor	Pre-mitigation predicted effect	Post-mitigation predicted effect	Summary of any significant residual effects
Roosting bats	Significant, District scale	Not significant	N/A
Foraging and commuting bats	Significant, Local scale	Not significant	N/A
Badger	Negligible, not significant	Not significant	N/A
Otter populations of County importance	Significant, Local scale	Not significant	N/A
Breeding and wintering birds of County importance	Significant, County scale	Not significant	N/A
Reptiles of District importance	Significant, District scale	Not significant	N/A
Amphibians of District importance	Significant, Local scale	Not significant	N/A
Fish	Negligible, not significant	Not significant	N/A
Invasive non-native species	Significant, Local scale	Not significant	N/A

9.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

- 9.9.1. Baseline survey work is still ongoing, owing to land access restrictions and the seasonality of many protected species surveys, which cannot be conducted during the winter months. Survey work will, therefore, continue through 2017 into 2018. Due to these restrictions the majority of planned protected species surveys could not be completed in time to be included in this PEIR. The precautionary approach taken to the assessment has assumed a reasonable worst-case scenario in terms of baseline. Combined with the application of professional judgement, this has allowed a robust preliminary assessment to be made, whilst additional information is being gathered to inform the subsequent ES ecological assessment.
- 9.9.2. A precautionary approach has been taken for this assessment. Important Ecological Features have been identified based on the suitability of the Site for protected and notable species, where accurate baseline information is not available, and appropriate professional judgement.

9.10 NEXT STEPS

- 9.10.1. The PEA carried out by WSP in September 2017 has identified a number of ecological receptors that are relevant to the proposed DCO Application. Further survey and assessment work is required in order to gather suitable information to inform the proposed DCO Application. Proposed ecological surveys and assessments are outlined below, the scope of these has been provisionally agreed with NYCES and NE. Consultation with NYCES and NE will continue in parallel with ongoing ecological surveys and assessment work, to communicate the ongoing scope of ecological surveys and review any proposed deviations to the currently agreed scope.

WINTERING BIRD SURVEYS

- 9.10.2. The Proposed Scheme will result in the permanent loss of habitat and the temporary loss and disturbance of other areas suitable for supporting a range of wintering birds, including waterfowl, waders and farmland species. Areas to be affected could be used by bird species for which the nearby River Derwent and Humber Estuary SPA / Ramsar sites are designated. In light of the above, monthly transects (up to five visits) between October and March to assess use of the site by wintering birds will be completed.
- 9.10.3. These surveys will be completed prior to the DCO Application and submitted as part of the ES.

BAT SURVEYS - PRF INSPECTIONS

- 9.10.4. The extended Phase 1 habitat survey identified trees with roosting potential for bats within the Power Station Site and the Pipeline Study Area. Suitable foraging and commuting habitat was also recorded. PRF inspection surveys will involve inspection from the ground and tree climbing to assess each feature on a tree to determine if it can be scoped out as being a bat roost. These surveys will also determine the level of any further survey effort needed to confidently mitigate for or rule out the potential presence of bat roosts.
- 9.10.5. Any further survey effort will likely include emergence/re-entry and activity surveys to determine habitat usage by bats and to detect if roosts are present (if required). These surveys can only be undertaken from May.
- 9.10.6. The PRF inspection/tree-climbing surveys will be completed prior to the DCO Application and submitted as part of the ES. Should there be any surveys that may not be complete prior to DCO submission due to seasonal constraints, then these will be provided as an addendum to the ES, if required. A precautionary approach will be applied that using a realistic worst-case scenario in the ES, where survey results are outstanding.

BAT ACTIVITY SURVEYS

- 9.10.7. Habitat suitable for commuting and foraging bats is present within the Site. Bat activity surveys will therefore be completed which will involve walked transects by suitably qualified surveyors using bat detectors and recording devices to compile data about the use of the Site by bats. This will be supplemented with the use of static detectors. These surveys will determine the level of bat activity within the Site.
- 9.10.8. These surveys will be carried out from April as per BCT guidelines. Preliminary survey results will be included within the ES, but some surveys will be completed after the DCO Application is submitted due to seasonal restrictions on when these can be carried out. A precautionary approach to the baseline will be applied using a realistic worst-case scenario in the ES, where survey results are outstanding.

OTTER AND WATER VOLE SURVEY

- 9.10.9. One survey visit for otter and water vole has been completed in September 2017. This visit identified evidence of otter within the Site. A further targeted otter survey is required (potentially including a boat-based survey from the Ouse. A second survey visit for water vole is also required in order to meet best practice survey guidance for this species.
- 9.10.10. These surveys will be completed prior to the DCO Application and appended to the ES.

GREAT CRESTED NEWT (HABITAT SUITABILITY INDEX AND ENVIRONMENTAL DNA SAMPLING)

- 9.10.11. Waterbodies have been identified within the Site and surrounding 250 m buffer zone (the distance from breeding ponds great crested newt typically travel in significant numbers). Given the current access limitations to part of the Pipeline Study Area the exact number of ponds is unknown. Habitat suitability index (HSI) assessments are required to assess the broad suitability of each waterbody for GCN; this will inform if further presence/absence surveys using environmental DNA sampling are required.
- 9.10.12. These surveys will be completed prior to the DCO Application and submitted as part of the ES.

BREEDING BIRD SURVEYS

- 9.10.13. Habitats within parts of the Existing Drax Power Station Complex and Pipeline Study Area provide suitable habitat for a range of breeding birds, including ground, building and vegetation-nesting species. Historical breeding records of marsh harrier, hobby, peregrine falcon, little ringed plover and incidental records of yellowhammer and skylark have been recorded at the site. Breeding bird surveys are required to record bird activity (which birds are nesting and at what time) which will support an assessment of how the Site and surrounds are being used and by which species. This will inform avoidance and mitigation strategies, particularly for any rare or specially protected species. Surveys would include the Power Station Site and the Pipeline Study Area, given the pipeline installation works are expected to take place during the core breeding bird season.
- 9.10.14. Preliminary survey results will be included within the ES, but some surveys will be completed after the DCO Application is submitted due to seasonal restrictions on when these can be carried out. A precautionary approach to the baseline will be applied using a realistic worst-case scenario in the ES, where survey results are outstanding.

REPTILE SURVEYS

- 9.10.15. Suitable habitat for reptiles is present within the Site (primarily within the existing Power Station Site). As permanent habitat loss will occur within this area (and in light of the consultation comments on the NSIP Scoping report received from North Yorks Ecology Service), targeted reptile surveys are recommended to detect which species are present within the Site and to obtain an indication of population sizes.
- 9.10.16. Preliminary survey results will be included within the ES, but some surveys will be completed after the DCO Application is submitted due to seasonal restrictions on when these can be carried out. A precautionary approach to the baseline will be applied using a realistic worst-case scenario in the ES, where survey results are outstanding.

HABITATS REGULATIONS ASSESSMENT (HRA)

- 9.10.17. The applicant will have to consider the potential impacts of the NSIP on European Sites. In accordance with the Habitats Regulations (2017) and PINS Advice Note 10, anyone applying for development consent for an NSIP must provide the competent authority with such information as may reasonably be required for the purpose of assessment and/or to enable them to determine whether an appropriate assessment is required.
- 9.10.18. HRA screening and completion of a Statement to Inform Appropriate Assessment and accompanying matrices will be completed prior to the DCO Application. It is intended that drafts of these documents will be provide to NE for comment and review in advance of the DCO application being submitted.

10 LANDSCAPE AND VISUAL

10.1 INTRODUCTION

10.1.1. This Chapter provides a preliminary assessment of the landscape and visual impacts associated with the Proposed Scheme. The Landscape and Visual Impact Assessment (LVIA) deals with the separate but interlinked issues of:

- Landscape: Landscape effects are direct physical changes to the landscape caused by the Proposed Scheme or indirect changes to landscape character and how the landscape is perceived following the Proposed Scheme. Landscape impact assessment considers these effects both in terms of the individual components of the landscape and on the structure, coherence and character of the landscape as a whole.
- Visual: Visual effects are changes in the composition and character of views available in the area affected by the Proposed Scheme. Visual impact assessment considers the response of the people who experience these effects, who may be living or working in the area, enjoying recreational activities or simply passing through. The assessment considers the overall consequence of the effects on the visual amenity - the pleasantness of the view or outlook - that the people affected enjoy.

10.1.2. This chapter describes:

- Relevant policy, legislation, conventions and guidance.
- Consultation undertaken to date.
- Potential effects of the construction phase including the loss of land and vegetation.
- Potential effects associated with the operation (and maintenance) of the Proposed Scheme, including presence of proposed structures, and on and off site mitigation.
- Potential effects of the decommissioning phase of the Proposed Scheme.

10.1.3. The LVIA reviews baseline conditions founded on an agreed study area with Local Planning Authorities (LPAs) ("Study Area") and considers two baselines in respect of the landscape and visual effects of construction:

- Current: with Site Reconfiguration Works carried out alongside the Proposed Scheme against the baseline as it exists today.
- Future: with Site Reconfiguration Works carried out and completed by the time the Proposed Scheme is implemented (with the Site Reconfiguration Works having been consented through a separate TCPA planning application). The Proposed Scheme is therefore assessed against a baseline where the Site Reconfiguration Works have already been carried out (hence a "future" baseline).

10.1.4. On operation all works to accommodate the Proposed Scheme (including Site Reconfiguration Works, regardless of how they are consented or when they were completed) would be complete. The LVIA goes on to analyse the landscape character and extent of visual influence of the Proposed Scheme informed by a series of Zone of Theoretical Visibility (ZTVs) and representative viewpoints discussed and agreed within the LPAs.

10.1.5. A Study Area was defined (Figure 10.1) based on a combination of professional judgment, discussions with the LPAs and analysis of ZTVs, and this was fixed at a 10 km radius for both landscape character and visual amenity. The decision for the Study Area was justified based on the type of development, the relative position of the Site Reconfiguration Works

and the Proposed Scheme to existing structures (which are much higher and of a greater mass) and that the surrounding landscape is relatively flat.

- 10.1.6. The sensitivity and magnitude of change for each landscape resource and visual receptor throughout the Study Area was then determined, and effects of the Site Reconfiguration Works and the Proposed Scheme on landscape and visual amenity were then assessed. This was based on the lifecycle of the Proposed Scheme considering impacts associated with construction (current and future), permanent operation (year 1 and year 15 after which any on or off site mitigation planting should have matured) and decommissioning.
- 10.1.7. The assessment of effects considered two scenarios:
 - Scenario 1: The repowering of both Units 5 and 6 and construction of Units X and Y and eight associated 120 m high stacks, two battery storage facilities housed in one location and the Gas Receiving Facility (GRF).
 - Scenario 2: The repowering of Unit 5 or 6 and construction of Unit X and four associated 120 m high stacks, one battery storage facility housed in the same size facility as Scenario 1 and the GRF.
- 10.1.8. Scenario 2 would introduce a smaller mass of development and fewer structures compared to Scenario 1. However, it would still give rise to a similar degree of effect on landscape character and visual amenity. Four stacks (rather than eight) would protrude above the horizontal lines created by the tops of the cooling towers, but this would still form a strong contrast to the existing mass, and visually “clutter” the top of the towers resulting in a slightly discordant view from certain angles. The extent of landtake within Development Parcel A plus the GRF and Compressor Building, all of which sit outside the confines of Existing Drax Power Station Complex would be the same for both scenarios.
- 10.1.9. As part of the assessment consideration was also given to:
 - Pipeline Study Area route Options A and B, and Above Ground Installation; and Options to transport materials during the construction either by road or by river through the use of the jetty.
- 10.1.10. The assessment focused on Scenario 1, being the likely worst case, identifying where relevant any differences between the transportation of materials during construction by river utilising Drax jetty for unloading and loading or by road (although it is acknowledged that Drax's preference at this stage is to not utilise the jetty given the potential environmental effects it would potentially have in order to make the jetty useable for abnormal loads (e.g. dredging may be required)).
- 10.1.11. This assessment also took into account the potential loss of existing vegetation within Power Station Site to accommodate the CCS in the future.
- 10.1.12. This preliminary assessment was undertaken in accordance with comments within the Scoping Opinion dated 23 October 2017.

10.2 LEGISLATION, POLICY AND GUIDANCE

LEGISLATION/CONVENTIONS

EUROPEAN LANDSCAPE CONVENTION

- 10.2.1. The landscape and visual impact assessment takes account of legislation relevant to landscape and visual issues, including the European Landscape Convention (ELC)⁴⁸ which was ratified in the UK on the 21 November 2006. The ELC became binding on 1 March 2007 and provides a basis for closer co-operation on landscape issues across Europe. The Convention highlights the need to recognise landscape in law, to develop landscape policies dedicated to the protection, management and creation of landscapes, and to establish procedures for the participation of the general public and other stakeholders in the creation and implementation of landscape policies. It also encourages the integration of landscape into all relevant areas of policy, including cultural, economic and social policies. The ELC defines landscapes as:

“An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.”

- 10.2.2. The ELC applies to natural, rural, urban and peri-urban areas including land, inland water and marine areas. Its purpose is to promote landscape protection, management and planning in relation to all landscapes regardless of whether their quality and condition is considered outstanding, ordinary or degraded. The UK is recognised as already putting many of the principles of the ELC into practice. The importance of landscapes in contributing to local identity and in reflecting local cultural influences and ecological diversity is shown through the use of Landscape Character Assessments and Natural England's National Character Areas Project.

COUNTRYSIDE AND RIGHTS OF WAY ACT

- 10.2.3. The Countryside and Rights of Way Act 2000 (CROW)⁴⁹ provides a statutory framework for protected landscapes and introduced an additional right of access requiring the identification of Open Access Land.

POLICY

NATIONAL PLANNING POLICY STATEMENTS

- 10.2.4. The Overarching National Planning Policy Statement for Energy (EN-1) (Department for Energy and Climate Change (DECC, now the Department for Business, Energy and Industrial Strategy), 2011)⁵⁰ includes a number of statements of relevance to the landscape including green infrastructure (GI) and visual impacts of energy infrastructure in general.
- 10.2.5. Section 5.9 of EN-1 sets out the requirements for assessing and mitigating landscape and visual impacts of proposed nationally significant energy infrastructure projects. The scope of the assessment should include construction phase effects as well as the effects of the completed facility and its operation on landscape components, landscape character and views and visual amenity.

⁴⁸ Council of Europe, 2000, The European Landscape Convention

⁴⁹ Department for Environment and Rural Affairs, 2000, Countryside and Rights of Way Act, HMSO

⁵⁰ Department for Energy and Climate Change (DECC), 2011, National Planning Policy Statement for Energy EN-1

- 10.2.6. In addition, consideration should be given to the impact on nationally designated areas where proposals lie outside the boundaries of protected landscapes as well as highly valued landscapes which are protected by a local designation.
- 10.2.7. In terms of mitigation, EN-1 encourages the reduction in scale of the buildings taking into consideration function, appropriate siting, design including colours and materials, and landscaping schemes to mitigate adverse landscape and visual impacts including landscaping off site.
- 10.2.8. Paragraphs 5.9.15 to 5.9.16 of EN-1 state: *“The scale of such projects means that they will often be visible within many miles of the site of the proposed infrastructure. The IPC [now the Secretary of State] should judge whether any adverse impact on the landscape would be so damaging that it is not offset by the benefits (including need) of the project.”*
- 10.2.9. *In reaching a judgment, the IPC [Secretary of State] should consider whether any adverse impact is temporary, such as during construction, and/or whether any adverse impact on the landscape will be capable of being reversed in a timescale that the IPC [Secretary of State] considers reasonable.”*
- 10.2.10. Paragraph 5.9.18 of EN-1 states: *“All proposed energy infrastructure is likely to have visual effects for many receptors around proposed sites. The IPC [Secretary of State] will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the project.”*
- 10.2.11. Paragraph 5.9.22 of EN-1 adds: *“Within a defined site, adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of the proposed project. Materials and designs of buildings should always be given careful consideration.”*
- 10.2.12. Section 5.10 of EN-1 establishes the requirements for identifying and mitigating impacts of energy infrastructure projects on open space (including green infrastructure).
- 10.2.13. An energy infrastructure project will have direct effects on the existing use of the proposed site and may have indirect effects on the use, or planned use, of land in the vicinity for other types of development. Given the likely locations of energy infrastructure projects there may be particular effects on open space including green infrastructure.
- 10.2.14. Where green infrastructure is affected, the Secretary of State should consider imposing requirements to ensure the connectivity of the green infrastructure network is maintained in the vicinity of the development and that any necessary works are undertaken, where possible, to mitigate any adverse impact.
- 10.2.15. The NPS for Fossil Fuel Electricity Generating Infrastructure EN-2 (DECC, 2011)⁵¹ provides further detail with respect to the impacts of large scale structures associated with fossil fuel generating stations.
- 10.2.16. Section 2.6.5 of EN-2 states that *“It is not possible to eliminate the visual impacts associated with a fossil fuel generating station. Mitigation is therefore to reduce the visual*

⁵¹ Department for Energy and Climate Change (DECC), 2011b, National Planning Policy Statement for Fossil Fuel Electricity Generating Infrastructure (EN-2)

intrusion of the buildings in the landscape and minimise impact on visual amenity as far as reasonably practicable.”

10.2.17. The design should provide the best fit with the existing local landscape and to minimise the impact through use of appropriate external finishes and colour choice and to enclose low level buildings and structures to reduce impacts from nearby receptors.

10.2.18. The NPS for Gas Supply Infrastructure and Gas and Oil Pipelines EN-4 (DECC, 2011)⁵², in Section 2.21.1, refers to additional considerations associated with: “specific landscape elements within and adjacent to the pipeline route, such as grasslands, field boundaries (hedgerows, hedgebanks, drystone walls, fences), trees, woodlands, and watercourses. There will also be temporary visual impact caused by the need to access the working corridor and to remove flora and soil.”

10.2.19. Mitigation measures may include reducing the working width of the route in specific locations.

NATIONAL PLANNING POLICY FRAMEWORK

10.2.20. Within Paragraph 17 of the National Planning Policy Framework (Department for Communities and Local Government (DCLG), 2012)⁵³ the Government sets out a number of overriding core planning principles that are relevant to the landscape including:

- Always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings.
- Take account of the different roles and character of different areas.
- Contribute to conserving and enhancing the natural environment and reducing pollution.

10.2.21. In Section 11 ‘*Conserving and enhancing the natural environment*’, paragraph 109 notes that the planning system should contribute to and enhance the natural and local environment by, *inter alia*: “*Protecting and enhancing valued landscapes, geological conservation interests and soils*”

10.2.22. Paragraph 115 notes that: “*Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The conservation of wildlife and cultural heritage are important considerations in all these areas, and should be given great weight in National Parks and the Broads.*”

NATIONAL PLANNING PRACTICE GUIDANCE (NPPG)

10.2.23. The National Planning Practice Guidance (PPG) was published in March 2014 and formally revoked 150 planning guidance documents. The PPG provides revised and updated planning practice guidance to replace these documents in order to make planning policy and the NPPF, more accessible. The key guidance provided in the PPG in relation to this chapter is described below.

⁵² Department for Energy and Climate Change (DECC), 2011b, National Planning Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)

⁵³ Department for Communities and Local Government (DCLG), 2012, National Planning Policy Framework, The Stationary Office, London

10.2.24. PPG Guidance Section Natural Environment – Landscape, contains the following relevant paragraph:

10.2.25. Paragraph: 001 Reference ID: 8-001-20140306. This section states that: *'One of the core principles in the National Planning Policy Framework is that planning should recognise the intrinsic character and beauty of the countryside. Local plans should include strategic policies for the conservation and enhancement of the natural environment, including landscape. This includes designated landscapes but also the wider countryside'*.

LOCAL PLANNING POLICY

10.2.26. The Study Area spans four LPAs, North Yorkshire County Council, Selby District Council, East Riding of Yorkshire Council and Doncaster Metropolitan Borough Council.

SELBY DISTRICT COUNCIL

10.2.27. The following policies are of relevance to the Site and are drawn from the documents below:

- The 'saved' policies of the Selby District Local Plan – adopted February 2005 (Selby District Council, 2005)⁵⁴.
- The Selby District Core Strategy Local Plan – adopted October 2013 (Selby District Council, 2013)⁵⁵.

10.2.28. Policies of relevance in landscape and visual terms to the Proposed Scheme are as follows:

Selby District Core Strategy Local Plan:

- SP15 Sustainable Development and Climate Change.
- SP 18 Protecting and Enhancing the Environment.
- SP 19 Design Quality.
- "Saved" policies from Selby District Local Plan:
- ENV 1 Control of Development.
- ENV 15 Locally Important Landscape Area (Magnesian Limestone Ridge, Brayton Barff and Hambleton Hough).
- ENV21 Landscaping Requirements.
- EMP 10 Additional Industrial Development at Drax and Eggborough Power Stations.

EAST RIDING OF YORKSHIRE

10.2.29. The following policies were considered of relevance to the Site and drawn from the East Riding Local Plan Strategy document, adopted 2016:

- Policy EC5 Supporting the Energy Sector
- Policy ENV1 Integrating High Quality Design
- Policy ENV2 Promoting a High Quality Landscape
- Policy ENV3 Valuing Our Heritage
- Policy ENV4 Conserving and Enhancing Biodiversity and Geodiversity
- Policy ENV5 Strengthening Green Infrastructure

⁵⁴ Selby District Council, 2005, Selby District Local Plan, adopted February 2005, saved policies

⁵⁵ Selby District Council, 2013, Selby District Core Strategy Local Plan, adopted October 2013

DONCASTER METROPOLITAN BOROUGH COUNCIL

10.2.30. Doncaster's Core Strategy 2011- 2028 was adopted in 2012. Policies of relevance to the Proposed Scheme and Study Area are as follows:

- Policy CS3 Countryside
- Policy CS14 Design and Sustainable Construction
- Policy CS15 Valuing our Historic Environment
- Policy CS16 Valuing our Natural Environment Policy CS17 Providing Green Infrastructure

10.2.31. These policies and policies of relevance within other administrative areas which fall within the Study Area are outlined in further detail in Appendix F.1.

10.2.32. Figures 10.1 and 10.2 illustrate the extent of the Study Area, Built and Natural Environment in terms of designations.

GUIDANCE

10.2.33. The landscape and visual impact assessment has been based on the following best practice guidance:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition⁵⁶.
- An Approach to Landscape Character Assessment⁵⁷.
- Photography and Photomontage in Landscape and Visual Impact Assessment.⁵⁸.

10.3 SCOPING OPINION AND CONSULTATION

SCOPING OPINION

10.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (PINS) (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the PINS in relation to landscape and visual, and how those requirements should be addressed by the applicant, are set out in Table 87 below:

Table 87 - Scoping Opinion Summary Table

Section	Applicants proposed matter	PINS Comments	Summary of response
7.6.2	Changes to landscape character and visual amenity associated with operation of the gas pipeline.	PINS agrees that the operation of the gas pipeline itself is unlikely to result in any significant effects on landscape character and visual amenity. However, the Scoping Report acknowledges the potential for loss of hedgerows during	Noted: The assessment will consider the effects of the pipeline on hedgerow loss during

⁵⁶ Landscape Institute and Institute of Environmental Management and Assessment, 2013, Guidelines for Landscape and Visual Impact Assessment, Third Edition

⁵⁷ Tudor, C, 2014, An Approach to Landscape Character Assessment, Natural England

⁵⁸ Landscape Institute, 2011, Landscape Institute Advice Note 01/11 Photography and Photomontage in Landscape and Visual Impact Assessment

Section	Applicants proposed matter	PINS Comments	Summary of response
		construction; the effects of which the Inspectorate considers would likely last into the operational phase. The Inspectorate agrees that operational effects of the gas pipeline can be scoped out of the ES on the basis that any loss of hedgerows that is caused by the construction of the pipeline is appropriately assessed having regard to the longevity of impacts. PINS welcomes that the likely significant effects on landscape character and visual amenity resulting from operation of the above-ground pipeline structures (i.e. the pig trap facility, minimum offtake connection and the pressure reduction and metering station) would be assessed.	construction and operation and recommend appropriate mitigation measures. It is considered that any adverse effects associated with hedgerow loss would reduce after 15 years of growth of reinstated hedgerows. Noted
7.6.2	Effects on designated landscapes and the setting of cultural heritage assets – this would instead be considered in the Cultural Heritage chapter of the ES.	PINS accepts this approach. The applicant is advised to include clear cross referencing between the two chapters.	Noted – consideration will be given to the visual receptors adjacent to heritage assets where the appreciation of the view is key to the experience.
7.6.1	Receptors	In addition to the sensitive receptors outlined in section 7.6.1 of the Scoping Report, the applicant is advised to consider the potential visual impacts on users of leisure facilities, such as the Drax Golf Club and recreational users of the River Ouse. The applicant's attention is drawn to the comments of North Yorkshire	Leisure users will be considered that a viewpoint from Drax Golf Club was taken as part of the winter views

Section	Applicants proposed matter	PINS Comments	Summary of response
		County Council and Selby District Council regarding sensitive receptors to be considered within the assessment.	
7.6.4	Sensitivity of receptors	The applicant should agree the sensitivity of the landscape and visual receptors with the relevant local planning authority.	Noted: This will be reviewed with the LPAs post PEIR
7.6.4	Landscape character and visual amenity	PINS advises that any potential damage to existing mature farmland pattern should be assessed.	Noted and is being considered in terms of impacts on Development Parcel A and the Pipeline Study Area
7.6.5	Photograph	The applicant proposes that photography used to inform the assessment will be taken during the summer, with the need for winter photography to be determined using professional judgement. To allow for identification of a worst-case scenario, the Inspectorate considers that photographs should be taken from the selected viewpoints during winter unless otherwise agreed with the relevant consultees.	Autumn and winter viewpoints have been agreed with the LPAs and have been taken to demonstrate Scenario 1 (both Units X and Y)
7.6.5	Photomontages	The Scoping Report explains that the need for photomontages will be determined through discussions with the relevant local planning authorities. The Inspectorate considers that photomontages would be a useful aid to the assessment. The locations of the photomontages should be agreed with the relevant local planning authority.	Verified viewpoints have been agreed with the LPAs and photomontages prepared to demonstrate the Scenario 1 (both Units X and Y)
	Sludge lagoons	Section 5.3.8 of the Scoping Report proposes to relocate the	The sludge lagoons would

Section	Applicants proposed matter	PINS Comments	Summary of response
		existing sludge lagoons (currently located within the curtilage of Drax Power Station). However it is unclear where these would be located to. This should be explained within the ES, along with details of any changes to topography from these works. The resultant potential landscape and visual effects should be assessed.	only be relocated if Scenario 1 goes forward to accommodate Unit Y and would not be considered as part of a separate planning application. The sludge lagoons would be moved from Area F to E. Potential landscape and visual effects are considered as part of the assessment.
	Temporary Structures	The ES should consider the potential landscape and visual effects resulting from any temporary construction-related structures (such as the mobile crane and the pedestrian bridge).	Temporary structures will be considered as part of the assessment
	Reinstatement of pipeline	The ES should include proposals for the reinstatement of the pipeline route as close to the original state as possible.	Noted

CONSULTATION

- 10.3.2. As part of the ongoing EIA and design development process, consultation is being undertaken through a two stage process outlined in Chapter 1 (Introduction).
- 10.3.3. Pre application consultations have taken place with technical specialists in Local Planning Authorities (LPAs) to agree the extent of the Study Area, representative viewpoints, necessity for winter views, verified photomontages and obtain datasets. Discussions have included North Yorkshire County Council (NYCC), Selby District Council (SDC), East Riding of Yorkshire Council (ERoY) and Doncaster Metropolitan Borough Council (DMBC). North Lincolnshire Council (NLC) was also notified as one selected viewpoint fell outside the Study Area and within their administrative area. In addition, advice has been sought from Natural England (NE).

10.3.4. The first round of consultations sought comments on the Study Area and preliminary viewpoints. Following site visits a further round of consultations took place over the representative viewpoints, the necessity for winter views and field verified visualisations / photomontages. Subsequent to the discussions over representative viewpoints, further consultations took place to determine with LPAs whether the extent of the Study Area should be revised to accommodate a potential increase in the height of the stacks up to 120 m. Consultations to date are outlined in Table 88 below and Appendix F.2 refer which includes two “historic” location plans showing the preliminary and revised viewpoint locations.

Table 88 - Consultation summary table

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
NYCC	31/08/2017 (Email and Phone)	NYCC agreed that the Study Area should be set at 10 km if LVIA explains the rationale. However other significant features/protected landscapes that may be significantly visually impacted by this developed beyond 10 km should be checked.	Two additional viewpoints were included within the preliminary list outside 10 km. These include viewpoint 19 and 20 (which remain unchanged on Figure 10.10 viewpoint location plan)
EROY	28/09/2017 (Email)	ERoY agreed with the defined Study Area of 10 km, viewpoints selected and added that consideration should be given to Important Landscape Areas.	No action.
SDC	29/09/2017 (Email)	SDC confirmed that they agreed with NYCC comments of 31/8/2017.	No action.
NYCC	29/09/2017 (Email and Phone)	NYCC recommended checking the following viewpoints in addition to the 16 preliminary viewpoints proposed:	Additional viewpoints were field verified and plan issued showing more clearly the

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
		1/ Views towards Drax over the open countryside from the A19 driving eastwards. 2/ Views across to Drax from the A1041. 3/ Open views affecting the southern side of Thorpe Willoughby from the Selby Golf Course area. Requested a plan view of the site to check orientation and therefore impact on surrounding landscape.	orientation of the Proposed Scheme.
DMBC	21/9/2017 and 02/10/2017 (Email and Phone)	Confirmed that they agreed with the Study Area of 10km but suggested another viewpoint from Peatlands Way near Moorends to demonstrate two different views from a smaller more isolated settlement and larger settlement.	Additional viewpoint was field verified and an alternative (9c) suggested in addition to 9b (now viewpoint 12 on Figure 10.10 viewpoint location plan)
NYCC	02/10/2017 (Email)	NYCC recommended that views from Brayton Barff Country Park should be considered.	Additional viewpoint was field verified (12c) (now viewpoint 15 on Figure 10.10 viewpoint location plan)
DMBC	09/10/2017 (Email)	Revised viewpoint list was issued and	No action.

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
		recommended visualisations / photomontages. DMBC confirmed happy with recommended views which now includes one from edge of Moorends (9c). No other comments regarding winter views or visualisations / photomontages.	
NYCC	11/10/2017 (Email)	NYCC agreed with the revised viewpoints and recommended winter viewpoints should be considered which impact on the community close by. These should include viewpoint 2, 3a- c, 7, 8, 11 and 13 for winter views. NYCC agreed with the suggested verified views and added viewpoint 3b, 10b and 12c.	Viewpoints 2, 3a, 3b, 3c and 3c, 7, 8 and 11 are to be considered for winter views and the following viewpoints 3b, 10b and 12c in addition to the suggested views for visualisations / photomontages. Now winter viewpoints 2, 3, 4, 5, 9, 10, 14 and 17 and photomontages 3, 5, 6,13 and15 refer to Figure 10.10 viewpoint location plan.
EROY	11/10/2017(Email)	ERoY confirmed that they were happy for the LVIA to take its course and identify which viewpoints should be used when the fieldwork is	Viewpoints 3a, 3b and 4b are to be considered for visualisations /photomontages now 3, 4 and 6 on Figure 10.10

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
		undertaken. Recommended visualisations / photomontages near the Barmby Barrage/Barmby on the Marsh (the VP3 family), and along the Trans Pennine Trail near Asselby (VP4b).	viewpoint location plan.
EROY	13/10/2017 (Email)	ERoY sent datasets on Conservation Areas and ILAs.	Information included in figure set
SDC	17/10/2017 (Email)	SDC had no further comments and were in agreement with the representative viewpoints discussed with NYCC. Datasets received regarding Conservation Areas and ILAs	No action – information included in figure set
NYCC	8/11/2017 (Email and phone)	Further consultation took place over potential changes to the Study Area based on a potential stack height of 120m – NYC stated that they were comfortable that the key viewpoints have been covered.	No action
DMBC	8/11/2017 (Email and phone)	DMBC confirmed that the Study Area as proposed and the viewpoints proposed are still regarded as satisfactory in the context of 120m stack height.	No action
EROY	8/11/2017 (Email and phone)	ERoY confirmed that they were happy for	No action

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
		the Study Area to remain at 10km in light of the potential change in the stack height and do not feel that a wider study area would particularly offer anything more to the identification and understanding of the likely effects of the proposal in our area.	
SDC	9/11/2017 (Email and phone)	SDC confirmed that they still agreed with a 10km Study Area based on a change in stack heights to 120m.	No action

10.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

10.4.1. The LVIA has been based on best practice guidance referred to in Section 10.2. A detailed description of the assessment methodology is included within Appendix F.3.

ASSUMPTIONS

SCENARIOS, BASELINES AND OPTIONS

10.4.2. The assessment conducted within this PEIR Chapter is based on the following assumptions:

10.4.3. The LVIA considered two scenarios in terms of the number of units repowered and therefore the scale and size of proposed structures and the geographical extent of the area influenced by them:

- Scenario 1: It assumes the repowering of both Units 5 and 6 and construction of both Units X and Y and eight associated 120 m high stacks, two battery storage facilities housed in one location and the GRF and Compressor Building; and
- Scenario 2: The repowering of Unit 5 or 6 and construction of only Unit X and four associated 120 m high stacks, one battery storage facility housed in the same sized facility as Scenario 1 and the GRF and Compressor Building.

10.4.4. For both options the proposed location of these facilities would be fixed. The maximum number and height of some of these structures for both scenarios is summarised in Table 89.

Table 89 - Scenario 1 and 2 Parameters

	Scenario 1	Scenario 2
Power Station Parameters	Parameter Details	
Heat Recovery Steam Generators (HRSG)	4 Buildings / up to 37.5m high (48 m, x 23 m)	2 Buildings / up to 37.5m high (48 m, x 23 m)
Combined Cycle Gas Turbine Building	1 building / up to 28 high (92 m, x 22 m)	1 building / up to 28 high (92 m, x 22 m)
Number of Stacks associated with the above	8 up to 120 m in height	4 up to 120 m in height
Battery Storage Facility	10 m (180 m, x 60 m)	10 m (180 m, x 60 m)
Gas Compressor Building	50 m x 75 m and 10m in height	50 m x 75 m and 10 m in height
Gas Receiving Facility	35 m x 75 m and 10 m in height	35 m x 75 m and 10 m in height
Minimum Offtake Connection (MOC) and Pipeline inspection Gauge (PIG), Pipeline Trap Facility (PTF) and on site Pressure Reduction and Metering Station (PRMS).	4 m Option A 22.82 ha and 33.93 ha for Option B.	4 m Option A 22.82 ha and 33.93 ha for Option B.

- 10.4.5. In relation to the construction transportation scenarios, as outlined above in paragraph 10.4.10 the LVIA focused on Scenario 1 (as the effects of Scenario 2 are not considered to be any worse than those identified for Scenario 1), identifying where relevant any differences arising between transportation by road or river utilising the jetty (refer to Chapter 3 for further details). Given that it was considered that there are no differences in effect between Scenario 1 and 2, Scenario 2 was only briefly referred to in the remainder of this chapter.
- 10.4.6. In terms of the two pipeline options, consideration was given to the Pipeline Study Area route Options A and B and Above Ground Installation.
- 10.4.7. In addition, this assessment takes into account the potential loss of existing vegetation within Power Station Site to accommodate the CCS in terms of embedded primary mitigation.
- 10.4.8. In terms of the Site Reconfiguration Works, for the purposes of the LVIA both a "current" and "future" baseline were considered. This is due to the possibility of Site Reconfiguration Works being carried out prior to the implementation of the Proposed Scheme (as explained in Chapter 3). If the Site Reconfiguration Works are consented under the TCPA and undertaken in 2018/19, then the Site Reconfiguration Works would take place prior to construction of the Proposed Scheme and the baseline (a future baseline) would treat those reconfiguration works as already carried out. However, the Site Reconfiguration Works may be part of the Proposed Scheme, consented by the DCO, in which case, those works would

be undertaken when the Proposed Scheme is implemented (so the baseline would remain as it is today). Current and future baselines are therefore as follows:

- Current Baseline: this assumes the Site Reconfiguration Works are part of the Proposed Scheme and would therefore be carried out when the Proposed Scheme is implemented. For the purposes of this assessment, this scenario therefore includes effects from the proposed Site Reconfiguration Works when assessing the effects of the Proposed Scheme – the Site Reconfiguration Works would be part of the Proposed Scheme. This scenario is referred to as the "current baseline" as it reflects the existing situation in which the Site Reconfiguration Works have not been carried out.
- Future Baseline: this assumes the Site Reconfiguration Works would be implemented through a separate TCPA planning permission in 2018/19 and would be complete when the Proposed Development is implemented. This scenario is referred to as the "future baseline" as it reflects a baseline at a future time when the Site Reconfiguration Works would have been completed. The Proposed Scheme would therefore be assessed against a baseline where the Site Reconfiguration Works have already been completed.

10.4.9. Potential landscape and visual impacts and the resulting effects (both adverse and beneficial) are considered for the following phases:

- Construction - This assumes for the current baseline assessment that the Site Reconfiguration Works including the demolition and relocation of existing facilities including the turbine outage stores, learning centre, contractors compound and welfare facilities, sludge lagoons and leisure facilities (a private squash court), are part of "construction". For the future baseline assessment, "construction" excludes the Site Reconfiguration Works on the basis they are assumed to have already been completed. The assessment assumes a construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.
- Opening (start of operation), assumes construction (including Site Reconfiguration Works in either scenario) is complete and the Proposed Scheme is in operation. New landscape mitigation measures have been introduced.
- Operation (year 15 of operation) assumes that landscape mitigation measures have matured.
- Decommissioning of the Proposed Scheme and which covers demolition and removal of the structures comprising the Proposed Scheme approximately 25 years post opening of the Proposed Scheme, other than the pipeline which is assumed to remain in situ.

10.4.10. The sensitivity and magnitude of change for each landscape resource and visual receptor throughout the Study Area as defined in Figure 10.1 was then determined, and effects of the Proposed Scheme on landscape and visual amenity were then assessed. This was based on the lifecycle of the Proposed Scheme considering impacts associated with construction (current and future), permanent operation (year 1 and year 15 after which any on or off site mitigation planting should have matured) and decommissioning.

10.4.11. In terms of the electrical connection scenarios, there is no difference in the effects for each scenario.

10.4.12. In terms of the air quality mitigation scenarios, there is no difference in the effects for each scenario.

EMBEDDED MITIGATION

- 10.4.13. Mitigation of adverse environmental impacts can be achieved by avoidance, reduction, remedying of, or compensation. Embedded primary and tertiary mitigation measures form an intrinsic part of the Proposed Scheme design through an iterative process.
- 10.4.14. Embedded primary mitigation has been assumed to be in place for the purposes of the assessment taking account of the lead in periods. Assessment of short term effects considers impact in the first year of operation (Year 1) and long term effects take into consideration the time taken for vegetation to reach maturity and is therefore assessed at Year 15 +.
- 10.4.15. The following mitigation measures would either be incorporated into the design (primary mitigation) or are standard construction or operational methods and would be implemented within the confines of the Site Boundary (tertiary mitigation). These measures have therefore been taken into account during the impact assessment process described in this chapter:
- 10.4.16. Considered through the inherent design process:
- Suitable materials would be used, where possible, in the construction of structures to reduce reflection and glare and to assist with breaking up the massing of the buildings and structures.
 - The selection of finishes for the buildings and other infrastructure would be developed in consultation with NYCC and SDC in order to minimise the visual impact of the Proposed Scheme.
 - Visual clutter would be minimised where possible through careful design and siting.
 - Retention of specific areas of planting within the Power Station Site.
 - Retention of a 15 m woodland buffer within the Power Station Site, adjacent to the northern boundary during construction providing a continuous belt of woodland during the construction and operation of the Proposed Scheme (without CCS) which would reduce visual impacts. This can be classed embedded mitigation for as long as CCS is not required.
 - Creation of an additional 20 m wide woodland buffer close to the north eastern edge of the Site Boundary and within the Power Station Site which would be sufficient for screening and relocation of PRoW 35.6/11/1 to north of new planting. This mitigation planting would only be required if the CCS goes ahead at some future date and is therefore not considered to be embedded mitigation.
 - Retention of existing planting along the southern road entrance resulting in revisions to the arrangement of the contractor's village access road.
- 10.4.17. Based on a considerate construction approach:
- Lighting required during the construction and operation stages of the Proposed Scheme would be designed to reduce unnecessary light spill outside of the site boundary avoiding unnecessary sky glow.

CONSTRUCTION

- 10.4.18. During construction, the following measures would be included in the Construction Environmental Management Plan (CEMP):
- Tree retention and protection proposals.

- Temporary storage of topsoil and any other material considered of value for retention. Where practical stores would be sited to screen the construction works.
- Agreed site access points.
- Lighting.
- Maintenance of tidy and contained site compound.
- Temporary measures including the removal of temporary structures and stockpiles when no longer required, and prompt reinstatement of temporary construction areas.
- Spreading of topsoil, reseeding and planting within the Site and adjoining areas that are to be reinstated as soon as possible after sections of work are complete.
- Management of all reinstated area in accordance with a 5 year aftercare plan to ensure full and successful establishment of the planting to the approval of the planning authority.
- Long term management plan for new and existing planting considering their longevity and screening function.

OPERATION

10.4.19. During operation the following mitigation proposals would be implemented:

- Detailed landscape plan, with information on species, schedules and specification.
- Woodland, tree/hedgerow planting on the perimeter of the Power Station Site and Pipeline Study Area Site boundary to reduce views of the ground level activities.
- Planting with native species of trees and shrubs similar to those present nearby, using local provenance stock wherever possible, in order to enhance biodiversity and connect habitats to form an ecological network.
- Hedgerow reinstatement and new tree planting across pipeline routes subject to micro-siting and National Grid's guidance on planting adjacent to and over pipelines.
- Careful consideration of colour and texture of structures associated with Above Ground Installation.
- New planting to screen Above Ground Installation

DECOMMISSIONING

10.4.20. Decommissioning would comprise the removal of all Proposed Scheme items and restoration of the Power Station Site. The gas pipeline would be left in situ, unless otherwise required to be removed. If removed, reinstatement would match the original construction requirements and specification used during construction.

SCOPE OF ASSESSMENT

10.4.21. The scope of potentially significant and insignificant effects outlined below is consistent with those identified in the Scoping Report, developed with the benefit of additional post-scoping consultation and preliminary assessment. It should be noted that as a result of the PIN's Scoping Opinion further consideration was given to the effects associated with the potential loss of vegetation and existing mature farmland pattern associated with the Pipeline Study Area to ensure that the longevity of such effects were considered.

10.4.22. There is a close relationship between the landscape setting of cultural heritage assets and their historic setting and for this reason there are clear interrelationships between this chapter and Chapter 9 (Historic Environment). The LVIA informs the cultural heritage assessment about the extent of potential visibility. It addresses the 'present day' effects on heritage assets that are also landscape or visual receptors because they are

distinct local landscapes or tourist/visitor attractions where views are an important contributory factor to the experience. The potential effects on the historic setting of heritage assets are considered in Chapter 9 (Historic Environment).

INSIGNIFICANT EFFECTS

10.4.23. The following landscape effect is not considered to be significant and therefore will not be considered further:

- Aside from the siting of a PIG, MOC facility, PTF and PRMS, which could generate significant effects, land associated with the proposed gas supply pipeline which would cross large open fields of intensive agriculture would be reinstated and thus returned to its previous use. The Scoping Opinion agrees that the operational effects of the gas pipeline can be scoped out of the ES on the basis that any loss of the construction of the pipeline is appropriately assessed having regard to the longevity of impacts. Due consideration was therefore given to the longevity of the impacts of the pipeline on hedgerow loss during construction and operation.

LIKELY SIGNIFICANT EFFECTS

10.4.24. The scoping report identified the following potentially significant effects of the Proposed Scheme:

- Effects on landscape character within and surrounding the Study Area, based on a current and future baseline, from construction and plant activities.
- Effects on landscape character within and surrounding the Study Area due to new built form and landscaping on completion and during operation.
- Effects on visual amenity of surrounding visual receptors, based on a current and future baseline, from construction activities and plant.
- Effects on the visual amenity of surrounding visual receptors due to new built form and landscaping on operation.

BASELINE APPRAISAL

10.4.25. The purpose of the baseline is to provide an understanding of the landscape in terms of its constituent elements/features and character, its condition, how it is experienced and the value attached to it. This stage also determines the area over which the Proposed Scheme may be visible and those groups of people who may experience views of the Proposed Scheme. The following tasks are undertaken as part of the baseline appraisal:

- An overview of statutory plans and other data regarding relevant designations and planning policies for the Study Area.
- A consideration of the landscape character of the Site with reference to published landscape character assessments and verified through fieldwork.
- Agreement with the LPAs over the extent of the area of landscape that needs to be covered in assessing landscape effects.
- GIS visual mapping of the Site, subsequent identification of representative viewpoints and agreement over representative viewpoints and the extent of the visual study area.
- A visual appraisal of the Site and its surroundings which was carried out in November 2017. At the time of the survey deciduous trees and hedgerows were in leaf. The visual appraisal was repeated in December 2017 following leaf fall to provide a worst case scenario

EXTENT OF STUDY AREA

10.4.26. The Guidelines for Landscape and Visual Impact Assessment (GLVIA 3) clarifies how study areas should be determined on a project specific basis. Paragraph 5.2 states that the study area extent should be:

“... Based on the extent of Landscape Character Areas likely to be significantly affected either directly or indirectly” or “on the extent of the area from which the development is potentially visible, defined as the Zone of Theoretical Visibility, or a combination of the two.”

10.4.27. For the purposes of this assessment the "Study Area" was defined by a combination of professional judgment, discussions with the LPAs and analysis of ZTVs. As there is no clear guidance on the extent of study areas for power stations and associated stacks, guidance from Scottish Natural Heritage⁵⁹ was initially considered which refers to a study area of 35 km for a 120 m height wind turbines including the rotors.

10.4.28. Discussions were had with LPAs over the need to follow such guidelines and it was agreed that a smaller Study Area of 10 km for both landscape character and visual amenity should be defined. The decision was justified based on the type of development (power stations are static objects whilst turbines are moving objects which attract the eye), the relative position of the Proposed Scheme to existing structures (which are much higher and of a greater mass) and that the surrounding landscape is relatively flat.

METHODOLOGY FOR THE ASSESSMENT

10.4.29. The assessment of landscape and visual effects is both a subjective and objective process (Appendix F.3). Whilst subjectivity can never be removed from the assessment process, by following a systematic and structured framework of assessment, a more robust assessment can be performed and more transparent conclusions drawn.

10.4.30. The assessment process includes the consideration of both tangible and intangible aspects of the environment. For example, intangible factors such as disturbance and tranquillity (including light pollution) are important factors in influencing how the landscape is interpreted and experienced. Direct and indirect effects of the development upon landscape character and visual amenity are also identified where they occur.

10.4.31. The assessment considered primary and tertiary mitigation measures as built into the design, as set out above. Following the assessment of baseline landscape and visual context the LVIA assessed:

- The sensitivity of the landscape resource and visual receptors.
- The magnitude of change.
- Significance of effect based on a comparison of the sensitivity of the resource/receptor against the magnitude of change.

SENSITIVITY

10.4.32. Sensitivity is the extent of which the resource or receptor can accept a change associated with the Proposed Scheme. Sensitivity varies between the landscape resource and receptor types:

⁵⁹ Scottish Natural Heritage, 2017, Visual representation of Wind Farms Guidance, Version 2.2

- Landscape sensitivity will vary according to the contribution the landscape resources make to landscape character, existing land use and features and their pattern, scale, quality and condition as well as the value placed on the landscape and scope for mitigation.
- Visual sensitivity will be judged based on location and context of the viewpoint, the expectations and occupation or activity of the receptor and importance or value of the view experienced.

10.4.33. Refer to Appendix F.3 for further details.

MAGNITUDE OF CHANGE

10.4.34. The magnitude of change affecting the landscape resource or visual receptor depends on the nature, scale and duration of a particular change that is expected to occur. Factors taken into account include:

- Changes to the visual appearance of the site (proportion, scale, enclosure, colour and views).
- Changes to the character of the site, including the physical structure of the buildings and development patterns.
- Perceived changes to surrounding buildings, street scene, routes or open space resulting from any changes to context and setting.
- Changes to the quality and condition of the landscape character perceived by the public.

10.4.35. The magnitude of change will vary from large, where there is the irrevocable or permanent loss and notable change to the landscape character or view to negligible where the change is barely perceptible. Refer to Appendix F.3 further details.

SIGNIFICANCE

10.4.36. In accordance with guidelines, significance is determined by considering the sensitivity/susceptibility of the landscape resource or visual receptor to change and the magnitude of change expected to result from the Proposed Scheme during its lifecycle (construction works, operation and decommissioning).

10.4.37. For the purposes of the LVIA, level of effect is classified on a four point scale: negligible, minor, moderate or major. Effects found to be moderate or greater are considered to be significant. Effects which are minor to moderate may or may not be significant and are dependent on the context and the specific landscape or visual receptor in question. Effects of minor significance or lower will not be significant. Table 90 below illustrates how the significance of effects is determined (refer to Appendix F.3 for further details).

10.4.38. It should be noted that Table 90 is intended to be a framework for assessment only and that the level of effect (significance) will vary depending on the circumstances, the type and scale of development proposed, the baseline context and other factors. The gradations of magnitude of change and level of effect used in the assessment represent a continuum; the assessor uses professional judgement when gauging the level of effect and determining whether or not an effect should be considered significant.

Table 90 - Matrix for Determining Significance of Landscape and Visual Effect

		Sensitivity (Value / Importance)			
		High	Medium	Low	Negligible
Magnitude of change	Large	Major	Moderate – Major	Minor – Moderate	Negligible
	Medium	Moderate – Major	Moderate	Minor	Negligible
	Small	Minor – Moderate	Minor	Negligible – Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

10.4.39. Effects can be described in a variety of ways depending on the assessment:

- Adverse (negative) or beneficial (positive).
- Direct (e.g. actual physical change and close perceptual changes) or indirect (e.g. perceptual change at a distance).
- Permanent or temporary (short, medium or long term).
- Reversible or irreversible.

10.5 BASELINE CONDITIONS

LANDSCAPE CHARACTERISATION

NATIONAL

- 10.5.1. The Site and the Study Area lie within National Character Area (NCA) Profile 39 Humberhead Levels⁶⁰, which is described as an area with: *“big expansive skies, and vertical elements like water towers, power stations and wind turbines are very prominent”*.
- 10.5.2. These power stations include Drax and Eggborough to the west.
- 10.5.3. To the north lies NCA Profile 28 Vale of York, west NCA 30 Southern Magnesium Limestone whilst to the east are a series of NCAs the closest being NCA 45 Northern Lincolnshire Edge and Coversands to the south of the Humber and NCA 27 Yorkshire Wolds to the north. NCA 41 the Humber Estuary wraps around the river edge.
- 10.5.4. The NCA are at a large scale and cover a considerable area. It is considered that for this scale of assessment both the county and local landscape character assessments are a more appropriate tool by which to determine landscape character.

COUNTY

- 10.5.5. The North Yorkshire and York Landscape Characterisation⁶¹ covers part of the Study Area including the Site. The document identifies Landscape Character Types (LCTs) at a county level. The Site lies within the Farmed Lowland and Valley Landscape Primary Landscape

⁶⁰ Natural England, 2013, NCA Profile 39: Humberhead Levels

⁶¹ Chris Blandford Associates, 2011, North Yorkshire and York Landscape Characterisation Project, North Yorkshire County Council

Unit (PLU). This PLU forms a belt running north south through North Yorkshire and is divided up into 11 LCTs of which the Levels Farmland (23) and River Floodplain (24) LCT are relevant to the Site.

- 10.5.6. The relevant characteristics of these LCTs are outlined in Table 91 below along with the key characteristics of other PLUs and LCTs that are relevant to the Study Area (Figure 10.3). The sensitivity of each landscape receptor is summarised in Appendix F.5.

Table 91 - Landscape Character Types and Areas within the Study Area

Primary Landscape Unit	Key characteristics (summarised from the LCAs)
North Yorkshire Landscape Characterisation Project	
Farmed Lowland and Valley Landscapes (PLU)	
Levels Farmland (23) (includes the Power Station Site and the western part of the Pipeline Study Area)	• <i>“Predominantly flat, low-lying landscape which encompasses a patchwork of arable fields;</i> • <i>Large scale, open and rectilinear field pattern;</i> • <i>Dykes or ditches often form field boundaries, with an general absence of hedgerows;</i> • <i>Industrial scale farm buildings, large embankments and drains, and major energy and transport infrastructure contribute human elements; and</i> • <i>Historical features, such as windmills, recording past attempts to drain the landscape are key features”</i>
River Floodplain (24) includes the middle and eastern end of the Pipeline Study Area)	• <i>“A series of flat, low lying, relatively narrow river corridors which flow through the different types of Vale Farmland LCT within the Study Area;</i> • <i>The ‘Ings’ - flood meadows maintained by traditional hay making activities;</i> • <i>Landscape pattern comprises a mixture of flood meadows, neutral grasslands and floodplain mires;</i> • <i>Halls and manor houses are key landscape features;</i> • <i>River engineering features such as Levees assert a human influence over the landscape;</i> • <i>Power stations, pylons and former collieries; and</i> • <i>The A1 (M) introduces a source of noise and visual intrusion in several places”.</i>
Vale Farmlands with Plantation Woodlands and Heathland (28)	• <i>“A patchwork of low lying, predominantly arable fields, often delineated by a network of mature hedgerows and interspersed with patches of regular shaped mixed and coniferous plantation woodlands;</i> • <i>Large heathlands are key features on sandy soils;</i> • <i>Distant visual containment is provided by higher Landscape Character Types to the east and west;</i>

Primary Landscape Unit	Key characteristics (summarised from the LCAs)
	• <i>Strong sense of openness throughout much of this Landscape Character Type;</i> • <i>Scattered settlement pattern of towns, villages and farmsteads within the landscape around the main historic City of York (which forms part of the Urban Landscapes Primary Landscape Unit);</i> • <i>A network of trunk roads linking the larger settlements and towns”</i>
Urban Landscape (PLU) Selby	• <i>“Contrasts in settlement size and pattern, encompassing a mixture of cities and principal towns;</i> • <i>Settlements often contain a historic core which encompasses a pattern of historic buildings and streetscapes, displaying a vernacular tradition of local building materials;</i> • <i>The historic core is often surrounded by Victorian residential expansion and more modern suburban housing areas;</i> • <i>Urban areas also contain a mixture of industrial and commercial areas, alongside town and city centres – containing wide range of shops;</i> • <i>Urban areas usually contain a patchwork of green spaces/corridors amongst the urban fabric, including parks, encapsulated countryside and river corridors;</i> • <i>Different ages of settlement are reflected by contrasting street patterns, densities and architectural styles, although there is often homogeneity within different areas of townscape (for example, Victorian suburbs and post 1960’s suburbs);</i> • <i>The surrounding landscape provides a setting for the edges of each urban area, which is a determining factor in their distinctiveness and sense of place.”</i>

LOCAL

10.5.7. At a local level the Study Area is divided by the following landscape character assessments adhering to administrative boundaries (refer to Table 92 and Appendix F.5 for further details):

- The Landscape Assessment for Selby District⁶².
- The East Riding of Yorkshire Landscape Character Assessment⁶³.
- Doncaster Landscape Character Assessment and Capacity Study⁶⁴.

Table 92 - Local Landscape Character Areas and Types

Landscape Character Areas and Types	Key characteristics (summarised from the LCAs)
Landscape Character Assessment of Selby District	
Camblesforth Lowlands (includes the Power Station Site and the western part of the Pipeline Study Area)	• <i>“Flat, semi enclosed arable farmland with frequent lines of hedgerow tress, and patches of semi-natural scrub;</i> • <i>Scattered small broadleaf and mixed woodland plantations and shelterbelts on lighter arable farmland;</i> • <i>Ponds and scrub woodland on the edge of Selby;</i> • <i>Sparse pattern of settlement; and</i> • <i>Influence of the visually prominent Drax Power Station on the local landscape.”</i>
Wharfe – Ouse River Corridor (includes the middle and eastern end of the Pipeline Study Area)	• <i>“Open heavily drained arable farmland with occasional mixed farmland</i> • <i>Important areas of wetland, diverse marshy grasslands and unimproved neutral grassland</i> • <i>High grassy flood embankments, which visually isolate the river from the surrounding landscape</i> • <i>Large number of strategically sited historic villages</i> • <i>Prime highway for trade and communication</i> • <i>Influence of the Drax power station on the river landscape</i> • <i>Striking changes in the appearance of the river due to tidal variations”</i>
River Aire Corridor (edges the middle and eastern end of the Pipeline Study Area)	• <i>“Principal highway for trade and communication;</i> • <i>Strong influence of large scale industrial and infrastructure development, in particular power stations and the motorway on the river landscape;</i> • <i>Varied character combing flat open farmland and semi-enclosed arable farmland, and small areas of flat wooded farmland;</i>

⁶² Woolerton Dodwell Associates, 1999, The Landscape Assessment for Selby District, Selby District Council

⁶³ Carl Bro, 2005, The East Riding of Yorkshire Landscape Character Assessment, East Riding of Yorkshire Council

⁶⁴ ECUS Ltd, 2007, Doncaster Landscape Character Assessment and Capacity Study, Doncaster Metropolitan Borough Council

Landscape Character Areas and Types	Key characteristics (summarised from the LCAs)
	• <i>Open heavily drained arable farmland on valley floor, with high grassy flood embankments, and areas of smaller scale mixed farmland;</i> • <i>Strategically sited historic villages;</i> • <i>Historic parkland and country mansions; and</i> • <i>Important wetlands, diverse marshy grasslands and unimproved neutral grasslands.”</i>
East Selby Farmlands	• <i>“Predominantly flat arable farmland, medium in scale and with frequent lines of hedgerow trees and strong pattern of enclosure</i> • <i>Area of more traditional mixed farmland with small-medium scale pattern of fields, thick rich hedgerows and numerous hedgerow of trees</i> • <i>Unimproved pastoral scenery of the narrow river Derwent floodplain which is of high conservation value</i> • <i>Dispersed pattern of farmsteads and small nucleated villages”</i>
Hambleton Sandstone Ridge	• <i>“Low but distinctive ridge is characterised by two wooded hills</i> • <i>Gently undulating arable farmland</i> • <i>Parkland that provides the setting to Gate-forth Hall”</i>
West Selby Plain	• <i>“Extensive area of flat open low-lying farmland with arable crops intensively cultivated in large or very large fields with few trees or hedgerows</i> • <i>Belt of semi-enclosed or lightly wooded landscape with frequent hedgerow trees and small woodlands</i> • <i>Very sparse settlement, with only a few isolated properties</i> • <i>Bishop’s Wood, the largest woodland in Selby</i> • <i>Rural fringe character of farmland adjacent to Selby Church Fenton airfield, still in use as a training centre by the RAF”</i>
Skipwith Lowlands	• <i>“Flat wooded arable farmland, visually enclosed and characteristically estate-managed</i> • <i>Extensive area of semi-natural lowland heath of high conservation value</i> • <i>Many scattered farmsteads and cottages have a unity of style, reflecting estate ownership</i>

Landscape Character Areas and Types	Key characteristics (summarised from the LCAs)
	• <i>Unimproved pastoral scenery of the narrow river Derwent floodplain which is of high conservation value</i> • <i>The Riccall mine developed on the former Riccall airfield</i> • <i>Wide grassy verges</i>
East Selby	• <i>“Predominantly flat arable farmland, medium in scale and with frequent lines of hedgerows and a strong pattern of enclosure</i> • <i>Area of more traditional mixed farmland with small medium scale pattern of fields, thick rick hedgerows and numerous hedgerow trees</i> • <i>Unimproved pastoral scenery of the narrow river Derwent floodplain which is of high conservation value</i> • <i>Dispersed pattern of farmsteads and small nucleated villages”</i>
Southern Farmland	• <i>“Varied character, predominantly flat semi-enclosed arable farmland, with an area of estate-managed wooded farmland, and an area of larger scale more open farmland;</i> • <i>Distinctive area of more traditional mixed farmland to the south of Blane moor, with pastures and orchards;</i> • <i>Small wetlands, some of which are medieval moats; Networks of minor roads and lanes linking scattered properties and settlements;</i> • <i>Traditional farmhouses typically constructed in red brick;</i> • <i>Distinctive landform of the ash disposal site Gale Common; and</i> • <i>Generally quiet and tranquil character largely unaffected by urban and industrial development.”</i>
East Riding of Yorkshire Landscape Character Assessment	
Landscape Character Type 4: River corridors	• <i>“Low lying flat floodplain of the river valleys on the western edge of the East Riding.</i> • <i>Combination of grassland pasture and meadow that are subject to seasonal flooding.</i> • <i>Man-made embankments formed as a result of dredging in the twentieth century.</i> • <i>Riparian woodland and trees in the corridor.</i> • <i>Areas of species rich alluvial flood meadow habitat.</i>

Landscape Character Areas and Types	Key characteristics (summarised from the LCAs)
	• <i>Organic arrangement of medium sized fields combined with more regular boundaries of enclosed fields.</i> • <i>Cultural and historic associations include churches and river crossing points.</i> • <i>Several moated sites within the corridor.</i> • <i>Windmills are a particular feature on the Ouse east of Goole.</i> • <i>Intimate isolated corridor landscape that is a marked contrast from surrounding intensively farmed land.</i> • <i>Villages, hamlets and farmsteads line the river corridor just above the floodplain."</i>
Landscape Character Type 5 Open Farmland	• <i>"Low lying flat landscape below 10m AOD.</i> • <i>Relatively featureless intensively farmed arable landscape.</i> • <i>Large areas are in the riparian flood plain of the River Derwent.</i> • <i>Large scale fields with fragmented hedgerow boundaries. Boundaries lost in places.</i> • <i>Open character with extensive views across the flat landscape.</i> • <i>Few woodland blocks and relatively little tree cover contributing to extensive views that include Drax Power Station to the southwest.</i> • <i>Howden in the largest settlement.</i> • <i>Howden Minster is an important landmark.</i> • <i>Small villages and Farmsteads are scattered throughout but overall settlement density is low. Many of these villages have Saxon origins.</i>
Landscape Character Type 7 – Foulness Open Farmland	• <i>Low lying flat landscape with open views stretching as far as the Wolds in the east.</i> • <i>Very few trees and woodland.</i> • <i>Sparse settlement consisting mainly of scattered farmsteads</i> • <i>Few roads or public rights of way.</i> • <i>Large and very large rectilinear fields surrounded by fragmented hedgerows.</i> • <i>Regular rectilinear drainage ditches feeding into the more sinuous River Foulness.</i> • <i>Important location of Iron Age settlement and iron working.</i> • <i>Roman and medieval archaeology is also present".</i>

Landscape Character Areas and Types	Key characteristics (summarised from the LCAs)
Landscape Character Type 8 M62 Corridor Farmland	• <i>“Low lying flat agricultural landscape.</i> • <i>Open views particularly from the motorway which is slightly raised above the surrounding area.</i> • <i>Communication infrastructure is a prominent feature i.e. motorway, roads and canal.</i> • <i>Settlement pattern is linear along communications corridors.</i> • <i>Linear tree and woodland cover associated with roads and railway lines.</i> • <i>Hedgerows field boundaries in varying condition.</i> • <i>Varied field size and field pattern along the corridor.</i> • <i>Varying scales of commercial development is present along the corridor.</i> • <i>The port of Goole is a major settlement in the East Riding located in this corridor.</i> • <i>Horticultural development is a feature of the corridor north east of Goole.</i> • <i>Railway lines and pylons are present.</i> • <i>Views of land mark structures e.g. Howden Minster and Boothferry Bridge and Goole Docks”.</i>
Landscape Character Type 9 Drained, Open Farmland	• <i>“Low lying flat intensively farmed arable landscape.</i> • <i>Sparse settlement concentrated along the river corridor.</i> • <i>Scattered farmsteads and villages.</i> • <i>Windmill towers are visible in several villages on the south bank of the River Ouse.</i> • <i>Open large scale landscape with very few trees and woodland.</i> • <i>Generally large fields south of the river.</i> • <i>Combination of fragmented hedgerow and ditch field boundaries.</i> • <i>Long linear field pattern unique to Goole Fields reflects past farming method.</i> • <i>Extensive views across the flat open landscape.”</i>
Doncaster Landscape Character Assessment	
G2 – Thorne and Hatfield Peat Moorlands	• <i>“Large scale, open, flat and low-lying.</i> • <i>Areas of dark peat exposed on Thorne and Hatfield Moors where there has been former peat extraction along with regenerating heathland.</i> • <i>Empty and remote feeling landscape on the Moors.</i>

Landscape Character Areas and Types	Key characteristics (summarised from the LCAs)
	• <i>Moors surrounded by area of scrubby woodland and a blocks of more mature deciduous trees which restrict views from the landscape beyond.</i> • <i>Limited access with no roads and few public footpaths onto the Moors.</i> • <i>Areas beyond the Moors are mainly arable farming with turf grown as a crop in some fields and occasional pasture.</i> • <i>Large geometric fields in a regular grid pattern bounded by straight ditches and occasional hedges and mature trees.</i> • <i>Scattered farmsteads surrounded by large sheds and shelterbelt trees.</i> • <i>Single built up area in the north west of the LCA at Thorne and Moorends.</i> • <i>Intrusive motorways, straight roads and a railway line on elevated embankments and a canal cut across the landscape beyond the Moors.”</i>
F2 – Owston to Sykehouse Settled Clay Farmlands	• <i>“Flat low lying landform.</i> • <i>Geology of silts and clays underlain by Sherwood sandstone.</i> • <i>Small scale arable and pasture fields including hay meadows.</i> • <i>Thick field boundary hedges with frequent mature hedgerow trees.</i> • <i>Some medium to large arable fields with fragmented hedges.</i> • <i>Network of water-filled drains.</i> • <i>Occasional small deciduous woodlands with larger and more frequent woodlands in the south west.</i> • <i>Compact historic settlements and many scattered farmsteads.</i> • <i>Historic network of lanes with sharp corners and roadside ditches.</i> • <i>Rail corridor cuts through the area with manned and unmanned gated crossings.</i> • <i>River Don and straight New Junction Canal with flood control embankments.</i> • <i>Occasional windmills and moated properties.</i> • <i>Network of green lanes and public rights of way.”</i>

- 10.5.8. It should be noted that the LCTs at a county level and LCAs at a district level (North Yorkshire and Selby District) overlap. As part of the PEIR the LVIA considered LCTs and LCAs at all levels. However for the Environmental Statement, the assessment will focus most on the more recent county level assessment and explain, where appropriate, the differences where overlaps arise.
- 10.5.9. The Study Area is covered by a number of Landscape Character Areas (LCAs) which are detailed in Appendix D. The Local LCA which covers the Site include the Camblesforth Lowlands and Wharfe Ouse River Corridor referred to in the Landscape Assessment of Selby District. The former LCA which includes the Proposed Scheme and the *western end of the Pipeline Study Area is described as a “flat, semi-enclosed arable farmland with frequent lines of hedgerow trees, and patches of semi-natural scrub”*.
- 10.5.10. It is an area of: *“scattered small broadleaf and mixed woodland plantations and shelterbelts” with a sparse settlement pattern.*
- 10.5.11. The Wharfe Ouse River Corridor LCA which covers the eastern end of the Pipeline Study Area is described as: *“Open heavily drained arable farmland with occasional mixed farmland”*.
- 10.5.12. Riverine characteristics are more prevalent with “important areas of wetland, diverse marshy grasslands and unimproved neutral grassland”, high grassy flood embankments” isolating the river from its surroundings and “strategically sited historic villages”.
- 10.5.13. For both LCAs, Drax Power Station is a visually prominent influence.
- 10.5.14. The eastern part of the Study Area falls within East Riding of Yorkshire Landscape Character Assessment (Carl Bro, 2005) and is covered by five LCTs. Each LCT is divided into a number of LCAs and those which fall within the Study Area are summarised below (Appendix A Figure 11.4 and Appendix E refer):
- River Corridors LCT (4A Derwent Valley – Barmby on the Marsh to Pocklington Canal Reach , 4B River Ouse Corridor, Barmby on the Marsh to M62 bridge, 4C River Ouse Corridor Howden Dyke to Trent Reach and 4D River Aire Corridor).
 - Open Farmland (5A Howden to Bubwith Farmland and 5B West of Holme on Spalding Moor Farmland)
 - Foulness Open Farmland (7BEastrington Farmland).
 - M62 Corridor Farmland (8A Howden to Gilberdyke and 8C M62 Corridor Hook to Pollington).
 - Drained Open Farmland (9A Thorne Moors, 9B Goole Fields, 9C Twin Rivers Farmland and 9D Blacktoft and Laxton Farmland).
- 10.5.15. The southern part of the Study Area falls within Doncaster’s administrative area. The Settled Farmlands and Peat Moorlands LCTs lie within the Study Area referred to in the Doncaster Landscape Character Assessment.
- 10.5.16. The Settled Farmlands LCT is divided into two LCAs of which F2 Owston to Sykehouse Settled Clay Farmlands is relevant to the Study Area. Key characteristics of the LCA include its: *“flat, low lying landform”, “network of water filled drains”, small, medium to large arable and pasture fields with thick field boundary hedges and “a network of green lanes and public rights of way”*.
- 10.5.17. To the east lies the Peat Moorlands and LCA Thorne and Hatfield Peat Moorlands (G2). This LCA is “large scale, open, flat and low lying”, evokes an “empty and remote

feeling” and is surrounded by areas of “scrubby woodland and blocks of more mature deciduous trees which restrict views from the landscape beyond”.

10.5.18. The edge of Moorends lies within the Study Area.

VEGETATION COVER

10.5.19. The Study Area is characterised by small woodland blocks with intermittent hedgerow and hedgerow trees along the majority of routes. Vegetation is often found along the main arterial routes. Larger areas of tree planting are also associated with historic estates.

10.5.20. Vegetation around the edge of the Existing Drax Power Station Complex includes numerous belts of mixed woodland. The main blocks of woodland are concentrated to the northwest between Barlow and the Power Station, along either side of the A645 to the southwest, south and south east as well as along smaller lanes to the east including Carr Lane and Wren Hall Lane. There is also a strong belt of woodland running on either side of a disused railway line which runs to the east of the Power Station and north of Drax village. Further site specific information is covered in the following paragraphs.

TOPOGRAPHY AND DRAINAGE

10.5.21. The topography within the Study Area is relatively flat lying between 5 m and 15 m AOD. There are small isolated pockets of high ground to the northwest, north east and south west including Hambleton Hough (approximately 40 m AOD) and Brayton Barff (55 m AOD) to the northwest and High Eggborough and Great Heck to the south west, 15 m respectively. In specific locations land has been raised as a form of flood defence. Barlow Mound, to the west of Drax Power Station is a prominent local landmark and is approximately 300 m in height, built in the 1970s using residue material from the power station.

10.5.22. Widespread evidence of drainage is prevalent throughout the Study Area. The River Aire runs to the south of the Site through the centre of the Study Area. To the north of Airmyn and east of the Site it joins the River Ouse which flows in a northwest/south east direction through Selby. The River Derwent feeds into the River Ouse north of Barmby on the Marsh. Other smaller tributaries, drains and ditches feed into these rivers.

10.5.23. Canals including the Aire and Calder Navigation and New Junction Canal, drains (Swinefleet Warping Drain), ditches, dykes and smaller watercourses including the River Went criss cross the landscape. Such features often form field boundaries and are prominent within the landscape alongside bridges and pumping stations. Isolated ponds are noticeable particularly within the centre of the Study Area.

SETTLEMENTS

10.5.24. The Study Area is characterised by small to medium sized settlements and isolated residential properties and farmsteads. Settlements close to the Existing Drax Power Station Complex and Site include:

- Drax (south east of the Existing Drax Power Station Complex).
- Camblesforth (south / south west of the Existing Drax Power Station Complex).
- Carlton (south / south west of the Existing Drax Power Station Complex).
- Snaith, West Cowick, East Cowick and Moorends (south of the Existing Drax Power Station Complex).
- Barlow (North West of the Existing Drax Power Station Complex).

- Hemingbrough (north / north east of the Existing Drax Power Station Complex).
- Barmby on the Marsh, Asselby and Knedlington (north east of the Existing Drax Power Station Complex)
- Airmyn (east of the Existing Drax Power Station Complex).
- Howden (east of the Existing Drax Power Station Complex).

10.5.25. The larger urban areas of Selby which lies to the northwest and Goole to the east are located within the Study Area.

TRANSPORT NETWORK

10.5.26. A number of motorways and A roads connect the larger settlements within and edging the Study Area. The M62 motorway lies approximately 3 km to the south of the Proposed Scheme and runs in an east/west direction from Goole to Knottingley (which lies outside the Study Area). The A19 runs north/south within the western part of the Study Area and connects Selby to Doncaster further south. The A645 runs to the north of the M62 and connects Snaith to Knottingley. It links with the A1014 which runs from East Cowick to Selby in the north. To the east, the A63 links Selby to Howden and the A614 connects with Goole running through Howden to Holme on Spalding Moor outside of the Study Area to the north east. A number of minor roads and tracks link smaller settlements, farmsteads and isolated properties within the Study Area.

10.5.27. Several railway lines crisscross the Study Area connecting Selby with Leeds, York, Goole and Hull. One line runs north/south from Doncaster to Selby between Drax and Eggborough power station and a spur line veers west to Leeds.

10.5.28. A number of Public Rights of Way (PRoWs) are located within the Study Area and either link the settlements or run alongside the watercourses and canals. Several PRoWs run in close proximity to the Existing Drax Power Station Complex linking Barlow, Camblesforth, Carlton, Drax and Long Drax. PRoWs which run in close proximity to the Existing Drax Power Station Complex and which may be affected by the Proposed Scheme include the following (Figure 3.1c):

- PRoW 35.6/11/1 which runs to the north west of the Existing Drax Power Station Complex and north of Development Parcel B.
- PRoW 35.47/1/1 to the north east of the Existing Drax Power Station Complex and crossing Development Parcel A.
- PRoW 35.47/1/2, 35.47.4.1, 35.47/5/2, 35.47/9/1, 35.49/2/1 and 35.26/7/1 which cross the Study Area and route options A and B.

10.5.29. The long distance Trans Pennine Trail runs through the Study Area. It forms two routes from Selby to the north of the Study Area and either follows the River Ouse to the east of the Existing Drax Power Station Complex, or south where it follows Burn Airfield before running along the banks of the River Aire, and heading southwards across the Study Area and along New Junction Canal.

10.5.30. Two National Cycle Routes cut across the Study Area following a similar course to the Trans Pennine Trail. Route 62 runs to the west of the Existing Drax Power Station Complex in a roughly north south direction whilst Route 65 runs through Selby to Hull along the River Ouse in a roughly east west direction.

INFRASTRUCTURE

- 10.5.31. Power stations, pylons and wind farms are prominent features within the landscape particularly to the south west and south east including Eggborough power station, Rusholme Wind Farm to the east of the Existing Drax Power Station Complex and two further wind farms close to Goole Fields and Balkholme Common.

THE SITE AND ITS IMMEDIATE SETTING

- 10.5.32. The full extent of the Proposed Scheme and associated Development Parcels are shown in Figure 1.3 and is described in Chapter 3. The following describes of the Site in terms of its landscape character and visual amenity based on the Development Parcels:

THE EXISTING DRAX POWER STATION COMPLEX AND IMMEDIATE SURROUNDINGS:

- A. This development parcel consists of a linear arable field edged by a ditch to the north, south and west. A native species rich hedgerow runs to the east of the field whilst another unmanaged hedgerow runs to the west with occasional hedgerow trees. A broadleaved woodland forms the southern boundary of Development Parcel A edging Carr Lane. The woodland links visually within a group of semi mature trees to the south. Field boundaries form a strong visual screen to the development parcel especially during summer months.
- B. This parcel lies north of the northern entranceway into the Site and includes a mature deciduous plantation on the corner of New Road and the northern entranceway into the Site (formerly New Road landfill site) and a mixed plantation on steep banks forming part of the power station's northern boundary. Both woodland plantations are strong landscape features and act as visual screen for receptors in close proximity to the Site. The remainder of this parcel is a mix of scrub, improved grassland used for grazing and arable land. The latter lies outside the Existing Drax Power Station Complex's boundaries.
- C. Parcel C sits within the Existing Drax Power Station Complex and includes five buildings, a car park with areas of hardstanding and groups of ornamental shrubs and trees. The northern part of this parcel is a wood yard whilst land to the east includes a pond surrounded by dense scrub and woodland. An unmanaged hedgerow runs along the southern edge of this parcel.
- D. This parcel includes New Road. The planting alongside the road and to the east of the Existing Drax Power Station Complex is a mix of small deciduous trees, hedgerows and improved grassland. The quality and condition of such planting is mixed.
- E. Semi mature broadleaved woodland, scrub and semi improved grassland is prevalent within this parcel which is used for grazing.
- F. This area includes land to the west of the cooling towers and comprises stores, contractor compounds and car parking. Vegetation is a mix of formal planting around car parks, roads and buildings consisting of mature and semi mature deciduous trees and a large area of scrub which lies between the switchgear and security fencing running along the edge of New Road.

- G. Land surrounding and adjacent to Drax jetty adjacent to the River Ouse is dominated by improved grassland with scattered trees and woodland. Deciduous woodland along Redhouse Lane screens the jetty from view.
- H. This area is largely hardstanding with surfaces of concrete/gravel used for car parking and storage including fuel oil, and edged by security fencing with CCTV cameras. Along the A645 and the southern entrance into the Site (used by visitors and staff) landscaping is a mix of improved grassland, native deciduous hedgerows and trees to the rear and along the bank. Internally landscaping edging the road access and hardstanding is a mix of amenity grassland with small areas of shrubs and isolated or small groups of trees.

10.5.33. The topography of the Existing Drax Power Station Complex is varied. Land close to the southern entranceway and forming part of Development Parcel H sits at a lower level than the A645 whilst land to the north of the northern entrance is raised, some areas formerly a disused tip. An extensive coal storage area partially screens land to the south west whilst ash mounds partially screen land to the northwest.

THE PIPELINE STUDY AREA

10.5.34. A landscape and visual survey was conducted from the roadside and information was drawn from the Preliminary Ecological Appraisals as well as aerial imagery to determine the location of key landscape features likely to be affected by Option A and B.

10.5.35. The Pipeline Study Area contains two field boundaries that are likely to be protected under the Hedgerows Regulations 1997 (Section 6.5). These include a boundary at the eastern terminus of pipeline Option B and the fragmented remains of field boundaries where pipeline Options A and B join; close to the proposed GRF.

CONJOINED ROUTE

10.5.36. Options A and B follow the same route until they separate at Main Road. The conjoined pipeline route runs from the edge of the Existing Drax Power Station Complex across arable land, Carr Lane and a number of ditches. To connect to the Power Station Site the route runs through two lengths of hedgerow forming the western and eastern boundaries to Development Parcel A. The latter is species rich and intact. There is also a fragmented historic hedgerow to the north of the GRF and which runs on either side of Wren Hall Lane. Based on existing surveys it is likely that these are the only sections of hedgerow likely to be affected.

10.5.37. The conjoined route runs close to a number of properties including Wren Hall off Hall Lane, properties off Main Lane including Baxter Hall, Woodlands, Poultry House, Briarden and Read School and Scurff Hall off Rusholme Lane.

OPTION A

10.5.38. The route is predominantly arable with grazing pasture, semi improved grassland and scattered trees. Fields are large and open bounded either by fences or ditches. This option runs close to the River Ouse and terminates west of Rusholme Grange, close to Rusholme Wind Farm and an electricity substation. Based on the field surveys the majority of field boundaries are ditches and it is likely that a limited number of hedgerows would be disturbed though some trees may be lost subject to the micro-siting of the route. Option A runs close to Rusholme Hall and Diamond Cottage.

OPTION B:

- 10.5.39. Option B runs across predominately arable fields with hedgerow boundaries or ditches. It runs through a private garden and two hedgerows, one of which is species rich and through areas of scattered trees which may be lost subject to micro-siting. The route also crosses a fragmented historic hedgerow line drain to the east of Brier Lane and Halfway House and runs close to Scurff Cottages. The Pipeline Study Area includes an important hedgerow which would remain undisturbed, works would take place to the east of Brier Lane to avoid impacting on this feature.

VALUE OF THE LANDSCAPE RECEPTOR

- 10.5.40. Whilst there are no national statutory designations within the Study Area relating to landscape value there are four landscapes which are designated as Locally Important Landscape Areas (ILAs), these fall within Selby District Council and East Riding of Yorkshire, and include:
- Hambleton Hough (SDC) to the north west of the Proposed Scheme.
 - Brayton Barff (SDC) to the north west of the Proposed Scheme.
 - Lower Derwent Valley to the north east of the Proposed Scheme.
 - Thorne, Crowle and Goole Moors (ERY) to the south of the Proposed Scheme.
- 10.5.41. The designations of ILAs for Selby have informed landscape appraisals - village assessments⁶⁵ (Core Strategy Background Paper, No 10 Landscape Appraisals, Appendix 1, January 2011) which have provided evidence to support the settlement hierarchy within the adopted Core Strategy. The village appraisal for Brayton states: *“regard needs to be given to development which could be detrimental to the open character and amenity of Brayton Barff and the character and appearance of the associated Locally Important Landscape Area”*
- 10.5.42. Whilst the landscape appraisal for Hambleton states: *“Hambleton Hough and the Locally Important Landscape Area associated within it provide a significantly locally important site with the landscape positively contributing to the character and appearance of the area in an otherwise flat open arable landscape.”*
- 10.5.43. The designation of locally Important Landscape Areas (ILAs) within East Riding of Yorkshire have been directly influenced by LPA’s Landscape Character Assessment. Local Plan Policy ENV2 prescribes how proposals should protect and enhance existing landscape character in the designated areas. The boundaries of the ILAs were reviewed in July 2013⁶⁶ and key valued attributes identified as detailed in Table 93 below:

⁶⁵ Selby District Council, January 2011, Core Strategy Background Paper, No 10 Landscape Appraisals, Appendix 1, landscape appraisals - village assessments

⁶⁶ East Riding of Yorkshire Council, July 2013, Important Landscape Areas Boundary Refinement

Table 93 - Important Local Landscape Areas in East Riding of Yorkshire

Lower Derwent Valley	Thorne, Crowle and Goole Moors
Low lying flat floodplain	Thorne Moors, part of the Thorne Crowle and Goole Moors SSSI
Combination of grassland pasture and meadow that are subject to seasonal flooding	Expanse of lowland raised mire modified by commercial peat extraction
Manmade embankments formed as a result of dredging in the twentieth century	Low lying and flat landform.
Riparian woodland and trees in the corridor	
Areas of species rich alluvial flood meadow habitat	
Small areas of organic arrangement of medium sized fields combined with more regular boundaries of enclosed fields	
Intimate isolated corridor landscape that is a marked contrast from surrounding intensively farmed land	

10.5.44. There are no Registered Parks and Gardens within the Study Area.

10.5.45. There are a number of Scheduled Monuments, Listed Buildings and Conservation Areas within the Study Area (Figure 10.1). The closest Scheduled Monuments within a 2 km radius of the Proposed Scheme include:

- Drax Augustinian Priory (1016857) north of the Power Station Site.
- Castle Hill moated site south of St Peter and St Paul's Church (1017455) south of Pipeline Option A and B and Drax Village.
- Scurff Hall moated site (1017485) south and east of pipeline option A and B respectively.
- Medieval settlement and early post medieval garden earthwork around Barlow Hall (1018403) northwest of the Drax Power Station and north of Barlow.

10.5.46. The following Listed Buildings lie within a 2 km radius of the Proposed Scheme:

- St Peter and St Paul Church (1148397) south of Option A and B and within Drax village (Grade I).
- Cross base and shaft in churchyard of St Peters and Paul Church (1174116) south of Option A and B and within Drax village (Grade II*).
- Pigeoncote to Manor Farm (1316359)(Grade II*).
- Newland Hall (1174128) (Grade II).
- Camblesforth Hall (1173983) south of the Existing Drax Power Station Complex within Camblesforth (Grade I).
- Dovecot to Camblesforth Hall 1316356(Grade II*).

- 10.5.47. There are also 10 Grade II* Listed Buildings within Barmby on the Marsh to the north east of the Proposed Scheme.
- 10.5.48. A number of Conservation Areas lie within 3 km of the Proposed Scheme, these include:
- Hemingbrough to the north of the Power Station Site.
 - Airmyn to the east of the Pipeline Study Area.
 - Rawcliffe to the south of the Pipeline Study Area.
- 10.5.49. Only Rawcliffe has a Conservation Area Appraisal⁶⁷ and no reference is made in the document to important views or vistas.
- 10.5.50. In terms of woodland there are two areas of ancient woodlands within 5 km of the Site. These include Staynor Wood to the north west of the Site and Kerrick Spring Wood to the south east. Eight designated sites lie within 10 km of the Site including SAC, SPA and Ramsar. Part of the disused railway line to the east of the Power Station Site and crossed by both pipeline route options is a SINC (Figure 10.2 and Figure 3.1a).
- 10.5.51. The Site has a no local landscape designations relating to any value. The design of Drax Power Station over 50 years ago considered on and off site mitigation planting as well as the massing and grouping of the buildings. Table 94 describes the factors relating to landscape value at a Site scale.

Table 94 - Factors relating to landscape value based on the Existing Drax Power Station Complex and the Pipeline Study Area

Factor	Study Area	Existing Drax Power Station Complex	Route Options
Landscape quality (condition)	The landscape of the Study Area is largely low lying, open agricultural land interrupted by transport routes (Motorways, A roads, Rail and Canal network)	The Existing Drax Power Station Complex's land-use relates to power production and agriculture and is typical of the immediate area and the wider Study Area	Agricultural land over which the routes pass is well managed whilst quality of boundary features are mixed
Scenic Quality	The Study Area includes four areas which are designated on the basis of scenic quality (Locally Important	The Existing Power Station Complex has no scenic qualities other than the current power station and associated facilities. It does have blocks of tree planting	Small lanes where enclosed by hedgerow vegetation form a strong sense

⁶⁷ East Riding of Yorkshire, 2010, Conservation Area Appraisal, Rawcliffe.

Factor	Study Area	Existing Drax Power Station Complex	Route Options
	Landscapes). The Study Area	which screen car parking areas and front the edge of the Existing Power Station Complex and these serve a function in partially screening low level local views.	
Rarity	The landscape of the Study Area is typical of the wider landscape context regionally	The Existing Power Station Complex contains no rare elements or features.	The Pipeline Study Area contains some important hedgerows identified through the Hedgerow Regulations Act 1997.
Representativeness	The Study Area does not contain any characteristics that are important examples	NA	NA
Conservation Interests	The Study Area contains a number of SSSI as well as international designations. In terms of heritage there are Scheduled Monuments, Listed Buildings and Conservation Areas.	The Existing Power Station Complex lies adjacent to Drax Augustinian Priory a Scheduled Monument. Within and immediately surrounding the Existing Drax Power Station Complex mitigation planting appears to be an example of a post-modern industrial landscape design. There are no other features of national or local value within the Existing Drax Power Station Complex.	A deleted SINC lies 100m to the north of the Pipeline Study Area and route options lie in close proximity to four Scheduled Monuments and a number of Listed Buildings.
Recreation value	The landscape of the Study Area is of some recreational	The Existing Drax Power Station Complex has no public access and its only element of value	There are a number of PRow which cross the pipeline route options. The

Factor	Study Area	Existing Drax Power Station Complex	Route Options
	value, restricted mainly to the use of the Trans Pennine Trail, NCR, PRoWs, waterways including canals and the River Aire, Ouse and users of Burn airfield.	relates to the woodland plantation and tree belts screening within and edging the Site. There is a PRoW which runs along the northern boundary of the Existing Drax Power Station Complex.	Trans Pennine Trail and National Cycle Route 65 run roughly parallel with Option A
Perceptual aspects	The Study Area contains a number of areas which are considered tranquil and remote. Such areas are mainly concentrated to the north east and south.	The Existing Drax Power Station Complex is a dominant and imposing feature within the landscape. It has a coherent design; the massing and grouping of the buildings has been carefully considered.	Along the routes there is a strong contrast between views framed by hedgerow trees and wide open, direct views across to Drax Power Station over fields edged by ditches
Overall landscape value	Medium The Study Area includes a number of areas designated locally for their landscape character and/or perceptual qualities / tranquillity whilst being heavily influenced by industrial developments and transport corridors.	The Existing Drax Power Station Complex is an area of previously developed land with no important landscape features, other than the mature woodland plantations and tree belts.	The route options cut across large open farmland with ditches and occasional hedgerows. Whilst close to Drax Power Station this is a relatively tranquil area.

EXISTING BASELINE – VISUAL AMENITY

10.5.52. The visual baseline establishes the area in which the Proposed Scheme may be visible, the different groups of people who may experience views of the Proposed Scheme, the places where they will be affected and the nature of the views and visual amenity at those points. Visual receptors are individuals and/ or defined groups of people who have the potential to be affected by a proposal.

10.5.53. Visual receptors, such as users of buildings, recreational spaces, footpaths and transport routes, have differing sensitivities to their visual environment. Generally, this is dependent upon their interest in the visual environment, their viewing opportunity and duration, and the context of the views.

10.5.54. In order to determine likely views of the Proposed Scheme, five Zones of Theoretical Visibility (ZTVs) were produced as described below.

ZTV AND PRELIMINARY VIEWPOINTS

10.5.55. A GIS terrain model was generated from EA LiDAR (2 m resolution), OS Terrain 5 and engineering drawings to produce ZTVs based on an agreed radius of 10 km and from an observer height of 1.6 m. The ZTVs assumed a number of fixed heights for the proposed structures within the footprint of the Existing Drax Power Station Complex and the Pipeline Study Area. For comparison Table 95 illustrates some of the key structures associated with the Existing Drax Power Station Complex and the Power Station Site.

Table 95 - Existing and proposed heights of structures

Existing heights of structures	Proposed height of structures
259 m Main chimney	Up to 120 m to top of HRSG stack
115 m Cooling towers	Up to 120 m to top of Bypass stack
74 m Boiler House	Up to 37.5 m to top of HRSG building
60 m Absorber Buildings	Up to 28 m to top of Gas Turbine Generator
31 m Turbine House	Up to 4 m to top of PIG and MOC infrastructure facility
	Up to 8.5 m Gas Receiving Facility and Compressor Building
	Up to 10 m to of Battery Storage Facility

* It should be noted that for a specific area identified on the ZTVs only OS Terrain 5 (bare earth) was available and this was resampled from 5 m to 2 m resolution. Screening within this area was not considered. In addition plumes from the cooling towers slightly distorted the LiDAR. In order to achieve a robust approach for the preliminary assessment it was assumed that the visual extent of the Proposed Scheme would cover the entire Study Area. On this basis a broad range of viewpoints were selected throughout the Study Area in discussions with the LPAs including one viewpoint (viewpoint 17) from a location not identified through the ZTVs.

10.5.56. Five ZTVs were produced:

- One illustrating the visual extent of the Proposed Scheme within the confines of the Existing Drax Power Station Complex.
- Two demonstrating the extent of the MOC facility and PIG trap associated with the above ground works within the Pipeline Study Area which is proposed to be 4 m in height.
- One illustrating the visual extent of the proposed battery storage facility at 8m in height.
- One demonstrating the visual extent of the GRF and Gas Compressor Building (Figure 10.5, 10.6, 10.7, 10.8 and 10.9).

10.5.57. The structures for the above ground works associated within the Pipeline Study Area cover an area of 22.82 ha for Option A and 32.93 ha for Option B.

10.5.58. Informed by the topography, a baseline review and ZTVs preliminary viewpoints were then identified throughout the Study Area. Sixteen preliminary viewpoints were proposed including two viewpoints (15 and 16) outside of the 10 km Study Area. These viewpoints were selected on the request of LPAs based their higher elevation, long distance views and proximity to heritage assets (Appendix F.2). As part of the initial round of discussions other viewpoint locations were also suggested:

- Peatlands Way, Moorends and from within the housing estate (viewpoint 9c).
- Brayton Barff County Park (viewpoint 12c).
- Barff Lane (viewpoint 12d).
- Along the A19 (viewpoint 12e).
- Along the A1041 / Braunton Reserve (viewpoint 12f).

10.5.59. Fieldwork then reviewed the preliminary viewpoints, which were refined in discussions and with the agreement of the LPAs. Twenty representative autumn viewpoints were agreed (refer to Figure 10.10 to Figure 10.20).

10.5.60. In addition, it was agreed with LPAs and the SoS that winter views should be taken from nine specific local to middle distance viewpoints and field verified visualisations / photomontages prepared for five viewpoints, most in close proximity of the Proposed Scheme as summarised in Table 96 below. These winter views (including one additional view, viewpoint 21) and field verified visualisations / photomontages demonstrate the “worst case scenario” in terms of visibility when deciduous trees and hedges are without leaves. Figures 10.12 for winter views and field verified visualisations / photomontages.

Table 96 - Winter Views and Field Verified Visualisations / Photomontages

Winter views	Visualisations / Photomontages
Viewpoint 2 Loftsome Bridge	Viewpoint 3 Pear Tree Avenue
Viewpoint 3 Pear Tree Avenue	Viewpoint 5 Barmby on the Marsh
Viewpoint 4 Barrage close to Barmby on the Marsh	Viewpoint 6 PRoW along Landing Lane
Viewpoint 5 Barmby on the Marsh	Viewpoint 13 PRoW along Fish Balk Lane
Viewpoint 9 PRoW close to Drax village	Viewpoint 15 Brayton Barff Country Park
Viewpoint 10 Long Hedge Lane	

Winter views	Visualisations / Photomontages
Viewpoint 14 PRoW near disused airfield	
Viewpoint 17 From Barlow	
Viewpoint 21 Additional viewpoint from Drax Golf Course (requested through the scoping opinion)	

VISUAL RECEPTORS

- 10.5.61. The Existing Drax Power Station Complex consists of large industrial buildings edged by areas of offsite woodland plantation particularly to the north and northwest. Views of Drax Power Station are extensive and span beyond 30 km. The largest structures noticeable on the skyline include the chimney, northern and southern cooling towers, boiler and absorber house which form a large rectangular mass between the cooling towers and within more immediate local views and at a lower elevation the switchgear fronting New Road. Plumes from the cooling towers are a temporary but notable feature on the skyline.
- 10.5.62. Visibility within the Study Area is widespread as a result of the low landform and limiting intervening vegetation and built form. Visual receptors who may see the Proposed Scheme include:

RESIDENTS

- 10.5.63. Residents closest to Drax Power Station and the Proposed Scheme are residents of individual properties off Wren Hall Lane, Carr Lane, Pear Tree Avenue, Main Lane, Rusholme Lane, Redhouse Lane and Brier Lane as well as residents within the settlements of Drax, Long Drax, Barlow, Cambleforth, Carlton, Newland, Little Airmyn, Airmyn, Barmby on the Marsh, Hemingbrough and Asselby, north of the River Ouse. Where there are open views, structures associated with the Existing Drax Power Station Complex are clearly visible and prominent.
- 10.5.64. Residents of parts of other settlements throughout the Study Area experience views of the Existing Drax Power Station Complex to varying degrees sometimes filtered through intervening vegetation or partially screened by built form. Refer to Appendix F.2 which sets out the sensitivity of residential receptors.

USERS OF THE PROW NETWORK, NATIONAL TRAILS, CYCLE ROUTES AND OTHER RECREATIONAL FACILITIES

- 10.5.65. Users of the PRoW, National Trails and Cycle Routes (refer to Figure 3.1c and 10.1) as well as leisure users such as Drax and Selby Golf Club, experience sequential views of the Existing Drax Power Station Complex to varying degrees throughout the Study Area. Within 1 km of the Proposed Scheme and where there are open views, structures associated with the Existing Drax Power Station Complex are clearly visible and prominent. Refer to Appendix F.2 which sets out the sensitivity of recreational receptors.

USERS OF TRANSPORTATION ROUTES

- 10.5.66. Users of the main transport routes may gain sequential views towards the Existing Drax Power Station Complex to varying degrees dependant on intervening structures, screening vegetation, elevation and direction of travel. Views from the A19 (particularly between Burn and Eggborough south bound) and A1014 (between Selby and Camblesforth south bound and between Camblesforth and Carlton north bound) are of both Drax Power

Station and Eggborough Power Station. Views are often broken by intervening vegetation. Similarly between intervening vegetation and the built form there are open views from the A63 to the east of the Existing Drax Power Station Complex (between Howden and Selby south and north bound).

- 10.5.67. There are also views of the Existing Drax Power Station Complex from the M62 and A645 to the south. Views are wide and expansive with the existing cooling towers, chimney and surrounding wind farms forming the most prominent features within the view. Views are often broken or restricted by screening vegetation along the road corridors as well as the built form.
- 10.5.68. There are a number of local roads in close proximity of the Existing Drax Power Station Complex which join the settlements. Generally views from these roads are sequential and ever changing. Views are often broken or restricted by screening vegetation and built form located along the road corridors. Where views are open, structures associated with the Existing Drax Power Station Complex are clearly visible, appearing prominent in close views of the proposed scheme.
- 10.5.69. Users of the railway lines including the east coast mainline experience sequential views of the Existing Drax Power Station Complex, albeit intermittently screened by trackside vegetation. This is seen in the context of a landscape containing other large scale structures such as power stations, overhead power lines, highway infrastructure and wind farms.
- 10.5.70. Within the Study Area there are numerous waterways used for leisure purposes. Generally views from these waterways are sequential and ever changing, often limited by intervening vegetation and landform. Where views do exist it is anticipated that views of the Existing Drax Power Station Complex and infrastructure are prominent closer to the Site, whilst views elsewhere are seen in context with other industrial structures including Eggborough Power Station. Refer to Appendix F.2 which sets out the sensitivity of users of transport routes.

AGREED REPRESENTATIVE VIEWPOINTS

- 10.5.71. Further details of the nature of the agreed representative 20 autumn viewpoints, receptor types, existing and predicted view and the receptor's sensitivity are referred to in Appendix F.5.
- 10.5.72. The location of the agreed representative autumn viewpoints is illustrated in Viewpoint Location Plan (Figure 10.10) and representative viewpoints are covered within Figures 10.11.1 to 10.11.20. Nine agreed representative viewpoints selected for winter views are included within Figure 10.12 including an additional viewpoint, viewpoint 21, requested by the SoS. Field verified visualisations / photomontages are referred to within Figure 10.12.
- 10.5.73. The representative viewpoints were selected based on publically accessible locations. The identification of views was carried out from external spaces within the public domain, and not from buildings or private spaces. However, where notable views from private dwellings are possible these were recorded from the nearest publicly accessible viewpoints and so the visual impacts from these receptors are estimated.
- 10.5.74. Consideration was given to the experience of visual receptors from this viewpoint and receptors likely to experience a similar view close by. It should be noted that the agreed representative viewpoints are not intended to be an exhaustive or fully comprehensive

catalogue of views of the Site, but rather they provide a representative sample for the purposes of the assessment and used to give a clear picture of the anticipated effects on all potential affected receptors (settlements, groups of receptors and individual isolated receptors) throughout the Study Area, with visualisations / photomontages from selected key viewpoints.

10.5.75. The agreed representative autumn views were taken on 6 November 2017 and winter views on 13 and 14 December 2017. For both sets of viewpoints a Canon EOS 600D digital camera was used with an 18-55 mm zoom lens set to a focal length of 55 mm and at 1.6m above ground level. The weather on both occasions was fair, with partial cloud cover and good visibility. The viewpoints assessment photographs show the Site in wider context and were based on a series of photostitched images.

10.5.76. Field verified views were taken to prepare the visualisations / photomontages using a Nikon D3200 SLR Camera with a Nikon DX AF-S NIKKOR 35mm 1:1.8G lens, a Manafrotto 190go tripod and MHXPRO-3W X-PRO 3-way head with a Trimble Juno Series GPS Reader. Further details of the methodology are outlined in Appendix F.3.

SUMMARY OF VISUAL BASELINE

10.5.77. The scale of the Proposed Scheme is similar or smaller than the existing developments found within the Study Area including the Existing Drax Power Station Complex, Eggborough Power Station and several wind farms. These are large scale structures and recognisable features within the local landscape. Due to the generally open nature of views and low topography of the Study Area views of the Existing Drax Power Station Complex are common place.

10.5.78. It should be noted however that unlike the developments outlined above, the Proposed Scheme would change the form of the Existing Drax Power Station Complex but not its nature. Receptors would experience a change in the form of the industrial development they see (of the Power Station Site) as well as an introduction of an industrial element within a largely open, rural view associated with Above Ground Installation forming part of the Pipeline Study Area

10.5.79. In many areas, due to a combination of the flat landscape and size, such structures are viewed against the skyline which increases their visibility.

10.5.80. The screening and limiting of views of the Existing Drax Power Station Complex is generally only possible where screening elements are located close to the receptor.

10.5.81. The extent of views available to receptors range from those in close proximity (local views) to long distance views. A number of receptors are located within villages and along roads that are located in relative close proximity to the Site. Views of the Proposed Scheme tend to be from the edges of settlements or along roads and routeways where there is limited intervening vegetation and structures restricting views.

10.5.82. The LVIA includes a comprehensive visual assessment describing and assessing the effects from all the potentially affected visual receptors (settlements, groups of receptors and individual isolated receptors) within the Study Area. This is illustrated through photographs from a series of agreed representative viewpoints to give a clear picture of the anticipated effects, with visualisations / photomontages from selected key viewpoints.

10.6 PRELIMINARY ASSESSMENT OF LIKELY EFFECTS

- 10.6.1. This section summarises the likely landscape and visual impacts and the likely significant visual and landscape effects associated with the Existing Drax Power Station Complex and the Pipeline Study Area throughout the lifecycle of the Proposed Scheme taking into consideration two baselines, two scenarios, route and transport options (as set out above in relation to the assumptions for the assessment). For a full list of the sensitivity of each receptor, the magnitude of change expected and the conclusions as to the significance of the effects on the landscape resource/visual receptors, refer to Appendix F.5 and F.6.
- 10.6.2. The assessment of effects considers mitigation both primary and secondary (detailed in Section 10.8). Short term effects are considered at year 1 of operation whilst long term effects relate to when mitigation planting has reached maturity (year 15).

LIKELY LANDSCAPE AND VISUAL IMPACTS DURING CONSTRUCTION

- 10.6.3. Principal construction impacts are likely to include:
- Erection of tree protection measures in accordance with BS 5837:2012 prior to commencement of ground works.
 - Site clearance, removal of vegetation and topsoil stripping from parts of the Power Station Site and the Pipeline Study Area and temporary stockpiling of turf, earth and storage of materials.
 - Site Reconfiguration Works (in the current baseline assessment only).
 - Movement of construction related traffic, plant and machinery including the delivery of materials to and from the Site, off site road traffic including workers travelling to and from the Site.
 - General construction activities including the movement of large scale construction equipment, creation of site compounds to include construction offices, warehouses, workshops, open air storage areas and car parking as well as laydown areas and the presence of temporary hoardings and signage.
 - Temporary pedestrian bridge across New Road and between Development Parcel A and B.
 - Crane movements to assist in the construction of high level structures on the Power Station Site.
 - Mobile cranes at Drax jetty (Development Parcel G) to assist in unloading and loading of materials (only if the Drax jetty is utilised, which is currently not the preferred position).
 - Construction site lighting to illuminate site operation, in particular the winter months.
 - Construction of the Proposed Scheme including units X and Y, associated infrastructure, laying of the pipeline and new pipeline infrastructure facilities.

DURING OPERATION

- 10.6.4. The likely principal operational or permanent impacts on the landscape resource and visual receptors associated with the Proposed Scheme would include:
- Introduction of permanent large scale structures including up to four gas turbines that would operate in both combined cycle and open cycle modes and up to four heat recovery steam generators (HRSGs) and associated stacks up to 120m high within Development Parcel E.

- Construction of a battery storage facility up to 8 m high for each repowered unit within Development Parcel C / E. This will be one building for both units but only 100MW of battery equipment would be installed in the event one unit is constructed.
- A GRF and Gas Compressor Building on land to the east of New Road (Development Parcel I)
- A 5m high screening wall to prevent drift of moisture from the cooling towers onto the village.
- Introduction of a permanent compound and car parking areas.
- Gas pipeline and associated Minimum Offtake Connection (MOC) and Pipeline inspection Gauge (PIG) trap facility (PTF) and on site Pressure Reduction and Metering Station (PRMS).
- The creation of new and soft landscaping elements associated with the Proposed Scheme.
- Increased vegetation cover following tree and shrub mitigation planting.
- Operational traffic.
- Lighting.

DURING DECOMMISSIONING

- 10.6.5. Temporary landscape and visual impacts likely to arise during decommissioning associated with the Proposed Scheme and which cover demolition and removal of proposed structures and associated infrastructure are similar to those described for construction.

ASSESSMENT OF LANDSCAPE EFFECTS

- 10.6.6. Significant landscape effects on character, local landscape designations and specific landscape features associated with the Existing Drax Power Station Complex and Pipeline Study Area during the life cycle of the Proposed Scheme are summarised below. Appendix F.5 provides an assessment of the sensitivity of each landscape receptor while Appendix F.6, is an assessment of the magnitude of change and the likely effects generated by the Proposed Scheme during construction, year 1 and year 15 of operation and decommissioning.
- 10.6.7. This section is based on Scenario 1 (Units X and Y). Where there are variations in the level of effect associated with (for construction only) a current and future baseline, different route options (A and B) and transport options (by road or by river) these are outlined in the text below. A summary of significant effects is included under each section refer to Tables 97 to 100.

SCENARIO 1 (UNITS X AND Y) - LANDSCAPE CHARACTER

- 10.6.8. For character areas within which the Proposed Scheme sits or lies adjacent to, it is considered that there are likely to be localised significant effects during construction and operation. Such effects relate to changes in the perceptual and experiential qualities associated with the Existing Drax Power Station Complex. Drax Power Station is a dominant feature in the landscape with a strong “presence”; almost iconic. Its large scale, mass and its coherent, considered design has resulted in strong vertical and horizontal lines primarily relating to the cooling towers, chimney, boiler house and turbine hall.
- 10.6.9. The Proposed Scheme, and in particular the presence of eight stacks would protrude above the horizontal lines created by the tops of the cooling towers, forming a strong contrast to the existing mass due to their narrow width and form, and visually “clutter” the top of the towers resulting in a slightly discordant view from certain angles. However subject to

appropriate climatic conditions, plumes from the existing cooling towers would mask views of the tops of the stacks in certain directions. The extent of landtake includes Development Parcel A plus a GRF and Compressor Building both of which sit outside the confines of the Existing Drax Power Station Complex.

- 10.6.10. Outside of a 3 km radius of the Site it is anticipated that the presence of the Proposed Scheme would not affect the aesthetic and perceptual qualities of the local landscape. This is based on the presence of large scale industry and power generation as a well-established land-use within the Study Area and the relative proximity of many LCTs and LCAs to the power station.
- 10.6.11. LCTs / LCAs which would experience a significant adverse effect include:
- 23 Levels Farmland and 24 River Floodplain (North Yorkshire and York Landscape Characterisation).
 - Camblesforth Lowlands, Wharfe and Ouse River Corridor and River Aire at a district level (Selby District).
- 10.6.12. LCT4 River Corridors and in particular 4A Derwent Valley, 4B River Ouse Corridor and 4D River Aire corridor (East Riding of Yorkshire).

CONSTRUCTION

- 10.6.13. During construction there would be moderate, localised short term and temporary adverse effects. The sensitivity of LCTs/ LCAs and the magnitude of change is medium. Such effects are associated with changes in the landscape character's aesthetic and perceptual qualities. This is through the movement of vehicles and plant within close proximity to the Site (and associated noise / disturbance / tranquillity levels), introduction of temporary structures into the landscape including cranes to erect large scale structures.
- 10.6.14. It is considered that the effects associated with both the current and future baseline (in terms of when Site Reconfiguration Works are carried out) whilst different in nature would not result in an overall change in significance based on the following:
- The current baseline would result in Site Reconfiguration Works (including demolition work associated with a number of buildings including the turbine outage store and learning / visitor centre both of which are 18 m high with other structures varying from 2.5 to 5m in height) being undertaken as part of the Proposed Scheme. Whilst activities (though temporary in nature) would be concentrated within the footprint of the Existing Drax Power Station Complex, works would extend over a longer duration.
 - The future baseline assumes the Site Reconfiguration Works have been carried out, so construction works for the Proposed Scheme do not include those reconfiguration works. The duration of construction activities would therefore be concentrated over a shorter period of time.
- 10.6.15. Whilst baselines would vary in terms of overall timescales and the extent of works (including the reconfiguration of the sludge lagoons); either concentrated within the Existing Drax Power Station Complex or as part of the Proposed Scheme, both baselines are considered in the context of an active operational site. The Existing Drax Power Station Complex already experiences low levels of tranquillity, the movement of vehicles and variations in air flows associated with the plumes from the cooling towers and main chimney.

- 10.6.16. During construction, effects would reduce to minor adverse for 24 River Floodplains, The Wharfe-Ouse River Corridor (includes the Site) and LCT 4: River corridors if construction material was to be transported by highway rather than river using the jetty. Furthermore, if the jetty was not utilised, then this would minimise the loss of tranquillity levels as cranes would not be used to unload and load materials from the jetty.

OPERATION (YEAR 1/15)

- 10.6.17. On operation year 1 and year 15 there would be localised, moderate adverse effects on specific character areas outlined above. Such effects relate to an erosion of landscape character and particularly its experiential and perceptual qualities. Structures associated with the Proposed Scheme would contrast with the overall mass of the Existing Drax Power Station Complex. Other new structures would be introduced including Above Ground Installation associated with the Pipeline Study Area.

DECOMMISSIONING

- 10.6.18. Temporary moderate significant adverse landscape effects are likely to arise during decommissioning and these would be similar to those described for construction and reinstatement.

SCENARIO 2 (UNIT X ONLY)

- 10.6.19. As discussed previously, it is considered that there would be no difference in effects between Scenario 1 and Scenario 2. Scenario 2 would introduce a smaller mass of development and fewer structures compared to Scenario 1. However, it would still give rise to a similar degree of effect on landscape character perceptually. Four stacks (rather than eight) would protrude above the horizontal lines created by the tops of the cooling towers, but this would still form a strong contrast to the existing mass which is coherent in form. The stacks would visually “clutter” the top of the towers resulting in a slightly discordant view from certain angles. The extent of landtake within Development Parcel A (which sits outside the confines of the Existing Drax Power Station Complex and includes a GRF and Compressor Building) would be the same as Scenario 1.
- 10.6.20. In terms of transport options there would be a difference in effect arising from a highways transport option rather than the use of the river and jetty to transport materials; the most noticeable difference being the lack of a mobile crane on the jetty and thus the use of the highway would be beneficial in terms of tranquillity in the location of the jetty (as it would be in Scenario 1).

Table 97 - Summary of Effects associated with Landscape Character based on Scenario 1

Landscape	Construction (current and future baselines)	Operation (year 1)	Operation (year 15)
23 Levels Farmland	Moderate adverse	Moderate adverse	Moderate adverse
24 River Floodplains	Moderate adverse	Moderate adverse	Moderate adverse

Landscape	Construction (current and future baselines)	Operation (year 1)	Operation (year 15)
	<i>(Minor adverse if highway)</i>		
1 Urban	Negligible	Negligible	Negligible
28 Vale Farmland with Plantation Woodland and Heathland	Negligible	Negligible	Negligible
The Wharfe-Ouse River Corridor (includes the Site)	Moderate adverse <i>(Minor adverse if highway)</i>	Moderate adverse	Moderate adverse
The River Aire Corridor	Minor adverse	Moderate adverse	Moderate adverse
The Hambleton Sandstone Ridge	Negligible	Negligible	Negligible
The Camblesforth Lowlands	Moderate adverse	Moderate adverse	Moderate adverse
Southern Farmlands	Minor adverse	Negligible	Negligible
The West Selby Plain	Negligible	Negligible	Negligible
The Skipwith Lowlands	Negligible	Negligible	Negligible
East Selby Farmland	Negligible	Negligible	Negligible
LCT 4: River corridors (remaining LCAs)	Moderate adverse <i>(Minor adverse if highway)</i>	Moderate adverse	Moderate adverse
	Minor adverse	Minor adverse	Minor adverse
LCT 5: Open Farmland	Minor adverse	Minor adverse	Minor adverse
LCT 7: Foulness and Open Farmland	Negligible	Negligible	Negligible
LCT 8: M62 Corridor Farmland	Negligible	Negligible	Negligible
LCT 9: Drained Open Farmland	Low to Negligible	Low to Negligible	Low to Negligible

Landscape	Construction (current and future baselines)	Operation (year 1)	Operation (year 15)
G2 – Thorne and Hatfield Peat Moorlands	Minor adverse	Minor adverse	Minor adverse
F2 – Owston to Sykehouse Settled Clay Farmlands	Minor adverse	Minor adverse	Minor adverse

Note: Where there is a difference in effect arising from Scenario 2 or the highway transport option this is noted in italics.

SCENARIO 1 (UNITS X AND Y) - EFFECT ON LOCAL LANDSCAPE DESIGNATIONS

- 10.6.21. There would be no significant effects on any of the local landscape designations within the Study Area apart from the Lower Derwent Corridor which lies in close proximity to the northern edge of the Power Station Site and within the LCT4 River Corridors - 4A Derwent Valley (East Riding of Yorkshire). The sensitivity of this ILA is high and the magnitude of change is medium for both construction and operation.

CONSTRUCTION

- 10.6.22. The ILA is considered to be an “intimate isolated corridor” which would experience moderate, localised short term and temporary adverse effects during construction. Such effects are associated with changes in landscape character’s aesthetic and perceptual qualities through the movement of plant within close proximity to the Site (and associated noise/disturbance/tranquillity levels) and the introduction of temporary structures into the landscape including cranes to erect large scale structures as well as the unloading and loading of materials from Drax jetty.
- 10.6.23. It is considered that the effects associated with both the current and future baseline (in terms of when the Site Reconfiguration Works are undertaken) whilst different in nature would not alter based on the relative proximity of the Lower Derwent Local Landscape designation to the Existing Drax Power Station Complex. This is as a consequence of a slight impact on landscape experiential and perceptive qualities including tranquillity associated with demolition of existing structures and construction activity in the form of cranes to accommodate the Proposed Scheme. If construction material was to be transported by highway rather than river, cranes would not be used to unload and load materials from Drax jetty minimising the loss of tranquillity levels and reducing construction effects to minor adverse. Construction work associated with the MOC, PIG, PTF and PRMS facilities for either route option would remain a notable feature in localised areas altering perceptual characteristics.

OPERATION YEAR 1 / YEAR 15

- 10.6.24. On operation year 1 and year 15 there would be moderate, localised adverse significant effects on the ILA. Such effects relate to an erosion of landscape character and particular experiential and perceptual qualities as outlined above. Structures associated with the Proposed Scheme (Unit X and Y and associated stacks and battery storage facility) would contrast with the overall mass of the Existing Drax Power Station Complex and be notable above vegetation edging the northern boundary of the Power Station Site (some of

which may be lost in the future to accommodate the CCS). Other new structures would be introduced including Above Ground Installation associated with the Pipeline Study Area. It should be noted however that effects would be concentrated over a localised area of the ILA and diminish with distance.

DECOMMISSIONING

- 10.6.25. Temporary landscape effects are likely to arise during decommissioning and these would be similar to those described for construction and reinstatement.

SCENARIO 2 (UNIT X ONLY)

- 10.6.26. It is considered that the effects on local landscape designations are no difference to those for Scenario 1. Based on Scenario 2 and the relative position of Unit X and its associated stacks to the ILA some of the stacks and the battery storage facility would still be discernible. Some of the planting to the northern boundary of the Power Station Site may be lost to accommodate the CCS in the future. The introduction of a new 20m woodland buffer strip would be introduced when the CCS is required.
- 10.6.27. Effects on views from the eastern banks of the River Ouse and the Lower Derwent ILA would remain unchanged and only reduce in the long term subject to the implementation of the CCS (at some future date) and the associated introduction of a new 20m woodland buffer strip to the north of the existing PRoW.

Table 98 - Summary of effects on Local Landscape Designations based on Scenario 1

Landscape	Construction (current and future baselines)	Operation (year 1)	Operation (year 15)
Locally Important Landscapes (apart from Lower Derwent)	Minor adverse	Minor adverse	Minor adverse
Lower Derwent Important Landscape Character Area	Moderate Minor adverse	Moderate adverse	Moderate Minor adverse subject to implementation of CCS

Note: There is no difference in effect arising from Scenario 2 or the highway transport option.

SCENARIO 1 (UNITS X AND Y) - EFFECT ON LANDSCAPE FEATURES ASSOCIATED WITH THE POWER STATION SITE

- 10.6.28. Localised effects would be generated on key landscape features within the Power Station Site. Significant effects associated with such features are summarised below.

CONSTRUCTION

- 10.6.29. Broadleaved and mixed woodland plantations, tree belts and groups of trees on site would be lost as a consequence of the Proposed Scheme within Development Parcel A, B, C, D, E, F and H. The trees, and particularly the mature plantations within Development Parcel B, serve an important screening function in localised views and connect with surrounding vegetation reinforcing the green infrastructure network. Existing woodland plantations/trees are judged to be of a medium sensitivity, whilst magnitude of change is

high. Therefore, the effects on trees would be adverse and of moderate to major significance.

10.6.30. Sections of hedgerows would be lost as a consequence of the development and relate to both the Power Station Site and connection from the gas pipeline route based on Option A and B. Loss of hedgerows are associated with Development Parcels A, C and H. As hedgerows are mixed in terms of condition and quality, their sensitivity is medium whilst the magnitude of change is high, given the impact of the site layout on such features is unknown. Consequential significant adverse effects would be moderate to major.

10.6.31. Such effects whilst reversible, would be long term subject to opportunities for on and off site mitigation.

10.6.32. The nature of effects would remain unchanged based on either a current and future baseline, and similarly effects would remain unchanged based on whether construction material would be transported by highway rather than river.

OPERATION YEAR 1

10.6.33. Subject to the agreed layout, on site embedded primary mitigation in the form of new tree and hedgerow planting would tie the development into its surroundings and partially screen the Proposed Scheme within local low level views. Since replacement planting takes time to mature it will not yet have provided benefits to local landscape character, there would be a high magnitude of change and a moderate to major adverse significant effect.

OPERATION YEAR 15

10.6.34. On Site embedded mitigation measures including new tree and hedge planting would have matured producing a beneficial characteristic and resulting in beneficial effects with a low magnitude of change based on embedded mitigation against a year 15 future baseline. It is expected as part of a long term management plan that planting would be managed to ensure its longevity and important screening function. For hedgerow planting (and subject to services) planting would gap up field boundaries and include shallow rooted local native species drawn from National Grid's approved list of suitable species.

DECOMMISSIONING

10.6.35. It is considered that no changes would take place to landscape features associated with the Proposed Scheme during decommissioning and effects would be negligible beneficial.

SCENARIO 2 (UNIT X ONLY)

10.6.36. It is considered that the effects on local landscape features for Scenario 2 would remain the same as for Scenario 1. Vegetation would still be lost in the same locations as Scenario 1 and planting along the northern boundary of the Power Station Site cannot be considered as embedded mitigation since this may be lost to accommodate the CCS (at some future date). The introduction of a new 20 m woodland buffer strip would only be introduced when the CCS is required.

Table 99 - Summary of effects on Landscape Features based on Scenario 1

Landscape	Construction (current and future baselines)	Operation (year 1)	Operation (year 15)
The Power Station Site			
Plantations /tree belts and groups of trees on site	Moderate to Major adverse	Moderate to major adverse	Negligible beneficial
Hedgerows	Moderate to Major adverse	Moderate to major adverse	Negligible beneficial
Grassland	Minor adverse	Negligible adverse	Negligible beneficial
Ornamental Planting along New Road	Minor adverse	Negligible to minor adverse	Negligible beneficial
Topography	Minor adverse	Negligible	Negligible

Note: There was no difference in effect arising from Scenario 2 or the highway transport option.

EFFECTS ON LANDSCAPE FEATURES ASSOCIATED WITH THE PIPELINE STUDY AREA

10.6.37. Landscape effects associated with the Pipeline Study Area as well as structures associated with the Above Ground Installation were considered, particularly effects on potential vegetation loss which would last into the operational phase of the Proposed Scheme and the consequential impact on existing mature farmland pattern. The LVIA considered that there would be no difference in the significance of effect based on a current or future baseline or a change in transport options.

10.6.38. In addition, there would be no variation in effects on landscape features between pipeline route Option A and Option B. Effects of Scenario 1 (Units X and Y) and 2 (Unit X only) were not considered in the context of the Pipeline Study Area as they do not change the need for the pipeline infrastructure. Furthermore, the current and future baseline is not applicable for LVIA and the Pipeline Study Area, as this relates to the Site Reconfiguration Works being undertaken on the Power Station Site, not within the Pipeline Study Area

CONSTRUCTION

10.6.39. The installation of the pipeline would require vegetation removal along its route for both Option A and Option B prior to construction. Where possible, micro siting of the route will be undertaken to avoid significant trees and hedge lines, the soil would be stripped and a trench dug along the route. A temporary haul road would be constructed along the route corridor in order to provide access for pipe laying. Temporary storage areas for soil and subsoil would run adjacent to the haul route and occasional traffic and storage of vehicles

would be visible along the route. Overall it is assumed that a 30 m corridor may be required to accommodate the laying of the pipeline, haul route and storage areas.

- 10.6.40. Due to constraints on planting over pipelines, the reinstatement of the land once the pipeline has been installed, would be with existing turf, shallow rooting native shrubs and/or small trees. Where possible, reinstatement would involve the careful handling of soils and a return to the existing habitat type.
- 10.6.41. Structures associated with the Above Ground Installation would consist of a PIG trap facility, MOC and PRMS. The area would be fenced for security purposes and surfaced.
- 10.6.42. The effects on vegetation and changes to farmland pattern would be minor adverse. Existing vegetation and farmland pattern is judged to be of medium sensitivity whilst the magnitude of change would be low. Grassland would be removed along the route and whilst route Option A and Option B pass through open fields, there is little vegetation. Some sections of hedgerows and trees would be lost for both Option A and Option B, though the exact extent would be confirmed following route selection and micro siting:
- Route Option A may result in the loss of scattered trees and some hedgerows (subject to field verification).
 - Route Option B may result in the loss of two sections of hedgerow one of which is species rich and scattered trees.
- 10.6.43. In terms of the structures associated with the Above Ground Installation it is likely that there would be minor adverse effects associated with vegetation loss though the extent would need to be determined through micro siting. Such effects are localised, short term and temporary.

OPERATION YEAR 1 AND 15

- 10.6.44. The underground gas connection could have noticeable impacts on landscape features such as hedgerows and trees and leave crop marks in fields and surrounding the Above Ground Installation. The route of the pipeline may generate minor adverse effects through the loss of existing vegetation which would be replanted. Hedge planting can be undertaken directly across the pipeline where visual screening is required and where it is necessary to gap up field boundaries. Planting should include shallow rooted, local, native species. Dense mass planting cannot be undertaken within 10 m of a pipeline, although individual species can be planted or in a row between 6 to 10 m of the pipeline, using species drawn from National Grid's approved list of suitable species. After 15 years of growth any reinstated hedgerows and shallow trees would be relatively mature and effects negligible.

DECOMMISSIONING

- 10.6.45. Temporary landscape effects are likely to arise during decommissioning and these would be similar to those described for construction and are associated with the removal of above ground plant structures.

Table 100 - Summary of significant effects for the Pipeline Study Area

Landscape	Construction	Operation (year 1)	Operation (year 15)
The Pipeline Study Area			
Vegetation including hedgerows and hedgerow trees and farmland pattern	Minor adverse	Minor adverse	Negligible

SCENARIO 1 (UNITS X AND Y) - ASSESSMENT OF COMBINED LANDSCAPE EFFECTS

CONSTRUCTION

- 10.6.46. During construction there will be localised moderate adverse significant effects on landscape character and in particular LCT 23 Levels Farmland and 24 Rivers Floodplains (North Yorkshire LCA), The Wharf and Ouse River Corridor, The Cambleforth Lowlands, (Selby District LCA) LCT River Corridors and the Lower Derwent Locally Important Landscapes (East Riding of Yorkshire LCA).
- 10.6.47. There would also be localised moderate to major adverse effects on woodland plantations, tree belts, groups of trees and hedgerows associated with the Power Station Site. The level of effect would remain the same for either a current or future baseline.
- 10.6.48. It is considered that during construction effects would reduce to minor adverse within LCT 23 River Floodplains, The Wharfe-Ouse River Corridor (includes the Site) and LCT 4: River corridors if construction material was transported by highway rather than river. In the scenario cranes would not be used to unload and load materials from Drax jetty minimising the loss of tranquillity levels.

OPERATION YEAR 1

- 10.6.49. On operation there would be localised moderate significant adverse effects on landscape for the LCTs and LCAs and Lower Derwent Locally Important Landscape described above and localised moderate to major adverse effects in relation to woodland plantations, tree belts, groups of trees and hedgerows associated with the Power Station Site.

OPERATION YEAR 15

- 10.6.50. After 15 years of operation significant moderate adverse effects would remain on landscape character LCTs and LCAs and the Lower Derwent described above whilst effects on vegetation associated with the Power Station Site would improve to negligible beneficial through embedded primary mitigation associated with on-site planting and the retention of a 15 m woodland buffer within the Power Station Site, adjacent to the northern boundary providing continuous belt of woodland during the construction and operation of the Proposed Scheme (without CCS). This can be classed embedded mitigation for as long as CCS is not required.
- 10.6.51. It should be noted that effects would be localised and would affect a few of the characteristics without altering its overall character.

SCENARIO 2 (UNIT X ONLY)

- 10.6.52. It is considered that the effects on landscape character, designations and features would remain the same for Scenario 2 as for Scenario 1.
- 10.6.53. In terms of transport options there would be a difference in effect arising from a highways transport option rather than the use of the river to transport materials; the most noticeable difference being the lack of a mobile crane on the jetty used for the unloading and loading of materials. This is again, the same as for Scenario 1.

ASSESSMENT OF VISUAL AMENITY EFFECTS

- 10.6.54. Significant effects on visual receptors associated with the Power Station Site and Pipeline Study Area during the life cycle of the Proposed Scheme are summarised below. Appendix C Table C1 provides an assessment of the sensitivity of each visual receptor whilst Appendix F Table F1 includes an assessment of the magnitude of change and the likely effects generated by the Proposed Scheme during construction, year 1 and year 15 of operation. This section is based on Scenario 1. Where there are variations in the level of effect associated with different route options (A and B) and transport options (by road or by river) these are outlined in the text below. Refer to Table 101 for a summary of significant effects for both the Power Station Site and Pipeline Study Area.
- 10.6.55. It is considered that the visual effects associated with both the current and future baseline (being when the Site Reconfiguration Works would be carried out – either with the Proposed Scheme (current baseline) or before the Proposed Scheme (future baseline)), whilst different in nature would not result in an overall change in significance.
- 10.6.56. Winter views were taken from viewpoints 2, 3, 4, 5, 9, 10, 14, 17 and 21 as well as field verified views / photomontages from viewpoints 3, 5, 6, 13 and 15.

SCENARIO 1 (UNITS X AND Y) - POWER STATION SITE CONSTRUCTION

- 10.6.57. Receptors from the majority of viewpoints surveyed would only experience an effect once the eight stacks have been constructed, and from some locations only the upper parts of the stacks would be discernible within the view. Most of the construction activity would be at a lower level with the exception of cranes associated with the erection of the stacks themselves and mobile cranes used for unloading from the jetty adjacent to the River Ouse if this option was selected.
- 10.6.58. Significant effects of the Power Station Site would be experienced by residents within Drax, Long Drax, and Barmby on the Marsh on the northern banks of the River Ouse as well as isolated properties and farmsteads within the surrounding area (viewpoints 3, 4, 5 and 9 refer). The sensitivity of such visual receptors is high, the magnitude of change medium resulting in a moderate to major significant adverse effect.
- 10.6.59. Recreational users along the Trans Pennine Trail to the north of the River Ouse which is also part of the National Cycle Network Route 65 and includes the B1228 would experience moderate to major significant adverse effects based on their sensitivity (high) and a medium magnitude of change (viewpoint 4 and 5 refer). Such receptors would experience sequential views and the magnitude of change would vary based on their proximity and orientation to the Proposed Scheme as well as their appreciation of views across the Ouse through intervening vegetation. Users of the local PRow network within a 1 km radius of the Power Station Site and who would experience views of the Proposed

Scheme would have a medium sensitivity to change. The magnitude of change would be medium resulting in a moderate significant adverse effect (viewpoint 3 refers).

10.6.60. Road users along the B1228 and local roads within 1 km of the Proposed Scheme where receptors would have clear open views across the landscape and be travelling at lower speeds (viewpoint 3 and 5 refer) would be of medium sensitivity to change. The magnitude of change would be medium resulting in a moderate adverse significant effect.

10.6.61. Construction effects would be temporary, short to long term and localised and are associated with the removal of existing vegetation, and the Site Reconfiguration Works (in the assessment against the current baseline) and construction of new structures to accommodate the Proposed Scheme. Activities would include the construction of a temporary pedestrian bridge over New Road, cranes used for erecting the stacks associated with Units X and Y, works associated with the GRF and Gas Compressor Building as well as either a mobile crane at Drax jetty or the transportation of materials via the highways network. Low level activities include the creation of compounds, laydown areas and Battery Storage Facility as well as the relocation of sludge lagoons to Development Parcels E and F (as part of the Site Reconfiguration Works in the current baseline assessment. Movement of vehicles would be noticeable in some views.

10.6.62. The LVIA considered that there was no change in the significance of effect based on a change in transport options when considered in combination with the presence of Units X and Y, their associated stacks, the Battery Storage Facility and GRF / Gas Compressor Building.

OPERATION YEAR 1

10.6.63. The main visual effects arising from the Power Station Site would be in relation to the gas turbines and HRSGs and their associated stacks (up to 120 m high) as well as the GRF and Battery Storage Facility. Although the Existing Drax Power Station Complex is well screened by extensive blocks of plantations particularly to the northwest off site (which would be retained) the stacks would be visible from locations in and around the Power Station Site as well as further afield. Due to the potential loss of site vegetation to the north east corner of the Site to accommodate the CCS at some future date, the Battery Storage Facility would also be noticeable at a lower elevation. The introduction of a new 20 m woodland buffer strip would be introduced if CCS is required.

10.6.64. Due to the position of the Proposed Scheme relative to the Existing Drax Power Station Complex significant effects experienced by receptors are largely localised, to the north, east and south and concentrated within a 1 to 1.5 km radius of the Power Station Site. From such locations the stacks associated with Units X and Y would be a prominent feature within the view, grouped to the front of the chimney, turbine house and in between the cooling towers.

10.6.65. The proposed stacks would contrast with the overall scale and mass of the Existing Drax Power Station Complex; slender narrow, vertical in form compared to the larger more coherent and considered structures associated with the cooling towers and turbine hall. The structures would interrupt the strong horizontal lines of the tops of the cooling towers at a higher elevation, though subject to appropriate climate conditions, plumes from the existing cooling towers may mask the tops of the stacks from view. In addition the siting of a GRF and Gas Compressor Building (up to 10 m in height) would also be notable in some

localised views, through this would not be permanently manned and would not be lit full time.

- 10.6.66. Significant effects would be experienced by residents within Drax, Long Drax and Barmby on the Marsh on the northern banks of the River Ouse as well as isolated properties and farmsteads within the surrounding area (viewpoints 3, 4, 5 and 9 refer). The sensitivity of such visual receptors is high, the magnitude of change high or medium depending on the proximity of the receptor to the proposed scheme resulting in either a major or moderate to major significant adverse effect.
- 10.6.67. Recreational users along the Trans Pennine Trail to the north of the River Ouse which is also part of the National Cycle Network Route 65 and includes the B 1228 would experience moderate to major significant adverse effects based on their sensitivity (high) and a medium magnitude of change (viewpoint 4 and 5 refer). Such receptors would experience sequential views and the magnitude of change would vary based on their proximity and orientation to the Proposed Scheme as well as their appreciation of views across the Ouse through intervening vegetation. Users of the local PRoW network within a 1 km radius of the Power Station Site and who would experience views of the Proposed Scheme would have a medium sensitivity to change. The magnitude of change would be medium resulting in a moderate significant adverse effect (viewpoint 3 refer).
- 10.6.68. Road users along the B 1228 and local roads within 1 km of the Proposed Scheme where receptors would have clear open views across the landscape and be travelling at lower speeds (viewpoint 3 and 5 refer) would be of medium sensitivity to change. The magnitude of change would be medium resulting in a moderate adverse significant effect.
- 10.6.69. The Proposed Scheme viewed from middle and long distance views would be appreciated in context with other vertical structures of varying mass and scale including Eggborough Power Station and several wind farms located to the south west and south east respectively. It is considered that receptors utilising Drax Golf Course would have a partial view of the Proposed Scheme. This is due to the presence of dense woodland in the foreground in the summer, the elevated position of the Existing Drax Power Station Complex relative to the golf course and resultant oblique view as well as the location of Units X and Y behind the southern cooling towers (viewpoint 21 refer).
- 10.6.70. Operation effects would be long term, reversible and localised.

OPERATION YEAR 15

- 10.6.71. Embedded primary mitigation in the form of on-site planting would effectively provide an extra provision for some local receptors' views who lie close to or within the Site Boundary where mitigation measures can be implemented. After 15 years mitigation planting is expected to reach the following heights:
- Native tree planting 7-10 m high.
 - Native understorey shrub planting 4-6 m high.
 - Native hedgerow planting 1.5 m high.
- 10.6.72. Over the long term the height of screen planting should reduce the magnitude of change resulting in a reduction in the significance of effect for specific residential receptors near viewpoint 3 and 9.
- 10.6.73. Views from other receptors such as residents within Long Drax, Barmby on the Marsh and Asselby would remain the same due to the angle of the view and the relative

size of the Proposed Scheme against the mitigation planting based on the retention of a 15 m woodland buffer so long as the CCS is not required and other on-site planting.

DECOMMISSIONING

- 10.6.74. Temporary visual effects likely to arise during decommissioning are similar to those described for construction.

SCENARIO 2 (UNIT X ONLY)

- 10.6.75. There would be no difference in visual amenity associated with Scenario 2 and Scenario 1.

PIPELINE STUDY AREA

- 10.6.76. Effects associated with route Option A and Option B are outlined below. Effects of Scenarios 1 and 2 were not considered in the context of the Pipeline Study Area and the current and future baseline is also not relevant in LVIA terms for the Pipeline Study Area.

CONSTRUCTION

- 10.6.77. Whilst visual effects associated with the construction of the pipeline have been scoped out of the assessment there would be significant adverse effects linked to the construction of the PIG facility, MOC and PRMS.
- 10.6.78. For Option A significant effects of the above ground structures would be experienced by residents located on the eastern edge of Barmby on the Marsh, Asselby, Long Drax and Drax, as well as isolated properties and farmsteads to the east of Drax off Rusholme Lane.
- 10.6.79. For Option B significant effects of the above ground structures would be experienced by residents located along part of Rusholme Lane close to the junction with Brier Lane and Brier Lane within Newland and Little Airmyn (Option B) (viewpoints 6 and 8 refer). The sensitivity of residential visual receptors is high, the magnitude of change medium subject to their orientation and proximity to the structures resulting in a moderate to major significant adverse effect.
- 10.6.80. For Option A recreational users along the Trans Pennine Trail to the north of the River Ouse would experience minor to moderate significant adverse effects based on their sensitivity (high) and a medium to low magnitude of change (viewpoint 6 refer). Such receptors would experience sequential views and the magnitude of change would reduce depending on their proximity and orientation to the PIG facility, MOC and PRMS as well as whether the view across the River Ouse is fully or partially screened by intervening vegetation.
- 10.6.81. For both Option A and Option B, users of the local PRow network within a 1 km radius of the works and who would experience a direct view would be of medium sensitivity to change. The magnitude of change would be medium resulting in a moderate significant adverse effect (viewpoint 8 refer).
- 10.6.82. For both Option A and Option B, road users along the local roads within 1 km of the above ground structures where receptors would have clear open views across the landscape and be travelling at lower speeds (viewpoint 8 refer) would be of medium sensitivity to change. The magnitude of change would be medium resulting in a moderate significant adverse effect.

- 10.6.83. Construction effects are associated with the movement of vehicles, removal of vegetation, compound and car parking as well as the construction of new structures. Views would be localised, temporary and short term.

OPERATION YEAR 1

- 10.6.84. On completion of the PIG facility, MOC and PRMS, structures would appear 4 m high. Vegetation introduced to screen the structures would be young and therefore views would remain across to the PIG facility, MOC and PRMS.
- 10.6.85. For Option A, significant effects associated with the PIG facility, MOC and PRMS would be experienced by residents located on the eastern edge of Barmby on the Marsh, Asselby, Long Drax and Drax, as well as isolated properties and farmsteads to the east of Drax off either Rusholme Road (Option A)
- 10.6.86. For Option B, significant effects would be experienced by residents located along part of Rusholme Lane close to the junction with Brier Lane and Brier Lane within Newland and Little Airmyn (Option B) (viewpoints 6 and 8 refer).
- 10.6.87. The sensitivity of residential visual receptors is high, the magnitude of change medium subject to their orientation and proximity to the above ground structures, resulting in a moderate to major significant adverse effect.
- 10.6.88. For Option A recreational users along the Trans Pennine Trail to the north of the River Ouse would experience moderate to major or minor to moderate significant adverse effects based on their sensitivity (high) and a medium to low magnitude of change (viewpoint 6 refer). Such receptors would experience sequential views and the magnitude of change would alter depending on their proximity and orientation to the Works as well as whether the view across the River Ouse is fully or partially screened by intervening vegetation.
- 10.6.89. For both Option A and Option B, users of the local PRoW network within a 1 km radius of the works and who experience a direct view would be of medium sensitivity to change. The magnitude of change would be medium resulting in a moderate significant adverse effect (viewpoint 8 refer).
- 10.6.90. For both Option A and Option B, road users along the local roads within 1 km of the PIG facility, MOC and PRMS where receptors would have clear open views across the landscape and be travelling at lower speeds (viewpoint 8 refer) would be of medium sensitivity to change. The magnitude of change would be medium resulting in a moderate significant adverse effect.
- 10.6.91. Operational effects would be long term, reversible and localised.

OPERATION YEAR 15

- 10.6.92. For both Options, embedded primary mitigation in the form of on-site planting, the use of colour and texture to integrate the above ground structures as well as proposed boundary features would effectively screen receptors views resulting in no significant effects for all receptors outlined above. Through micro-siting, careful consideration would be given to the siting of planting and other mitigation measures to ensure that they tie in with local landscape features in a sensitive manner.

EFFECTS DURING DECOMMISSIONING

10.6.93. Temporary visual effects likely to arise during decommissioning would be similar to those for construction due to the removal of Above Ground Installations.

Table 101 - Summary of Effects for the Power Station Site and Pipeline Study Area based on Scenario 1

Visual receptors	Visual receptor	Construction	Operation (year 1)	Operation (year 15)
Viewpoint 1	Residents	Negligible	Negligible	Negligible
	Users of PRow	Negligible	Negligible	Negligible
Viewpoint 2	Residents	Negligible	Negligible	Negligible
	Users of PRow	Negligible	Negligible	Negligible
Viewpoint 3	Residents	Moderate – major adverse	Major adverse	Minor to Moderate
	Road Users	Moderate adverse	Moderate adverse	Minor adverse
	Users of PRow	Moderate adverse	Moderate adverse	Minor adverse
Viewpoint 4	Residents	Moderate to major adverse	Moderate to major adverse	Moderate to major adverse
	Recreation users	Moderate adverse	Moderate to major adverse	Moderate to major adverse
Viewpoint 5	Residents	Moderate adverse	Moderate adverse	Moderate adverse
	Recreational users	Moderate to major adverse	Moderate to major adverse	Moderate to major adverse
	Road users	Moderate adverse	Moderate adverse	Moderate adverse
Viewpoint 6	Residents nearby (PP)	Minor to moderate adverse	Minor adverse	Minor adverse
	Residents nearby (PL)	Moderate to major adverse	Moderate to Major adverse	Minor to Moderate adverse
	Users of PRow (TPT)	Minor to Moderate adverse	Moderate to Major adverse	Minor to Moderate adverse to Minor adverse

Visual receptors	Visual receptor	Construction	Operation (year 1)	Operation (year 15)
Viewpoint 7	Residents nearby	Negligible	Negligible	Negligible
	Road users (Broad Lane)	Negligible	Negligible	Negligible
	Users of PRoW / TPT and NCR 65	Negligible	Negligible	Negligible
	Workers	Negligible	Negligible	Negligible
Viewpoint 8	Residents nearby (PP)	Minor to Moderate adverse	Minor to Moderate adverse	Minor to Moderate adverse
	Residents nearby (PL)	Moderate to major adverse	Moderate to major adverse	Minor to Moderate adverse
	Users of PRoW	Moderate adverse	Moderate to major adverse	Minor adverse
	Road users	Moderate adverse	Moderate to major adverse	Minor adverse
Viewpoint 9	Residents nearby	Moderate – major adverse	Major adverse	Minor - Moderate – Major adverse
	Users of PRoW	Moderate adverse	Moderate adverse	Moderate adverse
Viewpoint 10	Residents nearby	Negligible	Minor to moderate adverse	Minor to moderate adverse
	Users of PRoW/ school. Golf Course	Negligible	Negligible	Negligible
	Road Users			
Viewpoint 11	Residents nearby	Negligible	Negligible	Negligible
	Users of PRoW / boat users of canal	Negligible	Negligible	Negligible
Viewpoint 12	Residents nearby	Negligible	Negligible	Negligible
	Road users	Negligible	Negligible	Negligible

Visual receptors	Visual receptor	Construction	Operation (year 1)	Operation (year 15)
Viewpoint 13	Residents nearby	Negligible	Minor to Moderate adverse	Minor to Moderate adverse
	Users of PRow	Negligible	Minor adverse	Minor adverse
	Road users	Negligible	Negligible	Negligible
Viewpoint 14	Residents nearby	Negligible	Minor to Moderate adverse	Minor to Moderate adverse
	Users of PRow /TPT/ disused airfield	Negligible	Minor to Moderate adverse	Minor to Minor adverse to Moderate adverse
	Rail users	Negligible	Negligible – Minor adverse	Negligible – Minor adverse
Viewpoint 15	Residents nearby	Negligible	Negligible	Negligible
	Users of country park / golf club	Negligible	Negligible	Negligible
	Road users	Negligible	Negligible	Negligible
Viewpoint 16	Residents nearby	Negligible	Minor to moderate adverse	Minor to moderate adverse
	Road users	Negligible	Negligible	Negligible
Viewpoint 17	Residents nearby	Negligible	Minor to moderate adverse	Minor to moderate adverse
	Road users	Negligible	Minor adverse	Minor adverse
Viewpoint 18	Residents nearby	Negligible	Minor to moderate adverse	Minor to moderate adverse
	Road /rail users	Negligible	Negligible	Negligible
Viewpoint 19	Church congregation / visitors	Negligible	Negligible	Negligible
	Users of PRow: (From a Grade I Listed Building)	Negligible	Negligible	Negligible

Visual receptors	Visual receptor	Construction	Operation (year 1)	Operation (year 15)
Viewpoint 20	Users of PRoW and visitors to SM	Negligible	Negligible	Negligible
Viewpoint 21	Users of PRoW and Drax Golf Course	Minor adverse	Minor adverse	Minor adverse

SCENARIO 1 (UNITS X AND Y) - ASSESSMENT OF COMBINED VISUAL EFFECTS CONSTRUCTION

10.6.94. Residents and recreational users of the Trans Pennine Network and National Cycle Route within a localised vicinity of the Existing Drax Power Station Complex would experience significant moderate to major adverse effects associated with the Proposed Scheme during construction. Effects experienced by recreational users of the local PRoW network and road users would be moderate adverse. Whilst it is considered that the level of effect would remain the same based on either a current or future baseline and for Scenario 2, the extent of effects experienced in relation to the pipeline route options would differ. The number of visual receptors (both residents and users of the Trans Pennine Trail) in close proximity to Option A is higher than Option B.

OPERATION YEAR 1

10.6.95. Significant visual effects associated with the Proposed Scheme would be in relation to the Gas Turbines and Heat Recovery Steam Generators and their associated stacks, the GRF / Gas Compressor Building, Battery Storage Facility and structures associated within the Above Ground Installation. Local residents would experience a major or moderate to major adverse effect whilst recreational users of the Trans Pennine Trail / National Cycle Network would experience moderate to major or minor to moderate adverse effect subject to their proximity and orientation to the Proposed Scheme as well as intervening vegetation. Recreational users of the local PRoW network and road users would experience moderate adverse effects.

10.6.96. Effects would be experienced by a higher number of visual receptors for Option A than B.

OPERATION YEAR 15

10.6.97. Embedded primary mitigation in the form of on-site planting would effectively provide an extra provision for some local receptors' views who lie close to or within the Site Boundary where mitigation measures can be implemented. In addition, for the structures associated with the Above Ground Installation and the pipeline, the use of colour and texture would be carefully considered alongside boundary structures and planting to tie the works into surrounding local landscape features.

SCENARIO 2

10.6.98. There would be no difference in visual effects between Scenario 1 and Scenario 2.

10.7 MITIGATION MEASURES

- 10.7.1. Secondary mitigation considers measures designed to specifically address the remaining adverse effects of the Proposed Scheme. In the case of the Proposed Scheme it is considered that no further additional mitigation measures can be introduced for the Power Station Site to minimise the adverse effects outlined above.
- 10.7.2. In terms of secondary mitigation measures associated with the Pipeline Study Area consideration should be given to additional on-site mitigation within the Site Boundary to reduce the visual effects of the Proposed Scheme in localised views appreciated by residential and recreational receptors.
- 10.7.3. Mitigation measures would include the establishment of hedgerows based on historic boundaries where appropriate or tree planting to partially screen views from a lower elevation. Such measures should be implemented along agreed sections of local main roads close to the Site and within the Site Boundary drawing references on local landscape features and improving connectivity.

10.8 RESIDUAL EFFECTS

- 10.8.1. Table 102 summarises the residual effects associated with the Proposed Scheme on the landscape resource and visual receptors covering both the Power Station Site and Pipeline Study Area. Where no additional mitigation is proposed, there would be no change in the significance of effects for landscape resource and visual receptors.

Table 102 - Residual effects based on Scenario 1

Description Landscape Resource and Visual receptors	Details	Embedded Mitigation Measures	Significance of effects	
			Effects during the Proposed Scheme's lifecycle	Residual effects
Construction (based on either a current or future baseline)				
LCTs and LCAs: LCT 23 Farmland, LCT 24 River Floodplains, The Wharfe Ouse River Corridor, The River Aire Corridor, The Camblesforth Lowlands LCT 4 -River Corridors (4A, 4B and 4D),	Removal of existing structures and construction of new structures and associated infrastructure	Working in accordance with CEMP Retention of on-site planting where possible. Reduction in working width of pipeline and access into Development Parcel A	LCTs/LCAs/ Local Landscape designation: Significant Moderate Adverse effect Landscape features: Significant moderate to major	No change

Description Landscape Resource and Visual receptors	Details	Embedded Mitigation Measures	Significance of effects	
			Effects during the Proposed Scheme's lifecycle	Residual effects
Lower Derwent Local Important Landscape Area Specific landscape features ([plantations, tree belts, and groups of trees and hedgerows)				
Localised visual receptors (viewpoint 4, 5 ,6, 8 and 9)	Removal of existing structures and construction of new structures and associated infrastructure	Working in accordance with CEMP Retention of on-site planting where possible. Reduction in working width of pipeline and access into Development Parcel A	Viewpoint 3: Significant Moderate to Major and Moderate adverse effects Viewpoint 4: Significant Moderate to Major and Moderate Adverse effects Viewpoint 6 and Viewpoint 8: Significant Moderate to Major Adverse effects associated with structures linked to the Above Ground Installation	No change

Description Landscape Resource and Visual receptors	Details	Embedded Mitigation Measures	Significance of effects	
			Effects during the Proposed Scheme's lifecycle	Residual effects
			Viewpoint 9: Significant Moderate to Major effects	
Operation				
LCTs and LCAs: LCT 23 Farmland, LCT 24 River Floodplains, The Wharfe Ouse River Corridor, The River Aire Corridor, The Camblesforth Lowlands LCT 4 -River Corridors (4A, 4B and 4D), Lower Derwent Local Important Landscape Area Specific landscape features (plantations, tree belts, and groups of trees and hedgerows)	Unity X and Y, Battery Storage Facility, GRF, Gas Compressor Building	Implement on site mitigation planting where vegetation is lost to integrate the Proposed Scheme at a low elevation. The exact siting of replacement planting will be determined through micro-siting and once the design is fixed. Implement a 5 year maintenance plan. Introduce a long term management plan for existing and reinstated areas. Colour and texture should be carefully considered in the context of existing structures.	LCTs/LCAs/ Local Landscape designation: Significant Major and Moderate to Major effects Landscape features: Significant moderate to major	No change

Description Landscape Resource and Visual receptors	Details	Embedded Mitigation Measures	Significance of effects	
			Effects during the Proposed Scheme's lifecycle	Residual effects
Localised visual receptors (viewpoint 4, 5, 6, 8 and 9)		Combined stacks to reduce visual clutter and increase scale has been discounted based on a cost benefits analysis.	Viewpoint 3 and 9: Significant Major and Moderate adverse effects Viewpoint 4, 5, 6: Significant Moderate to Major and Moderate adverse effects Viewpoint 8: Significant Moderate to Major adverse effects associated with residents close to structures associated with the Above Ground Installation	No change
Operation Year 15				
LCTs and LCAs: LCT 23 Farmland, LCT 24 River Floodplains, The Wharfe Ouse River Corridor, The River Aire Corridor, The Camblesforth Lowlands	Unity X and Y, Battery Storage Facility, GRF, Gas Compressor Building	Embedded primary mitigation would have matured providing screening at lower elevations	LCTs/LCAs/ Local Landscape designation: Significant Major and Moderate to Major effects Landscape features: Negligible beneficial	No change

Description Landscape Resource and Visual receptors	Details	Embedded Mitigation Measures	Significance of effects	
			Effects during the Proposed Scheme's lifecycle	Residual effects
LCT 4 -River Corridors (4A, 4B and 4D), Lower Derwent Local Important Landscape Area Specific landscape features ([plantations, tree belts, and groups of trees and hedgerows)				
Localised visual receptors (viewpoint 4, 5 and 9)			Viewpoint 3: Minor effects Minor to Moderate effects	Viewpoint 9: Potential reduction in significant effects subject to secondary strategic planting to Significant Minor to Moderate adverse effects
			Viewpoint 4 and 5: Significant Moderate to Major and moderate effects.	No change
			Viewpoint 6 and 8: Minor to Moderate	No change

Description Landscape Resource and Visual receptors	Details	Embedded Mitigation Measures	Significance of effects	
			Effects during the Proposed Scheme's lifecycle	Residual effects
			Viewpoint 9: Significant Moderate to Major and Moderate effects	
Decommissioning				
LCTs and LCAs: LCT 23 Farmland, LCT 24 River Floodplains, The Wharfe Ouse River Corridor, The River Aire Corridor, The Camblesforth Lowlands LCT 4 -River Corridors (4A, 4B and 4D), Lower Derwent Local Important Landscape Area Specific landscape features ([plantations, tree belts, and groups of trees and hedgerows)	Working in accordance with CEMP		LCTs/LCAs/ Local Landscape designation: Significant Moderate Adverse effect Landscape features: Negligible beneficial to minor adverse	No change
Localised visual receptors			Viewpoint 3: Significant Moderate to Major and Moderate adverse effects	No change

Description Landscape Resource and Visual receptors	Details	Embedded Mitigation Measures	Significance of effects	
			Effects during the Proposed Scheme's lifecycle	Residual effects
			Viewpoint 4: Significant Moderate to Major and Moderate Adverse effects Viewpoint 6 and Viewpoint 8: Significant Moderate to Major Adverse effects associated with structures associated with the Above Ground Installation Viewpoint 9: Significant Moderate to Major effects	

10.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

10.9.1. The assessment made the following assumptions:

- The assessment of the views from private properties was based on representative viewpoints taken from publically accessible locations and professional judgement. A residential amenity survey was not undertaken.
- The visual envelope for the Proposed Scheme was prepared on the basis of desk based review and production of ZTVs (using LiDAR and base earth data) followed by survey work and the application of professional judgement. Where there were gaps in data existed these were verified in the field. This related to the lack of LiDAR data to the north of the Site and a distortion in LiDAR data resulting from the plumes associated within the existing cooling towers.
- The LVIA includes a comprehensive visual assessment describing and assessing the effects from all the potentially affected visual receptors (settlements, groups of receptors

and individual isolated receptors) within the Study Area. This is illustrated through photographs from a series of agreed representative viewpoints to give a clear picture of the anticipated effects, with visualisations / photomontages from selected key viewpoints.

10.10 NEXT STEPS

10.10.1. The approach taken to this preliminary assessment was based on good practice guidance and professional judgement. To inform the ES and to respond to comments made by LPAs and within the Scoping Opinion, the following work needs to be undertaken:

- Refinement to the LVIA based on receipt of the agreed site layout, confirmation of proposed structures and route option as well as on and off site mitigation.
- Continued consultations with LPAs on the sensitivity of the landscape resource and visual receptors as advised by the Scoping Opinion.
- Comments on the extent of the Study Area and viewpoints are pending from Natural England.
- Review of comments subsequent to the publication of the PEIR to inform the design of the Proposed Scheme and the LVIA.

11 GROUND CONDITIONS

11.1 INTRODUCTION

- 11.1.1. This chapter provides a preliminary assessment of the likely significant effects that the Proposed Scheme may have on geology and soils. It describes the baseline condition of the study area (as defined in Section 11.12) and considers the potential for land to be affected by contamination, which may impose constraints on the Proposed Scheme or inform the selection of the pipeline route - Option A or Option B. The Phase 1 Preliminary Risk Assessment (PRA) is followed by an assessment of effects determined on the basis of the perceived importance (sensitivity) of, and the potential impacts to, the identified environmental attributes and contaminated land receptors.
- 11.1.2. This chapter describes:
- Relevant policy, legislation and guidance.
 - Consultation undertaken to date.
 - Potential effects of the construction phase of the Proposed Scheme.
 - Potential effects of the operation of the Proposed Scheme.
 - Potential effects of the decommissioning of the Proposed Scheme.
- 11.1.3. The scope of this chapter excludes any assessment of effects on drainage and discharge (refer to Chapter 12: Water Resource, Quality and Hydrology) or waste and materials management (refer to Chapter 13: Waste).

11.2 POLICY, LEGISLATION AND GUIDANCE

- 11.2.1. The assessment has been undertaken with reference to or in general accordance with the following policy, legislation and guidance.

POLICY AND LEGISLATION

European Policy

Water Framework Directive (2000/60/EC)

- 11.2.2. The overall objective of the Water Framework Directive (WFD) is to bring about the effective co-ordination of water environment policy and regulation across Europe. The main aims of the legislation are to ensure that all surface water and groundwater reaches 'good' status (in terms of ecological and chemical quality and water quantity, as appropriate), promote sustainable water use, reduce pollution and contribute to the mitigation of flood and droughts

Groundwater Directive (2006/118/EC)

- 11.2.3. The Groundwater Directive aims to set groundwater quality standards and introduce measures to prevent or limit pollution of groundwater, including those listed with the 'List of Priority Substances'. The Directive has been developed in response to the requirements of Article 17 of the WFD, specifically the assessment of chemical status of groundwater and objectives to achieve 'good' status.

National Legislation and Policy

Overarching National Policy Statement for Energy (EN-1)

- 11.2.4. The overarching NPS EN-1 explains the assessment principles to which the SoS will have regard in the examination of an energy NSIP (such as the Proposed Scheme), and explains

the generic impacts with regard to energy infrastructure. Specific considerations for fossil fuel generating stations are provided in the NPS for Fossil Fuel Generating Infrastructure (NPS EN-2). The NPSs for Gas Supply Infrastructure and Gas Oil Pipelines (NPS EN-4) and Electricity Networks Infrastructure (NPS EN-5) provide specific considerations potentially relevant to the connection compounds.

- 11.2.5. The relevant assessment principles in terms of generic impacts ('Biodiversity and Geological Conservation' and 'Land Use including Open Space, Green Infrastructure and Green Belt' and 'Waste Management') from Part 5 of NPS EN-1 (Generic Impacts) are set out below:

NPS EN-1: Generic Impacts – Biodiversity and Geological Conservation

- 11.2.6. Paragraphs 5.3.3. to 5.3.4:

"Where the development is subject to an EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally and locally designated sites of ecological and geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity... The applicant should show how the project has taken advantage of the opportunities to conserve and enhance biodiversity and geological conservation interests"

NPS EN-1: Generic Impacts – Land Use including Open Space, Green Infrastructure and Green Belt

- 11.2.7. Paragraphs 5.10.8 to 5.10.9:

"Applicants should seek to minimise impacts of the best and most versatile agricultural land (defined as defined as Grades 1, 2 and 3a of the Agricultural Land Classification (as set out in Natural England Technical Information Note TIN049) and preferably use land in area of poorer quality (Grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations. Applicants should also identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed. For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination."

"Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommission has taken place."

NPS EN-2: Fossil Fuel Electricity Generating Infrastructure

- 11.2.8. Paragraph 1.7.2 of NPS EN-2 states that the "effects on geology and soils are likely to be localised and limited."

NPS EN-4: Gas Supply Infrastructure and Gas and Oil Pipelines

- 11.2.9. Section 2.23 of NPS EN-4 discusses the potential impacts on soil and geology and recognises the importance of understanding the underlying soils and geology. This sections states that the applicants should assess the stability of ground conditions via a desktop study and if necessary, new borehole data. It also states that the assessment should cover options considered for installing pipelines and weigh up impacts of means of installation.

NPS EN-5: Electricity Networks Infrastructure

- 11.2.10. NPS EN-5 includes limited information regarding impacts on geology, although Paragraph 2.8.9 recognises that an underground line is likely to have more potential impacts on geology and soils than an overhead line.

Environmental Protection Act (1990). Part 2A, Section 78

- 11.2.11. Part 2A of the Environmental Protection Act (EPA) 1990 (as amended) deals with contaminated land. This defines contaminated land as “any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substance in, on or under the land that;
- a) Significant harm is being caused or there is significant possibility of such harm being caused; or
 - b) Significant pollution to controlled waters is being caused, or there is a significant possibility of such pollution being caused.”

National Planning Policy Framework (NPPF)

- 11.2.12. The National Planning Policy Framework (NPPF) states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing geological conservation interests and soils (paragraph 109). It also instructs the prevention of new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil or water pollution or land instability (paragraph 109).

- 11.2.13. The NPPF states in paragraphs 120 and 121:

“To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment and general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.”

“Planning policies and decisions should also ensure that:

- *The site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
- *After remediation, as a minimum, land should not be capable as being determined as contaminated land under Part 2A of the Environmental Protection Act 1990; and*
- *Adequate site investigation information, prepared by a competent person, is presented.”*

- 11.2.14. The NPPF also references the sustainable use of minerals. Paragraph 143 states:

“When determining planning applications, local planning authorities should:

- *Define Mineral Safeguarding Areas and adopt appropriate policies in order that known locations of specific minerals resources of local and national importance are not needlessly sterilised by non-mineral development, whilst not creating a presumption that resources defined will be worked; and*

- *Set out policies to encourage the prior extraction of minerals, where practicable and environmentally feasible, if it is necessary for non-mineral development to take place.”*

The Water Resources Act 1991 (SI57) (as amended by the Water Act 2003).

- 11.2.15. Under the Water Resources Act, Controlled Waters are defined as including both surface waters and groundwater. Once a site is classified as ‘contaminated land’ then remediation is required to render significant pollutant linkages (i.e the source-pathway-receptor relationships that are associated with significant harm and/or pollution of Controlled Waters) insignificant, subject to a test of reasonableness.

LOCAL POLICY

Selby District Local Plan, Section 4: Environment (adopted February 2005); and Selby District Core Strategy Local Plan, Section 7: Improving the Quality of Life (adopted October 2013).

- 11.2.16. The key parts of Section 4: Environment of the Selby District Local Plan relate to contaminated land, groundwater protection and hazardous substances.
- 11.2.17. Section 4 of the Selby District Local Plan states the following in paragraph 4.43 in relation to contaminated land:
- “Contaminated land such as former industrial sites or waste disposal sites can also have serious implications for the health and safety of the local population and the environment. When contamination is known or suspected, developers will be required to undertake proper investigations to assess the nature and extent of contamination and applicants will be required to provide sufficient information to enable the Authority to determine the application. Effective measures must be incorporated to protect the public, property and natural resources from potential harmful effects.”*
- 11.2.18. Section 4 of the Selby District Local Plan states the following in paragraphs 4.44 to 4.47 in relation to groundwater protection:
- “Groundwater stored in aquifers is a principal source of drinking water supply in the Plan area. Groundwater is also widely used by industry and agriculture, as well as feeding rivers and supporting wetlands which provide wildlife habitats. Both the quality and quantity of groundwater are legally protected. If groundwater becomes polluted it is very difficult (sometimes impossible) and expensive to clean up again. It is therefore better to prevent or reduce the risk of groundwater contamination in the first place, rather than deal with the consequences.*
- Whilst it is the duty of the Environment Agency to monitor and protect groundwater, the way land is used and developed is one of the threats to the quality of groundwater. Land use planning can therefore play a key role in protecting groundwater. To assist in this process, the Environment Agency has published Groundwater Vulnerability Maps which show the areas that are most vulnerable to groundwater pollution.*
- The Sherwood Sandstone Aquifer in the Selby area has been subject to high levels of abstraction. Groundwater levels have been decreasing steadily. The issue has been recognised by the Environment Agency and is currently being investigated as part of its Catchment Abstractions Management Strategy.*
- The Sherwood Sandstone underlying the Selby area is particularly sensitive to contamination due to the area of exposed aquifer. It is important that aquifers within*

sensitive areas are protected from potentially polluting land uses. In addition to publishing Groundwater Vulnerability Maps, the Environment Agency is in the process of producing and amending the definition of Groundwater Protection Zones around major borehole supplies, for which a degree of protection is afforded against a range of activities.

ENV2

- A) Proposals for development which would give rise to, or would be affected by, unacceptable levels of noise, nuisance, contamination or other environmental pollution including groundwater pollution will not be permitted unless satisfactory remedial or preventative measures are incorporated as an integral element in the scheme. Such measures should be carried out before the use of the site commences.*
- B) Where there is a suspicion that the site might be contaminated, planning permission may be granted subject to conditions to prevent the commencement of development until a site investigation and assessment has been carried out and development has incorporated all measures shown in the assessment to be necessary.”*

11.2.19. Section 4 of the Selby District Local Plan states the following in paragraphs 4.50 to 4.52 in relation to hazardous substances:

The Plan area contains a number of sites that contain installations handling or storing notifiable hazardous substances. There are also a number of notifiable high pressure natural gas transmission pipelines.

Hazardous substances are subject to stringent controls under the Planning (Hazardous Substances) Act 1990 which requires hazardous substances consent to be obtained for the use or storage of certain materials. It is equally appropriate to exercise careful planning controls over development involving hazardous substances in order to ensure that installations are kept separate from housing and other sensitive land uses such as schools and hospitals with which they may be incompatible.

In determining whether a risk is unacceptable in considering proposals, account will be taken of the proposed amount, type and location of hazardous substances and the need for special precautions or restrictions to protect future uses of the site or adjoining land. Advice is contained in Annex B of Circular 11/92 which also outlines the issues of risk considered by the Health and Safety Executive in giving advice to Local Planning Authorities. The District Council will take particular account of advice from the Health and Safety Executive in relation to the potential risks involved within the “advised consultation distances” for any individual installation. Development likely to lead to a concentration of people close to existing hazardous installations or storage facilities will be resisted unless it can be shown that there is no special risk.

ENV4

Proposals involving the storage or use of hazardous substances, or developments in the vicinity of sites where hazardous substances are being stored or used, will only be permitted where the District Council is satisfied that:

- 1) There is no unacceptable risk to the public or the natural environment; and*
- 2) Opportunities for the development of land in the vicinity will not be severely restricted.*

11.2.20. Section 4 of the Selby District Local Plan states the following in paragraph 4.91 in relation to ancient woodland:

“Ancient woodlands have existed from at least medieval times without ever having been cleared for uses other than wood or timber production. Many are relics of Britain’s prehistoric woods which developed after the last ice age representing the last direct links with the lost lowland forests. Ancient woodlands are important for nature conservation because their wildlife communities are generally richer than those of recently planted woodlands, often containing a high proportion of rare and vulnerable species which require the stability afforded by the continuity of woodland cover. Existing plant communities include the tree and shrub layer, the ground vegetation, lichens and mosses and undisturbed soils. Even when felled and replanted they retain much of their special wildlife interest. English Nature estimated that ancient woodlands represent only 1.8% of the total Plan area, the majority of which are under 10 hectares in size (Inventory of Ancient Woodlands 1987). In view of the small number of remaining ancient woodlands, their small extent as a proportion of land area and their high nature conservation value it is important that remaining ancient woodlands and ancient replanted woodlands are protected and managed sympathetically.

ENV11

Development will not be permitted where it is likely to cause loss of, or damage to, an ancient woodland, unless the reasons for the development outweigh the nature conservation value of the woodland.”

11.2.21. The key part of Section 7: Improving the Quality of Life of the Selby District Core Strategy Local Plan, which relates to groundwater (paragraphs 7.24 to 7.26), is as follows:

“The District contains significant groundwater supplies including both the Sherwood Sandstone aquifer and the Magnesian Limestone aquifer (which provides a vital water supply for the brewing industry in and around Tadcaster). There are also a number of wells for potable water abstraction in the southern part of the District which form part of a larger well-field for public supply. This water resource is already overcommitted.

In some areas the protective drift material is missing and therefore the public water supply is very susceptible to contamination. Consideration must be given to the protection of water quality and prevention of pollution to the ground water supply.

Climate change will lead to drier summers and wetter winters, increased flood risk in winter and a longer growing season. This will put increased pressure on related infrastructure and water resources. There is therefore a need to protect existing resources and encourage water conservation measures and encourage water efficiency to help the District adapt to climate change and ensure sufficient water resources to meet its needs.”

GUIDANCE

Guidance documents that are applicable include:

- DMRB Volume 11, Section 2, Part 5 Assessment and Management of Environmental Effects, Highways Agency, 2008.
- DMRB Volume 11, Section 3, Part 11 Geology and Soils, Highways Agency, June 1993;
- Technical Guidance to the National Planning Policy Framework, Department for Communities and Local Government, 2012.

- Guidance for the Safe Development of Housing on Land Affected by Contamination. R&D Publication 66, Volume 1, Environment Agency / National House-Building Council, 2008.
- Contaminated Land Statutory Guidance, Department for Environment, Food and Rural Affairs, 2012.
- Model Procedures for the Management of Land Contamination (CLR11), Department for Environment, Food and Rural Affairs and Environment Agency, 2004.
- CIRIA C552: Contaminated Land Risk Assessment: A guide to good practice. (London, 2001).

11.2.22. The DMRB guidance referenced is considered the most comprehensive guidance available for the assessment of geology and soils and its principles are applied in this context with a degree of interpretation and professional judgement given the Proposed Scheme is not a road scheme.

11.3 SCOPING OPINION AND CONSULTATION

SCOPING OPINION

11.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to ground conditions and contamination, and how those requirements should be addressed by the applicant, are set out below in Table 103.

Table 103 - Scoping Opinion Summary Table for Ground Conditions

Section	Applicants proposed matter	PINS' Comments	Summary of response
7.7.1	Statutory designated sites	On the basis that there are no geological SSSIs and no known Regionally Important Geological Sites within the study area (see also comments below regarding the study area), the Inspectorate agrees that these do not need to be assessed within the ES. However, for completeness, it is recommended that the ES provides confirmation of their absence.	Agreed.
7.7.2	Adverse effects on the health of construction workers associated with exposure to any contaminative substances in the ground (e.g. from historical land uses)	Section 4.10 of the Scoping Report notes the potential for contamination within the application site and section 7.7.4 states that a PRA would be undertaken to establish baseline conditions. The Inspectorate notes the proposal that construction will be undertaken in accordance with all relevant legislation, guidance and best	In response to this decision, adverse effects to the health of construction workers is assessed in the PEIR and will be assessed in the ES.

Section	Applicants proposed matter	PINS' Comments	Summary of response
		practice. However, there is no information regarding the levels of potential contaminants or any necessary remediation in relation to the site. Accordingly, the Inspectorate does not agree that this can be scoped out.	
7.7.2	Sediment loading of nearby surface water, resulting from soil erosion associated with ground works.	The Inspectorate agrees that a detailed assessment can be scoped out on the basis that a CEMP will be in place to manage erosion and transport of soils potentially affected by contamination. However, it is recommended that this approach is detailed within the ES and has regard to relevant best practice and guidance in relation to construction. The Inspectorate will expect to see a draft CEMP provided with the application which controls these matters.	Agreed.
7.7.2	Adverse effects to any sensitive receptor following the introduction of contaminative substances during construction (e.g. due to inappropriate storage of fuel).	The Inspectorate agrees that a detailed assessment can be scoped out on the basis that a CEMP will be in place to control storage and use of potentially contaminative substances. However, it is recommended that this approach is detailed within the ES. The Inspectorate will expect to see a draft CEMP provided with the application which controls these matters.	Agreed.
7.7.2	Adverse effects to the built environment from the potential presence of aggressive chemical agents in the ground, which may be destructive to concrete.	It is noted that suitable construction materials will be selected for use at the detailed design stage. However, the Inspectorate does not agree that this can be scoped out because the Scoping Report states that ground investigation is required to evaluate potential risks from aggressive chemical agents. As such, there is no assurance that	In response to this decision, adverse effects to the built environment is assessed in the PEIR and will be assessed in the ES.

Section	Applicants proposed matter	PINS' Comments	Summary of response
		there will not be any significant effects arising.	
7.7.2	Physical damage to soil (e.g. sealing and compaction), with potential secondary impacts to surface water run-off.	The Inspectorate agrees that a detailed assessment can be scoped out on the basis that demolition and construction works will be carried out in accordance with Defra's Construction Code of Practice and that a Materials Management Plan (forming part of the CEMP) will be in place to prevent physical damage to soil. However, it is recommended that this approach is detailed within the ES. The Inspectorate will expect to see a draft CEMP provided with the application which controls these matters.	Agreed.
7.7.2	Adverse effects to any sensitive receptor associated with the demolition of existing infrastructure, resulting in contaminant release.	The Inspectorate notes that a CEMP will include procedures for identifying and mitigating contaminant risk during demolition of the existing infrastructure. However, there is no information regarding the likely presence of potential contaminants and therefore it is not possible to rule out the potential for significant effects. As such, the Inspectorate does not agree that this can be scoped out. The Inspectorate will expect to see a draft CEMP provided with the application which controls these matters.	This is assessed in the PEIR. Mitigation will be stated in the PEIR and ES and is likely to include a pre-demolition survey to identify the condition and likely content of the infrastructure to be demolished.
7.7.2	Adverse effects to any sensitive receptor following the introduction of contaminative substances during operation of the power station and pipeline.	The Inspectorate agrees that this can be scoped out on the basis that operation will be in accordance with pollution prevention industry guidance and controls in relevant permits issued by the EA.	Agreed.

Section	Applicants proposed matter	PINS' Comments	Summary of response
7.7.1 and 7.7.4	Study area	Sections 7.7.1 and 7.7.4 of the Scoping Report refer to the study area, but do not indicate what this would be. The ES should clearly identify the study area to be used in the assessment. This should be discussed and agreed with relevant consultees and reflect the full extent of the likely impacts.	The study area for this topic is defined in the Section 11.7. This study area has been defined according to professional judgements and best practice and we are awaiting a response from the EA.
7.7.4	Baseline	The Scoping Report states that a walkover survey would be undertaken 'if necessary' and that the PRA will identify any requirements for further ground investigation. The Scoping Report does not explain what the walkover survey would comprise, however the Inspectorate notes that the PRA will identify any requirements for further ground investigation. The Applicant is recommended to agree the need and methodology of any on site walkover surveys and ground investigations with the relevant consultees.	Agreed. A Phase 1 walkover survey was completed on 21 November 2017.
7.7.4	Assessment methodology	This section of the Scoping Report states that the assessment will consider the protection of BMV agricultural land (as a proxy for soil quality). Whilst this is welcomed, it is also noted that Section 6.1.3 of the Scoping Report proposes to scope out potential impacts on BMV. The applicant's attention is drawn to the Inspectorate's previous comments regarding BMV (see Table 3).	The geology and soils assessment uses BMV as a proxy for soil quality and this chapter of the PEIR will undertake an assessment of the potential impacts on BMV. Impacts upon

Section	Applicants proposed matter	PINS' Comments	Summary of response
		Table 3 of the Scoping Opinion states: The Scoping Report states that following construction of the pipeline, agricultural land would be reinstated to the existing ALC Grade; that a Soil Management Plan (SMP) would be implemented in order to maintain the integrity of the soil and there would not be significant loss of BMV agricultural land or other significant impact on the viability of farm practices. The Inspectorate does not agree that this topic can be scoped out. The Scoping Report does not provide a sufficiently detailed understanding of the area of BMV land to be temporarily affected or the detail of the proposed mitigation measures to be implemented.	agricultural land will also be considered within Chapter 14: (Socio-economics).
7.7.4	Assessment methodology	The applicant's attention is drawn to the comments of the EA and its recommendations for the PRA, site investigations and risk assessments.	The relevant guidance is listed in the Section above.

11.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

PRELIMINARY RISK ASSESSMENT

- 11.4.1. A Phase 1 Preliminary Risk Assessment has been undertaken to establish the current baseline condition of the study area (defined below in the Assessment Methodology and Significance Criteria section 11.4 of this chapter) and assess potential constraints relating to land contamination relevant to the construction and operational phases of the Proposed Scheme.
- 11.4.2. The potential for land contamination within the study area has been assessed in accordance with the principles of the Environment Agency report CLR11: Model Procedures for the Management of Land Contamination. In accordance with current UK Government guidance, qualitative risks on land contamination are assessed using the 'source-pathway-receptor' approach, where the following definitions apply:
- Source/hazard: a substance or situation which has the potential to cause harm or pollution.
 - Pathway: means by which a source/hazard can reach and impact upon a receptor.
 - Receptor: that which may be adversely affected by the presence of the source/hazard.

- 11.4.3. Such an approach recognises that risks relating to land contamination can only exist where all three elements are present constituting a complete contaminant linkage.
- 11.4.4. The level of risk has been evaluated in accordance with the methodology set out in CIRIA C552: Contaminated Land Risk Assessment: A guide to good practice. This involves classification of the consequence and probability associated with each potential contaminant linkage and thereby the corresponding level of risk (risk category).
- 11.4.5. The framework for classifying of consequence, presented in full in CIRIA C552, is summarised in Table 104. The consequence classification does not depend on the probability that the consequence will be realised. The 'severe' consequence classification describes acute risk (arising from short-term exposure). The 'medium' classification describes chronic harm (and may constitute 'significant harm' under Part 2A of the Guide).

Table 104 - Qualitative Risk Assessment – Classification of Consequence

Classification	Definition
Severe	Severe short-term (acute) risks to human health, likely to result in significant harm. Short-term risk of pollution of sensitive water resource. A short-term risk to a particular ecosystem, or an organism forming part of such an ecosystem.
Medium	Chronic damage to human health (significant harm). Pollution of sensitive water resources. A significant change in a particular ecosystem, or an organism forming part of such an ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or to the environment.
Minor	Harm, not necessarily significant, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health. Easily repairable effects of damage to buildings, structures and services.

- 11.4.6. The framework for classifying probability, presented in full in CIRIA C552, is summarised in Table 105.

Table 105 - Qualitative Risk Assessment – Classification of Probability

Classification	Definition
High Likelihood	There is a contaminant linkage and an event that appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	It is probable that an event will occur. Whilst not inevitable, it is possible in the short term and likely over the long term.
Low Likelihood	Circumstances are possible under which an event could occur, but it is not certain that (even over a long time period) such an event would occur.
Unlikely	It is improbable that an event would occur even in the very long term.

11.4.7. The level of risk (risk category), ranging from 'very high risk' to 'very low risk', is determined by the consequence and probability classifications using the matrix shown in Table 106.

Table 106 - Qualitative Risk Assessment – Risk Category

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

ASSESSMENT OF EFFECTS ON GEOLOGY AND SOILS ASSUMPTIONS

11.4.8. The assessment conducted within this PEIR Chapter is based on the following assumptions:

- With reference to the assessment scenarios set out in Chapter 3, this assessment assumes:
- The Site Reconfiguration Works are part of the Proposed Scheme and represent a worst case.
 - Both units are repowered to represent an assessment of a 'worst-case' scenario.
 - In terms of construction transport, effects are considered to be the same for both scenarios.
 - In terms of the gas pipeline routes, both options are assessed and where effects are only referable to one option this is made clear.
 - In terms of scenarios relating to the electrical connection and air quality mitigation, the effects on geology and soils are the same for each scenario.
 - Construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.

11.4.9. The majority of potential effects were considered 'insignificant effects' on the basis of the 'embedded' mitigation incorporated into the design of the Proposed Scheme. Embedded mitigation assumed within this Chapter is as follows:

- Provision of an Outline Construction and Environmental Management Plan (CEMP), a draft of which will be submitted alongside the Environmental Statement. The final CEMP will be provided to contractors undertaking construction phase works and will detail measures for the prevention of contamination and the control of hazardous substances.

Responsibility for ensuring compliance with the final CEMP during the construction phase is assumed to lie with the principal contractor.

The CEMP will include various control plans including:

- **A Soil and Earthworks Control Plan:** This will set out requirements and will include (but will not be limited to) requirement for adherence with Best Practice documents associated with Health & Safety legislation, storage of fuels, oil and chemicals under COSHH regulations, general requirements such as Health and Safety Plans and guidance associated with provision of site risk assessments together with general site mitigation measures (such as good construction site management measures, information on the storage and handling of soils and equipment and highway washing).
 - **A Water Control and Pollution Plan:** This will set out a list of requirements and control measures to minimise risks associated with the direct and indirect contamination of the water environment. It will include (but will not be limited to) adherence with all published documents that establish the environmental issues to be addressed at all stages of construction, and will cover site management controls, management of accidental leakages and spillages and mitigation measures employed during the works to reduce potential risk.
- Demolition and construction works will be carried out in accordance with Defra's Construction Code of Practice and a Materials Management Plan (forming part of the CEMP) will be in place to prevent physical damage to soil.
 - Construction works will be undertaken in accordance with all legislation, guidance and best practice relevant to the safety of construction workers.
 - The operation of Drax Power Station will be in accordance with pollution prevention industry guidance and controls in relevant permits issued by the Environment Agency.
 - For decommissioning, an Environmental Management Plan (EMP) will be in place and include procedures for the identification and mitigation of contaminant risks.

11.4.10. In cases where the assessment in the PEIR has determined a significance level of 'moderate' or greater, additional mitigation, not integral to the Proposed Scheme, has been proposed. The objective of the additional mitigation is to reduce the significance level to no greater than 'slight'.

11.4.11. The design of the Proposed Scheme has not yet been finalised. The assessment of effects has therefore been completed on the basis of indicative layout drawings which are subject to consultation and final approval. It has been assumed that the indicative layout drawings will be representative of the final design. It has further been assumed that the information provided and reviewed in the Phase 1 Preliminary Risk Assessment is representative of existing ground conditions. A degree of professional judgement has been used in the interpretation of this information and in its application to determining environmental sensitivity and magnitude of impact.

11.4.12. Where in this Chapter reference is made to the works carried out on the Existing Drax Power Station Complex, this refers to the elements of the Proposed Scheme carried out on the Existing Drax Power Station Complex and includes the electrical connection, as, at this stage, this infrastructure is not considered likely to independently determine the significance of effect for the works on the Existing Drax Power Station Complex. Following

the Phase 2 ground investigation, it may be possible, if it is considered necessary, to divide the study area into a number of 'averaging areas' in which risks will be independently assessed.

- 11.4.13. The assessment of effects relating to the construction phase is based only on the anticipated potential outcomes of the construction phase, as indicated by the layout drawings in Figure 3.2 and 3.3. This chapter does not provide any assessment of specific strategies for the construction phase, such as use of the jetty or, alternatively, the highways network, during the construction phase, and does not differentiate between these options. It is assumed that effects for geology and soils are independent of construction phase strategy.

SENSITIVITY

- 11.4.14. A sensitivity has been assigned to each attribute or land contamination receptor in accordance with the principles established in DMRB Volume 11 Section 2 Part 5. Definitions of terms relating to the sensitivity of soil are provided in Table 107 and Table 108.

Table 107 - Definition of Terms Relating to Sensitivity of Soils and Geology (Attributes)

		Definition	
		Geology and Geomorphology	Soils
Sensitivity	High	Geological or geomorphological features of national importance such as a Site of Special Scientific Interest.	Good to excellent quality agricultural land; for example, best and most versatile agricultural land. Peatlands (active or inactive).
	Medium	Regionally Important Geological Sites.	Poor to moderate quality agricultural land.
	Low	No features of importance within the theoretical sphere of influence of the Proposed Scheme.	Very poor quality agricultural land. Made Ground, with little potential for agricultural use.

Table 108 - General Definition of Terms Relating to Sensitivity of Soils and Geology (Receptors)

		Definition		
		Controlled Waters	Built Environment	Human Health
Sensitivity	High	Principal Aquifer beneath site or major surface water within the theoretical sphere of influence of the Proposed Scheme.	Buildings of high historical value or other high sensitivity.	Residential development, allotments, play areas and construction workers employed during the construction-phase works only.
	Medium	Secondary Aquifer beneath site or minor surface water within the theoretical sphere of influence of the Proposed Scheme.	Buildings, including services and foundations.	Landscaping or public open space.
	Low	Aquitard beneath site or no surface water body within the theoretical sphere of influence of the Proposed Scheme.	Not applicable.	A 'hard' end use (for example industrial use, road, car park), end users of a commercial development.

MAGNITUDE OF IMPACT

11.4.15. The expected magnitude of impact to each identified attribute and receptor has been assigned in accordance with the principles established in DMRB Volume 11 Section 2 Part 5. The terms used to describe magnitude of impact are defined in Table 109.

Table 109 - Definition of Terms Relating to Magnitude of Impact on Soils and Geology

Magnitude of Impact		Definition
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements. Less than 20 ha of BMV agricultural land.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key

Magnitude of Impact		Definition
		characteristics, features or elements. Between 20 and ≤50 ha of BMV agricultural land.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduce risk of negative impact occurring.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements; short-term exposure to contaminants with chronic (long-term) toxicity. Between 50 and ≤100 ha of BMV land.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements; exposure to acutely toxic contaminants. Greater than 100 ha of BMV agricultural land.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality.

SIGNIFICANCE OF EFFECT

11.4.16. The sensitivity and magnitude of impact are then compared using the matrix shown in Table 110 to determine a significance category ranging from 'neutral' to 'large or very large'.

Table 110 - Matrix Used for Assessment of Significance of Effects

		Magnitude of Impact				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate

STUDY AREA

11.4.17. For the purposes of this assessment, the 'study area' comprises the maximum physical extent of the Site Boundary plus a buffer zone of 250 m. This distance is referenced in best practice documents, including Guidance for the Safe Development of Housing on Land Affected by Contamination: R&D Publication 66 (National House Building Council, 2008), and is typical at the hazard identification stage of an assessment. Consideration has been given to the study area selected and, based on the site specifics

(such as the underlying geology, an appreciation of the water environment and previous land use) the study area selected is considered suitable. It should be noted that whilst the study area comprises the Site Boundary plus an additional buffer zone of 250 m, all applicable pollutant pathways and identified receptors located outside of the 250 m zone are included in the risk assessment. Consultation with the EA is currently being undertaken with respect to the suitability of the study area.

11.4.18. The study area is presented on Figure 11.1 and 11.2.

11.4.19. The Site of the Proposed Scheme (233 ha) includes the following, as defined in Chapter 3 (Site and Project Description) and shown on Figure 1.3:

- The area within the curtilage of Drax Power Station (including Area H but excluding Area G) (69 ha)
- The area of the jetty site (Area G) (2 ha)
- The 'Pipeline Study Area' (163 ha), which comprises the pipeline Options A and B, each approximately 3 km in length, located across rural and agricultural land to the east of Drax power station.

11.4.20. The geology and soil assessment seeks to differentiate between pipeline route Option A and Option B where possible to support option selection. However, expected effects are likely to be similar as the options are located within the common Pipeline Study Area. The high-level baseline conditions described can be assumed to be representative of both options except where differences are explicitly highlighted.

11.4.21. If there is considered to be a potential for features outside of the study area to be impacted by or to constrain the development then these will be included in the assessment. Volume 11 Section 3 Part 11 of the DMRB does not specify a minimum study area distance for the assessment of impacts to geology and soils.

11.5 BASELINE CONDITIONS

SOURCES OF INFORMATION

11.5.1. The baseline condition of the study area is provided based on a review of the following sources:

- Envirocheck® Report: 143154578_1_1, dated 17 October 2017 (Available on request and will be provided as an appendix to the ES);
- British Geological Survey (BGS) 'Onshore GeoIndex'
Available at: <http://mapapps2.bgs.ac.uk/geoindex/home.html> (accessed 25 October 2017).
- BGS 'Geology of Britain' viewer
Available at: <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html> (accessed 25 October 2017).
- British Geological Survey (BGS) 1:63,360 / 1:50,000 Geological Map Series, New Series: Sheet No. 79 'Goole' (Drift ed.), 1971.
- British Geological Survey (BGS) 1:63,360 / 1:50,000 Geological Map Series, New Series: Sheet No. 79 'Goole' (Solid ed.), 1972.
- Natural England, 2010. Agricultural Land Classification map 'Yorkshire & The Humber Region' (ALC003)
Available at:
(<http://publications.naturalengland.org.uk/publication/130043?category=5954148537204736>) (accessed 25 October 2017).

- Environment Agency ‘What’s In Your Backyard?’ application
Available at: <http://apps.environment-agency.gov.uk/wiyby/> (accessed 25 October 2017).
- Department for Environment, Farming and Rural Affairs online ‘Magic’ map application
Available at: <http://magic.defra.gov.uk/MagicMap.aspx> (accessed 25 October 2017).
- WSP, 2017. Drax Repower Project: Environmental Impact Assessment Scoping Report. For Drax Repower Ltd. Published. September 2017. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010091/EN010091-000010-Scoping%20Report.pdf> (accessed 25 October 2017).

11.5.2. A site reconnaissance visit was undertaken by consultants from WSP on 21 November 2017. The consultants identified current land uses and potential sources of contamination within the relevant areas of the Existing Drax Power Station Complex and, where permitted by land access agreements or Public Rights of Way, the Pipeline Study Area. The information and photography obtained has been used to inform the Phase 1 Preliminary Risk Assessment. A record of the photography obtained is presented in Appendix G.1.

GEOLOGY

11.5.3. The geology of the study area has been reviewed with reference to Envirocheck® Report: 143154578_1_1, geological mapping published by the BGS and a number of borehole records published by the BGS. The historical borehole records referred to are summarised in Table 111.

Table 111 - Historical Borehole Records

Borehole Reference	NGR	Area
SE62NE30	466597 427501	Area F
SE62NE138	469860 426653	Pipeline Option A

ARTIFICIAL GROUND

11.5.4. It is highly likely that the study area contains Made Ground associated with all current and historical developments including the Existing Drax Power Station Complex. The log from borehole ref. SE62NE30 describes ‘top soil’ and ‘made up ground’ to a depth of 2.0 m below ground level (b.g.l.) The study area contains rural and agricultural land and may therefore contain localised areas of artificial ground; for example, where depressions have been infilled to aid farming. No known artificial ground is identified within the study area in the BGS ‘Onshore GeoIndex’.

SUPERFICIAL DEPOSITS

- 11.5.5. The majority of the study area (including Areas A-F and H) is underlain by the Hemingbrough Glaciolacustrine Formation (glacigenic silty clay) and the Brighton Sand Formation (fluvial and aeolian sands). These units were formed up to 2 million years ago in the Quaternary Period in a local environment characterised by ice age conditions. Stratigraphical information published by the BGS indicates the Hemingbrough Glaciolacustrine Formation is older than and therefore underlies the Brighton Sand Formation where it is present.
- 11.5.6. The northern part of the business park and old wood yard (Area C), located in the north of the study area, is underlain by alluvium (clay, silt, sand and gravel) associated with a minor

tributary of the River Ouse. The jetty (Area G) is underlain by warp (clay and silt). These units were formed up to 2 million years ago in the Quaternary Period in a local environment characterised by rivers.

- 11.5.7. The Pipeline Study Area is underlain by the Hemingbrough Glaciolacustrine Formation and the Brighton Sand Formation in the west. The proposed pipeline route Option A approaches the River Ouse to the east and is underlain by alluvium and warp. Route Option B projects southwest into land underlain by alluvium.
- 11.5.8. The log from borehole ref. SE62NE30, located within Area F, underlain by the Hemingbrough Glaciolacustrine Formation in BGS mapping, describes superficial 'solid grey/blue clay' from 2.0 m b.g.l. to 16 m b.g.l. The log from borehole ref. SE62NE138, located near the River Ouse, underlain by warp in BGS mapping, describes various silty clays from 0.3 m b.g.l. to 15.24 m b.g.l. (as well as 'firm brown fibrous clayey peat' from 2.29 m b.g.l. to 4.27 m b.g.l.) and sand, potentially derived from the underlying bedrock, from 15.24 m b.g.l. to 20.12 m b.g.l.

BEDROCK GEOLOGY

- 11.5.9. The study area is located on the East Midlands Shelf. In 1:50,000 geological mapping published by the BGS, the study area is shown underlain by the Sherwood Sandstone Group (SSG). This is sedimentary bedrock formed approximately 229 to 271 million years ago in the Triassic and Permian Periods in a local environment previously dominated by rivers.
- 11.5.10. The log from borehole ref. SE62NE30, located within Area F, describes 'sand', which may represent weathered sandstone, from 16 m b.g.l. to 20 m b.g.l., and sandstone from 20 m b.g.l. Beneath this bedrock comprises layers of sandstone and layers of marl. The log from borehole ref. SE62NE138, located adjacent to the River Ouse "near the GVC (sic)", describes 'very dense red fine to medium sand with fragments of sandstone' from 19.81 m b.g.l. and 'weathered sandstone' comprising 'very dense red weakly cemented micaceous fine to medium sand' from 20.12 m b.g.l.

SOIL QUALITY - AGRICULTURAL LAND CLASSIFICATION

- 11.5.11. The Agricultural Land Classification (ALC) map for the 'Yorkshire & The Humber Region' (ALC003) published by Natural England in August 2010 (based on data obtained between 1967 and 1974) shows agricultural land within the Study Area of ALC Grade 3 'Good to Moderate', Grade 2 'Very Good' and Grade 1 'Excellent'. However, the majority of the study area is non-agricultural land.
- 11.5.12. It is acknowledged that this map is not of sufficient accuracy for the assessment of individual sites and forms part of a series at 1:250,000 scale intended for strategic use only.
- 11.5.13. Some parts of the study area have been resurveyed post-1988. The agricultural land to the south of the Existing Drax Power Station Complex was assigned ALC Grades 2-3b, and the agricultural land to the north of the Existing Drax Power Station Complex was assigned ALC Grades 1-4. Land of ALC Grades 1, 2, and 3a is defined as BMV agricultural land by the NPPF.
- 11.5.14. It is not the objective of the geology and soils assessment to consider any potential adverse effects to agricultural land (measured as change to ALC grade) or to the agricultural industry (e.g. due to severance). However, impacts to agricultural land are given further consideration in Chapter 14: (Socio-Economics).

11.5.15. Indicative soil mapping provided by Soilscape identifies the following soil types within the study area:

- 18 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.
- 15 - Naturally wet very acid sandy and loamy soils.
- 21 - Loamy and clayey soils of coastal flats with naturally high groundwater.
- 20 - Loamy and clayey floodplain soils with naturally high groundwater.

LEACHING POTENTIAL

11.5.16. Soil leaching potential within the study area is high (H1) and intermediate (I1). Generic descriptions of these soil classes are provided as follows:

- H1 - Soils that readily transmit liquid discharges because they are either shallow, or susceptible to rapid by-pass flow directly to rock, gravel or groundwater.
- I1 - Soils which can possibly transmit a wide range of pollutants.

11.5.17. Soils with a higher leaching potential may form part of a potential contaminant linkage as a migratory pathway for a contaminative substance or as a contaminative substance source to which end users may be exposed.

HYDROGEOLOGY

11.5.18. The geological units within the study area are assigned the following aquifer classifications by the EA:

- The Hemingbrough Glaciolacustrine Formation is an aquiclude.
- The Brighton Sand Formation is a Secondary A Aquifer.
- The Alluvium is a Secondary A Aquifer.
- The Warp is a Secondary A Aquifer.
- The Sherwood Sandstone Group is a Principal Aquifer.

11.5.19. Groundwater was encountered in warp within borehole ref. SE62NE138, located adjacent to the River Ouse, at 2.3 m b.g.l. The direction of groundwater flow is likely to be east and northeast towards the River Ouse.

11.5.20. Groundwater abstractions located within the study area are summarised in Table 112.

Table 112 - Groundwater Abstractions

Licence No.	NGR	Source	Details
2/27/24/197	465770 426230	Sherwood Sandstone Group	General Agriculture: Spray Irrigation

11.5.21. The majority of the study area is located within a groundwater Source Protection Zone (SPZ) 3 (total catchment). The protected groundwater sources are located to the south at Carlton. In groundwater flood susceptibility mapping published by the BGS, the majority of the study area has a 'limited potential for groundwater flooding to occur'. Some areas in the south of the study area, primarily those areas underlain by the Brighton Sand Formation, have a 'potential for groundwater flooding of property situated below ground level' to occur.

11.5.22. Further discussions of groundwater sources and abstraction points is found in Chapter 12 Water Resource, Quality and Hydrology.

HYDROLOGY

11.5.23. The nearest major surface water feature is the River Ouse, located approximately 1.5 km northeast of the Existing Drax Power Station Complex. This flows eastwards into the Humber Estuary. The River Ouse is a 'main river' as defined by the EA (a river for which the EA has powers to carry out maintenance, improvement or construction work to manage flood risk). There are a number of field drains and other minor river channels within the study area, including Carr Dyke drain in the north of the study area, a pond associated with Drax Abbey Farm, and a pond to the east of the Existing Drax Power Station Complex approximately 0.2 km east of New Road.

11.5.24. Surface water abstractions located within the study area are summarised in Table 113. Drax Power Station also abstracts surface water from and discharges surface water to the River Ouse.

Table 113 - Surface Water Abstractions

Licence No.	NGR	Source	Details
2/27/24/194	466300 428000	Carr Dyke / Lendall Drain (Tidal)	General Agriculture: Spray Irrigation
2/27/24/195	467000 428200	Drax Abbey Fish Pond (Tidal)	-

11.5.25. It is noted that the northwest of the study area, near Carr Dyke, is identified as 'subject to floods' or 'liable to floods' in 1:10,560 scale historical mapping published between 1851 and 1909. The south of the study area, to the south of the Existing Drax Power Station Complex, is a flood zone 3 (flooding from rivers or sea without defences).

11.5.26. For further information on surface water features refer to Chapter 12 Water Resource, Quality and Hydrology.

ENVIRONMENTAL DESIGNATIONS

11.5.27. There are no geological Sites of Special Scientific Interest (SSSIs) within the study area. There are no known regionally important geological sites (RIGS) within the study area.

11.5.28. The study area does not contain Ancient Woodland.

HISTORICAL LAND USE

11.5.29. A summary of historical land use within the study area based on a review of published historical mapping is provided in Table 114.

Table 114 - Summary of Historical Land Use

Historical Map	Detail
Yorkshire 1851-1854 1:10,560	In the earliest available historical mapping, the study area is rural and agricultural. There are some minor areas of woodland including Barlow Hagg in the northwest and Ormerley Carr in the south; and occasional

Historical Map	Detail
	farm dwellings including Wood House, located within the boundary of the Existing Drax Power Station Complex. Drax Abbey and the historical Priory of Drax (Augustinian, founded AD 1130-39, dissolved AD 1535) are located in the north of the Study Area adjacent to the farming land now leased by Drax (Area A).
Yorkshire 1891-1892 1:10,560	Barnsley & West Riding Junction Railway first appears in historical mapping published in 1891-1892. This is located adjacent north of the jetty (Area G). An engine house is present, which would likely have contained pumps and hydraulic accumulators for the operation of Ouse Bridge (swing).
Yorkshire 1938-1953 1:10,560	Barlow Hagg was felled by 1938 to facilitate construction of a 'depot' in the west of the Study Area. This is a former airship factory operational during WWI ⁶⁸ and Royal Ordnance plc. munitions depot ⁶⁹ and prisoner of war camp (Stable Road Camp, Barlow) constructed in the 1930s and operational throughout WWII. ⁷⁰
Ordnance Survey Plan 1974-1975 1:10,000	The Existing Drax Power Station Complex first appears in historical mapping published in 1974-1975. Construction of the Existing Drax Power Station Complex included felling of Ormerley Carr for southern cooling towers (adjacent to Area H). A Sewage Works was constructed in the west of the study area by 1974-1975. Barnsley & West Riding Junction Railway is dismantled and Ouse Bridge is disused by 1974-1975. It is likely that the jetty (Area G) became operational at this time.
Ordnance Survey Plan 1984-1989 1:10,000	Further construction, including construction of the northern cooling towers (adjacent to Areas C, E and F), was undertaken at the Existing Drax Power Station Complex by 1989. The 'depot' had been removed by 1984-1989. A Sewage Works was constructed adjacent west of the jetty (Area G) by 1984-1989.
10k Raster Mapping 1999 1:10,000.	The Selby-Goole railway line, which closed in the 1960s became part of the northwest-southeast orientated stretch of the A645 in the south of the Study Area, southeast of the Existing Drax Power Station Complex.
VectorMap Local 2017 1:10,000	The Existing Drax Power Station Complex is present and operational in mapping from 2017. Rusholme Wind Farm, located in the southeast of the study area, first appears in mapping published in 2017. The historical depot has become the site of the Skylark Centre and Nature

⁶⁸ <http://www.airshipsonline.com/airships/r33/>

⁶⁹ <http://www.airfields-in-yorkshire.co.uk/yorkshireatwar/barlow/>

⁷⁰ <https://www.theguardian.com/news/datablog/2010/nov/08/prisoner-of-war-camps-uk>

Historical Map	Detail
	Reserve. The Sewage Works adjacent to the jetty (Area G) remains present and operational.

CURRENT LAND USE

- 11.5.30. The major feature within the Study Area is the Existing Drax Power Station Complex, which remains operational in 2018. Drax is a large coal-fired power station which includes three units already converted to biomass located south of the River Ouse. The site is 'lower tier' classified under Control of Major Accident Hazards (COMAH).
- 11.5.31. The study area is otherwise predominantly rural and agricultural, with the villages of Barlow, Camblesforth and Drax located within 1 km of the Existing Drax Power Station Complex and the village of Newland located to the east within 1 km of pipeline route Option B. The Skylark Centre and Nature Reserve is located adjacently to the west, on Barlow Mound—an anthropogenic feature containing pulverised fuel ash (PFA) and furnace bottom ash (FBA) as well as other deposits.
- 11.5.32. The Existing Drax Power Station Complex is served by a railway line which connects with the Pontefract line to the south. The major roadway infrastructure is the A645, located in the south of the study area on the southern perimeter of the power station. There are no known fuel retail sites within the study area.

REGISTERED LANDFILLS

- 11.5.33. The following registered landfills are present within the study area:
- Camblesforth By-Pass Tipping Site, located in the south of the study area adjacent to Area H (licence ref. NYCC/076, operational between 1978 and 1982) (see Figure 11.2). There is no known restriction on the source of the waste accepted during the operational period. Deposited waste included inert and industrial waste. The landfill categorisation was 'landfills taking non-biodegradable waste (not construction).'
 - New Road Landfill Site, located in the north of the study area within Area B (license ref. NYCC/075, operational between 1978 and 1982). There is no known restriction on the source of the waste accepted during the operational period. Deposited waste included inert waste. The landfill categorisation was 'landfills taking non-biodegradable waste (not construction).'
 - Barlow Mound Ash Disposal Site, located in the northwest of the study area within 250 m of Area C (license ref. NYCC/040B). This is a 'very large' landfill (maximum input rate ≥250,000 tonnes per year) operational since 1977. Authorised waste includes construction and demolition waste, flue gas desulphurisation (FGD) gypsum, FGD plant wastewater and sludge, furnace bottom ash and pulverised fuel ash.
- 11.5.34. Camblesforth By-Pass Tipping Site has since been redeveloped to contain two electricity distribution sites.

POTENTIAL SOURCES OF CONTAMINATION

- 11.5.35. Following a review of land use in current and historical mapping, the following potential sources of contamination have been identified within the study area:
- Made Ground (associated with any current or historical development).
 - Agriculture (diffuse source).

- The highways network (diffuse source).
- The 'Barnsley & West Riding Junction Railway' and Selby-Goole (historical) railway lines.
- The engine house for the historical operation of Ouse Bridge (swing).
- Historical airship factory (WWI).
- Historical munitions depot operated by Royal Ordnance plc. and Stable Road Camp (WWII).
- Sewage works (in the west of the Study Area).
- Sewage works (in the east of the Study Area adjacent to the jetty (Area G)).
- The historical Camblesforth By-Pass Tipping Site (south of Study Area, now electricity distribution sites).
- The historical New Road Landfill Site (north of Study Area, now woodland).
- The operational Barlow Mound Ash Disposal Site (northwest of Study Area)
- The Existing Drax Power Station Complex.

POTENTIALLY CONTAMINATIVE SUBSTANCES

- 11.5.36. It is assumed that Made Ground is present within the Study Area associated with all developments. Made Ground is a potential source of a wide range of contaminants including metals, hydrocarbons and asbestos. Area B particularly comprises scrubland and is described in client-supplied mapping as a potential 'old asbestos site'.
- 11.5.37. Agriculture is considered a potential general source of diffuse contaminants associated with the use of fertilisers, pesticides and herbicides. The highways network, particularly the A645 roadway, is a potential diffuse source of contaminative substances which are likely to be hydrocarbon based associated with discharges from vehicles. There is potential for discharges to have impacted drainage routes which may not be wholly competent.
- 11.5.38. The historical railways (identified in Table 114 and on Figure 11.2) are a potential source of contaminants including hydrocarbons, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), solvents, ethylene glycol, creosote, herbicides, metal fines, ferrous residues, asbestos, ash and fill potentially containing metals, phenols, sulphates, and asbestos.
- 11.5.39. The depot (identified in Table 114 and on Figure 11.2), historically used for the manufacture of airships and munitions, and currently an operational landfill site (Barlow Mound Ash Disposal Site), may have released metals, free cyanide, nitrates, sulphates, chlorides, aromatic hydrocarbons, chlorinated aliphatic hydrocarbons, PCBs and asbestos; and is now authorised as a landfill for disposal of FGD plant gypsum, wastewater and sludge, furnace bottom ash and pulverised fuel ash.
- 11.5.40. The two sewage works (identified in Table 114 and on Figure 11.2) are considered potential sources of metals, free cyanide, nitrates, sulphates, sulphides, oil and fuel hydrocarbons, chlorinated aliphatic and aromatic hydrocarbons, PCBs and asbestos.
- 11.5.41. This historical tipping sites (Camblesforth By-Pass Tipping Site and New Road Landfill Site and on Figure 11.2) are presumed to be potential sources of landfill gases (including methane and carbon dioxide), with possible traces of hydrogen sulphide, organosulphur compounds, and ethene; and leachate containing ammonia, organics including phenols and PAHs, and inorganics such as cyanides, sulphates, and metals. The electricity distribution sites now present within the boundary of Camblesforth By-Pass

Tipping Site are a potential source of PCBs and oils associated with possible electrical equipment, plant, interceptors, and oil storage tanks.

- 11.5.42. The Existing Drax Power Station Complex is considered a potential source of metals, metalloids and their compounds, coal, fuel oils, lubricating oils, water and timber treatment chemicals, solvents, PCBs and other transformer oils, and asbestos.
- 11.5.43. A pollution incident to controlled waters occurred in the north of the study area in April 1989 (ref. 5985). This was a release of oils and was classified as Category 2 (significant incident). No further details are available.
- 11.5.44. The study area is not assigned a risk level in regional unexploded bomb risk mapping provided by Zetica for North Yorkshire.

CONCEPTUAL SITE MODEL

- 11.5.45. On the basis of the Preliminary Risk Assessment, a preliminary conceptual site model has been developed. The site model is presented in Table 115.

Table 115 - Conceptual Site Model

Sources	Pathways	Receptors	Consequence	Probability	Risk
→ Agriculture (diffuse source); → The highways network (diffuse source); → The 'Barnsley & West Riding Junction Railway' and Selby-Goole railway lines; → The engine house for the historical operation of Ouse Bridge (swing); → Historical airship factory (WWI); → Historical munitions depot operated by Royal Ordnance plc. and Stable Road Camp (WWII); → Sewage works (in the west of the study area); → Sewage works (in the east of the study area adjacent to the jetty (Area G)); and → Drax Power Station.	Ingestion, inhalation and dermal contact with contaminated soil or dust. Inhalation of asbestos fibres. Ingestion of contaminated water.	Human Health (e.g. of construction workers, local residents or users of adjacent land).	Medium	Low Likelihood	Moderate/ Low Risk
	Lateral migration of aqueous and dissolved contaminants via groundwater flow or preferential pathways.	Surface water (e.g. River Ouse).	Medium	Low Likelihood	Moderate/ Low Risk
	Vertical migration of aqueous and dissolved contaminants through Made Ground strata or via preferential pathways.	Groundwater: Brighton Sand Formation and the alluvium and warp (Secondary A Aquifers).	Medium	Low Likelihood	Moderate/ Low Risk
→ The historical Camblesforth By-Pass Tipping Site (south of study area, now electricity distribution sites);	Ingestion, inhalation and dermal contact with contaminated soil or dust. Inhalation of asbestos fibres. Ingestion of contaminated water.	Human Health (e.g. of construction workers, local residents or	Medium	Low Likelihood	Moderate/ Low Risk

Sources	Pathways	Receptors	Consequence	Probability	Risk
→ The historical New Road Landfill Site (north of study area, now woodland); and → The operational Barlow Mound Ash Disposal Site (northwest of study area).		users of adjacent land).			
	Inhalation of hazardous ground gases or vapours.	Human Health (e.g. of construction workers, local residents or users of adjacent land).	Medium	Unlikely	Low Risk
	Lateral migration of aqueous and dissolved contaminants via groundwater flow or preferential pathways.	Surface water (e.g. River Ouse).	Medium	Low Likelihood	Moderate/ Low Risk
	Vertical migration of aqueous and dissolved contaminants through made ground strata or via preferential pathways.	Groundwater: Brighton Sand Formation and the alluvium and warp (Secondary A Aquifers).	Medium	Low Likelihood	Moderate/ Low Risk
→ Made Ground (associated with any current or historical development).	Ingestion, inhalation and dermal contact with contaminated soil or dust. Inhalation of asbestos fibres. Ingestion of contaminated water.	Human Health (e.g. of construction workers, local residents or users of adjacent land).	Medium	Low Likelihood	Moderate/ Low Risk

Sources	Pathways	Receptors	Consequence	Probability	Risk
	Lateral migration of aqueous and dissolved contaminants via groundwater flow or preferential pathways.	Surface water (e.g. River Ouse).	Medium	Low Likelihood	Moderate/ Low Risk
	Vertical migration of aqueous and dissolved contaminants through Made Ground strata or via preferential pathways.	Groundwater: Brighton Sand Formation and the alluvium and warp (Secondary A Aquifers).	Medium	Low Likelihood	Moderate/ Low Risk
	Chemical attack and degradation (buried concrete structures).	Below-ground structures (e.g. foundations and utility services).	Mild	Low Likelihood	Low Risk

11.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

ATTRIBUTE IMPORTANCE (SENSITIVITY)

- 11.6.1. The attribute importance (sensitivity) assigned to environmental attributes and contaminated land receptors is shown in Table 115. Attribute importance levels are defined in Table 116 and Table 117.
- 11.6.2. As there are no geological SSSIs and no known RIGS within the Study Area, the geological and geomorphological statutory attributes have been scoped out of the assessment.

Table 116 - Attribute Importance (Sensitivity)

Attribute / Receptor	Justification	Attribute Importance (Sensitivity)
Soil	The study area contains rural and agricultural land, a proportion of which is likely to be best and most versatile agricultural land, as defined in the NPPF. No other soil receptors, such as peat deposits or soils associated with Ancient Woodland have been identified.	High
Hemingbrough Glaciolacustrine Formation	The Hemingbrough Glaciolacustrine Formation is an aquiclude. However it is underlain by The Sherwood Sandstone Group (Principal aquifer). The majority of the study area is located within a groundwater SPZ 3 (total catchment). The leaching potential of overlying soils is intermediate or high.	High
Brighton Sand Formation	The Brighton Sand Formation is a Secondary A aquifer. However it is underlain by The Sherwood Sandstone Group (Principal aquifer). The majority of the study area is located within a groundwater SPZ 3 (total catchment). The leaching potential of overlying soils is intermediate or high.	High
Alluvium and warp	The alluvium and warp are Secondary A aquifers. However they are underlain by The Sherwood Sandstone Group (Principal aquifer). The majority of the study area is located within a groundwater SPZ 3 (total catchment). The leaching potential of overlying soils is intermediate or high.	High
Sherwood Sandstone Group	The Sherwood Sandstone Group is a Principal aquifer. Groundwater stored in aquifers is a principal source of drinking water in the area. The majority of the study area is located within a groundwater SPZ 3 (total catchment). The	High

Attribute / Receptor	Justification	Attribute Importance (Sensitivity)
	leaching potential of overlying soils is intermediate or high.	
River Ouse (Main River)	The River Ouse is a 'main river' as defined by the EA.	High
Ordinary Watercourses	There are a number of field drains and other minor watercourses within the study area including Carr Dyke. However, the River Ouse is a 'main river' as defined by the EA. The importance of this attribute is therefore 'high'.	High
Existing Drax Power Station Complex	The built environment within the study area includes the Existing Drax Power Station Complex.	Medium
Proposed pipelines	The built environment within the study area includes proposed pipelines.	Medium
Peripheral buildings	The built environment within the study area includes peripheral buildings	Medium
Utility services	The built environment within the study area includes utility services	Medium
Built Environment	This includes the Existing Drax Power Station Complex and other buildings, services and foundations.	Medium
End Users	It is assumed that the Existing Drax Power Station Complex is operated in accordance with all relevant legislation, guidance and best practice, which will mitigate occupational risks to power station personnel. The Pipeline Study Area has a greater potential to expose end users to (e.g. local residents or users of adjacent land) to contaminants.	Low (Power Station Site); medium (Pipeline Study Area)
Construction Workers	It is assumed that the construction phase will be undertaken in accordance with all relevant legislation, guidance and best practice, which will mitigate occupational risks to construction workers during works on the Power Station Site and works in the Pipeline Study Area.	Low

INSIGNIFICANT EFFECTS

- 11.6.3. The majority of potential effects identified for the Proposed Scheme will be mitigated by primary, secondary or tertiary measures, and are therefore considered insignificant. Primary and tertiary measures are part of the "embedded mitigation", which has been assumed as

being implemented for the purposes of this assessment. The assessment of potential effects is currently based on indicative scheme layout drawings which are subject to this consultation and final approval. Insignificant potential effects which apply to the construction phase and which are therefore not considered in the PEIR are summarised in Table 117, alongside the embedded mitigation designed to manage and mitigate each effect.

Table 117 - Insignificant Effects (Construction Phase)

Insignificant Effect	Embedded Mitigation
Sediment loading of nearby surface waters following soil erosion associated with ground works. Contamination of nearby surface waters if soils are affected by contamination.	A CEMP will be in place to manage the erosion and transport of soils potentially affected by contamination. The CEMP is likely to include the following measures: → Requirements to protect vegetation. → Provision of hardstanding for construction plant. → Washing of construction plant wheels. → Use of sediment traps, cut-off ditches, and bunds; and → Covering of stockpiles.
Adverse effects to any sensitive receptor following the introduction of contaminative substances during construction (e.g. due to inappropriate storage of fuel).	A CEMP will be in place to control storage and use of potentially contaminative substances. The CEMP is likely to include the following measures: → Use of bunds; and → Provision of spill kits.
Physical damage to soil (e.g. sealing and compaction) with potential secondary impacts to surface water runoff.	Demolition and construction works will be carried out in accordance with Defra's Construction Code of Practice ⁷¹ and a Materials Management Plan (forming part of the CEMP) will be in place to prevent physical damage to soil.

11.6.4. Insignificant potential effects which apply to the operational phase and which are not considered in the PEIR are summarised in Table 118, alongside the embedded mitigation designed to manage or mitigate the effect.

⁷¹ Construction Code of Practice for the Sustainable Use of Soil on Construction Sites. Defra, 2009.

Table 118 - Insignificant Effects (Operational Phase)

Insignificant Effect	Mitigation
Adverse effects to any sensitive receptor following the introduction of contaminative substances during operation of the power station and pipeline (e.g. due to the release of oils from the new transformers).	The operation of Drax Power Station will be in accordance with pollution prevention industry guidance and controls in relevant permits issued by the Environment Agency.

LIKELY SIGNIFICANT EFFECTS

- 11.6.5. Likely significant effects identified for the works undertaken within the Power Station Site are summarised in Table 119. A preliminary assessment of the significance of the effects set out below is contained in the following section and summarised in Tables 121, 122 and 123.

Table 119 - Likely Significant Effects (Works within the Power Station Site)

Effect	Receptor	Applicable Development Phase
Adverse effects to the health of construction workers and end users associated with exposure to contaminative substances potentially present in the ground (e.g. from historical industrial land use).	Human health of construction workers and end users (e.g. power station operatives and users of adjacent land).	Construction Phase
Creation of new migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. piling, drilling and excavation).	Sherwood Sandstone Group (Principal Aquifer); Brighton Sand Formation, Alluvium and Warp (Secondary A Aquifers).	Construction Phase
Presence of migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. piling, drilling and excavation).	Controlled waters receptors; human health receptors (if groundwater abstractions are present within the theoretical sphere of influence of the Proposed Scheme); the built environment (including foundations and water supply).	Operational Phase
Adverse effects to the built environment from the potential presence of aggressive chemical agents in the ground	Concrete building foundations and water supply infrastructure within the study area	Construction Phase

Effect	Receptor	Applicable Development Phase
which may be destructive to concrete (e.g. foundations).		
Adverse effects to any sensitive receptor associated with the demolition of existing infrastructure (at the construction phase) resulting in contaminant release.	Construction workers	Construction Phase
Adverse effects to any sensitive receptor associated with the decommissioning of the infrastructure at the end of its lifecycle resulting in contaminant release.	Human health of decommissioning workers and end users (e.g users of adjacent land). Controlled waters receptors (groundwater and surface water).	Decommissioning Phase

11.6.6. Likely significant effects identified for the works undertaken in the Pipeline Study Area (assessed within the PEIR) are summarised in Table 120. A preliminary assessment of the significance of the effects set out below is contained in the following section and summarised in Tables 121, 122, and 123.

Table 120 - Likely Significant Effects (Works within Pipeline Study Area)

Effect	Receptor	Applicable Development Phase
Adverse effects to the health of construction workers and end users associated with exposure to contaminative substances potentially present in the ground (e.g. from historical industrial land use).	Human health of construction workers and end users (e.g. power station operatives and users of adjacent land).	Construction Phase
Creation of new migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. excavation).	Sherwood Sandstone Group (Principal Aquifer); Brighton Sand Formation, Alluvium and Warp (Secondary A Aquifers).	Construction Phase
Presence of migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. piling, drilling and excavation).	Controlled waters receptors; human health receptors (if groundwater abstractions are present within the theoretical sphere of influence of the	Operational Phase

Effect	Receptor	Applicable Development Phase
	Proposed Scheme); the built environment (including foundations and water supply).	
Adverse effects to the built environment from the potential presence of aggressive chemical agents in the ground which may be destructive to concrete (e.g. foundations).	Concrete building foundations and water supply infrastructure within the study area	Construction Phase
Adverse effects to any sensitive receptor associated with the decommissioning of the infrastructure at the end of its lifecycle resulting in contaminant release.	Human health of construction workers and end users (e.g. power station operatives and users of adjacent land).	Decommissioning Phase

SIGNIFICANCE OF EFFECT

- 11.6.7. No significant effects are expected for geology and geomorphology as there are no geological SSSIs and no known RIGS within the Study Area. No significant effects are expected in relation to physical impacts to soil; however, the potential for loss of BMV agricultural is described below. Although no direct potentially significant effects to surface water, the built environment, or end users (e.g. local residents or users of adjacent land) were identified at the scoping stage, the potential for indirect potentially significant effects in relation to potential new migratory pathways is described below. Summaries of significance of effect are provided in Tables 121, 122 and 123.

SOILS

- 11.6.8. The BMV agricultural land identified following the resurvey post-1988 to the north of the Existing Drax Power Station Complex and to the south of the Pipeline Study Area will not be directly impacted by the Proposed Scheme as it is not located within the Site Boundary. Any loss or degradation of BMV agricultural land not resurveyed post-1988 (for example, as a result of the works in the Pipeline Study Area) is unlikely to exceed 20 ha.
- 11.6.9. It is understood that any adverse impacts to soil quality (measured as change to ALC grade resulting in loss of BMV agricultural land) will be confined to the construction phase and that, for the pipeline works, soil quality will be maintained or restored to pre-development conditions (as measured by ALC grade) through provision of a Soil Management Plan (SMP).
- 11.6.10. The proposed positioning of the gas receiving facility (GRF) within agricultural land adjacent to New Road is not expected to increase the potential loss of BMV agricultural land to greater than 20 ha. The impact to soils during the construction and operational phases is therefore unlikely to exceed negligible adverse. The significance of the effect on soils during the construction phase is therefore unlikely to exceed slight adverse. As no further impact is

expected during the operational and decommissioning phases, the significance of the effect on soils during the operational and decommissioning phases will be neutral.

GROUNDWATER

- 11.6.11. There is a potential for ground works (e.g. piling, drilling and excavation) to create migratory pathways through which contaminants could migrate into underlying aquifers (receptors). For this to result in the formation of a potential (or 'plausibly significant') contaminant linkage there must exist a potential source of contamination. The PRA has identified a number of potential sources of contamination and qualitatively assigned a risk category to groundwater of 'moderate to low'. A further assessment of risks to groundwater will be undertaken in the ES following the Phase 2 ground investigation. As detailed above in Table 116 construction will be undertaken in accordance with all relevant legislation, guidance and best practice and detailed design will minimise risks to aquifers.
- 11.6.12. The potential impact to groundwater for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction and operational phases, is likely to be 'minor adverse'.
- 11.6.13. The potential significance of the effect on groundwater for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction, operational and decommissioning phases is therefore likely to be slight or moderate adverse.

SURFACE WATER

- 11.6.14. Any adverse effect on groundwater has the potential to impact surface waters via baseflow. The potential for lateral migration of aqueous or dissolved-phase contaminants via groundwater flow or preferential pathways was qualitatively assessed in the PRA and assigned a risk category of 'moderate to low'. Further assessment of risks to surface water will be required following ground investigation (which should include surface water monitoring as an indicator of the baseline condition of surface water quality). This is expected to occur post submission of the ES. As detailed above in Table 116 construction will be undertaken in accordance with all relevant legislation, guidance and best practice, and that detailed design will minimise risks to surface water.
- 11.6.15. The potential impact to surface water for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction and operational phases, is unlikely to exceed 'minor adverse'.
- 11.6.16. The significance of the effect on surface water for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction, operational and decommissioning phases is therefore unlikely to exceed slight or moderate adverse.

BUILT ENVIRONMENT

- 11.6.17. There is a potential for chemicals that are destructive to concrete (such as sulphates and acids) to exist in the ground as a result of the historical industrial activity. The presence of such substances within the study area could adversely impact building foundations and water supply infrastructure and therefore act as a constraint at the detailed design stage of the development. This potential contaminant linkage was qualitatively assessed and assigned a risk category of 'low' in the PRA. It is assumed that suitable construction materials, resistant to chemical attack, will be selected at the detailed design stage. This is expected to preclude adverse effects to the built environment.

11.6.18. The potential impact to the built environment for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction and operational phases will therefore be 'no change'.

11.6.19. The significance of the effect on the built environment for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction, operational and decommissioning phases will therefore be neutral.

CONSTRUCTION WORKERS AND END USERS

11.6.20. Construction works will be undertaken in accordance with all relevant legislation, guidance and best practice and will include, for example, COSHH assessments and the wearing of appropriate PPE and other applicable apparatus/equipment associated with the underlying ground conditions. Adherence to such documents and guidance is likely to preclude adverse effects to construction workers (in the construction phase) associated with the possibility of exposure to contaminants potentially present in the ground.

11.6.21. It is the responsibility of the Principal Contractor, as defined in the Construction (Design and Management) Regulations 2015, to determine and ensure compliance with the relevant legislation, guidance and best practice during the construction phase. This is likely to include the following, for example:

- Health and Safety in Construction (HSG150) (HSE, 2006); and,
- A Guide to Safe Working on Contaminated Sites, R132, CIRIA, 1996.

11.6.22. The potential impact to construction workers at the Power Station Site and the Pipeline Study Area in the construction phase will therefore be 'no change'. No impacts to construction workers are expected for the Power Station Site or Pipeline Study Area in the operational phase (also 'no change'), given construction will be complete by that time.

11.6.23. The significance of the effect on construction workers at the Power Station Site and Pipeline Study Area throughout the construction, operational and decommissioning phases will therefore be neutral.

11.6.24. The works on the Power Station Site, which comprise upgrades to existing infrastructure and associated developments, are considered unlikely to expose end users (e.g. local residents or users of adjacent land) to contaminants. The potential for any personnel at the Power Station Site to be subject to contaminant exposure is (and will continue to be) mitigated through adherence to all relevant legislation, guidance and best practice (e.g. COSHH assessments). The works in the Pipeline Study Area have a greater potential to expose end users to (e.g. local residents or users of adjacent land) to contaminants (public open space).

11.6.25. However any adverse effect on groundwater has the potential to indirectly impact end users (e.g. local residents or users of adjacent land) through ingestion of abstracted groundwater. The study area is located within an SPZ 3 (total catchment). The potential for ingestion of abstracted groundwater was qualitatively assessed in the PRA and assigned a risk category of 'moderate to low'.

11.6.26. On this basis, potential impacts to surface water for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction and operational phases, are unlikely to exceed 'minor adverse'.

- 11.6.27. The significance of the effect on surface water for the works on the Power Station Site and the works in the Pipeline Study Area and throughout the construction and operational phases is therefore unlikely to exceed slight or moderate adverse.

SUMMARY OF SIGNIFICANCE OF EFFECT (OPTION ANALYSIS)

Table 121 - Summary of Effect Significance: Power Station Works and Pipeline Option A

Aspect	Sensitivity	Impact	Effect (Construction Phase)	Effect (Operational Phase)	Effect (Decommissioning Phase)
Soil	High	Negligible adverse — any loss or degradation of BMV land is unlikely to exceed 20 ha.	Slight adverse	Neutral	Neutral
Groundwater	High	Minor adverse — the Study Area contains potential sources of contamination and there is a potential for ground works to create migratory pathways through which contaminants could migrate into underlying aquifers.	Slight or moderate adverse	Slight or moderate adverse	Slight or moderate adverse
Surface Water	High	Minor adverse — the Study Area contains potential sources of contamination and there is a potential for ground works to create migratory pathways through which contaminants could migrate into underlying aquifers. Any adverse effect on groundwater has the potential to impact surface waters via baseflow.	Slight or moderate adverse	Slight or moderate adverse	Slight or moderate adverse
Built Environment	Medium	No change — analytical data, which will be used to ensure appropriate construction materials (such as concrete classification) are selected, will be obtained at the detailed design stage.	Neutral	Neutral	Neutral
Construction Workers	Low	No change — it is assumed the construction phase will be undertaken in accordance with all relevant legislation, guidance and best practice which will preclude adverse impacts to construction workers.	Neutral	Neutral	Neutral

Aspect	Sensitivity	Impact	Effect (Construction Phase)	Effect (Operational Phase)	Effect (Decommissioning Phase)
End Users	Low	Minor adverse — the works on the Power Station Site are considered unlikely to expose end users (e.g. local residents or users of adjacent land) to contaminative substances. The works in the Pipeline Study Area have a greater potential to expose end users (e.g. local residents or users of adjacent land) to contaminative substances (public open space).	Neutral or slight adverse	Neutral	Neutral or slight adverse

SUMMARY OF SIGNIFICANCE OF EFFECT (OPTION ANALYSIS)

Table 122 - Summary of Effect Significance: Power Station Works and Pipeline Option B

Aspect	Sensitivity	Impact	Effect (Construction Phase)	Effect (Operational Phase)	Effect (Decommissioning Phase)
Soil	High	Negligible adverse — any loss or degradation of BMV land is unlikely to exceed 20 ha.	Slight adverse	Neutral	Neutral
Groundwater	High	Minor adverse — the Study Area contains potential sources of contamination and there is a potential for ground works to create migratory pathways through which contaminants could migrate into underlying aquifers.	Slight or moderate adverse	Slight or moderate adverse	Slight or moderate adverse
Surface Water	High	Minor adverse — the Study Area contains potential sources of contamination and there is a potential for ground works to create migratory	Slight or moderate adverse	Slight or moderate adverse	Slight or moderate adverse

Aspect	Sensitivity	Impact	Effect (Construction Phase)	Effect (Operational Phase)	Effect (Decommissioning Phase)
		pathways through which contaminants could migrate into underlying aquifers. Any adverse effect on groundwater has the potential to impact surface waters via baseflow.			
Built Environment	Medium	No change — it is assumed that analytical data will be available at the detailed design stage and that suitable construction materials will be selected, precluding any adverse effects.	Neutral	Neutral	Neutral
Construction Workers	Low	No change — it is assumed the construction phase will be undertaken in accordance with all relevant legislation, guidance and best practice which will preclude adverse impacts to construction workers.	Neutral	Neutral	Neutral
End Users	Low	Minor adverse — the works on the Power Station Site are considered unlikely to expose end users (e.g. local residents or users of adjacent land) to contaminative substances. The works in the Pipeline Study Area have a greater potential to expose end users (e.g. local residents or users of adjacent land) to contaminative substances (public open space).	Neutral or slight adverse	Neutral	Neutral or slight adverse

11.7 ADDITIONAL MITIGATION AND ENHANCEMENT MEASURES

11.7.1. No additional mitigation measures have been identified at this preliminary assessment stage. Embedded mitigation is considered within this assessment.

11.8 RESIDUAL EFFECTS

11.8.1. As no additional mitigation is identifiable at this stage, the residual effects comprise the potential 'likely significant effects' identified for the Power Station Works in Table 119 and the Pipeline Works in Table 120. These are reproduced in Tables 123 and 124 below:

Table 123 - Residual Effects (Power Station Works)

Effect	Receptor	Applicable Development Phase
Adverse effects to the health of construction workers and end users associated with exposure to contaminative substances potentially present in the ground (e.g. from historical industrial land use).	Human health of construction workers and end users (e.g. power station operatives and users of adjacent land).	Construction Phase
Creation of new migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. piling, drilling and excavation).	Sherwood Sandstone Group (Principal Aquifer); Brighton Sand Formation, Alluvium and Warp (Secondary A Aquifers).	Construction Phase
Presence of migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. piling, drilling and excavation).	Controlled waters receptors; human health receptors (if groundwater abstractions are present within the theoretical sphere of influence of the Proposed Scheme); the built environment (including foundations and water supply).	Operational Phase
Adverse effects to the built environment from the potential presence of aggressive chemical agents in the ground which may be destructive to concrete (e.g. foundations).	Concrete building foundations and water supply infrastructure within the study area	Construction Phase
Adverse effects to any sensitive receptor associated with the demolition of existing infrastructure (at the	Construction workers	Construction Phase

Effect	Receptor	Applicable Development Phase
construction phase) resulting in contaminant release.		
Adverse effects to any sensitive receptor associated with the decommissioning of the infrastructure at the end of its lifecycle resulting in contaminant release.	Human health of decommissioning workers and end users (e.g users of adjacent land). Controlled waters receptors (groundwater and surface water).	Decommissioning Phase

Table 124 - Residual Effects (Pipeline Works)

Effect	Receptor	Applicable Development Phase
Adverse effects to the health of construction workers and end users associated with exposure to contaminative substances potentially present in the ground (e.g. from historical industrial land use).	Human health of construction workers and end users (e.g. power station operatives and users of adjacent land).	Construction Phase
Creation of new migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. excavation).	Sherwood Sandstone Group (Principal Aquifer); Brighton Sand Formation, Alluvium and Warp (Secondary A Aquifers).	Construction Phase
Presence of migratory pathways between potentially contaminated soils and underlying aquifers as a result of ground works (e.g. piling, drilling and excavation).	Controlled waters receptors; human health receptors (if groundwater abstractions are present within the theoretical sphere of influence of the Proposed Scheme); the built environment (including foundations and water supply).	Operational Phase
Adverse effects to the built environment from the potential presence of aggressive chemical agents in the ground which may be destructive to concrete (e.g. foundations).	Concrete building foundations and water supply infrastructure within the study area	Construction Phase

Effect	Receptor	Applicable Development Phase
Adverse effects to any sensitive receptor associated with the decommissioning of the infrastructure at the end of its lifecycle resulting in contaminant release.	Human health of decommissioning workers and end users (e.g users of adjacent land).	Decommissioning Phase

11.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

- 11.9.1. The Phase 1 PRA and wider geology and soils assessment is predicated on a desk-based review and synthesis of the informational sources stated. The assessment of significance of effects is based on professional judgement and information known at this stage and based on the assumptions detailed at the start of this chapter.
- 11.9.2. The study area has not yet been surveyed for ALC post-1988. Although the Proposed Scheme is considered unlikely to result in the loss or degradation of >20 ha of BMV agricultural land, this could be confirmed through a full assessment of potential impacts to agricultural land quality. An ALC survey will be completed in advance of the ES.

11.10 NEXT STEPS

- 11.10.1. The next steps include continued consultation with stakeholders to discuss the Proposed Scheme and proposed mitigation. In addition, continued development of appropriate mitigation and development of control plans will be refined for incorporation into the outline CEMP.
- 11.10.2. A Phase 2 intrusive ground investigation will be required in order to provide information associated with detailed design but the intrusive works will not be required in advance of submission of the ES chapter.

12 WATER RESOURCE, QUALITY AND HYDROLOGY

12.1 INTRODUCTION

- 12.1.1. This Chapter provides a preliminary assessment of the likely significant effects of the Proposed Scheme on water resources and describes:
- Relevant policy, legislation and guidance.
 - Consultation undertaken to date.
 - Potential effects of the construction phase.
 - Potential effects of the operation of the Proposed Scheme.
 - Potential effects of the decommissioning phase.
 - Flood risk (currently being assessed as part of the Flood Risk Assessment).
- 12.1.2. Potential impacts to groundwater associated with effects on groundwater quantity, groundwater flows and the release of contaminants contained in the ground are assessed in Chapter 12 (Ground Conditions and Contamination). Similarly, impacts to ecology, including sensitive and/or important aquatic species and habitats, are assessed in Chapter 10 (Biodiversity).

12.2 POLICY, LEGISLATION AND GUIDANCE

POLICY

EUROPEAN POLICY

WATER FRAMEWORK DIRECTIVE (2000/60/EC)

- 12.2.1. The overall objective of the Water Framework Directive (WFD) is to bring about the effective co-ordination of water environment policy and regulation across Europe. The main aims of the legislation are to ensure that all surface water and groundwater reaches 'good' status (in terms of ecological and chemical quality and water quantity, as appropriate), promote sustainable water use, reduce pollution and contribute to the mitigation of flood and droughts.

GROUNDWATER DIRECTIVE (2006/118/EC)

- 12.2.2. The Groundwater Directive aims to set groundwater quality standards and introduce measures to prevent or limit pollution of groundwater, including those listed with the 'List of Priority Substances'. The Directive has been developed in response to the requirements of Article 17 of the WFD, specifically the assessment of chemical status of groundwater and objectives to achieve 'good' status.

NATIONAL LEGISLATION, POLICY AND GUIDANCE

FLOOD AND WATER MANAGEMENT ACT 2010

- 12.2.3. The Flood and Water Management Act created the role of the Lead Local Flood Authority (LLFA) to take responsibility for leading the co-ordination of local flood risk management in their areas. In accordance with the Flood and Water Management Act, the Environment Agency (EA) is responsible for the management of risks associated with main rivers, the sea and reservoirs. LLFAs are responsible for the management of risks associated with local sources of flooding such as ordinary watercourses, surface water and groundwater. The Act is also guiding the role of the LLFA in the review and approval of surface water management systems, leading to LLFAs reviewing and commenting on significant development in regard to the Non-Statutory Technical Standards for Sustainable Drainage Systems (explained further below).

ENVIRONMENT AGENCY GROUNDWATER PROTECTION GUIDES (2017)

- 12.2.4. The EA is the statutory body responsible for the protection and management of groundwater resources in England. The groundwater protection guides published in March 2017 set out the framework for the EA regulation, and replace Groundwater Protection: Principles and Practice GP3. In summary, Section C sets out the EA's position statements and approach to managing and protecting groundwater in relation to infrastructure developments.

ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016

- 12.2.5. Under the Environmental Permitting Regulations it is an offence to cause or knowingly permit a water discharge activity, including the discharge of polluting materials to freshwater, coastal waters, relevant territorial waters or groundwater, unless complying with an exemption or an environmental permit (obtained from the EA). The EA sets conditions which may control volumes and concentrations of particular substances or impose broader controls on the nature of the effluent, taking into account any relevant water quality standards from EC Directives. The Environment Permitting Regulations also manage works that have the potential to affect a watercourse under the jurisdiction of the EA. Any works in, under or near a main river require permission from the EA to ensure no detrimental impacts on the watercourse.

NON STATUTORY TECHNICAL STANDARDS FOR SUSTAINABLE DRAINAGE SYSTEMS (2015)

- 12.2.6. The Non-Statutory Technical Standards set out the core technical standards for sustainable drainage systems (SuDS) proposed within England. These standards should be used in accordance with the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG). The standards include guidance on controlling flood risk within a development boundary and elsewhere, peak flow and runoff volume control, and the structural integrity of SuDS.

LAND DRAINAGE ACT 1991

- 12.2.7. Local Authorities and Internal Drainage Boards (IDBs) have additional duties and powers associated with the management of flood risk under the Land Drainage Act. Consent must be given for any permanent or temporary works that could affect the flow within an ordinary watercourse under their jurisdiction in order to ensure that local flood risk is not increased. The Land Drainage Act also sets out the maintenance responsibilities riparian owners have in order to reduce local flood risks.

OVERARCHING NATIONAL POLICY STATEMENT FOR ENERGY (EN-1)

- 12.2.8. The Overarching National Policy Statement for Energy (NPS EN-1) recognises that infrastructure can have adverse effects on the water environment. It states that the effects could lead to adverse impacts on health or on protected species and habitats and could result in surface waters, groundwaters or protected areas failing to meet environmental objectives established under the WFD.
- 12.2.9. It states that where projects are likely to have effects on the water environment, applicants should undertake an assessment of the existing status of, and impacts of a proposed project on, water quality, water resources and physical characteristics of the water environment as part of the ES. The Environmental Statement (ES) should particularly describe: existing quality of watercourses, existing water resources, existing physical characteristics of the water environment and impacts on protected waterbodies and areas.

12.2.10. Section 5.7 (Flood risk) of NPS EN-1 details that projects of 1 hectare or greater in Flood Zone 1 in England and all proposals for energy projects located in Flood Zones 2 and 3 in England should be accompanied by a Flood Risk Assessment (FRA). The requirements for FRAs are that they should (paragraph 5.7.5 of NPS EN-1):

- *Be proportionate to the risk and appropriate to the scale, nature and location of the project;*
- *Consider the risk of flooding arising from the project in addition to the risk of flooding to the project;*
- *Take the impacts of climate change into account, clearly stating the development lifetime over which the assessment has been made;*
- *Be undertaken by competent people, as early as possible in the process of preparing the proposal;*
- *Consider both the potential adverse and beneficial effects of flood risk management infrastructure, including raised defences, flow channels, flood storage areas and other artificial features, together with the consequences of their failure;*
- *Consider the vulnerability of those using the Site, including arrangements for safe access;*
- *Consider and quantify the different types of flooding (whether from natural and human sources and including joint and cumulative effects) and identify flood risk reduction measures, so that assessments are fit for the purpose of the decisions being made;*
- *Consider the effects of a range of flooding events including extreme events on people, property, the natural and historic environment and river and coastal processes;*
- *Include the assessment of the remaining (known as 'residual') risk after risk reduction measures have been taken into account and demonstrate that this is acceptable for the particular project;*
- *Consider how the ability of water to soak into the ground may change with development, along with how the proposed layout of the project may affect drainage systems;*
- *Consider if there is a need to be safe and remain operational during a worst case flood event over the development's lifetime; and*
- *Be supported by appropriate data and information, including historical information on previous events.*
- *In determining an application for development consent, the SoS should be satisfied that where relevant (paragraph 5.7.9 of NPS EN-1):*
 - *The application is supported by an appropriate FRA;*
 - *The Sequential Test has been applied as part of site selection;*
 - *A sequential approach has been applied at the site level to minimise risk by directing the most vulnerable uses to areas of lowest flood risk;*
 - *The proposal is in line with any relevant national and local flood risk management strategy;*
 - *Priority has been given to the use of sustainable drainage systems (SuDS); and*
 - *In flood risk areas the project is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed over the lifetime of the development.*

12.2.11. Section 5.15 (Water quality and resources) of NPS EN-1 details that where a project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality,

water resources and physical characteristics of the water environment as part of the ES or equivalent. The ES should in particular describe:

- *The existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges;*
- *Existing water resources affected by the proposed project and the impacts of the proposed project on water resources, noting any relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Catchment Abstraction Management Strategies).;*
- *Existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project and any impact of physical modifications to these characteristics; and*
- *Any impacts of the proposed project on water bodies or protected areas under the Water Framework Directive and source protection zones (SPZs) around potable groundwater abstractions.*

THE NATIONAL POLICY STATEMENT FOR FOSSIL FUEL ELECTRICITY GENERATING INFRASTRUCTURE (EN-2)

- 12.2.12. NPS EN-2 states that where a project is likely to have an effect on water quality or resources the applicant for development consent should undertake an assessment which should particularly demonstrate that appropriate measures will be put in place to avoid or minimise adverse impacts of abstraction and discharge of cooling water. The applicant should demonstrate measures to minimise adverse impacts on water quality and resources including specific measures to minimise fish impingement and/or entrainment and excessive heat from discharges to receiving waters.

THE NATIONAL POLICY STATEMENT FOR ELECTRICITY NETWORKS INFRASTRUCTURE (EN-5)

- 12.2.13. NPS EN-5 states that with regard to climate change, applicants should set out to what extent the proposed development is expected to be vulnerable and, as appropriate, how it would be resilient to flooding, particularly for substations that are vital for the electricity transmission and distribution network.

THE NATIONAL POLICY STATEMENT FOR GAS SUPPLY INFRASTRUCTURE AND GAS AND OIL PIPELINES (EN-4)

- 12.2.14. NPS EN-4 states that when designing routes for new pipelines, applicants should research relevant constraints including below surface usage, proximity to environmentally sensitive areas (for example the River Ouse), and watercourse crossings.
- 12.2.15. The selection of the pipeline route should also seek to avoid and minimise any adverse impacts from usage below the surface, with the implementation of mitigation measures if necessary. These suggested mitigation measures include horizontal directional drilling. It also states that constructing pipelines can affect watercourses, aquifers, water abstraction and discharge points, areas prone to flooding and ecological receptors. The impacts of the pipeline could include excessive or inadequate drainage, interference with groundwater flow pathways, mobilisation of contaminants present in the ground, introduction of new pollutants, flooding disturbance to water ecology, pollution due to silt from construction and disturbance to species and their habitats.

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

- 12.2.16. The NPPF sets out the Government's planning policies for England and provides a framework which allows Local Authorities to produce their own plans that better reflect the specific needs of their communities. Planning Practice Guidance (PPG) has been published alongside the NPPF, and is regularly updated, to provide guidance on the implementation of the planning policies, including those relating to flood risk, set out in the NPPF. The NPPF also sets out the requirements for a site specific FRA to be undertaken and states that development should not increase flood risk elsewhere.

LOCAL POLICY

SELBY DISTRICT CORE STRATEGY LOCAL PLAN (2013)

- 12.2.17. Policy SP15 (Sustainable Development and Climate Change) sets out to promote sustainable development, and determine scheme layouts which are resilient to climate change:
- Section A Part D) Ensure that development in areas of flood risk is avoided wherever possible through the application of the sequential test and exception test; and ensure that where development must be located within areas of flood risk that it can be made safe without increasing flood risk elsewhere.
 - Section a Part E) Support sustainable flood management measures such as water storage areas and schemes promoted through local surface water management plans to provide protection from flooding; and biodiversity and amenity improvements.
 - Section B part C) Incorporate water-efficient design and sustainable drainage systems which promote groundwater recharge.
- 12.2.18. Policy SP18 (Protecting and Enhancing the Environment) sets out to protect the District's environment, in particular by:
- Section 7. Ensuring that new development protects soil, air and water quality from all types of pollution.
 - Section 8. Ensuring developments minimise energy and water consumption, the use of non-renewable resources, and the amount of waste material.
 - Section 9. Steering development to areas of least environmental and agricultural quality.
- 12.2.19. The Local Plan identifies a number of primary issues which should be considered. Two of these issues are relevant to the Proposed Scheme in relation to the water environment:
- Protection of groundwater: The District is underlain by the Sherwood Sandstone and the Magnesian Limestone aquifers, both of which provide a significant groundwater supply. Where there are no superficial deposits over the aquifers, groundwater contamination is a serious concern so consideration must be given to the prevention of pollution and the protection of water quality within the groundwater. Water conservation measures are promoted across the District to adapt to the future pressures of climate change.
 - Flood Risk management: Significant flood risks exist across large areas of Selby District, most developments therefore require the application of the Sequential Test.
- 12.2.20. The promotion of SuDS across the District encourages infiltration and groundwater discharge.

12.3 SCOPING OPINION AND CONSULTATION

SCOPING OPINION

- 12.3.1. As explained in Chapter 1 Introduction, a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to water resources, quality and hydrology, and how those requirements should be addressed by the applicant, are set out below in Table 125.

Table 125 - Planning Inspectorate's Comments to Scoping and WSP's Response

Section	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
7.8.2	Surface water runoff associated with operation of the pipeline	The Scoping Report (section 4.12) explains that areas of the site are at risk from surface water flooding, predominantly those areas along field boundaries and in local depressions. However, the Applicant explains that as the pipeline will be buried (and ground surface reinstated to current levels), its operation will not change the rate, volume or quality of surface water runoff. The Inspectorate is in agreement that this matter can be scoped out for the operational phase. However, the effects on surface water runoff from above ground structures associated with the gas pipeline should be considered.	The potential impacts associated with surface water runoff from above ground structures associated with the pipeline are being assessed within the standalone FRA.
7.8.2	Changes to fluvial and tidal flood risk during the operation of the pipeline	The Applicant explains that following construction, the existing ground surface associated with the buried pipeline will be reinstated to current levels. The Inspectorate agrees that the potential for significant effects is therefore unlikely and that effects from the pipeline itself can therefore be scoped out. However, the Inspectorate considers that the effects on flood risk from above ground structures associated with the gas pipeline should be considered.	The potential impacts associated with fluvial and tidal flooding associated with above ground structures associated with the pipeline are being assessed within the standalone FRA.
4.11	Consultation	The Inspectorate notes section 4.11 of the Scoping Report, where Selby Area Internal Drainage Board (IDB) is described as the Lead Local Flood Authority (LLFA) for the area. The Inspectorate advises that North Yorkshire	NYCC is being consulted as LLFA. Other relevant authorities are also being consulted.

Section	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		County Council is the LLFA for the area covering the application site.	
5.2.5	Water abstraction and discharge	The Inspectorate notes from section 5.2.5 of the Scoping Report the new generating station would utilise cooling water from the River Ouse. The existing abstraction/discharge arrangements are proposed as the likely route of delivery. Any changes to this arrangement should be fully described and assessed in the ES. The ES should demonstrate measures that will avoid or minimise adverse impacts of abstraction and discharge of cooling water. Potential inter-related effects should be considered in the relevant topic chapters, such as any effects on ecology, navigation and health.	It is predicted that there will be no change to the existing abstraction and discharge rates in line with the current licenses.
7.7.4	Impacts on navigation	The Applicant's attention is drawn to the consultation response from the Canal and River Trust, which explains that any changes to the abstraction (or any discharge) rates compared to existing rates have the potential to affect navigation on the River Ouse. The Applicant is advised to consult with the Canal and River Trust regarding any changes to the existing abstraction/ discharge situation and any implications for navigation on the River Ouse. Suitable cross reference should be made to the Traffic and Transportation chapter of the ES.	It is predicted that there will be no change to the existing abstraction and discharge rates in line with the current licenses. The Canal and Rivers Trust is being consulted to confirm this approach.
4.11; 7.8.1	Impacts on designated wildlife sites	The Applicant identifies watercourses which would be crossed by the pipeline or are located in proximity to the Proposed Scheme in section 4.11 of the Scoping Report. It is understood that these all drain into the River Ouse, a main river which flows within 0.1km to the north of Route Option A. Approximately 3.5km downstream of the application site, the River Ouse forms part of the Humber	An appropriate assessment is being carried out of the potential impacts on the downstream protected areas of the Humber Estuary Ramsar

Section	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		Estuary Ramsar site, SAC, SPA and SSSI. The section of the SSSI closest to the application site is noted to be in 'unfavourable – recovering' condition. The potential effects on these sites from water pollution should be identified and assessed, with any necessary mitigation measures identified and agreed with the relevant consultees. In addition, the Inspectorate agrees with the MMO that consideration should be given to potential for impacts on the River Derwent SAC.	site, SAC, SPA and SSSI. The PEIR and the ES assess the potential impacts on the River Derwent SAC in the Chapter 10 (Biodiversity)
7.8.3	WFD	The Scoping Report identifies the potential for construction of the gas pipeline to affect the WFD status of groundwater within a Principal Aquifer. In addition, the Inspectorate notes from Figure 2 of the Scoping Report a number of surface water WFD waterbodies which either cross through or are in the vicinity of the Proposed Scheme which should also be considered. The Inspectorate supports the preparation of a separate WFD assessment, which should clearly explain any impacts on WFD waterbodies and how the requirements of the WFD have been met. This should be prepared in consultation with the EA. The Applicant's attention is drawn to the Inspectorate's advice note on the WFD (Advice Note 18) and to the comments of the EA.	A separate WFD assessment is being completed as part of the application, and in consultation with the EA.
7.8.4	Study Area	The Inspectorate notes the proposed study areas for surface water and groundwater features (0.5km); and for features in hydraulic connectivity and groundwater abstractions (approximately 1km). It is stated that the study areas are considered appropriate based on 'professional judgement...and current knowledge of the area'. The study areas should be agreed with the EA and the LLFA and justified in the ES.	Appropriate study areas for the assessment of surface and groundwater features are being discussed with the relevant consultees.

Section	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
7.8.4	FRA	The Inspectorate welcomes that a Flood Risk Assessment (FRA) will be prepared to support the EIA and stresses the need for early discussions with the EA. The Applicant should agree the scope of the FRA with the EA and ensure that up to date and appropriate climate change allowances are utilised in any modelling. Large parts of the site fall within Flood Zones 2 and 3 on the EA Flood Maps (as illustrated on Figure 2 of the Scoping Report). The FRA should therefore demonstrate that the requirements of the sequential and exception tests are satisfied. The approach and conclusions of the FRA should be agreed with the EA prior to submission of the DCO application, with evidence of such agreement provided (for example in a draft SoCG).	The FRA will assess the Proposed Scheme in accordance with the sequential and exception tests. The approach and conclusions of the FRA are being discussed with the EA and LLFA in order to reach agreement.
7.8.4	Impacts	In accordance with paragraph 5.15.3 of NPS EN-1, the ES should describe any impacts on source protection zones (SPZs) around potable groundwater abstraction points. The Applicant should consider the interrelated impacts to the SPZ which may result from changes to the water environment but also changes to geology and soils. The Inspectorate notes the potential for other inter-related impacts, most notably between the water environment, ground conditions and biodiversity chapters. The Applicant is advised to include clear cross referencing between these chapters to ensure all potential impacts are identified and assessed.	There is ongoing engagement with the biodiversity and the ground conditions teams to ensure all potential impacts are identified and assessed.
7.8.4	Water Quality Sampling	The Applicant's attention is drawn to paragraph 5.15.3 of NPS EN-1, which states that the ES should describe 'the existing quality of waters affected by the proposed project...' The Scoping Report	Consultation with EA, LLFA and IDB is being undertaken to agree the approach to

Section	Applicant's proposed matter	Planning Inspectorate's Comments	Summary of response
		notes that it is not proposed to undertake water quality sampling to inform the impact assessment. The Applicant is therefore advised to agree the approach to establishing the baseline environment with the relevant consultees.	establishing the baseline environment

CONSULTATION

12.3.2. Table 126 summarises the consultation carried out to date.

Table 126 - Consultation Summary Table for Water Resource

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
Environment Agency	12 October 2017 (email to PINS in response to consultation on the Scoping Opinion)	In response to the Scoping Opinion the EA said they agreed with the proposed methodology for assessing flood risk and water quality. The EA highlight that the abstraction licence should be checked to ensure the proposals will adhere to the existing licence. Some of the works near to the River Ouse may need a Flood Risk Activity Permit.	A Flood Risk Assessment is being produced to address both the risk to and risk arising from the Proposed Scheme. A review of the proposed works for the temporary crane on the jetty will be carried out (should the applicant utilise the jetty) and if needed the appropriate permit will be applied for.
Canal and River Trust	6 October 2017 (letter to PINS in response to consultation on the Scoping Opinion)	In response to the Scoping Opinion the Canal and River Trust state that any changes to the abstraction or discharge rates have the potential to affect navigation on the River Ouse.	Whilst it is predicted that there will be no changes to the existing abstraction and discharge rates, if changes are expected further consultation will be held with the Trust in relation to the changes and the implications for

Consultee	Date (method of consultation)	Summary of consultee comments	Summary of response
			navigation on the River Ouse.
North Yorkshire County Council (NYCC) as the Lead Local Flood Authority (LLFA)	12 October 2017 (email to PINS in response to consultation on the Scoping Opinion)	The Proposed Scheme will need to be assessed on the basis of the NYCC SuDs Design Guidance Document.	Reference will be made to the SuDS Design Guidance Document as part of the drainage design.
Marine Management Organisation (MMO)	No date supplied (report in response to consultation on the Scoping Opinion)	Consideration should be given to potential impacts on the River Derwent SAC.	The PEIR and the ES assess the potential impacts on the River Derwent SAC in Chapter 10 (Biodiversity)
Environment Agency	23 November 2017 (email to determine scope and technical approach)	No response received yet	
North Yorkshire County Council	23 November 2017 (email to determine scope and technical approach)	Response received in December 2017, further consultation to be undertaken for the ES	
Selby Internal Drainage Board	23 November 2017 (email to determine scope and technical approach)	Initial response received in December 2017, further consultation required for the ES.	

12.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

- 12.4.1. The assessment will be undertaken following the principles of Environmental Impact Assessment as set out within the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 10 (HD 45/09) as this provides a good basis for assessing effects of schemes on the water environment. The DMRB promotes the following approach:
- Estimation of the importance of the attribute (Table 127). The importance of the feature or resource is based on the value and sensitivity of the feature or resource.
 - Estimation of the magnitude of the impact (Table 128). The magnitude of an impact is estimated based on the potential size or scale of change compared to the baseline, and it is independent of the importance of the attribute.
 - Assessment of the significance of the effect (Table 129) based on the importance of the attribute (Table 127) and the magnitude of the impact (Table 128).

→ Guidance for estimating these factors is provided in Table 127, Table 128 and Table 129 below.

12.4.2. The basic approach to assessing the impacts of the Proposed Scheme is to consider how sensitive the receptors may be to changes in surface water or groundwater conditions, including flows and water quality. The indicators used in making a professional judgement on the importance of a water feature under consideration include quality, scale, rarity and substitutability where:

- Quality is a measure of the physical condition of the attribute.
- Scale requires consideration of the geographical scale at which the attribute matters to both policy makers and stakeholders, at all levels.
- Rarity requires consideration of whether the water feature is commonplace or scarce and the scale at which it matters.

12.4.3. Substitutability requires consideration of whether water attributes are replaceable over a given time frame.

Table 127 - Estimating the Importance of Water Environment Attributes

Importance	Criteria	Example
Very High	Attribute has a high quality and rarity on regional or national scale	Water body of very good chemical or biological quality, i.e. Water Framework Directive (WFD) Class 'High'. Site protected/designed under EC or UK habitat legislation (Special Areas of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interests (SSSI), Water Protection Zone (WPZ), Ramsar site, species protected by EC legislation. Principle aquifer providing a regionally important resource or supporting site protected under EC and UK habitat legislation. Source Protection Zone (SPZ) 1. A source used for public or local potable water supply. Water body of high amenity value, including areas of bathing and where water emersion sports are regularly practised. Floodplain or defence protecting more than 100 residential properties from flooding. Areas which are highly vulnerable. With reference to NPPF, these can include essential infrastructure, emergency services and basement dwellings.
High	Attribute has a high quality and rarity on local scale	Water body of good chemical and biological quality, i.e. WFD Class 'Good' Species protected under EC or UK habitat legislation Principle aquifer providing locally important resource or supporting river ecosystem. SPZ 2. A source used for domestic non-potable water supply. Water body of a moderate amenity value including public parks, boating, non-contact water sports, popular footpaths

Importance	Criteria	Example
		adjacent to watercourses, or watercourses running through housing developments/town centres. Floodplain or defence protecting between 1 and 100 residential properties or industrial premises from flooding. Areas which are more vulnerable. With reference to NPPF, these can include hospitals, residential units, educational facilities and waste management sites.
Medium	Attribute has a medium quality and rarity on local scale	Water body of fair chemical or biological quality, i.e. WFD Class 'Moderate'. Aquifer providing water for agricultural or industrial use with limited connection to surface water. SPZ 3. Water body of particular local social/cultural/educational interest. Water body of low amenity value with only casual access, e.g. along a road or bridge in a rural area. Floodplain or defence protecting 10 or fewer industrial properties from flooding. Areas which are less vulnerable. With reference to NPPF, these can include retail, commercial and general industrial units, agricultural/forestry sites and water/sewage treatment plants.
Low	Attribute has a low quality and rarity on local scale	Water of poor or bad chemical or biological quality, i.e. WFD Class 'Poor' Low sensitivity aquatic ecosystem. Non-Aquifer. Water body of no amenity value, seldom used for amenity purposes, in a remote or inaccessible area. Floodplain with limited constraints and a low probability of flooding of residential and industrial properties. Areas which are considered to be water-compatible. With reference to NPPF, these can include flood control infrastructure, docks/marinas, pumping stations and recreational/landscape areas.

12.4.4. Impacts may be adverse or beneficial, depending on the circumstances. Impacts are evaluated where practicable and the degree or magnitude of impact is assessed on a qualitative scale, to facilitate comparison with impacts on other environmental receptors.

Table 128 - Estimating the Magnitude of an Impact

Magnitude	Criteria	Example
Major Adverse	Results in loss of attribute and / or quality and integrity of the attribute	Loss or extensive change to a fishery / designated Nature Conservation Site. Loss of, or extensive change to an aquifer / groundwater supported designated wetlands.

Magnitude	Criteria	Example
		Change to the environmental status/classification of a water feature, including water quality classification. Changes to site resulting in an increase in discharge/runoff of > 75% with flood/sewerage exceedance potential. Increase in peak flood level (1% annual probability event (APE)) > 100mm. Loss of flood storage areas.
Moderate Adverse	Results in effect on integrity of attribute, or loss of part of attribute	Partial loss or change to a fishery / designated Nature Conservation Site. Loss in the productivity of a fishery. Partial loss or change to an aquifer/ groundwater supported designated wetlands. Pollution of a receiving water body, but insufficient to change the environmental status/classification, including water quality classification. Changes to site resulting in an increase in discharge/runoff of > 50% with flood/sewerage exceedance potential. Increase in peak flood level (1% APE) > 50mm.
Minor Adverse	Results in some measurable change in attributes quality or vulnerability	Potential low risk of some pollution to a surface water or groundwater body, but insufficient to cause loss in quality, fishery productivity or biodiversity. Changes to site resulting in an increase in discharge/runoff of > 25% with flood/sewerage exceedance potential. Increase in peak flood level (1% APE) > 10mm.
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use of integrity	The proposed scheme is unlikely to affect the integrity of the water environment. No measurable impact upon an aquifer Negligible change in peak flood level (1% APE) < +/-10mm
Minor Beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring	Potential for slight reduction in pollution to a surface water or groundwater body, but insufficient to cause noticeable benefit in quality, fishery productivity or biodiversity. Changes to site resulting in a decrease in discharge/runoff > 25%. Reduction in peak flood level (1% APE) > 10mm.
Moderate Beneficial	Results in moderate improvement of attribute quality	Moderate improvement to a fishery / designated Nature Conservation Site. Potential increase in the productivity of a fishery.

Magnitude	Criteria	Example
		Reduced pollution of a receiving water body, but insufficient to change the environmental status/classification, including water quality classification. Changes to site resulting in a decrease in discharge/runoff > 50%. Reduction in peak flood level (1% APE) > 50mm.
Major Beneficial	Results in major improvement of attribute quality	Significant improvement to a fishery / designated Nature Conservation Site. Removal of existing polluting discharge, or removing the likelihood of polluting discharges occurring. Change to the environmental status/classification of a water feature, including water quality classification. Changes to site resulting in a decrease in discharge/runoff of > 75%. Reduction in peak flood level (1% APE) > 100mm.

12.4.5. Potential effects are classified by considering both the importance of the feature and the magnitude of impact, using the matrix shown in Table 129.

Table 129 - Estimating the Significance of Likely Significant Effects

		MAGNITUDE OF IMPACT			
		Negligible	Minor	Moderate	Major
IMPORTANCE OF ATTRIBUTE	Very High	Neutral	Moderate to Large	Large to Very Large	Very Large
	High	Neutral	Slight to Moderate	Moderate to Large	Large to Very Large
	Medium	Neutral	Slight	Moderate	Large
	Low	Neutral	Neutral	Slight	Slight to Moderate

12.4.6. The assessment being undertaken is informed by a desk study using available information, such as data on flood defences, a review of the Envirocheck Report⁷² prepared for the Proposed Scheme, literature review, site walkover, consultation with the relevant authorities, Water Framework Directive Assessment (WFD) and Flood Risk Assessment (FRA) being prepared in support of the DCO application. The WFD and FRA are being prepared with ongoing consultation with relevant authorities including the EA, NYCC, Selby IDB and other relevant authorities.

⁷² Landmark Information Group Service, 2017, Envirocheck Report for Site at 467943, 426885

- 12.4.7. The study will comprise a qualitative assessment of the potential effects of the Proposed Scheme on the water environment. The aspects of the water environment that will be considered include the ecological, chemical and hydromorphological quality of the surface water features, flood risk and groundwater quality in so far that groundwater may be affected by surface water-borne pollutants.
- 12.4.8. Potential impacts to groundwater associated with impacts to groundwater quantity, groundwater flows and the release of contaminants contained in the ground are being assessed in Chapter 11 (Ground Conditions). Similarly, potential impacts to ecology and designated sites, including sensitive and/or important aquatic species and habitats, are being assessed in Chapter 9 (Biodiversity).
- 12.4.9. The WFD assessment will include an assessment of the Proposed Scheme in regard to the ecological, chemical and hydromorphological quality of surface water features, and the quantitative and chemical quality of groundwater resources.
- 12.4.10. A FRA is being undertaken with due regard to the Energy NPSs and NPPF to assess the potential implications of the Proposed Scheme on flood risk to people and property elsewhere, as well as assess the potential risk of flooding to the Proposed Scheme. The following aspects will be considered:
- Potential impacts to flood flow conveyance in watercourses crossed by the Proposed Scheme for both temporary diversions and permanent amendments to water features.
 - Potential impacts to the Proposed Scheme from all sources of flooding, including fluvial, tidal, surface water, groundwater, drainage systems and artificial sources, and the potential impacts to the Proposed Scheme from a breach or overtopping of defences.
 - Potential impacts of the Proposed Scheme to people and property elsewhere, notably through a loss of fluvial floodplain storage, and a potential loss of tidal storage from overtopping and/or breach.
 - Potential impacts of the Proposed Scheme to overland flows.
 - Potential impacts to fluvial and surface water flooding associated with a possible increase in impermeable areas within the Proposed Scheme area.
 - The application of the Sequential and Exception Tests, and the application of a sequential approach to site layout.
- 12.4.11. The FRA will consider climate change allowances in accordance with current policy. Consultation is being held with the EA to determine the appropriate allowances to use based on the Proposed Scheme.
- 12.4.12. At this stage it is not proposed to undertake detailed hydraulic modelling to inform the assessment of flood risk to the Proposed Scheme or elsewhere as a result of the Proposed Scheme. This is because the source of flood risk is considered to be mainly tidal and the existing modelling data will be sufficient to understand current and future flood risks, and inform the design of appropriate mitigation. The outputs from the existing hydraulic model of the River Ouse will be used to inform the assessment. In addition, the hydraulic model will be re-run to assess the impacts of climate change based on updated guidance. Agreement of this approach with the EA is currently being sought.
- 12.4.13. It is not proposed to undertake water quality sampling to inform the assessment of the impacts of the Proposed Scheme on the quality of the water features nearby. This is because we predict no permanent risks to water quality associated with the operation of the Proposed Scheme, and that construction impacts can be appropriately mitigated. Any water

quality monitoring deemed to be required for construction works (for example proposed open cut works to river channels or works to the existing jetty) can be agreed as part of the EA, IDB and LLFA consenting procedures. The approach to establishing the baseline will be agreed with the relevant consultees, consultation with the EA, IDB and LLFA regarding this approach is currently being sought.

12.4.14. The findings of the standalone FRA will be used to inform the flood risk section of the ES. The FRA will provide a detailed assessment of flood risk from all sources of flooding associated with the Proposed Scheme and this will inform the need for any mitigation measures. The FRA will also provide a surface and foul water drainage strategy for the Proposed Scheme.

12.4.15. The following are the scenarios assessed as part of this PEIR (as outlined in Table 8 in Chapter 3). The assessment concluded there is no difference in the effects on the water environment resulting from the assessment between scenarios referred to below:

- Consent for up to two gas turbine generating units (OCGT or CCGT)
- Site reconfiguration works
- Gas Pipeline (Route A and Route B)
- Air quality mitigation
- Construction transport
- Electrical connection for Unit Y

STUDY AREA

12.4.16. The study area will encompass surface water features up to a minimum of 0.5 km from the Proposed Scheme for the assessment of direct effects (i.e. associated with overland migration of pollutants directly to a surface feature, overland flows and works within or near to a river channel). Features that are further than 0.5 km from the Proposed Scheme but are in hydraulic connectivity with the study area will also be considered, including surface water abstractions and downstream watercourses. Based on the professional judgement of the assessor and current knowledge of the area, features located up to a distance of approximately 1 km from the Proposed Scheme will be considered.

12.4.17. The study area will encompass groundwater features and abstractions up to a minimum of 1 km from the Proposed Scheme. This distance is considered appropriate for the assessment of surface-borne pollutants migrating to groundwater features.

12.4.18. Consultation with the EA, Selby IDB and NYCC is currently being sought regarding the suitability of the study areas for both the surface water features and the groundwater features.

ASSUMPTIONS

12.4.19. The assessment conducted within this PEIR Chapter is based on the following assumptions:

- There will be no change in ground levels; existing ground levels will be retained.
- Modelling of the Proposed Scheme will not be required (confirmation is being sought with the EA).
- A 'worst case' impact scenario of construction of the pipeline with an open-cut trenching method for all of the watercourse crossings.
- No new access routes will be required; existing roads and access points will be utilised for construction, operation and decommissioning.

- Assumed best practice SUDS will be included in the surface water drainage strategy.
- The abstraction and discharge volumes as a result of the Proposed Scheme will not change and will be within their existing licence requirements, and therefore this will be an insignificant effect.
- No permanent access roads will be required for either the construction or operational phase.
- The electrical connection is being assessed as part of the Power Station Site and not as part of the Pipeline Study Area.
- The watercourse bed will be reinstated like for like following an open cut construction method, and the works within the watercourses will be limited as far as practicable. It is additionally assumed that there will be no changes to bed slope and width.
- Construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.

12.4.20. For the purposes of this assessment, it is assumed that the measures set out below would be implemented as part of the Proposed Scheme (and is therefore embedded mitigation):

MANAGEMENT OF FLUVIAL AND TIDAL FLOOD RISK

12.4.21. The likely significant effect of increased flood risk to the Site and users of the Site is being investigated further and managed through the FRA being prepared in conjunction with the ES. The FRA will address both risk to and risk arising from the Proposed Scheme for all sources of flooding. Further analysis will be undertaken to understand the fluvial and tidal interactions. Consultation is being held with the EA to establish any additional appropriate mitigation for the Proposed Scheme.

12.4.22. Should any proposed works or structures lie in, under or within 16 m of the top of the bank of the tidal River Ouse, or from the toe of the defence, then a Flood Risk Activity Permit will be obtained to ensure the works meet all regulatory requirements. This will be of particular relevance to pipeline route Option A. In addition, consultation is being held with Selby IDB to discuss any works to ordinary watercourses, and to determine if a land drainage consent is required.

12.4.23. During the construction, operation and decommissioning phases, the existing Drax Flood Evacuation Plan will be followed during any flood events, from site securing to site evacuation measures.

12.4.24. The CEMP will incorporate measures to reduce and prevent an increase in flood risk during construction works.

SURFACE AND FOUL WATER

12.4.25. To mitigate the potential impacts to surface water flood risk during the operational phase, a robust surface water drainage system will be implemented and is being developed as part of the FRA. Discharge rates from the Proposed Scheme will be discussed and

confirmed with Selby IDB. Best practice SuDS and the SuDS hierarchy is being promoted in the drainage design for the Site⁷³.

12.4.26. Appropriate pollution prevention measures will be incorporated in the new surface water drainage system as required to comply with pollution prevention guidelines and environmental permits.

12.4.27. No significant increase in the number of employees on site is envisaged. Where new toilet or welfare facilities are provided, the existing foul water drainage system will be utilised wherever feasible or new foul water sewers will be provided and will connect to the existing foul drainage.

PROCESS WATER

12.4.28. The existing process water drainage system will be utilised wherever feasible and a new system will be provided where required. The existing approach for treatment and discharge of process water will be maintained.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

12.4.29. The Proposed Scheme will be carried out in accordance with the CEMP (a draft of which will be submitted with the DCO Application) that will include mitigation measures to protect the water environment. This will set out how construction activities will be undertaken in accordance with appropriate good practice guidance, such as CIRIA's control of water pollution from construction sites (C532). Although withdrawn, the Pollution Prevention Guidelines (PPG) published by the EA still provide good practice guidance, particularly PPG1 - General guide to the prevention of water pollution; PPG2 - Above ground oil storage tanks; PPG 5 - Works in, near or liable to affect watercourses; and PPG 6 - Working at construction and demolition sites.

12.4.30. The CEMP will contain construction method statements and work instructions for on-site staff that will inform them of the way that they should work on Site to reduce the risk of polluting the surrounding environment. It will include instructions on dealing with certain situations such as general good site practice, adverse weather conditions, environmental incidents and complaints.

12.4.31. There will be inspections and audits along with general monitoring and reporting of the effectiveness of control measures.

- At minimum, measures that are likely to be included in the construction method statements and work instructions for managing risks to the water environment include:
- Management of water that collects on Site or within excavations.
- Management of polluting substances that are being brought on Site and used as part of the construction process.
- Management of sediments and pollution during open cutting of watercourses.
- Management of use of the jetty within the River Ouse.

12.4.32. The mitigation strategies implemented would be reviewed regularly to best suit the practices currently being undertaken on Site.

⁷³ NYCC SUDS Design Guidance, SDG160301 Revision 4

- 12.4.33. The CEMP will detail procedures such as sediment and pollution management in order to prevent potential deterioration of the WFD status of surface and groundwater features. The CEMP will also describe the procedures in the event of an environmental emergency such as a fuel or chemical spillage.
- 12.4.34. Recommended measures that are likely to be included in the CEMP are summarised below.
- INCREASED SEDIMENT LOADS**
- 12.4.35. Minimise areas of exposed surface by only removing vegetation when necessary and keep gradients as shallow as possible to prevent large amounts of earth being washed away during periods of heavy rainfall. Areas which are exposed should be reseeded or surfaced as soon as practicable.
- 12.4.36. Enforce tight control of Site boundaries including minimal land clearance and restrictions on the use of machinery adjacent to water bodies. Where possible, do not locate stockpiles within 10 m of water bodies or drainage lines.
- 12.4.37. Provide wheel wash facilities at all entry and exit points. Water from wheel wash facilities must not be discharged into water bodies or the on-site surface water sewerage network.
- 12.4.38. Capture Site runoff in perimeter cut off ditches, settlement lagoons and/or settlement tanks where possible. Any dewatering required from Site excavations should be pumped into a settlement tank or lagoon and not discharged directly to a water body or the on-Site surface water sewerage network.

RELEASE OF HYDROCARBONS AND OILS

- 12.4.39. Incorporate interceptors into the Site drainage system at high risk areas, such as parking, unloading and refuelling areas, to remove hydrocarbons and oils from surface water prior to discharge.
- 12.4.40. Other measures including drip trays, under equipment such as generators, and wheel washing facilities should also be implemented to minimise the risk of pollutants infiltrating groundwater or the surface water drainage network. Drip trays used for diesel pumps and standing plant should be regularly maintained to prevent leaks, in accordance with the Environmental Management System currently employed on the Site.

USE OF HAZARDOUS MATERIALS

- 12.4.41. Provide storage facilities and tanks and conduct refuelling of machinery within bunded areas, which should not be located within 10 m of water bodies or drainage lines.
- 12.4.42. Storage and bunded areas should be constructed of impervious floors and walls with the capacity for the contents of the storage tank and an additional 10% safety margin.
- 12.4.43. Construction materials, such as cement, should be mixed in designated areas located away from water bodies and drainage lines.
- 12.4.44. As a remedial measure, spill containment equipment such as absorbent materials are stored on Site.

DUST AND DEBRIS

- 12.4.45. Dust management procedures should be applied which are typically implemented for air quality management issues, such as damping down to suppress the creation of dust.

Contractors should also implement good site practice, perimeter fences and tight control of materials and waste to minimise the risk of debris entering water bodies. Control of fugitive emissions of dust will be managed in accordance with the Environmental Management System already used on the site.

12.5 BASELINE CONDITIONS

- 12.5.1. This section provides a description of the current baseline conditions with respect to the water environment. The main features within the study area that may be affected by the Proposed Scheme are identified in the Water Constraints Map Figure 12.1.

SURFACE WATER FEATURES

POWER STATION SITE

- 12.5.2. Review of OS mapping indicates the Power Station Site is located within 0.5 km of five ponds and 13 ordinary watercourses or field drains. The Carr Dyke is culverted through the Power Station Site in an approximate south-west to north-east direction, and drains an area of approximately 25 km². All identified watercourses are classified as ordinary watercourses under the jurisdiction of the Selby Area Internal Drainage Board (IDB).
- 12.5.3. Area G of the Proposed Scheme is located along the banks of the River Ouse. The River Ouse is located in the Humber River Basin District and is classified as a main river under the jurisdiction of the EA. Area C and E are noted to be an area of saturated ground, of no known ecological designation.
- 12.5.4. The quality of all of these surface water features is discussed in relation to the Pipeline Study Area discussed below.

PIPELINE STUDY AREA

- 12.5.5. Review of OS mapping indicates the Pipeline Study Area crosses or is located within 0.5 km of four ponds, one main river (River Ouse) and 17 ordinary watercourses or field drains. With the exception of the River Ouse, the other surface water features have no known designations, and the use, quality and ecological value of these features are unlikely to have any significant value. This will be assessed further in the ES with further ecological surveys being undertaken to assess habitat usage of field drains. Watercourses crossed by the proposed pipeline route options include the Willow Road Drain and Dickon Field Drain. Route Option A also passes within 0.05 km to the south of the River Ouse, approximately 2 km downstream of Area G.
- 12.5.6. All watercourses in the Pipeline Study Area and Power Station Site drain to the River Ouse located approximately 1 km north of the Power Station Site and 0.05 km north of the pipeline route options at the closest point.
- 12.5.7. The EA surveys main watercourses in England and Wales on a regular basis in order to analyse, monitor and review waterbody status against the WFD objectives. The quality of the River Ouse is monitored by the EA in accordance with WFD objectives. The stretch closest to the study area (River Ouse from River Wharfe to Upper Humber) has an overall status of moderate, with failing chemical status as a result of para DDT levels, as it is a priority substance as defined in the WFD, and moderate ecological status.
- 12.5.8. Approximately 4 km downstream of the study area, the River Ouse forms part of the Humber Estuary Ramsar site, SAC, SPA and SSSI. Natural England undertook an assessment of the SSSI in 2017, which determined the unit to be of variable condition, although the section closest to the Site was described as 'Unfavourable – Recovering'.

Although the Humber Estuary is located outside of the study area, due consideration will be given to these features within the Water Resources ES Chapter given their high sensitivity and importance.

- 12.5.9. The River Derwent SSSI and SAC is approximately 1 km upstream of the study area and will therefore be considered within the water environment assessment. Natural England undertook an assessment of the SSSI in 2017 and determined the unit to be predominantly 'Unfavourable-Recovering', with the section closest to the Site being described as 'Favourable'.
- 12.5.10. Review of the Envirocheck report produced for the Proposed Scheme indicates that there are 10 groundwater abstractions, 9 surface water abstractions and 7 tidal abstractions for agricultural and unspecified uses within 1 km of the Proposed Scheme. There are 52 discharge consents for emergency overflow, trade and treated effluent within 0.5 km of the Proposed Scheme.

GROUNDWATER FEATURES

- 12.5.11. Review of the British Geological Survey (BGS) mapping indicates that the Proposed Scheme is underlain by bedrock geology of the Sherwood Sandstone group.
- 12.5.12. Review of the EA's groundwater map⁷⁴ indicates the majority of the bedrock geology is classified as Principal Aquifer, described as layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage and may support water supply and/or river base flow on a strategic scale.
- 12.5.13. Review of BGS mapping indicates that superficial deposits within the study area are predominantly alluvial tills comprising sands, clays, gravels and silts.
- 12.5.14. Review of the EA's groundwater map indicates that the superficial deposits are classified as Secondary A Aquifer, described as 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.
- 12.5.15. Review of the EA's groundwater map indicates that the Proposed Scheme is located within a total catchment (Zone 3) groundwater Source Protection Zone (SPZ). Total catchment (Zone 3) is defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. SPZs are typically used to protect abstractions for public water supply. The groundwater abstractions for potable water supply are located approximately 2 km to the south of the Proposed Scheme.
- 12.5.16. Review of the EA's Water Abstraction Licences map⁷⁵ indicates that groundwater abstractions are used for industry, agriculture and potable uses; and that tidal and surface water abstractions are predominantly used for agriculture.

⁷⁴ EA's Groundwater Map, BGS Aquifer Maps, <http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683&y=355134&scale=1&layerGroups=default&ep=map&textonly=off&lang=e&topic=groundwater>, accessed 18/10/2017

⁷⁵ EA's Water Abstraction Licences Map, http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=water_abstractions&layerGroups=default&lang=e&ep=map&scale=5&x=472036.5682741804&y=420257.22335243236, accessed 18/10/2017

12.5.17. The quality of groundwater resources in this catchment is monitored by the EA in accordance with the WFD objectives. The current overall status of the catchment (Wharfe and Lower Ouse Sherwood Sandstone) is poor, with poor chemical and quantitative status.

12.5.18. A high level review of borehole scans within the study area indicates groundwater depths of between two and six metres below ground level.

FLUVIAL AND TIDAL FLOODING

12.5.19. A standalone FRA is being completed in accordance with NPPF and the Energy NPSs. A brief summary of identified flood risks is provided below.

POWER STATION SITE

12.5.20. Review of the EA's Flood Map for Planning (Rivers and Sea) indicates that the Power Station Site is located in an area of complex flood risk comprising Flood Zones 2, 3 and in areas benefitting from flood defences. Figure 12.2 shows the Site Boundary, Flood Zone 2, Flood Zone 3 and Areas Benefiting from Defences.

12.5.21. The source of this flood risk is the River Ouse which is tidally influenced at this location, and the ordinary watercourses located within the study area such as the Carr Dyke. Much of the land defined as high risk Flood Zone 3 in the eastern and northern development areas benefit from flood defences (the standard of protection is currently being determined with the EA) located along the banks of the River Ouse. In 2014 the standard of protection (SoP) was assessed to be 1 in 200 year⁷⁶. Current assessment indicates that flooding is tidally dominated, however, there may also be a fluvial flood risk contribution which will be determined during the FRA.

PIPELINE STUDY AREA

12.5.22. Review of the EA's Flood Map for Planning (Rivers and Sea) indicates that the majority of the Pipeline Study Area is located in the high risk Flood Zone 3, with some areas benefitting from flood defences, and in the medium risk Flood Zone 2. As above, the source of this flood risk is the River Ouse and the ordinary watercourses located within the study area. Current assessment indicates that flooding is tidally dominated, however, there may also be a fluvial flood risk contribution which will be determined during the FRA. Figure 12.2 shows the Site Boundary, Flood Zone 2, Flood Zone 3 and Areas Benefiting from Defences.

HISTORIC FLOODING

12.5.23. There are no known historical flood events in the study area⁷⁷. Further consultation with the EA, NYCC and Selby IDB will provide further details on historical flooding in the area.

SURFACE WATER FLOODING

POWER STATION SITE

12.5.24. Review of the EA's Flood Risk from Surface Water map⁷⁸ indicates that areas of the Power Station Site are at risk of flooding from surface water sources. Flooding from surface

⁷⁶ White Rose Carbon Capture and Storage (CCS) Project, ES Volume 2 Chapter C.1 - Flood Risk Assessment, November 2014

⁷⁷ Selby District Council, 2015, Selby Level 1 Strategic Flood Risk Assessment Update

⁷⁸ EA's Flood Risk from Surface Water Map, <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map>, accessed 19/10/2017

water is typically associated with natural overland flow paths and local depressions in topography where surface water runoff can accumulate during or following heavy rainfall events. The areas across the Power Station Site at risk of surface water flooding are predominantly found along field boundaries and in local depressions. In addition to overland flow routes, the Flood Risk from Surface Water map also indicates fluvial flood risk from watercourses with a catchment of less than c. 3 km² that are too small to be mapped on the EA's Flood Map for Planning. Figure 12.1 shows the Site Boundary and areas of surface water flood risk.

PIPELINE

- 12.5.25. Review of the EA's Flood Risk from Surface Water map indicates that sections of the Pipeline Study Area are at risk of flooding from surface water sources, in particular along field boundaries and in local depressions. Figure 12.1 shows the Site Boundary and areas of surface water flood risk.

ATTRIBUTE IMPORTANCE (SENSITIVITY)

- 12.5.26. Table 130 below summarises the attribute importance (sensitivity) as identified in Section 12.6 which have been assessed in this chapter. The sensitivity of these receptors has been allocated in accordance with criteria of DMRB (tables above).

Table 130 - Attribute Importance / Sensitivity

Receptor type	Receptor name	Description	Value / Sensitivity
Surface water features	River Ouse	Main river. River Derwent SAC and SSSI located less than 1 km upstream. Humber Estuary SSSI located approximately 4 km downstream. River lamprey, sea lamprey, bullhead and salmonids are qualifying features for upstream and downstream designations therefore the River Ouse is a migratory path for these species. Classified as having 'moderate' status under WFD	Very high
	River Derwent SSSI and SAC	SSSI and SAC located approximately 1 km upstream from the Proposed Scheme. River lamprey, sea lamprey, bullhead and otters are qualifying features.	Very high
	Ordinary watercourses and field drains within study area including	Ordinary watercourses, no known ecological or amenity value.	Low

Receptor type	Receptor name	Description	Value / Sensitivity
	Carr Dyke, Willow Drain and Rickon Drain		
Groundwater resources	Principal aquifer	Principal aquifer, Source Protection Zone 3, Classified as having 'poor' status under WFD.	High
Flood risk receptors	Agricultural land	Surrounding land is predominantly rural and agricultural	Medium
	People and residential receptors	The proposed pipeline routes pass in close proximity to the village of Drax	Very high
	The Power Station Site and employees	The Proposed Scheme will be classified as essential infrastructure in accordance with NPPF	Very high

12.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

12.6.1. The Proposed Scheme has the potential to impact the water environment during construction, operation and decommissioning.

INSIGNIFICANT EFFECTS

12.6.2. The following effects have been considered negligible and therefore have not been considered further in this assessment. These negligible effects are for the entirety of the Proposed Scheme and cover both the Power Station Site and the Pipeline Study Area.

- Surface water runoff from the operational pipeline will not be assessed as the pipeline will be buried underground with existing ground surface reinstated. The pipeline is therefore not considered to change the rate, volume or quality of surface water runoff that would impact flood risk, groundwater quality or surface water quality.
- Changes to fluvial and tidal flood risk during the operation of the pipeline as the existing ground surface will be reinstated to current levels and therefore the fluvial and tidal flood risk will not change from the current status.
- Impacts to surface water features that are located greater than 0.5 km from the Proposed Scheme and that are not hydraulically linked to watercourses within 0.5 km of the Proposed Scheme. It is considered unlikely that surface-borne pollutants would migrate overland or via groundwater flow to surface water features that are located further than 0.5 km from the Proposed Scheme.
- Impacts to groundwater features that are located greater than 0.5 km from the Proposed Scheme and groundwater abstractions that are located greater than 1 km from the Proposed Scheme. It is considered unlikely that surface-borne pollutants would migrate and pose notable impact at a distance greater than this.

- Impacts to ecology, including sensitive and/or important aquatic species and habitats. These risks are discussed in Chapter 9 (Biodiversity).
- Impacts to the quality and quantity of groundwater resources not associated with surface-borne pollutants (such as surface water runoff and spillages). Risks to the quality, quantity and flow of groundwater resources associated with other aspects such as contaminated land are discussed in Chapter 11 (Ground Conditions).

12.6.3. The Proposed Scheme would be subject to decommissioning after a 25 year lifetime (at 25 years, a review would be undertaken to see whether it would be appropriate for the Proposed Scheme to continue operating beyond that initial time period). The effects on the water environment during the decommissioning stage would be similar to those identified during the construction phase. As such, the potential effects of the Proposed Scheme during decommissioning are as summarised in the construction phase section.

CONSTRUCTION PHASE

12.6.4. For the purpose of this preliminary assessment of effects of the Proposed Scheme on the water environment, it is assumed that open cut trenching across all watercourses will be undertaken as part of the construction phase. This assessment assumes the mitigation and best practice measures discussed above are implemented.

Table 131 – Preliminary Construction Assessment of Power Station Site

Receptor	Effect	Preliminary assessment	Significance
Watercourses, field drains and other surface water features identified within the study area	Increased sedimentation caused by surface water runoff from areas of bare earth, construction materials such as aggregate and stockpiles of topsoil	The provision of, and adherence to, the measures outlined in the CEMP (as well as other recommended design and construction processes) is considered adequate to reduce the likelihood of increased sediment loading. Appropriate mitigation will be provided with sediment traps, cut off ditches, bunds, covering stockpiles and wheel washing of construction plant. Where both direct and indirect impacts are expected, the magnitude of the impact with the implementation of the CEMP and the mitigation is considered to be negligible.	Neutral
Watercourses, field drains and other surface water features identified within the study area.	Increased pollution risks from spillage of fuels and other harmful substances that may migrate to local surface water	Adherence to measures outlined in the CEMP (and other recommended design and construction processes) is considered adequate to reduce the likelihood of spillages. In addition, a Method Statement (MS) will be provided detailing the procedures for securing the site and plant equipment for a flood event, in particular with reference to harmful substances and fuels. The magnitude of impact on surface water features is considered to be negligible.	Neutral
Principal A Aquifer	Increased pollution risks from spillage of fuels and other harmful substances that may migrate to local surface water and groundwater receptors	Adherence to measures outlined in the CEMP (and other recommended design and construction processes) is considered adequate to reduce the likelihood of spillages. In addition, a Method Statement (MS) will be provided detailing the procedures for securing the Power Station Site and plant equipment for a flood event, in particular with	Slight to moderate adverse significance

Receptor	Effect	Preliminary assessment	Significance
		reference to harmful substances and fuels. Groundwater contamination is difficult to treat and can have an adverse indirect effect on water quality of watercourses receiving baseflow or that are in hydraulic connectivity with the groundwater. The adherence to the CEMP and MS will reduce the magnitude of impact to minor adverse. Further assessment of high risk works (such as piling or deep excavations) will be undertaken in the ES.	
Groundwater within the Principal Aquifer	Potential deterioration of WFD status of groundwater resources	Adherence to measures outlined in the CEMP and detailed above is considered to be adequate to reduce the likelihood of deterioration of WFD status of groundwater features.	Neutral
River Ouse	Potential deterioration of WFD status of the River Ouse	Adherence to measures outlined in the CEMP and detailed above is considered to be adequate to reduce the likelihood of deterioration of WFD status of surface water features.	Neutral
River Derwent SSSI and SAC	Potential deterioration of water quality and habitat due to works near watercourses	Adherence to measures outlined in the CEMP and detailed above with the MS is considered to be adequate to reduce the likelihood of deterioration of the SSSI and SAC.	Neutral
Residential properties, people and agricultural land within 1 km of the Power Station Site	Increased flood risk associated with temporary works within areas of fluvial and tidal flood storage	The measures outlined in the CEMP and the Drax FEP will allow the contractor to receive adequate warning of a potential flood event. In the eventuality of a flood event, plant and equipment will be moved to areas of higher elevation and lower flood risk. This effect will be negligible with the CEMP, FEP and other	Neutral

Receptor	Effect	Preliminary assessment	Significance
		mitigation measures outlined above.	

Table 132 – Preliminary Construction Assessment of Pipeline

Receptor	Effect	Preliminary assessment	Significance
Watercourses, field drains and surface water features identified in the Pipeline Study Area	Increased sedimentation caused by works within watercourses and disturbance to hydromorphology	The open cut method for crossing watercourses will result in increased sedimentation within the watercourses. Adherence to a CEMP will reduce the sediment volumes within the watercourses however will not be able to prevent increased sedimentation. It is assumed that the watercourse bed will be reinstated like for like, and the works within the watercourse will be limited as far as practicable. It is additionally assumed that there will be no changes to bed slope and width. This effect will be of minor magnitude and will have a temporary effect of 2-5 years.	Slight adverse significance
Watercourses, field drains and surface water features identified in the Pipeline Study Area	Increased pollution risks from spillage of fuels or other harmful substances that may migrate to local surface water	The open cut method for crossing watercourses could result in an increased risk of pollution from spillages. The adherence to the CEMP and the measures outlined previously with regards to MS will reduce the risk of pollution.	Neutral
Principal Aquifer	Increased pollution risks from spillage of fuels or other harmful substances that may migrate to local surface water and	The open cut method for crossing watercourses could result in an increased risk of pollution from spillages. The adherence to the CEMP and the measures outlined previously with regards to MS will reduce the risk of pollution to minor adverse. In addition, the cuttings for the open cut method could be below	Slight to moderate adverse significance

Receptor	Effect	Preliminary assessment	Significance
	groundwater receptors	the groundwater table. This will be assessed further in the ES.	
Watercourses identified in the study area reliant on base flow—River Ouse, ordinary watercourses and field drains Principal aquifer	Impacts to catchment hydrology caused by changes to subsurface flows within the superficial deposits and aquifer due to the pipeline	The construction of the pipeline could result in impacts on catchment hydrology and groundwater flow due to the introduction of a barrier to subsurface flows. This effect will be of minor magnitude.	Slight adverse significance
Groundwater within principal aquifer	Potential deterioration of WFD status	Adherence to measures outlined in the CEMP and detailed above with the MS is considered to be adequate to reduce the likelihood of deterioration of WFD status of groundwater features. This effect will be negligible with the mitigation measures in place.	Neutral
River Ouse	Potential deterioration of WFD status	Adherence to measures outlined in the CEMP and detailed above with the MS is considered to be adequate to reduce the likelihood of deterioration of WFD status of surface water features. This effect will be negligible with the mitigation measures in place.	Neutral
River Derwent SSSI and SAC	Potential deterioration of water quality and habitat due to works near watercourses	Adherence to measures outlined in the CEMP and detailed above with the MS is considered to be adequate to reduce the likelihood of deterioration of the SSSI and SAC.	Neutral
Residential properties, people and agricultural land within 1 km of the Pipeline Study Area	Increased flood risk associated with temporary works within areas of fluvial and tidal flood storage	The measures outlined in the CEMP and the Drax FEP will allow the contractor to receive adequate warning of a potential flood event. In the eventuality of a flood event, plant and equipment will be moved to areas of higher elevation and lower flood risk.	Neutral

Receptor	Effect	Preliminary assessment	Significance
		This effect will be negligible with the CEMP, FEP and other mitigation measures outlined above.	

OPERATION PHASE

Table 133 - Preliminary Operational Assessment of Power Station Site

Receptor	Effect	Preliminary assessment	Significance
Residential properties, people and agricultural land within 1 km of the Power Station Site	Increased flood risk associated with an increase in the rate and volume of surface water runoff from a possible increase in impermeable areas at the Power Station Site.	A robust drainage strategy will be provided as part of the FRA. This will detail that any surface water runoff will be managed through appropriate mitigation if required, to ensure that there is no overall increase in the existing surface water discharge from the Power Station Site. With the drainage strategy in place this effect will be of negligible magnitude.	Neutral
The Power Station Site and employees	Increased flood risk associated with the potential of a breach or overtopping of defences along the River Ouse. This risk is being assessed in greater detail in the FRA with a review of hydraulic modelling.	The adherence to the existing FEP will minimise the risk to the receptor.	Neutral
Residential properties, people and agricultural land within 1 km of the Power Station Site	Potential loss of fluvial floodplain storage associated with Proposed Scheme	Following further consultation with the EA and detailed design, if there is the potential for the loss of fluvial floodplain storage, this will be assessed and compensated for on like for like basis. This will be confirmed at a later stage in the FRA.	Slight adverse significance

Table 134 - Preliminary Operational Assessment of Pipeline Study Area

Receptor	Effect	Preliminary assessment	Significance
Residential properties, people and agricultural land within 1 km of the Pipeline Study Area	Increased surface water runoff from the Above Ground Installation facilities within the Pipeline Study Area	A drainage option will be provided for all above ground structures associated with the pipeline. This will detail that any surface water runoff will be managed through appropriate mitigation such as shedding surface water runoff to ground, to ensure that there is no overall increase in existing surface water discharge from those installations. This approach will be confirmed with relevant authorities at a later stage within the FRA. With appropriate mitigation, this effect will be of negligible magnitude.	Neutral
Watercourses identified in the study area reliant on base flow— River Ouse, ordinary watercourses and field drains Principal aquifer	Impacts to catchment hydrology caused by changes to subsurface flows within the superficial deposits and aquifer due to the pipeline	The operation of the pipeline could result in impacts on catchment hydrology and groundwater flow due to the introduction of a barrier to subsurface flows. Potential impacts associated with the pipeline will be assessed at a later stage. This effect will be of minor magnitude.	Slight adverse significance

- 12.6.5. We have considered the combined effect of the works to the Power Station Site and the Pipeline Study Area in relation to each receptor. For each receptor, the combined effect will be of the same magnitude and significance as when assessed for the Power Station Site or Pipeline Study Area works separately. The ES will include further detail of the assessment of the likely significant effects of the Proposed Scheme.
- 12.6.6. Table 135 below summarises the significance of the largest possible potential effects using the assessment of attribute importance and the magnitude of potential impacts identified in the tables above.

Table 135 - Estimation of the Significance of the Largest Potential Effects of the Proposed Scheme

Receptor type	Receptor name	Attribute Importance	Magnitude of Potential Effects	Significance of largest effect
Surface water features	River Ouse	Very High	Negligible	Neutral
	Carr Dyke	Low	Negligible	Neutral
	Ordinary watercourses and field drains within study area	Low	Minor adverse	Slight adverse
	River Derwent SSSI and SAC	Very high	Negligible	Neutral
Groundwater resources	Principal aquifer	High	Minor adverse	Slight to moderate adverse
Flood risk receptors	Agricultural land	Medium	Negligible	Neutral
	Residential receptors	High	Negligible	Neutral
	Essential infrastructure	Very high	Negligible	Neutral
	People within the proposed Site and in nearby areas	Very high	Negligible	Neutral

12.7 MITIGATION AND ENHANCEMENT MEASURES

12.7.1. There are no further mitigation measures identified at this preliminary assessment stage.

12.8 RESIDUAL EFFECTS

- 12.8.1. As no additional mitigation measures are proposed, the residual effects will be as assessed and set out above in Section 6.9.
- 12.8.2. A temporary (2-5 years) residual effect remains. Increased sedimentation within surface water features from construction within and in close proximity to watercourses. There is little opportunity to implement further mitigation measures other than those which are provided through the CEMP to reduce potential sedimentation from construction.
- 12.8.3. The main residual risk to the Power Station Site is flood risk from a breach or overtopping of the flood defences along the River Ouse. Ongoing consultation with the EA will determine the approach to be taken regarding a possible breach and the impacts it may have on the Proposed Scheme. A review of the existing Evacuation Plan held at the power station will be carried out to ensure it meets current requirements.

- 12.8.4. Preliminary assessment of the groundwater levels suggest that construction and operation of the pipeline could affect subsurface flows. This is subject to further investigation and will be assessed within the ES.

12.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

- 12.9.1. In addition, the preliminary assessment of significance of effects is based on professional judgement based on information known at this stage and based on the assumptions detailed in this chapter.
- 12.9.2. The current best available information regarding fluvial and tidal flood risk is the 2009 River Ouse Flood Modeller Pro⁷⁹ hydraulic model received in September 2017. Whilst there have been updates to hydrology and modelling techniques since 2009 it is not proposed to update the model apart from re-running it with the latest climate change scenarios. We are seeking agreement with the EA however, it is understood that the 2009 model provides a robust assessment for the Proposed Scheme.

12.10 NEXT STEPS

- 12.10.1. The following will be completed and included in the ES and FRA:
- Continued consultation with stakeholders to discuss the Proposed Scheme and proposed mitigation.
 - A FRA is being undertaken in accordance with NPPF and with due regard to NPS to assess the potential implications of the Proposed Scheme on flood risk to people and property elsewhere, as well as assess the potential risk of flooding to the Proposed Scheme. Existing hydraulic modelling of the River Ouse is being used to inform the FRA for all modelled annual probability events, with the exception of climate change assessments which will be rerun in accordance with updated climate change guidance. In addition, the FRA will include the development of mitigation with regards to surface water runoff and any potential impacts on fluvial and tidal flood storage.
 - Continued development of appropriate mitigation as necessary.
 - In addition, a surface and foul water drainage design is being developed for the Proposed Scheme and will be submitted as part of the FRA.
 - A WFD assessment is being undertaken in conjunction with the ES to assess the impacts of the Proposed Scheme on the water environment.

⁷⁹ Halcrow 2010, River Ouse Model Update, Environment Agency

13 WASTE

13.1 INTRODUCTION

13.1.1. This Chapter reports the preliminary assessment of effects related to waste.

13.1.2. The Chapter outlines the following:

- The relevant legislative framework pertaining to waste.
- The scope of the assessment and the assessment methodology.
- The potential effects of Site Reconfiguration Works and construction within the Power Station Site on waste.
- The mitigation measures required to prevent, reduce, or offset the effects.
- The residual effects.

13.1.3. As set out in Chapter 3, the Site Reconfiguration Works may be the subject of a TCPA application to be submitted in 2018, with works anticipated either in 2018/2019 before implementation of the DCO, or at the same time the DCO is implemented. As explained in Chapter 3, the alternative is that the Site Reconfiguration Works may be consented as part of the DCO Application. As set out in Chapter 3, the EIA will assess two scenarios with regards to the Site Reconfiguration Works:

- The Site Reconfiguration Works being carried out when the DCO Application is implemented. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and not carried out until the DCO is being implemented, or a situation in which the Site Reconfiguration Works are consented by the DCO. This scenario therefore assesses the Site Reconfiguration Works as being part of the Proposed Scheme.
- The Site Reconfiguration Works implemented in 2018/2019 in advance of the implementation of the DCO Application. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and carried out prior to the DCO being implemented. This scenario therefore treats the completed Site Reconfiguration Works as being part of the baseline.

13.1.4. This Chapter has carried out an assessment on the basis that the Site Reconfiguration Works are part of the Proposed Scheme, as that scenario represents the likely worst case scenario in terms of waste impacts.

13.1.5. Decommissioning has been considered but not assessed at this stage. Given the 25 year lifespan of the Proposed Scheme and proposed phasing of decommissioning being unknown at this stage there is uncertainty surrounding decommissioning. Further to this, a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot at this stage be defined. On this basis it has not been possible to accurately assess the decommissioning effects of the Proposed Scheme at this stage.

13.2 POLICY, LEGISLATION AND GUIDANCE

POLICY

OVERARCHING NATIONAL POLICY STATEMENT FOR ENERGY (EN-1)

13.2.1. Whilst National Policy Statements (NPS) EN-2, EN-4 and EN-5 are relevant to the Proposed Scheme, National Policy Statement EN-1 (NPS EN-1) is the most relevant for waste. NPS EN-1 sets out national policy for certain energy infrastructure. It has effect, in combination

with the relevant technology-specific NPSs, on the decisions by the Secretary of State on applications for energy developments that fall within the scope of the energy NPSs.

- 13.2.2. With regards to waste management, NPS EN-1 states the following *“The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a Site Waste Management Plan. The arrangements described and Management Plan should include information on the proposed waste recovery and disposal system for all waste generated by the development, and an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that this is the best overall environmental outcome.”*

NATIONAL PLANNING POLICY FRAMEWORK

- 13.2.3. The National Planning Policy Framework (NPPF) sets out the Government’s economic, environmental and social planning policies for England and provides a framework within which local people and councils can produce local and neighbourhood plans. Most of the existing Planning Policy Statements (PPSs) have now been abolished and replaced by 12 ‘core’ planning principles in the Framework. The Framework states that: *“This Framework does not contain specific waste policies, since national waste planning policy will be published as part of the National Waste Management Plan for England. However, local authorities preparing waste plans and taking decisions on waste applications should have regard to policies in this Framework so far as relevant.”*
- 13.2.4. Further guidance is included in the Waste Management Plan for England (2013) which superseded the Waste Strategy for England 2007 for these purposes.

NATIONAL PLANNING POLICY FOR WASTE (2014)

- 13.2.5. The National Planning Policy for Waste replaces ‘Planning Policy Statement 10: Planning for Sustainable Waste Management’ (PPS 10) and is to be considered alongside other national planning policy for England - such as in the NPPF and the Waste Management Plan for England. As its primary focus is on planning for waste management facilities, it is not considered relevant to the Proposed Scheme.

WASTE MANAGEMENT PLAN FOR ENGLAND (2013)

- 13.2.6. The Waste Management Plan for England, published in December 2013, provides an analysis of the current waste management situation in England and fulfils the mandatory requirements of Article 28 of the revised Waste Framework Directive (WFD). The WFD required that Member States ensure that their competent authorities, in this instance Defra, establish one or more waste management plans covering all of their territory.
- 13.2.7. The Plan does not introduce new policies or change the landscape of how waste is managed in England. Its core aim is to bring current waste management policies under the umbrella of one national plan. It supersedes the previous waste management plan, the Waste Strategy for England 2007.

PLANNING PRACTICE GUIDANCE (PPG 2015 ONWARDS)

- 13.2.8. The PPG is an online planning resource that provides guidance on the NPPF. With regard to waste issues, the PPG provides further information in support of the implementation of waste planning policy, including the role of waste planning in meeting European obligations, preparing Local Plans and implementing the Waste Hierarchy.

SELBY DISTRICT LOCAL PLAN (2005)

- 13.2.9. The Selby District Local Plan (SDLP) was formally adopted in February 2005. It develops and underpins many of the aims and objectives of the Council, providing a comprehensive land-use framework for promoting, co-ordinating and controlling future development.
- 13.2.10. There are no saved policies relating to waste management within the SDLP.

SELBY DISTRICT CORE STRATEGY LOCAL PLAN 2013

- 13.2.11. The Core Strategy provides a spatial vision for Selby District and strategic objectives to achieve that vision. With regards to waste management, the Core Strategy states the following:

“Policy SP18 Protecting and Enhancing the Environment

The high quality and local distinctiveness of the natural and manmade environment will be sustained by:

...

8. Ensuring developments minimise energy and water consumption, the use of non-renewable resources, and the amount of waste material.”

LEGISLATION

- 13.2.12. The applicable legislative framework is summarised below:

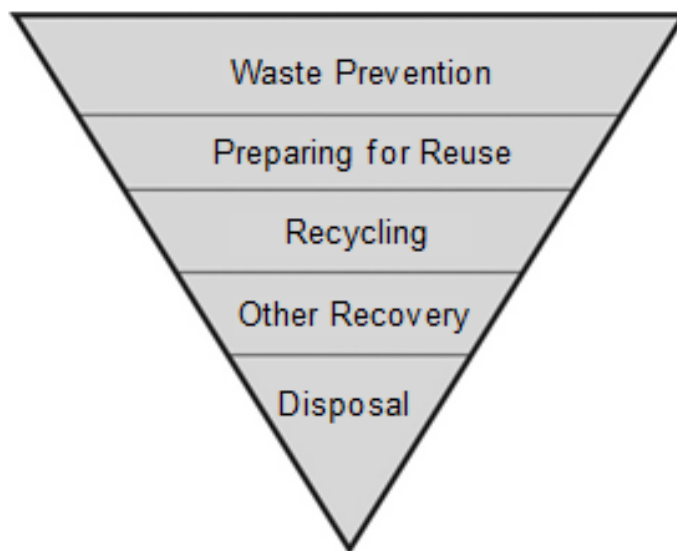
- **Waste Management, The Duty of Care Code of Practice (2016 update)** - This code of practice replaces the 1996 Code and is pursuant to Section 34(9) of the Environmental Protection Act 1990. It sets out practical guidance on how to meet waste duty of care requirements and is admissible as evidence in legal proceedings i.e. its rules will be taken into account where relevant in any case based on breach of the duty of care.
- **The Waste (England and Wales) Regulations 2011 (as amended)** - The Waste (England and Wales) Regulations 2011 implement the waste hierarchy in England and Wales. These regulations require that an establishment or undertaking that imports, produces, collects, transports, recovers or disposes of waste must take reasonable steps to apply the Waste Hierarchy when waste is transferred or disposed of.
- **Revised Waste Framework Directive (2008)** - The revised Waste Framework Directive (rWFD) is a unique EU Directive because it clarifies the definition of ‘waste’ and of other concepts such as ‘recycling’ and ‘recovery’. It implements a revised Waste Hierarchy, expands the ‘polluter pays’ principle by emphasising producer responsibility and applies more stringent waste reduction and waste management targets for Member States. It also requires Member States to take measures to promote high quality recycling and to set up separate collections of paper, plastic, metal and glass.
- **Environmental Protection Act 1990** - Part II of the Act was originally implemented by the Duty of Care Regulations 1991. The Duty of Care is a legal requirement for those dealing with certain kinds of waste to take all reasonable steps to keep it safe and is set out in Section 34 of the Act. The Waste (England and Wales) Regulations 2011 repealed the Environmental Protection (Duty of Care) Regulations 1991 and apply the Duty of Care requirements by the Environmental Protection Act 1990.

GUIDANCE

WASTE HIERARCHY

- 13.2.13. The Waste Hierarchy requires avoidance of waste in the first instance followed by reducing the volume that requires disposal after it has been generated.
- 13.2.14. It gives an order of preference for waste management options to minimise the volume for disposal, as shown in Chart 3.

Chart 3 - Waste Hierarchy



Source: Waste Framework Directive

- 13.2.15. The main principles of the Waste Hierarchy are:

- Waste should be prevented or reduced at source as far as possible.
- Where waste cannot be prevented, waste materials or products should be reused directly or refurbished and then reused.
- Waste materials should be recycled or reprocessed into a form that allows them to be reclaimed as a secondary raw material.
- Where useful secondary materials cannot be reclaimed, the energy content of the waste should be recovered and used as a substitute for non-renewable energy resources.
- Only if waste cannot be prevented, reclaimed or recovered, should it be disposed of into the environment and this should only be undertaken in a controlled manner.

13.3 SCOPING OPINION AND CONSULTATION

SCOPING OPINION

- 13.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to waste, and how those requirements should be addressed by the applicant, are set out below in Table 136.

Table 136 - Scoping Opinion Summary Table

SECTION	APPLICANTS PROPOSED MATTER	PLANNING INSPECTORATE'S COMMENTS	SUMMARY OF RESPONSE
7.9.2	Waste generation during operation	Taking into account the nature and characteristics of the Proposed Scheme, the Inspectorate agrees that this is unlikely to result in significant effects and is therefore content with the proposed approach.	No further action.
7.9.2	Waste generated during construction of the pipeline	Taking into account the nature and characteristics of the Proposed Scheme, the Inspectorate agrees that this is unlikely to result in significant effects and is therefore content with the proposed approach.	No further action.
7.9.2	Generation of hazardous waste	Taking into account the nature and characteristics of the Proposed Scheme, the Inspectorate agrees that this is unlikely to result in significant effects and is therefore content with the proposed approach.	No further action.
7.9.4	Assessment methodology	There is no specific guidance to be followed for the assessment. The ES should clearly describe and define levels of magnitude, sensitivity and significance of effects.	Noted.

CONSULTATION

- 13.3.2. No consultation activities have been undertaken in support of the preparation of this PEIR chapter. This is because the EA and LA are unlikely to hold accurate information in terms of capacity of all potential waste infrastructure, any information the consultees do have is likely to be commercially sensitive. The EA and LA may provide comment on the methodology and study area as set out in the PEIR.

13.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

SCOPE OF THE ASSESSMENT

INSIGNIFICANT ENVIRONMENTAL EFFECTS

13.4.1. The following effects have been considered insignificant and are therefore not considered further (as set out in the applicant's Scoping Report, and confirmed by PINS in its Scoping Opinion and detailed in Table 136):

- Due to the nature of the Proposed Scheme, it is not envisaged that significant levels of waste will be generated during its operational life. Therefore, there will not be significance effects relating to operational waste and this will not be considered further.
- The gas pipeline does not require the demolition of any above ground features. In addition, excavated soil generated during construction of the gas pipeline is to be retained on Site and reinstated following construction of the pipeline. As such, there is not considered to be any waste generated during the construction of the gas pipeline and this will not be considered further.
- Due to the nature of the Proposed Scheme, it is not envisaged that significant levels of hazardous waste will be generated during the demolition, construction and operational phases. Therefore, there will not be significant effects relating to hazardous waste and this will not be considered further.

EFFECTS CONSIDERED ELSEWHERE WITHIN THE ES

13.4.2. The following effects are to be considered elsewhere in the ES:

- The increases in traffic, dust, noise and visual intrusion associated with the transportation of construction materials to the Site and demolition (where necessary) and construction waste materials from the Site to waste treatment and disposal facilities will be assessed appropriately within Chapter 5 (Traffic and Transport); Chapter 6 (Air Quality and Climate); Chapter 7 (Noise and Vibration); and Chapter 10 (Landscape and Visual) and therefore there is no need for a duplicate assessment.

LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS

13.4.3. The following effects are considered in this PEIR and will be further considered in the ES:

- Increase in waste generation from demolition materials (including from Site Reconfiguration Works as explained above). The Site Reconfiguration Works involve the demolition and relocation of existing facilities at the Power Station Site. This will include the Turbine Outage Stores, Learning Centre, Contractors' Compounds and Welfare Facilities (temporary), Ash Lagoons and Leisure Facilities (squash court).
- Increase in waste generation from construction materials (including from Site Reconfiguration Works as explained above) and increase in demand for local waste treatment and disposal facilities.

13.4.4. EXTENT OF THE STUDY AREA

13.4.5. The study area includes the wider area of the East Riding of Yorkshire and Yorkshire and the Humber region, where it is anticipated the treatment and / or disposal of the majority of waste from the Proposed Scheme would take place. The Yorkshire and Humber region comprises South Yorkshire, West Yorkshire, the East Riding of Yorkshire, Hull, North Yorkshire and the City of York, alongside North Lincolnshire and North East Lincolnshire.

METHOD OF BASELINE DATA COLLATION

DESK STUDY

13.4.6. In order to determine the baseline scenario with regards to current waste arising, a desk-top study has been undertaken using the following sources of information:

- Building Research Establishment (BRE) Waste Benchmarking Data (2012).
- Survey of Arisings and Use of Alternatives of Primary Aggregates in England, 2005: Construction, Demolition and Excavation Waste (2005).
- Yorkshire and Humber Waste Planning Authorities, Yorkshire and Humber Waste Position Statement 2016.

13.4.7. The estimated quantities of waste that will be generated from the construction of the Proposed Scheme have been primarily calculated through the use of applicable benchmarking data.

13.4.8. SIGNIFICANCE CRITERIA

13.4.9. The assessment of potential effects as a result of the Proposed Scheme has taken into account the construction phase. The significance level attributed to each effect has been assessed based on the magnitude of change due to the Proposed Scheme and the sensitivity of the affected receptor/receiving environment to change (how significant the volume of waste requiring management is estimated to be and the presence of suitable local waste treatment and disposal facilities).

13.4.10. The current capacity of waste treatment and disposal facilities is commercially sensitive information and therefore not publicly available on the Environment Agency's registers. The magnitude of change from the Proposed Scheme is dependent on the extent of the effect, and would take into account the volumes of waste arising generated, the nature of the material, (e.g. whether it is hazardous, non-hazardous or inert), the ease of handling and the implications for treatment and disposal (e.g. whether facilities are easily available or whether treatment or disposal capacity is restricted).

13.4.11. The criteria for assessing the sensitivity of local waste treatment and disposal facilities will be as follows:

- High: The waste generated comprises large volumes of hazardous, non-hazardous or inert waste and local waste facilities are severely restricted (i.e. there are less than three facilities in the study area).
- Medium: The waste generated comprises medium volumes of hazardous, non-hazardous or inert waste and local waste facilities are restricted (i.e. there are less than 10 facilities in the study area).
- Low: The waste generated comprises small volumes of hazardous waste, or medium volumes of non-hazardous waste or inert waste and local waste facilities are less restricted (i.e. there are more than 10 facilities but less than 20 facilities in the study area).
- Negligible: The waste generated comprises no or negligible volumes of hazardous waste, or minor volumes of non-hazardous or inert waste and local waste facilities are unrestricted (i.e. there are more than 20 facilities in the study area).

13.4.12. The magnitude of change to local waste facilities will be assessed according to the following criteria:

- Large: The Proposed Scheme generates more than 50,000 tonnes of waste per annum.

- Medium: The Proposed Scheme generates more than 5,000 tonnes but less than 50,000 tonnes of waste per annum.
- Small: The Proposed Scheme generates more than 500 tonnes but less than 5,000 tonnes of waste per annum.
- Negligible: The Proposed Scheme generates less than 500 tonnes of waste per annum.

SIGNIFICANCE OF EFFECTS

13.4.13. The following terms have been used to define the significance of the effects identified:

- Major effect: where the Proposed Scheme could be expected to have a considerable effect (either positive or negative) on the capacity of local waste treatment and disposal facilities.
- Moderate effect: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on the capacity of local waste treatment and disposal facilities.
- Minor effect: where the Proposed Scheme could be expected to result in a small, barely noticeable effect (either positive or negative) on the capacity of local waste treatment and disposal facility.
- Negligible: where no discernible effect is expected as a result of the Proposed Scheme on the capacity of local waste treatment and disposal facilities.

13.4.14. Effects categorised as significant will be categorised major or moderate, insignificant effects will be categorised as minor or negligible.

13.4.15. Table 137 illustrates the matrix used for determining significance of effects.

Table 137 - Significance of Effects Matrix

		Sensitivity of Receptor to Impact			
		High	Medium	Low	Negligible
Magnitude of Impact	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

ASSUMPTIONS

13.4.16. The assessment conducted within this PEIR Chapter is based on the following assumptions:

- In terms of the assessment scenarios set out in Chapter 3, this assessment assumes:
 - The Site Reconfiguration Works will be carried out as part of the Proposed Scheme (as noted above).
 - Repowering of both units.

- Construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme.
 - There are no differences in effects associated with the construction transportation scenarios.
 - There is limited differences in effects associated with the air quality scenarios.
 - There is limited differences in effects associated with the electrical connection scenarios.
 - Neither gas pipeline scenarios have been considered as the gas pipeline was scoped out of the assessment at the scoping stage.
- It is assumed that all uncontaminated excavated material on-site will be used to meet any fill requirements and would therefore not be sent for disposal off-site. It is understood that there are some areas of made ground which, prior to intrusive surveys being undertaken, have the potential for contamination. This will be assessed appropriately within Chapter 11 (Ground Conditions) and therefore there is no need for a duplicate assessment.
- Embedded mitigation assumed within this Chapter is as follows:
- The estimated volumes of waste identified in Table 143 are based on standard waste management practices in the UK and have significant potential to be reduced through best practice on-site waste minimisation and management. The estimated waste arising data can be used as an indicator for measuring and monitoring waste generated. This will enable the Principal Contractor to set realistic and attainable waste minimisation and management targets.
 - Adherence to the Waste Hierarchy by reusing and/or recycling waste materials in order to reduce the significance of the effect. It is likely that the key waste streams generated by the construction phase of the Proposed Scheme that have the potential to be reused / recycled will predominantly comprise soils, concrete, bricks, metal, glass, plastic and timber.
 - The implementation of a programme of realistic waste management targets and subsequent monitoring arrangements at an early stage during the construction phase to assist in reducing the amount of waste disposed off-site. The Principal Contractor will be responsible for the implementation of such a programme however it is important to note it isn't a requirement and more so best practice.
 - Good practice measures in terms of on-site storage will be implemented to assist in reducing unnecessary wastage of material and ensure that high standards are maintained throughout the development process.
 - Best practice measures and recommendations for the minimisation and management of waste will be incorporated into the Construction Environmental Management Plan (CEMP).
 - To ensure that the system of waste minimisation, reuse and recycling is effective, on-site waste targets will be set for the Proposed Scheme and a suitable programme of monitoring at regular intervals to focus upon:
 - Quantifying raw material wastage.
 - Quantifying the generation of each waste stream.

- Any improvements in any working practices.
- Methods by which the waste streams are being handled and stored.
- The available waste disposal routes used, e.g. landfill, waste transfer stations.
- The principal contractor will be responsible for the setting and review of waste targets from the outset to ensure that high standards are maintained with the emphasis being on continual improvement.
- Specific waste quantification and monitoring will be undertaken to assist in determining the success of waste management initiatives employed and progress against these targets will be relayed back to the project team.
- All construction works will be undertaken in accordance with the Considerate Constructors Scheme. This is a national initiative set up by the construction industry. Sites that register with the Scheme sign up to and are monitored against a Code of Considerate Practice designed to encourage best practice beyond statutory requirements. The Scheme is concerned about any area of construction activity that may have a direct or indirect effect on the image of the industry as a whole. The main areas of concern fall into three main categories: the environment, the workforce and the general public. Waste management is a key area of focus and on-site considerations may include:
 - How waste is avoided, reduced, reused and / or recycled.
 - Whether there is a Waste Management Plan / Strategy and how this is monitored.
 - The type of feedback received (if any) as to how much waste on-site is diverted from landfill.
- As part of the encouragement of on-site best practice, the applicant will ensure that suppliers for the construction phase of the Proposed Scheme are committed to reducing surplus packaging associated with the supply of any raw materials. This includes the reduction of plastics (i.e. shrink wrap and bubble wrap), cardboard and wooden pallets. This may involve improved procurement and consultation with selected suppliers regarding commitments to waste minimisation, recycling and the emphasis on continual improvement in environmental performance. Where practicable, the off-site manufacture/pre-fabrication of building components will be undertaken to help minimise the generation of on-site construction waste.
- Where practicable, waste streams that have the potential to be reused on-site or transported off-site for recycling will be segregated. Although every effort will be made to retain all suitable materials on-site, it is possible that some of these materials cannot be reused or recycled during the construction of the Proposed Scheme. In these situations, the site manager will work to identify suitably licensed waste facilities in order for material to be redistributed to other suitable sites. This represents the most sustainable alternative to landfill disposal.
- During the construction phase of the Proposed Scheme, it will be important for contractors to regularly review waste generation estimates, taking into account any changes in legislation, the available waste management facilities' capacity and any advancement in waste treatment technologies.
- The above measures, including how they will be implemented and monitored will be set out in a Site Waste Management Plan (SWMP).

13.5 BASELINE CONDITIONS

CURRENT WASTE MANAGEMENT ARRANGEMENTS

- 13.5.1. Table 138 summarises the methods used for the treatment and disposal of inert Construction, Demolition and Excavation (CD&E) waste in the East of England region and England as a whole (as a comparator). A survey commissioned by the Department for Communities and Local Government (DCLG) provides the most recent and comprehensive nationwide dataset currently available and offers an indicative assessment of methods used to manage inert CD&E waste within the region.

Table 138 - Management of Inert CD&E Waste in the East of England Region and England as a Whole

Waste management method	East of England (million tonnes)	England (million tonnes)
Recycled aggregate and soil	6.03 (52.4%)	46.4 (51.8%)
Spread on registered exempt sites*	1.68 (14.6%)	15.4 (17.2%)
Waste entering licensed landfills (total for engineering, capping and disposal):	3.83 (33.3%)	27.7 (30.9%)
<i>Landfill engineering</i>	0.41 (3.6%)	4.2 (4.7%)
<i>Landfill capping</i>	0.97 (8.4%)	5.4 (6.0%)
<i>Landfill disposal</i>	2.4 (20.9%)	18.1 (20.2%)
Total managed	11.5 (100.0%)	89.6 (100.0%)
* Sites which are notified by the site operator as being exempt from environmental permitting (though not exempt from waste regulation) and where this exemption has been placed on the public register by the Environment Agency.		

- 13.5.2. The proportion of inert CD&E waste in the east of England being used as recycled aggregate and soil was slightly higher than the England average. The proportion of inert CD&E waste being utilised on registered exempt sites is lower in the east of England. A higher proportion of inert CD&E waste in the east of England is entering licensed landfills, with the majority of this material being sent for landfill disposal.
- 13.5.3. The regional estimate indicates that approximately 88% of inert CD&E waste was reused or recycled in 2005 (this figure has been derived from all the waste management methods not including 'Landfill disposal'). Therefore considerable opportunity exists during the construction phase of the Proposed Scheme for the reuse/recycling of these materials. Such an approach will be dependent on the quality and presence of any contamination of the material.

- 13.5.4. Regarding non-inert CD&E waste, such as wood and plastics, the 2007 Waste and Resources Action Programme (WRAP) report, stated that: '*...the annual tonnage of non-inert C&D waste arising in Britain probably lies about half way between two contrasting pre-existing estimates (of 7.5 million and 22 million tonnes per year).*
- 13.5.5. This supports the view that definitive figures to accurately quantify non-inert CD&E waste arising are not currently known.
- 13.5.6. Based on current working methods, a significant opportunity exists for segregating non-inert CD&E waste streams for reuse / recycling at the Site.
- 13.5.7. Operational waste is currently generated at the Existing Drax Power Station Complex. It is likely this waste is generated by the Learning / Visitors' Centre, contractors' portable cabins used for offices and modular buildings (1st storey welfare (canteen) facilities, 2nd storey offices), however the specific volumes and types of waste are unknown. It is not envisaged significant volumes of waste are currently generated.
- 13.5.8. Table 139 provides a summary of the current strategic waste facilities located within the study area, with the information sourced from the Yorkshire and Humber Waste Position Statement 2016.

Table 139 - Strategic Waste Facilities within the Study Area

Local Authority District	Waste Facilities ¹
Barnsley	-
Bradford	1
Calderdale	-
Doncaster	1
East Riding of Yorkshire	2
Kingston upon Hull	1
Kirklees	-
Leeds	1
North East Lincolnshire	1
North Lincolnshire	-
North Yorkshire	1
Rotherham	-
Sheffield	-
Wakefield	-

Local Authority District	Waste Facilities ¹
Total	8

Note to Table 139:

¹ Waste Facilities include inert and excavation waste transfer stations with treatment facilities with the benefit of an EA permit capacity in excess of 75,000 tonnes per annum.

- 13.5.9. There are also a number of landfill facilities within the study area which had a remaining capacity in excess of 1 million cubic metres at the end of 2014. Restricted facilities or sites accepting only inert waste (i.e. construction waste) have not been included; it is however important to note the landfill facilities included are non-hazardous and co-disposal landfill sites which will likely receive demolition and construction wastes. Table 140 provides a summary, divided by sub-region within the study area.

Table 140 - Strategic Landfill Facilities within the Study Area

Sub-region	Landfill Facilities
Humber	8
North Yorkshire	2
South Yorkshire	5
West Yorkshire	5
Total	20

SENSITIVE RECEPTORS

- 13.5.10. The following are the sensitive receptors which are considered in this PEIR and will be further considered in the ES:
- Local waste treatment and disposal facilities detailed in Tables 139 and 140 above. This includes waste treatment and recycling facilities, inert, non-hazardous and hazardous landfill sites.

13.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

- 13.6.1. A number of buildings and structures will be demolished as part of the Proposed Scheme (including as part of Site Reconfiguration Works). These are shown in Figure 3.4 with a description of each provided in the Table 141.

Table 141 - Number of buildings and structures will be demolished as part of the Proposed Scheme (including the Site Reconfiguration Works)

ID	Description
1	Contractors' (Doosan) compound – steel-framed sheds
2	Turbine Outage Store – steel-framed and clad building
3	Learning / Visitors' Centre and hard standing car park
4	Contractors' compound. Range of contractors' portable cabins used for offices, storage and mess rooms - brick built single storey welfare facility to the north of the compound. Hard standing over entire area
5	Car park – hard standing
6	Contractors' compound – steel-framed work sheds and modular office buildings
7	Modular buildings, 1 st storey welfare (canteen) facilities, 2 nd storey offices - brick built single storey washroom facilities
8	Sludge lagoons
9	Riggers' Store and Drawing Archive - steel-framed and cladding

- 13.6.2. Waste will be generated from the demolition of the buildings and structures. The specific quantities and types of demolition material have not been determined at this stage, as a pre-demolition audit will not be carried out until the buildings are unoccupied.
- 13.6.3. The intention will be to reuse as much clean excavated material onsite as possible. There will be sufficient capacity onsite to reuse clean excavated material therefore the volume of material that will require removal from the Site is not expected to be significant.
- 13.6.4. Calculations of excavated material generation from the Proposed Scheme have not yet been undertaken, therefore, it is not possible to generate a quantitative assessment of the effects of waste from earthworks at this stage.
- 13.6.5. The BRE has developed indicators to aid in the calculation of construction waste arising at the design stage of a variety of development types. These indicators do not include demolition, excavated or groundworks waste, however, the Environmental Performance Indicators (EPis) measure the tonnes of construction waste per 100 m² of Gross Internal Area (GIA) floorspace. These are outlined in Table 142.

Table 142 - BRE Waste Benchmarks

Project type	Average tonnes / 100 m ²
Residential	16.8
Public Buildings	22.4

Project type	Average tonnes / 100 m ²
Leisure	21.6
Industrial Buildings	12.6
Healthcare	12.0
Education	23.3
Commercial Offices	23.8
Commercial Retail	27.5
Commercial Other	7.0

- 13.6.6. The benchmark for Industrial Buildings, which is applicable to the Proposed Scheme, has been used to measure construction waste generation and relates to rates where no minimisation, reuse or recycling of materials has taken place. This will provide the baseline figure against which a reduction in waste arising would then be planned.
- 13.6.7. Table 143 shows the estimated construction waste arising for the Proposed Scheme, based on the indicative floor areas of the buildings and the relevant EPI from the BRE.

Table 143 - Estimated construction waste arising

Description	Total PROPOSED construction area (m ²)	Tonnes per 100 m ² (bre Benchmark)	Construction waste arising (tonnes)
Power Station Area (likely worst case of both units being repowered)	45,021	12.6	5,673
Battery Storage Area (likely worst case of both batteries being constructed)	26,367		3,322
Total	71,388	-	8,995

- 13.6.8. It is estimated that approximately 8,995 tonnes of construction waste will be generated from the Proposed Scheme. Over the duration of the construction works (expected to be two periods of 34 months), this equates to an average of approximately 1,587 tonnes per year, although this is likely to vary significantly according to the construction programme and phasing.

- 13.6.9. The sensitivity of the local waste treatment and disposal facilities is negligible as the waste generated comprises none or negligible volumes of hazardous waste, or minor volumes of non-hazardous or inert waste and local waste facilities are unrestricted (i.e. there are more than 20 facilities in the study area). The magnitude of change prior to mitigation is small, as the Proposed Scheme would generate more than 500 tonnes but less than 5,000 tonnes of waste per annum. Therefore, there is likely to be a direct, permanent, long-term effect on local waste treatment and disposal facilities of negligible significance.

13.7 MITIGATION AND ENHANCEMENT MEASURES

- 13.7.1. As there is likely to be a direct, permanent, long-term effect on local waste treatment and disposal facilities of minor negative significance, no secondary mitigation would be required.

13.8 RESIDUAL IMPACTS

- 13.8.1. As no secondary mitigation will be required, the residual effect will be as assessed in section 13 above, and is therefore likely to be a direct, permanent, long-term effect on local waste treatment and disposal facilities of negligible significance.

13.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

- 13.9.1. Information regarding current waste facilities within the study area has been obtained from third party sources.

13.10 NEXT STEPS

- 13.10.1. WSP will further develop the ES Chapter, in light of more detail and information being provided by the project team.

14 SOCIO-ECONOMICS

14.1 INTRODUCTION

- 14.1.1. This Chapter reports the preliminary assessment of effects related to socio-economics associated with the Proposed Scheme. The focus is on the preliminary assessment of direct employment, indirect employment and induced employment opportunities generated by the Proposed Scheme during the demolition and construction phases of the Proposed Scheme. This Chapter also reports the preliminary assessment of effects in relation to access and amenity value of Public Rights of Way that may be affected by the Proposed Scheme and in relation to agricultural land, reduction in soil quality and the viability of farming businesses that may be affected by the Proposed Scheme.
- 14.1.2. This Chapter describes:
- Relevant legislation, policy and guidance;
 - Potential effects of the construction phase;
 - Potential effects associated with the operation and maintenance of the Proposed Scheme, including presence of proposed structures, and on and off site mitigation.
- 14.1.3. As set out in Chapter 3, the Site Reconfiguration Works may be the subject of a separate application under the TCPA to be submitted during the course of 2018, with works anticipated either in 2018/2019 before implementation of the DCO, or at the same time the DCO is implemented. As explained in Chapter 3, the alternative is that the Site Reconfiguration Works may be consented as part of the DCO Application. As set out in Chapter 3, the EIA will assess two scenarios with regards to the Site Reconfiguration Works:
- The Site Reconfiguration Works being carried out when the DCO Application is implemented. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and not carried out until the DCO is being implemented, or a situation in which the Site Reconfiguration Works are consented by the DCO. This scenario therefore assesses the Site Reconfiguration Works as being part of the Proposed Scheme; and
 - The Site Reconfiguration Works implemented in 2018/2019 in advance of the implementation of the DCO Application. This scenario covers a situation in which the Site Reconfiguration Works are consented by a TCPA planning permission and carried out prior to the DCO being implemented. This scenario therefore treats the completed Site Reconfiguration Works as being part of the baseline (and therefore not considered as part of the assessment).
- 14.1.4. This Chapter has carried out separate assessments of effects during the demolition and construction phases and clearly identifies the effects associated with each phase. The effects identified as resulting from the demolition phase are only likely to occur as a result of the Site Reconfiguration Works being carried out when the Proposed Scheme is implemented or as part of the Proposed Scheme (i.e. the scenario in paragraph 14.1.3 above).

14.2 LEGISLATION, POLICY AND GUIDANCE

LEGISLATION

- 14.2.1. There is no relevant legislation to the consideration of socio-economic effects associated with the Proposed Scheme.

POLICY

OVERARCHING NATIONAL POLICY STATEMENT FOR ENERGY (NPS EN-1)

- 14.2.2. Paragraph 5.12.1 of NPS EN-1 recognises that the construction, operation and decommissioning of energy infrastructure may have socio-economic impacts at local and regional levels. NPS EN-1 states that where the project is likely to have such impacts, an assessment of these impacts should be included within the ES (and the PEIR). The assessment should consider all relevant socio-economics impacts, describe the socio-economic conditions in the areas surrounding the proposed development and should also refer to how the development's socio-economics impact correlate with local planning policies.
- 14.2.3. The other relevant NPSs, being the NPS for fossil fuel electricity generating infrastructure (EN-2), the NPS for gas supply infrastructure and gas and oil pipelines (EN-4) and the NPS for electricity transmission and distribution network (EN-5) are relevant to the Proposed Scheme but do not contain specific policies on socio-economics.

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

- 14.2.4. The NPPF, published in 2012, has an overarching presumption in favour of sustainable development that should be the basis of every plan and every decision. The NPPF notes at paragraph 7 that there are three dimensions to sustainable development: economic, social and environmental. The role of the planning process is to contribute to building a strong, responsive and competitive economy and to identify and coordinate development requirements, including the provision of infrastructure.
- 14.2.5. The NPPF states that planning should proactively drive and support sustainable economic development. The NPPF requires local authorities to set out a clear economic vision and strategy for their area which encourages sustainable economic growth.

Paragraph 18 states *'The Government is committed to securing economic growth in order to create jobs and prosperity, building on the country's inherent strengths...'*

Paragraph 19 states *'The Government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. Planning should operate to encourage and not act as an impediment to sustainable growth. Therefore significant weight should be placed on the need to support economic growth through the planning system'*.

Paragraph 75 states *that 'planning policies should protect and enhance public rights of way and access. Local authorities should seek opportunities to provide better facilities for users, for example by adding links to existing rights of way networks including National Trails'*.

Paragraph 109 identifies the protection and enhancement of soils as a priority in the conservation and enhancement of the natural and local environment. Paragraph 112 advises that local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land and further states that local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality. Whilst there is no policy in the NPPF on the potential effects of development on farm

holdings, paragraph 28 emphasises the need to support economic growth in rural areas to create jobs and prosperity, by, amongst other means, promoting the development and diversification of agricultural and other land-based rural businesses.

14.2.6. Planning Practice Guidance (PPG) has been published alongside the NPPF, and is regularly updated, to provide guidance on the implementation of the planning policies. The relevant parts of the PPG are as follows:

- Open space, sports and recreation facilities, public rights of way and local green space, which notes that open space, which includes all open space of public value, should be taken into account in planning for new development and considering proposals that may affect existing open space (Paragraph 004 Reference ID: 37-004-20140306).
- Natural environment, including the development of best and most versatile agricultural land (Paragraph 026, Reference: 8-026-20140306),

LOCAL PLANNING POLICY

SELBY DISTRICT COUNCIL 'SAVED POLICIES' (2005)

14.2.7. The Local Plan notes that the Selby economy has traditionally been focussed on industrialised forms of employment, such as coal mining and power generation, but that it is increasingly important to 'stimulate economic development'. It supports the creation of new employment opportunities and the retention of established employment areas.

14.2.8. The relevant saved policies are as follows:

- EMP 10 Additional Industrial Development at Drax and Eggborough Power Stations which supports the development of ancillary industrial development close to the Power Stations, in particular development to address waste products generated by operations within Drax and Eggborough.
- EMP 11 Exceptional Major Industrial and Business Development is intended to cater for major inward investment proposals that require large, strategically located sites that would otherwise have to be treated as a departure from the Development Plan.

SELBY DISTRICT COUNCIL CORE STRATEGY LOCAL PLAN (2013)

14.2.9. A key objective of the Core Strategy is to promote economic prosperity. This is highlighted as important in relation to reducing out-commuting and creating a more sustainable way of life for residents. It aims to 'cater for inward investment as well as indigenous employment growth', with emphasis on retaining existing employment sites (including Drax) in the District.

14.2.10. The Core Strategy indicates that the energy sector will continue to play an important role in the economy of the District. The Strategy recognises the role that Drax plays in the economy of the District and states that *'there is a need for further investment in energy infrastructure in line with national policy as a prominent contributor to economic prosperity' and 'supporting the energy sector will assist in reinvigorating, expanding and modernising the District's economy'.*

14.2.11. The relevant policies are as follows:

- SP 13 Economic Growth supports the development and revitalisation of the local economy.

GUIDANCE

14.2.12. The socio-economic assessment has been based on the following best practice guidance:

- Homes and Communities Agency (2014) Additionality Guidance 4th Edition; which sets out the approach and method of calculating additional benefits (e.g. indirect and induced employment) associated with a development.
- Highways England (1993) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 8, which sets out the approach and methodology for the assessment of effects on users of public rights of way;
- Highways England (2015) Peoples and Communities Interim Advice Note (unpublished), provides an update on the principles and methodology for the assessment of effects in relation to users of public rights of way; and
- Natural England (2012) Technical Information Note 049, which summarises the agricultural land classification system and states that the system is a basis for assessing how development proposals affect agricultural land within the planning system but is not the sole consideration.

14.3 SCOPING OPINION AND CONSULTATION

14.3.1. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to socio-economics, and how those requirements should be addressed by the applicant, are set out in Table 144 below:

Table 144 - Scoping Opinion Summary Table

Section	Applicants proposed matter	PINS Comments	Summary of response
7.10.2	Effects considered to be unlikely or insignificant and 'scoped out' of further assessment	Taking into account the nature and characteristics of the Proposed Development, the Inspectorate agrees that this is unlikely to result in significant effects and is therefore content with the proposed approach	Noted.
7.10.3	Consideration of change in the provision of formal recreational space	It is unclear why this potential effect will only be considered during the demolition phase and not the construction phase. This should be clarified within the ES.	Noted. Further clarification will be provided within this PEIR and the ES.
7.10.4	Data sources	The ES should identify the 'publicly available' data sources that are utilised within the assessment.	Noted. The data sources will be clearly set out within this PEIR and the ES Chapter.

Section	Applicants proposed matter	PINS Comments	Summary of response
7.10.4	Assessment methodology	The ES should provide further details on the 'Excel based analysis' which is proposed within the Scoping Report.	Noted. Further details will be provided within this PEIR and the ES Chapter.

14.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

14.4.1. The preliminary socio-economic assessment has been based on best practice guidance referred to in Section 14.2.

14.4.2. The preliminary assessment covers both the demolition and construction phases associated with the Proposed Scheme (as described in the introduction section of this PEIR).

GENERATION OF DIRECT, INDIRECT AND INDUCED EMPLOYMENT OPPORTUNITIES

14.4.3. The preliminary assessment of likely significant effects relating to employment opportunities during the demolition and construction phases has been undertaken using Microsoft excel. This information and the backing calculations will be provided as appendices to the ES. All of the data sources used are publicly available and including NOMIS and Census 2011.

14.4.4. For the purposes of this PEIR, the demolition and construction phases have been considered separately.

14.4.5. It has been assumed that during the demolition phase, there will be an average of 200 jobs generated by the demolition works comprised within the Site Reconfiguration Works and the Proposed Scheme each year. During the construction phase, it is assumed that 1,200 construction jobs will be generated by the Site Reconfiguration Works and the Proposed Scheme each year. These figures are then evaluated against the total number of employees in Industry Sector F (Construction) at the local (Selby and East Riding of Yorkshire) and regional (Yorkshire and the Humber) levels to determine the magnitude of change for both the demolition and construction phases.

14.4.6. Generation of indirect employment and induced employment opportunities associated with the demolition and construction phases have been calculated using an assumed multiplier of 1.5 on the basis that the level of multiplier effects is considered to be 'medium' as there are anticipated are to be 'average linkages' associated with the Site Reconfiguration Works and the Proposed Scheme in line with the 'ready reckoners' provided by the Additionality Guide. At this stage, it is not possible to isolate the Industry Sector where the impact may occur. Therefore, these figures have then been evaluated against the total number of employees in all Industry Sectors within the local and regional levels to determine the magnitude of change for both the demolition and construction phases as a worse-case.

14.4.7. For the purposes of this assessment, no displacement, leakage or substitution is considered associated with demolition and construction phases due to the extent of the study areas considered and that employment will only be focused in one industry sector (construction).

CHANGES IN ACCESSIBILITY AND AMENITY VALUE OF PUBLIC RIGHTS OF WAY

14.4.8. The assessment of changes to accessibility and amenity value of Public Rights of Way has been undertaken in accordance with DMRB Volume 11, Section 3, Part 8 'Pedestrians,

Cyclists, Equestrians and Community Effects’ and Peoples and Communities Interim Advice Note.

- 14.4.9. The qualitative assessment of changes to accessibility will focus on disruption to routes due to construction activities / vehicles and increases in journey length / decrease of the route /recreational resource.
- 14.4.10. The DMRB defines amenity value as the relative ‘pleasantness’ of an experience and notes a number of factors which contribute to this, including receptor’s exposure to traffic – noise, dirt and air quality – and the effect of the development itself. Noise, dirt and air quality will be dealt with elsewhere in the ES and within this PEIR (Chapters 6 Air Quality and 7 Noise and Vibration), and therefore will not be considered as part of this assessment. Chapter 10 (Landscape and Visual) also considers changes in visual amenity associated with the Site Reconfiguration Works and the Proposed Scheme; however, this is primarily focussed on a change in views / elements in views and not amenity value (defined as the ‘pleasantness’ of the experience).
- 14.4.11. The qualitative assessment of amenity value will focus on changes to fear / safety associated within the below:
- The current condition of the route / recreational resource (e.g. width of route etc.);
 - Distance of the route / recreational resource from the Site Reconfiguration Works / the Proposed Scheme;
 - The presence of any barriers between the users of the route / recreational resource and associated plant / traffic / works.

CHANGE OF USE OF BEST AND MOST VERSATILE AGRICULTURAL LAND

- 14.4.12. The assessment of changes of use of best and most versatile agricultural land has been undertaken in accordance with Natural England Technical Information Note 049. The change of use of best and most versatile agricultural land is quantitative and based on the land-take from each Grade of agricultural land.

REDUCTION IN SOIL QUALITY

- 14.4.13. The significance of effect on the soil resource is assessed according to the degree to which soils can continue to fulfil their primary functions other than food and fibre production which is encapsulated in the ALC. These other functions comprise:
- The storage, filtration and transformation of many substances and elements including water, carbon and nitrogen.
 - Support of ecological habitats and biodiversity.
 - Support for the landscape.
 - Protection of cultural heritage.
 - Providing raw materials.
 - Providing a platform for human activities, such as construction and recreation.
- 14.4.14. The sensitivity of the soil resource reflects its textural characteristics and its susceptibility to smearing and compaction. The least sensitive soils are those with a high sand fraction (sands, loamy sands and sandy loams); the most sensitive are those with a high clay and silt fraction (clay, silty clays, heavy clay loams and heavy silty clay loams); with medium textured clay loams being of medium sensitivity. The magnitude of change mirrors that of agricultural land quality and the continued ability of a soil to fulfil its primary functions.

LOSS OF THE USE OF AGRICULTURAL LAND AFFECTING FARM BUSINESSES

- 14.4.15. The effects on farm holdings relate primarily to the loss of land and other key farm infrastructure (dwellings, buildings and other structures such as irrigation reservoirs and slurry pits) and the fragmentation of land from the residually farmed area.
- 14.4.16. The baseline data used to inform the assessment within the ES will be based on interviews / surveys undertaken with landowners.
- 14.4.17. The sensitivity of farm holdings is determined by the extent to which they have the capacity to absorb or adapt to effects, which will be determined primarily by their nature and scale. In general terms, larger farm holdings will have a greater capacity to absorb effects and will be less sensitive. Farm types where there is a degree of flexibility in the normal course of operations, such as combinable arable enterprises and grazing livestock farms, will be less sensitive than those where the operation of the enterprise is dependent on the relationship with key infrastructure, such as dairying, field-scale horticulture and intensive livestock or horticultural production.

ASSUMPTIONS

- 14.4.18. The following assumptions have been made in relation to this preliminary assessment:
- In terms of the assessment scenarios set out in Chapter 3, this assessment assumes:
 - The Site Reconfiguration Works will be carried out as part of the Proposed Scheme (as noted above), and in this chapter those works are assessed as a separate "demolition phase".
 - Repowering of both units (although note, the effects of repowering of one unit will be assessed in the ES to ensure a worst case is assessed in terms of generation of employment opportunities).
 - In terms of the gas pipeline route, effects to the entire Pipeline Study Area have been assessed (in terms of impacts to agricultural land and soil). Other effects have been assessed on the basis of one pipeline route, however the effects are the same for both scenarios.
 - In terms of the use of construction transport, electrical connection and air quality mitigation, the assessment is the same for both scenarios in each case.
 - A construction period of approximately 34 months per unit followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme (although, as noted above, the ES will include an assessment of the construction period for one unit only, to ensure a worst case is assessed in terms of generation of employment).
 - Whilst limited elements of the demolition and construction phases will require the employment of specialist contractors, it is assumed that the majority of direct employment, indirect employment and induced employment opportunities will be made available to employees in Selby District and the East Riding of Yorkshire as well as the wider region (Yorkshire and the Humber). Therefore, the majority of construction workers will reside within their current locations.
 - It is assumed that site security arrangements for the areas of the Proposed Scheme outside of the Existing Drax Power Station Complex will be in line with the requirements

set out in the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided. In addition, it is anticipated that the Proposed Scheme will be designed to incorporate the 'Secure by Design' principles and liaison will be undertaken with the Police Architectural Liaison Officer at the detailed design stage. Furthermore, appropriate levels of security (personnel / CCTV) will be implemented during the operational phase.

- Once operational, there is unlikely to be a significant increase in the number of employees at the Drax Power Station.
- Whilst temporary closure of the roads surrounding the Site may be required for health and safety purposes during the demolition and construction periods, there is not anticipated to be a significant reduction in footfall due to the location of the Site (i.e. situated away from settlements) and continuing access across the surrounding area via other routes. As such, it is not considered that disruption to local businesses due to a reduction in footfall in the locality during the demolition and construction phases will result from the Site Reconfiguration Works and the Proposed Scheme.
- There is a squash court within the Existing Drax Power Station Complex, which will be demolished and permanently removed. However, this is only for private use (i.e. employees of Drax) and is currently in limited use.
- It is assumed that all works will be undertaken in accordance with relevant health and safety legislation (e.g. the Health and Safety at Work Act 1974).
- It is assumed that 200 jobs will be generated each year during the demolition phase and 1,200 jobs will be generated each year during the construction phase.
- It is assumed that there will be a temporary loss of agricultural land during the construction phase, primarily within the Pipeline Study Area but also as part of the Proposed Scheme.

SIGNIFICANCE CRITERIA

14.4.19. The assessment considered best practice and primary mitigation measures (as set out above under "Assumptions") as built into the design. The assessment is, therefore, based on those measures being in place.

14.4.20. The assessment will be based on the following:

- The sensitivity of the socio-economic receptors.
- The magnitude of change.
- Significance of effect based on an evaluation of the sensitivity of the resource / receptor against the magnitude of change.

SENSITIVITY

14.4.21. Sensitivity is the extent to which the resource or receptor can accept a change associated with the Proposed Scheme.

14.4.22. For the purposes of this preliminary assessment, the following receptors have been identified:

- 'Economic receptors' (i.e. individuals of working age) at both the local and regional study areas
- 'Community receptors' (i.e. non-motorised users (pedestrian, cyclists and equestrians) of the Public Rights of Way)
- Best and most versatile agricultural land
- Soil resources

→ Farm holdings.

14.4.23. The sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible.

14.4.24. Determining the sensitivity of a socio-economic receptor is based upon the baseline conditions. The criteria for sensitivity of socio-economic receptors are outlined in Table 145.

Table 145 - Criteria for sensitivity

Sensitivity	Criteria
High	Areas with levels of considerable unemployment well in excess of the national/regional averages and level of relative deprivation (top 10%). PRoW frequently used by non-motorised users (NMU) (including pedestrians and cyclists) for commuting, recreational and leisure purposes (e.g. National Trails). Also for use by vulnerable travellers (e.g. elderly, school children and people with disabilities). Grade 1, excellent quality agricultural land Farm types in which the operation of the enterprise is dependent on the spatial relationship of land to key infrastructure, and where there is a requirement for frequent and regular access between the two, or dependent on the existence of the infrastructure itself, e.g. dairying, irrigated arable cropping and field-scale horticulture, and intensive livestock or horticultural production.
Medium	Areas with levels of unemployment above the national/regional averages and level of relative deprivation (top 50%). PRoW moderately used by NMU for commuting, recreational and leisure purposes (e.g. regional trails). Grade 2 and Subgrade 3a, very good to good quality agricultural land Farm types in which there is a degree of flexibility in the normal course of operations, e.g.: combinable arable farms and grazing livestock farms (other than dairying).
Low	Areas with levels of unemployment in line with national/regional averages and level of relative deprivation (bottom 50%). PRoW sometimes used by NMU for recreational / leisure purposes (e.g. local routes). Subgrade 3b and Grade 4, moderate to poor quality agricultural land Isolated land areas rented or contracted out
Negligible	Areas of very limited unemployment (well below the national/regional averages) and level of relative deprivation (bottom 50%). PRoW not / infrequently used by NMU for recreational purposes. Grade 5, very poor quality agricultural land Isolated non-commercial land uses.

MAGNITUDE OF CHANGE

14.4.25. The magnitude of change affecting the socio-economic receptor depends on the nature, scale and duration of a particular change that is expected to occur. Factors taken into account include:

- Reversible or irreversible.
- Permanent or temporary (short (up to 1 year), medium (1-10 years) or long term (10 years +)).

14.4.26. Magnitude of change is the scale and the extent of change anticipated to be experienced by the receptor due to the Proposed Scheme. The magnitude of change is assessed on a scale of large, medium, small and negligible. The criteria for magnitude of change are outlined in Table 146.

Table 146 - Criteria for magnitude of change

Magnitude of change	Criteria
Large	Permanent / temporary greater than 5% increase/decrease on existing baseline levels of employment. Permanent loss / severance of an existing recreational route used by NMU / considerable change in amenity value. 50 ha or more of agricultural land is affected by the Proposed Scheme Loss of 20% or more of all land farmed / no access available to severed land / direct loss of farm dwelling, building or structure
Medium	Permanent / temporary 1% - 5% increase/decrease on baseline levels of employment. Disruption of a recreational route used by NMU with significant increase / decrease in journey length / time / or moderate change in amenity value. Between 20 and 50 ha of agricultural land is affected by the Proposed Scheme Between 10% and less than 20% of all land farmed / access available to severed land via the public highway / loss of / damage to infrastructure affecting land use
Small	Permanent / temporary 0.01 – 0.9 % increase/decrease on existing baseline levels of employment. Alteration of a recreational route used by NMU but with no significant increase in journey or minor change in amenity value. Between 5 and 20 ha of agricultural land is affected by the Proposed Scheme Between 5% and less than 10% of all land farmed / access available to severed land via private way / infrastructure loss / damage does not affect land use
Negligible	Permanent / temporary Less than 0.01% increase/decrease on existing baseline levels of employment.

Magnitude of change	Criteria
	No change to recreational route used by NMU or change in amenity value. Less than 5 ha of agricultural land is affected by the Proposed Scheme Less than 5% of all land farmed / no new severance / no effect on farm infrastructure

14.4.27. The matrix used to determine the significance of effects based on sensitivity of the receptor and magnitude of change is provided in Table 147.

Table 147 - Matrix for Determining Significance of Effect

		Sensitivity (value / importance)			
		High	Medium	Low	Negligible
Magnitude of change	Large	Major	Moderate – Major	Minor – Moderate	Negligible
	Medium	Moderate – Major	Moderate	Minor	Negligible
	Small	Minor – Moderate	Minor	Negligible – Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

14.4.28. Where a range has been provided in Table 147, professional judgement will be used to define the significance.

SIGNIFICANCE

14.4.29. The following terms will be used to define the significance of the effects identified:

- Major effect: where the Proposed Scheme could be expected to have a considerable effect (either positive or negative) on socio-economic receptors.
- Moderate effect: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on socio-economic receptors.
- Minor effect: where the Proposed Scheme could be expected to result in a small, barely noticeable effect (either positive or negative) on socio-economic receptors.
- Negligible: where no discernible effect is expected as a result of the Proposed Scheme on socio-economic receptors.

SCOPE OF ASSESSMENT

14.4.30. The scope of likely significant environmental effects and insignificant effects outlined below is consistent with those identified in the Scoping Report, developed with the benefit of preliminary assessment.

INSIGNIFICANT EFFECTS

14.4.31. The following socio-economics effects are not considered to be significant and therefore will not be considered further. These effects and the associated technical evidence base has been updated and / or revised since that set out in the applicant's Scoping Report and confirmed by PINS in its Scoping Opinion:

- Whilst limited elements of the demolition and construction phases will require the employment of specialist contractors, it is assumed that the majority of direct employment, indirect employment and induced employment opportunities will be made available to employees in Selby District and the East Riding of Yorkshire as well as the wider region (Yorkshire and the Humber). Given the majority of construction workers will reside within their current locations, there is unlikely to be a significant increase in demand for educational and healthcare services, community facilities (including recreational / open space) and accommodation local to the Site due to construction workers. Therefore, this will not be considered further within the PEIR nor the ES.
- Part of the Site is already an existing power station site, with appropriate security measures (e.g. security guards and checkpoints installed). It is also assumed that site security arrangements for the areas of the Proposed Scheme outside of the Existing Drax Power Station Complex will be in line with the requirements set out in the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided. In addition, it is anticipated that the Proposed Scheme will be designed to incorporate the 'Secure by Design' principles and liaison will be undertaken with the Police Architectural Liaison Officer at the detailed design stage. Furthermore, appropriate levels of security (personnel / CCTV) will be implemented during the operational phase. Therefore, there is unlikely to be significant effects in relation to crime and will not be considered further within the PEIR nor the ES.
- The Proposed Scheme is commercial / industrial in nature. Once operational, there is unlikely to be a significant increase in the number of employees at the Drax Power Station. Therefore, there is unlikely to be a significant increase in the demand for community infrastructure (education and healthcare facilities) or the availability of open space and this is will not considered further within the PEIR nor the ES.
- Whilst temporary closure of the roads surrounding the Site may be required for health and safety purposes during the demolition and construction periods, there is not anticipated to be a significant reduction in footfall due to the location of the Site (i.e. situated away from settlements) and continuing access across the surrounding area via other routes. As such, it is not considered that disruption to local businesses due to a reduction in footfall in the locality during the demolition and construction phases will result from the Proposed Scheme. Therefore, this will not be considered further within the PEIR nor the ES.
- There is a squash court within the Existing Drax Power Station Complex, which will be demolished and permanently removed as part of the Site Reconfiguration Works / Proposed Scheme. However, this is only for private use (i.e. employees of Drax) and is currently in limited use. In addition, given the Site is adjacent and within the Existing Drax Power Station Complex, there is unlikely to be a significant effect in relation to a reduction in leisure uses or tourism in the local area (such as Drax Club). It is not anticipated that there would be any significant permanent changes to access to leisure / recreational resources within the surrounding area (e.g. Selby) due to traffic movements along the highway network. As such, this will not be considered further within the PEIR nor the ES.

- During operation, it is assumed that the Public Rights of Way will be reopened along their existing alignment, aside from a short section which would be realigned should the CCS be implemented. As such, no significant changes in terms of accessibility and amenity value are anticipated during the operational phase.
- It is assumed that all works will be undertaken in accordance with relevant health and safety legislation (e.g. the Health and Safety at Work Act 1974). Given this, there is unlikely to be any significant effects in relation to health and safety and this will not be considered further within the PEIR nor the ES.
- During the operational phase, there is not anticipated to be a significant change in the number of employees on-site. Therefore, employment related effects during operation are not considered to be significant and will not be considered further within the PEIR nor the ES.
- The potential for disturbance, disruption and reduction in amenity of residents during demolition and construction phases will be considered in Chapter 6 - Traffic and Transport, Chapter 7 - Noise and Vibration, Chapter 8 - Air Quality and Chapter 9 - Landscape and Visual, as appropriate.
- Effects in relation to health will be considered, as appropriate, within Chapter 6 – Noise and Vibration, Chapter 8 – Air Quality, Chapter 12 – Water Quality, Resource and Hydrology and Chapter 13 - Ground Conditions and Contamination.
- Effects in relation to quality of surroundings and sense of place will be considered, where appropriate within Chapter 9 – Landscape and Visual and Chapter 10 – Cultural Heritage.
- Effects in relation to severance and delay will be addressed, where appropriate, with Chapter 6 – Traffic and Transport.

LIKELY SIGNIFICANT EFFECTS

14.4.32. The scoping report identified the following likely significant effects of the Proposed Scheme associated with the demolition and construction phases:

- Generation of direct employment opportunities.
- Generation of indirect and induced employment opportunities associated with spending in the local economy by contractors and contracts placed with suppliers;
- Changes in accessibility and amenity value of Public Rights of Way during demolition and construction phases.
- Change in the use of best and most versatile agricultural land;
- Reduction in soil quality; and
- Loss of the use of agricultural land affecting farm businesses.

BASELINE APPRAISAL

14.4.33. A desktop review of the following publicly available information has been undertaken to determine the baseline conditions in the study areas:

- Census, 2011.
- Office for National Statistics (ONS) NOMIS.
- Selby District Council Economic Profile.
- East Riding of Yorkshire Local Economic Assessment.
- North Yorkshire County Council Public Rights of Way Interactive Map.
- Multi- Agency Geographic Information Committee (MAGIC) website.

EXTENT OF STUDY AREA:

GENERATION OF DIRECT, INDIRECT AND INDUCED EMPLOYMENT OPPORTUNITIES

- 14.4.34. The Homes and Communities Agency (2014) Additionality Guide advises that ‘local level for projects that generate employment effects or other economic benefits is often considered to be within the relevant travel to work area’. Aside from various works to highways the Site is located within Selby District, but as it is located in such close proximity to East Riding employees during both the demolition and construction phases could be drawn from both Local Authority areas. As such, it is considered appropriate to assume that the ‘local level’ comprises Selby District and the East Riding of Yorkshire combined.
- 14.4.35. Given the scale of the Proposed Scheme, strong transport connections, economic linkages and travel to work patterns, the employment effects of the Proposed Scheme are considered to extend beyond Selby and the East Riding. Based on the travel to work information identified in the Census 2011, a larger number of workers travel throughout the region. As such, the ‘regional level’ has been set as the whole of Yorkshire and the Humber.
- 14.4.36. Statistics for England / Great Britain / UK have been provided within the baseline for context but will not be utilised within this PEIR nor the ES.

CHANGE IN AMENITY VALUE OF PUBLIC RIGHTS OF WAY

- 14.4.37. A 500m study area around the Site Boundary has been used for the assessment of effects on amenity value of recreational routes. It is considered that is a suitable area within which there is likelihood of receptors to be affected by the Proposed Scheme.

CHANGE OF USE OF BEST AND MOST VERSATILE AGRICULTURAL LAND

- 14.4.38. The study area is restricted to the area within the Site Boundary for the change of use of best and most versatile agricultural land.

REDUCTION IN SOIL QUALITY

- 14.4.39. The study area is restricted to the area within the Site Boundary for the reduction in soil quality.

LOSS OF THE USE OF AGRICULTURAL LAND AFFECTING FARM BUSINESSES

- 14.4.40. The study area is restricted to the area within the Site Boundary for the change of use of agricultural land affecting farm businesses.

14.5 BASELINE CONDITIONS

POPULATION

- 14.5.1. The 2016 ONS population estimate for Selby was 86,700, whilst the East Riding of Yorkshire was 337,700.
- 14.5.2. The 2016 estimates for proportion of individuals aged 16 – 64 in Selby, East Riding of Yorkshire, Yorkshire and Humber region and Great Britain are presented in Table 148.

Table 148 - Summary of Population Aged 16- 64

Area	Percentage of population aged 16-64 (%)
Selby District Council administrative area	61.8
East Riding of Yorkshire Council administrative area	58.7

Area	Percentage of population aged 16-64 (%)
Yorkshire and the Humber region	62.8
Great Britain	63.1

Source: ONS, NOMIS

- 14.5.3. Table 148 shows that there is a higher proportion of individuals aged 16-64 in Selby (61.8%) compared with the East Riding of Yorkshire (58.7%). The average across both Selby and East Riding of Yorkshire is lower than the proportion of individuals across the Yorkshire and the Humber region (62.8%) and the average across Great Britain as a whole (63.1%).

DEPRIVATION

- 14.5.4. The Indices of Multiple Deprivation 2015⁸⁰ use a combination of information relating to income, employment, education, health, skills and training, barrier to housing and services, and crime to create an overall score of deprivation. These scores are then used to rank specific geographical extents. A low rank indicates greater, relative deprivation; hence the most deprived area is ranked 1.
- 14.5.5. Selby was ranked 245 in England out of 326 local authorities and, as such, was in the top 50% least deprived areas with only one of its Lower Super Output Areas (LSOAs) within the top 10% most deprived across England. The East Riding of Yorkshire was ranked 215 and, as such, was in the top 50% least deprived areas, within only 13 of its LSOAs within the top 10% most deprived across England (out of a total of 34,753 LSOAs across England). Within the vicinity of the Site, there are pockets of deprivation within Selby to the north-west and Goole to the south-east.

EMPLOYMENT

- 14.5.6. There are 932 direct employee jobs associated with the current operations within the Existing Drax Power Station Complex based in the Yorkshire and the Humber region (Oxford Economics). For the purposes of this assessment, it is assumed that there is no significant employment associated with the gas pipeline routes given these traverse currently agricultural land.
- 14.5.7. According to NOMIS job density level in 2015 (i.e. the ratio of jobs available to each member of the resident population aged between 16 and 64) is 0.73 in Selby (i.e. there is 0.73 jobs available for each member of Selby's residence population aged between 16-64). The jobs density across the East Riding is 0.69, which is lower than Selby. The jobs density in Selby and the East Riding is lower compared with the Yorkshire and the Humber regional average (0.79) and Great Britain (0.83).
- 14.5.8. NOMIS states that the estimated total number of employees in Selby was 39,000 and in East Riding of Yorkshire was 123,000 in 2016. The combined total number of employees across Selby and East Riding of Yorkshire is 162,000. The estimated number of employee jobs across the Yorkshire and Humber region was approximately 2,700,000 in 2016.

⁸⁰ <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>

14.5.9. Table 149 provides a summary of employment and unemployment across Selby, East Riding of Yorkshire, Yorkshire and the Humber region and Great Britain in 2016.

Table 149 - Summary of Employment and Unemployment (2016)

Economic activity by group	Selby (%)	East riding of Yorkshire (%)	Yorkshire and the Humber (%)	Great Britain (%)
Percentage of people of working age classified as Economically Active	87.0	80.6	76.5	77.8
In Employment (as proportion of individuals classified as 'Economically active')	83.7	77.5	72.4	74.04
Employees (as proportion of individuals classified as 'In Employment')	76.8	66.6	62.4	63.0
Self Employed (as proportion of individuals classified as 'In Employment')	#	10.6	9.5	10.6
Unemployed (model-based)	3.8	3.8	5.2	4.8

Source: ONS⁸¹, NOMIS⁸²

Sample size too small for reliable estimate

14.5.10. As shown in Table 149, there was a higher proportion of individuals classified as 'Economically Active' (i.e. the part of the population that is either employed or actively seeking employment) in Selby (87.0%) compared to the East Riding of Yorkshire (80.6%). Across Selby and the East Riding, the proportion of individuals classified as 'Economically Active' is higher compared to in the Yorkshire and the Humber region (76.5%) and Great Britain as a whole (77.8%). The proportion of the population classified as 'Unemployed' is the same in Selby and the East Riding, which is lower than the regional (5.2%) and national (4.8%) averages.

⁸¹ <https://www.ons.gov.uk/>

⁸² <https://www.nomisweb.co.uk/>

14.5.11. Table 150 provides a summary of economic inactivity across Selby, East Riding of Yorkshire, Yorkshire and the Humber region and Great Britain in 2016.

Table 150 - Summary of Economic Inactivity (2016)

	Selby (%)	East riding of Yorkshire (%)	Yorkshire and the Humber (%)	Great Britain (%)
Percentage of people of working age classified as Economically Inactive	13.0	19.4	23.5	22.2
Student*	#	18.6	25.2	26.3
Looking after family / home*	!	22.4	26.2	24.7
Temporary sick*	!	!	1.7	2.0
Long-term sick*	#	14.9	23.3	22.3
Discouraged*	!	!	#	0.4
Retired*	#	30.2	14.6	13.3
Other*	!	12.0	9.6	10.9

Source: ONS, NOMIS

Notes to Table 6:

* Out of proportion of people of working age classified as 'Economically Inactive.

sample size is too small for reliable estimate.

! estimate is not available since size is disclosive.

14.5.12. As outlined in Table 150, the total proportion of working age individuals who are classified as 'Economically Inactive' is lower in Selby (13.0%) compared with the East Riding (19.4%). The total proportion of individuals of working age classified as 'Economically Inactive' across Selby and the East Riding of Yorkshire is lower than the Yorkshire and the Humber region (23.5%) and Great Britain (22.2%).

ECONOMY

14.5.13. The major industries in Selby include manufacturing and distribution, public sector and agriculture. The major industries in the East Riding are wholesale and retail trades, manufacturing, education and human health and social work activities.

14.5.14. Table 151 provides an overview of the estimated employees by industry sector in 2016.

Table 151 - Overview of estimated employee jobs by industry sector (2016)

Employee jobs by industry	Selby (%)	East riding of Yorkshire (%)	Yorkshire and the Humber (%)	Great Britain (%)
B: Mining and quarrying	0.5	0.7	0.1	0.2
C: Manufacturing	17.1	13.0	10.3	8.1
D: Electricity, gas, steam and air conditioning supply	2.9	0.3	0.4	0.4
E: Water supply; sewerage, waste management and remediation activities	1.7	0.5	0.7	0.7
F: Construction	5.0	4.9	4.8	4.6
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	11.4	16.3	16.2	15.3
H: Transportation and storage	12.9	6.5	5.4	4.9
I: Accommodation and food service activities	5.0	7.3	6.2	7.5
J: Information and communication	2.6	2.4	2.7	4.2
K: Financial and insurance activities	0.6	0.8	2.9	3.6
L: Real estate activities	0.9	1.2	1.3	1.6
M: Professional, scientific and technical activities	8.6	5.7	6.5	8.6
N: Administrative and support service activities	7.1	5.7	9.0	9.0
O: Public administration and defence; compulsory social security	1.4	7.3	4.3	4.3
P: Education	10.0	8.1	10.0	8.9
Q: Human health and social work activities	7.1	13.8	14.5	13.3
R: Arts, entertainment and recreation	1.3	2.0	2.4	2.5
S: Other service activities	1.3	1.8	1.8	2.1

Source: ONS, NOMIS

- 14.5.15. As shown in Table 146, in Selby and the East Riding, Services (Sectors G – S) is the largest employment sector, accounting for 72.8% and 80.6% of employee jobs respectively. There is a higher percentage of individuals employed in Electricity, Gas, Steam and Air Conditioning Supply (Sector D) in Selby (2.9%) compared with East Riding of Yorkshire (0.3%) and the regional and national averages (0.4%). The proportion of individuals employed within Construction (Sector F) is similar in Selby (5.0%) and the East Riding

(4.9%), which is higher than the averages across the Yorkshire and Humber region (4.8%) and Great Britain (4.6%).

"DO NOTHING" SCENARIO

- 14.5.16. In the absence of the Proposed Scheme (i.e. not re-powering), then it is possible that the existing coal fired units are taken off stream by 2025. In this scenario, there is anticipated to be a reduction in the operational employment at the Existing Drax Power Station Complex.

PUBLIC RIGHTS OF WAY

- 14.5.17. There are no National Trails or Sustrans Route within the Site or surrounding 500m study area. The North Yorkshire County Council 'Public Rights of Way Map' shows that there are 18 PROWs that cross the Site; Footpath 35.47/1/2, which crosses across the north of the Site from Carr Lane; Footpath 35.47/4/1, Footpath 35.26/5/2, Footpath 35.26/15/1; Footpath 35.26/5/1; Footpath 35.47/5/2, Footpath 35.47/9/1, Footpath 35.47/5/1 and Footpath 35.26/5/3 to the south of Carr Lane and north of Drax village; Footpath 35.47/6/1, Footpath 35.47/8/1 and Footpath 35.47/1/1 to the north of Drax Power Station; Footpath 35.26/7/1, Footpath 35.49/3/1, Footpath 35.49/2/2, Footpath 35.49/1/1, Footpath 35.26/14/1, Footpath 35.49/8/1 and Footpath 35.49/7/1 to the east of Drax village. These footpaths are shown in Figure 3.1c. In addition to the PROWs, there are a number of other non-designated public routes within the Site and study area, including along the existing local road network and footways alongside the roads within Drax.
- 14.5.18. The existing PROW infrastructure and amenity for pedestrian / cyclist movements to / from the Site is considered to be of mixed quality and amenity value, depending on a number of factors, including the condition of the routes (e.g. surfaced or unsurfaced).

AGRICULTURAL LAND QUALITY

- 14.5.19. The Site comprises approximately 222 ha of land, both within the Existing Drax Power Station Complex, and to its east, where two routes for the gas pipeline are currently being considered. The Site Boundary currently includes two main areas: The Power Station Site and the Pipeline Study Area. The Power Station Site is predominantly land within the curtilage of the Existing Drax Power Station Complex. It includes the jetty, and land required for all works other than the pipeline and is approximately 60 ha. The Pipeline Study Area is all land along the two routes of the proposed new gas supply pipeline locations. The Pipeline Study Area, under consideration for the pipeline, currently comprises approximately 162 ha.
- 14.5.20. The Power Station Site lies approximately 6 m Above Ordnance Datum (AOD). Lower elevations are present to the east of the Power Station Site, and within the Pipeline Study Area, associated with the floodplains of the River Aire and River Ouse. Within the wider surrounding area, the topography remains generally low-lying at a similar elevation to the Power Station Site.
- 14.5.21. The ALC survey undertaken on behalf of MAFF shows that, of the agricultural land on the Site, approximately 59 ha is excellent quality land within Grade 1 and approximately 142 ha is good quality land in Grade 2 and 1 ha undifferentiated Grade 3. All of the land classified as Grade 1 is situated within the Pipeline Study Area. However, further survey work will be undertaken which will determine the grade of the land and the extent of change associated with the Proposed Scheme.

SOIL RESOURCES

14.5.22. The majority of the study area (including Areas A-F and H) is underlain by the Hemingbrough Glaciolacustrine Formation (glacigenic silty clay) and the Brighton Sand Formation (fluvial and aeolian sands). These units were formed up to two million years ago in the Quaternary Period in a local environment characterised by ice age conditions. Stratigraphical information published by the BGS indicates the Hemingbrough Glaciolacustrine Formation is older than and therefore underlies the Brighton Sand Formation where it is present.

14.5.23. Soilscape identifies the following soil types within the study area:

- 18 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils;
- 15 - Naturally wet very acid sandy and loamy soils;
- 21 - Loamy and clayey soils of coastal flats with naturally high groundwater; and
- 20 - Loamy and clayey floodplain soils with naturally high groundwater.

FARM HOLDINGS

14.5.24. At this stage, there is a potential impact on farm holdings within the Site. However, further survey work (e.g. farmer interviews) will be undertaken to ascertain the nature, scale and duration of this impact.

14.6 PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS DEMOLITION PHASE

GENERATION OF DIRECT EMPLOYMENT OPPORTUNITIES

- 14.6.1. Spending during the Site Reconfiguration Works (if carried out as part of the Proposed Scheme), will generate new direct employment opportunities. There is assumed to be an average of 200 jobs generated each year across the demolition phase. For the purposes of this assessment, these jobs are assumed to be created both at the local level (e.g. Selby and the East Riding) and the regional level (e.g. Yorkshire and the Humber region).
- 14.6.2. The total number of employee jobs estimated within the local study area is approximately 162,000 as of 2016. Within Selby 5.0% and 4.9% in the East Riding of Yorkshire were employed in Sector F (Construction) as of 2016, which equates to approximately 7,750 employees. Based on the assumption that an average of 200 jobs will be generated each year, this represents approximately 2.5% of the employee jobs in Sector F (Construction) at the local level.
- 14.6.3. The sensitivity of economic receptors at the local level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, temporary, medium-term effect on economic receptors at the local level of minor to moderate positive significance.
- 14.6.4. The total number of employee jobs estimated at the regional level (Yorkshire and the Humber) was 2,700,000 as of 2016. Given the individuals employed in Sector F (Construction) account for 6.7% of these jobs, this equates to approximately 181,000 employees. Based on the assumption that an average of 200 jobs will be generated each year, this represents 0.11% of the employee jobs in Sector F (Construction) at the regional level.

- 14.6.5. The sensitivity of economic receptors at the local level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be low. Therefore, there is likely to be a direct, temporary, medium-term effect on economic receptors at the regional level of negligible to minor positive significance, if Site Reconfiguration Works are carried out as part of the Proposed Scheme.

GENERATION OF INDIRECT AND INDUCED EMPLOYMENT OPPORTUNITIES ASSOCIATED WITH SPENDING IN THE LOCAL ECONOMY BY CONTRACTORS AND CONTRACTS PLACED WITH SUPPLIERS

- 14.6.6. Demolition phase activities (in the scenario where the Site Reconfiguration Works are part of the Proposed Scheme) will lead to an increase in spending in the local economy by contractors. Such multiplier effects are anticipated both in terms of the sourcing of local supplies (indirect employment across wider supply chains) and local spend by on-site workers (induced employment) within and outside of their working hours.
- 14.6.7. The multiplier for indirect and induced employment opportunities during the demolition phase is 1.5. Based on the 200 direct jobs per year, it is anticipated that there will be 100 additional indirect and induced jobs generated by the Proposed Scheme.
- 14.6.8. It is not possible to isolate the Industry Sector where the impact may occur. As such, it is anticipated that indirect and induced employment associated with the demolition phase could have an influence across all Industry Sectors. The total number of employees across all Industry Sectors at the local level is 162,000. Based on an evaluation against the total employee jobs available in the local area across all Industry Sectors (162,000), the number of indirect and induced opportunities represents 0.06% of total jobs at the local level.
- 14.6.9. The sensitivity of economic receptors at the local level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be low. Therefore, there is likely to be an indirect, temporary, medium-term effect on economic receptors at the local level of negligible to minor positive significance, if Site Reconfiguration Works are carried out as part of the Proposed Scheme.
- 14.6.10. As outlined above, the multiplier for indirect and induced employment opportunities during the demolition phase is 1.5. Therefore, it is anticipated that there will be 100 indirect / induced jobs generated by the Proposed Scheme. Based on an evaluation against the total employee jobs available in the regional area (2,700,000), across all Industry Sectors, the number of indirect and induced opportunities represents 0.004% of total jobs at the regional level.
- 14.6.11. The sensitivity of economic receptors at the regional level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be low. Therefore, there is likely to be an indirect, temporary, medium-term effect on economic receptors at the regional level of negligible to minor positive significance, if Site Reconfiguration Works are carried out as part of the Proposed Scheme.

CONSTRUCTION PHASE

GENERATION OF DIRECT EMPLOYMENT OPPORTUNITIES

- 14.6.12. Spending during the construction phase will generate new direct employment opportunities. There is assumed to be an average of 1,200 full time jobs generated each year across the construction phase. For the purposes of this assessment, these jobs are assumed to be created both at the local level (e.g. Selby and the East Riding) and the regional level (e.g. Yorkshire and the Humber region). The same effect is assessed for its significance at a local and regional level.
- 14.6.13. The total number of employee jobs estimated within the local study area is approximately 162,000 as of 2016. Within Selby 5.0% and 4.9% in the East Riding of Yorkshire were employed in Sector F (Construction) as of 2016, which equates to approximately 7,750 employees. Based on the assumption that an average of 1,200 jobs will be generated each year, this represents approximately 15% of the employee jobs in Sector F (Construction) at the local level.
- 14.6.14. The sensitivity of economic receptors at the local level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be large. Therefore, there is likely to be a direct, temporary, medium-term effect on economic receptors at the local level of minor to moderate positive significance.
- 14.6.15. The total number of employee jobs estimated at the regional level (Yorkshire and the Humber) was 2,700,000 as of 2016. Given the individuals employed in Sector F (Construction) account for 6.7% of these jobs, this equates to approximately 181,000 employees. Based on the assumption that an average of 1,200 jobs will be generated each year, this represents 0.66% of the employee jobs in Sector F (Construction) at the regional level.
- 14.6.16. The sensitivity of economic receptors at the regional level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, temporary, medium-term effect on economic receptors at the regional level of negligible to minor positive significance.

GENERATION OF INDIRECT AND INDUCED EMPLOYMENT OPPORTUNITIES ASSOCIATED WITH SPENDING IN THE LOCAL ECONOMY BY CONTRACTORS AND CONTRACTS PLACED WITH SUPPLIERS

- 14.6.17. Construction phase activities will lead to an increase in spending in the local economy by contractors. Such multiplier effects are anticipated both in terms of the sourcing of local supplies (indirect employment across wider supply chains) and local spend by on-site workers (induced employment) within and outside of their working hours.
- 14.6.18. The multiplier for indirect and induced employment opportunities during the construction phase is 1.5. Based on the 1,200 direct jobs per year, it is anticipated that the gross number of direct, indirect and induced jobs will be 1,800. As such, by deducting the number of direct jobs (1,200), it is anticipated that there will be 600 additional indirect and induced jobs generated by the Proposed Scheme.
- 14.6.19. It is not possible to isolate the Industry Sector where the impact may occur. As such, it is anticipated that indirect and induced employment associated with the construction

phase could have an influence across all Industry Sectors. The total number of employees across all Industry Sectors at the local level is 162,000. Based on an evaluation against the total employee jobs available in the local area across all Industry Sectors (162,000), the number of indirect and induced opportunities represents 0.37% of total jobs at the local level.

14.6.20. The sensitivity of economic receptors at the local level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be small. Therefore, there is likely to be an indirect, temporary, medium-term effect on economic receptors at the local level of negligible to minor positive significance.

14.6.21. As outlined above, the multiplier for indirect and induced employment opportunities during the construction phase is 1.5. Therefore, it is anticipated that there will be 600 indirect / induced jobs generated by the Proposed Scheme. Based on an evaluation against the total employee jobs available in the regional area (2,700,000), across all Industry Sectors, the number of indirect and induced opportunities represents 0.02% of total jobs at the regional level.

14.6.22. The sensitivity of economic receptors at the regional level is considered to be low due to the levels of unemployment (which is below the national average) and levels of relative deprivation. The magnitude of change is considered to be small. Therefore, there is likely to be an indirect, temporary, medium-term effect on economic receptors at the regional level of negligible to minor positive significance.

CHANGE IN ACCESSIBILITY AND AMENITY VALUE OF PUBLIC RIGHTS OF WAY

14.6.23. There are 18 PRoWs and a number of other non-designated public routes within and in close proximity to the Site. The location of these routes is shown on Figure 3.1c.

14.6.24. During the construction phase, the users of the majority of the PRoW and non-designated public routes within the study area will not experience a noticeable change due to the implementation of the Proposed Scheme, particularly those within Drax village. However, at the outset of this stage, it is anticipated that all of the PRoW and non-designated public routes within the Site will need to be temporarily closed for health and safety purposes. It is also anticipated that Footpath 35.47/6/1 will also be closed and diverted during this phase. As such, non-motorised users of these routes will experience disruption to their journeys and an increase in journey length / time.

14.6.25. There will also be an increase in plant and equipment within the Site associated with activities during this stage. In addition, there are anticipated to be changes in the land use within the Site due to the site preparation, earthworks and construction activities, e.g. removal of vegetation during site clearance. Together, these are likely to result in an increase in fear / safety and reduce amenity value of PRoW and non-designated public routes in close proximity to the Site (not subject to closure / diversion). Overall, the magnitude of change is considered to be medium.

14.6.26. The sensitivity of community receptors is low as the routes are anticipated to be used for infrequent recreational activities. The magnitude of change, prior to mitigation, is medium given the disruption and increases in journey times alongside a reduction in amenity value. Therefore, there is likely to be a direct, temporary, medium-term effect on community receptors of minor negative significance.

CHANGE OF USE OF BEST AND MOST VERSATILE AGRICULTURAL LAND

- 14.6.27. Altogether the Site Boundary covers an area of approximately 233 ha, 163 ha of which lies within the Pipeline Study Area. The ALC survey undertaken on behalf of MAFF shows that, of the agricultural land on the Site, approximately 57 ha is excellent quality land within Grade 1 and approximately 142 ha is good quality land in Grade 2 (i.e. a total of 199 ha of best and most versatile agricultural land in total). However, further survey work will be undertaken which will determine the Grade of the land and the extent of change associated with the Proposed Scheme.
- 14.6.28. The area of land ultimately needed for the pipeline will not comprise the entire 163 ha Pipeline Study Area. The area of Grade 1 land is entirely within the Pipeline Study Area (Option A). Following the completion of the pipeline, the land affected within the Pipeline Study Area will be reinstated to its former condition for agricultural usage.
- 14.6.29. In addition, 16 ha of best and most versatile agricultural land lies within the Parcel A and B (the CCS land excluding existing woodland) which may be temporarily disturbed during construction. However, the permanent loss of this land for CCS land would form part of a separate future application.
- 14.6.30. The total area of permanent loss associated with the AGI buildings / structures is not expected to exceed 1 ha.
- 14.6.31. As such, due to the temporary disturbance of up to 179 ha (up to 163 ha in the Pipeline Study Area and 16 ha in Parcels A and B) of best and most versatile (BMV) agricultural land, the magnitude of change during construction is considered to be high.
- 14.6.32. There will be a permanent loss of less than 1 ha due to the AGIs. The magnitude of change is considered to be negligible.
- 14.6.33. Based on a preliminary assessment, the sensitivity of the best and most versatile land in Grade 1 and 2 is considered to be medium to high. The temporary magnitude of change is also considered to be medium. Therefore, there is likely to be a direct, temporary short-term effect on BMV land of moderate to major adverse significance during the construction phase of the Proposed Scheme.
- 14.6.34. The permanent magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, permanent effect on BMV land of negligible significance during the operation of the proposed scheme.

REDUCTION IN SOIL QUALITY

- 14.6.35. Across the Site, the soils may be subject to excavation and relocation during the Proposed Scheme. Once the construction activities are complete, it is anticipated that the soil will be reinstated, where possible.
- 14.6.36. The principal potential direct effect on soil would be loss of quality if it were handled inappropriately (for example, handled or trafficked when wet; and by the mixing of topsoil and subsoil on stripping). Based on the preliminary assessment, the sensitivity of the soil resources, described by Ministry of Agriculture, Food and Fisheries (MAFF, now known as DEFRA) as clay loams over clay is assessed as medium, and the magnitude of change prior to mitigation, is also considered to be medium. Therefore, there is likely to be a direct, temporary, long-term effect on soil resources of moderate negative significance.

LOSS OF THE USE OF AGRICULTURAL LAND AFFECTING THE VIABILITY OF FARM HOLDINGS

14.6.37. The Site covers an area of 234 ha, 167 ha of which is agricultural land. However, at this stage, the effect on farm holdings associated with this loss of land cannot be fully assessed until farmer / survey interviews have been undertaken. The assessment will be reported within the ES.

14.7 MITIGATION AND ENHANCEMENT MEASURES

14.7.1. Mitigation of adverse environmental impacts can be achieved by avoidance, reduction, remedying of, or compensation. The primary mitigation measures (set out above under "Assumptions") form an intrinsic part of the Proposed Scheme design through an iterative process. Secondary mitigation measures are those that are designed to specifically address the remaining negative effects of the Proposed Scheme, and the measures proposed are set out below.

DEMOLITION AND CONSTRUCTION PHASES

- An Employment and Skills Plan will be implemented to ensure that benefits are generated within the local communities. This will set out agreed outputs with Selby District Council and East Riding of Yorkshire Council and mechanisms to report on delivery.
- Implementation of appropriate diversions of PRoW during construction.
- To ensure the negative effects on amenity value and disruption to users of PRoWs and other footpaths are reduced as far as possible during the construction phase of the Proposed Scheme the following mitigation measures should be incorporated into the CEMP: The public will be informed of the nature, timing and duration of particular activities during the construction stage and the duration of the works by newsletters and liaison with MCC / Town / Parish Councils where applicable; and the provision of clear directions for any alternative routes.
- Following construction of the pipeline, agricultural land will be reinstated to the existing ALC Grade. Furthermore, throughout the construction phase a Soil Management Plan (SMP) will be implemented in order to maintain the integrity of the soil.

14.8 RESIDUAL EFFECTS

14.8.1. Table 152 summarises the residual effects associated with the Proposed Scheme.

Table 152 - Residual Effects

Description	Pre-mitigation significance of effects	Mitigation / Monitoring Measure	Residual effect (i.e. following secondary mitigation)
Generation of direct employment opportunities	Negligible to moderate positive effect associated with the provision of direct employment opportunities.	An employment and Skills Plan with mechanisms for ongoing monitoring to be set out may be created.	Negligible to moderate positive effect associated with the provision of direct employment opportunities.

Description	Pre-mitigation significance of effects	Mitigation / Monitoring Measure	Residual effect (i.e. following secondary mitigation)
Generation of indirect and induced employment opportunities	Negligible to minor positive effect associated with the provision of indirect and induced employment opportunities.	N/A	Negligible to minor positive effect associated with the provision of indirect and induced employment opportunities.
Changes in accessibility and amenity value of Public Rights of Way	Minor negative associated with temporary disruption to accessibility and reduction in amenity value	Liaison with local parish councils and provision of clear signage for diverted routes.	Negligible to minor negative associated with temporary disruption to accessibility and reduction in amenity value
Change of use of best and most versatile agricultural land	Moderate to major negative significance associated with change of best and most versatile agricultural land.	Reinstatement to the existing ALC grade	Negligible significance
Reduction in soil quality	Moderate negative significance associated with a reduction in soil quality.	Preparation and implementation of a Soil Management Plan	Moderate negative significance associated with a reduction in soil quality.
Loss of the use of agricultural land affecting the residual farm business	To be determined	None identified at this stage.	To be determined

14.9 LIMITATIONS AND ASSUMPTIONS OF THE PEIR

14.9.1. The assessment made the following assumptions:

- The assessment of employment effects has relied upon the use of secondary data within calculations as assumptions in order to generate an understanding of the likely direct, indirect and induced effects resulting from the demolition and construction phases of the Proposed Scheme. As such, there are limitations associated with the secondary data applied in each case. However, the assessment has utilised the latest full data set available at the time of writing. As such, a preliminary assessment can be undertaken at this stage.

14.10 NEXT STEPS

14.10.1. To inform the ES and to respond to comments made by LPAs and within the Scoping Opinion, the following work needs to be undertaken:

- Further refinement to the socio-economic assessment as necessary based on receipt of the fixed site layout, confirmation of proposed structures and route option as well as on and off site mitigation.
- Ongoing consultations with the LPA on the scope and methodology for the socio-economic assessment.

15 CUMULATIVE ASSESSMENT

15.1 INTRODUCTION

- 15.1.1. ES Chapter 15 – Cumulative Effects will assess the potential for significant cumulative environmental effects as a result of the Proposed Scheme and other existing and/or approved projects (or development).
- 15.1.2. To accord with the EIA Regulations 2017 and best practice guidance, the following types of cumulative effects are assessed in this chapter on a preliminary basis and will be considered further within the ES:
- Effect interactions (combined effects) – the interaction and combination of environmental effects of the Proposed Scheme affecting the same receptor.
 - In-combination interactions (cumulative effects) – the interaction and combination of environmental effects of the Proposed Scheme with 'other development' affecting the same receptor.
 - The cumulative effects assessment therefore considers other proposed developments that are in the public domain, such as planning applications registered with the local planning authorities/Planning Inspectorate and/or already consented developments, but not yet constructed or operational. There are a number of proposed developments considered within the PEIR for which applications have been submitted but are not yet determined.
 - Assessment of cumulative and in-combination effects within the ES will be carried out in accordance with the Planning Inspectorate's Advice Note 17 "Cumulative Effects Assessment" dated December 2015. Advice Note 17 recommends that applicants identify a "long list" of "other development", which is then reduced to "short list" following a review of the identified "other development" and excluding development for reasons such as temporal scope, scale and nature of the development and other factors, which could include lack of information in the public domain making any assessment meaningless and not proportionate. The "long list" and "short list" of other development will be agreed with the relevant local authorities.
 - Regard will also be given to any existing environmental problems relating to areas of particular importance likely to be affected or the use of natural resources, as required under Schedule 4, Section 5(e) of the EIA Regulations 2017.
- 15.1.3. It is anticipated that a qualitative cumulative effects assessment will be undertaken for the majority of environmental topics considered. However, partially quantitative assessments may be undertaken for traffic-related effects for air quality and noise and for air quality impacts arising due to stack emissions.
- 15.1.4. This Chapter is supported by Figure 15.1, which shows "other development" considered within the cumulative assessment.

15.2 LEGISLATION AND PLANNING CONTEXT

- 15.2.1. The requirement for cumulative and combined impact assessments is stated in the following relevant European Directive and domestic legislation:
- European Directive 2011/92/EU (as amended by Directive 2014/52/EU) on the assessments of effects of certain public and private projects on the environment requires an assessment of *"the direct effects and any indirect, secondary, cumulative,*

transboundary, short-term, medium-term and long term, permanent and temporary, positive and negative effects of the project”.

- Paragraph 5, Schedule 4 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires that an environmental statement includes:
- *“A description of the likely significant effects of the development on the environment resulting from, inter alia -*

...

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

...

The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development.”

- 15.2.2. The Overarching NPS for Energy (EN-1) paragraph 4.2.5 states that *“When considering cumulative effects, the ES should provide information on how the effects of the applicant’s proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence)”*.
- 15.2.3. The Planning Inspectorate's Advice Note 17 "Cumulative Effects Assessment", dated December 2015, has no statutory status but sets out a staged process for applicants to adopt in cumulative effects assessment for NSIPs in the absence of a single, agreed industry standard method.

15.3 ASSESSMENT METHODOLOGY

IMPACT ASSESSMENT AND SIGNIFICANCE CRITERIA

- 15.3.1. There is no standard prescriptive method for assessing combined and cumulative effects and the extent to which the effects of other developments can be assessed quantitatively depends on the level of information available about the other developments. Such effects are, therefore, assessed by professional judgment, although matrices and modelling are used where appropriate and where enough information regarding the other developments exists. Where environmental assessment information regarding other developments is not available or is uncertain, the assessment is necessarily qualitative. Where that is the case, we will discuss with the relevant local authorities about whether it is worth including that particular development in the cumulative assessment given the importance of a cumulative assessment to be proportionate and meaningful.
- 15.3.2. When considering cumulative and combined effects, the mitigation measures as set out in Chapters 5 to 14 have been taken into account i.e. only residual (following mitigation) effects are discussed in this chapter.
- 15.3.3. Combined and cumulative effects are assessed to be neutral, minor, moderate or major. Moderate or major effects are considered to be significant, using the methodologies outlined in each technical chapter (Chapters 5 to 14 of this PEIR), with exception for the assessment of landscape and visual in combination effects. Significance for these effects is as outlined within Appendix F.3 Table D, which refers to a matrix for determining the significance of effects which is used as a framework for the assessment.

ASSUMPTIONS

- 15.3.4. Cumulative assessment of the Proposed Scheme has been undertaken on a worst case basis and therefore assumes the following (unless otherwise stated for individual topics):
- Site Reconfiguration Works are included as part of the Proposed Scheme.
 - The maximum parameters for the Proposed Scheme as set out in Chapter 3.
 - Both Units X and Y would be repowered.
 - The assumptions for the cumulative (worst case) assessment in relation to scenarios for: construction transport, pipeline route options, electrical connection and air quality mitigation are as detailed in Chapters 5 to 14.
 - That all measures identified as embedded mitigation in the topic chapters are implemented / delivered.
 - The construction programme will be as follows:
 - The gas turbine generating units will be constructed in phases, with construction of each taking approximately 34 months followed by commissioning. It is anticipated that the two construction periods will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit. The battery storage facility and gas pipeline will be constructed within the first half of this programme. The battery storage would be installed in two phases of 100 MW as each unit is repowered.
 - It is assumed that construction of the first unit will commence in 2019 with OCGT capability by 2022 and CCGT ready by 2023. If two units are built, the construction of the second unit would commence in 2024 and be completed in 2027.

CUMULATIVE EFFECTS

- 15.3.5. Cumulative effects are those that accrue over time and space from a number of developments.
- 15.3.6. The Planning Inspectorate Advice Note 17 'Cumulative effects assessment relevant to nationally significant infrastructure projects' (Planning Inspectorate, December 2015) (AN17) sets out a four stage approach to assessment of cumulative effects:
- Stage 1: identify the Zone of Influence and identify long list of "other developments".
 - Stage 2: identify short list of "other development" for cumulative assessment.
 - Stage 3: information gathering for "other development".
 - Stage 4: assessment.
- 15.3.7. This approach has been broadly followed in undertaking the cumulative effects assessment presented in this chapter.
- 15.3.8. The Zone of Influence (ZOI) is discussed in the study area section of this Chapter below. A long list of developments was identified following the submission of the EIA Scoping Report and reduced to an initial shortlist for consideration in the PEIR. Following the PEIR, this shortlist will be reviewed and updated in consultation with the local planning authorities (and where relevant other statutory consultees) for final consideration within the EIA.
- 15.3.9. In order to assess the potential for cumulative effects to arise in relation to these developments, where an application for planning permission or development consent has been made, information presented within the ES or environmental reports for the development has been gathered. A preliminary assessment has been carried out for the

PEIR based on scale, nature and location of development. A full review of publicly available information will be carried out and used to inform the assessment within the ES, following confirmation of the shortlist with the relevant local planning authorities and the Planning Inspectorate. For developments that are known to be proposed (either via screening or scoping opinion requests submitted to the local authority / Planning Inspectorate or following presentation of information in the public domain) but where an ES (or other environmental reports) has not yet been prepared or submitted, any readily available information has been and will be utilised. This includes communication with local authorities, public consultation material and material available via the internet.

- 15.3.10. Following identification of the short list of other projects or developments and information gathering from available sources, a preliminary assessment of the effects of the Proposed Scheme have been considered in conjunction with the likely potential effects from other projects or activities that are both reasonably foreseeable in terms of delivery (e.g. have planning consent or are in the planning process) and are geographically located in a position where environmental impacts could act together to create an effect that is more (or less) significant overall than the effect of individual developments alone.
- 15.3.11. Operational impacts are generally long-term; whilst construction impacts are often short-term and temporary, they can potentially be of a large magnitude. Consequently, when cumulative effects that could be associated with construction at one site and operation at another are considered the difference in duration and reversibility will be considered within the assessment. This will be considered fully within the ES.
- 15.3.12. In assessing cumulative effects, it is appropriate to also acknowledge the relative contributions that different projects make to a cumulative effect, and carefully consider whether a cumulative effect occurs at all. For example, effects associated with a large scale project may be significant, and whilst a smaller project may contribute to this effect, the cumulative effect of the smaller project and the larger project is only considered to be significant if it is of greater significance than the effect of either project in isolation.
- 15.3.13. Where applicable, the assessment considers all other known developments that have potential for significant cumulative effects with the Proposed Scheme together, as a worst case. Regard is also given to any existing environmental problems relating to areas of particular importance likely to be affected or the use of natural resources, as required under Schedule 4, Section 5(e) of the EIA Regulations 2017. Environmental effects from existing developments are generally included in the baseline environment assessments in Chapters 5 to 14.

STUDY AREA (STAGE 1)

- 15.3.14. The study area for each environmental assessment topic (referred to as a zone of influence (ZOI) for the purpose of this Chapter, in accordance with guidance note AN17) has been defined, based on the predicted extent of impacts associated with the Proposed Scheme. The ZOI for each environmental assessment topic is documented in Table 153.

Table 153 - Zone of Influence for each Environmental Topic

Environmental Topic	Zone of Influence
Traffic and Transport	Construction / Decommissioning – the following local junctions may be impacted during the construction and decommissioning phases by workforce vehicle movements and vehicles transporting plant and materials (assuming a worst case that all deliveries are made by road and the jetty is not utilised): → M62 Dumbbell junction (Junction 36). → A645 / A1041 3 arm roundabout. → A1041 / A63 4 arm roundabout. → A63 / A19 4 arm roundabout. → A63 / A1238 3 arm roundabout. → A63 / A162 4 arm roundabout. Preliminary AIL routes (by highway and jetty) are shown in Figure 5.2 and 5.3 respectively. The likely HGV Route is shown in Figure 5.4 Operation – Neutral (no additional traffic impact during operation ZOI only for Construction/decommissioning phases)
Air Quality	Construction / Decommissioning – ZOI, following IAQM guidance, includes human receptors within 350 m from the Site from dust sources and ecological receptors within 50 m from the Site. It also includes roads within 500 m from the Site. Operation – ZOI, will be defined by air dispersion modelling and would not exceed beyond 15 km of the proposed stack(s). For the purposes of the cumulative assessment, the developments within ZOI that are considered relevant are developments with relevant stack emissions, or associated with vehicle emissions
Noise and Vibration	Construction Activity / Plant Noise - ZOI is 5 km from the Site defined by noise propagation modelling Decommissioning Activity / Plant Noise – ZOI is 5 km from the Site defined by noise propagation modelling Operational Plant Noise – ZOI is 5 km from the Site as defined by noise propagation modelling
Historic Environment	Construction / Decommissioning – ZOI is 300 m from the Site and is defined by professional judgement and experience from similar projects. Operation – ZOI is 10 km from the Site as recommended by Historic England

Environmental Topic	Zone of Influence
Biodiversity	Construction / Decommissioning – ZOI is 10 km from the Site, based on professional judgement and anticipated likely effects identified by other topics with the potential to affect biodiversity. Operation – ZOI is 15 km from the Site as this is the maximum extent in relation to the Air Quality ZOI, and other relevant operational phase impacts are likely to be confined to areas much closer to the Site. This is to be confirmed with Natural England.
Landscape and Visual	Construction / Decommissioning / Operation - cumulative effects will be considered on receptors located within a ZOI 10 km from the Site (as previously defined in Chapter 10) however the area considered for the purposes of identifying "other development" for the assessment of a cumulative effect will extend to a 15 km radius from the Site (this is assuming Ferrybridge Power Station is to be decommissioned).
Ground Conditions and Contamination	Construction / Decommissioning – ZOI is 250 m from the Site. This distance, which is considered typical at the hazard identification stage of site assessment, is referenced by Guidance for the Safe Development of Housing on Land Affected by Contamination: R&D Publication 66 (National House Building Council. 2008). Operation – ZOI is 250 m from the Site. This distance, which is considered typical at the hazard identification stage of site assessment, is referenced by Guidance for the Safe Development of Housing on Land Affected by Contamination: R&D Publication 66 (National House Building Council. 2008).
Water Resource, Quality and Hydrology	Construction / Decommissioning – cumulative impacts will be considered within a ZOI for surface water features of 0.5 km from the Site, 1 km for surface water features in hydraulic connectivity and 1 km for groundwater features. Operation – cumulative impacts will be considered within a ZOI for surface water features of 0.5 km from the site, 1 km for surface water features in hydraulic connectivity and 1 km for groundwater features. The ZOI study area has been determined based on professional judgement as detailed in DMRB, Volume 11, Section 2, HA202/08, Assessment and Management of Environmental Effects. This distance is considered appropriate for the assessment of the surface water, groundwater and flood risk. This is to be confirmed with the EA, NYCC and Selby Internal Drainage Board (IDB).

Environmental Topic	Zone of Influence
Waste	Construction / Decommissioning – the ZOI for the cumulative effects on waste receiving facilities is Regional (North Yorkshire and Humber region) which comprises South Yorkshire, West Yorkshire, the East Riding of Yorkshire, Hull, North Yorkshire and the City of York, alongside North Lincolnshire and North East Lincolnshire. Operation – Assessment of the impacts operational waste has been scoped out of the assessment The ZOI is regional as it is unknown at this stage where waste will be taken to and could be taken to waste infrastructure anywhere within the region. This will be refined further in the ES. Developments have been identified to 15 km and beyond that, will be identified in consultation with the local authorities following publication of the PEIR to enable a proportionate assessment.
Socio-economics	Construction / Decommissioning - For the purposes of the assessment of cumulative effects in this PEIR, the ZOI has been restricted to the 15 km ZOI used for other environmental topics (informed by the air quality ZOI). Whilst it is acknowledged that there are cumulative effects with developments beyond this study area, the cumulative effect assessment has been restricted in order to allow a meaningful assessment. These effects are primarily associated with construction, direct, indirect and induced employment and effects on best and most versatile agricultural land and farm holdings. Operation – Assessment of effects on operational employment has been scoped out of the assessment and therefore will not be considered in this Chapter.

SCOPING OPINION AND CONSULTATION

- 15.3.15. To date, no consultation with local authorities has been conducted with regards to the cumulative effects assessment. This is being undertaken alongside the statutory consultation on this PEIR (amongst other documents), and will continue as the ES is prepared. Following publication of the PEIR, the long and shortlists will be discussed and agreed with the relevant local planning authorities (SDC, NYCC and ERoY) and the Planning Inspectorate as well as Natural England, Environment Agency and Historic England where necessary. The resulting agreed shortlist of projects and developments will be assessed within the ES.
- 15.3.16. As explained in Chapter 1 (Introduction), a Scoping Opinion was received by the applicant from the Planning Inspectorate (on behalf of the SoS) on 23 October 2017, including formal responses from statutory consultees. The responses from the Planning Inspectorate in relation to the assessment of cumulative effects, and how those requirements are addressed by the applicant, are provided below in Table 154.

Table 154 - Summary of Scoping Opinion Cumulative Comments

Section	Applicants proposed matter	Planning Inspectorate's Comments	Response
2.3.1	N/A	The Scoping Report states that it is not yet determined whether the works to the National Grid substation and the gas supply pipeline would comprise part of the authorised development within the DCO. It is expected that this will be determined by the time the application is made. However, the Scoping Report has at this stage presented these elements as forming part of the Proposed Scheme and therefore they have been considered as part of this Scoping Opinion. If the works do not form part of the DCO, the Inspectorate would expect to see consideration of these works within the cumulative effects assessment.	A description of the Proposed Scheme is included in Chapter 3. The Proposed Scheme includes the gas pipeline and works to the National Grid substation, and the assessment has therefore taken account of any effects arising from those elements of the Proposed Scheme. These works are therefore not assessed as separate cumulative projects.
7.2.1 and 7.2.4	Impacts on ecological sites resulting from nitrogen and acid deposition	The Inspectorate notes the potential for changes in emissions to air from operation of the Proposed Scheme to impact on ecological sites. The Applicant is advised to also assess the effects of the Proposed Scheme cumulatively with other relevant plans and projects.	The in-combination and combined effects on ecological sites from air quality are assessed in this Chapter of the PEIR and will be assessed further in the ES.

Section	Applicants proposed matter	Planning Inspectorate's Comments	Response
7.5.2	Construction phase air quality impacts on designated sites	In particular, the Applicant should consider the potential for cumulative impacts with other plans or projects.	The in-combination and combined effects on designated sites from air quality are considered within this Chapter and will be considered further in the ES
8.2.2	Assessment methodology	The Inspectorate notes the overarching approach suggested by the Applicant. Whilst this does not mirror exactly the suggested approach set out in AN17, the principles appear to be broadly in line with these recommendations.	Methodology has been updated to be in broadly accordance with AN17.
8.2.2	Identification and evaluation of projects for consideration	The Inspectorate recommends that the list of plans and projects to be considered within the assessment is agreed with the local authority.	A longlist of "other developments" was first identified, following by a shortlist of developments, in accordance with AN17. This is detailed in Table 155 The shortlist of developments will be reviewed and updated for the ES. The longlist and proposed shortlist will be consulted on with SDC, NYCC, EROy and the Planning Inspectorate as well as Natural England, Environment Agency and Historic England where necessary.
8.2.2	Identification and evaluation of projects for consideration	The ES should set out and justify what geographical boundary	Zones of Influence (ZOI) have been identified in accordance with AN17

Section	Applicants proposed matter	Planning Inspectorate's Comments	Response
		has been used to identify other plans or projects.	and are outlined in Table 153.
8.2.2	Identification and evaluation of projects for consideration	In order to determine whether the Proposed Scheme shares common sensitive receptors with other projects, it is recommended that the ES establishes zones of influence for each topic, as detailed in AN17.	ZOI have been identified in accordance with AN17 and are outlined in Table 153.

15.4 CUMULATIVE EFFECTS ASSESSMENT (STAGES 2&3)

IDENTIFICATION OF SHORT LIST OF "OTHER DEVELOPMENTS" FOR ASSESSMENT

- 15.4.1. An initial screening exercise (Stage 1 of the cumulative effects assessment) was undertaken to identify potential developments within the ZOI of the Proposed Scheme for each environmental topic for consideration within the cumulative impact assessment. This process identified "other developments" within a 15 km radius to create an initial long list for consideration (where this is not suitable, this has been identified by topic in Table 15.1). The long list was subsequently screened based on the potential for impact and a refined short list was developed for further, more detailed consideration (Stage 2 of the cumulative effects assessment). The initial short list is presented in Table 15.1 below, with details of a project's current status and comments regarding their temporal scope in relation to the temporal scope of the Proposed Scheme.
- 15.4.2. For the purposes of the PEIR, the short list of developments includes developments which have been submitted into the planning or DCO system, but that are awaiting a decision (classified as Tier 1 developments within AN17). There are no nationally significant infrastructure projects (NSIP) within 15 km for which a scoping report has been submitted, but no planning application has been made (classified as Tier 2 developments within AN17). Any developments which would be classified as Tier 3 under AN17 will be determined in consultation with the local planning authorities and the Planning Inspectorate following publication of the PEIR.
- 15.4.3. In addition to filtering on the basis of planning status, projects and other developments for consideration within the cumulative assessment have been filtered based on the following:
- Applications that are of a suitable equivalent (i.e. applications for residential development of 10 or more homes; industrial, commercial or retail based applications over 500 m²; and significant infrastructure based applications).
 - Common receptors, only those applications with identifiable common receptors.
- 15.4.4. All the developments identified in Table 153 are considered to be of such a nature and proximity to the Proposed Scheme to have the potential to generate significant cumulative effects when considered in context with the Proposed Scheme.

15.4.5. The short list of "other developments" has been considered for each environmental topic in Section 15.4 below, with reference to the ZOI for each topic, and the developments in the short list with the potential for significant cumulative effects in relation to that topic have been identified. The location of the "other developments" in relation to the Proposed Scheme is shown in Figure 15.1.

Table 155 - Short List of Developments to be Considered within Cumulative Assessment

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
1	2016/0401/REM Selby	554 m E	Permitted	Reserved matters approval is sought for the scale, layout, external appearance and landscaping of 14 dwellings, means of access was approved at outline stage	Planning permission granted July 2016 (RMA) Expiry July 2019. Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Site layout
2	2016/1124/COU Selby	4413 m SW	Permitted	Change of Use of land to 20 pitch caravan park and camping area with conversion of existing outbuildings into shower and toilet facilities	Permission granted January 2017 Expiry January 2022 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Site layout
3	2017/1018/FULM Selby	0 m -	Permitted	Construction of 40 MW battery energy storage barn to provide back-up electricity services to the National Grid for a period	Permitted December 2017 Expiry December 2020	Planning, Design and Access Statement

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				of 25 years from the date of commissioning and retention of building thereafter, infrastructure, bund and landscaping on paddock and field	Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Preliminary Ecological Appraisal Survey Report Flood Risk Assessment and Surface Water Drainage Strategy Heritage Desk-Based Assessment Landscape Appraisal Location Plan Noise Assessment Swept Path Analysis Construction Traffic Route Plan Transport Statement.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
4	2015/1405/OUT Selby	1443 m SW	Permitted	Outline application including access for the erection of up to 45 dwellings	Permission granted May 2017 Expiry May 2020 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Phase 1 Environmental Assessment Flood Risk Assessment Extended Phase 1 Habitat Survey Planning Support Statement Site Plan Transport Assessment Travel Plan.
5	2017/0261/FULM Selby	6531 m W	Permitted	Proposed engineering operation comprising the construction of flood alleviation embankment, land engineering works, alteration and partial removal of existing flood	Permission granted June 2017 Expiry June 2020 Construction timetable: May/June 2017 to November/December 2017	Proposed Flood Defence Drainage Masterplan

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				embankment and creation of temporary construction access at land north of Temple Hirst flood defences at Street Record Main Road, Temple Hirst	(to be confirmed with local planning authority)	Preliminary Ecological Appraisal Proposed Flood Defence General Arrangement (Superseded) Historic environmental desk-based assessment Photomontage Construction and Traffic Statement.
6	2017/0822/FULM Selby	465 m SW	Permitted	Proposed construction of new energy centre comprising of new main energy centre building and ancillary tanks, containers and services buildings	Permission granted November 2017 Expiry November 2020 Construction timetable not known at the time of writing PEIR. To be	Design and Access Statement Existing and Proposed Site Plan Indicating Car Parking Proposals

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
					confirmed in consultation with LA.	SuDS Maintenance.
7	2017/0272/FUL Selby	2615 m SW	Permitted	Proposed erection of apartments on brownfield site	Permission granted December 2017 Expiry December 2020 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Site Plan.
8	2016/0875/FUL Selby	9939 m W	Permitted	Proposed Erection of 54 units	Permission granted in October 2017, permission expiry October 2020 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Extended Phase 1 Habitat Survey Site Layout Revised Supporting Planning Statement.
9	2017/0842/OUTM Selby	9971 m W	Permitted	Outline application to include access (all other matters reserved) for the construction	Permitted June 2017	Design and Access Statement

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				of up to 100 no. residential dwellings on land west	Expiry assumed to be three years (June 2019) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Archaeological Assessment Ecological Appraisal Flood Risk Assessment Geo-environmental Report Landscape/Visual Impact Report Planning statement Transport Assessment Travel Plan
10	2017/0542/OUTM Selby	10619 m W	Awaiting decision	Outline to include access (all other matters reserved) for erection of up to 120 dwellings and associated car parking, garages, landscaping, open space and details of including demolition and removal of all	Application made May 2017 Construction timetable not known at the time of writing PEIR. To be	Design and Access Statement Site layout.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				structures, buildings and hard standing to facilitate future development	confirmed in consultation with LA.	
11	2015/1392/EIA Selby	9273 m W	Permitted	Erection of a new single storey production facility for the manufacture of insulation boarding together with associated vehicle movement and parking areas.	Permission granted March 2016, permission expiry in March 2019 Construction timetable assumed to be 12 months (March 2016 to March 2017).	Archaeological Desk-based Assessment Design and Access Statement Extended Phase 1 Habitat Survey Report Environmental Statement Location Plan.
12	2015/0367/FUL Selby	7330 m W	Permitted	Proposed development of 125 no. dwellings with associated access from Barff Lane, landscaping, new footpath and drainage pond	Permission granted in November 2015, permission expiry in November 2018 Construction timetable not known at the time of	Design and Access Statement Heritage Desk-Based Assessment

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
					writing PEIR. To be confirmed in consultation with LA.	Preliminary Ecological Appraisal Site Layout Transport Assessment.
13	2016/0978/FULM Selby	7325 m W	Permitted	Proposed residential development of 53 dwellings including access and associated infrastructure	Permission granted in February 2017, permission expiry in February 2020 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Archaeological Desk Based Assessment Report Design and Access Statement Site Layout Plan Transport Statement.
14	2017/0250/OUTM Selby	7503 m W	Awaiting decision	Outline application for development of 110 no. dwellings, a primary school, nursery and public open space	Application made March 2017 Construction timetable not known at the time of	Travel Plan Air Quality Assessment

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				to include access (all other matters reserved)	writing PEIR. To be confirmed in consultation with LA.	Arboricultural Survey Archaeological Survey Contaminated Land Assessment Design and Access Statement Drainage and FRA Ecological Appraisal Geophysical Report Landscape Baseline Report
15	2015/0389/FUL Selby	7379 m W	Permitted	Proposed erection of 52 residential dwellings including site access	Permission granted in December 2015, permission expiry in December 2018 Construction timetable not known at the time of	Archaeological Desk Based Assessment Report

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
					writing PEIR. To be confirmed in consultation with LA.	Phase 1 Habitat Survey Report Landscape Assessment Layout Plan Site Layout Plan Transport Statement.
16	2017/0526/OUTM Selby	11348 m W	Awaiting decision	Outline application for erection of up to 150 dwellings including access and the demolition of existing buildings	Application made May 2017	Design and Access Statement Location Plan.
17	2017/0577/OUTM Selby	9647 m W	Awaiting decision	Outline application for residential development for up to 68 No. dwellings with all matters reserved	Application made May 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Bat Survey Report Design and Access Statement Location Plan Preliminary Ecological Appraisal

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
						Transport Statement.
18	2015/0105/OUT Selby	11176 m W	Permitted	Outline application with all matters reserved for the erection of residential development 119 dwellings	Permission granted in December 2015, permission expiry in December 2018 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Indicative Site Layout Transport Assessment.
19	2014/1028/OUT Selby	8773 m W	Permitted	Outline planning permission for residential development including access. All other matters are reserved for future consideration 276 dwellings	Outline planning permission granted in January 2015, permission expiry January 2018 Construction period from 2014 to 2026	Archaeology Desk Based Assessment Bat Survey Ecological Appraisal Heritage Statement Site Layout Transport Assessment.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
20	2015/0333/FUL Selby	11421 m W	Permitted	Erection of 22 No. dwellings with associated access and landscaping	Permission granted in December 2015, permission expiry in December 2018 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Site Layout.
21	2015/0676/FUL Selby	8587 m W	Permitted	Proposed installation of 960 ground mounted PV panels	Permission granted in September 2015, permission expiry September 2018 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Location Plan
22	2015/0007/FUL Selby	6872 m NW	Permitted	Erection of a two storey building to accommodate new social and leisure facilities including; ten-pin bowling,	Permission granted in February 2015, permission expiry in February 2018	Design and Access Statement

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				adventure play, high ropes, recreational skiing, skate/BMX park and restaurant/cafe facility, complete with associated external soft and hard landscaping	Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Ecological Appraisal report Proposed Site Plan Transport Statement.
23	2016/0140/REM Selby	9643 m NW	Permitted	Reserved matters application relating to appearance, landscaping and scale for buildings C,D,E,F and farmhouse of approval 2012/0485/OUT Outline application to include access and layout for the erection of agricultural buildings to form a pig breeding, rearing and finishing unit and associated agricultural workers dwelling on land to the west of Thorpe Hall	Outline application permission granted in May 2016, permission expiry in May 2019 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Location Plan

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
24	2014/0202/OUT Selby	6950 m NW	Permitted	Outline application including access for the erection of 13No. dwellings	Permission granted in May 2014, permission expiry in May 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Site plan
25	2017/0750/OUTM Selby	7686 m W	Awaiting decision	Outline planning application for the construction of up to 76 dwellings, with all matters reserved except for access	Application made July 2017 Proposed opening year 2020 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Ecological Appraisal Heritage Desk-Based Assessment Landscape Appraisal Site Layout Transport Assessment.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
26	2016/1337/OUTM Selby	2377 m NE	Awaiting decision	Outline application for residential development of up to 21 dwellings (with all matters reserved)	Application made November 2016 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Amphibian and Water Vole Survey Report Design and Access Statement Ecology Report Location Plan
27	2015/0517/OUT Selby	9146 m N	Permitted	Outline application to include access and layout for residential and associated development (35 dwellings) on land to the west of York Road (The Paddocks)	Permission granted in December 2015, permission expiry in December 2018 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Protected Species Assessment Heritage Assessment Proposed Site Layout.
28	2017/1055/COD Selby	5264 m NW	Permitted	Request for written confirmation of compliance of conditions of planning approval CO/2012/1185 (8/19/1011C/PA) for outline	Permission granted in November 2017 Expiry assumed to be three years (November 2020)	N/A (Not EIA development)

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				application for the erection of 1200 dwellings (4 existing to be demolished), employment, public open space, shopping and community facilities (including up to 2,000 sq.m. of shops), together with associated footpaths, cycleways, roads, engineering	Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	
29	2016/1408/FULM Selby	6493 m NW	Permitted	Conversion of former courthouse building to form 16No. flats with associated management suite/office, external works including works to windows and doors including new openings with associated vehicular and cycle parking	Permission granted in April 2017, permission expiry in April 2020 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Heritage Statement Layout Plan.
30	2015/0341/OUT Selby	7898 m NW	Permitted	Hybrid application comprising outline proposals for the erection of circa 200 new dwellings including the construction of a new junction onto Flaxley Road, the laying	Permission granted in December 2015 Expiry December 2018 Construction timetable not known at the time of	Archaeology Desk-Based Assessment Heritage Impact Assessment

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				out of open space and children's play area, pumping station, siting of electricity substation, landscaping and creation of areas for sustainable drainage including connection to water course and detailed proposals for the conversion of agricultural buildings to form 2 dwellings together with associated works including the creation of curtilages and areas of driveways/hardstanding (including external areas relating to the existing farm house) and demolition at Hempbridge Farm and land	writing PEIR. To be confirmed in consultation with LA.	Location Plan Proposed Site Layout Transport Assessment Travel Plan.
31	2016/0178/FUL Selby	5190 m NW	Permitted	Construction of an new glucose syrup plant and associated storage tanks, pipebridges, roads and hardstandings within an existing industrial site	Permission granted in June 2016 Expiry June 2019 Construction timetable not known at the time of	Archaeology and Cultural Heritage Desk Based Assessment

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
					writing PEIR. To be confirmed in consultation with LA.	Preliminary Ecological Assessment Site Layout Site Location.
32	2016/0528/FUL Selby	7689 m NW	Permitted	Section 73 application to vary condition 05 (plans) of planning permission 2014/0685/FUL Proposed installation of 4 x 18 m high floodlights onto existing rugby pitch and training area	Permission granted in July 2016 Expiry July 2019 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Layout Plan
33	17/01720/STPLF ERYC	5004 m NE	Awaiting decision	Erection of 300 dwellings with associated access, open space, landscaping and infrastructure	Application made May 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Bat Activity Survey Preliminary Ecological Appraisal Breeding Bird Survey

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
						Heritage Assessment Location Plan Proposed Site Layout Riparian Mammal Survey Transport Assessment Travel Plan.
34	17/02265/STOUT ERYC	4625 m NE	Awaiting decision	OUTLINE - Erection of Residential Development (up to 175 dwellings) (Access to be considered)	Application made July 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Extended Phase 1 Habitat Survey Report (Updated) Transport Assessment Residential Travel Plan.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
35	17/03450/CM ERYC	7804 m NE	Awaiting decision	Installation of an Anaerobic Digestion (AD) Plant including; AD Digester tanks; a biomethane gas to grid plant; CHP (Combined Heat and Power) unit; flare; buffer and treatment tanks; and a digestate storage lagoon with associated works	Application made October 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Archaeological Desk Based Assessment Landscape and Visual Impact Assessment Site Location Plan Preliminary Ecological Appraisal Proposed Site Layout.
36	17/02705/PLF ERYC	15,767 m NE	Awaiting decision	Erection of 27 dwellings with associated garages/parking	Application made August 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Location Plan Proposed Site Plan.
37	16/01584/STPLF	7089 m N	Permitted	Erection of a building consisting of 6 aircraft hangers	Permission granted in December 2016	Design and Access Statement

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
	ERYC			and storage following demolition of existing buildings and creation of a new vehicular access road	Expiry assumed to be three years (December 2019) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Proposed Site Layout Site Location Plan.
38	16/00528/PLF ERYC	10,473 m E	Permitted	Erection of 17 dwellings and associated surface water drainage	Permission granted in November 2016 Expiry assumed to be three years (November 2019) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Landscape Management Plan Proposal Landscape Management Plan Location Plan Design and Access Statement Site Plan.
39	16/02460/OUT ERYC	2411 m S	Permitted	Outline - Erection of 10 dwellings with associated	Permission granted in January 2017	Design and Access Statement Heritage Statement

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
				access and parking (access and layout to be considered)	Expiry assumed to be three years (January 2020) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Location Plan.
40	15/03487/STPLF ERYC	4810 m S	Permitted	Erection of 94 dwellings with associated open space, drainage infrastructure and landscaping	Permission granted in September 2016 Expiry assumed to be three years (September 2019) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Extended Phase 1 Habitat Survey Design and Access Statement Historic Environment Assessment Landscape and Visual Statement Landscape Proposal Transport Assessment Travel Plan.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
41	17/03359/STPLF ERYC	5437 m E	Awaiting decision	Erection of 92 dwellings with associated parking (with access from adopted road for Phase 1)	Application made September 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Extended Phase 1 Habitat Survey Design and Access Statement Design and Access Statement Appendix A Location Plan Detailed Site Plan Transport Assessment Travel Plan.
42	17/00144/STREM ERYC	5580 m E	Application Approved	Erection of 138 dwellings following outline permission 13/00931/STOUT (All matters to be considered)	Permission granted in August 2017 Expiry assumed to be three years (August 2020) Construction timetable not known at the time of writing PEIR. To be	Ecological Enhancement Management Plan Travel Plan Location Plan Travel Plan.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
					confirmed in consultation with LA.	
43	16/04220/STREM ERYC	6239 m E	Permitted	Erection of 30 dwellings following Outline planning permission 12/04725/STOUT (Appearance, Landscaping and Scale to be considered)	Permission granted in January 2017 Expiry assumed to be three years (January 2020) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Location Plan Proposed Site Plan.
44	17/00508/STPLF ERYC	6116 m SE	Awaiting decision	Erection of 77 dwellings with associated garages, infrastructure and access	Application made February 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Landscape Proposal Location Plan Preliminary Ecological Appraisal Survey Report

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
						Transport Statement Travel Plan.
45	14/01833/OUTM ERYC	11,005 m S	Planning Permission GRANTED	Outline application for the erection of 28 dwellings on 0.72 ha of land with associated access roads, footpaths and landscaping (Some matters reserved - approval being sought for layout)	Permission granted in February 2017 Expiry assumed to be three years (February 2020) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Site Plan
46	15/02275/OUTM Doncaster	12,154 m S	Planning Permission GRANTED	Outline application for the erection of 79 dwellings and construction of access roads on approx. 2.48 ha of land (Approval being sought for access, layout and scale)	Permission granted in January 2017 Expiry assumed to be three years (January 2020) Proposed design year 2024 Construction timetable not known at the time of	Site Plan Transport Assessment.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
					writing PEIR. To be confirmed in consultation with LA.	
47	17/01021/FULM Doncaster	12,378 m S	Awaiting decision	Proposed erection of 67 dwelling apartments with associated ancillary and parking following the demolition of the former NHS clinic.	Application made April 2017 Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Site Plan
48	16/02438/FUL Doncaster	11,664 m S	Planning Permission GRANTED	Erection of a 27 bedroom hotel with associated car parking and landscaping	Permission granted in December 2016 Expiry assumed to be three years (December 2019) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Site Plan.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
49	16/01934/MAT Doncaster	11,122 m S	Planning Not Required	Erection of 35 affordable houses on approx. 1.17 ha of land (Being Application under Regulation 4 Town and Country Planning (General) Regulations 1992).	Application made July 2016 Decision made August 2016, planning not required. Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Proposed Site Plan
50	16/00898/FULM Doncaster	12,176 m S	Planning Permission GRANTED	Extra Care Development comprising of 72 flats, communal areas and associated parking and landscaping	Permission granted in August 2016 Expiry assumed to be three years (August 2019) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Design and Access Statement Landscape Mater Plan Location Plan Site Plan Transport Statement.

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
51	16/00771/FULM Doncaster	10,079 m S	Planning Permission GRANTED	Erection of 17 semi-detached and terrace houses on approx. 0.47ha of land	Permission granted in May 2016 Expiry assumed to be three years (May 2019) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	Location Plan and Site Plan
52	15/03006/FULM 17/01583/MAT Doncaster	11,627 m S	Planning Permission GRANTED	Erection of two retail units (Class A1), one drive-thru restaurant (Class A3/A5) and one commercial unit (Class A1, A2, A3, A4, A5) with associated landscaping and car parking	Permission granted in September 2017, planning not required. Expiry assumed to be three years (September 2020) Construction timetable not known at the time of writing PEIR. To be confirmed in consultation with LA.	N/A

ID	Name of Development	Distance from closest part of the Site	Status (at time of assessment)	Description of Development	Temporal Scope	Environmental Information Available
53	Eggborough CCGT PINS	8500 m W	Examination	Eggborough CCGT - The construction and operation of a new CCGT generating station with a capacity of up to 2,500 megawatts, new gas pipeline to the NTS and other associated development.	Examination due to close on 27 March 2018, with decision expected by end of September 2018. Proposed construction period 2019 to 2022 (40 months)	Environmental Statement Location Plan Design and Access Statement
54	Thorpe Marsh Gas Pipeline PINS	8838 m SW	Granted development consent	Thorpe Marsh Gas Pipeline - The Proposed Gas Pipeline will be a continuously welded buried steel pipeline of approximately 18 km in length	DCO granted in March 2016 Expiry assumed to be three years (March 2019) Construction commence January 2017 to July 2017.	Environmental Statement
55	Knottingley Power Project PINS	15344mW	Granted development consent	Knottingley Power Project - A 1500 MW Combined Cycle Gas Turbine (CCGT) power station and associated infrastructure.	DCO granted in March 2015 Construction is expected to begin in 2017 and operation expected in 2020.	Environmental Statement Location Plan Design and Access Statement.

15.5 CUMULATIVE EFFECTS ASSESSMENT (STAGE 4)

- 15.5.1. For each topic assessment, the short list of developments identified within 15 km of the Proposed Scheme have been filtered to identify those schemes as being within the ZOI, and having the potential to cause cumulative effects. These are detailed by topic below.
- 15.5.2. Cumulative effects which have been identified as being caused by activities during the Construction, Operational and Decommissioning of the Proposed Scheme are identified by topic in Table 165. Cumulative effects identified by the landscape and visual assessment are identified separately in Tables 166 to 170.

TRAFFIC AND TRANSPORT

- 15.5.3. The following developments (taken from Table 155) have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme:
- ID 19: 2014/1028/OUT - Outline planning permission for residential development including access. All other matters are reserved for future consideration 276 dwellings.
 - ID 33: 17/01720/STPLF - Erection of 300 dwellings with associated access, open space, landscaping and infrastructure.
 - ID 53: Eggborough CCGT - The construction and operation of a new CCGT generating station with a capacity of up to 2,500 MW, new gas pipeline to the NTS and other associated development.
- 15.5.4. Developments identified within the shortlist and within the ZOI for Traffic and Transport but not to be considered further are detailed in Table 156.

Table 156 - Developments Excluded from the Traffic and Transport Assessment

Development	Justification for Exclusion from Cumulative Assessment
ID 1:2016/0401/REM ID 3:2017/1018/FULM ID 2:2016/1124/COU ID 4:2015/1405/OUT	Insignificant scale to impact during construction period – consents would be required to have been constructed/implemented prior to the Proposed Schemes construction phase.
ID 16: 2017/0526/OUTM ID 29: 2016/1408/FULM ID 30: 2015/0341/OUT ID 31: 2016/0178/FUL ID 32: 2016/0528/FUL ID 36: 17/02705/PLF ID 37: 16/01584/STPLF ID 38: 16/00528/PLF ID 39: 16/02460/OUT ID 40: 15/03487/STPLF ID 41: 17/03359/STPLF ID 42: 17/00144/STREM ID 43: 16/04220/STREM ID 44: 17/00508/STPLF	Unlikely to impact in traffic terms due to size of developments. Any potential small scale impact of construction would be covered within TEMPRO Growth rate assumptions for the area (TEMPRO considers localised background growth assumptions for the area provided by Dft). Some consents would also be required to have been constructed/implemented prior to the Proposed Schemes construction phase or further planning permissions would need to be sought.

Development	Justification for Exclusion from Cumulative Assessment
ID 45: 14/01833/OUTM ID 46: 15/02275/OUTM ID 47: 17/01021/FULM ID 48: 16/02438/FUL ID 49: 16/01934/MAT ID 50: 16/00898/FULM ID 51: 16/00771/FULM ID 52: 15/03006/FULM ID 35: 17/03450/CM ID 34: 17/02265/STOUT ID 12: 2015/0367/FUL ID 13: 2016/0978/FULM ID 14: 2017/0250/OUTM ID 15: 2015/0389/FUL ID 16: 2017/0577/OUTM ID 18: 2015/0105/OUT ID 20: 2015/0333/FUL ID 21: 2015/0676/FUL ID 22: 2015/0007/FUL ID 23: 2016/0140/REM ID 24: 2014/0202/OUT ID 25: 2017/0750/OUTM ID 26: 2016/1337/OUTM ID 27: 2015/0517/OUT ID 5: 2017/0261/FULM ID 7: 2017/0272/FUL ID 6: 2017/0822/FULM ID 8: 2016/0875/FUL ID 9: 2017/0842/OUTM ID 10: 2017/0542/OUTM ID 11: 2015/1392/EIA	
ID 28: 2017/1055/COD	Request of condition compliance - no highways impact
ID 54: Thorpe Marsh Gas Pipeline	4 vehicles per hour from 7am to 7pm, or one every 15 minutes, during the working week. Overall the impacts on the existing road networks are expected to be modest and not likely to increase traffic on ZOI
ID 55: Knottingley Power Project	Not likely to impact the same junctions as our assessment due to location on M62

AIR QUALITY

- 15.5.5. The following developments (taken from Table 155) have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme:

- ID 3: 2017/1018/FULM
- ID 4: 2015/1405/OUT
- ID 6: 2017/0822/FULM
- ID 53: Eggborough CCGT

15.5.6. Developments identified within the shortlist and within the ZOI for Air Quality but not to be considered further are detailed in Table 157.

Table 157 - Developments Excluded from the Air Quality Assessment

Development	Justification for Exclusion from Cumulative Assessment
IDs: 1, 2, 5, 11, 21, 31, 32, 35, 37 and 54.	Type of development and distance to Proposed Scheme is unlikely to result in in-combination effects (No relevant emissions for developments).
IDs: 7-10, 12-20, 22-30, 33-34, 36, 38-47.	Residential development small in scale and/or with no significant traffic emission in the local road network to the Proposed Scheme (i.e. distance from the Proposed Scheme).

NOISE AND VIBRATION

15.5.7. The following developments (taken from Table 155) have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme:

- ID 3: 2017/1018/FULM - Construction of 40 MW battery energy storage barn to provide back-up electricity services to the National Grid for a period of 25 years from the date of commissioning and retention of building thereafter
- ID 6: 2017/0822/FULM - Proposed construction of new energy centre comprising of new main energy centre building and ancillary tanks, containers and services buildings

15.5.8. Developments identified within the shortlist and within the ZOI for Noise and Vibration but not to be considered further are detailed in Table 158.

Table 158 - Developments Excluded from the Noise and Vibration Assessment

Development	Justification for Exclusion from Cumulative Assessment
ID 1 : 2016/0401/REM	Residential development – no cumulative noise increase with Proposed Scheme
ID 2 : 2016/1124/COU	Residential development – no cumulative noise increase with Proposed Scheme
ID 4 : 2015/1405/OUT	Residential development – no cumulative noise increase with Proposed Scheme
ID 7 : 2017/0272/FUL	Residential development – no cumulative noise increase with Proposed Scheme

Development	Justification for Exclusion from Cumulative Assessment
ID 39: 16/02460/OUT	Residential development – no cumulative noise increase with Proposed Scheme
ID 40: 15/03487/STPLF	Residential development – no cumulative noise increase with Proposed Scheme

HISTORIC ENVIRONMENT

15.5.9. The following developments (taken from Table 155) have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme:

→ The construction of 40 MW battery energy storage barn (ID 3: 2017/1018/FULM)

15.5.10. Developments identified within the shortlist and within the ZOI for the historic environment but not to be considered further are detailed in Table 159.

Table 159 - Developments Excluded from the Cultural Heritage Assessment

Development	Justification for Exclusion from Cumulative Assessment
All shortlisted developments excluding ID 3: 2017/1018/FULM	With the exception of Scruff Hall, Drax Priory, The Church of St Peter and St Paul and associated cross base, impacts resulting from the Proposed Scheme on the setting of designated heritage assets during operation and construction is anticipated to be No Change or Negligible, therefore the in-combination effect of the two developments will not be significant and will not require further assessment. As the development will not be seen from Scruff Hall, Drax Priory, The Church of St Peter and St Paul and associated cross base, it will not act cumulatively with the Proposed Scheme to have an effect on their settings. It is anticipated that there will be a cumulative impact together with the Proposed Scheme upon the general archaeological resource of the area, rather than upon any one individual heritage asset identified in this report and therefore requires no further assessment.

BIODIVERSITY

15.5.11. The following developments (taken from Table 155) have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme:

→ ID 3: 2017/1018/FULM, comprising construction and operation of a 40 MW battery storage facility at the eastern end of Pipeline Option A.

→ ID 6: 2017/0822/FULM, comprising construction and operation of a new energy centre at the English Salads horticultural facility 465 m SW of the Site.

- ID 35: 17/03450/CM, comprising construction and operation of Anaerobic Digestion (AD) Plant, approximately 7800 m NE of the Site.
- ID 53: Eggborough CCGT comprising the construction and operation of a new CCGT generating station with capacity of up to 2,500 MW.

15.5.12. Developments identified within the shortlist and within the ZOI for biodiversity but not to be considered further are detailed in Table 160.

Table 160 - Developments Excluded from the Biodiversity assessment

Development	Justification for Exclusion from Cumulative Assessment
All residential developments	Small Scale of developments and/or distance from Site. Vehicle emissions arising from operational use of developments likely to be negligible and long term air quality strategy for UK will see ultra-low and zero emissions vehicles making up an increasing proportion of the vehicle fleet over coming years.
ID 5: 2017/0261/FULM	Project comprises flood defence embankment and associated infrastructure. Located in excess of 6 km from Site; nature and distance of this development from the Project means significant cumulative effects are unlikely to arise.
ID 11: 2015/1392/EIA	Project comprises erection of a new single-storey production facility for the manufacture of insulation boarding together with associated vehicle movement and parking areas. Small scale and nature of development and distance from Site means significant cumulative effects are unlikely to arise.
ID 21: 2015/0676/FUL	Proposed installation of 960 ground mounted PV panels. Small scale and nature of development and distance from Site means significant cumulative effects are unlikely to arise.
ID 22: 2015/0007/Ful	Erection of a two storey building to accommodate new social and leisure facilities. Small scale and nature of development and distance from Site means significant cumulative effects are unlikely to arise.
ID 32: 2016/0528/FUL	Section 73 application to vary condition 05 (plans) of planning permission 2014/0685/FUL Proposed installation of 4 x 18 m high floodlights. Small scale and nature of development and distance from Site means significant cumulative effects are unlikely to arise.
ID 37: 16/01584/STPLF	Erection of a building consisting of 6 aircraft hangers and storage following demolition of existing buildings and creation of a new vehicular access road. Small scale and nature of development and distance from Site means significant cumulative effects are unlikely to arise. Emissions to air from

Development	Justification for Exclusion from Cumulative Assessment
	operational airfield unlikely to contribute significantly to air quality impacts on European Sites.
ID 54: Thorpe Marsh Gas Pipeline	Distance of development from the Proposed Scheme. SoS Decision letter identifies that no likely significant effects to European Sites are expected and that this concurs with advice from NE. The decision letter also identifies that positive biodiversity enhancements are predicted.

LANDSCAPE AND VISUAL

15.5.13. The following developments (taken from Table 155) are considered as being within the ZOI and have the potential to provide cumulative effects when considered in the context of the Proposed Scheme:

- ID 3: 2017/1018/FULM Construction of 40 MW battery energy storage barn to provide back-up electricity services to the National Grid for a period of 25 years from the date of commissioning and retention of building thereafter. This lies in close proximity to Route Option A and forms a large structure (45 m x 25 m).
- ID 11: 2015/1392/EIA Erection of a new single storey production facility for the manufacture of insulation boarding together with associated vehicle movement and parking areas. The structure lies close to Eggborough Power Station and could be perceived to be part of the overall mass associated with the power station covering 19,995 m².
- ID 53: Eggborough CCGT - The construction and operation of a new CCGT generating station with a capacity of up to 2,500 MW which will include new stacks, new gas pipeline to the NTS and other associated development.
- ID 54: Thorpe Marsh Gas Pipeline - The Proposed Gas Pipeline will be a continuously welded buried steel pipeline of approximately 18 km in length. Effects associated with the 30 m working corridor during construction which spans from Thorne across to Burn.
- ID 55: Knottingley Power Project - A 1500 MW Combined Cycle Gas Turbine (CCGT) power station which will include new stacks, and associated infrastructure.

15.5.14. The cumulative assessment focused on the additional effect of the Proposed Scheme in conjunction with other developments of the same type, scale, mass and height as referred to under GLVIA 3 (paragraph 7.10 – 7.11)⁸³.

15.5.15. The assessment did not consider residential developments, conversions or extensions, storage and distribution, waste management and holiday and recreational facilities due to their overall size, scale and height. The majority of such developments lie within or adjacent to settlements within the ZOI predominately Selby, Thorne, Goole,

⁸³ 'Guidelines for Landscape and Visual Impact Assessment' Third Edition, Landscape Institute and the Institute of Environmental Assessment, 2013 (GLVIA3),

Howden and Eggborough and therefore should be integrated by the built form or intervening vegetation.

15.5.16. As outlined in the LVIA chapter the assessment makes clear where cumulative effects will be different depending on the gas pipeline route options and transport options. It is considered that effects associated with decommissioning would be similar to those during construction.

15.5.17. The LVIA considered cumulative effects on receptors within a 10 km ZOI from the Site as previously defined, and gave due consideration to "other developments" within a 15 km radius from the Site.

Table 161 - Developments excluded from the Landscape and Visual Assessment

Development	Justification for Exclusion from Cumulative Assessment
ID 1: 2016/0401/REM ID 2: 2016/1124/COU ID 4: 2015/1405/OUT ID 7: 2017/0272/FUL	Insignificant impacts in terms of scale, height and extent
ID 5: 2017/0261/FULM	Insignificant impacts in terms of height and distance in relation to the Proposed Scheme
ID 6: 2017/0822/FULM	Proposed structure (39 x 36m and 8.7m in height will replace existing boiler house with an energy centres. It sits within an industrialised site. It is relatively small in scale compared to existing buildings over 10m in height and 10,000m2 in area The development is also screened to the south by existing trees
ID 8: 2016/0875/FUL	Insignificant impacts in terms of scale, height and proximity.
ID 9: 2017/0842/OUTM	Urban extension at a distance and adjacent to the urban edge of Eggborough
ID 10: 2017/0542/OUTM	Insignificant impacts in terms of scale, height and extent and adjacent to the urban edge of Eggborough
ID 12: 2015/0367/FUL ID 13: 2016/0978/FULM ID 14: 2017/0250/OUTM ID 15: 2015/0389/FUL	Insignificant impacts in terms of scale and height, and within Brayton to the north west of the Proposed Scheme
ID 16: 2017/0526/OUTM ID 20: 2015/0333/FUL	Insignificant impacts in terms of scale and height, within Hambleton to the north west of the Proposed Scheme
ID 17: 2017/0577/OUTM	Insignificant impacts in terms of scale, height and extent, and edging Thorpe Willoughby to the north west of the Proposed Scheme

Development	Justification for Exclusion from Cumulative Assessment
ID 18: 2015/0105/OUT ID 19: 2014/1028/OUT	Insignificant impacts in terms of scale and height, edging Thorpe Willoughby to the north west of the Proposed Scheme
ID 21: 2015/0676/FUL	Distance from the site and based on position of Proposed Scheme insignificant impacts
ID 22: 2015/0007/FUL	Located west of Selby town centre adjacent to leisure centre, insignificant impacts in terms of its proximity to the Proposed Scheme and height
ID 23: 2016/0140/REM	Proposed pig units north west of Selby- insignificant impacts in terms of scale, height, extent and proximity
ID 24: 2014/0202/OUT	Insignificant impacts in terms of scale, height, extent and proximity forms an infill development within Barlby
ID 25: 2017/0750/OUTM	Insignificant impacts in terms of scale, height and extent - within Hensall to west of the Proposed Scheme
ID 26: 2016/1337/OUTM	Insignificant impacts in terms of scale, height and extent - edging Heminborough to north of the Proposed Scheme
ID 27: 2015/0517/OUT	Insignificant impacts in terms of scale, height, extent and proximity - lies to north of North Duffield and north of the Proposed Scheme
ID 28: 2017/1055/COD	Insignificant impacts in terms of height and proximity - lies on the southern edge of Selby and north of the Proposed Scheme
ID 29: 2016/1408/FULM	Insignificant impacts in terms of scale, height, extent - lies within Selby to the north of the Proposed Scheme
ID 30: 2015/0341/OUT	Insignificant impacts in terms of scale, height, extent - lies north west of Selby and to the north of the Proposed Scheme
ID 31: 2016/0178/FUL	Sits within an industrial estate to the eastern edge of Selby and of a compatible height and mass to existing structures some of which will be demolished to accommodate the development.
ID 32: 2016/0528/FUL	Insignificant impacts in terms of scale, height, extent and given its proximity to the urban edge of Selby
ID 33: 17/01720/STPLF ID 34: 17/02265/STOUT	Insignificant impacts in terms of scale, height - lies to the north west of Howden and to the east of the Proposed Scheme and will form an urban extension
ID 35: 17/03450/CM	Insignificant impacts - heights of proposed structures a max of 14.83m and limited long distance views of the development due to topography, intervening vegetation and

Development	Justification for Exclusion from Cumulative Assessment
	built form - intervisibility between the Proposed Scheme and this development is limited.
ID 36: 17/02705/PLF	Insignificant impacts in terms of scale, height and extent and proximity - Holme on Spalding
ID 37: 16/01584/STPLF	Insignificant impacts due to relatively low height of structures and distance - limited inter visibility with Brighton Airfield
ID 38: 16/00528/PLF	Insignificant impacts in terms of scale, height and extent and proximity - Eastrington and forms infill development
ID 39: 16/02460/OUT	Insignificant impacts in terms of scale, height and extent - Rawcliffe in fill development
ID 40: 15/03487/STPLF	Insignificant impacts in terms of scale, height and extent - West Cowick / Snaith
ID 41: 17/03359/STPLF ID 42: 17/00144/STREM ID 43: 16/04220/STREM ID 44: 17/00508/STPLF	Insignificant impacts in terms of scale, height and extent - Goole
ID 45: 14/01833/OUTM ID 46: 15/02275/OUTM ID 47: 17/01021/FULM ID 48: 16/02438/FUL ID 49: 16/01934/MAT ID 50: 16/00898/FULM ID 51: 16/00771/FULM ID 52: 15/03006/FULM	Insignificant impacts in terms of scale, height and extent as well as proximity -Thorne

GROUND CONDITIONS AND CONTAMINATION

15.5.18. The following developments (taken from Table 155) are considered as being within the ZOI and have the potential to provide cumulative effects when considered in the context of the Proposed Scheme:

→ ID 3: 2017/1018/FULM comprising construction of 40 MW battery energy storage facility to provide backup electricity services to National Grid, located within the red line boundary for the Proposed Scheme in proximity to Gas Pipeline Option A.

15.5.19. All other developments identified within the shortlist fall outside of the ZOI for Ground Conditions and Contamination and will not be considered further

WATER RESOURCE, QUALITY AND HYDROLOGY

15.5.20. The following developments (taken from Table 155) have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme:

→ ID 1: 2016/0401/REM

→ ID 3: 2017/1018/FULM

→ ID 6: 2017/0822/FULM

15.5.21. The assessment looked at the following aspect when considering the potential for cumulative effects:

- Hydraulically linked;
- Potential downstream receptor;
- Construction happening at the same time / period (more details required on this for the applications taken forward to Stage 4); and
- Any loss of floodplain storage.

15.5.22. All developments assumed to have an effective CEMP in place for volume, rate and pollution management and a surface water drainage strategy approved by the LLFA / IDB.

15.5.23. The following development is located outside of the ZOI, however it is within 1 km of the ZOI so it has been considered. However, following a review of the Flood Risk Assessment it was concluded that the development will not be considered further.

Table 162 - Developments Excluded from the Water Resource, Quality and Hydrology

Development	Justification for Exclusion from Cumulative Assessment
ID 4 : 2015/1405/OUT	Robust drainage strategy proposed as part of the application. Floor levels will be raised, however it is likely to include ramped access to maintain surrounding site levels at or near existing levels to ensure flood waters are not dispersed elsewhere as a result of the development.

WASTE

15.5.24. The following developments (taken from Table 155) have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme:

- ID 1: 2016/0401/REM
- ID 3: 2017/1018/FULM
- ID 4: 2015/1405/OUT
- ID 6: 2017/0822/FULM
- ID 7: 2017/0272/FUL
- ID 8: 2016/0875/FUL
- ID 9: 2017/0842/OUTM
- ID 10: 2017/0542/OUTM
- ID 11: 2015/1392/EIA
- ID 12: 2015/0367/FUL
- ID 13: 2016/0978/FULM
- ID 14: 2017/0250/OUTM
- ID 15: 2015/0389/FUL
- ID 16: 2017/0526/OUTM
- ID 17: 2017/0577/OUTM
- ID 18: 2015/0105/OUT

- ID 19: 2014/1028/OUT
- ID 20: 2015/0333/FUL
- ID 21: 2015/0676/FUL
- ID 22: 2015/0007/FUL
- ID 24: 2014/0202/OUT
- ID 25: 2017/0750/OUTM
- ID 26: 2016/1337/OUTM
- ID 27: 2015/0517/OUT
- ID 28: 2017/1055/COD
- ID 29: 2016/1408/FULM
- ID 30: 2015/0341/OUT
- ID 31: 2016/0178/FUL
- ID 32: 2016/0528/FUL
- ID 33: 17/01720/STPLF
- ID 34: 17/02265/STOUT
- ID 35: 17/03450/CM
- ID 36: 17/02705/PLF
- ID 37: 16/01584/STPLF
- ID 38: 16/00528/PLF
- ID 39: 16/02460/OUT
- ID 40: 15/03487/STPLF
- ID 41: 17/03359/STPLF
- ID 42: 17/00144/STREM
- ID 43: 16/04220/STREM
- ID 44: 17/00508/STPLF
- ID 45: 14/01833/OUTM
- ID 46: 15/02275/OUTM
- ID 47: 17/01021/FULM
- ID 48: 16/02438/FUL
- ID 49: 16/01934/MAT
- ID 50: 16/00898/FULM
- ID 51: 16/00771/FULM
- ID 52: 15/03006/FULM
- ID 53: Eggborough CCGT
- ID 54: Thorpe Marsh Gas Pipeline
- ID 55: Knottingley Power Project

15.5.25. Developments identified within the shortlist and within the ZOI for Waste but not to be considered further are detailed in Table 163.

Table 163 - Developments Excluded from the Waste Assessment

Development	Justification for Exclusion from Cumulative Assessment
ID 2: 2016/1124/COU	Operational waste will be generated however volume will be minor. It is not likely the caravans and campsite will be occupied permanently throughout the year.
ID 5: 2017/0261/FULM	Demolition and construction waste will likely be generated however in small volumes due to the nature of the development. It is envisaged materials will be reused on-site.
ID 1: 2016/0140/REM	Earthworks and construction waste will likely be generated however in small volumes due to the nature of the development. It is envisaged materials will be reused on-site.

SOCIO-ECONOMICS

- 15.5.26. All developments listed within Table 155 have been deemed as being within the ZOI and having the potential to provide cumulative effects, when considered in the context of the Proposed Scheme, other than the developments in Table 164 below which have been identified within the shortlist and within the ZOI for Socio-economics but will not be considered further.

Table 164 - Developments Excluded from the assessment of particular effects for Socio-economics

Development	Justification for Exclusion from Cumulative Assessment
ID 7: 2017/0272/FUL ID 10: 2017/0542/OUTM, ID 11: 2015/1392/EIA, ID 22: 2015/0007/FUL, ID 24: 2014/0202/OUT, ID 28: 2017/1055/COD, ID 31: 2016/0178/FUL, ID 32: 2016/0528/FUL, ID 35: 17/03450/CM, ID 35: 17/03450/CM, ID 52: 15/03006/FULM, ID 55: Knottingley Power Project	Situated on brownfield site and therefore will not involve the loss of best and most versatile agricultural land or affect farm landholdings and the viability of farm businesses.
All developments aside from the construction of 40 MW battery energy storage barn (ID 3: 2017/1018/FULM) and Reserved matters approval is sought for	Two committed developments (ID 3: 2017/1018/FULM) are anticipated to have an in-combination cumulative effects on access and the amenity value of PRoW, as only these developments have common sensitive receptors with the Proposed Scheme (e.g. the local public rights of way within and in the immediate vicinity of the Site).

Development	Justification for Exclusion from Cumulative Assessment
the scale, layout, external appearance and landscaping of 14 dwellings, means of access was approved at outline stage (ID 1: 2016/0401/REM)	

Table 165 - Cumulative Effects for the Proposed Scheme

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
Traffic and Transport			
ID 19: 2014/1028/OUT	<u>Construction Effects</u> Potential to increase traffic flows in the area during the construction phase although these would be low increases—neutral - minor adverse effect <u>Operational Effects</u> Neutral <u>Decommissioning Effects</u> Neutral	Embedded mitigation proposed (Construction Traffic Management Plan and Travel Plan). Wider highway mitigation may be required but information is not available at this stage	Neutral - Minor adverse Neutral Neutral
ID 33: 17/01720/STPLF	<u>Construction Effects</u> Potential to increase traffic flows in the area during the construction phase although these would be low increases—Neutral/Minor adverse Effect <u>Operational Effects</u> Neutral <u>Decommissioning Effects</u> Neutral	Embedded mitigation proposed (Construction Traffic Management Plan and Travel Plan). Wider highway mitigation may be required but information is not available at this stage	Neutral - Minor adverse Neutral Neutral
ID 53: Eggborough CCGT	<u>Construction Effects</u>	Embedded mitigation proposed (Construction Traffic	Neutral - Minor adverse

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	Potential to increase traffic flows in the area during the construction phase – minor adverse effect <u>Operational Effects</u> Neutral <u>Decommissioning Effects</u> Potential to increase traffic flows in the area during the decommissioning phase - minor adverse effect	Management Plan and Travel Plan). Wider highway mitigation may be required but information is not available at this stage	Neutral Neutral
Combination of: ID 19: 2014/1028/OUT ID 47: 17/01720/STPLF ID 53: Eggborough CCGT	To be confirmed within the ES when further information on construction programmes is known.	Embedded mitigation proposed (Construction Traffic Management Plan and Travel Plan). Wider highway mitigation may be required but information is not available at this stage	To be confirmed within the ES when further information on construction programmes is known.
Air Quality			
ID 3: 2017/1018/FULM	<u>Construction Effects</u> Potential to increase traffic flows in the area– minor adverse effect	In the event that construction phases run in parallel, scheduling of deliveries and a CEMP will ensure that any	Neutral – Minor Adverse

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
		potential impacts are minimised.	
ID 4: 2015/1405/OUT	<u>Construction Effects</u> Potential to increase traffic flows in the area – minor adverse effect	In the event that construction phases run in parallel, scheduling of deliveries and a CEMP will ensure that any potential impacts are minimised	Neutral – Minor Adverse
ID 6: 2017/0822/FULM	<u>Operational Effects</u> Potential to increase emissions of NO ₂ at sensitive human receptors – minor adverse effect Impacts on Biodiversity receptors covered in relevant rows below.	Design, layout and location of stacks to ensure adequate air dispersion and minimise impacts.	Neutral – Minor Adverse
ID 53: Eggborough CCGT	<u>Operational Effects</u> Potential for likely significant effects as a result of nitrogen deposition onto Natura 2000 Sites arising from the developments operational emissions. These effects could combine with potential likely significant effects arising from the Proposed Scheme, increasing the overall magnitude of the impact.	Design, layout and location of stacks to ensure adequate air dispersion and minimise impacts.	Potentially significant (Moderate – Major); further assessment required at ES stage.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
Combination of: ID 3: 2017/1018/FULM ID 4: 2015/1405/OUT Combination of: ID 6: 2017/0822/FULM ID 53: Eggborough CCGT	<u>Construction Effects</u> Potential to increase traffic flows in the area – minor adverse effect <u>Operational Effects</u> Potential to increase emissions of NO₂ at sensitive human receptors and Natura 2000 Sites	In the event that construction phases run in parallel, scheduling of deliveries and a CEMP will ensure that any potential impacts are minimised Design, layout and location of stacks to ensure adequate air dispersion and minimise impacts.	Neutral – Minor Adverse Potentially significant (Moderate – Major); further assessment required at ES stage.
Noise and Vibration			
ID 3: 2017/1018/FULM -	<u>Construction Effects</u> There is currently no construction noise assessment available for this development on the SDC planning register. However, based on the proposed development, the likely construction activities and the distances between this development and the closest NSR locations, it is considered that cumulative construction noise effects are unlikely.	Embedded Mitigation	No cumulative effect – Neutral

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	<u>Operational Effects</u> The planning noise report (Rusholme Grange Farm Energy Barn Noise Assessment A1009-15 R02 11 September 2017) has been reviewed. Based on the predicted operational noise levels identified in the report it is confirmed that cumulative operational noise effects at the NSR locations are considered to be unlikely. <u>Decommissioning Effects</u> A decommissioning noise assessment for the energy centre is not available on the SDC planning register. However, based on the proposed development, the likely decommissioning activities and the distances between the development site and the closest NSR locations, it is considered that cumulative decommissioning noise effects are unlikely.		
ID 6: 2017/0822/FULM -	<u>Construction Effects</u> There is currently no construction noise assessment available for this	Embedded Mitigation	No cumulative effect – Neutral

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	development on the SDC planning register. However, based on the proposed development, the likely construction activities and the distances between the site and NSR locations, it is considered that cumulative construction noise effects are unlikely. <u>Operational Effects</u> An operational noise assessment for the energy centre is not currently available on the SDC planning register. However, based on the proposed development, the likely operational activities and the distances between the development site and the closest NSR locations, it is considered that cumulative operational noise effects are unlikely. <u>Decommissioning Effects</u> A decommissioning noise assessment for the energy centre is not available on the SDC planning register. However, based on the proposed development, the likely decommissioning activities and		

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	the distances between the development site and the closest NSR locations, it is considered that cumulative decommissioning noise effects are unlikely		
Combination of: ID 3: 2017/1018/FULM ID 6: 2017/0822/FULM	To be confirmed within the ES when further information on construction programmes is known.	Embedded mitigation	To be confirmed within the ES when further information on construction programmes is known.
Historic Environment			
ID 3: 2017/1018/FULM	<u>Construction Effects</u> This development is located within the footprint of Pipeline Option A, where gas retrieving facilities associated with the Proposed Scheme may be located. As both developments will require ground disturbance in their construction, any archaeological remains identified through investigative trial trenching within the footprint are at risk of being disturbed or truncated. If archaeological remains are found to be present it is	If following intrusive investigation significant archaeological remains were identified in the footprint of Pipeline Option A, this area would be subject to an open area excavation and subsequent post-excavation assessment and analysis through to publication and dissemination of the results.	There would be no residual effect following mitigation as the archaeology would have been removed prior to construction (Neutral)

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	likely their significance would range from local to regional therefore the impact of the Proposed Scheme could be large. The in-combination of the two developments would not increase the likely significance of this effect. <u>Operational Effects</u> No operational effects are anticipated as mitigation would have been carried out in this area prior to construction. <u>Decommissioning Effects</u> There would no decommissioning effects as the archaeology would have been removed prior to construction		
Biodiversity			
ID 3: 2017/1018/FULM	No significant cumulative effects predicted. The Preliminary Ecological Appraisal prepared for the development (Acorn Ecology, 2017) predicts no significant effects on ecological resources and that the development will be located within an area of limited ecological interest.	N/A	Neutral

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
ID 6: 2017/0822/FULM	Operational emissions to air from the New Energy Centre could potentially combine with those from the Proposed Scheme to result in cumulative air quality impacts on designated ecological sites. Potential contributions to significant effects are most likely to Natura 2000 Sites in close proximity to the development due to the relatively low capacity and stack height of the proposed CHP Plant. Documents identifying the predicted emissions of the development could not be found on the Selby District Council Planning Portal so quantification of potential impacts cannot be completed.	Detailed assessment of air quality impacts on designated ecological sites will be completed for the ES, as air quality modelling is still being completed; this will determine what, if any, mitigation is appropriate. Mitigation could take the form of measures to avoid or reduce certain emissions from the Proposed Scheme.	Potentially significant (Moderate – Major); further assessment required at ES stage.
ID 35: 17/03450/CM	No significant cumulative effects predicted. The development is located in excess of 2 km from any Natura 2000 Sites and in excess of 7.5 km from the Site. It is therefore considered unlikely to contribute significantly to air quality impacts on Natura 2000 Sites (the only effect which is considered potentially	N/A	Negligible contribution to potential effects from the Proposed Scheme and hence a neutral level of effect is anticipated.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	significant in-combination with the Proposed Scheme).		
ID 53: Eggborough CCGT	Potential for likely significant effects as a result of nitrogen deposition onto Natura 2000 Sites arising from the developments operational emissions. These effects could combine with potential likely significant effects arising from the Proposed Scheme, increasing the overall magnitude of the impact.	Detailed assessment of air quality impacts on designated ecological sites will be completed for the ES, as air quality modelling is still being completed; this will determine what, if any, mitigation is appropriate. Mitigation could take the form of measures to avoid or reduce certain emissions from the Proposed Scheme.	Potentially significant (moderate – major); further assessment required at ES stage.
Combination of: ID 3: 2017/1018/FULM ID 6: 2017/0822/FULM ID 35: 17/03450/CM ID 53: Eggborough CCGT	To be confirmed within the ES when further information on construction programmes is known.	Embedded mitigation Detailed assessment of air quality impacts on designated ecological sites will be completed for the ES, as air quality modelling is still being completed; this will determine what, if any, mitigation is appropriate. Mitigation could	To be confirmed within the ES when further information on construction programmes is known.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
		take the form of measures to avoid or reduce certain emissions from the Proposed Scheme.	
Ground Conditions and Contamination			
ID 3: 2017/1018/FULM	No expectation of cumulative effects on the basis that construction of both the Proposed Scheme and ID 3: 2017/1018/FULM will be undertaken in accordance with a robust CEMP and operation of the facility will in accordance with an environmental permit.	Embedded mitigation (CEMP) No further mitigation proposed	No residual cumulative effect (Neutral).
Water Resource, Quality and Hydrology			
ID 1: 2016/0401/REM ID 3: 2017/1018/FULM ID 6: 2017/0822/FULM	No expectation of cumulative effects on the basis that construction of the developments will be undertaken in accordance with a robust CEMP, and operation of the developments will be in accordance with planning guidance and	Embedded mitigation (CEMP) No further mitigation proposed	No residual cumulative effect (Neutral)

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	will therefore have minimal or no operational impacts.		
Waste			
ID 1: 2016/0401/REM ID 4: 2015/1405/OUT ID 7: 2017/0272/FUL ID 7: 2016/0875/FUL ID 9: 2017/0842/OUTM ID 10: 2017/0542/OUTM ID 10: 2017/0542/OUTM ID 12: 2015/0367/FUL ID 13: 2016/0978/FULM ID 14: 2017/0250/OUTM ID 15: 2015/0389/FUL ID 16: 2017/0526/OUTM ID 17: 2017/0577/OUTM ID 18: 2015/0105/OUT ID 19: 2014/1028/OUT ID 20: 2015/0333/FUL ID 24: 2014/0202/OUT ID 25: 2017/0750/OUTM ID 26: 2016/1337/OUTM	It should be noted that the proposed residential developments identified within 'other developments' have been grouped together in this row as they will all generate similar waste types and have similar waste management arrangements. <u>Construction Effects</u> For the purposes of estimating construction waste generation, it has been assumed that each of the proposed residential units will have a Gross Internal Area (GIA) of 105 m²; this is the average size of an owner-occupied home in the UK. Based on this assumption, the total number of proposed households identified within 'other developments' (4,100) and BRE	<u>Construction</u> In terms of waste generation and disposal, these developments, in addition to the Proposed Scheme, will implement Site Waste Management Plans (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor significance.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
ID 27: 2015/0517/OUT ID 28: 2017/1055/COD ID 29: 2016/1408/FULM ID 30: 2015/0341/OUT ID 33: 17/01720/STPLF ID 34: 17/02265/STOUT ID 36: 17/02705/PLF ID 38: 16/00528/PLF ID 39: 16/02460/OUT ID 40: 15/03487/STPLF ID 41: 17/03359/STPLF ID 42: 17/00144/STREM ID 43: 16/04220/STREM ID 44: 17/00508/STPLF ID 46: 15/02275/OUTM ID 47: 17/01021/FULM ID 48: 16/02438/FUL ID 49: 16/01934/MAT ID 50: 16/00898/FULM ID 51: 16/00771/FULM	benchmark for calculating construction waste (16.8 tonnes per 100 m²) it is estimated that approximately 72,324 tonnes of construction waste from these developments will be generated. The construction phasing of these developments is unknown at this stage therefore for the purpose of this assessment and to provide a worst case scenario it has been assumed that this estimated volume of construction waste will be generated in one year. On this basis, the sensitivity of the local waste treatment and disposal facilities is medium as the waste generated comprises small volumes of hazardous waste, or medium volumes of non-hazardous waste or inert waste and local waste facilities are unrestricted (i.e. there are more than 20 facilities in the study area). <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these		

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.		
ID 3: 2017/1018/FULM	<u>Construction Effects</u> Based on BRE benchmarks for calculating construction waste (12.6 tonnes per 100 m ²) and the proposed floor area of the development (1,125m ²) it is estimated that approximately 142 tonnes of construction waste from this development will be generated. The construction phasing of this development is unknown at this stage therefore for the purpose of this assessment and to provide a worst case scenario it has been assumed that the estimated volume of construction waste will be generated in one year. On this basis, the sensitivity of the local waste treatment and disposal facilities is neutral as the waste generated comprises no or negligible volumes of	<u>Construction</u> In terms of waste generation and disposal, this development, in addition to the Proposed Scheme, will implement Site Waste Management Plans (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor significance.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	hazardous waste, or minor volumes of non-hazardous or inert waste and local waste facilities are unrestricted (i.e. there are more than 20 facilities in the study area). <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.		
ID 6: 2017/0822/FULM	<u>Construction Effects</u> Based on BRE benchmarks for calculating construction waste (12.6 tonnes per 100 m²) and the proposed floor area of the development (1,404 m²) it is estimated that approximately 178 tonnes of construction waste from this development will be generated.	<u>Construction</u> In terms of waste generation and disposal, this development, in addition to the Proposed Scheme, will implement Site Waste Management Plans (SWMPs) which incorporate measures	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor significance.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	The construction phasing of this development is unknown at this stage therefore for the purpose of this assessment and to provide a worst case scenario it has been assumed that the estimated volume of construction waste will be generated in one year. On this basis, the sensitivity of the local waste treatment and disposal facilities is neutral as the waste generated comprises no or negligible volumes of hazardous waste, or minor volumes of non-hazardous or inert waste and local waste facilities are unrestricted (i.e. there are more than 20 facilities in the study area). <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time	for the minimisation and sustainable management of construction waste.	

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	when these developments are decommissioned cannot be defined.		
ID 3: Eggborough CCGT ID 55: Knottingley Power Project	<u>Construction Effects</u> A review of publicly available information will be carried out for the ES, when further information on anticipated construction waste for the Proposed Scheme will be available. <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.	<u>Construction</u> In terms of waste generation and disposal, these developments, in addition to the Proposed Scheme, will implement Site Waste Management Plans (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor adverse significance.
ID 11: 2015/1392/EIA	<u>Construction Effects</u> A review of publicly available information will be carried out for the ES, when further information on anticipated	<u>Construction</u> In terms of waste generation and disposal, this development, in addition to the	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	construction waste for the Proposed Scheme will be available. <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.	Proposed Scheme, will implement a Site Waste Management Plan (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	waste management infrastructure are anticipated to be of minor adverse significance.
ID 21: 2015/0676/FUL	<u>Construction Effects</u> A review of publicly available information will be carried out for the ES, when further information on anticipated construction waste for the Proposed Scheme will be available. <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of	<u>Construction</u> In terms of waste generation and disposal, this development, in addition to the Proposed Scheme, will implement a Site Waste Management Plan (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor adverse significance.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.		
ID 22: 2015/0007/FUL ID 52: 15/03006/FULM ID 35: 17/03450/CM ID 31: 2016/0178/FUL	<u>Construction Effects</u> A review of publicly available information will be carried out for the ES, when further information on anticipated construction waste for the Proposed Scheme will be available. <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.	<u>Construction</u> In terms of waste generation and disposal, these developments, in addition to the Proposed Scheme, will implement Site Waste Management Plans (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor adverse significance.
ID 32: 2016/0528/FUL	<u>Construction Effects</u> A review of publicly available information will be carried out for the ES, when further information on anticipated	<u>Construction</u> In terms of waste generation and disposal, this development, in addition to the Proposed Scheme, will	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	construction waste for the Proposed Scheme will be available. <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.	implement a Site Waste Management Plan (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	infrastructure are anticipated to be of minor adverse significance.
ID 37: 16/01584/STPLF	<u>Construction Effects</u> A review of publicly available information will be carried out for the ES, when further information on anticipated construction waste for the Proposed Scheme will be available. <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of	<u>Construction</u> In terms of waste generation and disposal, this development, in addition to the Proposed Scheme, will implement a Site Waste Management Plan (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor significance.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.		
ID 54: Thorpe Marsh Gas Pipeline	<u>Construction Effects</u> A review of publicly available information will be carried out for the ES, when further information on anticipated construction waste for the Proposed Scheme will be available. <u>Decommissioning Effects</u> It is not possible to assess the decommissioning effects of these developments at this stage as a baseline which takes into consideration the types, quantum and capacity availability of waste infrastructure in the region at the time when these developments are decommissioned cannot be defined.	<u>Construction</u> In terms of waste generation and disposal, this development, in addition to the Proposed Scheme, will implement a Site Waste Management Plan (SWMPs) which incorporate measures for the minimisation and sustainable management of construction waste.	<u>Construction</u> Considering these mitigation factors, the resulting cumulative effects on existing waste management infrastructure are anticipated to be of minor adverse significance.
Socio-economics			
All developments	<u>Construction Effects</u>	N/A other than the preparation of Employment and Skills Plan.	Minor - moderate positive significance

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	There is likely to be positive in-combination socio-economic effects associated with direct temporary demolition employment generated by all of the identified developments (based on a scenario where the Site Reconfiguration Works are undertaken as part of the Proposed Scheme). Therefore, there is considered to be an in-combination effect associated with direct employment opportunities of greater positive significance (i.e. greater than negligible to minor positive significance at the local and regional level study areas). In addition, multiplier effects are anticipated during the demolition stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination effect associated with indirect and induced employment opportunities of greater positive		

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	significance (i.e. greater than negligible to minor positive significance at the local level Study Area). There is likely to be positive in-combination socio- economic effects associated with direct temporary construction employment generated by all of the identified developments. Therefore, there is considered to be an in-combination effect associated with direct employment opportunities of greater positive significance (i.e. greater than negligible to minor positive significance at the local and regional level study areas). In addition, multiplier effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination effect associated with indirect and		

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	induced employment opportunities of greater positive significance (i.e. greater than negligible to minor positive significance at the local level study area).		
ID 3: 2017/1018/FULM ID 1: 2016/0401/REM	<u>Construction Effects</u> During demolition / construction, there are likely to be cumulative changes in access and amenity value of Public Rights of Way associated with the Proposed Scheme and the two committed developments identified on the local routes within and adjacent to the Site. Although these developments will involve ground disturbance and construction activities associated with the gas pipeline, there is not likely to be in-combination assessment of greater significance than that assessed for the Proposed Scheme (e.g. minor negative significance).	<u>Construction Effects</u> To ensure the negative effects on amenity value and disruption are reduced as far as possible during the construction phase of the Proposed Scheme the following mitigation measures should be incorporated into the CEMP: The public will be informed of the nature, timing and duration of particular activities during the construction stage and the duration of the any works by newsletters and liaison with MCC / Town / Parish Councils where applicable; and the provision of clear directions for any alternative routes.	Minor adverse significance

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
ID 1: 2016/0401/REM, ID 2: 2016/1124/COU, ID 3: 2017/1018/FULM, ID 4: 2015/1405/OUT, ID 6: 2017/0822/FULM, ID 9: 2017/0842/OUTM, ID 12: 2015/0367/FUL, ID 13: 2016/0978/FULM, ID 14: 2017/0250/OUTM, ID 15: 2015/0389/FUL, ID 16: 2017/0526/OUTM, ID 17: 2017/0577/OUTM, ID 18: 2015/ 0105/OUT, ID 19: 2014/1028/, OUT, ID 20: 2015/0333/FUL, ID 21: 2015/0676/FUL, ID 23: 2016/0140/REM, ID 25: 2017/0750/OUTM, ID 27: 2015/0517OUT, ID 29: 2016/1408/FULM, ID 30: 2015/0341/OUT, ID 33: 17/1720/STPLF, ID 34: 17/02265/STOUT, ID 36: 17/02705/PLF,	<u>Construction and Operation</u> Given the location of these developments, there is a potential for a change of use of best and most versatile agricultural land. At this stage, it not known whether all sites contain best and most versatile agricultural. As such, for the purposes of this assessment, it is assumed that there is higher quality agricultural land present within the sites of these committed developments. Therefore, in conjunction with the Proposed Scheme there is anticipated to be a change in the use of best and most versatile agricultural land of greater negative significance than that identified for the Proposed Scheme (i.e. negligible).	<u>Construction Effects</u> Land not permanently required to be reinstated to former land use. <u>Operation Effects</u> N/A	Greater negative significance than assessed (negligible). To be confirmed within the ES.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
ID 37: 16/01584/STPLF, ID 38: 16/00528/PLF, ID 39: 16/02460/OUT, ID 40: 15/03487/STPLF, ID 41: 17/03359/STPLF, ID 42: 17/00144/STPLF, ID 43: 16/04220/STREM, ID 44: 17/00508/STREM, ID 45: 14/01833/OUTM, ID 46: 15/02275/OUTM, ID 47: 17/01021/FULM, ID 48: 16/02438/FUL, ID 49: 16/01934/MAT, ID 50: 16/00898/FULM, ID 51: 16/00771/FULM, ID 53: Eggborough CCGT, ID 54: Thorpe Marsh Gas Pipeline			
All developments	There is a potential cumulative effect associated with a reduction in soil quality associated with all of the committed developments in conjunction with the Proposed Scheme. As cumulatively, these developments and the Proposed Scheme will lead to a loss of soil	Implementation of a Soil Management Plan (SMP) will be implemented for the Proposed Scheme in order to maintain the integrity of the soil.	Greater negative significance (moderate – major significance)

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
	resource across a greater area, the in-combination effect is considered to be of greater negative significance than that identified at the Proposed Scheme (ie. moderate negative significance).		
ID 1: 2016/0401/REM, ID 2: 2016/1124/COU, ID 3: 2017/1018/FULM, ID 4: 2015/1405/OUT, ID 6: 2017/0822/FULM, ID 9: 2017/0842/OUTM, ID 12: 2015/0367/FUL, ID 13: 2016/0978/FULM, ID 14: 2017/0250/OUTM, ID 15: 2015/0389/FUL, ID 16: 2017/0526/OUTM, ID 17: 2017/0577/OUTM, ID 18: 2015/ 0105/OUT, ID 19: 2014/1028/, OUT, ID 20: 2015/0333/FUL, ID 21: 2015/0676/FUL, ID 23: 2016/0140/REM, ID 25: 2017/0750/OUTM, ID 27: 2015/0517OUT,	Given the location of these developments, there is a potential for an impact on farm landholdings and the viability of farm businesses. At this stage, it not known whether all sites form important elements of the landholdings. However, for the purposes of this assessment, it is assumed that the sites of these committed developments are important to farm holdings. Therefore, in conjunction with the Proposed Scheme there is anticipated to be a change in farm landholdings and viability of farm businesses of greater negative significance than that identified for the Proposed Scheme which has yet to be determined.	None	To be confirmed within the ES when baseline information is available.

Project Application Reference	Assessment of Cumulative Effect with Proposed Scheme	Proposed Mitigation applicable to Proposed Scheme, including any apportionment	Residual Cumulative Effect
ID 29: 2016/1408/FULM, ID 30: 2015/0341/OUT, ID 33: 17/1720/STPLF, ID 34: 17/02265/STOUT, ID 36: 17/02705/PLF, ID 37: 16/01584/STPLF, ID 38: 16/00528/PLF, ID 39: 16/02460/OUT, ID 40: 15/03487/STPLF, ID 41: 17/03359/STPLF, ID 42: 17/00144/STPLF, ID 43: 16/04220/STREM, ID 44: 17/00508/STREM, ID 45: 14/01833/OUTM, ID 46: 15/02275/OUTM, ID 47: 17/01021/FULM, ID 48: 16/02438/FUL, ID 49: 16/01934/MAT, ID 50: 16/00898/FULM, ID 51: 16/00771/FULM, ID 53: Eggborough CCGT, ID 54: Thorpe Marsh Gas Pipeline			

LANDSCAPE

- 15.5.27. The landscape cumulative assessment assesses the cumulative effects on the identified landscape resource within the ZOI. Landscape resource that have been assessed as experiencing negligible effects have not been included in the assessment of cumulative effects. It is considered unlikely that the addition of a negligible effect to the cumulative effects of other developments within the ZOI would lead to a significant cumulative effect.
- 15.5.28. The majority of other development listed above in Table 165 lie within the Farmed Lowland and Valley Landscape LCT referred to within the North Yorkshire Landscape Characterisation. LCTs likely to be affected by cumulative effects include:
- 23 Levels Farmland (North Yorkshire and York Landscape Characterisation)
 - 24 River Floodplain (North Yorkshire and York Landscape Characterisation)
- 15.5.29. Development IDs 3: 2017/1018/FULM, 11: 2015/1392/EIA and 53: Eggborough CCGT sits within 24 River Floodplain whilst development ID 54: Thorpe Marsh Gas Pipeline and 55: Knottingley Power Project sits within 23 Levels Farmland. Other development lies in close proximity to LCT 4 River Corridors which was also considered in the cumulative assessment and is referred to within the East Riding of Yorkshire Landscape Character Assessment. Consideration was also given to River Derwent; a Local Important Landscape Area. Cumulative effects associated with on-site landscape features were not considered as such effects are localised and limited to the extent of the development taking place within the Site. The cumulative landscape effects are summarised in Tables 166 and 167 below.
- 15.5.30. In summary it is considered that for each of the LCTs (and associated LCAs) and based on the existing presence of large scale power, industrial and infrastructure development there will only be a small to medium amount of change in addition to the Proposed Scheme. The built form of such structures would change with the introduction of stacks associated with Eggborough CCGT and demolition of part of Eggborough Power Station as well as the introduction of new CCGT stacks associated with Knottingley Power Project.
- 15.5.31. This would lead to a perceptual change in landscape character; the large structures associated with Eggborough Power Station (and what people have been accustomed to as iconic features) will be replaced with a number of narrow vertical structures, similar in width to many of the wind farm developments which already exist. Changes are not just associated with ground features but also the relative position of stack emissions in the sky.

Table 166 - Assessment of cumulative visual effects – Construction

Landscape type	Sensitivity of Landscape Resource	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Landscape Character Types and Areas				
23 Levels Farmland (The Camblesforth Lowlands - SDC)	Medium	The other development would introduce built form and changes in views from the LCT across to LCT 24 alongside construction activity associated with the Proposed Scheme. It is considered that the introduction of construction activities associated with the Proposed Scheme would alter the perceptual and experiential qualities. Cumulatively and given the extent of the LCT, the existing presence of large scale power, industrial and infrastructure development it is considered that there will only be a small to medium amount of change.	Small to Medium	Minor to Moderate adverse (not significant)
24 Rivers Floodplain (The Wharfe-Ouse River Corridor and The River Aire Corridor - SDC)	Medium	The other development would introduce built form into the LCT and changes in views from the LCT across to LCT 23 alongside construction activities associated with the Proposed Scheme. It is considered that the introduction of construction activities associated with the Proposed Scheme would alter the perceptual and experiential qualities. Cumulatively and given the extent of the LCT, the existing presence of large scale power, industrial and infrastructure development it	Small to Medium	Minor to Moderate adverse (not significant)

Landscape type	Sensitivity of Landscape Resource	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		is assessed that there will only be a small to medium amount of change.		
LCT 4: River Corridors (LCA 4A, 4B and 4D East Riding of Yorkshire)	Medium	The other development would introduce built form into the LCT and changes in views from the LCT across to LCT 24 alongside construction activities associated with the Proposed Scheme. It is considered that the introduction of construction activities associated with the Proposed Scheme would alter the perceptual and experiential qualities. Cumulatively and given the extent of the LCT, the existing presence of large scale power, industrial and infrastructure development it is assessed that there will only be a small to medium amount of change.	Small to Medium	Minor to Moderate adverse (not significant)
Landscape Designations				
Lower Derwent Important Landscape Character Area	High	The other development would introduce only a slight change in views - views across to other developments would be limited by intervening vegetation, the built form, and the presence of the Existing Power Station Complex and Proposed Scheme in the foreground and are at a distance beyond the Proposed Scheme. Cumulatively and based on the comments above it is considered that there will only be a negligible small change.	Negligible	Neutral

Table 167 - Assessment of cumulative landscape effects - Operation (year 1 and year 15)

Landscape type	Sensitivity of Landscape Resource	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Landscape Character Types and Areas				
23 Levels Farmland (The Camblesforth Lowlands - SDC)	Medium	The presence of other development would marginally increase the built form and changes in views from the LCT across to LCT 24 altering the perceptual and experiential qualities. Cumulatively and given the extent of the LCT, the existing presence of large scale power, industrial and infrastructure development it is assessed that there will only be a small to medium amount of change in addition to the Proposed Scheme.	Small to Medium	Minor to Moderate adverse (not significant)
24 Rivers Floodplain (The Wharfe-Ouse River Corridor and The River Aire Corridor - SDC)	Medium	The other development would introduce built form into the LCT and changes in views from the LCT across to LCT 23 altering the perceptual and experiential qualities. Cumulatively and given the extent of the LCT, the existing presence of large scale power, industrial and infrastructure development it is assessed that there will only be a small to medium amount of change in addition to the Proposed Scheme.	Small to Medium	Minor to Moderate adverse (not significant)
LCT 4: River corridors	Medium	The other development would introduce built form into the LCT and changes in views from the LCT across to LCT 24 alongside the construction	Small to Medium	Minor to Moderate adverse (not significant)

(remaining LCAs)		activities associated with the Proposed Scheme. It is considered that the introduction of construction activities associated with the Proposed Scheme would alter the perceptual and experiential qualities. Cumulatively and given the extent of the LCT, the existing presence of large scale power, industrial and infrastructure development it is assessed that there will only be a small to medium amount of change.		
Landscape Designations				
Lower Derwent Important Landscape Character Area	High	The other development would introduce only a slight change in views - views across to other developments would be limited by intervening vegetation, the built form, and the presence of the Existing Power Station Complex and Proposed Scheme in the foreground and are at a distance beyond the Proposed Scheme. Cumulatively and based on the comments above it is considered that there will only be a negligible small change.	Negligible	Neutral

VISUAL AMENITY

- 15.5.32. Visual receptors that have been assessed as experiencing a negligible effect due to the Proposed Scheme have not been included in the assessment of cumulative effects. It is considered unlikely that the addition of a negligible effect to the cumulative effects of other developments within the ZOI would lead to a significant cumulative impact.
- 15.5.33. The cumulative visual effects are outlined below in Tables 168, 169 and 170.
- 15.5.34. In summary the cumulative visual amenity assessment identified that viewpoint 6 and 8 (residential and recreational receptors close to the Above Ground Installation (AGI)) would receive a Minor to Moderate (not significant) or Moderate to Major adverse effect (significant) during construction and opening if it is concurrent with the construction and opening of the battery storage plant. Such effects would diminish as mitigation measures including planting matures integrating the developments into their surroundings.
- 15.5.35. Minor adverse (non-significant) effects would be experienced by visual receptors close to representative viewpoint 14 during operation year 1 and year 15. From this viewpoint and locations nearby it is likely that stacks associated with Eggborough Power Station CCGT would be discernible and the installation building at the St Gobian factory site. There may be distant views across to stacks associated with Knottingley CCGT. The addition of the Proposed Scheme would result in a slight cumulative impact whilst the depth of field would remain unaltered, the composition would change however this change in view includes the loss of the existing Eggborough Power Station which would be demolished.
- 15.5.36. In terms of viewpoint 18 there would be Minor to Moderate adverse effects (not significant) on residential, road and rail receptors. There would be long distance views across to activities associated with the operation of Eggborough Power Station CCGT and associated stacks, St Gabions insulation board building and more distant views across to Knottingley CCGT and associated stacks would be seen in the context of other existing transport infrastructure. It is considered that given the relative distance of such other developments to the Proposed Scheme and the orientation of the view, whilst the composition of the view will alter, the depth of field would remain the same and views would be partially screened by intervening vegetation. There would be a cumulative impact, although this is considered to be no greater than that assessed for the Proposed Scheme in isolation during operation.
- 15.5.37. The remaining viewpoints are all predicted to experience no change and are therefore neutral in effect and not cumulatively significant. This is due to the proximity of receptors to the Proposed Scheme, intervening vegetation and the built form.

Table 168 - Assessment of cumulative visual effects – Construction

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptor	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 3	Residents – High Road Users- Medium Users of PRoW - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during construction.	Negligible / No change	Neutral
Viewpoint 4	Residents – High Recreation users - High	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during construction.	Negligible / No change	Neutral
Viewpoint 5	Residents – High Recreational users – High Road users - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during construction.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptor	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 6	Residents nearby (Power Plant) – High Residents nearby (Pipeline AGI) – High Users of PRoW- High to Medium	From this viewpoint and locations nearby it is likely that Eggborough Power Station would be visible and cranes may be discernible associated with the decommissioning of the power station and construction of stacks for the proposed CCGTs and possibly the erection of the installation building at the St Gobian factory site. Views of construction activities associated with the erection of 40 MW battery energy storage barn which lies close to the AGI would be noticeable in short to middle distance views (up to 4.2 m in height within a very flat landscape).	Small to Medium	Minor to Moderate associated with the Power Station Site (not significant). Short term and reversible. Minor to Moderate and Moderate to Major associated with AGI (Significant) Short term and reversible.
Viewpoint 8	Residents nearby (Pipeline - AGI) – High Residents nearby (Power Plant) – High Users of PRoW - Medium	From this viewpoint and locations nearby it is likely that Eggborough Power Station would be visible and cranes may be discernible associated with the decommissioning of the power	Small to Medium	Minor to Moderate associated with the Power Station Site (not significant) Short term and irreversible. Minor to Moderate and Moderate to Major

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptor	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
	Road users - Medium	station and construction of stacks for the proposed CCGTs and possibly the erection of the installation building at the St Gobian factory site. There would be middle distance views across to the Proposed Scheme. Views of the erection of 40 MW battery energy storage barn which lies close to the AGI would be noticeable (up to 4.2 m in height within a very flat landscape).		associated with AGI (Significant) Short term and reversible.
Viewpoint 9	Residents nearby - High Users of PRoW - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during construction.	Negligible / No change	Neutral
Viewpoint 21	Users of PRoW and Drax Golf Course - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptor	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		considered that there will be no change in the visual composition or depth of field.		

Table 169 - Assessment of Cumulative Landscape Effects - Operation (Year 1)

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 3	Residents – High Road Users- Medium Users of PRoW - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral
Viewpoint 4	Residents – High Recreation users - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 5	Residents – High Recreational users – High Road users - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral
Viewpoint 6	Residents nearby (PP) - High Residents nearby (PL) - High Users of PRow – Medium to High	From this viewpoint and locations nearby it is likely that stacks associated with Eggborough Power Station CCGT would be discernible as well as the installation building at the St Gobian factory site. There may be distant views across to stacks associated with Knottingley CCGT. Middle distance views across to the Proposed Scheme.	Small to Medium	Minor adverse associated with the Power Station Site (not significant). Short term and irreversible. Minor to Moderate adverse and Moderate to Major adverse associated with AGI (Significant). Irreversible.

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		Views of the erection of 40mw battery energy storage barn which lies close to the AGI would be noticeable.		
Viewpoint 8	Residents nearby (PP) – High Residents nearby (PL) - High Users of PRow – Medium to High Workers - Low Road users - Medium	From this viewpoint and locations nearby it is likely that stacks associated with Eggborough Power Station CCGT would be discernible as well as the installation building at the St Gobian factory site. There may be distant views across to stacks associated with Knottingley CCGT. Middle distance views across to	Small to Medium	Minor adverse associated with the Power Station Site (not significant). Short term and irreversible. Minor to Moderate adverse and Moderate to Major adverse associated with AGI (Significant). Irreversible.

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		the Proposed Scheme. Views of the erection of 40mw battery energy storage barn which lies close to the AGI would be noticeable.		
Viewpoint 9	Residents nearby - High Users of PRow - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 10	Residents nearby - High Users of PRow/ visitors and workers at school - Medium Road Users - Low	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there would be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral
Viewpoint 13	Residents nearby - High Users of PRow - Medium Road users - Low	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments more specifically the battery storage plant ID 3. It is considered that there would be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 14	Residents nearby - High Users of PRoW /TPT/ disused airfield –Medium Rail users - Low	From this viewpoint and locations nearby it is likely that stacks associated with Eggborough Power Station CCGT would be discernible and the installation building at the St Gobian factory site. There may be distant views across to stacks associated with Knottingley CCGT. Middle distance views across to the Proposed Scheme. The addition of the Proposed Scheme would result in a slight cumulative impact. Whilst the depth of field would remain unaltered the composition would change however this change in view includes the loss of the existing Eggborough	Small	Minor adverse (not significant) Long term and irreversible

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		Power Station which would be demolished.		
Viewpoint 16	Residents nearby – High	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there would be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral
	Road users - Low			
Viewpoint 17	Residents nearby – High Road users - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		would be no change in the visual composition or depth of field during operation.		
Viewpoint 18	Residents nearby - High Road /rail users - Low	Long distance views across to activities associated with the operation of Eggborough Power Station CCGT and associated stacks, St Gabions insulation board building and more distant views across to Knottingley CCGT and associated stacks would be seen in the context of other existing transport infrastructure. It is considered that given the relative distance of such other developments to the Proposed Scheme and the orientation of the view whilst the composition of	Small	Minor to Moderate adverse (not significant)

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		the view would alter the depth of field would remain the same. There would be a cumulative impact, although this is considered to be no greater than that assessed for the Proposed Scheme in isolation during operation.		
Viewpoint 21	Users of PRow and Drax Golf Course - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Table 170 - Assessment of cumulative landscape effects - Operation (year 15)

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 3	Residents – High Road Users- Medium Users of PRoW - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral
Viewpoint 4	Residents – High Recreation users - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 5	Residents – High Recreational users – High Road users - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral
Viewpoint 6	Residents nearby (PP) - High Residents nearby (PL) - High Users of PRow – Medium to High	From this viewpoint and locations nearby it is likely that stacks associated with Eggborough Power Station CCGT would be discernible and the installation building at the St Gobian factory site. There may be distant views across to stacks associated with Knottingley CCGT. Middle distance views across to the Proposed Scheme.	Small	Minor adverse (not significant)

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		Through mitigation measures views of the 40mw battery energy storage barn and AGI associated with the Proposed Scheme would be visually integrated into the surrounding landscape. Although there would be a slight cumulative impact this would be no greater than assessed for the Proposed Scheme in isolation during operation.		

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 8	Residents nearby (PP) – High Residents nearby (PL) - High Users of PRow – Medium to High Workers - Low Road users - Medium	From this viewpoint and locations nearby it is likely that stacks associated with Eggborough Power Station CCGT would be discernible and the installation building at the St Gobian factory site. There may be distant views across to stacks associated with Knottingley CCGT. Medium distance views across to the Proposed Scheme. Through mitigation measures views of the 40mw battery energy storage barn and AGI associated with the Proposed Scheme would be visually integrated into the surrounding landscape. Although there would be a slight	Small	Minor adverse (not significant)

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		cumulative impact this would be no greater than assessed for the Proposed Scheme in isolation during operation.		
Viewpoint 9	Residents nearby - High Users of PRow - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 10	Residents nearby - High Users of PRow/ visitors and workers at school - Medium Road Users - Low	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there would be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral
Viewpoint 13	Residents nearby - High Users of PRow - Medium Road users - Low	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments more specifically the battery storage plant ID 3. It is considered that there would be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 14	Residents nearby - High Users of PRoW /TPT/ disused airfield –Medium Rail users - Low	From this viewpoint and locations nearby it is likely that stacks associated with Eggborough Power Station CCGT would be discernible and the installation building at the St Gobian factory site. There may be distant views across to stacks associated with Knottingley CCGT. Middle distance views across to the Proposed Scheme. The addition of the Proposed Scheme would result in a slight cumulative impact whilst the depth of field would remain unaltered, the composition would change however this change in view includes the loss of the existing Eggborough	Small	Minor adverse (not significant) Long term and irreversible

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		Power Station which would be demolished.		
Viewpoint 16	Residents nearby – High	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there would be no change in the visual composition or depth of field during operation	Negligible / No change	Neutral
	Road users - Low			
Viewpoint 17	Residents nearby – High Road users - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there would be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
Viewpoint 18	Residents nearby - High Road /rail users - Low	Long distance views across to activities associated with the operation of Eggborough Power Station CCGT and associated stacks, St Gabions insulation board building and more distant views across to Knottingley CCGT and associated stacks would be seen in the context of other existing transport infrastructure. It is considered that given the relative distance of such other developments to the Proposed Scheme and the orientation of the view whilst the composition of the view will alter the depth of field would remain the same. There would be a cumulative	Small	Minor to Moderate adverse (not significant)

Representative viewpoint and associated visual receptors	Sensitivity of Visual receptors	Description of impact	Predicted Magnitude of Change	Assessment of cumulative effect
		impact, although this is considered to be no greater than that assessed for the Proposed Scheme in isolation during operation.		
Viewpoint 21	Users of PRow and Drax Golf Course - Medium	From this viewpoint intervening vegetation in the foreground and the built form will screen views of other developments. It is considered that there will be no change in the visual composition or depth of field during operation.	Negligible / No change	Neutral

15.6 COMBINED EFFECTS ASSESSMENT

- 15.6.1. Table 171 below identifies where in the PEIR combined effects are considered in further detail with regard to the Proposed Scheme, and considers other combined effects that are not discussed elsewhere.
- 15.6.2. Combined effects are defined as the interaction and combination of environmental effects of the Proposed Scheme affecting the same receptor.

Table 171 - Summary of Effect Interactions (Combined Effects)

Chapter	Combined Effects Considered in Technical Chapter	Other Combined Effects to be Considered
Traffic and Transport	No combined effects have been identified.	There is potential for receptors located close to the road network to experience combined effects from traffic (severance, pedestrian amenity, highway safety etc.) and associated noise, vibration and air emissions during construction of the Proposed Scheme. The traffic, air quality and noise assessments do not identify any significant effects on sensitive receptors due to construction traffic and the combined effect is also considered to be not significant.
Air Quality	The Air Quality chapter considers air quality effects of stack emissions and road traffic emissions. As the receptors of these two types of air quality effects are in different locations and the main road traffic emissions will occur before the plant is operational, it is anticipated that there is no potential for significant combined effects on a single receptor. No significant adverse effects are predicted. Impacts on ecological receptors are considered in the Chapter 9 (Biodiversity).	There is potential for dust effects, combining with noise & visual effects reducing amenity for human receptors.

Chapter	Combined Effects Considered in Technical Chapter	Other Combined Effects to be Considered
Noise and Vibration	No combined effects have been identified. Impacts on ecological receptors are considered in the Chapter 9 (Biodiversity)	No combined effects have been identified.
Historic Environment	This chapter considers both physical and setting impacts on cultural heritage assets. No significant effects are predicted following implementation of mitigation	No other combined effects identified.
Biodiversity	No other combined effects identified.	This chapter considers the combined effects of noise, air quality, disturbance, water contamination and ground contamination on ecological receptors in the vicinity of the Site.
Landscape and visual	No combined effects are anticipated for landscape and visual.	There is potential for dust effects, combining with noise & visual effects reducing amenity and levels of tranquillity for human receptors.
Ground Conditions and Contamination	No combined effects have been identified. Impacts on ecological receptors are considered in the Chapter 9 (Biodiversity).	No other combined effects identified.
Water Resource, quality and hydrology	No combined effects have been identified. Impacts on ecological receptors are considered in the Biodiversity Chapter	No other combined effects identified.
Waste	No other combined effects have been identified	Traffic effects arising from the transport of waste are taken into account in Chapter 5 (Traffic and Transport) and associated air quality and noise and vibration effects are assessed in Chapters 6 (Air

Chapter	Combined Effects Considered in Technical Chapter	Other Combined Effects to be Considered
		Quality and Climate) and 7 (Noise and Vibration). Best practice measures for the storage of waste on Site and appropriate drainage systems and bunding of storage areas as necessary will avoid impacts on water or land quality.
Socio-economics	No combined effects are considered within the socio-economic technical chapter.	There is potential for dust effects, combining with noise & visual effects reducing amenity for PRoW users.

15.7 LIMITATIONS

- 15.7.1. Limitations encountered during individual assessments are detailed within Chapters 5 to 14.
- 15.7.2. The cumulative assessment is based on publicly available information.
- 15.7.3. The final list of developments to be considered within the ES will be informed by discussions with local authorities and statutory consultees in 2018. For the purposes of this preliminary cumulative assessment, the short list of developments identified is based on the ZOI detailed in Table 153 and limited to 15 km from the Proposed Scheme.

15.8 NEXT STEPS

- 15.8.1. The long and short lists of developments for consideration within the cumulative assessment will be agreed with the relevant local authorities and the Planning Inspectorate, in addition to other statutory consultees deemed necessary.
- 15.8.2. Full analysis of the publicly available information for the “other developments” to be considered, in accordance with AN17.

15.9 CONCLUSIONS

IN-COMBINATION EFFECTS (CUMULATIVE EFFECTS)

- 15.9.1. The following chapters have identified that no significant in-combination effects are anticipated as a result of the Proposed Scheme:
 - Chapter 5 Traffic and Transport
 - Chapter 7 Noise and Vibration
 - Chapter 8 Historic Environment
 - Chapter 11 Ground Conditions and Contamination
 - Chapter 12 Water Resource, Quality and Hydrology
 - Chapter 13 Waste

- 15.9.2. The Landscape and Visual assessment of in-combination effects has also identified the potential for a number of short term significant impacts during construction and operation on landscape receptors:
- Viewpoint 6 (during construction and operation Year 1)
 - Viewpoint 8 (during construction and operation Year 1)
- 15.9.3. It was identified by the Biodiversity and Air Quality assessment that while a number of insignificant effects have been identified, there is potential for significant effects on Natura 2000 Sites when considering the Proposed Scheme in combination with development ID 53: Eggborough CCGT. Further work is required to determine the level of significance of these effects.
- 15.9.4. Further work is required to determine the significance of in combination effects on socio-economic receptors.

COMBINED EFFECTS

- 15.9.5. No significant effects have been identified when considering combined effects.



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