White Rose Carbon Capture and Storage (CCS) Project

Document Ref: 6.1
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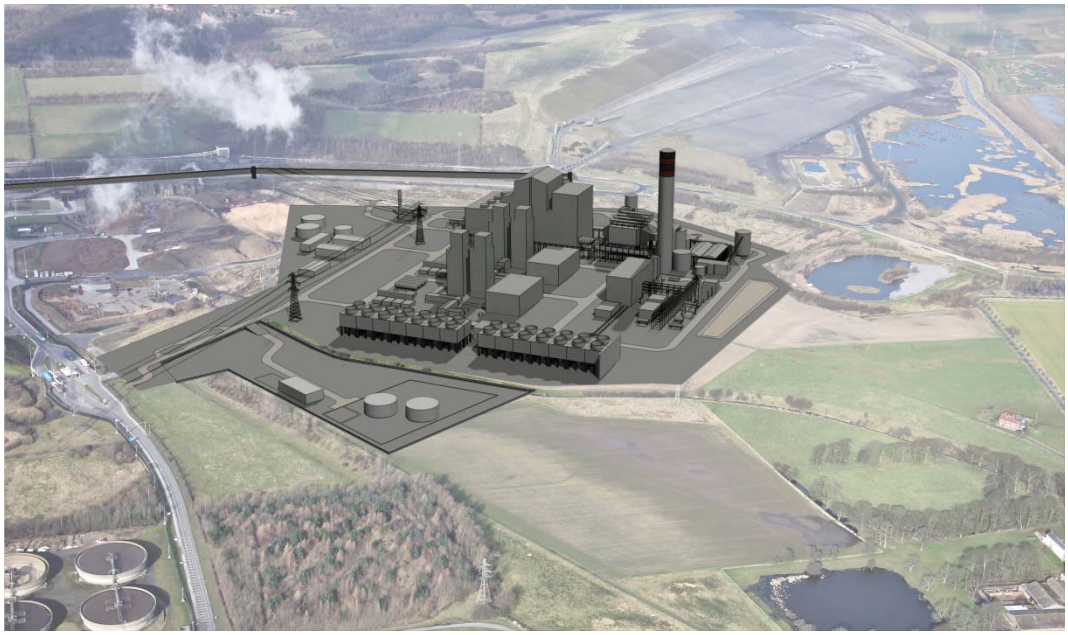
The White Rose CCS (Generating Station) Order

Land within and adjacent to the Drax Power Station site, Drax, near Selby, North Yorkshire

Environmental Statement – Non-technical Summary

The Planning Act 2008

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



Applicant: Capture Power Limited
Date: November 2014

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Glossary of Terms and Abbreviations	
AOD	Above Ordinance Datum
ASU	Air Separation Unit
BS	British Standard
CCS	Carbon Capture and Storage
CEMP	Construction Environmental Management Plan
CPL	Capture Power Limited
DCO	Development Consent Order
dB	Decibel
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
FGD	Flue Gas Desulphurisation
FRA	Flood Risk Assessment
GPU	Gas Processing Unit
HGV	Heavy Goods Vehicle
LWS	Local Wildlife Site
MWe	MegaWatt
NERC	Natural Environment and Rural Communities (Act 2006)
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WHO	World Health Organisation
WSI	Written Scheme of Investigation

Introduction

Purpose of this Document

This document is the Non-technical Summary to the Environmental Statement (ES) for the White Rose Carbon Capture and Storage (CCS) Project ('the Project'). The Project is classed as a Nationally Significant Infrastructure Project (NSIP) and therefore a Development Consent Order (DCO) is required under the Planning Act 2008. Regulations stemming from the Planning Act 2008 include the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations) which requires an EIA to be undertaken and an Environmental Statement (ES) to be submitted with the draft DCO for a project of this scale and type.

The EIA Regulations specify certain information for inclusion in Environmental Statements and also require that a non-technical summary of this information is also provided. The purpose of this non-technical summary is to provide an account of the EIA findings in plain language that renders a sometimes complex and scientific analysis into a form which is approachable to the lay person.

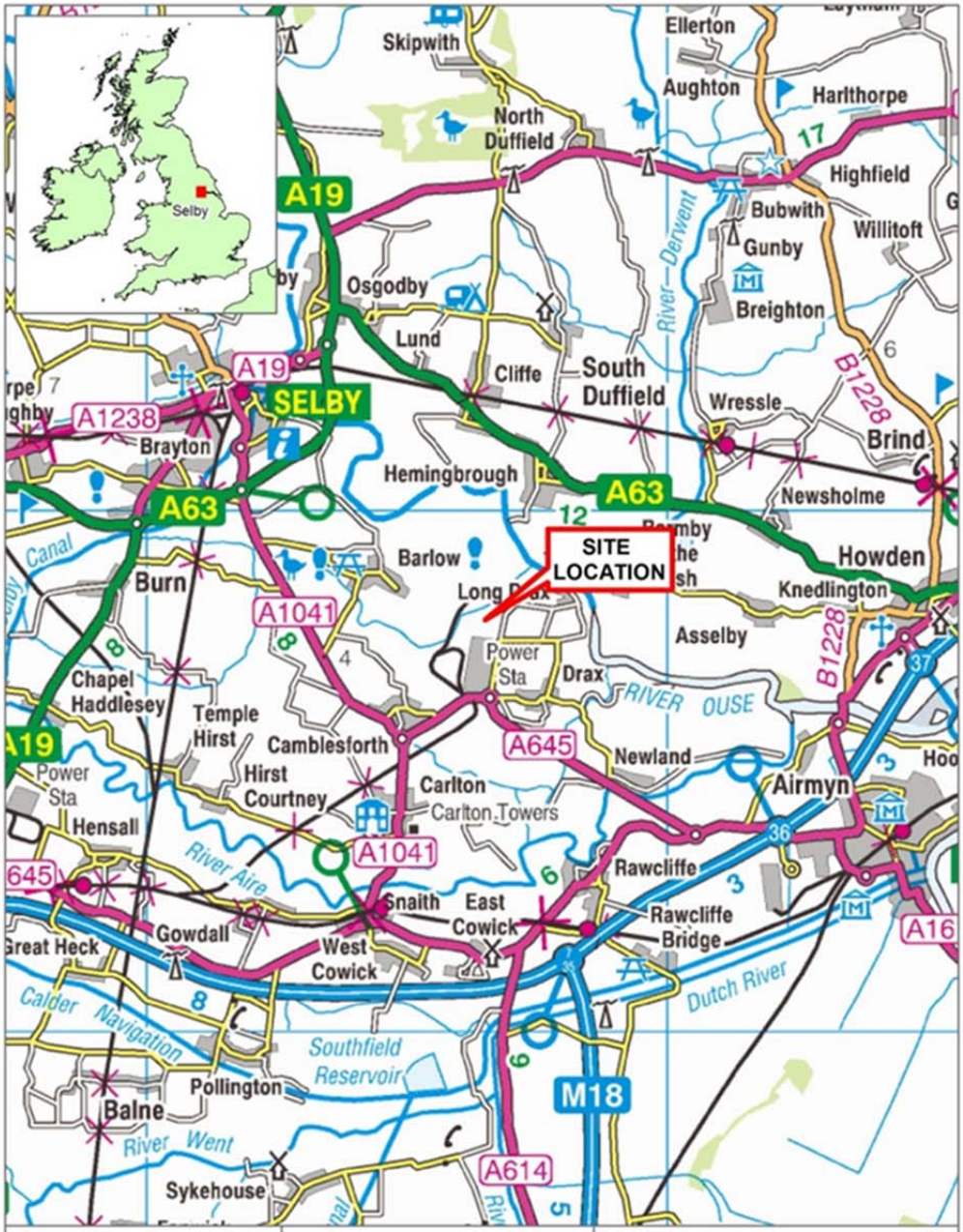
As noted above this document is a non-technical summary only and further and more detailed information is available from the following sources:

- the ES itself;
- http://www.whiteroseccs.co.uk/; and
- http://infrastructure.planningportal.gov.uk/projects/yorkshire-and-the-humber/white-rose-carbon-capture-and-storage-project/

Overview of the White Rose CCS Project

Capture Power Limited (CPL) plans to construct and operate a new 448 MW power station (super critical coal-fired with oxygen combustion technology) with the capacity to provide electricity to 630,000 households whilst capturing two million tonnes of carbon dioxide per year arising from the combustion process. The project will support the development of a carbon dioxide transport pipeline (a separate project developed by National Grid Carbon Ltd). It is believed this pipeline will also be used by other industries and power stations in the Yorkshire and Humber area to transport their carbon dioxide emissions for permanent storage beneath the bed of the North Sea.

The Project is aligned with national strategies relating to the construction and operation of new electrical generation infrastructure whilst meeting UK energy sector carbon reduction targets (see for example the government's CCS Roadmap: https://www.gov.uk/government/publications/the-ccs-roadmap). The Project is also a key part of the development and commercialisation of carbon capture and storage technology, which the government is supporting through over £1billion of capital and research and development funding. The Project site is located on land adjoining the existing Drax Power Station in North Yorkshire, England.


Selby
SITE LOCATION
SELBY
A19
A63
A1238
A1041
A645
M18
A614
B1228
A16
Skipwith
North Duffield
Ellerton
Aughton
Harlthorpe
Highfield
Bubwith
Willitoft
Gunby
Breighton
Osgodby
Lund
Cliffe
South Duffield
Wressle
Brind
Hemingbrough
Newsholme
Howden
Knedlington
Asselby
Barlow
Burn
Brayton
Chapel Haddlesey
Temple Hirst
Camblesforth
Hirst Courtney
Carlton
Carlton Towers
Power Sta
Drax
RIVER OUSE
Newland
Airmyn
Hensall
River Aire
Snaith
East Cowick
West Cowick
Rawcliffe
Rawcliffe Bridge
Gowdall
Great Heck
Dutch River
Calder Navigation
Southfield Reservoir
Pollington
Balne
River Went
Sykehouse
River Derwent
Canal
0 0.5 1 1.5 2 2.5
Kilometres
N
Figure 1
Site Location Plan
SIZE: A4
SCALE: 1:100,000
PROJECT: 0149315
DATE: 20/03/2014
VERSION: A
DRAWN: MTC
CHECKED: RE
APPROVED:
ERM
CAPTURE POWER
PROJECTION: British National Grid
SOURCE: Reproduced from Ordnance Survey digital map data. © Crown copyright. All rights reserved. 2012 License number 0100031673.
Path: T:\GIS Project\0149315DraxGIS_MTC_RMMAPS\0149315_SiteLocation_A01.mxd

Policy Context and Need for the Project

The Climate Change Act 2008 sets an ambitious and binding target for the UK of at least an 80% reduction in greenhouse gas emissions by 2050 relative to the 1990 level, including an interim target of 26 % by 2020. This has led to, and will continue to lead to, a substantial array of government legislation (such as the Energy Acts 2004, 2008 and 2011) and policy that requires the development of energy sources with reduced carbon emissions. The Project will be important in developing and demonstrating CCS technology. By virtue of its nature and size the Project is categorised as a Nationally Significant Infrastructure Project (NSIP) and requires approval under Section 37 of the Planning Act 2008.

The Planning Act 2008 fundamentally reformed the planning system for NSIPs, seeking to create a more efficient, transparent and accessible approach. The Act states that decisions on NSIPs must be taken in accordance with the relevant National Policy Statement (NPS) (where published). The NPSs set out types of infrastructure that are needed and the criteria by which projects to develop them should be assessed.

The first NPSs published were those for energy infrastructure, given the need to replace around a third of the UK's electricity generating capacity over the next twenty years to maintain a resilient and secure supply. NPS EN-1 (Overarching National Policy Statement for Energy), EN-2 (Fossil Fuel Electricity Generating Infrastructure) and EN-5 (Electricity Networks Infrastructure) are relevant to the Project and were enacted on 19 July 2011.

The need for such development as the Project is therefore supported by a combination of:

- it falling within the categories of development set out in the Planning Act 2008 (as amended), and given the very clear statements of need in the NPSs; and

- the contribution it and similar projects will make to the UK meeting binding targets to reduce carbon dioxide emissions.

It is also worth noting that the Project is one of two schemes supported under the government's £1 billion CCS commercialisation programme, with around £100 million of that funding supporting the detailed planning and engineering. In around 2015, the projects will take financial investment decisions, with government potentially investing the remainder of the £1 billion to support construction.

The government believes that the only feasible way to reduce carbon dioxide emissions and maintain fossil fuels in the electricity generation mix is to develop CCS technologies. Fossil fuels are an important part of the current and future energy mix because they allow a balance between the intermittency of renewable sources (as influenced by weather conditions) and the inflexibility of nuclear power.

At a national level the Project will contribute to realising a range of benefits, including:

- generating electricity with low carbon dioxide emissions;

- demonstrating oxyfuel CCS plant as a commercially viable technology;

- improving the UK's security and diversity of electricity supply by providing a new, flexible and reliable electricity generation option;

- generating enough electricity to supply the energy needs of the equivalent of over 630,000 households with low carbon electricity, and

- helping to establish carbon dioxide transportation and storage infrastructure capability which will in turn benefit other industrial businesses.

It is important that CCS is developed soon if the government wishes to maintain fossil fuel fired power plants in the energy mix. This is due to the forthcoming shortfall in power generation as older coal and gas fired plants reach end of life combined with the need to replace them in a way that does not compromise the ability of the UK to meet its carbon dioxide emissions targets. In addition, by the UK taking a leading role in CCS development and application there will be national benefits in terms of economic development and employment.

Alternatives

In regard to alternatives, alternative locations, alternative technologies and the do-nothing scenario have been considered.

The location is an ideal one as it provides ready access to the national grid to export power and it can capitalise on shared infrastructure with the main Drax Power Station, including good road access, delivery of fuel and other raw materials by rail and shared water supplies and effluent control systems. A standalone project elsewhere would have had a notably larger footprint while being less economically viable to develop.

In terms of technological alternatives, as outlined earlier, the Project is part of a commercialisation programme run by the UK government whereby funding is awarded to projects to try and develop the technology and a market for CCS in the UK. Currently there are two projects under consideration: White Rose and Peterhead in Aberdeenshire. The Peterhead CCS Project proposes to retrofit equipment to an existing, operational gas turbine at the Peterhead Power Station. Together the White Rose and Peterhead projects will further understanding of two alternative technologies. At this stage in the development of the CCS sector it is beneficial that alternatives are taken forward to actual demonstration projects as this will allow the overall programme to evaluate the development of viable cost effective CCS technology in the longer term. In this respect the main conclusion is the selected ‘alternative’ for the Project delivers the outcome of low carbon power generation.

The do nothing alternative would result in a low carbon solution to power generation, i.e. CCS by use of oxyfuel technology, not being demonstrated and therefore possibly not being considered as part of a future low carbon power generation mix for the UK and Europe.

Remainder of this Document

The remainder of this document contains brief descriptions of the Project, its environmental and socio-economic setting, the EIA and consultation approach, a summary of the main effects of the Project and provisional mitigation measures to address them and finally the next steps. More detailed information is available in the main ES documentation and the table below relates this to the requirements of the EIA regulations.

Relevant Paragraph No of Schedule 4 to the EIA Regulations	Required Information	ES Reference
17	A description of the Project, including in particular: • A description of the physical characteristics of the whole Project and the land-use requirements during the construction and operational phases; • A description of the main characteristics of the production processes, for instance, nature and quantity of the materials used; • An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc) resulting from the operation of the Project.	Chapters 4 and 5 of Volume 1 of the ES; Technical Reports in Volume 2
18	An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.	Chapter 5 of Volume 1 of the ES
19	A description of the aspects of the environment likely to be significantly affected by the Project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.	Chapter 4 of Volume 1 of the ES; Technical Reports in Volume 2
20	A description of the likely significant effects of the Project on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the Project, resulting from: • The existence of the Project; • The use of natural resources; • The emissions of pollutants, the creation of nuisances and the elimination of waste, • And the description by the applicant of the forecasting methods used to assess the effects on the environment.	Technical Reports in Volume 2 of the ES
21	A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.	Chapter 5 of the ES; Technical Reports in Volume 2
22	A non-technical summary (NTS) of the information provided under paragraphs 1 to 5 of this Part.	ES NTS
23	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.	Technical Reports in Volume 2 of the ES

Description of the Project

Introduction to the Technology

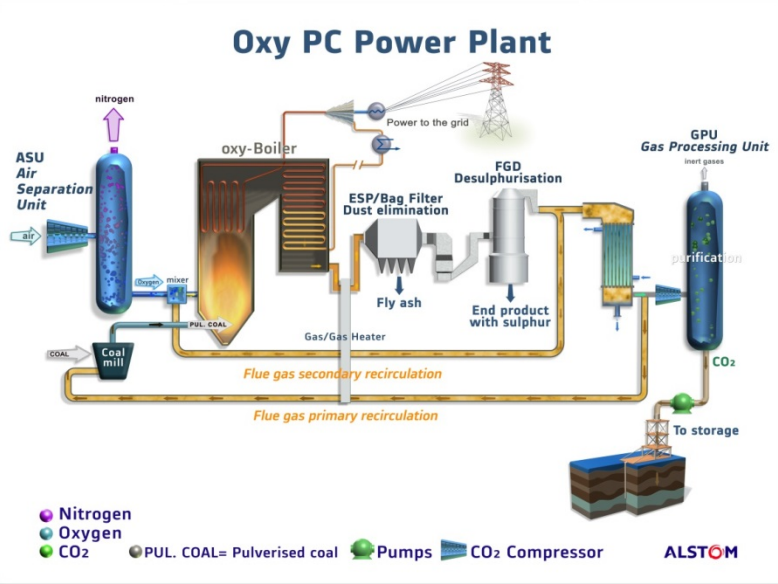
The Project will involve the combustion of fuel (typically coal and possibly a coal/biomass blend) in a boiler in a mixture of oxygen and re-circulated flue gas (largely carbon dioxide and water vapour). The oxygen will be provided by the Air Separation Unit (ASU). This process will largely eliminate the high volume of nitrogen, present naturally in air, from the combustion process. This in turn will produce a carbon dioxide rich flue gas, allowing it to be easily processed to the purity levels required for transportation / storage. The resultant potential carbon dioxide capture rate will be in excess of 90%.

The main combustion by-product pollutants, nitrous oxides, particulates and sulphur dioxide, will be largely extracted through conventional and state of art air quality control system equipment downstream of the boiler. The flue gas will then pass to a direct contact cooler where the flue gas will be cooled down and a large portion of the contained moisture condensed and removed. The final carbon dioxide processing will take place in the Gas Processing Unit (GPU) where the carbon dioxide will be further purified and compressed to a specification ready for onwards transmission and storage offshore.

The process effectively adds two specific components to the 'conventional 'coal fired power plant namely:

- an oxygen production unit, i.e. the air separation unit; and
- a gas processing unit to recover, clean and compress carbon dioxide from the flue gas.

The process is illustrated below.



Construction Activities

Construction activities will take place in three main areas as described below and shown on the map on the next page.

Project Site	All of the areas detailed below namely: the Operational Area, Construction Laydown Areas and the Infrastructure Corridor.
Operational Area	Approximately 27.4 hectares (ha) of land required to operate the Project. Includes the main power plant, the air separation unit, fuel and ash handling facilities and cooling infrastructure.
Construction laydown areas	Approximately 39.4 ha of land to be used temporarily (leased) during construction. The land will be returned to its former use at the end of construction.
Infrastructure corridors	Approximately 49.7 ha of land (within the existing Drax Power site) which will be used by the Project to house new water intake / discharge, fuel conveyors, grid connection and other associated facilities.

The construction programme is shown below. It is anticipated to last for 56 months followed by 6 months of commissioning activities. The initial phase will involve site clearance and then raising the site level above the 'flood risk level' to provide a platform for the operational facilities.

Activity	Start Date	End Date
Site preparation	04.2016	08.2016
Platform Formation	08.2016	07.2017
Preparation of Construction Laydown Areas	08.2016	07.2017
Piling and Installation of Service Runs	05.2017	01.2018
Erection of Power Plant	01.2018	05.2021
Construction of ASU	06.2018	12.2020
CCS Commissioning	05.2021	11.2021
Operational	11.2021	

Staff numbers on site will vary between approximately 200 and 3,300, peaking in year 4 of construction.

Working hours will be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays. No work will take place on Sunday or bank holidays (other than in exceptional circumstances). The workings hours do not necessarily apply to the following:

- construction and related works which do not exceed a noise limit of 50 dB at the DCO Order limits; or
- the delivery or removal of materials, plant and machinery via designated routes on the local road network; or
- the delivery of abnormal indivisible loads; or
- where the prior agreement of Selby District Council has been obtained; or
- in the event of emergencies.

General traffic movements will also vary accordingly but heavy good vehicles (HGV) movements will peak in the early period of construction during the import of fill to raise the site level and capping material for construction laydown areas. The Project will be accessed via Drax New Road, which connects to the A645, known as the Drax Link Road, connecting the existing power station to the A614 and junction 36 of the M62 motorway. All HGV traffic currently arriving at, or leaving the Project site (regardless of its origin or destination) must travel from the M62 junction 36 along the A614 and the Link Road to the site. It is expected that this arrangement will continue to be enforced, where practicable, for the Project.

At the end of the construction phase temporarily occupied areas (e.g. the construction laydown area) will be reinstated to their pre-project condition.

Operation

As described above the Project will effectively operate as a supercritical pulverised coal fired plant consisting mainly of dual air / oxygen fired pulverised coal boiler, turbine-generator unit, Air Separation Unit (ASU) and carbon dioxide capture system.

The Project will be able to burn coal and coal/biomass blends delivered via the existing Drax Power Station coal yard and imported to the yard via rail. The coal and biomass will be transferred from the existing Drax Power Station coal yard using a new conveying system that will be extended up to the Project coal and biomass silos located in the boiler house.

Emissions to air will meet the UK applicable standards and limits. Selective catalytic reduction (SCR) will remove nitrous oxides, flue gas desulphurisation (FGD) will remove sulphur oxides and fine particulate material will be removed by electrostatic precipitators."

The cooling water system will consist of mechanical draft low plume cooling towers. Make up water will be supplied from the existing Drax Power abstraction and treatment facilities. Industrial liquid effluents will be treated within the Operational Site before discharge to the River Ouse under Drax Power Station's existing Environmental Permit. CPL has applied to National Grid for a grid connection at a nearby Drax sub-station. During operation it is anticipated there will be 60 full time jobs at the plant itself.

Site Boundary

Site Boundary
Operational
Temporary Laydown
Infrastructure Corridor
11kV Diverson
Fuel Intake
Fuel Effluent
Electrical Connection

0 100 200 300 400 500
Metres

N

SCALE: See Scale Bar	VERSION: A
SIZE: A3	DRAWN: MTC
PROJECT: 0239623	CHECKED: RE
DATE: 02/10/2014	APPROVED:

Figure 1.3
The Components of the Project Site

ERM

CAPTURE POWER

PROJECTION: British National Grid

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Environmental Management

In advance of construction a Construction Environmental Management Plan (CEMP) (or similar) will be developed in association with the selected EPC contractor. The main purpose of the CEMP will be:

- to provide a mechanism for ensuring that measures to mitigate potentially adverse environmental and socio-economic impacts are implemented;
- to ensure that standards of good construction practice are adopted throughout the construction of the Project;
- to provide a framework for mitigating impacts that may be unforeseen or unidentified until construction is underway;
- to provide assurance to third parties that their requirements and the commitments made in the Environmental Statement with respect to environmental performance will be met; and
- to provide a framework for compliance auditing and inspection to enable CPL to be assured that its aims with respect to environmental performance are being met.

The CEMP will be developed as the Project proceeds through the detailed design and pre-construction phases, to also reflect the results of any discussions with relevant bodies such as the Local Planning Authorities, Environment Agency, English Heritage and Natural England, and to include details of the conditions and requirements imposed by the consents obtained.

The CEMP will address a range of matters including:

- control of surface run-off and drainage;
- construction waste management;
- construction traffic routing and access;
- control of dust;
- control of noise;
- storage and handling of fuels, lubricant oil and other hazardous materials;
- protection of sensitive habitats and species;
- archaeological watching brief; and
- public communication and complaints handling procedures.

During operation, it is anticipated that CPL will include the Project within the existing environmental management system (EMS) for the main Drax Power Station. The EMS will be an integral part of the site's overall management system. The EMS will reflect the policies, management principles, organisational structure, responsibilities, standards/procedures, process controls and resources that are in place to manage environmental protection across all aspects of the business.

The EMS will place particular importance on:

- reducing risks to the environment to a level that is as low as reasonably practicable, using best available techniques;
- integrating EMS responsibilities within line management;
- a commitment to personnel environmental awareness and competence;
- the ongoing monitoring and review of environmental performance; and
- a commitment to working to achieve continuous improvement in environmental performance.

The Project's Environmental and Socio-economic Setting

The Site

As noted above the Project site can be divided up into three areas:

- The Operational Area is predominantly on relatively low-lying, flat scrubland, with elevations ranging from 1.6 metres above ordnance datum (m AOD) near the Carr Dyke in the eastern part of the Site to 6.60 m AOD in southwestern parts of the Site. There are areas currently used for biomass storage and treatment in the southwest corner with scrub land and topsoil heaps in the northwest of the Site.

- The majority of the proposed Infrastructure Corridor is located on hard standing surfaces associated with the main Drax Power Station and the Barlow Mound Ash disposal site.

- The proposed Construction Laydown Areas are currently situated on agricultural land or within the boundary of the Drax Power Station site.

The southwestern portion of the Site is currently used for the storage, handling and preparation of wood and biomass materials for the existing Drax Power Station. The surface beneath this area is cleared ground with a geo-grid membrane, with some concrete hard standing in areas of heavy transport and the Site entrance.

The majority of the Project site is overlain by topsoil (especially within current agricultural land) and/or made ground deposits. Beneath the topsoil and made ground the site is underlain by drift deposits including a thin strip of alluvium deposits, associated with the Carr Dyke on the Site and the River Ouse north of the Site. The alluvium is classified by the Environment Agency as a 'Secondary Aquifer A' the main value of which is probably to provide a source of base flow to the local rivers. A deeper more important aquifer in the sandstone is isolated from the surface by intervening impermeable clay.

The site lies within the tidal flood zones of the River Ouse but is in an area benefiting from flood defences and is protected up to the 1 in 200 year tidal flood water level by the River Ouse flood defences.

Baseline concentrations were established for a number of atmospheric pollutants that could potentially be further elevated by the operation of the Project, including gases and trace metals. Baseline air quality in the main is good as the Project site is located in a primarily rural area and all the pollutants looked at were within respective air quality standards. However, there are significant local sources of emissions including the adjacent Drax Power Station, major roads including the M62 motorway, urban areas including Selby and Goole, and major industrial processes including Scunthorpe steelworks, Eggborough power plant and Ferrybridge power plant.

Baseline noise levels were measured at a number of locations around the site. Despite the presence of the operating Drax Power Station, night-time (and quite often day-time) noise levels at several locations were low reflecting the good management at the existing site and the lack of other sources and the rural nature of the nearest sensitive receptors.

There is little in the way of natural habitat present on the site and accordingly few protected species. The southern section of the Project site, in which most of the Infrastructure Corridor is located, is dominated by the existing Drax Power Station buildings and hard standing. Small areas of amenity grassland, scrub and semi-mature broadleaf woodland are also present within this area, all of low ecological value.

In the northern part of the Project site, where the Operational Area and most of the Construction Laydown Area is located, habitats are predominantly arable with smaller areas of scrub, semi-improved and marshy grassland, reed bed, standing open water and broadleaf wood. The surrounding land to the north is primarily arable and the River Ouse runs to the north of the site.

Views within the area are generally open and across flat farm land with large infrastructural elements such as power stations, electricity pylons and wind turbines visually dominant. In some places small isolated woodlands and hedgerows offer a degree of visual enclosure. More locally to the site the Barlow Mound Ash disposal site is also a visually prominent man-made feature to the west of Drax Power Station. The raised topography and vegetation associated with this feature largely restrict views east from Barlow and surrounding area. However the dominant feature in the local landscape is the Drax Power Station with its cooling towers, stack and turbine buildings visible over large distances.

Access to the site is good and will be via the Drax New Road. This access in turn connects to the M62 via the A645, an established route for current HGV traffic into and out of the existing power station.

Traffic information collected for a recently consented major scheme has been reviewed (based on projected traffic increase from the date of collection to a 2014 baseline) and supplemented by further data collected for the Project. The review indicated that there is no capacity issue or queuing problem in the present situation. All junctions operated with significant reserve capacity. Observations made during site visits also indicate that traffic is generally free-flowing on the local road network, with limited queuing occurring at the main junctions. Slow-moving agricultural vehicles occasionally hold up traffic temporarily on the local highway network.

There are no designated heritage assets within the footprint of the Project site. By virtue of its nature and location there is the potential for unknown buried features to be present and the EIA has included detailed archaeological baseline surveys. Based on survey work undertaken to date of a large part of the site with archaeological potential, there are six undesignated cultural heritage assets recorded within or near working areas. Not all of these would necessarily fall within the physical footprint of the Project.

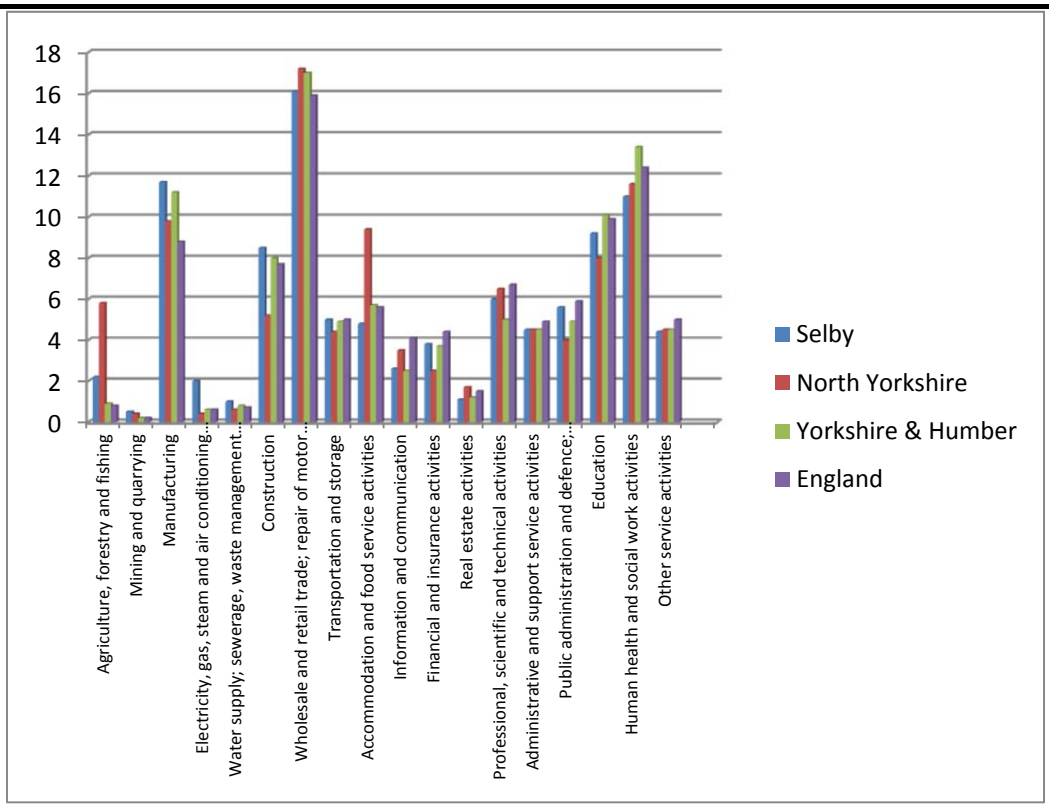
Archaeological features potentially within or near working areas
The site of the Barlow airship construction works and airfield lies to the west of Drax Power Station and the north end of the site lies within the western Infrastructure Corridor. The site of the Barlow Airship Production Factory has since been covered by the Barlow Mound ash disposal site effectively preserving the site from surface activities.
Field boundary ditch recorded as a relatively modern boundary.
Related to Drax Augustinian Priory is the site of a possible fishpond recorded as an earthwork seen in 1967 but now ploughed out.
Roman pits and ditch comprise the earliest recorded asset and were identified during archaeological trial trenching in 1998.
Natural palaeochannel (a previous river or stream channel now filled in or buried by later sedimentation), prior to survey in 2009 previously interpreted as part of a moat around Drax Augustinian Priory.
Field boundary ditch possibly associated with Drax Augustinian Priory recorded from previous trial trenching in the Operational Area.

Further data will be acquired through a staged programme of archaeological works in accordance with a written scheme of investigation to be agreed with the North Yorkshire County Council archaeological adviser.

The Project is located between the villages of Drax and Barlow. The nearest large settlements are Selby and Goole and there are a number of small villages in the vicinity such as Drax, Long Drax, Barlow, Barmby on the Marsh, Camblesforth and Hemingbrough. There are also several scattered properties in the vicinity of the Project site.

As can be seen in the diagram below the local economy is quite mixed but in many ways is reflective of the wider region and England in general. It is worth noting that a significant number of people travel outside the local area for employment, e.g. to Leeds and York.

Occupations Comparison for Selby, the Region and England



The Selby area is not a major tourist destination but it has some tourist attractions. In the vicinity of the Project site, there are some recreational amenities including a footpath and the Trans Pennine Trail / National Cycle Network route 65 runs along the northern bank of the River Ouse, approximately 1 km to the north and east.

The Wider Study Area

The Project site lies within the floodplain of the River Ouse, and the surrounding area is generally flat and low-lying with ground levels typically between 2 and 5 metres Above Ordinance Datum (AOD). The Barlow Ash Mound rises above the surrounding topography at around 30 m AOD. The area in proximity to the Project site is predominantly used as agricultural land with the exception of the existing Drax Power Station. A number of small patches of planted woodland exist within and around the Project site boundary.

There are several small and medium sized settlements within 10 km of the Project site. The village of Drax lies 2 km to the southeast, and the village of Barlow 2 km to the west. The larger settlement of Camblesforth lies 2.5 km to the south of the Project site. On the other side of the River Ouse, lie Hemingbrough (2 km to the north) and Barmby on the Marsh (2.5 km to the northeast). A small number of single dwellings and farms are scattered within the surrounding area. The main settlements within 10 km are Selby, which lies approximately 6 km to the northwest, and Goole, which lies 8 km to the southeast.

The River Ouse follows a sinuous southeasterly route 1 km to the northeast of the Project site. A number of drains and ditches form a network around the area, including the Carr Dyke which flows within the eastern part of the Operational Area, northeastwards to the River Ouse. Carr Dyke drains a wider area of land and is managed by the Selby Internal Drainage Board. A small number of large ponds also exist within the surrounding area, including a lagoon used by Drax Power Station as a water source for dust suppression.

The site is well-served by the local motorway and road network, with the M62 and M18 approximately 6 km to the south, and the A63 and A19 Trunk roads to the north and west. The A645 and A1041 to the south connect to a limited network of minor local roads. Access to the existing Drax Power Station is directly from the A645. The Trans Pennine Trail and National Cycle Network route 65 follow the northern bank of the River Ouse, on the opposite side of the river to the Project site.

A number of statutory and non-statutory designated sites for nature conservation interest exist within the vicinity of the Project site. Statutory sites include the River Derwent which is designated as a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) that lies within 1 km to the northeast. The Lower Derwent Valley is designated as a SAC, Special Protection Area (SPA), Ramsar site, and SSSI and lies within 5 km to the northeast. This site comprises lowland hay meadows and alluvial forests, and supports internationally valuable populations of waterfowl as well as European otter. The Humber Estuary, designated as a SAC, SPA, Ramsar site and SSSI, lies to the east over 6 km away. In terms of non-statutory sites, four Sites of Importance for Nature Conservation (SINC) and a candidate Local Wildlife Site (LWS) exist within 2 km of the Project site.

The Project site is close to a Scheduled Monument, Drax Augustinian Priory, which occupies two areas to the east of the site boundary. There are no other Scheduled Monuments and no Listed Buildings, Conservation Areas, Registered Parks and Gardens and Registered Battlefields within 1 km of the Project boundary.

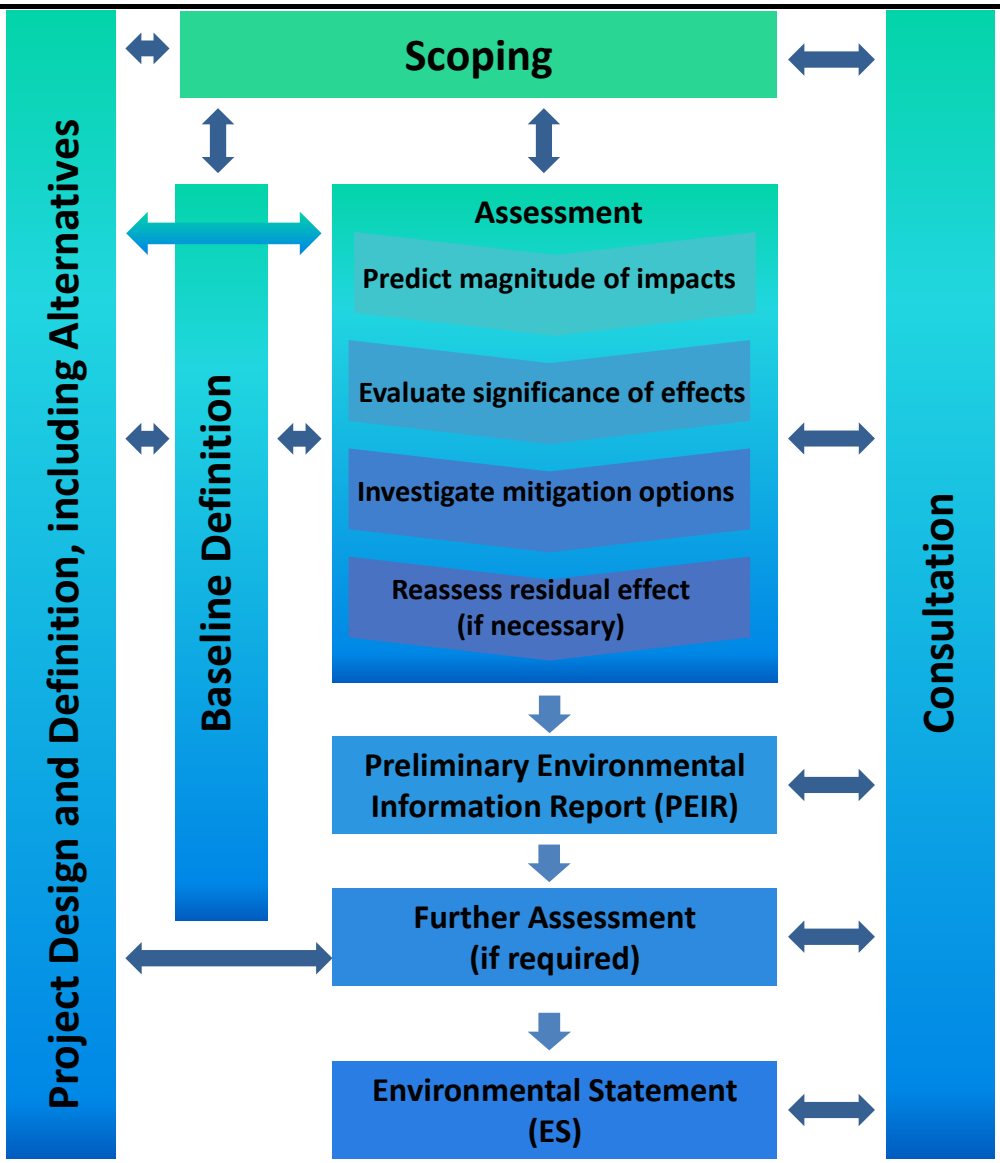
Summary of Baseline Studies Completed

All environmental and social subject areas have been subjected to detailed baseline surveys which were informed by desk studies, scoping responses and accepted guidance. In addition specific survey work has been carried out in a number of areas as summarised below.

Subject	Surveys Undertaken
Land and Water Quality	Soil and groundwater chemical analyses from previous site investigations
Ecology	Extended Phase 1 Habitat Survey
	Breeding bird survey
	Badger survey
	Water vole survey
	Bat roost and activity survey
	Reptile survey
	Great-crested newt survey
	Terrestrial invertebrate survey
Landscape and Visual	Visit by specialist and photography from viewpoints
Noise	Three baseline noise measurements at sensitive receptors
Traffic	Traffic count data collected for the Ouse Renewable Energy Project Traffic surveys and junction counts for the Project
	General visit by specialist to site and surrounding area
Archaeology and Cultural Heritage	Trial trenching within the Operational Area as part of the Ouse Renewable Energy Project EIA
	Two site visits for walk over and geophysical surveys

Environmental Impact Assessment Approach and Consultation

The general approach to the EIA is shown in the diagram below.



The EIA commenced with a scoping exercise and associated consultation resulting in a 'scoping opinion' which set out those issues that the consultees required to be covered in the EIA. The subsequent EIA scope in terms of such matters as the baseline studies, assessment methodologies, mitigation and general focus of the impact assessment for the technical topics was therefore informed by feedback from statutory consultees and the public. As the EIA progressed, further consultation was undertaken on various matters including two sets of public meetings, the latter coinciding with release of the Preliminary Environmental Information Report (PEIR) for consultee review and comment. The information presented in this ES, the subjects covered and how they have been covered therefore reflects the informed comments of consultee as provided at several stages in the overall EIA process.

The EIA to date has also been an iterative process with the design teams, generally starting with the provision of design information to inform the basis of the assessment, proceeding through interactive workshops and discussions on mitigation. The design will proceed beyond the completion of the EIA and a key aspect of the interaction with design has been establishing assessment 'envelopes' within which the ultimate design will fit. Examples of assessment envelopes include for example the height and mass of structures and emission and discharge compositions and volumes. This approach in turn provides assurance that the EIA will capture all the main eventualities, including 'worst case scenarios'.

For the EIA to be a manageable process, as is normal practice it has been divided into various subjects for individual assessment. At the same time subject specialists have worked closely together so that important linkages, interactions and interdependencies between different subjects could be analysed and addressed appropriately. Some important linkages are noted below.

Technical Topic	Linkages, Interactions and Interdependencies with:
Ecology and Nature Conservation	Air Quality and Water Resources
Flood Risk	Water Resources
Water Resources	Land Quality
Landscape and Visual	Archaeology and Cultural Heritage and Ecology and Nature Conservation
Traffic and Transport	Noise and Air Quality

Likely Significant Effects and Mitigation

Land Quality

In the unlikely event of surface or sub-surface contamination being present in the soils (and groundwater) of the site then if disturbed during construction there is the potential for contamination to be mobilised and subsequently affect receptors (ecological and people).

It should be noted that an actual effect would only be expected where a pollutant linkage exists, ie a source of contamination was connected via an environmental pathway to a receptor. In the majority of cases, potential impacts during construction can be avoided and minimised through standard construction management practices. Typically these might include pre-investigation where the risk of contamination is thought to exist, removal or isolation of contaminated material (if it exists) and installation of barriers to prevent contaminated material being mobilised.

During the operational phase of the Project, potential impacts to land (and thence groundwater and surface water run-off) will relate mainly to the storage and use of polluting materials (i.e. oils and fuel) and waste management. Site environmental management practices will minimise these risks.

All areas where potentially polluting substances will be stored and used will be designed with appropriate bunding to industry standards. Bunds will provide containment for 110% of stored volume and be constructed of impervious materials. In the rare event of an oil spill into the bund system, the oil would be pumped out for re-use if possible, or disposed of in an environmentally acceptable manner.

Fuel will be offloaded at the existing Drax Power Station and transferred to the Project site, or alternatively directly by road for some coal and all fuel oil deliveries. Management procedures for waste transport on to or off the Site will be in place, and regularly audited. The Project Site will be operated in accordance with best working practices and measures to protect the land (and water) environment. With mitigation in place, residual risks to people and the environment will be negligible.

Water Resources

Construction of the Project will include activities that could, in the absence of mitigation, affect ground and surface water quality through the mobilisation of existing potential contamination (to the extent any exists) and / or the introduction of new effluents. Impacts on ground and surface water quality could, in turn, lead to effects on people and ecological receptors.

Construction activities may also lead to changes in site surface water runoff characteristics. Specifically, construction activities (such as excavation of materials, soil removal, compaction of soil by mobile plant, dewatering and increased area of hard standing) could alter the soil properties leading to changes in surface water runoff rate and volume and creating new potential pathways to receptors. These activities could also lead to sediment mobilisation across the Project site and into nearby water bodies including Carr Dyke and the River Ouse.

Potential impacts during construction will be avoided or reduced to acceptable levels through standard construction management practices. These measures will be set out in the Construction Environmental Management Plan (CEMP).

During operation, day to day wastewater discharges from the Project will comprise cooling water purge, water treatment plant effluent, boiler blowdown, general wash water, sewage, boiler drainage and turbine drain points. These effluents will be routed through new treatment plants, provisionally as follows.

- Oil-contaminated effluents will be treated by an oil-water separator, with separated oil remaining in the separator for removal and disposal off site by licensed contractors.
- Effluents with the potential for causing chemical contamination of receiving waters will be routed to the effluent neutralisation plant.
- Some process effluents will be directed to a retention basin (primary holding sump); others will be discharged if they are compliant with Drax's existing discharge consent.
- Sanitary and domestic waste water will be discharged to the existing Drax treatment plant.

With these types of measures in place there will be no significant effects on the water quality of nearby water resources (Carr Dyke and the River Ouse) and no significant effects on other water users or ecological populations that rely on these water resources.

A new surface water (rainfall) management system will be put in place for the operational Project site. This will make provision for collection, treatment, retention and discharge of surface run-off and drainage to the River Ouse under the permit for the main Drax Power Station site and to the Carr Dyke. Discharge to Carr Dyke will be designed to be within the natural 'greenfield' run-off rate from the site as presently exists and therefore no significant effects will result to water resources (or flood risk, see below) as a result of the management and discharge of surface run-off.

The water abstraction required for the Project will not exceed the current licence conditions for the existing Drax Power Station and the Project will have no significant effects on other water users or ecology.

Flood Risk

Flood risk for the Project was looked at from two perspectives.

- Could the Project be susceptible to the risk of flooding including from a breach in the Ouse defences?
- Could the presence of the Project increase the flood risk to neighbouring land uses?

The Project site is 1.5 km west of the village of Long Drax, North Yorkshire, approximately 700 m southwest of the River Ouse. Based on the Environment Agency's (EA) Flood Map, the site lies within the tidal Flood Zones 2 and 3 of the River Ouse (i.e. having a medium or high risk of flooding). The site is, however, in an area benefiting from flood defences and is protected up to the 1 in 200 year tidal flood water level by the existing flood defences. However, the possibility exists for the site to be subject to residual risk resulting from the flood defences being breached or overtopped, and therefore detailed 'breach modelling' was conducted as part of the flood risk assessment (FRA) and EIA.

The main findings of the breach analysis and FRA were as follows.

- From an operational perspective, to protect sensitive equipment from the expected 1 in 200-year tidal flood level (including an allowance for climate change and 1 in 5 year river flood event) the minimum floor level will be at or above 5.13 m AOD. The Project will be built on a raised platform to achieve the necessary height above ordnance datum.

- The presence of the raised site platform plus non-naturally draining areas in the flood plain poses a theoretical risk of increasing flood risk to neighbouring land uses. The FRA demonstrated that these potential effects and associated loss of floodplain storage are not significant. Through the use of an engineered surface water run-off and drainage system incorporating storage basins, the site run-off into Carr Dyke and the River Ouse will be within the current green field run-off rates for the site; i.e. there will be no significant change from the baseline conditions.

With respect to people working at the operational Project, safe access and egress routes or an area of safe refuge will be available and prior to commencement of operations, an emergency plan will be produced outlining the procedures to be followed in the event of an emergency, including flooding.

Air Quality and Climate Change

The assessment of air quality effects focused primarily on:

- emissions from construction vehicles along the local road network; and
- emissions from the operational power station in both normal operating mode (coal and biomass combusted in pure oxygen) and air mode (fuel combustion in air).

While dust can be generated in construction activities and in coal handling both sources will be subject to tried and tested management measures and will have no significant effects.

The effects on air quality of construction traffic were assessed in terms of emissions of nitrogen oxides and small particles. For all the scenarios assessed, including peak construction traffic on the local road networks, the effects were not significant.

Emissions to air from the Project were assessed using an atmospheric dispersion computer model. The model predicts ground level concentrations of pollutants around the site and at nearby receptors for every day of one year. However, as a precaution in order to take the most conservative approach, the assessment considered five years of meteorological data and with the highest impact predicted anywhere off-site used in the analysis.

The assessment considered both gaseous pollutants such as nitrogen dioxide as well as trace metals such as lead. For each pollutant of interest, the contributions from the process as predicted by the modelling were added to the baseline levels and then compared with air quality standards designed to protect human health. The assessment also considered different operational scenarios that included:

- 'oxy-mode, which is the normal mode of operation in which carbon dioxide is captured; and
- 'air mode' which is a temporary upset condition when the plant would operate in a similar way to a conventional coal-fired power station, e.g. because the carbon capture and storage facilities were not available.

For all operational scenarios modelled and for all emitted pollutants assessed, the project contributions plus existing baseline levels together were all within the standards or guideline levels designed to protect human health.

The project will generate electricity equivalent to the needs of approximately 630,000 households while capturing two million tonnes of carbon dioxide per year. In the context of climate change the Project will be a very low emitter of greenhouse gases compared with typical conventional thermal power plant which currently provide the majority of the UK's electricity.

Noise and Vibration

The noise assessment considered three main phases of construction comprising:

- civil engineering and platform preparation;
- construction site preparation; and
- construction and installation.

Noise levels for these phases were calculated from published levels for typical assemblages of construction plant and equipment. The noisiest phase was then selected and noise levels were predicted at noise sensitive properties around the site and compared with the British Standard criterion covering daytime activity for low noise areas and for Saturday morning works. The construction noise levels at receptor locations are predicted to be below the assessment criterion and therefore no significant effects are expected as a result of noise from site construction activities.

8. Landling Lane
(Nearest Prediction Point to Site - baseline at No 40 Landing Lane)
4. Barlow (Nearest Prediction Point to Site)
4. Barlow (Baseline)
1. Foreman's Cottage
5. Drax Abbey Farm
7. Old Lodge
6. Long Drax
2. Wren Hall
3. Camblesforth
BARLOW CP
ONG DRAX CP
CAMBLESFORTH CP
River Ouse
River Derwent
Trans Pennine Trail
Between Dikes Road
Barmby Ferry Road
Brown Cow Road
Belly Croft Belt
Barlow Hall
Barlow
Roundhouse Plantation
Hook's Fields
Barmby Pasture
Small Ings
Marsh Lane
Barmby on the M
Barmby Tidal Barrage
Derwent View Farm
Drax Abbey Farm
Long Drax (Langrick)
Bank Field
Bankfield Lane
Hills-Field
Solo Marsh
Green Lane
Middle Marsh
Low Field
Red Marsh
Mill Lane
Mill Bridge
Mill House
Carr Lane (Track)
Carr Plantation
Wind Covert
Dismtd Rly
Common Plantation
Camela Lane
Common House
Clay Lane
Ash Spring Wood
Drax Power Station
Pear Tree Avenue
Sewage Works
Nelliefield Farm
New Close Wood
Baxter Hall
Redhouse Lane
Carr Lane
Woodcock Wood
New Road
Wren Hall Lane
Wren Hall
Cobble Croft Wood
Camela House
Camblesforth Grange
Poplar Tree Farm
Claypit Lane (Track)
Hales Lane Farm
Castle Earthworks
Castle Hill Farm
Drax Hales
Hales Lane
Drax Hall
School
Church Dike Lane
Drax
Camblesforth
Noise Receptor
Site Boundary
0 100 200 300 400 500
Metres
N
SCALE: See Scale Bar
VERSION: A
SIZE: A3
DRAWN: MTC
PROJECT: 0239623
CHECKED: RE
DATE: 23/10/2014
APPROVED:
Figure B1
Locations of Noise Receptors
ERM
CAPTURE POWER
PROJECTION: British National Grid

Path: T:\GIS Project\0239623_Drax_WRCCS_GIS_MTC_RE\MAPS\MAPS_ES\ES\CHB\0239623_CHB_NoiseReceptors_A01.mxd

The noise assessment also considered construction traffic on the two main routes between the Project site and the M62 motorway. However resulting increases in flows will be less than 10% for both routes; therefore according to accepted national criteria, noise effects on people due to increased traffic will not be significant.

While the assessment undertaken to date suggests no need for specific mitigation measures aimed at controlling construction noise, the Construction Environmental Management Plan will set out the good practice measures that would be expected for the types of construction activities that will take place.

To assess impacts during the operation phase different criteria were selected to reflect the long-term and 24 hours per day nature of the activities. In accordance with widely accepted practice, assessment criteria based on the measured baseline (as described in the relevant British Standard) and World Health Organisation (WHO) night-time standards for avoiding sleep disturbance and daytime standards for preserving amenity were adopted.

Operational noise levels were calculated at receptor locations using a computer model and data for the various noise sources provided by the design team. The noise source data took into consideration noise control measures such as selection of low noise equipment, building enclosures, silencers, cladding and acoustic screens. The predicted noise levels exceed baseline noise levels at times, and WHO criteria would suggest that complaints may be likely in these situations at one location based on night-time noise levels. During the day During the day all receptors being below the marginal situation, which is not expected to result in significant impacts, except at locations Foreman's Cottage and Drax Abbey Farm... It should be noted that this forms a cautious assessment since the lower end of measured baseline noise levels was selected for the criteria whereas for a proportion of the time baseline noise levels are higher; at such times plant noise will be less noticeable.

Adopting the WHO night-time standard, the predicted noise levels are above criteria by 3 to 4 decibel (dB) at two locations. However, it may be possible to ensure that these noise levels are acceptable within these buildings. This would involve ensuring that suitable internal noise levels could be achieved to avoid sleep disturbance by using noise insulation and appropriate acoustic ventilation. External daytime noise levels are predicted to be below the WHO daytime criteria by at least 6 db.

The Project is continuing to explore mitigation options to reduce noise both at source and at the main affected receptors (Foreman's Cottage and Drax Abbey Farm) which are both owned by Drax Power Ltd.

Operational traffic will be minimal compared with baseline flows and will have no significant noise effect on receptors.

Ecology and Nature Conservation

The assessment of effects on ecology and nature conservation considered both the direct effects of land lost to the development through permanent and temporary operation and construction disturbance and secondary effects from such matters as operational emissions to atmosphere and changes to hydrology and surface water quality.

Statutory designated sites for nature conservation are sufficiently far removed from the site that they will not experience any direct effects; they also lack hydrological connectivity so would not be

affected in the event of Project discharges (including accidental ones) to surface water. Similar considerations apply to non-statutory locally designated sites.

Relatively small areas identified as Priority Habitat types under the provisions of the Natural Environment and Rural Communities (NERC) Act 2006 will be directly lost to the Project site. These habitats are found in abundance in the surrounding area and as mitigation the Project is evaluating habitat enhancement opportunities.

Baseline surveys have shown some protected species to use the site, including badgers, grass snake and various breeding birds. No evidence of great-crested newt was found. Bats forage and commute across the site but no roosts were found. No recent evidence of water voles was found but suitable habitat is present.

Effects on some species through disturbance and loss of habitat will be unavoidable. However the Project will avoid the majority of badger setts, vegetation clearance will be undertaken at a time and in a manner that is sensitive to reptiles and breeding birds, buffers will be put in place around certain sensitive features (such as retained ditches) and, during construction, features that are important to certain species (e.g. hedgerows for bats) will be retained to the extent practicable. A small number of badger setts that are likely to be disturbed will be dealt with in accordance with the terms of a licence currently being sought from Natural England. Residual effects on ecological populations will be mitigated in the longer term through construction phase environmental management and local habitat enhancement measures.

The air quality assessment looked at nitrogen and acid deposition (along with several other air quality parameters) to sensitive protected nature conservations sites. When the power station is operating in its normal (oxy-fuel) mode there will be no significant effects in any part of any site. Should the plant be required to operate in air mode, acid deposition was predicted to occur in some parts of some nearby European protected sites at levels that required further assessment. Should the plant be required to operate in air mode for long periods (i.e. full time), SO_2 levels were also predicted at nearby European protected sites that required further assessment. Further assessment was undertaken in the form of Stages 1 and 2 of a Habitat Regulations Assessment and this assessment found that no likely significant effects would occur on the protected areas. In reality these effects are not likely to be experienced as the facility is unlikely to operate continually in air mode for long periods of time.

Landscape and Visual Amenity

The EIA assessed the effects of changes to the landscape caused by the Project's construction and operation, together with how these and the presence of the Project could affect the visual amenity of people.

The loss of shelter belt planting, hedgerow vegetation and arable farmland within the footprint of the operational area will have a localised impact on the landscape immediately to the north of Drax Power Station. However, this is likely to have only a small impact on the character of the wider landscape and is unlikely to result in significant landscape effects.

The introduction of construction machinery, including tall cranes, will be visible across large parts of the study area, particularly across the relatively flat, open landscape to the north and east of the Project. With the presence of the existing Drax Power Station, however, this is likely to have only a

small impact on the setting and character of the wider landscape and is unlikely to result in significant landscape effects.

The introduction of construction site lighting, in particular during the winter months, will have a localised impact on the surrounding landscape to the north and east of the Project. However, this will occur within a landscape containing existing lighting associated with the Drax Power Station and is unlikely to result in significant effects.

The presence of construction machinery, storage of materials and site compounds will be intrusive new elements in the immediate landscape and evident in views. This visual impact will be the greatest for receptors nearby, such as residential receptors on Pear Tree Avenue and Redhouse Lane to the east, and recreational receptors on The Trans Pennine Trail to the northeast. These receptors will experience relatively open views of construction activities, with existing tree and hedgerow vegetation in the vicinity of the receptors providing some intermittent visual screening. The visual dominance of Drax Power Station and associated infrastructure within baseline views, however, mean that significant visual effects are unlikely. Further afield, tall construction plant, such as cranes, will be evident in views. However, this will also be seen within the context of views containing Drax Power Station and is unlikely to result in significant visual effects.

The introduction of construction site lighting, in particular during the winter months, will have a visual impact, particularly on receptors in proximity to the east. However, this will be seen against a baseline containing existing lighting associated with Drax Power Station and so is unlikely to result in significant visual effects.

Once built and operating the presence of the Project and the change in land use will have a localised impact on the landscape character to the northeast and east of the Project. The Project will be visible across large parts of the study area, particularly across the relatively flat, open landscape to the north and east. Due to the presence and influence of the Drax Power Station, however, impacts are likely to be small within the context of the wider landscape and unlikely to result in significant landscape effects. With the existing influence of Drax Power Station, however, this is likely to have a small impact on the setting and character of the wider landscape and is unlikely to result in significant landscape effects.

The presence of the Project, which will include the 120 m high chimney stack, a 72 m high oxy fuel boiler and an approximately 49 m high air separation unit, will be an intrusive new element in the landscape and evident in views for localised visual receptors. The visual impact will be the greatest for residential receptors nearby to the east on Pear Tree Avenue and Redhouse Lane, and for recreational receptors on The Trans Pennine Trail to the northeast. These receptors will experience relatively open views of the Project, although there will be some intermittent screening afforded by vegetation in the vicinity of the receptors. The visual dominance of Drax Power Station and associated infrastructure within baseline views, however, mean that significant visual effects are unlikely.

Further afield, taller elements of the Projects, such as the chimney stack, will be evident in views. However, this will also be seen within the context of views containing the existing Drax Power Station and is unlikely to result in significant visual effects. The introduction of lighting associated with the Project, in particular during the winter months, will have a visual impact for residential receptors nearby to the east. However, this will be seen against a baseline containing existing lighting at Drax Power Station and so is unlikely to result in significant visual effects.

Photomontage from Trans Pennine Trail

Traffic and Transport

For the construction phase the traffic assessment considered peak traffic generation from the Project plus other committed development plus traffic associated with annual outage work at the main Drax Power Station. Together these represent both a worst case and an assessment of cumulative effects. The traffic assessment looked at effects at nearby junctions, effects associated with HGVs and abnormal loads.

Junction capacity analysis was carried out for the following junctions most likely to be affected by the Project:

- A645 / New Road / Main Road roundabout;
- A645 / A614 / Rawcliffe Road roundabout;
- M62 (J36) / A614 northern dumbbell roundabout;
- M62 (J36) / A614 southern dumbbell roundabout;
- A645 / A1041 / Station Road roundabout; and
- A63 / A1041 Bawtry Road roundabout.

With one exception the assessment indicates that the junctions are predicted to operate with sufficient reserve capacity in all scenarios, with limited queuing experienced.

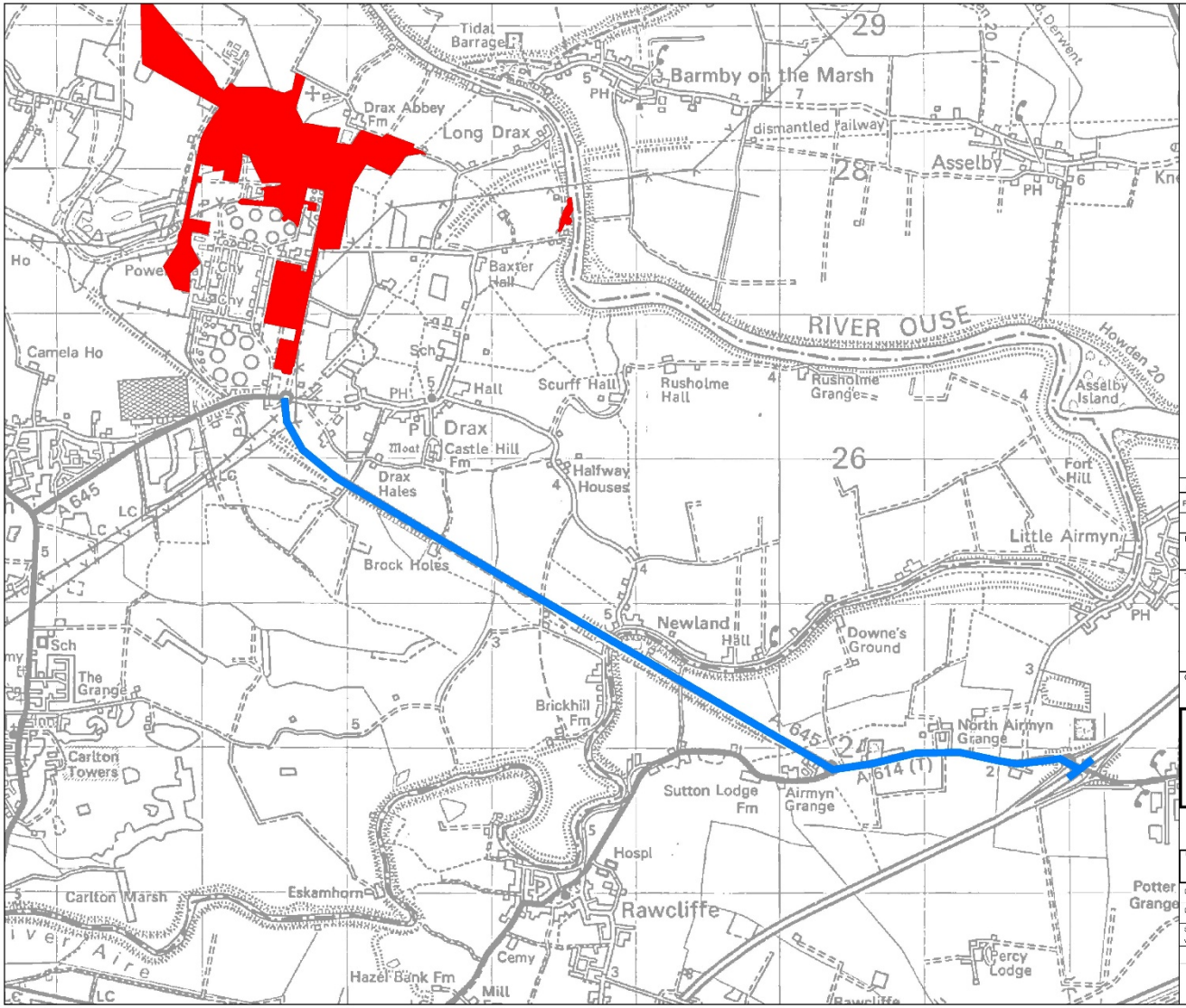
The one exception was the M62 / A614 Northern Dumbbell Roundabout. The assessment indicates that the junction is predicted to operate with reserve capacity in all scenarios, other than the during the peak cumulative worst case when traffic would cause one arm of the roundabout to approach capacity, resulting in queues of around 20 vehicles during the hour. It is expected that this queuing would be for a limited period associated with the peak traffic periods (e.g. morning and afternoon peaks only). Queuing would be unlikely to extend outside of these peak periods.

While the contribution of Project HGV traffic was included within the traffic analysis and junction modelling assessment summarised above, a review of the absolute numbers expected to be generated has also been undertaken.

The busiest period of construction traffic for HGVs is during the twelve month platform formation period. The peak period will be during the first few months when approximately 180 HGVs per day are expected to access and egress the site.

This level of HGV movement, whilst accepted as being relatively large in number, can be accommodated on the local highway network in terms of junction capacity impacts. These movements are expected to be spread across the day, so that the potential effects of HGV traffic will be limited in terms of affecting peak hour flows.

Project HGV traffic will use the dedicated HGV route from the M62 (junction 36) to the Project site via the A645 shown below.



DCO Application Boundary

Rev	Date	Description	By
A	17:09:14	Site Boundary Amended	HD

Amendments

Project: White Rose Site, Drax

Title: HGV Dedicated Route

Client: Capture Power Ltd

Waterman

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Drawing Status: FINAL

Designed by	Drawn by	Checked by	Date	Project No
	DM		March 2014	CIV13924

Scales @ A3 work to figured dimensions only: 1:25,000

Computer File No: CIV-13924-SA-95-0011A.dwg

Publisher	Zone	Category	Number	Revision
CIV	SA	95	0011	A

A3-Waterman-S

File Path: K:\Projects\CIV13924\DWG\95\

Abnormal loads are expected to require access to the Project site, with a maximum of five per month expected during the peak of the construction period. These have been assumed to originate from the Port of Immingham and a route has been identified which should minimise inconvenience to other road users.

The operational traffic will be negligible and will not cause any significant effects on the local road network. Fuel for the operational phase of the Project is expected to arrive by rail directly into the Project site, from the Drax Power Station site, or alternatively small quantities can be delivered directly via road by lorries.

Archaeology and Cultural Heritage

The assessment of effects on archaeology and cultural heritage considered both direct effects such as potential loss or damage and also changes to the setting for protected and important assets that could be caused by the Project.

Due to the proximity of the Operational Area of the Project site to the scheduled monument Drax Augustinian Priory there is potential for unintentional damage from construction vehicles. If it occurred, damage to the priory would be an effect of major significance.

Following baseline investigations in the Operational Area it can be concluded that there is limited potential for the survival of previously unrecorded cultural heritage assets in the area to the southwest of Drax Augustinian Priory. Consultation undertaken to date indicates that the site does have some further potential but that potential negative effects could be mitigated through an archaeological condition. The condition would involve the implementation of a Written Scheme of Investigation (WSI) to be agreed with the consultees and that this would typically cover archaeological monitoring of topsoil stripping, with survey, excavation and recording of features as they are exposed. The WSI for this programme of works would also include assessment (and, if appropriate, analysis) of samples from a palaeochannel identified during geophysical surveys of the site, as well as newly identified features.

There are no known features of interest in the Infrastructure Corridor (largely comprising operational areas of the Drax Power Station and Barlow Mound surface). It is also considered that there is very low potential for previously unrecorded cultural heritage and therefore equally low potential for construction impacts on previously unrecorded cultural heritage assets.

The remains of the Barlow airship construction works and airfield may survive subsurface below the Barlow Mound. However, no ground works are proposed which will reach the original ground surface below the artificial mound. It is therefore considered that there will be no effect on the Barlow airship construction works and airfield.

There is moderate potential for previously unrecorded cultural heritage assets to survive subsurface within the Construction Laydown Area. Any ground breaking works in this area will have the potential to affect these assets and will be addressed under the WSI.

The potential for the operational phase of the Project to affect cultural heritage assets has been considered. Setting issues are the only operational aspects with the potential for significant effects on cultural heritage assets.

Although Drax Augustinian Priory is considered to be an asset of high importance, much of this value is derived from the evidential value held in the fabric of its remains and the information this

may hold on Augustinian priories. There is little aesthetic or communal value to the priory, as it survives only as a series of slight earthworks and buried remains and is therefore difficult to interpret on the ground. It is not signposted; nor is there any evidence to suggest that it is regularly visited by the public. Equally there is little aesthetic value to the asset, and its setting is much altered; at the time of its foundation, it was located on a small island in an area of regularly flooded marshland. This setting has since been altered by drainage of surrounding land, its division into agricultural fields and more recently by the industrial features that make up Drax Power Station and its associated infrastructure. It is therefore considered that Drax Augustinian Priory gains little of its cultural significance from its setting. This factor together with limited change to baseline views, which are presently dominated by the existing Drax Power Station, means that effects on the setting of the monument will not be significant.

Ten other listed assets were identified as being within a potential zone of effect but all were sufficiently distant that effects were assessed as being not significant for them all.

Socio-economic Characteristics

The assessment of socio-economic effects has looked at both positive effects from such matters as employment as well as potential negative effects, for example from the influx of workers. Based on the assessment to date effects from the Project are anticipated to be mostly positive.

- There will be increased employment with an estimated 120 new jobs (60 direct hires and approximately another 60 through the knock-on benefits in the local and regional economy) during operation.
- There will be approximately 3,300 jobs at peak during construction, averaging at approximately 1,000 per year (equivalent to 500 full time jobs) over the 5 year period.
- The Project will help the UK achieve its CO_2 emissions targets and thus allow continued growth of the national economy.
- Many of the new jobs will attract highly skilled workers to the area.
- There will be wider effects on the local economy such as investment in Research and Development (R&D) and raising the skills of the local workforce.
- The Project could lead to an influx of workers which could put pressure on local services such as education and healthcare.

Mitigation of socio-economic effects will be aimed at enhancing the positive effects as well as managing the potential negative ones. Mitigation will address such matters as the following.

- As far as possible and practicable with availability of the necessary skills, the workforce will be recruited from the local area which will enhance local benefits and reduce the influx of workers.
- CPL will engage with local stakeholders at an early stage to gain an understanding of the skills requirements and promote local suppliers.
- A local procurement policy will be discussed with the selected contractor to address recruitment opportunities and sourcing of goods and services locally.
- CPL will engage with local educational providers to ensure the numbers of skilled workers available locally are maximised.
- A register has been created on the Project website for interested companies and individuals to express their interest in tendering for work or seeking employment (http://www.whiteroseccs.co.uk/supplier-database).
- CPL will engage with research centres to promote increased innovation and technological development.

Summary and Next Steps

Responses can relate to the information set out in this report or to any other aspect of the Project and can be provided through the following means:

- requesting a freepost feedback form by calling freephone 0800 169 5290;
- providing feedback via the project website at www.whiteroseccs.co.uk; or
- Sending an email with your views and comments to info@whiterose.co.uk.

CPL is required to seek authorisation to construct the Project through an application to the Secretary of State through the Planning Inspectorate (as the responsible agency) for a Development Consent Order (DCO). The ES was submitted with the DCO application in November 2014. Once accepted by the Planning Inspectorate on behalf of the Secretary of State, the public will have further opportunity to comment on the application.

Details of how the process works can be found on the National Infrastructure Planning website and are also provided in Project literature distributed to members of the community, available at public exhibitions and on the project website.