Drax

DRAX REPOWER PROJECT

Preliminary Environmental Information Report
Non-Technical Summary

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JANUARY 2018

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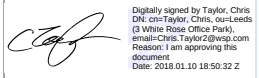
Signature	 Digitally signed by Taylor, Chris DN: cn=Taylor, Chris, ou=Leeds (3 White Rose Office Park), email=Chris.Taylor2@wsp.com Reason: I am approving this document Date: 2018.01.10 18:50:32 Z
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Table 1 – Abbreviations

Abbreviation	Term in full
AILs	Abnormal Indivisible Loads
CCGT	Combined Cycle Gas Turbine
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
GIS	Gas Insulated Switchgear
HGVs	Heavy Goods Vehicles
HRSG	Heat Recovery Steam Generator
MW	Megawatts
NOx	Nitrogen oxides
NTS	Non-Technical Summary
OCGT	Open Cycle Gas Turbine
PEIR	Preliminary Environmental Information Report
SoS	Secretary of State for Business, Energy and Industrial Strategy

Table 2 - Glossary

Term	Definition
Combined Cycle Gas Turbine (CCGT)	A combined cycle gas turbine is an assembly of turbines that convert heat into mechanical energy and works alongside HRSGs.
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.
Development Consent Order (DCO)	Under Section 31 of the Planning Act 2008 (as amended), an order granting development consent is required for developments that are, or form part of, a nationally significant infrastructure project. A DCO is the equivalent of planning permission for such projects, but can also confer other powers.

Existing Drax Power Station Complex	The area where the existing Drax power station is located, as shown in **Figure 2**.
Gas Compressor Building	The Gas Compressor Building will receive gas from the gas receiving facility and, if required, increase the gas pressure to that required for the new gas turbines used in the Repower project. External cooling equipment will be required and this will be located adjacent to the building. The gas compressor building location is shown in **Figure** .
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.
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.
Open Cycle Gas Turbine (OCGT)	An open cycle gas turbine converts heat into mechanical energy.
Power Station Site	Areas within the Existing Drax Power Station Complex where part of the Proposed Scheme is proposed to be located as shown in **Figure 2**. Also referred in this NTS as 'Power Station'.
Proposed Scheme	Drax is proposing to repower up to two existing coal-fired units (known as Unit 5 and 6) with gas and install battery storage capability (subject to technology and commercial considerations). Should both units be repowered, the new gas-fired generating station would have a combined generating capacity of up to 3,600 MW (1,800MW per unit) and a combined battery storage capacity of up to 200 MW (100MW per unit), making a total potential capacity of up to 3,800MW. It is also proposed to install a new gas pipeline from the Power Station Site to the national gas transmission system.
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 and is shown in **Figure 2**.
Site Boundary	The Site Boundary refers to the outer perimeter of the Site and is shown in **Figure 2**.
The applicant	Drax Power Limited. Referred to in this NTS as the applicant or 'Drax'.

TABLES

FIGURES

1 INTRODUCTION

1.1 OVERVIEW

1.1.1. This document presents the Non-Technical Summary (NTS) of the Preliminary Environmental Information Report (PEIR) which has been produced to inform the public and other stakeholders on the preliminary findings of the Environmental Impact Assessment (EIA) process for the Drax Repower Project (the 'Proposed Scheme').

1.1.2. The information reported in the NTS reflects a summary of the initial findings of the ongoing environmental assessments presented in the PEIR. These findings are preliminary in nature and reflect the position as at January 2018 before the full EIA process has been completed, but are presented here as required under the Planning Act 2008 (as amended) and to assist in the statutory consultation of which this document forms part. **Section 1.2** to **Section 1.4** provide further information on the consenting framework, the EIA process and the approach for consultation as part of the Proposed Scheme.

1.1.3. The applicant of the Proposed Scheme is Drax Power Limited (also called here 'Drax' or the 'applicant'). Drax owns and manages the Existing Drax Power Station Complex which is located in Selby, North Yorkshire. The Existing Drax Power Station Complex has been generating electricity since 1974 and has the capacity to meet 8% of the UK's electricity needs.

1.1.4. Drax is proposing to repower up to two of the six generating units at the Existing Drax Power Station Complex from coal-fired to gas generation plant(s). Each unit would (subject to technology and commercial considerations) be connected to its own battery energy storage facility. These proposals and the associated infrastructure would have a total combined capacity of up to 3,800MW of electricity. The Proposed Scheme's objectives are to:

- reduce the reliance of the Existing Drax Power Station Complex on coal as a source of power for electricity generation, in turn generating electricity using a lower carbon form of technology in accordance with government policy;
- increase the flexible, response generating capacity of the Existing Drax Power Station Complex to meet increasing demand across the UK, in particular by;
    a) providing additional support services to manage the stability of the National Grid, such as frequency response and inertia, to support weather-dependent renewables like wind and solar; and
    b) increasing reliable large scale capacity on the system by providing a large amount of capacity that can be called on at any time;
- maximise the Existing Drax Power Station Complex's generation efficiency.

1.2 THE DEVELOPMENT CONSENT ORDER (DCO) PROCESS

1.2.1. The Proposed Scheme constitutes a Nationally Significant Infrastructure Project under the Planning Act 2008 (as amended) ('2008 Act'). The applicant must, therefore, make an application under the 2008 Act for a permission known as a Development Consent Order (DCO) to construct and operate the Proposed Scheme.

1.2.2. The application for a DCO will be submitted to the Secretary of State for Business, Energy and Industrial Strategy ('SoS'), who will examine the application through appointed inspectors from the Planning Inspectorate (known as the Examining Authority). The Examining Authority will make a recommendation to the SoS on whether a DCO should be granted for the Proposed Scheme. The SoS will make the final decision.

1.2.3. Further details on the DCO process and the planning policy applicable to the Proposed Scheme can be found in **Chapters 1-3 of the PEIR or Chapters 1 and 4 of the Project Overview Report**.

1.3 ENVIRONMENTAL IMPACT ASSESSMENT

EIA is a process that identifies the likely significant environmental effects of a development and suggests ways that those effects that are classed as adverse can be avoided, reduced or managed. EIA is a requirement of EU and UK law for developments that are likely to cause significant environmental effects.

The key steps of the EIA process are as follows:

Screening	Determining whether a development proposal needs an EIA (this step is not needed where an EIA is automatically required by law due to the scale and nature of the proposal)
Scoping	Determining the topics that the EIA should address in detail
PEIR	Establishing baseline data and carrying out a preliminary evaluation of potential impacts of the development proposal. Making the PEIR publically available in order that the public, affected landowners and statutory consultees can view it and provide feedback before the development proposal is submitted to the determining body **(this is the current stage in the EIA process)**
ES	Detailed assessment of the likely significant environmental effects for the proposed development and description of mitigation measures
ES Submission	Formally submitting the ES to the SoS (as part of the DCO application) for scrutiny by the Examining Authority, authorities and stakeholders

1.3.1. Under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('EIA Regulations 2017'), the Proposed Scheme is defined as the type and scale of development that automatically requires an EIA (the Screening step of the EIA process was therefore not needed). Accordingly, Drax is undertaking the EIA process alongside the development of the design of the Proposed Scheme. A brief summary of the key documents produced to inform the EIA process and consultation to date is presented below.

1.3.2. In September 2017, Drax submitted a request for a Scoping Opinion to the SoS to seek an opinion on the scope and level of detail of the information to be included in the Environmental Statement (ES) as part of the DCO application. This request was accompanied by a Scoping Report (Drax, 2017) which set out what should be within the scope of the ES. A Scoping Opinion was provided to Drax in October 2017 by the Planning Inspectorate on behalf of the SoS. The comments and recommendations contained in the Scoping Opinion have been incorporated into the EIA process.

1.3.3. For the purpose of consultation, the initial findings (as of January 2018) of the ongoing EIA process have been reported within a PEIR. The PEIR is presented in three volumes, including:

- Volume 1: Main Report;
- Volume 2: Figures; and
- Volume 3: Appendices.

This document is a non-technical summary of the PEIR.

1.3.4. Drax is actively seeking comments on the preliminary information included in the PEIR as part of the statutory consultation taking place between 16 January and 27 February 2018.

1.3.5. At a later date, when submitting an application for the DCO to the SoS, the complete findings of the EIA process will be reported in the ES. The PEIR will form the basis for the ES and will be developed further as the design and EIA process progress. The ES will be accompanied by a non-technical summary, and when both documents are finalised, these will be made available online via the Planning Inspectorate website for anyone to view.

1.4 CONSULTATION

1.4.1. Drax is committed to ensuring that the local community, residents, those persons with an interest in the Site, local interest groups, businesses, local authorities, visitors and local highway users, have the opportunity to consider the Proposed Scheme and comment on its proposals. This includes making use of online media and scheduling public events at times that are likely to be convenient for the local community.

1.4.2. Drax is consulting residents and businesses living and working within a 10km radius of the Site for the Proposed Scheme, which includes the gas pipeline route. The Statement of Community Consultation (Drax, 2018) provides further information on the consultation process and is available to view alongside the PEIR as part of the consultation exercise.

1.4.3. The consultation process is on-going and covers the following aspects of the Proposed Scheme: design and layout of the infrastructure and buildings, proposals for the gas pipeline route options and the preliminary results of the likely environmental effects on surrounding local communities and environmental receptors. The information presented also includes proposed mitigation measures considered necessary at this stage.

1.4.4. The PEIR and the accompanying NTS form part of the current statutory consultation being undertaken, as required by the 2008 Act and the EIA Regulations 2017. Consultation with key stakeholders will continue following the statutory consultation and in preparation of the final ES to support the DCO application. A summary of feedback received, key themes that have emerged and how these have been considered in developing the Proposed Scheme will be published in a Consultation Report that will accompany the DCO application.

1.4.5. Further information about consultation undertaken to date is provided in the **PEIR Volume 1: Chapter 1**.

2 EIA METHODOLOGY

2.1 GENERAL IMPACT ASSESSMENT APPROACH

2.1.1. The objective of the EIA process is to anticipate the changes (or 'impacts') that may occur to the environment as a result of the Proposed Scheme (for example changes to air quality). The changes are compared to the environmental conditions that would have occurred without the Proposed Scheme (defined as 'the baseline conditions').

2.1.2. The EIA process identifies potentially sensitive 'receptors' that may be affected by the predicted changes (e.g. local residents living near the Proposed Scheme, local flora and fauna, etc.) and defines the extent to which these receptors may be affected by the predicted changes.

2.1.3. Effects on receptors can be adverse (negative), neutral (neither negative nor positive) or beneficial (positive). Effects may also be permanent (irreversible) or temporary (reversible) and direct or indirect.

2.1.4. The interaction between the sensitivity or importance of a receptor and the potential scale of the impact produces the 'significance' of the environmental effect which ranges from 'no change' to 'major'. The description of the impact assessment methodology adopted for the Proposed Scheme is set out in each technical chapter of the PEIR.

2.1.5. Where possible, the PEIR uses standard methodologies, based on legislation, definitive standards, and accepted industry best practice and criteria. In general, the terminology used for classifying significance of an effect (unless indicated otherwise) is set out in **Table 1**.

Table 1 – Terminology for classifying the significance of the Effect

Significance of the Effect	Definition for an Adverse Effect	Definition for a Beneficial Effect
Major	The impact gives rise to serious concern and would be considered as unacceptable without change in design and/or or appropriate mitigation measures in place.	The impact provides a significant positive gain.
Moderate	The impact gives rise to some concern but is likely to be tolerable depending on scale and duration.	The impact provides some gain to the environment.
Minor	The impact is undesirable but of limited concern.	The impact is of minor significance but has some environmental benefit.
Negligible	The impact is not of concern or is unlikely to be detected.	The impact provides some environmental benefits but these are negligible.
No change	There is an absence of one or more of the following: impact source, pathway or receptor.	

2.1.6. Where a 'significant' adverse effect is predicted on one or more receptors (usually an effect that is predicted to have a major or moderate adverse effect), mitigation measures are identified, if possible, to avoid or reduce the effect identified, or to reduce the likelihood of occurrence. With mitigation in place, the 'residual impact' is assessed, which is the predicted significance of the effect after the implementation measures have been implemented.

2.1.7. Cumulative effects of the Proposed Scheme with "other developments", as well as the combined effect of different types of environmental effects from the Proposed Scheme on the same receptors, are also considered in the PEIR. The proposed methodology to assess cumulative effects is described separately in **PEIR Volume 1: Chapter 15**.

2.2 RESULTS OF THE SCOPING STAGE

2.2.1. The topics to be assessed within the EIA that were agreed during the scoping process are as follows:

- Traffic and Transport;
- Air Quality;
- Noise and Vibration;
- Historic Environment;
- Biodiversity;
- Landscape and Visual;
- Ground Conditions and Contamination;
- Water Resource, Quality and Hydrology;
- Waste;
- Socio-economics; and
- Cumulative effects.

2.2.2. Volume 1 of the PEIR contains technical chapters focussing on each of the above topics. The assessment of the above topics considers the following, as a result of the Proposed Scheme:

- Disturbance, disruption and reduction in amenity of residents during construction;
- Effects in relation to health;
- Effects in relation to quality of surroundings and sense of place; and
- Effects in relation to severance and delay.

2.2.3. The Scoping Opinion concluded that assessment of the following impacts could be 'scoped out' from further assessment, because it was not considered that the Proposed Scheme will have a significant effect in terms of:

- Local infrastructure and services (for e.g. educational and healthcare services, community facilities and accommodation);
- Site security;
- Disruption to local businesses;
- Reduction in leisure uses or tourism;
- Health and safety (although impacts on human health are included within the EIA); and
- Employment during operation.

2.2.4. The topics relevant to the EIA process have been assessed in the PEIR and the key findings are summarised in the NTS (**Chapter 5** to **Chapter 15**).

2.3 SCHEME DESIGN, IMPACT AVOIDANCE AND MITIGATION

2.3.1. Drax has worked with the environmental specialists of WSP to ensure that the design of the Proposed Scheme avoids or reduces environmental effects on receptors where possible. A number of measures have been incorporated into the concept design to avoid or minimise environmental impacts. These measures include those required for legal compliance and also include current industry best practice guidance which would be adopted during construction and operation of the Proposed Scheme.

2.3.2. These in-built types of mitigation measures are called 'embedded mitigation' and the assessment presented in each technical chapter of the PEIR has identified and quantified, where possible, the embedded mitigation measures proposed to minimise the environmental effects of the Proposed Scheme. In addition, further consideration has also been given to mitigate any potentially significant adverse effects that have been identified. The residual effects (effects remaining after the implementation of any additional mitigation) have then been assessed and presented in each chapter.

2.3.3. The construction mitigation measures recommended during the EIA process will be reported in a Construction Environmental Management Plan (CEMP) which will be prepared and implemented during the construction of the Proposed Scheme by the construction contractor. Measures may include how Heavy Goods Vehicles (HGVs) access the Site, how waste is handled, various environmental protection methods and how codes of conduct are to be complied with. A draft of the CEMP will accompany the ES and the DCO application.

3 SITE AND PROJECT DESCRIPTION

3.1 SITE LOCATION AND DESCRIPTION

3.1.1. The Proposed Scheme is located at the Existing Drax Power Station Complex. This Site is located off the A645 north of Drax Village and south of the A63, and lies between the A1041 to the west and the River Ouse to the east, as shown in **Figure 1**.

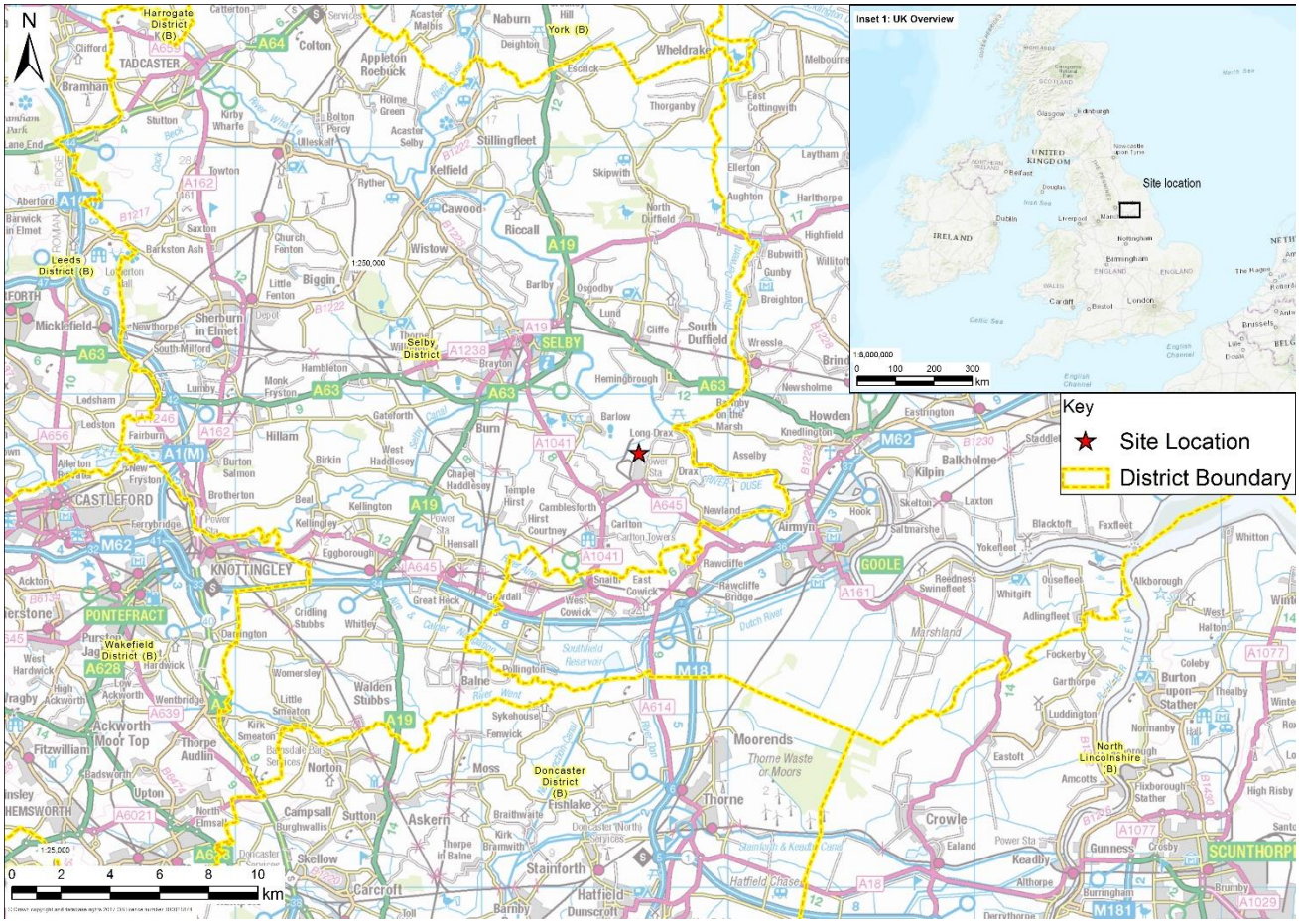


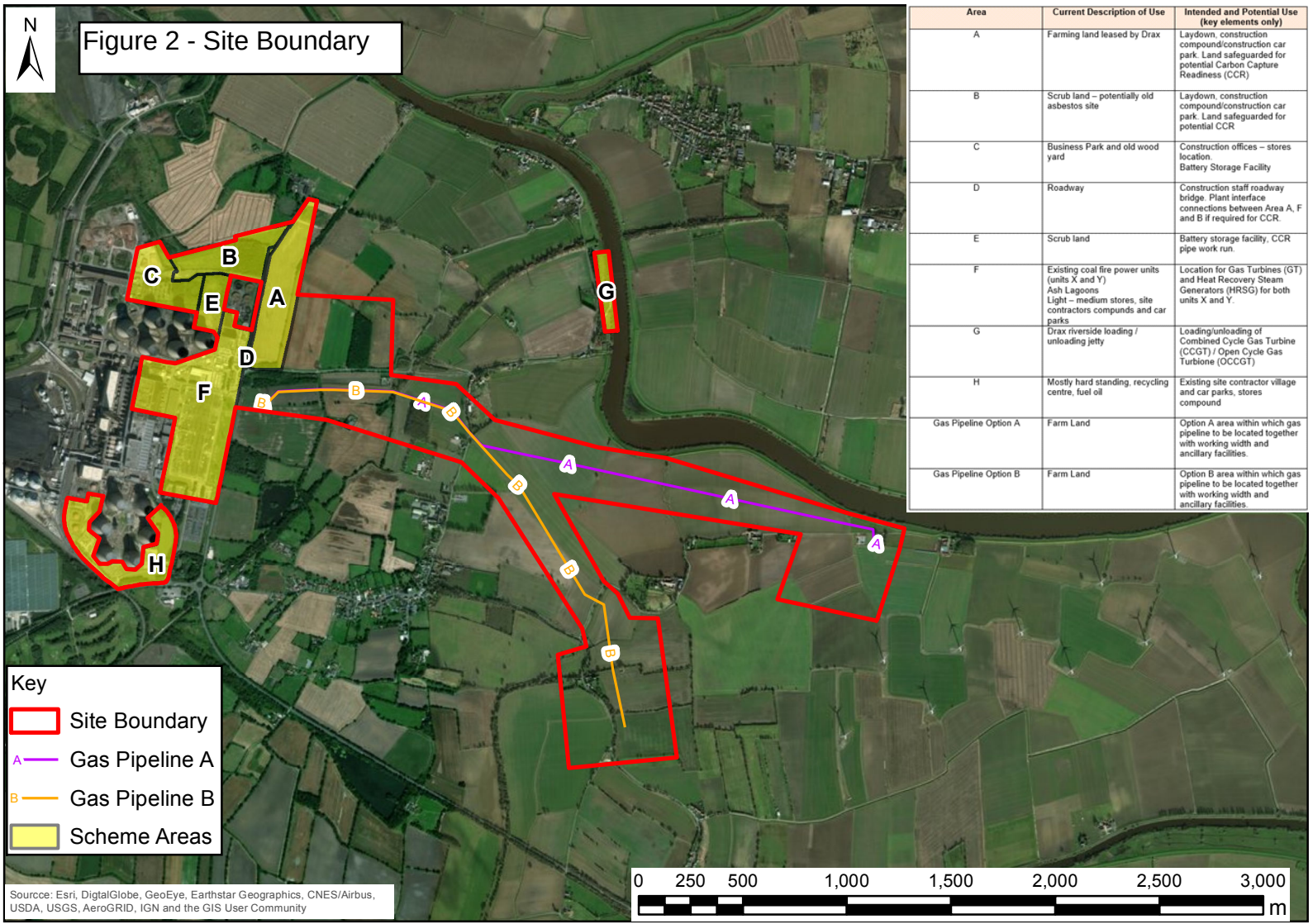
Figure 1 – Site Location

3.1.2. A Site Boundary has been defined for the Proposed Scheme and represents the maximum extent of all potential permanent and temporary works (see **Figure 2**). The Site Boundary covers approximately 233 ha and comprises the corridor of the two potential gas pipeline routes considered and the Power Station Site where the proposed activities are located. The Site Boundary will be refined following this statutory consultation, therefore the final Site Boundary included in the DCO application may differ to the Site Boundary shown in **Figure 2**, however, the area will not include any land not already shown as being within the Site Boundary.

3.1.3. The Power Station Site is located within the Existing Drax Power Station Complex that includes the existing coal generation units to be repowered (Unit 5 and Unit 6), National Grid substation, a coal stock yard, a fuel oil store, hard standing, contractor's compounds and stores. Other facilities include the sludge lagoons, car parks, access and services roads, and the river jetty on the River Ouse (currently unused). The Power Station Site also encompasses agricultural land, scrub land and grassland. There is also a wood yard and a former business park within the Power Station Site.

3.1.4. 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 pipeline study area covers approximately 163 ha.

Figure 2 - Site Boundary



Area	Current Description of Use	Intended and Potential Use (key elements only)
A	Farming land leased by Drax	Laydown, construction compound/construction car park. Land safeguarded for potential Carbon Capture Readiness (CCR)
B	Scrub land – potentially old asbestos site	Laydown, construction compound/construction car park. Land safeguarded for potential CCR
C	Business Park and old wood yard	Construction offices – stores location. Battery Storage Facility
D	Roadway	Construction staff roadway bridge. Plant interface connections between Area A, F and B if required for CCR.
E	Scrub land	Battery storage facility, CCR pipe work run.
F	Existing coal fire power units (units X and Y) Ash Lagoons Light – medium stores, site contractors compunds and car parks	Location for Gas Turbines (GT) and Heat Recovery Steam Generators (HRSG) for both units X and Y.
G	Drax riverside loading / unloading jetty	Loading/unloading of Combined Cycle Gas Turbine (CCGT) / Open Cycle Gas Turbione (OCCGT)
H	Mostly hard standing, recycling centre, fuel oil	Existing site contractor village and car parks, stores compound
Gas Pipeline Option A	Farm Land	Option A area within which gas pipeline to be located together with working width and ancillary facilities.
Gas Pipeline Option B	Farm Land	Option B area within which gas pipeline to be located together with working width and ancillary facilities.

3.2 THE EXISTING ENVIRONMENT SURROUNDING THE SITE

3.2.1. The Existing Drax Power Station Complex is located approximately 5 km south east of Selby and 7.5 km north west of Goole. Four settlements are located within a radius of approximately 2 km from the Existing Drax Power Station Complex. The nearest is Drax followed by Camblesforth, Barlow and Long Drax.

3.2.2. The Existing Drax Power Station Complex lies close to the junction of the A1041/A645 near Camblesforth and is accessed from the A645 to the south of the site. This access is primarily used by staff and visitors. Site contractors, deliveries and heavy goods vehicle traffic make use of another entrance to the site which is located on New Road on the eastern boundary of the Existing Drax Power Station Complex.

3.2.3. The Proposed Scheme will be developed within the Existing Drax Power Station Complex boundary and within the surrounding area where two corridors have been identified for the pipeline as shown in **Figure 2**.

3.2.4. The Existing Drax Power Station Complex is currently served by a railway line which connects with the Pontefract line to the south for deliveries of fuel and there is also an access to the River Ouse via a jetty located off Redhouse Lane.

3.2.5. The Existing Drax Power Station Complex is a major feature in the region. The area surrounding the Existing Drax Power Station Complex is predominantly rural and agricultural, with scattered residential dwellings. 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 of Drax and Long Drax. A number of Public Rights of Ways run immediately adjacent to the border of the Site Boundary and extend across the surrounding area.

3.2.6. There are designated ecological sites located within close proximity to the Existing Drax Power Station Complex. The nearest designated site is the River Derwent located approximately 0.7 km to the north of the Existing Drax Power Station Complex. The River Ouse, which forms part of the Humber Estuary designated sites, is located 1.5 km north east of the Site.

3.2.7. Within close proximity to the Existing Drax Power Station Complex, there is an industrial site and Drax Skylark Centre and Nature Reserve. Further away, there is also the Drax Golf Club and Rusholme Wind Farm.

3.3 PROJECT DESCRIPTION OF THE PROPOSED SCHEME

Introduction

3.3.1. Drax proposes to repower up to two existing coal-powered generating units (unit 5 or unit 6, or both) at the Existing Drax Power Station Complex. This will involve the re-use of existing infrastructure and the installation of new gas turbines to enable the construction of a gas fired generating plant.

3.3.2. Each repowered generating unit would have up to two new gas turbines. Each generating unit will have up to four stacks (or chimneys) (a total of eight stacks if both units are repowered). The stacks will vent hot exhaust gases emitted as a result of the combustion of fuels to the outside atmosphere. Each gas turbine will power a dedicated generator of up to 600 MW in capacity.

3.3.3. The gas turbines can operate in both combined cycle and open cycle modes as follows:

- when operating in open cycle (OCGT), the exhaust gas from the gas turbine will be sent direct to the atmosphere through a bypass stack.
- when operating in combined cycle (CCGT), the hot gas steam from the gas turbine will pass through a recovery heat exchanger (called the Heat Recovery Steam Generators (HRSG)) to generate steam that will be used to power the existing steam turbines.

3.3.4. It is anticipated that each new gas turbine generating unit would (subject to technology and commercial considerations) be connected to a battery energy storage facility of up to 100MW in capacity (i.e. up to 200MW for two new units combined). This would support the repowered units in providing fast and flexible electricity export to the National Grid.

3.3.5. When all the infrastructure is installed, this would result in a combined capacity of up to 3,800 MW (up to 1,900MW should only one unit be repowered), replacing existing units with a combined capacity to generate up to 1,320 MW (660MW each unit).

3.3.6. An illustration of the proposed changes at the Existing Drax Power Station Complex as part of the Proposed Scheme is presented in **Figure 3**.

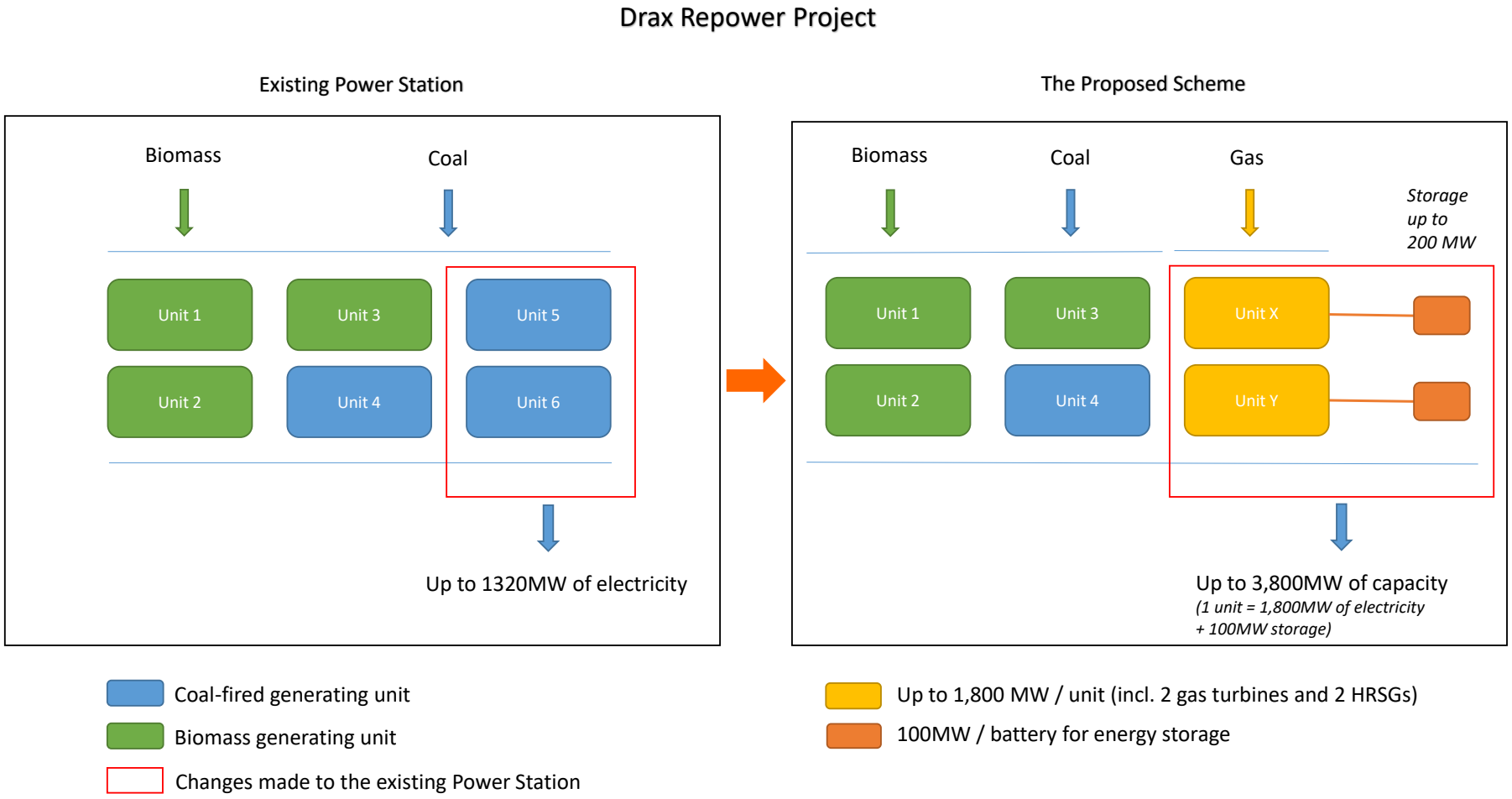


Figure 3 – Overview of the Proposed Scheme

Proposed buildings and infrastructure at the Power Station Site

3.3.7. The main buildings and elements of the gas turbine generating units are listed below.

Table 2 – Description of the proposed buildings and infrastructure

Project component	Description
Gas Turbine Units	Up to two gas turbines per repowered generating unit (up to four in total if both units repowered).
HRSGs	Up to two HRSGs per repowered generating unit (up to four in total if both units repowered).
Stacks	Up to 4 stacks (or chimneys) per repowered generating unit (up to eight in total if both units repowered): ▪ Main stack of 120m in height (would operate in combined cycle); and ▪ Bypass stack of 120 m in height (would operate in open cycle).
NOx abatement technology	This may be included in the repowered units should there be a need to mitigate the amount of nitrogen oxide (NOx) emissions from the plant.
Cooling Solution	No new infrastructure is required to transfer the heat generated by the new gas turbines. The existing condensers (heat exchangers) and cooling water infrastructure will be used (this includes the existing northern group of cooling towers on the Existing Drax Power Station Complex).
Battery Storage	Each new unit would (subject to technical and commercial considerations) be connected to a battery energy storage facility of up to 100MW in capacity (up to 200MW capacity if both units repowered).

3.3.12. The location of these facilities is presented in **Figure** and **Figure** .

Associated development

3.3.13. As part of the Proposed Scheme, it is proposed to construct the following associated development, both within and outside of the Existing Drax Power Station Complex (as indicated below).

Table 3 – Description of Associated Development

Project component	Description
Gas Pipeline	A gas pipeline of 3km in length will be built to connect the generating units to the national gas transmission system. The pipeline will be located outside the Existing Drax Power Station Complex and will extend eastwards with a diameter of up to 600 millimetres nominal bore. Two pipeline options are currently under consideration: route Options A and B. Both routes run east from the Power Station Site (see **Figure**) and share the same corridor for approximately 1.2 km then diverge. Each route option is approximately 250 m wide. Above ground infrastructure will be installed at the connection with the power station (shown as the gas receiving facility and the gas compressor building on **Figure** and **Figure** below) and at the connection to the national gas transmission system.

Project component	Description
Gas Receiving Facility	The Gas Receiving Facility will receive the natural gas coming from the pipeline. The gas receiving facility would comprise an emergency control valve, filtration and metering equipment, preheating boilers, heat exchangers, pressure regulations and gas compression equipment. The gas receiving facility would be located outside the Existing Drax Power Station Complex, within the pipeline corridor as shown in **Figure** .
Gas Compression Building	The Gas Compressor Building will receive gas from the gas receiving facility and, if required, increase the gas pressure to that required for the new gas turbines used in the Repower project. The building will house a number gas compressors and all associated piping, valves, control and electrical equipment. External cooling equipment will be required and this will be located adjacent to the building. The gas compressor building would be located outside the Existing Drax Power Station Complex, within the pipeline corridor as shown in **Figure** .
Above Ground Installation	Supporting infrastructure anticipated to connect the generating units to the national gas transmission system will include the following above ground infrastructure: a minimum offtake connection, a pipeline inspection gauge, a trap facility and on-site pressure reduction and metering station. These facilities will be located adjacent to the national transmission system gas pipeline. The final location will be determined based on local constraints to minimise potential impacts.
Electrical Connection	The output from each generating unit would be banked using Gas Insulated Switchgear (GIS) housed in a new building close to the generating units. Connection from the GIS banking building to the existing National Grid 400kV substation would be by either: ▪ an underground cable to the existing National Grid 400kV substation; or ▪ an underground cable that terminates in a new cable sealing end compound outside of the boundary of the existing National Grid 400kV substation and is connected to the existing equipment using overhead conductors.
Switchyard and Transmission Plant Works in existing 400kV National Grid Switchyard	Switchyard and transmission plant works are within the existing 400kV switchyard which is owned and operated by National Grid. These works may therefore be undertaken by National Grid, but are currently included in the proposed Site Boundary and as part of the Proposed Scheme. It may be necessary to remove and restring some of the existing overhead lines during the construction phase of the Proposed Scheme.
Carbon Capture	The gas turbine generating units will be designed to be carbon capture ready. A suitable area of land has been identified for the installation of carbon capture equipment (see **Figure**).
Combined Heat and Power	Combined heat and power is a highly efficient process that captures and utilises the heat that is a by-product of the electricity generation process. A study is currently being carried out to assess the viability of Combined Heat and Power at the Power Station Site and will consider if existing heat demand is suitable. The result of the study will be incorporated into the ES.

Other necessary infrastructure	▪ 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.

The location of these facilities is presented in **Figure a** and **4b**.

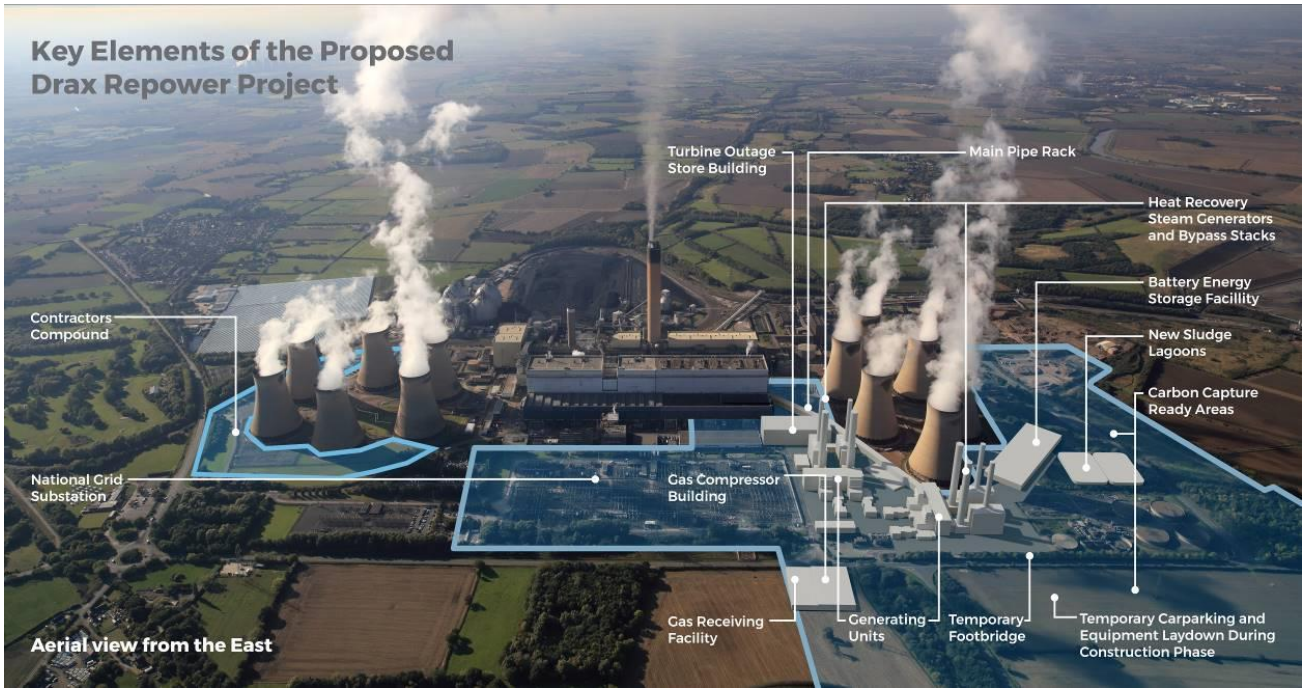


Figure 4a – Key Elements of the Proposed Scheme (1)

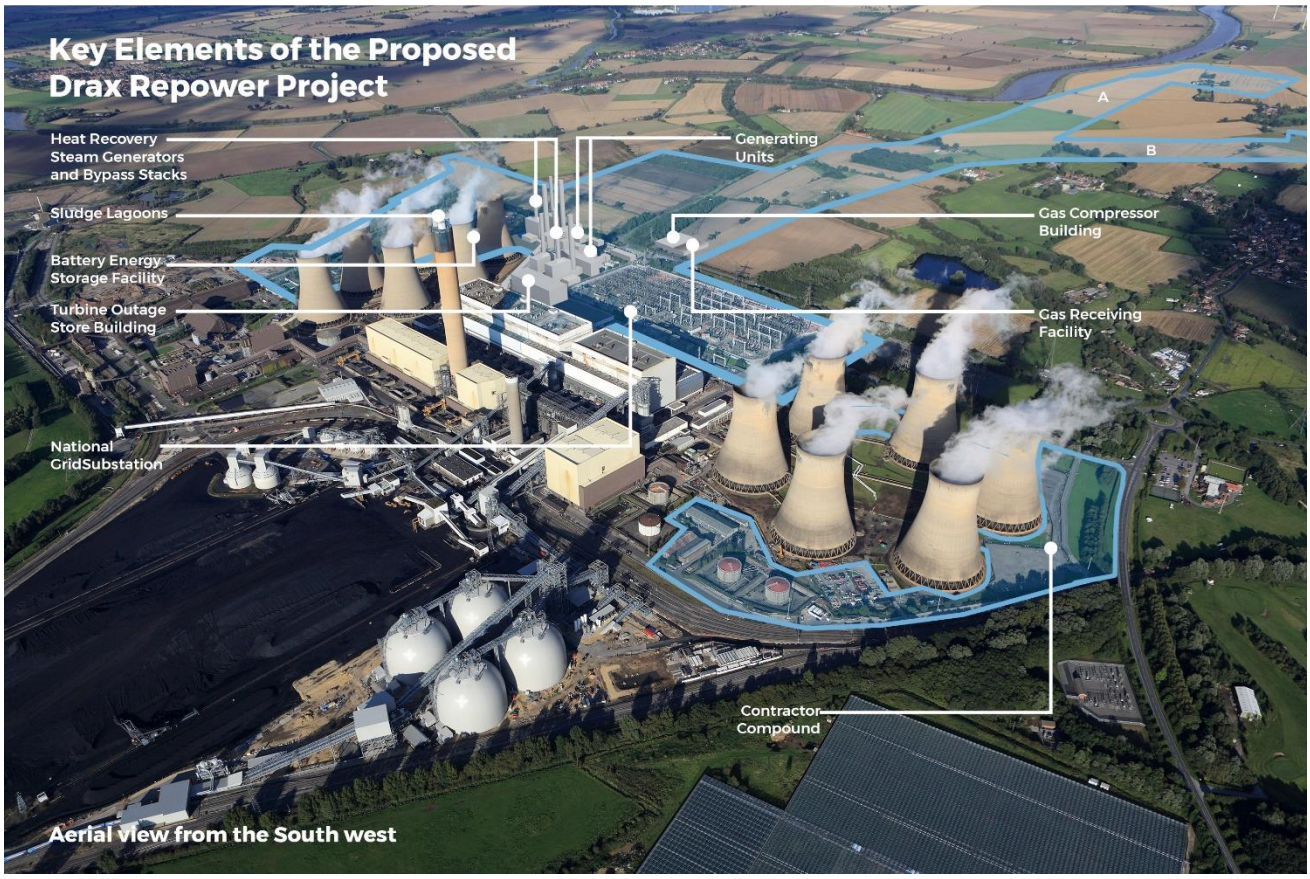


Figure 4b – Key Elements of the Proposed Scheme (2)

3.4 CONSTRUCTION

Introduction

3.4.1. The construction activities will start with the mobilisation of staff and equipment, and also enabling works to allow the commencement of the construction of the proposed infrastructure . This will involve demolition works and relocation of existing facilities to construct the new generating units and associated facilities. Temporary sites (for e.g. laydown areas) will be constructed or altered to support the execution of the construction works.

3.4.2. A brief description of the main construction activities is presented below.

Demolition and relocation of existing facilities

3.4.3. As part of the preparation of the site, it is anticipated that a number of existing facilities at the Existing Drax Power Station Complex will be demolished, removed and/or relocated. These would be relocated to the area referred as the contractor compound on **Figure** and **Figure** .

3.4.4. Some of these works may be undertaken in 2018 as part of ordinary site reconfiguration works to make better use of space (in which case planning permission would be required from Selby District Council). The PEIR has considered in each technical chapter two options for the assessment of the potential effects of the site reconfiguration works. These include:

- the site reconfiguration works that would be undertaken as being part of the Proposed Scheme; and
- the site reconfiguration works being undertaken in advance and therefore not as part of the Proposed Scheme.

Construction sites, laydown areas and transportation

3.4.5. Several construction and laydown areas have been identified within or adjacent to the Power Station Site for use during construction as shown in **Figure 2**. These include:

- three construction laydown areas to accommodate temporary offices, warehouses, workshops, open air storage areas and car parking;
- a contractors compound of 100 m x 100 m for the pipeline construction; and
- a pipe storage yard approximately 150 m x 60 m.

3.4.6. The construction works will also require:

- construction of a temporary pedestrian bridge to connect the contractor's laydown area to the power station.
- potential erection of a temporary crane on the existing Drax jetty to load and unload large plant and equipment. This may include lighting, fencing and storage facilities. An alternative option is for all material to be brought to the Site by highway, which would mean no works at the existing jetty (see below).
- temporary highways powers to accommodate the transport of large plant and equipment from the M62 to the Site. This may involve temporary stopping up of roads and removal of barriers. The land will be reinstated to its former condition once the equipment is delivered to site. No development is proposed.

3.4.7. The majority of construction materials will be delivered on-site via the road network from Junction 32 of M62. The movement of larger plant and equipment via the port of Goole and offloaded at the existing jetty on the River Ouse is still an option. However, given the restrictions on the weight of loads that could be transported, the limitation on the type of barge that could be used so as to avoid dredging of the River Ouse which would likely have impacts on ecology, and given a reliance on tidal windows for movements, the scope for using the jetty is limited. The preferred construction transport route is 'tried and tested'. Some temporary highways powers may be necessary in order to bring larger plant and equipment to Site. The highways powers would allow the removal of street furniture and temporary closure of part of the highway, normally at night and for the duration of the movement only. The land will be reinstated to its former condition once the loads have been delivered.

Construction of the pipeline

3.4.8. It is anticipated that whichever pipeline route is chosen, the pipeline would be constructed using primarily open cut construction techniques. Areas containing constraints may the use of trenchless crossing techniques. A construction corridor of approximately 30 m would be used and this may be increased up to 100 m wide if specific crossing techniques are required.

3.4.9. Following the construction of the pipeline, the land will be reinstated. The loss of hedgerows will be avoided where possible and hedgerows that are removed will be replaced. 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

3.4.10. Working hours during construction are expected to be from Mondays to Fridays (7am to 7 pm) and Saturdays (7am to 1pm). Some construction activities will be required to be 24 hours at certain times and these will be agreed in advance with the Local Planning Authority.

3.5 OPERATION AND MAINTENANCE

3.5.1. The repowered units 5 and 6 would be operated and controlled from the current Drax control room which is situated within the Existing Drax Power Station Complex. The proposed generating equipment would be capable of responding to requests from National Grid to provide short-term additional generating capacity and other ancillary grid services, as well as selling electricity into the market. Gas generation will allow the new units to respond rapidly to changing demands of the electricity market.

3.5.2. The facility will be designed to operate 24/7 with programmed offline periods for maintenance. Specific hazard prevention and emergency planning will be put in place by Drax and will be managed through the implementation of a Health and Safety Plan. This plan will cover commissioning and operation of the Proposed Scheme.

3.5.3. During operation, 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.

3.6 DECOMMISSIONING

3.6.1. The Proposed Scheme will be designed to operate for up to 25 years after which the continued operation of infrastructure will be reviewed. If it is not appropriate to continue operation, the plant will be decommissioned.

3.6.2. During decommissioning, demolition plant/equipment items would be mobilised to demolish the power generation units and the installations located above ground. It is assumed that the gas connection pipeline would be left in-situ.

3.6.3. The decommissioning phase is likely to take place over several months. For the purpose of the EIA, the environmental effects of decommissioning are assumed to be no worse than the effects resulting from construction. When specific effects are expected from the decommissioning phase that differ from this assumption, this has been stated in the Chapters 5 to 14.

3.7 PROGRAMME

3.7.1. 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 (should both units be repowered) will be separated by 12 months, with the overall programme lasting approximately 83 months including commissioning of the second unit.

3.7.2. It is anticipated that the battery storage facility and gas pipeline will be constructed within the first half of this programme.

3.7.3. The construction of the first unit will start in 2019 (assuming approval by the SoS of the DCO application) and will be completed in 2022. If a second unit is built, its construction would start in 2023 and would end in 2026.

4 CONSIDERATION OF ALTERNATIVES

4.1.1. In accordance with the EIA Regulations 2017, an ES should include a description of the reasonable alternatives considered as part of the Proposed Scheme 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. As part of the iterative design process, a number of options were identified for the Proposed Scheme and this process took into account environmental constraints (see **PEIR Volume 1 - Chapter 4**).

4.1.3. A summary of the key findings from this exercise is presented below:

- **'Do Nothing' scenario**: this would consist in the closure of the existing 3 coal-fired generating units and would leave the biomass units and reduce the generating capacity to 1,860MW. This was not considered appropriate given the established national need for new energy generation;
- **Alternative development sites**: given the nature of the Proposed Scheme (i.e. re-using existing infrastructure for the construction of the gas-fired generating units), no other sites were considered as a viable or suitable alternative to the Existing Drax Power Station Complex;
- **Alternative layouts**: only available areas within the Existing Drax Power Station Complex with sufficient space and causing minimal disruption to existing operations were considered for the new gas turbine units. Three layouts were discounted.
- **Alternative technologies**:Drax is working in partnership with Siemens to install Siemens gas turbines and battery technology at the Power Station Site. The new gas turbines will likely be Siemens SGT5-9000HL machines. Previous generations of gas turbine, such as the Siemens SGT5-8000H, are not considered suitable for the Proposed Scheme. It is also proposed to make use of vertical HRSG. Horizontal units were discounted due to insufficient space at the Power Station Site.
- **Alternative emissions abatement and stack heights**: a variety of strategies have been considered to reduce NOx emissions. However, the NOx abatement technology is not yet confirmed. It is currently proposed to increase the stack height to up to 120 m which would reduce the impact on air quality, and no exceedance of limits is expected from the Proposed Scheme alone. Consultation with environmental bodies is on-going to discuss and refine the approach to abatement of emissions, including the exploration of alternatives and this will be reported in the ES.
- **Alternative fuels for electricity generation**: two fuel types were considered, namely biomass and natural gas. Natural gas was assessed as an economically viable fuel choice for the Proposed Scheme.
- **Alternative options for electrical connection**: two options are currently being considered to connect the new units to the 400 kV substation. These are explained further in **PEIR Volume 1: Chapter 3**.
- **Alternative options for the gas pipeline route**: during the initial feasibility study, six pipeline routes were initially considered. After the preliminary analysis of technical and environmental constraints, two gas pipeline routes were selected (route option A and B as shown in **Figure 2**). The summary of environmental and social constraints is presented in the PEIR.

4.1.4. The design of the Proposed Scheme will continue to be refined taking into account environmental factors such as flood risk, sensitive habitats, ecological designations, human receptors and the status of agricultural land. This will also consider the concerns and feedback from the consultation undertaken during the EIA process with the local community and key stakeholders.

5 TRAFFIC AND TRANSPORT

5.1 INTRODUCTION

5.1.1. The preliminary traffic and transport assessment identifies the likely significant effects of the Proposed Scheme on both motorised and non-motorised users of the road network. The study area considered as part of this assessment currently covers the following junctions, along with highways links between junctions (see **Figure 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.

5.1.2. Two delivery options are currently being considered for abnormal indivisible loads (AIL) during the construction of the Proposed Scheme, which are defined as vehicles with a width of more than 2.9 m and a length of more than 18.65 m:

- Option 1 – AILs are delivered via the Port of Goole travelling along the Goole Bypass, M62 and then A645 to Drax.
- Option 2 – AILs are delivered via the River Ouse and unloaded using a crane at the existing Drax jetty.

5.1.3. In either option, heavy goods vehicles are assumed to travel from the M62 junction 36 and then the A645 to Drax (see **Figure 8 of the Project Overview Report)**.

5.1.4. During operation, access to the Power Station Site will be from the existing access off New Road.

5.2 LIKELY CONSTRUCTION EFFECTS

5.2.1. During the busiest part of the construction period, the maximum number of car trips both arriving and departing per day will be 824 and the maximum number of HGVs both arriving and departing per day will be 140. These figures represent the worst case site traffic flows and include trip generation associated with the proposed site reconfiguration works and the repowering of both units.

5.2.2. A number of embedded mitigation measures will be undertaken as standard and considered as part of the Proposed Scheme, these include a Construction Traffic Management Plan and a Travel Plan. These plans include measures to reduce the impact on additional vehicle journeys on local roads and would be secured by requirements attached to the DCO.

5.2.3. There will be increased traffic on the local and strategic highway network as a result of construction worker traffic (consisting of cars and light goods vehicles) and HGV delivery traffic for the Power Station Site and electrical connection. The assessment concludes that the predicted numbers of construction traffic movements will not have significant adverse effects on the existing network.

5.2.4. If the delivery of AILs during construction is made by road, they will be made during off peak times, typically when network flows are low therefore the effects are not predicted to be significant. Highway powers will be required to temporarily close all or part of highways along the route to the Power Station Site and to remove barriers on the highway to enable AILs to pass, but these will normally be undertaken at off-peak times thereby minimising the effects so as not to be significant.

5.2.5. If the delivery of AILs during construction is made via the jetty (and the local road network) the traffic on Redhouse Lane will likely experience some delay. Impacts will be concentrated during off peak times, typically when network flows are low therefore the effects are not predicted to be significant.

5.2.6. During construction on the Power Station Site effects on cyclists and public transport services are not predicted to be significant.

5.2.7. Construction worker traffic and HGV traffic is expected to be low for the gas pipeline in comparison to the Power Station Site. As such, there are not likely to be significant effects associated with additional traffic for the gas pipeline.

5.2.8. Temporary road closures and diversions will be required in order to construct the gas pipeline leading to localised temporary queuing. These will be mitigated through route diversions or temporary road signals. The effects on localised temporary queuing are not predicted to be significant.

5.3 LIKELY OPERATIONAL EFFECTS

5.3.1. During operation there will be little change in existing workforce levels with staff being redeployed from existing operations within the Existing Drax Power Station Complex. Therefore, the operation of the Proposed Scheme will have fewer worker vehicle and HGV movements than during construction. HGV movements will reduce from current levels with fuel being provided by pipeline rather than HGV deliveries.

5.3.2. The effects of the Proposed Scheme during operation are not considered to be significant.

5.4 LIKELY DECOMMISSIONING EFFECTS

5.4.1. The impacts of decommissioning of the Proposed Scheme are similar to those for construction. No significant effects have been identified.

5.5 CONCLUSION

5.5.1. In summary, there are not considered to be any impacts of significance on motorised or non-motorised users of the road network as a result of the Proposed Scheme.

5.5.2. Further work will be undertaken between this preliminary assessment and the final assessment in the ES which will be submitted with the DCO application. The further work to be undertaken is as follows:

- Consideration of the comments received during this consultation period.
- Additional discussions will be held with North Yorkshire County Council and Highways England.
- Trip generation calculations to be finalised.
- Surveys will be undertaken to determine traffic flow.
- Routes for the delivery of abnormal loads will be further assessed.

6 AIR QUALITY

6.1 INTRODUCTION

6.1.1. The air quality within the study area is mainly influenced by existing emissions from the Existing Drax Power Station Complex, traffic emissions and by emissions from other industrial activities such as the Eggborough Power Station.

6.1.2. The air quality assessment considers potential impacts from the Proposed Scheme on both human and ecological receptors, Air Quality Management Areas of Selby, and designated ecological sites which are of importance at European, national and local levels.

6.1.3. A qualitative assessment of air emissions and dust has been conducted for the construction phase and this takes into account predicted numbers of plants and vehicles, duration of activities and proximity of sensitive receptors. The assessment has considered the two options for the site reconfiguration works.

6.1.4. A quantitative assessment of air emissions has been undertaken for the operation phase using a computer model. The assessment considers the dispersion of air emissions within a radius of up to 15km from the Proposed Scheme (the 'study area'). The worst case scenario (used for the purposes of ensuring the effects of the Proposed Scheme are not under-estimated) assumes that the plant runs at full load continuously and both units 5 and 6 are repowered with the new gas fired generating units having a capacity of up to 3,800MW.

6.1.5. A climate change assessment will form part of the ES to assess the contribution of the Proposed Scheme to global warming during construction, operation and decommissioning.

6.2 LIKELY CONSTRUCTION EFFECTS

Air Quality

6.2.1. During construction, it is anticipated that dust and particulate matter may arise from a range of on-site construction activities, including demolition (should the Site Reconfiguration Works be undertaken as part of the Proposed Scheme), earthworks, general construction activities and building of temporary access to the Site. In addition to these, exhaust emissions from construction vehicles and plant may also have an impact on local air quality.

6.2.2. For almost all construction activities, the application of effective mitigation measures as set out in the CEMP should prevent any significant effects occurring to sensitive receptors. A detailed list of mitigation measures will be included in the ES.

Climate

6.2.3. The climate change assessment evaluates the potential increase and/or decrease of greenhouse gas in the atmosphere as a result of the Proposed Scheme. The detailed assessment could not be conducted at this stage as there is not sufficient information available.

6.2.4. However, it is our professional judgment that the potential effects of the Proposed Scheme during the construction phase are not anticipated to be significant. These will be assessed further as part of the ES, including greenhouse gas emissions mitigation opportunities.

6.3 LIKELY OPERATIONAL EFFECTS

Air Quality

6.3.1. The new plant operation at the Power Station Site is unlikely to have significant impacts on air quality affecting human health, but may have impacts which affect the integrity of local fauna and flora.

6.3.2. Predicted concentrations of air pollutants due to air emissions from the operation of the new plant have been calculated. The results have been used to determine an acceptable stack (or chimney) height and to ensure that the plume generated by the new plant is dispersed effectively and does not interact with the cooling towers. It is currently proposed that the height of the new plant stacks is up to 120m.

6.3.3. Through the use of such stack heights, no significant air quality effects are predicted at the identified human receptors. However, the assessment indicates that the new plant may contribute to nitrogen and acid deposition over designated ecological sites. At this stage it is considered that this effect could be significant, however this will be assessed further in the ES.

6.3.4. Work to identify the achievable emissions and associated mitigation measures for the new plant and the resulting environmental impacts is ongoing. The options under consideration are presented in **PEIR Volume 1: Main Report – Chapter 4**.

Climate

6.3.5. The Proposed Scheme will have a net increase of 2,280MW in generation capacity over and above the current situation (the two existing coal-fired units to be repowered have a combined generating capacity of 1,320MW). This will represent a significant net increase in greenhouse gas emissions and have therefore negative climate impacts. However, the use of more efficient technologies at the Existing Drax Power Station Complex will offset other forms of electricity generation (e.g. coal-powered generation) which are more intensive in terms of emissions.

6.4 LIKELY DECOMMISSIONING EFFECTS

Air Quality

6.4.1. Effects during the decommissioning phase are anticipated to be comparable to those identified for the construction phase. Therefore, the potential effects identified are not expected to be significant.

Climate

6.4.2. Similar to the construction phase, the potential contribution of the Proposed Scheme to greenhouse gas emissions during decommissioning is not anticipated to be significant in comparison to the operational emissions. These will be assessed further as part of the ES.

6.5 CONCLUSION

6.5.1. In summary, a significant effect on designated ecological sites is currently predicted due to the potential contribution of the Proposed Scheme to nitrogen and acid deposition during operation. However, further assessment work is required to assess the significance of the effect and mitigate this effect.

6.5.2. The following assessments are recommended in the **PEIR Volume 1: Main Report – Chapter 6** and are being carried out to inform the ES:

- A qualitative construction dust assessment;
- A detailed quantitative assessment using air dispersion modelling and a detailed quantitative assessment of ecological impacts and required mitigation during operation; and
- A detailed assessment of the greenhouse gas emissions of the Proposed Scheme during construction, operation and decommissioning.

6.5.3. The scope and approach to the air quality assessment is being discussed with Selby District Council and the Environment Agency.

7 NOISE AND VIBRATION

7.1 INTRODUCTION

7.1.1. Potential noise sensitive receptors have been identified around the Site at both residential and ecological locations. The baseline noise levels at the receptor locations have been informed by ambient noise surveys undertaken in 2013 and 2017.

7.1.2. For noise and vibration, the predicted effects have been determined on the basis of the potential change from baseline levels as a result of the Proposed Scheme and the sensitivity of receptors.

7.1.3. The construction noise and vibration assessments have used existing applicable standards to calculate the predicted levels of impact of the Proposed Scheme.

7.1.4. The operational noise assessment has used a noise modelling software to assess the predicted levels and the results were compared to national standards for noise and vibration.

7.1.5. The assessment in the PEIR has considered the potential for noise and vibration effects from construction, operation and decommissioning of the Proposed Scheme on sensitive receptors. The assessment has considered the two options for the site reconfiguration works. The worst case scenario has assumed that the plant runs at full load continuously and both units 5 and 6 are repowered.

7.2 LIKELY CONSTRUCTION EFFECTS

7.2.1. Construction activity could lead to some degree of noise disturbance at receptors located close to the construction works and within the surrounding road network used by construction traffic.

7.2.2. For the majority of the construction works, no significant noise effects are predicted on sensitive receptors. Construction noise from traffic is also not anticipated to be significant. A potential localised temporary adverse effect has been identified in relation to the construction of the gas pipeline.

7.2.3. Specific mitigation measures (e.g. use of noise screens) will be incorporated in the CEMP to mitigate potential construction noise effects on sensitive receptors. With the implementation of these measures, the construction noise impact during both the day and night time will not be significant at any of the sensitive receptors identified.

7.2.4. Vibration is likely to occur for a short period of the construction works due to the use of construction plant and equipment. However, these are not recognised as sources of high levels of vibration; therefore no significant effects are predicted during the construction phase of the Proposed Scheme.

7.3 LIKELY OPERATIONAL EFFECTS

7.3.1. The operational noise assessment has identified potential effects at different sensitive receptor locations during both the day and night time. A review of the noise model has shown that the dominant noise levels are located at the stack terminations.

7.3.2. The design of the Proposed Scheme will include appropriate measures to mitigate potential operational noise effects (e.g. attenuators). With the implementation of these measures, the operational noise impact at the new plant will not be significant at any of the sensitive receptors identified.

7.4 LIKELY DECOMMISSIONING EFFECTS

7.4.1. During decommissioning, demolition plant and/or equipment items would be mobilised to demolish the power generation units and the installations located above ground. In general, these machineries are not recognised as being a significant source of vibrations. It is assumed that the gas connection pipeline would be left in-situ.

7.4.2. Therefore, the noise and vibrations effects at sensitive receptors from all decommissioning activities are not anticipated to be significant.

7.5 CONCLUSION

7.5.1. In summary, a potential significant effect has been identified on sensitive receptors during construction in relation to the construction of the gas pipeline. It is expected that this effect would be mitigated through the implementation of an effective CEMP.

7.5.2. The ES will be informed by the following further assessments:

- A construction noise assessment based on the construction programme and works phasing;
- A detailed construction traffic noise assessment; and
- An updated noise model based on further refinements to the layout of the plant on the Power Station Site.

8 HISTORIC ENVIRONMENT

8.1 INTRODUCTION

8.1.1. The preliminary historic environment assessment identifies the likely significant effects the Proposed Scheme on heritage assets such as listed buildings, scheduled monuments and buried archaeological finds. The assessment has gathered information through a desk based study and surveys of the Site and its immediate surroundings.

8.1.2. A total of 515 heritage assets are present within 10 km of the Proposed Scheme. These heritage assets are comprised of 19 scheduled monuments, 11 Grade I listed buildings, 17 Grade II* listed buildings, 440 Grade II listed buildings, 13 conservation areas and 15 non-designated heritage assets. These are shown in **PEIR Volume 2: Figures.**

8.1.3. The closest heritage assets located within 500 m from the Site Boundary are as follows:

- The Drax Augustinian Priory to the north of the Existing Drax Power Station Complex.
- The Scurff Hall Moated Site Scheduled Monument to the east of the east end of pipeline Option B.
- The Castle Hill Moated Site Scheduled Monument to the west of the east end of pipeline Option B.
- The Grade I listed Church of St Peter and St Paul and associated cross base and shaft to the west of the east end of pipeline Option B.

8.1.4. Three of the non-designated assets lie within the pipeline route options. These include the possible site of a Romano-British landing stage and two historical field boundaries.

8.1.5. Preliminary geophysical survey work, which collects information associated with subsurface archaeological features, has identified the potential for a prehistoric settlement in the east end of pipeline Option B.

8.1.6. The assessment has considered that the site reconfiguration works will be carried out as part of the Proposed Scheme during the construction phase. The assessment has considered that both units are repowered as it represents the worst case scenario for both construction and operation impacts.

8.2 LIKELY CONSTRUCTION EFFECTS

8.2.1. The construction of the pipeline may temporarily affect the setting of the heritage assets, particularly those closest to the Site, through increased construction traffic and construction noise. These impacts will be temporary in nature and therefore are not considered to have a significant effect on the heritage assets.

8.2.2. Construction works associated with the Proposed Scheme could disturb potentially known and unknown/undiscovered buried heritage assets. However, no significant effects on known and unknown buried assets are predicted within the Power Station Site. There are no known buried assets on the Power Station Sire and the land has been subject to previous ground disturbance associated with the construction of the facilities on the Existing Drax Power Station Complex. Geophysical survey work is ongoing along the pipeline route therefore the significance of effects on buried assets within the pipeline are not yet known.

8.2.3. The two historical field boundaries are likely to be impacted by the construction of the gas pipeline. A strategy to mitigate this loss will be devised in discussions with North Yorkshire County Council. This will likely include recording of these boundaries. Following the application of this strategy no significant effects are predicted.

8.3 LIKELY OPERATIONAL EFFECTS

8.3.1. The sensitivity of the setting of heritage assets to change and impact that the Proposed Scheme would have on that setting has been considered. As the current setting of the assets includes power generation infrastructure, no significant effects on the setting of heritage assets are predicted.

8.4 LIKELY DECOMMISSIONING EFFECTS

8.4.1. 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.

8.5 CONCLUSION

8.5.1. In summary, no significant effects are predicted on above ground heritage assets or known buried archaeological finds.

8.5.2. The geophysical survey over the remaining areas within the pipeline route options and the proposed gas receiving facility and gas compressor building is ongoing and therefore the results cannot be presented at this time. This may be followed by a programme of trial trenching, the timing of which will be discussed with North Yorkshire County Council. Trial trenching is a series of trenches dug at intervals to explore the potential for buried heritage assets.

9 BIODIVERSITY

9.1 INTRODUCTION

9.1.1. The preliminary biodiversity assessment has gathered information through a desk based study and surveys of the Site and its immediate surroundings.

9.1.2. The assessment has identified no designated sites for biodiversity within the Site. Seven sites designated as of international importance have been identified within 10 km of the Proposed Scheme, six sites designated as of national importance have been identified within 5 km of the Proposed Scheme and four sites designated as of local importance have been identified within 2 km of the Proposed Scheme. These are shown in **PEIR Volume 2: Figures.**

9.1.3. Habitats of importance consisting of ponds, woodland and hedgerows have been identified within the Site.

9.1.4. Signs of activity from species including badgers, bats, otters, wintering/breeding birds and reptiles have been recorded on and adjacent to the Site. Surveys are currently being carried out to confirm the status of these species and other species groups and the results of these will be reported fully in the ES.

9.1.5. The non-native and invasive plant, Himalayan Balsam has been recorded on the Power Station Site.

9.1.6. The preliminary biodiversity assessment identifies the likely significant effects of the Proposed Scheme on biodiversity i.e. habitats and plant and animal species. The assessment has considered both options for the site reconfiguration works during construction and operation of the Proposed Scheme. It has also considered that both units would be repowered.

9.2 LIKELY CONSTRUCTION EFFECTS

9.2.1. The Proposed Scheme has been designed to reduce its impact on biodiversity as follows, where possible:

- To minimise land take of designated habitats.
- To minimise loss and disturbance of habitats for the following, bat foraging and roosting, breeding and wintering birds, reptiles and amphibians.
- To avoid areas supporting non-native invasive species.

9.2.2. During construction, best practice measures to control the effects of the Proposed Scheme on biodiversity will be implemented through a CEMP. These measures will include, for example, the use of fencing to identify the area for use during construction and to protect adjacent habitats. The implementation of these embedded mitigation measures has been considered as part of the Proposed Scheme.

9.2.3. Due to the best practice measures applied through the CEMP, no significant effects on sites designated for their biodiversity importance are currently predicted during construction.

9.2.4. Habitat of importance within the Site will be permanently lost by site clearance during construction. There are no predicted significant effects resulting from the loss of this habitat as a replacement habitat will be provided. The location and extent of this replacement habitat is not yet confirmed, but it will be designed in conjunction with the landscape design. This mitigation measure will form part of an Ecological Management Plan.

9.2.5. There are no predicted significant effects on protected species during construction. There will be some disturbance of habitats for protected species including bats, otters, reptiles and amphibians. However, the effects of these impacts on the species can be adequately reduced through measures including provision of replacement foraging habitat and specifically for bats through the provision of roosts if required.

9.2.6. There are no predicted significant effects resulting from the accidental spread of the invasive species, Himalayan Balsam, during construction. A non-native species management strategy will be devised and will contain construction measures to prevent accidental spread.

9.3 LIKELY OPERATIONAL EFFECTS

9.3.1. No significant effects are predicted on protected species due to the operation of the Proposed Scheme.

9.3.2. The operation of the Power Station Site will lead to emissions of gases to air including nitrogen. Nitrogen has the potential to be deposited on sites designated for the importance of their biodiversity. This can raise nutrient nitrogen levels in the soil/water (a process known as eutrophication) leading to excessive growth of undesirable plants at the expense of rare or otherwise important plant and animal species. Operational

emissions may also lead to acidification of designated sites' habitats, which can affect the condition of the habitats and the species they support. Significant negative effects are currently predicted on internationally and nationally designated biodiversity sites. However, further work is required to fully explore this.

9.3.3. No significant effects are predicted on protected species due to the operation of the Proposed Scheme.

9.4 LIKELY DECOMMISSIONING EFFECTS

9.4.1. The impacts of decommissioning are currently predicted to be similar to those of construction. There are no predicted significant effects on protected species or sites designated as of biodiversity importance during decommissioning.

9.5 CONCLUSION

9.5.1. In summary, one significant effect on biodiversity is currently predicted during operation of the Proposed Scheme due to increased nitrogen deposition at internationally and nationally designated sites for biodiversity importance. However, further assessment work on the effects of nitrogen deposition is still being carried out. This will include air quality modelling.

9.5.2. In addition to the above, ecological surveys and assessments are still ongoing as follows:

- Wintering birds surveys.
- Bat surveys.
- Otter and water vole surveys.
- Great crested newt surveys.
- Breeding bird surveys.
- Reptile surveys.

10 LANDSCAPE AND VISUAL

10.1 INTRODUCTION

10.1.1. The preliminary landscape and visual assessment identifies the likely significant effects of the Proposed Scheme on landscape character, sensitive views and those who experience the views. The assessment considers the following categories of people who may experience changes to their views: users of buildings, users of recreational space and users of footpaths and transport routes.

10.1.2. The assessment gathered information through a desk based study and surveys of the Site and its immediate surroundings. It considers a study area of 10 km radius around the Site. This study area was decided on the basis of a combination of both professional judgment and discussions with the local planning authority.

10.1.3. The preliminary assessment describes the vegetation within the current landscape of the 10 km study area as characterised by small blocks of woodland with intermittent hedgerow. Power stations, pylons and wind farms are prominent features in the landscape. The study area includes small to medium sized villages and towns and residential properties and farms. The villages within 10 km the Proposed Scheme 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).

10.1.4. The assessment has considered both options for the site reconfiguration works during construction and operation of the Proposed Scheme. It has also considered that both units would be repowered.

10.2 LIKELY CONSTRUCTION EFFECTS

10.2.1. The Proposed Scheme has been designed to protect the landscape and views where possible, as follows:

- through the use of suitable materials to reduce reflection and glare.
- through careful siting to reduce visual clutter.
- by retention of specific areas of planting within the Power Station Site to provide a visual screen.
- through planting of an additional 20 m wide woodland close to the north eastern edge of the Site Boundary and within the Power Station Site to screen views of the Power Station Site. This mitigation planting would only be required if the carbon capture and storage goes ahead at some future date.
- a lighting design to reduce light pollution during construction and operation.

10.2.2. During construction, best practice measures to control the effects of the Proposed Scheme on the landscape and views will be implemented through a CEMP. These measures will include for example, tree retention and protection proposals to screen views of construction activity. The implementation of these embedded mitigation measures has been considered as part of the Proposed Scheme.

10.2.3. Significant effects are predicted on the landscape character and views within the study area during construction. These significant effects are the result of the movement of construction vehicles which generate noise and disturb the landscape's tranquillity, as well as the introduction of temporary structures into the landscape including cranes. Further, existing woodland to the north east of the Power Station Site, which provides an important role in screening views of the Power Station, may be cleared during construction if the carbon capture and storage is constructed.

10.2.4. The construction of the pipeline will affect vegetation and farm patterns in the study area. However, as this disturbance will be temporary this is not predicted to be significant.

10.3 LIKELY OPERATIONAL EFFECTS

10.3.1. Significant effects are predicted on the landscape character and a local landscape designation, and views within the study area during operation. Those who experience significant effects on views will include local residents (particularly in Drax, Long Drax and Barmby on the Marsh), users of local footpaths and the local

road network. These effects are associated with new structures associated with the Proposed Scheme which would contrast with the overall mass of the Existing Drax Power Station Complex. Further, significant visual effects are associated with new above ground structures required for the pipeline. New tree and hedgerow planting would tie the Proposed Scheme into its surrounding and reduce the significance of some of these effects, once planting has matured.

10.3.2. Operational effects of the gas pipeline are not predicted to be significant. The connection will have an impact on features in the landscape such as hedgerows and trees. However, these will be replanted following construction and the land the farmland pipeline crosses will be reinstated.

10.4 LIKELY DECOMMISSIONING EFFECTS

10.4.1. During decommissioning the likely significant effects are predicted to be similar to those of construction.

10.5 CONCLUSION

10.5.1. In summary, some significant effects are predicted on the landscape character and sensitive views as a result of the Proposed Scheme.

10.5.2. Further work is still ongoing to expand on the results of this preliminary assessment. This work includes:

- Consideration of the comments received during this consultation period.
- Refinements of the assessment based on any changes to the site layout.

11 GROUND CONDITIONS AND CONTAMINATION

11.1 INTRODUCTION

11.1.1. A review of historical ground conditions and a site visit (November 2017) have been undertaken to understand the current conditions at the Power Station Site and within the pipeline route options, and surroundings. This information was also used to inform the ground conditions and contamination assessment.

11.1.2. Baseline information indicates that the majority of the Site Boundary and surroundings is underlain by silty clay, fluvial and wind-deposited sands. The areas north of the Power Station Site are underlain by clay, silt, sand and gravel. The area of the Proposed Scheme located closed to the River Ouse (including the southern part of the pipeline corridors and the jetty) is also underlain by clay and silt. The presence of man-made ground is highly likely within the Site and surroundings.

11.1.3. The majority of the Site is non-agricultural land, however the surroundings of the Proposed Scheme comprise land which is considered to be suitable for agriculture, including within the pipeline corridors. The soil leaching potential is considered to be intermediate to high.

11.1.4. Sherwood Sandstone bedrock (a Principal Aquifer) lies below the surface sediment across the Power Station Site. Beneath this bedrock there are layers of sandstone and mudstone. Four aquifers are present within the study area and a groundwater abstraction point is used for agriculture purposes. The River Ouse is about 1.5km to the northeast of the Power Station Site and the area to the northwest of the Power Station Site experiences flooding.

11.1.5. The assessment has considered the potential effects of the Proposed Scheme to ground conditions and contamination and its subsequent risks to people, surrounding land uses, ecological receptors, buildings, soils and groundwater during construction, operation and decommissioning. The assessment has consideredthe two options for the site reconfiguration works during construction and the worst case scenario for the plant operation (i.e. repowering of both units 5 and 6).

11.2 LIKELY CONSTRUCTION EFFECTS

11.2.1. The history of the study area indicates the presence of possible ground contamination. During construction, the assessment identified potential likely significant effects on the existing environment (for e.g. contamination of soils, surface water and aquifers) and these might affect the health of workers during construction and operation of the Proposed Scheme.

11.2.2. The findings of the preliminary assessment indicate that the construction works are not predicted to have significant effects on geology and geomorphology receptors and soil within the Site. Potentially significant effects to surface water and groundwater have been identified such as the transfer of contaminants into surface water and underlying aquifers, and these will be assessed further in the ES. However, no significant effects on human health and the built environment are anticipated after the implementation of embedded mitigation measures.

11.2.3. Embedded mitigation for ground conditions and contamination include a CEMP, which will be prepared for the Proposed Scheme and this plan will include procedures for the identification and mitigation of contaminant risks associated with the construction of the Proposed Scheme. In addition to this, a Soil Management Plan will be prepared to ensure that soil quality will be maintained or restored to pre-development conditions once the construction works are completed. The construction phase will be implemented in line with best practice construction methods.

11.3 LIKELY OPERATIONAL EFFECTS

11.3.1. During operation, there is the potential for contamination of surface water and groundwater resources which may affect the health of the local community following the completion of construction works. However, these effects during the operation of the Proposed Scheme are not anticipated to be significant and would be avoided or minimised through a combination of design measures and mitigation measures.

11.3.2. Good management practices will be also implemented during the operation phase of the Proposed Scheme and form part of embedded mitigation proposed to avoid risks of soil and groundwater pollution in line with relevant legislation, guidance and best practice.

11.4 LIKELY DECOMMISSIONING EFFECTS

11.4.1. Decommissioning effects are predicted to be similar to or less than those described above for the construction phase.

11.4.2. A Decommissioning Environmental Management Plan will be put in place and will include procedures for the identification and mitigation of contaminant risks associated with the decommissioning of the infrastructure.

11.5 CONCLUSION

11.5.1. In summary, no potential significant effects have been identified after the implementation of mitigation measures during construction, operation and decommissioning of the Proposed Scheme.

11.5.2. Further ground investigation will be undertaken to inform detailed design.

12 WATER RESOURCE, QUALITY AND HYDROLOGY

12.1 INTRODUCTION

Surface Water Features

12.1.1. The Power Station Site is located within 0.5 km of 18 surface water features, including 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.

12.1.2. The areas located to the north of the Power Station Site are characterised by saturated ground which does not comprise any designated ecological receptors.

12.1.3. Watercourses crossed by the proposed pipeline route options include the Willow Road Drain and Dickon Field Drain. The pipeline route Option A also passes within 0.1 km to the south of the River Ouse, approximately 2 km downstream of Drax Jetty.

Groundwater Features

12.1.4. The majority of the bedrock geology is classified as Principal Aquifer, and this area is known to provide a high level of water storage and may support water supply and/or river base flow on a strategic scale.

12.1.5. The Environment Agency'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.

12.1.6. The Proposed Scheme is located within a groundwater source protection zone. This area is defined around large and public potable groundwater abstraction sites and it aims at protecting drinking water quality through constraining the proximity of an activity that may impact upon a drinking water abstraction. The groundwater abstractions for potable water supply are located approximately 2 km to the south of the Proposed Scheme. Research shows that these groundwater abstractions are used for industry, agriculture and potable uses; and that tidal and surface water abstractions are predominantly used for agriculture.

12.1.7. The quality of groundwater resources in this catchment is monitored by the EA in accordance with the Water Framework Directive objectives. The current overall status of the catchment (Wharfe and Lower Ouse Sherwood Sandstone) is poor, with poor chemical and quantitative status.

12.1.8. A high level review of borehole scans within the study area indicates groundwater depths of between two and six metres below ground level.

Flood Risk

12.1.9. A preliminary flood risk assessment has been carried out as part of the assessment of impact on water resources. The Proposed Scheme is located in an area of complex flood risk comprising Flood Zones 2 (land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding), 3 (land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%)) and in areas benefitting from flood defences. The source of this flood risk is the River Ouse, which is tidally influenced at this location, and the 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 (of the Power Station Site) benefits from flood defences located along the banks of the River Ouse. Current assessment indicates that flooding is tidally dominated, however, there may also be a fluvial flood risk contribution which will be determined during the flood risk assessment.

Approach for the Assessment

12.1.10. The assessment has considered the potential effects of the Proposed Scheme to surface water and groundwater features, and flood risk during construction, operation and decommissioning.

12.1.11. The assessment of the potential effects of the Proposed Scheme during construction has considered a 'worst case' impact scenario for all of the watercourse crossings and the site reconfiguration works. During operation and decommissioning, the assessment has considered the repowering of both units.

12.2 LIKELY CONSTRUCTION EFFECTS

12.2.1. During construction, it is anticipated that water runoff from construction activities could result in increased sedimentation in surface water features. There is also a risk of pollution from spillages of harmful substances

such as fuel, which may filter through into surface and groundwater features. There is potential for construction activities to cause deterioration to the status of surface and groundwater features or impact upon water quality.

12.2.2. There is potential for harm to receptors such as residential properties, people and agricultural land within 1 km of the Proposed Scheme due to an increased level of flood risk associated with temporary construction works within a flood zone.

12.2.3. There is potential for the construction of the pipeline to cause disturbance to the sub surface water flows in the area.

12.2.4. It is anticipated that a number of measures will be implemented as part of a CEMP to address potential impacts during the construction of the Proposed Scheme. A detailed list of mitigation measures will be included in the ES, which will be accompanied by a draft CEMP.

12.2.5. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors. The initial assessment indicates that the residual impacts of the construction of the Proposed Scheme with the implementation of specific mitigation measures are not expected to be significant.

12.3 LIKELY OPERATIONAL EFFECTS

12.3.1. The initial assessment has identified that there is the potential for increased flood risk for receptors within 1 km of the Proposed Scheme during the operational phase due to an increase in surface water run-off, a possible reduction in permeable areas at the Power Station Site and potential loss of floodplain storage.

12.3.2. It has also identified that there is potential for an increase in surface water run-off from the above ground infrastructure associated with the pipeline installation which could affect receptors within 1 km.

12.3.3. An appropriate drainage strategy will be devised for the operational phase and therefore the residual impacts of the Proposed Scheme from flood risk are expected to be neutral.

12.3.4. It has also been identified that the pipeline may have an adverse effect on the base flow of surface and groundwater features within the study area caused by changes to subsurface flows. The assessment predicts that these effects will not be significant.

12.4 LIKELY DECOMMISSIONING EFFECTS

12.4.1. Effects during the decommissioning phase are anticipated to be comparable to the construction phase and therefore are as summarised in the construction phase section.

12.5 CONCLUSION

12.5.1. In summary there are not expected to be any impacts of significance on receptors within the water resources study area.

12.5.2. The following next steps are being undertaken to complete the water resources assessment for the ES:

- Consult with the Environment Agency to agree the methodology of the assessment.
- Undertake a flood risk assessment.
- Undertake a Water Framework Directive assessment.
- Develop appropriate mitigation and devise surface and foul water drainage design where it is required.

13 WASTE

13.1 INTRODUCTION

13.1.1. This preliminary assessment has taken into consideration the likely significant effects associated with the generation of waste from the Proposed Scheme. It is based on a desk top study of publically available information, along with preliminary calculations of waste produced.

13.1.2. The assessment considers local waste treatment and disposal facilities within a study area which includes the wider area of the East Riding of Yorkshire and the Yorkshire and Humber region. This study area is where it is anticipated that the treatment and/or disposal of the majority of waste from the Proposed Scheme would take place. The assessment has also considered that the site reconfiguration works would be part of the Proposed Scheme as this represents the likely worst case scenario.

13.1.3. As part of the assessment, the construction waste volume was calculated based on the construction of two gas generating units. It is estimated that approximately 8,995 tonnes of construction waste would be generated from the construction of the Proposed Scheme. This corresponds to a total volume of approximately 1,587 tonnes of construction waste per year over a period of almost 7 years.

13.2 LIKELY CONSTRUCTION EFFECTS

13.2.1. A CEMP will be prepared for the Proposed Scheme. This will set out best practice measures for waste minimisation and management throughout the construction period. Further, the Proposed Scheme will be constructed in accordance with the Considerate Constructors Scheme, which is a national construction industry initiative aimed at promoting best practice.

13.2.2. No significant effects are predicted on local waste treatment and disposal facilities as a result of waste generated by construction of the Power Station Site. The volumes of hazardous and inert waste generated by construction are not considered to be significant volumes and there are more than 20 facilities in the study area. Additionally, there is capacity onsite to reuse clean, excavated material.

13.2.3. Waste generated by the construction of the pipeline was scoped out of the assessment on the basis that there will be no demolition of above ground features and excavated soil will be reinstated on top of the pipeline. This was agreed with Planning Inspectorate.

13.3 LIKELY OPERATIONAL EFFECTS

13.3.1. Operational waste is currently generated at the Existing Drax Power Station Complex. The specific volumes of this waste is not currently known, however it is not anticipated to be significant. Waste generated during operation was scoped out of this assessment and this was agreed with the Planning Inspectorate.

13.4 LIKELY DECOMMISSIONING EFFECTS

13.4.1. The potential effects of the Proposed Scheme during decommissioning have not been assessed due to limited information available at this stage (e.g. type of waste, phasing of the works and availability of waste infrastructure in the long term). This will be assessed further within the ES.

13.5 CONCLUSION

13.5.1. In summary, no significant effects are predicted in relation to waste as a result of the Proposed Scheme during construction and operation.

13.5.2. The ES will assess further the potential effects identified at this stage based on future information that is currently being compiled.

14 SOCIO-ECONOMICS

14.1 INTRODUCTION

14.1.1. A desktop review has been undertaken for the Proposed Scheme to assess the existing socio-economic conditions near the Site and within its surroundings.

14.1.2. The majority of socio-economic indicators for the Site and the wider region are representatives of the average figures observed across Great Britain. The major industries in Selby area and East Riding include wholesale and retail trades, manufacturing, agriculture and public sectors. In terms of employment, the Existing Drax Power Station Complex and associated operations in the Humber region currently employ 932 direct employees.

14.1.3. The Site Boundary (as shown in **Figure 2**) comprises public rights of ways, infrastructure and amenity for pedestrians and cyclists, and farm holdings. No national trails or Sustrans routes were identified within the vicinity of the Site.

14.1.4. The socio-economic assessment has considered the potential effects of the Proposed Scheme on employment, public rights of ways, agricultural land use and soil quality during construction and operation. The assessment considers the two options for the site reconfiguration works during construction and the worst case scenario for the plant operation (i.e. continuous operation at full and both units 5 and 6 are repowered).

14.1.5. The potential effects of the Proposed Scheme during decommissioning have not been assessed yet due to limited information available at this stage (e.g. methods, timescales and associated staffing requirements).

14.2 LIKELY CONSTRUCTION EFFECTS

14.2.1. The demolition works and the general construction works would generate direct and indirect employment opportunities at the local level and regional level. The Proposed Scheme is anticipated to create an average of 300 direct and indirect jobs each year during the demolition phase and an average of 1,200 full time jobs each year across the construction phase. The beneficial effects associated with the direct employment opportunities are likely to be of significance locally whereas the other effects might not be significant at the regional scale.

14.2.2. The Proposed Scheme may change the accessibility and amenity value of the public rights of ways located near the Site. Specific mitigation measures will be incorporated into the CEMP to mitigate this effect in coordination with local parish councils (e.g. temporary signage and diversion of public right of ways). Therefore, temporary disruption associated with the construction works is not expected to result in significant effect.

14.2.3. The Proposed Scheme may also involve the change of use or the potential loss of land suitable for agriculture. This would affect farm businesses that are located within the vicinity of the pipeline route options during the construction and the operation phases of the Proposed Scheme. This potential significant effect would be reduced through the implementation of specific mitigation measures which include the restoration of agricultural land once the construction of the pipeline is completed.

14.2.4. During excavation and relocation during the works, the inappropriate handling of soils could affect soil quality (for e.g. mixing of topsoil and subsoil). It is expected that the potential significant effects identified would be reduced through the implementation of a Soil Management Plan.

14.3 LIKELY OPERATIONAL EFFECTS

14.3.1. During the operational phase, it is unlikely that the number of employees at the Existing Drax Power Station Complex would increase significantly as a result of the Proposed Scheme. Therefore, no significant beneficial effects are expected in terms of employment opportunities.

14.3.2. A potential significant effect has been identified on farm holdings during the operational phase, as described above for the construction phase. The ES will develop further the required mitigation measures during the operational phase to minimise the effects on farm holdings.

14.4 CONCLUSION

14.4.1. The Proposed Scheme would have an overall positive impact on both the local and regional economy. Likely significant negative effects are identified during construction of the Proposed Scheme on soil quality,

agricultural land, farm businesses and public rights of ways. The ES will assess these effects further and provide specific mitigation to reduce these effects.

14.4.2. The socio-economic assessment will be reviewed to incorporate refinements to the site layout, the proposed structures and pipeline route option as well as the set of mitigation measures.

15 CUMULATIVE AND COMBINED EFFECTS

15.1 INTRODUCTION

15.1.1. As part of the EIA Regulations 2017, the ES is required to include a project-level assessment of potentially significant effects of the Proposed Scheme when considered cumulatively with "other developments", and an assessment of the combination of all environmental effects of the Proposed Scheme on receptors.

15.1.2. Combined and cumulative effects are defined as follows:

- **Combined effects** – the interaction and combination of environmental effects of the Proposed Scheme affecting the same receptor; and
- **Cumulative effects** – the interaction and combination of environmental effects of the Proposed Scheme with other existing or approved project(s) (not yet constructed or operational) affecting the same receptor.

15.1.3. The ES will include an assessment of cumulative and combined effects in accordance with applicable legislation and guidance. The preliminary findings of this assessment are presented in the **PEIR Volume 1: Main Report – Chapter 15**.

15.2 CUMULATIVE EFFECTS

15.2.1. The cumulative effects assessment has broadly followed a four stage approach (as recommended by the Planning Inspectorate in its Advice Note 17):

- Stage 1: identify the Zone of Influence and identify long list of "other developments";
- Stage 2: identify short list of "other developments" for cumulative assessment;
- Stage 3: information gathering; and
- Stage 4: assessment.

15.2.2. A zone of influence of up to 15 km from the Site was established based on the predicted extent of impacts associated with the Proposed Scheme.

15.2.3. During the development of the PEIR, "other developments" within the zone of influence were identified. This preliminary list of developments was assessed for their relevance to the cumulative assessment. This list was then refined to a 'short list' of 55 projects which are either permitted, approved, awaiting decision, or under examination but where there is sufficient material in the public domain to enable a meaningful assessment. The locations of the short list of "other developments" identified are shown on **Figure 5**.

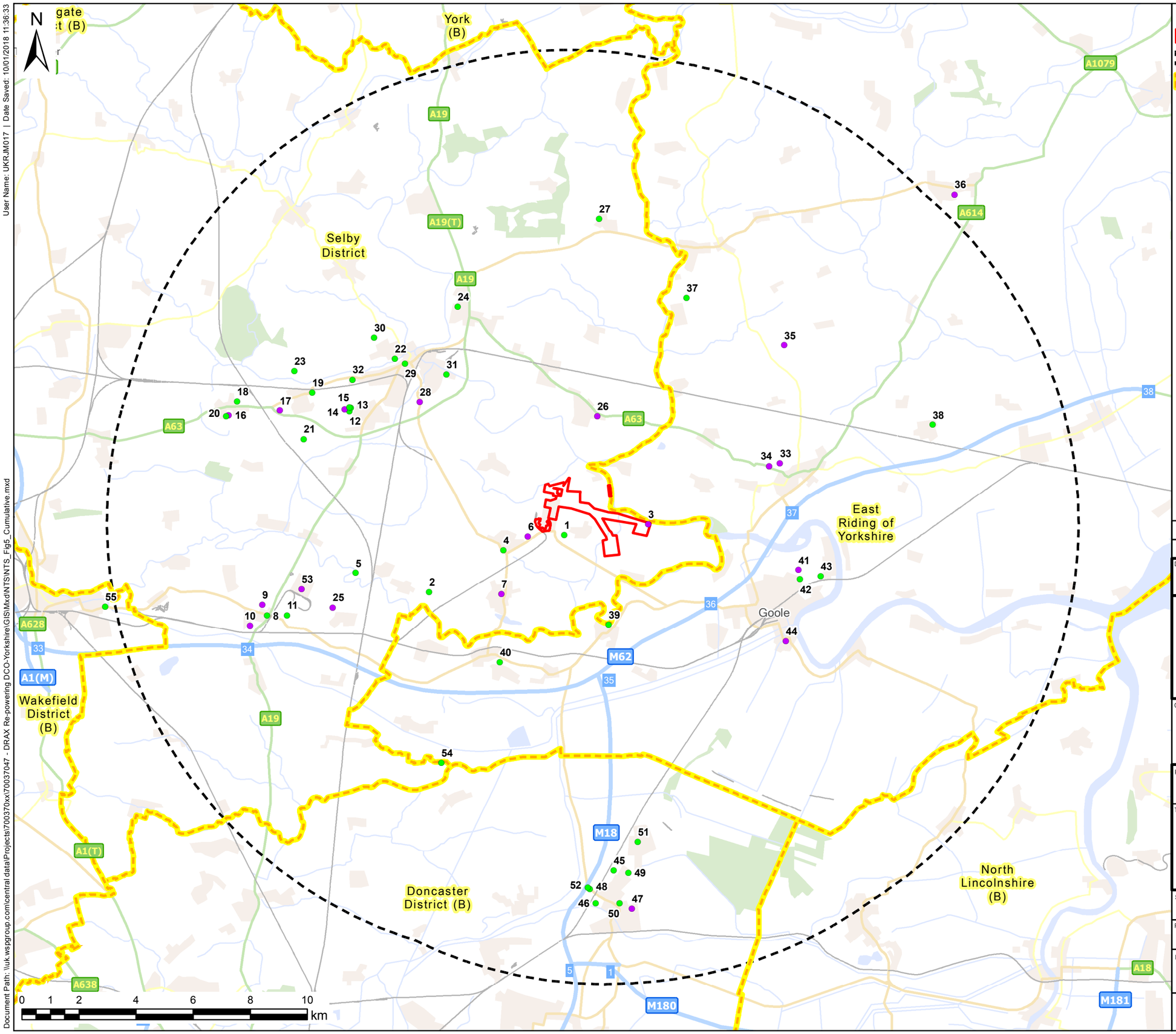
15.2.4. Consultation with the local planning authorities and relevant statutory consultees is on-going to confirm the status of these developments, to better understand the estimated programme for construction and operation of the developments.

15.2.5. The potential for cumulative effects with these "other developments" was considered for all of the environmental topics based on available information. Within the cumulative assessment, no significant cumulative effects have been identified for the following topics as a result of the Proposed Scheme during the Construction, Operational and Decommissioning:

- Traffic and Transport
- Air Quality
- Noise and Vibration
- Historic Environment
- Ground Conditions and Contamination
- Water Resource, Quality and Hydrology
- Waste

15.2.6. Potential significant cumulative effects have been identified within the cumulative assessment as a result of the Proposed Scheme during the Construction, Operational and Decommissioning of the Proposed Scheme:

- Biodiversity
- Landscape and Visual



Key

- Site Boundary
- 15km Study Area
- District Boundary

Short List of 'Other Development'

Status

- Approved
- Awaiting Decision

REV	DATE	BY	DESCRIPTION	CHK	APP
A	18/12/2017	RMcC	FIRST ISSUE	AB	CT

DRAWING STATUS: FINAL

Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL, UK
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wsp.com

CLIENT: drax

PROJECT: DRAX REPOWER

TITLE: FIGURE 5
LOCATION OF SHORT LIST OF OTHER DEVELOPMENTS CONSIDERED FOR CUMULATIVE ASSESSMENT

SCALE @ A3:	CHECKED:	APPROVED:
130,000 @ A3	AB	CT

PROJECT No:	DESIGNED:	DRAWN:	DATE:
70037047	WSP	RMcC	18/12/2017

DRAWING No: 70037047_NTS_Fig5 REV: A

User Name: UKRJM017 | Date Saved: 10/01/2018 11:36:33
Document Path: \\uk.wspgroup.com\central data\Projects\700370xx\70037047 - DRAX Re-powering DCO-Yorkshire\GIS\MxdNTS\NTS_Fig5_Cumulative.mxd

15.3 COMBINED EFFECTS

15.3.1. Combined effects have been assessed in order to identify any new or worse significant effects on receptors as a result of the combination of effects from the different environmental technical topics presented in the PEIR during the Construction, Operational and Decommissioning of the Proposed Scheme.

15.3.2. The combined effects assessment concludes that no significant effects are anticipated as a result of the Proposed Scheme.

16 SUMMARY AND CONCLUSION

16.1.1. The PEIR presents the preliminary findings of the EIA process for the Proposed Scheme based on the design information provided at this stage.

16.1.2. The majority of the Proposed Scheme is set within the Existing Drax Power Station Complex, and the proposed works have been designed to remain within the site itself or within close proximity to it. The pipeline corridors have also been optimised to avoid sensitive environmental and social receptors identified during the EIA process.

16.1.3. The PEIR has assessed a number of environmental topics judged of importance and the following potential significant residual effects (i.e. after mitigation) have been found:

- **Air quality and biodiversity** – potential indirect adverse effects on sensitive ecological receptors due to nitrogen and acid deposition during operation;
- **Climate change** – potential for long term adverse effects due to the contribution of the Proposed Scheme to greenhouse gas emissions during operation;
- **Noise and vibration** - short term localised adverse effects on sensitive receptors during the construction of the gas pipeline;
- **Landscape and visual** – potential temporary and long term adverse effects on the landscape character and sensitive views are predicted during construction and decommissioning. Potential long term adverse effects have been identified on the landscape character and a local landscape designation, and views during operation; and
- **Socio-economics** – short term beneficial effects on the local and regional economy due to generation of construction employment. A potential short term adverse effect has been identified on farm holdings and agricultural land during construction.

16.1.4. No likely significant residual effects have been identified for the following topics:

- **Traffic and transport** – no significant short term or long term effects are predicted on motorised or non-motorised users of the road network during construction, operation and decommissioning;
- **Air quality** – no significants on air quality or climate change are predicted during the construction phase. The new plant operation at the Power Station Site is unlikely to have significant impacts on air quality affecting human health.
- **Noise and vibration** – with the except of the above, for the majority of the construction works, no significant noise effects are predicted on sensitive receptors. The operational noise is not predicted to be significant.
- **Historic environment** – no significant short term or long term effects are predicted on above ground heritage assets during construction, operation and decommissioning. Investigations are ongoing to determine the potential for significant effects on buried assets;
- **Biodiversity** – no significant effects on sites designated for their biodiversity importance are currently predicted during construction. No significant effects are predicted on protected species during the construction or operation of the Proposed Scheme. No significant effects on accidental spread of invasive species are predicted.
- **Landscape and visual** - the construction of the pipeline will affect vegetation and farm patterns in the study area. However, as this disturbance will be temporary this is not predicted to be significant. Operational effects of the gas pipeline are not predicted to be significant.
- **Ground conditions and contamination** – no significant short term or long term effects are predicted on surface water and groundwater during construction, operation and decommissioning;
- **Water resource, quality and hydrology** - no significant short term or long term effects are predicted on surface water and groundwater, and also in relation to flood risk during construction, operation and decommissioning;
- **Waste** – no significant short term effects are predicted as a result of waste generated during the construction phase.
- **Socioeconomics** - temporary disruption to human receptors associated with the construction works is not expected to result in a significant effect. No significant beneficial effects are expected in terms of employment opportunities for the operational phase.

16.1.5. The conclusion of the cumulative assessment and the combined effects assessment are presented below:

- **Cumulative effects** – no significant cumulative effects are predicted as a result of the Proposed Scheme on traffic and transport, air quality, historic environment, ground conditions and contamination, water resources, quality and hydrology, noise and vibration and waste during construction, operation and decommissioning. However, significant cumulative effects have been identified for biodiversity and landscape and visual during construction, operation and decommissioning. Further work is required to determine the level of significance of these effects. Further work is required to determine the significance of cumulative effects for socioeconomics.
- **Combined effects** - no significant combined effects have been identified for all the environmental topics idendified in the PEIR during construction, operation and decommissioning.

16.1.6. A number of design and additional mitigation measures have been identified to mitigate and control environmental effects during construction, operation and decommissioning of Proposed Scheme.

16.1.7. The mitigation measures recommended for the construction phase will be reported in a number of management plans including a Soil Management Plan, a Traffic Management Plan and an Ecological Management Plan. A CEMP will be prepared and implemented by the construction contractor(s) appointed for the construction of the Proposed Scheme. A similar approach will be adopted during the decommissioning phase.

16.1.8. The mitigation measures recommended for the operational phase will be integrated in specific management plans. These plans will be prepared and implemented by Drax (and sub-contractors) as part of their management systems.

17 REFERENCES

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