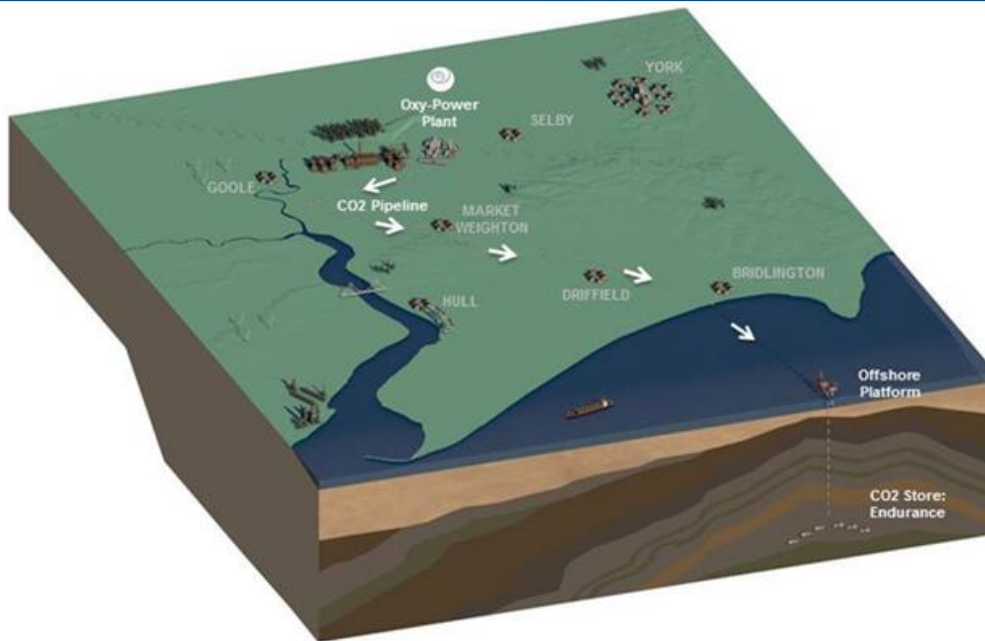




**WHITE
ROSE**

K.13 Full Chain Environmental Report

Full Chain



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Key Words

Carbon Capture	An element, but used as shorthand for its gaseous oxide, CO ₂ . Collection of CO ₂ from power station combustion process or other facilities and its process ready for transportation.
Development Consent Order	A statutory instrument granted by the Secretary of State to authorise the construction and development of a Nationally Significant Infrastructure Project. The natures of these projects are defined by sections. 14-30 of the Planning Act 2008.
Engagement	Engagement describes the myriad of ways in which the planning of the proposed project might be shared with the stakeholders. Engagement is by definition a two- way process, involving interaction and listening, with the goal of generating mutual benefit and understanding.
Environment	The natural world, as a whole or in a particular geographical area, especially as affected by human activity.
FEED	Front End Engineering Design
Full Chain	The complete process from the capture of the CO ₂ at the emitter plant to its injection into the storage reservoir
Key Knowledge Deliverable	A series of reports (including this one) issued as public information to describe the flows and processes associated with the overall system. Also referred to as a KKD
Storage	Containment in suitable pervious rock formations located under impervious rock formations usually under the sea bed.
Stakeholder	Persons and organisations who/which have a vested, direct or indirect interest in or a genuine concern for all or part of the proposed project.
Transport	Removing processed CO ₂ by pipeline from the capture and process unit to storage.

Executive Summary

The approach to the management of environmental matters across the full chain has been developed as part of the Front End Engineering Design (FEED) contract with the Department of Energy and Climate Change (DECC) for White Rose, an integrated full-chain Carbon Capture and Storage (CCS) Project. This document is one of a series of Key Knowledge Deliverables (KKD) from White Rose to be issued by DECC for public information. This report draws on work, which was undertaken by Capture Power Limited (CPL) relating to the Oxy-Power Plant (OPP) and by National Grid Carbon Limited (NGCL) on the Transport and Storage (T&S) elements of the full chain. The work undertaken by NGCL is partly funded under the European Union's European Energy Programme for Recovery (EEPR).

White Rose comprises a new coal-fired ultra-supercritical OPP of up to 448MWe (gross) and a T&S network that will take the carbon dioxide from the OPP and transport it by pipeline for permanent storage under the southern North Sea. The OPP captures around 90% of the carbon dioxide emissions and has the option to co-fire biomass.

Delivery of the project is through CPL, an industrial consortium formed by General Electric (GE), BOC and Drax, and NGCL, a wholly owned subsidiary of National Grid.

This report sets out both the detail of the work that has been undertaken during FEED to mitigate the environmental impact of all elements of the project and looks forward to how environmental issues will be managed during project implementation and operations. The framework for the latter is largely provided through the key consents that the project must obtain under UK law in order to allow it to be built and then operated. At the time of writing these consents are at various stages of application and award and details of the current status are provided in the report in Section 3, Section 4.17 and Section 5.3.11. All of the key consents listed will be achieved prior to final investment decision as they are fundamental to project execution.

After the introductory sections that deal with environmental issues across the full chain, this report is divided into sections dealing with the OPP and T&S separately as the consenting regimes and environmental considerations are largely different and as separate companies will be responsible for the building and operation of the assets. It should be noted that it is a requirement of the Development Consent Order (DCO) processes for both the OPP and the Onshore Pipeline that the combined environmental impact of both projects (and indeed any other concurrent developments) is considered by the developers and the Examining Authority in forming the DCOs eventually issued. This has been an important part of both DCO processes to date.

Her Majesty's Government (HMG) Autumn Statement and Statement to Markets on 25 November 2015 regarding the Carbon Capture and Storage Competition confirmed that the £1 billion ring-fenced capital budget for the Carbon Capture and Storage Competition was no longer available. This meant that the Competition could not proceed on the basis previously set out. A notice of termination of the White Rose FEED Contract was issued to CPL on 23 December 2015 and the FEED Contract was terminated on 25 January 2016; a date which was earlier than the expected completion date. The Government, CPL and National Grid are committed to sharing the knowledge from UK CCS projects, and this Key Knowledge Deliverable represents the learning achieved up to the cancellation of the CCS Competition and termination of the FEED Contract and therefore does not necessarily represent the final and completed constructible project.

1 Introduction

1.1 Background

The White Rose Carbon Capture and Storage (CCS) Project (White Rose), hereafter referred to as the 'project' is an integrated full-chain CCS project comprising a new coal-fired Oxy Power Plant (OPP) and a transport and storage (T&S) network that will take the carbon dioxide (CO₂) from the OPP and transport it by pipeline for permanent storage under the southern North Sea.

The OPP is a new ultra-supercritical power plant with oxyfuel technology of up to 448 MWe gross output that will capture around 90% of CO₂ emissions and also have the option to co-fire biomass.

One of the first large scale demonstration plants of its type in the world, White Rose aims to prove CCS technology at commercial scale as a competitive form of low-carbon power generation and as an important technology in tackling climate change. The OPP will generate enough low carbon electricity to supply the equivalent needs of over 630,000 homes.

White Rose is being developed by CPL, a consortium of GE, BOC and Drax. The project will also establish a CO₂ transportation and storage network in the region through the Yorkshire and Humber CCS pipeline being developed by National Grid Carbon Ltd (NGCL).

1.2 Oxy-Power Plant

CPL will provide the OPP element of the project. The OPP includes all elements on a conventional coal fired power station plus additional elements necessary to achieve Carbon Capture and Storage (CCS).

The conventional power plant includes the boiler, turbine hall, power generation and transformers, Air Quality and Control Systems (AQCS). The CCS elements include an Air Separation Unit (ASU) and a Gas Processing Unit (GPU) for purification and compression of CO₂. In addition to these elements the OPP includes a cooling water facility and interconnections with the existing Drax site.

The OPP is a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 and hence is subject to the grant of a Development Consent Order (DCO).

1.3 Transport and Storage Systems

NGCL will provide the transportation and storage element of the project. This includes the transportation pipeline and pressure boosting facilities; offshore CO₂ reception and processing facilities; and injection wells into an offshore storage reservoir.

The transportation and storage elements of the project comprise two elements: the "Onshore Scheme", which includes the construction of a Cross Country Pipeline (including the Above Ground Installations (AGIs) such as Pipeline Internal Gauge Traps, a multi-junction, it's block valve sites and an onshore pumping station) to transport CO₂ , in dense phase from electricity generation and industrial capture plants in the region; and the "Offshore Scheme" which includes an offshore pipeline to transport the CO₂ to a permanent storage site beneath the North Sea. The Onshore and Offshore Schemes are located, sized

and designed to accommodate CO₂ emissions captured from multiple sources; although an initial, direct connection with the White Rose CCS Project power station itself forms the primary focus of the FEED Contract.

The Onshore Scheme requires a new buried high pressure cross country pipeline of approximately 67km in length with an external diameter of 610mm for the transportation of the dense phase CO₂ to a location on the Holderness coast. The Offshore Scheme requires a new high pressure 90km sub-sea pipeline to a geological storage site. The storage site presently proposed is a saline aquifer located approximately 1000m below the seabed. The Onshore and Offshore Schemes would be joined at the Mean Low Water Mark using appropriate landfall techniques. The Onshore Scheme is also an NSIP and hence is subject to the grant of a DCO. The Offshore Scheme is subject to a separate consenting procedure under the Petroleum Act 1998 and the Energy Act 2008 and has been subject to a separate application.

1.4 This Report

This report is designed to give an overview of the environmental matters that have to be managed by the deployment of this CCS project including the approaches to the mitigation of environmental impact. This is set within the context of the consenting framework that UK law requires which covers all aspects of the full chain, both onshore and offshore.

2 Environmental Management

During the construction and operational phases an Environmental Management System (EMS) will be implemented in compliance with relevant legislation and best practice (ISO14001:2015). The Project Company shall establish, implement, maintain and continually improve the EMS throughout the construction and operation phase of the Project.

The stages of an effective EMS shall be broken down into the following key stages:

- Creation of an Environmental Policy
- Planning
- Implementation and Operation
- Checking and Corrective Procedures
- Management Review

At this stage of the Project, detailed systems and related procedures have not yet been finalised, however it is expected that the following documents and procedures will be produced as part of the overall EMS:

- Environmental Policy
- Environmental Legislation Review
- Environmental Impact and Aspects Register
- Environmental Management Plan
- Operational Procedures
- Emergency Preparedness and Response Plan
- Pollution Prevention and Spill Response
- Waste Management Plan
- Water Use and Discharge Plan
- Material Management Plan

The Project Company will establish documented procedures to monitor and measure the progress of the Project in relation to the objectives and targets outlined within the Environmental Policy. This will make particular reference to compliance with environmental legislation. An audit programme and procedure will be established and undertaken during the construction and operation phase to determine whether the Project is being implemented in line with the EMS and environmental legislation.

3 Key Environmental Permitting

At the time of writing the project's consenting processes remain in progress. This section outlines the current status of the key environmental consents that will be put in place before a Final Investment Decision is taken.

The project is committed to managing its environmental impact in accordance with good industry practice and it recognises the importance of the environmental provisions of these consents for providing the framework within which to do that.

Table 3.1: Key Environmental Consents

	Consent	Status	Award Expected
1	Development Consent Order for the Onshore Pipeline	The Examination phase is complete and the Examining Authority (ExA) has presented his report to the Secretary of State. The Secretary of State announced on the 19 th November 2015 that a decision on the DCO would be delayed by six months to allow a decision on the DCO for the OPP to be made first.	19 May 2016
2	Development Consent Order for the OPP	The Examination phase is complete and ExA is preparing her report for presentation to the Secretary of State	15 April 2016
3	Environmental Permit (EP) for the OPP	The application for a variation to the existing Drax Power Ltd. permit (the route agreed with the Environment Agency (EA)) was submitted in April 2015 and confirmed by the EA as duly made. This was followed by various discussions between the EA and the project on specific matters. In November 2015 the EA decided that the application was of High Public Interest and extended the time to adjudicate. As agreed with the EA the plan is to divide the amended permit into two separate permits (existing Drax power station and OPP) at an appropriate point in the future.	March 2016
4	CO ₂ Storage Permit (inclusive of Offshore Environmental Statement)	During 2014 and 2015 detailed discussions have been progressing between NGCL and DECC Oil & Gas Authority (OGA) over the structure and content of the permit application. All sections of the permit have been submitted in draft and amended based on feedback received. NGCL expects to submit the formal application prior to the end of November 2015. The Offshore Environmental Statement was submitted on the 8 October 2015 and issued for its 28 day Facilitated Consultation on 28 October 2015	May 2016
5	Pipeline Works Authorisation for the Offshore Pipeline	A draft of the application was provided to DECC OGA in August 2015 and is under review and discussion.	2016

4 Oxy Power Plant

4.1 Introduction

An NSIP, by definition, must generate and submit an Environmental Statement (ES) and an Environmental Impact Assessment (EIA) as part of the suite of documents comprising the DCO application. The development of a DCO application is a process which must be followed and includes a number of stages.

An inherent part of the pre-application phase also includes a screening request leading to a screening opinion from the relevant Secretary of State (SoS) as well as provision of Preliminary Environmental Information (PEI) sometimes referred to as a Preliminary Environmental Information Report (PEIR).

As the project moves from screening, through PEI and toward submission, the characteristics and information regarding the development become more focused and the issues and impacts more defined. It is, however, imperative for any development to be aware that certain specific procedural issues must be complied with before formal consultation can proceed.

4.1.1 Screening and Scoping Requests and Opinions

For any NSIP, a developer must request from the SoS an opinion on whether the development is an EIA development or not; or they have informed PINS via a regulation 6 notification that the development is believed to be an EIA development and hence the application will be accompanied by an ES/EIA.

A screening opinion is a written statement from the SoS giving an opinion about whether an NSIP is EIA development. This takes into account information provided by the developer, relevant screening criteria in Schedule 3 to the EIA Regulations and relevant guidance including guidance published by the European Commission. A screening opinion would normally be generated 21 days after the developer has submitted a screening request.

In the case of the project a regulation 6 notification was generated informing PINS that the development was believed to be EIA as an integral part of the Scoping Request.

“...the Applicant is deemed to have notified the SoS under Regulation 6(1)(b) of the EIA Regulations that it proposes to provide an ES in respect of the White Rose CCS project.”

The Scoping Request was submitted by the applicant to the SoS and received on 7 December 2012; a Scoping Opinion was generated on 13 January 2013. Both documents are accessible on the Planning Inspectorate’s website.

<http://infrastructure.planninginspectorate.gov.uk/projects/yorkshire-and-the-humber/white-rose-carbon-capture-and-storage-project/?ipcsection=docs&stage=1&filter=Environmental+Impact+Assessment>

The scoping opinion included responses from a number of statutory consultees which helped identify issues of concern or where additional clarity may have been sought or required. This information was used to inform the Statement of Community Consultation (SoCC) and the content of discussions with key stakeholders.

The SoS noted some key areas for the project which had been identified from the Scoping Request which were considered pertinent to the development.

- Description of the development
- Landscape and Visual
- Ecology and Nature Conservation
- Emissions to air and water
- Flood Risk

Due to the nature of DECC's CCS Commercialisation Programme and the subsequent rounds of the competition, the Scoping Opinion generated in January 2013 was followed by the generation and delivery of various pieces of documentation to meet the requirements of the Bid Improvement Phase as well as to commence early work on the project's description, early engagement with key stakeholders and consultation with Selby District Council (SDC) and North Yorkshire County Council (NYCC) regarding the content and format of the SoCC.

4.1.2 PEIR development and consultation

The PEIR was generated in June 2014 and was intended to be a draft ES providing the relevant stakeholders with a reasonably robust document on which to consult with. The PEIR was generated at a point in the project programme when certain key engineering decisions will have been fixed.

The PEIR published on the 13 June 2014 included the following technical reports:

- Summary
- Non-Technical summary
- LVIA
- Emissions to atmosphere
- Surface Water and Flood risk
- Ecology
- Geology and Land Quality
- Cultural Heritage
- Socio-economic

For the project, a period of approximately four months was envisaged for the preparation of the report including surveys where necessary, analysis and modelling. The project benefitted from the previously consented Ouse Renewable Energy Plant (OREP) project having received Section 36 planning consent and an Environmental Permit (EP). The PEIR was issued to all Section 42 consultees and was made publically available at a number of local venues in both an electronic format and as hard copies.

4.1.3 EIA development and consultation

Following generation of the PEIR, consultation was undertaken with a number of key stakeholders to precipitate any issues or concerns regarding the PEI and the details contained. Meetings took place with SDC, NYCC, East Riding Yorkshire Council (ERYC), Natural England (NE) and the Internal Drainage Board (IDB). Meetings were also offered to the EA but were not taken up. It is worth highlighting that the Environment Agency took a defensive position as a consultee in not formally commenting on specific aspects through the DCO where they felt that the EP Process may be prejudiced by responses made as part of formal consultation on the DCO.

The PEIR was generated and published prior to the second and final round of public exhibitions held in July 2014. Guidance from consultants indicated that in order to maximise the issue of the PEIR, the final round of public exhibitions followed to allow demonstration of meaningful consultation.

Meetings with the consultees did not identify any major issues which the project was not already aware of through scoping, informal consultation or formal consultation and hence the project was in the process of considering in terms of options for mitigation. Following on from the delivery of the PEI, the project had allocated a two month window for formal consultation to allow response on the PEI and also to allow any response following the public exhibitions.

The PEIR was then adapted into the ES/EIA and prepared for submission as part of the suite of DCO documents.

In terms of preparation of the ES and EIA, a four month timeframe was envisaged. Generally speaking the four month / two month / four month breakdown was a reasonable estimate, although an awareness that consultation and responses from various consultees could have required the project to re-evaluate certain aspects of the project which may have been considered to be fixed and locked down.

Other potential strategic points which may have impacted on the environmental information and opportunities for consultees to raise concerns or provide feedback included two roundtable discussions organised by PINS which took place at Drax Power Station in March and September 2014. These discussions included discussion between the applicant, PINS, various consultees and stakeholders.

The September 2014 discussion was informed by formal consultation on the PEIR and hence was an ideal opportunity for PINS to determine whether issues were still outstanding with consultees regarding the project. Generally speaking, these discussions were relatively benign in nature with the only specific issue raised by the EA regarding noise and their position regarding noise as an issue which would be assessed as part of the EP regime. However, generally speaking, there was little feedback provided by the consultees attending the meeting.

Table 4.1: Consultation feedback contained within the Scoping Opinion

Consultee	Issues Raised	Applicant response
CAA	Local Aerodromes and safety; Aviation warning lighting; Gas venting/flaring, maps and charts of tall structures	Requirements in draft DCO to deal with a number of these issues
Coal Authority	No observations or specific comments	No action
Darlington Borough Council	No comments	No action
Environment Agency	Flood Risk, contaminated land. Groundwater, biodiversity, Water Framework Directive, Waste, Environmental Permitting	Information gratefully received and acknowledged
ES Pipelines	No comments at this stage	No action
Health and Safety Executive	Hazardous Substances Consent (HSC), Electrical Safety	HSC applied for and granted, relevant electrical safety regs noted
Health Protection Agency (HPA)	General Approach to EIA, identification of receptors, emissions to air and water, land quality, waste, other aspects, e.g. accidents and impacts, biomass, EMF.	Response from HPA gratefully acknowledged and guidance noted.
Humber Local Resilience Forum	No comments	No action

Middlesbrough Borough Council	No comments due to location of project	No action
National Grid	Location of assets and associated rights with regard to those assets. Guidance provided regarding development close to NG assets	Information gratefully received and acknowledged through FEED
National Air Traffic Services (NATS)	No issues identified	No action
Natural England	Generic response regarding information required for further consultation as project develops.	Information and guidance acknowledged.
North Yorkshire Police Authority	Security and crime prevention and reference to CABE guidance	Information gratefully received and acknowledged through FEED
North Yorkshire County Council (Planning and Highways)	Specific topics listed included historic environment, landscape and visual impact, ecology and public rights of way	Information acknowledged and considered when generating PEIR
OfWat	Local resolution of any issues expected	No action
Selby District Council	Generic response and suggested breakdown of EIA with list of likely EIA topics	Response appreciated and suggested structure and topics considered
Yorkshire Water	Provision of supplies and location of assets	Information provided to engineering teams for consideration through FEED

4.2 Information and Data Development

Discussions and meetings were held with the various consortium members of CPL, Drax, BOC and GE, to discuss the requirements of the DCO and the information and data that would be required in order to achieve an acceptable and compliant application as required under the Planning Act, 2008.

A register of documents required for the DCO application is shown in Appendix A. (A number of additional documents were submitted during examination at the request of the Examining Authority (ExA)). Regular discussions and meetings regarding outstanding data in order to move the project forwards were held; these discussions included specific environmental, planning and legal consultants to assist with the direction of the project and compliance with various facets of the Planning Act.

Areas which required significant input from the engineering team included:

- Air emissions data, e.g. NO_x, SO₂, particulates, specific metals
- Noise data, identification of specific plant and associated noise data
- Dimensions of specific operational plant and equipment
- Bulk chemicals onsite including volumes
- Waste management systems
- Traffic and transport data
- Construction methodology
- Basic program of work during construction
- Information regarding operations and any specific differences from standard combustion plant
- Specific impacts associated with CCS plant and equipment.

4.3 Environmental Information

The following sections relate to the Environmental Chapters which are contained within the full ES for the project. In addition, there is a section that gives information on the Statements of Common Ground (SoCG)

(Table 4.6 shows which organisations have entered into a SoCG for the project), Other Consents and Prospective Environmental Management.

For each section, detail was provided on the scope for each environmental discipline, as well as the consultation process that was carried out.

All statutory consultees were contacted as required during the formal consultations. The intention of the consultation process in relation to the PEIR was to seek views in advance of the full DCO submission, and to ensure that the outcome of formal consultation stages and the matters agreed between the project team and consultees were incorporated into the ES that accompanied the DCO.

During the DCO process non-statutory consultation was also undertaken to iteratively communicate the EIA (so far as is practicable) with the requirements and expectations of consultees and the public. Prior to the publication of the PEIR, certain consultees were invited to review selected technical aspects of a draft version of the PEIR of particular interest to them.

This was then followed by details of the mitigation and conclusions that have been made to the overall ES required for the project.

The relevant SoS is the competent authority for the purposes of the Habitats Directive and the Habitats Regulations in relation to applications for NSIPs. The Habitats Regulations require competent authorities, before granting consent for a project, to carry out an appropriate assessment (AA) in circumstances where the plan or project is likely to have a significant effect on a European site or a European Marine site (either alone or in combination with other plans or projects)

The Habitat Risk Assessment (HRA) process comprises four main stages as shown below:

- Stage 1 Screening to identify the likely effects of a project on a European Site and consider whether the effects are likely to be significant
- Stage 2 Appropriate Assessment to determine whether the integrity of the European site will be adversely affected by the project
- Stage 3 Assessment of Alternative Solutions to establish if there are any that will result in a lesser effect on the European site
- Stage 4 Imperative Reasons of Overriding Public Interest (IROPI) and Compensatory Measures to establish whether it is necessary for the project to proceed despite the effects on the European site, and to confirm that necessary compensatory measures are in place to maintain the coherence of the Natura 2000 network.

Further details with regards to the HRA are shown in Section 4.14.

4.4 Air Quality

4.4.1 Scope

The construction and operational phases of the project have the potential to have the following potential impacts on air quality:

- Dust deposition issues to arise during construction
- Impacts on air quality due to vehicle exhaust emissions during construction
- Direct emissions to air during operation, with consideration of potential impacts on both sensitive human and ecological receptors

- Impacts on air quality during the start-up and shut down of the facility and emissions during some foreseeable non-routine operations.

4.4.2 Consultation

The following key responses were based upon the Scoping Response obtained during consultation:

- The Planning Inspectorate identified the following key areas to be addressed:
 - Dust from construction activities
 - Emissions arising from road vehicle movements during construction and operation
 - Impacts of process emissions on habitats with due regard to relevant EA Guidance
 - Detailed dispersion modelling to reflect multiple scenarios where uncertainties exist, and notes the assessment of both air-mode and oxy-mode
- Natural England identified the following key areas to be addressed:
 - Assessment of impacts on sensitive ecology due to emissions to air, specifically naming the River Derwent Site of Specific Scientific Interest (SSSI)
 - Following the issue of draft Habitats Regulations Assessment (HRA) Report NE recommended that:
 - Impacts on Skipwith Common Special Area of Conservation (SAC) and the River Derwent SAC from SO₂ should be taken to Stage 2 of the HRA, and that further information on the sensitivities of the receptors be presented
 - Information provided at Stage 1 of the HRA for acid deposition impacts (for Skipwith Common and Thorne Moor) is to be taken forward and presented at Stage 2 of the HRA
 - Both SDC and the EA commented on the draft version of the Emissions to Atmosphere PEIR. The EA comments were received at a meeting with the EA on 30 May 2014 and subsequently via email from the EA's Air Quality Modelling and Assessment Unit (AQMAU) dated 5 June 2014. Comments from SDC's Environmental Health Officer (EHO) were received via email dated 9 June 2014.

4.4.3 Mitigation and Conclusion

An air quality impact assessment for plant emissions was undertaken on the basis of two modes of operation; oxy-mode which represents the normal operating conditions for the project and air-mode which represents the operational conditions during start-up, shut down and when the ASU, GPU or CO₂ pipeline is not available.

The air quality impact assessment identified that when operating in oxy-mode and therefore during normal operations, there are predicted to be negligible impacts on air quality at sensitive human receptors, for the large majority of pollutants and therefore effects on human sensitive receptors will not be significant. There is an exception when considering emissions of arsenic and chromium, which result in a minor adverse effect. Using the Agency's H1 guidance, however, the Process Contribution (PC) of arsenic is in fact acceptable when also considering the Predicted Environmental Concentration (PEC) which calculates the emissions from the project added to the ambient background concentration of the relevant species.

When considering impact to sensitive habitats, there are negligible impacts for all pollutants. This is the case even adopting the worst case assumption; therefore effects are assessed to be not significant.

Considering impacts when operating using the air-mode, again, there are predicted to be negligible impacts to air quality at sensitive human receptors, for the large majority of pollutants. There is an exception is when considering emissions of SO₂ and arsenic, both of which result in minor adverse effects, and chromium, which results in a slight adverse effect. When considering impact on air quality and deposition

rates at sensitive habitats, there are unacceptable impacts (i.e. process contribution >1% and predicted environmental concentration >70% of the critical load) associated with annual mean SO₂ and due to annual mean acid deposition. However, in practice, it is not intended for the project to operate in air-mode for any significant length of time; therefore, these impacts are highly unlikely to actually occur in practice.

In addition, the Emissions Performance Standard (EPS) provides a regulatory back-stop on CO₂ emissions from new power stations by setting an annual limit on CO₂ emissions from new fossil fuel plants, with generating capacity of at least 50MWe, equivalent to 450g/kWh at baseload. The EPS thus requires that new coal-fired power stations are equipped with CCS to enable them to operate under this emissions threshold. Power stations consented under the EPS would be subject to the 450g/kWh level until 2045.

The annual EPS limit of 450g/kWh is to be interpreted as a total CO₂ tonnage allowance within which the generating plant would have to remain each year. The annual limit is based on a load factor of 85% and the plants installed electrical capacity. The net annual emissions (when operating entirely in air mode) would be the total emissions without abatement, which would exceed the EPS allowance. If this situation arises, to remain within the EPS allowance the project would have to be potentially limited in its operations to 56% of the year, i.e. 29 weeks, thus reducing impacts while in air-mode further than have been identified in this assessment. It should be noted that CCS projects are exempt from the EPS requirement in their first three years from commissioning. A worst case for the project would therefore be three years of operation in air mode 100% of the time and thereafter operation in air mode for 56% of the time.

The findings of the air quality impact assessment for the project demonstrate that the enhanced reduction of mass emissions of all pollutants achieved, with the use of flue gas recirculation when operating in oxy-mode, more than off-set the adverse impacts on the dispersion characteristics of the exhaust plume as a result of lower volumetric flow rate.

4.5 Noise and Vibration Assessment

4.5.1 Scope

This section describes the potential effects of noise and vibration from construction, operation and decommissioning the project. Potential effects of the project on noise sensitive receptors include the following:

- Noise from construction plant during the various phases of site preparation and installation of equipment and structures
- Construction traffic on the wider road network
- 24-hour, year round operation of the facility.

4.5.2 Consultation

In the Scoping Opinion a number of comments pertaining to the noise and vibration assessments were provided. These comments chiefly relate to construction and operation and also noise associated with traffic along access routes. The Scoping Opinion also states “vibration effects, in particular from activities such as piling and demolition activities, may extend over a wide area” and should be considered within the assessment.

Consultation continued with SDC and the EA during the preparation of the ES. The noise and vibration PEIR technical report was also sent to the EA for comment; however no significant matters were raised on the baseline conditions, assessment methodologies or predicted noise levels.

In summary the consultation conducted to date with SDC includes discussions held with the EHO who is responsible for environmental issues at the site to confirm baseline measurement locations and receptor sensitivity.

Further meetings were held to discuss initial predictions and the assessment criteria for the EIA. SDC commented on the Noise and Vibration PEIR Technical Report on 9 June 2014 raising several matters which were addressed as far as possible in the final PEIR:

- Clarification was provided that baseline noise measurements were made during operational conditions and did not include construction noise (for activities then underway on the Drax Power site)
- Likely core working hours were clarified
- Traffic routing options were considered, but the worst-case increase in traffic flow and consequential noise changes at receptors around road links were predicted to be small, which lead to the conclusion that SDC's suggestion of managing traffic to avoid passing through Carlton and Snaith was not considered necessary at the PEIR stage.

Following submission of the PEIR SDC confirmed that there were a number of aspects that still needed to be addressed further and these were addressed in the ES by undertaking the following actions:

- Criteria for operational noise were further discussed with SDC including criteria for noise levels outside of buildings where noise insulation is being proposed
- A methodology and a selection of assessment criteria were developed to cover day time and night time. The methodology was also reviewed to ensure that evening periods were also likely to be protected
- Operational noise predictions were refined and further mitigation options considered refining the likely operational noise impacts from the project
- The use of the Heavy Goods Vehicles (HGV) route has been confirmed avoiding HGV movements past Carlton and Snaith.

4.5.3 Mitigation and Conclusion

The plant design has included mitigation on all the key noise generating plant items. The types of mitigation that will be applied will generally include the following:

- Placing loudest noise sources indoors
- Procuring low noise equipment (transformers, cooling tower fans etc.)
- Adding silencers on air intakes/outlets and upstream/downstream of main boiler fans
- Using acoustic screens or enclosures on major outdoor items such as pumps, motors and conveyors
- Acoustically insulating valves and pipes.

The results of construction noise predictions show that the levels are below the BS 5228 criterion of 65dB LAeq and therefore no significant effects are expected as a result of construction activities. Predicted noise level changes on road links that are to be used by construction traffic suggests an increase in noise levels of no more than 1dB(A) on any road link which is used by construction traffic. This will result in noise changes which are unlikely to be generally perceptible for roadside receptors, and would not be significant.

Although some impacts are predicted in terms of operational noise using the BS 4142 assessment methodology at night, the overall noise levels are sufficiently low that the recent guidance in BS 8233 indicates that noise levels within the buildings are not likely to give rise to a significant risk of sleep disturbance. At one location (Foreman's Cottage) BS 8233 night-time criterion can be met by installing noise insulation (e.g. acoustic glazing) to the property. Since the property is owned by Drax it will be

possible to implement this measure. This will ensure that noise levels within all buildings will not give rise to a significant risk of sleep disturbance.

During the day at Foreman's Cottage and Drax Abbey Farm BS 4142 guidance is not met, but the noise levels are at least 1dB(A) below criteria proposed by BS 8233 (50dB LAeq) which indicates that conditions within the buildings would not be significantly affected and external noise levels in the garden areas will also be below desirable noise levels.

Lower noise impacts are predicted at other receptors using the guidance in BS 4142 with all receptors being below a marginal situation, which is not expected to result in significant impacts.

4.6 Surface Water Assessment

4.6.1 Scope

Potential effects of the project on water quality, hydrology and flood risk include the following:

- Changes to flood risk status of the 'Operational Area' and wider floodplain during construction
- Residual risk and safety of people working on the site during construction, operation and decommissioning phases
- Surface water quantity and quality change and the potential effects on the water environment during construction, operation and decommissioning, including water abstraction and discharge activities during operation.

4.6.2 Consultation

Initially the EA, Selby IDB, NYCC and SDC were contacted during the scoping stage in 2012. During the preparation of the PEIR, both the EA and Selby IDB have been further consulted on the issues of flood risk and surface water management on the project site, respectively.

The EA consultation included the discussion of existing flood risk sources, data to inform the assessment and the methodology for the breach analysis, the results of the flood risk assessment conducted and proposed mitigation. As part of the PEIR process, further consultation and feedback in regards to surface water runoff management, surface water quality and flood risk issues, was sought.

4.6.3 Mitigation and Conclusions

Without the planned mitigation the potential effects on surface water and flood risk through construction, operation and decommissioning of the project are likely to include the following:

- Disruptions to the surface water drainage system and increase to flood risk through reduction of infiltration areas during construction
- Contamination of surface waters through overland flow or shallow groundwater flow and transport of contaminants during the construction, operation and decommissioning phases
- Reduction in water quality from increased effluent discharges during operational phase
- Reduction in water quality and quantity from increased abstraction during operational phase
- Flood risk to the operational area and its occupants should a breach of flood defences occur during a tidal event
- Exposure of workers to potentially contaminated surface water during construction and decommissioning.

The mitigation measures required to reduce all of these impacts to negligible include careful design of the project and execution of its construction and decommissioning, as well as responsible operational practices.

Mitigation measures include the following:

- Raising the land of the operational area to above maximum flood levels, in case of a breach / overtopping of flood defences
- Temporary storage and containment of rain water and surface water to decrease the flood risk and water quality impacts on site
- Development and implementation of environmental management plans designed specifically for the site and project, to include the following:
 - Waste management plan
 - Sediment control plan
 - Surface water management plan
 - Soil management plan
- Minimising the potential for creating pathways for contaminants to the watercourse
- Development and implementation of a drainage system and waste water treatment system which captures and treats effluents before discharge and monitors on a regular basis
- Regularly monitoring the quality and quantity of local watercourses near abstraction points and areas downstream (if required)
- Minimise the import, transfer, storage and use of hazardous substances
- Appropriately store and handle hazardous substances
- Applying excellent health and safety management on-site
- Conducting appropriate testing and investigations where land contamination or water pollution may occur.

4.7 Flood Risk Assessment

4.7.1 Scope

The Flood Risk Assessment takes into account the requirements of the National Planning Policy Framework (NPPF) and specific guidance on development with regards to flood risk (Department for Communities and Local Government, 2012). This guidance revokes the previous planning policy relating to flood risk, Planning Policy Statement 25 (PPS25). The Technical Guidance to the NPPF includes flood risk guidance and retains key elements of PPS25 including the Sequential and Exception Tests, climate change allowances and development classifications.

4.7.2 Consultation

The EA has been consulted to agree the model parameters and scope for the modelling work. The main sources of data used within this study include:

- River Ouse Model Update, Halcrow, September, 2009 – The modelling report and appendices, prepared by Halcrow were supplied along with the extracts from the model results files and model files
- Flood Information, EA, 2013 – The EA flood defence asset locations and condition ratings for the defences in the area were also supplied
- LiDAR data purchased December 2013 from CentreMaps Live
- 10K OS Mapping.

As part of the data request sent to the EA, water level hydrographs were requested at node locations adjacent to the proposed site. These hydrographs were not provided as part of the data package sent in response and therefore could not be used to inform the modelling undertaken. Alternative approaches were used to construct a water level hydrograph as described within the ES.

4.7.3 Mitigation and Conclusion

The project site is 1.5km west of the village of Long Drax, North Yorkshire, approximately 700m southwest of the River Ouse. Based on the EA's Flood Map, the Site lies within the tidal Flood Zones 2 and 3 of the River Ouse. 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 River Ouse flood defences. Hence, the possibility exists for the Operational Area of the OPP in its current condition to be subject to residual flood risk resulting from the flood defences being breached or overtopped, for which the EA requested a detailed breach modelling exercise to be conducted in support of the Flood Risk Assessment (FRA).

From an operational perspective, the FRA recommends that the Site be raised above the expected 200-year tidal flood level (including an allowance for climate change and 1 in 5 year fluvial flood event). The predicted flood level for such an event equates to 4.53m AOD. A further provision of 600mm (as freeboard) is suggested by the NPPF to ensure safety of personal and sensitive equipment. Hence, from the operational perspective, sensitive equipment needs to be situated above 5.13m AOD (as the minimum floor level).

Flood risk effects as a result of the project and associated loss of floodplain storage are not considered significant. No other risks from other flood sources have been identified in the study area. In order to manage surface water runoff at the project site, two different approaches have been considered at the north and south side of Carr Dyke. At the north side, the additional surface water runoff due to development will be primarily stored in a 4,500m³ storage basin then discharged to the a terminal point using two pumps with a maximum discharge of 500m³/h (i.e. two pumps with 139l/s capacity). The treated process water and surface water will eventually reach the terminal point where the mixed water will be discharged into the River Ouse under the existing discharge permit held by Drax Power Station.

At the south side of Carr Dyke, a maximum surface water runoff of 21l/s will be generated during a 1 in 100 rainfall event including the climate change influence. This figure falls within the total volume of surface water allowed to be discharged into Carr Dyke under the greenfield runoff rate from the whole Site (i.e. 39l/s). It is, therefore, proposed that 21l/s of the greenfield runoff allowance be allocated to surface water runoff generated from the south side of Carr Dyke area. As a precautionary approach, a storage basin of 1,150m³ for the south side of Carr Dyke has also been proposed.

With respect to people working at the Operational Site, safe access and egress routes or an area of safe refuge must be provided. Safe refuge within the project site boundary can be provided in the form of areas within office buildings with a minimum floor level of 5.13m AOD. Considering the layout and topography of the project site and surrounding areas, it is suggested that the safe access and egress routes be directed towards the south of the project site where the existing Drax Power station is located. Prior to commencement of operations at the project site, an emergency plan will be produced outlining the procedures to be followed in the event of an emergency, including flooding.

4.8 Geology

4.8.1 Scope

Potential effects of the project on geology, hydrogeology and land quality are mostly in relation to construction and decommissioning, and comprise:

- Disturbance and / or removal of the ground and ground water which could potentially remove, relocate or mobilise contaminants
- Use of plant and equipment which could accidentally leak fuels and oils, introducing contaminants to the ground
- Storage and use of materials and substances with polluting potential (e.g. concretes, fuel, oils and soils) which could be mobilised to ground or controlled waters
- Exposure of construction/decommissioning workers to potentially contaminated dust during soil removal and transportation activities

During the operational phase of the project, issues in regards to geology, hydrogeology and contamination, are more likely to involve site activities around storage of wastes and oils.

4.8.2 Consultation

Matters that been raised in consultation on the Scoping Report and the PEIR that are pertinent to geology, hydrogeology and land quality are summarised in the table below.

Table 4.2: Geology matters raised at the Scoping Report and PEIR Stage

Consultee	Issue Raised	ES Section that addresses	Response
SoS (The Planning Inspectorate)	Advises that cross references be made within EIA with the Water Quality and Flood Risk section due to interaction between topics.	Geology / Land Quality Technical Report, Surface Water and Flood Risk	The EIA refers to Water Quality and Flood Risk where appropriate.
SoS (The Planning Inspectorate)	Consideration should be given to the need for investigative site surveys (including intrusive works if necessary).	Geology / Land Quality Technical Report	Current findings are based on previous site investigation data with coverage of the majority of the proposed operational area, as well as current desk study research.
NYCC	What will happen to the shale and limestone from the temporary laydown areas when they are restored?	Geology / Land Quality Technical Report	The final design has not been defined yet. However, the material will be clean and used in a manner to maximise environmental benefits and minimise environmental impacts. It is not anticipated that shale will be used.
National Farmers' Union (NFU)	Abstraction – while the project intends to utilise the existing licences held by Drax for groundwater abstraction; current abstraction by the existing Drax site is below full capacity. Clarification is needed to address the long-term (outside the scope of the current Catchment Abstraction Management Strategies timeline) impact that groundwater abstraction may have	Geology / Land Quality Technical Report	Other significant water users within the catchment are taken into account in the assessment.

upon abstraction from the Sherwood Sandstone for all abstractors (including agricultural use and any impact upon the environment). The Report also states that 'Most of the catchment is rural in character, with water usage for fish farming, public water supply, and industrial and commercial activities' with no reference to water abstraction of agricultural use. Again, further clarification is needed to ensure that all sectors have been assessed.

4.8.3 Mitigation and Conclusion

Without the planned mitigation the potential effects on geology, surface water, soils and hydrogeology through construction, operation and decommissioning of the project are likely to include the following:

- Disturbance or degradation of soils due to removal during construction or decommissioning
- Disturbance or degradation of soils due to contamination during construction, operation or decommissioning
- Disruptions to the groundwater and surface water system through reduction of infiltration areas during construction
- Transport of potential contamination to a significant aquifer through creation of migration paths during construction
- Contamination of surface waters through overland flow or shallow groundwater flow transport of contaminants during the construction, operation and decommissioning phases
- Exposure of workers to potentially contaminated materials during construction and decommissioning.

The mitigation measures required to reduce all of these impacts to negligible include careful design of the project and execution of its construction and decommissioning, as well as responsible operational practices. This includes:

- Development and implementation of environmental management plans designed specifically for the project site and project, to include waste management plan, sediment control plan and soil management plan
- Reducing the need for movement of material or the volumes involved
- Maximising the use of spoil on site where it has to be moved
- Minimising the potential for creating pathways for contaminants to the Sherwood Sandstone through appropriate design of piling
- Minimise the use of hazardous substances
- Appropriately store and handle hazardous substances
- Applying excellent health and safety management on site
- Conducting appropriate testing and investigations where contamination is possible.

4.9 Transport Assessment

4.9.1 Scope

This section considers the traffic associated with the construction, operation and decommissioning of the project and the associated potential impacts.

Potential impacts of the project on traffic and travel comprise the following:

- Increased traffic flows (both cars and HGVs) along principal routes during construction have the potential to increase congestion and the risk of accidents
- During construction the transport of Abnormal Indivisible Loads (AILs) could require junction modifications or cause increased queuing on the network
- During operation slight increases in both cars (for workers) and HGVs could result in localised effects.

4.9.2 Consultation

Matters that were raised in consultation ahead of the PEIR submission pertinent to traffic and travel are summarised as follows:

- The use of OREP traffic assumptions and analysis for the PEIR stage were agreed with the relevant local highway authorities
- Consultation was undertaken with the Highways Agency (HA), ERYC and NYCC via email with relevant officers of those authorities. A copy of the Initial Transport Statement Scoping Report was issued to each authority
- As agreed with the local highway authority, checks of traffic levels on key roads and, a suite of additional junction surveys were then undertaken and analysed prior to the final DCO submission.

Following the submission of the PEIR document, comments were received from the statutory consultees for the traffic and transport disciplines via both email and at a meeting attended by representatives of the overseeing authorities as well as the design team.

The key traffic points received were as follows:

- *“Construction staff travelling from the west are expected to use the M62/A614/A645. However I am not yet convinced that drivers would not use the A19 / A645 / A1041 (through Camblesforth) / A645 which is 6 miles shorter. As such the A19 / A645 may need a capacity assessment.”* **Comment received from NYCC Highways.**
- *“Section 5.1 talks about an additional access being created on Pear Tree Avenue. The need for this third access has been questioned and not yet agreed.”* **Comment received from NYCC Highways.**
- *“The Traffic and Travel Technical Report refers at paragraph 3.5.1 to the existing Drax Power Station as having a dedicated HGV route which would be used for the Project. It should be noted that under the terms of the 1993 Section 106 agreement the Power Station is also required to use a specified route for the transport of desulphogypsum from the power station to the British Gypsum works at Sherburn in Elmet. This existence of this separate routing agreement may be a consideration for the Project.”* **Comment received from NYCC Local Plan and Technical Services.**

Additionally, the following comments were received from The Canal and River Trust (CRT):

“The Trust is the Harbour Authority on the River Ouse between Goole Railway Bridge and a point on the river to the north of Selby. The Canal & River Trust Freight Advisory Group has proposed that this section of the river is classified as a priority freight waterway in order to promote the transportation of waterborne freight. In light of this, we note that paragraph 2.2.3 of the Transport Technical Report section of the PEIR refers to the delivery of AIL to the site and such loads over 40m will be split or transported along the River Ouse.

The Trust welcome this but also recommends that in addition to the transportation of AILs the applicant fully considers, within the ES, the use of the river for the transportation of construction material and fuel stock. There is an existing purpose built jetty at the Power Station, which is acknowledged by the Applicant

as it is included within the red line boundary of the application site, providing direct links to the North Sea via the Humber Estuary. Such usage of the jetty and waterway would provide an alternative sustainable transport solution that helps reduce CO₂ emissions and congestion on the local highway network, according with the aims of paragraph 30 of the National Planning Policy Framework.

Therefore, we recommend that the ES fully considers the option of utilising the waterway for the transportation of construction materials during the construction stage and the transportation of fuel stock during the operation stage.”

4.9.3 Mitigation and Conclusions

It is expected that to accommodate the project's workforce construction traffic, HGVs, AILs and operational traffic, that mitigation measures will be necessary in order to reduce the impacts of the project on the surrounding highway network.

It is noted that the analysis undertaken was based upon peak construction traffic. The theoretical scenario produced coincided with the peak level of staff during the outage period undertaken annually at the Drax site. It is therefore not only an unlikely test, but one that demonstrates that during other months of the construction period there would a lower effect of construction related movements. Given that the impact of peak construction would be short in nature (i.e. less than six months) and that outage periods last only for around four months (of which there is a one month intense usage) it is not proposed to provide any specific highway works associated with capacity improvements.

In respect of highway works, a limited amount is proposed in order to allow the construction and operational phases of the project to be implemented.

- Two junctions are being constructed: one off New Road and one off Pear Tree Avenue (to serve as an emergency entrance / exit) in order to allow access into laydown areas, with these junctions being temporary in nature. These areas will be returned to their existing state following the end of the construction period.
- Additionally, it is proposed that a four-arm crossroad junction is constructed on New Road to the north of the existing materials handling area. This junction is to allow access into both the laydown facilities area as well as into the project site.

In order to provide this junction operation, a stretch of carriageway of around 150m in length is to be realigned and widened to provide two full lanes on New Road.

The four-arm crossroad junction is to be controlled by traffic signals during the construction period of the project programme, and the junction itself is to be retained following the start of the operational period of the project – however, the eastern arm of the junction is to be removed in order that the junction becomes a Simple T-Junction upon completion of the construction phase.

The following potential mitigation measures could be implemented in order to reduce the impacts of the project. It should be noted that these are provisional, and are yet to be finalised:

- Provision of a Construction Environmental Management Plan (CEMP)
- Shift working
- Peak spreading
- Junction improvement works
- Expansion of the existing Drax Travel Plan to cover additional operational workers.

It is expected that a CEMP will be required to be provided by the contractor and agreed by the local planning authority. This document would highlight how pedestrians and cyclists would access the site, how these trips would be diverted should roads or routes be required to be closed as part of these works, and define the traffic routes for construction traffic to follow (i.e. defining the specific routes that construction traffic must take – via the M62 dedicated route).

Potentially, this CEMP could be expanded to include all construction workforce vehicles, so as to prevent the use of the route from the west through Snaith and Carlton.

The project is predicted to be constructed over a 56 month period (excluding the commissioning period) with staffing levels due to peak at around 3,300 daily construction staff. The existing road network operates with significant reserve capacity, and although the existing Drax power station has outages where up to 1,000 contractors are present on the site during the peak month, no adverse highways impacts are currently experienced.

The project's impacts are predicted to be greatest during the construction phase, with the need to get 3,300 employees to and from site, and manage the arrival of HGV and AIL movements. During the operational phase traffic levels are expected to have a negligible impact, whilst decommissioning is likely to have an impact akin to that of construction (albeit with less intensive staff levels).

Capacity analysis has been undertaken using traffic flows from the OREP scheme previously permitted on the project site, and growthed to a future year of 2020. Some additional traffic surveys have been undertaken on the local highway network in agreement with the local authorities. Traffic distributions have been retained from the previous OREP scheme, however no traffic has been routed via Snaith and Carlton as this is not considered to be a direct route from the west, and would only be used by contractors living in temporary accommodation within those settlements. The accommodation levels in those settlements are limited in number.

4.10 Socio-economic

4.10.1 Scope

Potential effects of the project on socio-economic aspects comprise:

- Increased employment with an estimated 60 new jobs during operation and approximately 3,324 at the peak of construction
- Disruption to the local community during construction including additional traffic and effects on community infrastructure
- The permanent loss of approximately 13.9 hectares (ha) of land from agricultural production and a further 23.4ha temporarily during construction
- Aiding the commercialisation of CCS technology and helping to maintain the UK's diversity of electrical supply whilst de-carbonising energy generation
- Facilitating the construction of National Grid Carbon Ltd (NGCL) CO₂ transportation pipeline which will be of potential benefit to high CO₂ emitters in the region allowing them to 'plug into' the transmission / storage infrastructure.

4.10.2 Consultation

Matters that have been raised in consultation that are pertinent to socio-economic aspects can be summarised as follows:

- An evaluation of the types of jobs generated in the context of the available workforce of the local area
- An evaluation of the significance of the predicted effects on the local and regional economy
- An assessment of possible negative effects from the project, namely those associated with change of land use and disruption in terms of access, noise and air quality.

4.10.3 Mitigation and Conclusion

The EIA has identified a number of positive economic benefits from the project. Some negative effects could occur from the influx of workers and their families, especially during construction. Given the amount of employment and likely commuting patterns, this is not expected to be an issue during operation.

Mitigation measures include the following:

- The Project will keep SDC and NYCC informed on the progress of the project
- CPL and the councils will further publicise the project and its scale so local and regional businesses are aware of the development and can plan accordingly
- CPL and the national government will publicise the project so that the wider business community is aware of the CCS development and its wider implications for the future of UK economic growth
- Mitigation measures for noise and vibration, air quality and traffic are outlined in the respective technical assessment / section of the ES.

Overall, the project has the potential to bring significant positive benefits to the area of influence. This is in terms of employment during construction, operation and decommissioning but also the wider spend in the local area.

Nationally, the project will help the UK to retain important industries and jobs by allowing highly emitting industries to continue operating by capturing their CO₂ emissions. The project will also allow the UK to meet its obligations in terms of CO₂ reductions and climate change.

The influx of workers into the Selby area could have a negative effect as there is currently a shortage of housing available which could be exacerbated by the influx of new workers, especially during construction. Liaison and communication between the project and the local authorities will be important to manage the process and ensure effects are reduced.

4.11 Archaeology

4.11.1 Scope

Potential impacts of the project upon cultural heritage assets comprise:

- Direct physical damage to the fabric of cultural heritage assets, generally resulting from groundworks associated with the construction of the project, but also potential secondary impacts from changes to groundwater
- Levels or soil chemistry
- Adverse impacts upon the setting of cultural heritage assets, largely as the result of visual impacts.

4.11.2 Consultation

Matters that have been raised in consultation that are pertinent to cultural heritage and archaeology comprise the scoping responses that were received from English Heritage (20/12/12) and North Yorkshire

County Council's Historic Environment Team (NYCC HET) (7/1/13), and the subsequent responses to the PEIR (English Heritage: 13/8/14; NYCC-HET: 19/8/14).

4.11.3 Mitigation and Conclusion

Table 4.3: Archaeology Mitigation matters raised at PEIR

Impact	Mitigation
Construction effects on previously unrecorded cultural heritage assets in the Operational Area and Construction Laydown Area.	<p>Construction impacts will be mitigated by a staged programme of archaeological works, in accordance with a written scheme to be agreed with NYCC archaeological advisor. The archaeological works will be based on the results of previous archaeological works within the Inner Study Area, as well as the results of the further evaluation programme, the WSI, undertaken in June 2015.</p> <p>The archaeological works will concentrate on areas which are considered to be of moderate to high archaeological potential based on the results of the previous archaeological works and are likely to comprise:</p> <ul style="list-style-type: none"> • A programme of strip, map and record in areas of moderate to high potential • Archaeological monitoring of groundworks where appropriate <p>English Heritage's suggestion, in its response to the PEIR, that a community heritage project into the documentary evidence for the WW1 airship construction works at Barlow could help offset the effects on the archaeology of the site, is welcomed. Preliminary discussions with Barlow Parish Council have been undertaken and CPL recognises that this could become part of the 'legacy' of the archaeological work.</p>
Drax Augustinian Priory is deemed at risk of unintentional damage, due to its proximity to construction works.	The boundary with Drax Augustinian Priory will be clearly marked by fencing and construction vehicles will not enter this area.
Operational effect on the setting of Drax Augustinian Priory.	To minimise the operational effect on the setting of Drax priory, a strip of landscaping is proposed between the scheduled area and Drax Power Station. The framework landscape and biodiversity plan has identified an area of tree planting along the southwest side of the Scheduled Monument (SM), between the Carr Dike and the pond to the northwest. The August 2014 consultation meeting with English Heritage indicated that they were content that details of the landscaping and boundary work around the SM will be discussed during the examination phase of the DCO process. These discussions in 2015 led to no further changes being agreed. CPL will provide interpretive sign boards at appropriate places on the diverted footpath which will run alongside the site of the priory.
Operational effects on the setting of other cultural heritage assets in the surrounding area.	No further mitigation is proposed with respect to operational effects on the setting of heritage assets. Effects resulting from the visibility of the project in views that contribute to the setting of heritage assets cannot simply be mitigated due to its size and scale. No significant effects, however, have been identified.

4.12 Landscape and Visual Impact

4.12.1 Scope

This chapter presents an assessment of the potential effects of the project on landscape and visual amenity. This includes:

- An assessment of landscape effects, including how the project will affect the elements that make up the landscape, including the aesthetic and perceptual aspects of the landscape and its distinctive character

- An assessment of visual effects, including effects due to change or loss of landscape elements and/or introduction of new elements and considering effects upon views experienced by potential viewers/viewing groups and on general visual amenity.

4.12.2 Consultation

Table 4.4: Landscape and Visual Impact matters raised at PEIR Stage

Consultee	Response	ERM Action
NYCC	The ZTV took the cooling towers into account, but other features of the Drax Power Station complex could also be added to the DTM e.g. Barlow Mound, to help in assessing the wider visibility of the proposed buildings.	Terrain 5 DTM data has been used which has more detailed landform data. Built elements, i.e. main features of Drax Power Station and Barlow Mound, have been added as visual buffers in the ZTV.
NYCC	There needs to be a consistent approach to published landscape character assessments for the study area, including across administrative boundaries. The different scales and methodologies of the assessments and their respective dates and need for updating will need to be taken into account in the ES, and an approach adopted that is tailored to the study and which ignores administrative boundaries	Project specific Landscape Character Areas (LCAs) have been established which are based on published landscape character assessments.
NYCC	We don't think the 7.5km radius study area (reduced from an initial 15km, and compared with 10km for the earlier Ouse Renewable Energy Study) was endorsed in December 2013/January 2014 although viewpoints within this area were discussed at that time. It needs more justification given the general openness of the landscape and the inter-visibility of some existing developments which are over 7.5km apart. The areas most affected would be within this radius but there is a wider concern about the incremental effects of industrialisation which need to be considered under the cumulative landscape and visual impact assessment (CLVIA). The PINS Scoping Opinion recommended that assessment of cumulative effects were included within each topic chapter of the ES.	Further justification is provided within the ES. The cumulative assessment is addressed within the ES.
NYCC	The Drax Augustinian Priory SM site and Drax Priory farm steading are presently set on a slightly raised area above the floodplain, and are surrounded by farmland. This has landscape as well as cultural significance which need to be fully assessed. Changes to the setting, including changes in level as mentioned above, have previously been identified as of concern, requiring particular attention. There would be cumulative effects with the proposed National Grid CCS pipeline.	Addressed within the ES.
NYCC	Green infrastructure linkage between the existing Drax Power Station complex and the proposed site and surrounding landscape will also need to be explored as a multi-disciplinary topic	Addressed in the Landscape and Ecology Masterplan.
NYCC	The landscape and visual interaction between the proposed development and the different types of development within the Drax complex will need to be assessed, including aesthetic aspects.	Addressed in Cultural Heritage and Archaeology.
NYCC	There will be a need to look at opportunities for offsite mitigation, offsetting of residual effects, enhancement of historic landscape and landscape character, and multifunctional green infrastructure. Reference should also be made to GLVIA3 paras 7.39 to 7.41 which discusses mitigation of cumulative effects. It is recommended that the wider Drax Power Station complex is also considered along with any on or offsite landscape proposals as it encloses part of the site.	Addressed within the ES.
NYCC	What are the implications of the overlap of the construction laydown areas with National Grid CCS pipeline construction laydown areas in terms of landscape and visual impact?	This has not been considered within the cumulative assessment. Due to the

Consultee	Response	ERM Action
		temporary nature of construction activities, significant effects are not anticipated
NYCC	What will happen to the shale and limestone from the temporary laydown areas when they are restored?	These areas will be restored to farmland, and so no significant residual effects are anticipated.
NYCC	Due to the quantities of material to be imported, are there any implications for the appearance of Kellingley Colliery and Womersley Quarry (where colliery shale is currently being used for landfill prior to restoration)?	Considering the nature of existing activities at these sites, significant effects are not anticipated.
NYCC	How will the raised ground level of the platform relate to the height of the Drax Abbey farmsteading and SM site?	This has been considered in Cultural Heritage and Archaeology assessment.
NYCC	The area of influence for Landscape and Visual effects is stated to be 'up to 10km' (6.2 miles). This is a very minimal area of search for cumulative assessment as it only just includes Eggborough Power Station which is intervisible with Drax Power Station. The Scoping Report proposed a 15km radius as the LVIA study area, whilst section 2.2 of the draft PEIR proposes a reduced 7.5km radius, based on 'professional judgement'. It could be further justified. A CLVIA study area also needs to be confirmed and justified. It is likely to be more extensive, though not necessarily circular, as it would need to take effects on landscape character into account, as well as the overlap of ZTVs.	The justification for the 7.5km study area is outlined within the ES. The CLVIA has been undertaken based on a 15km study area.
NYCC	It is recommended that the CLVIA also considers potential developments in combination with existing in order to evaluate the total likely effects. This is in accordance with the guidance in paragraph 4.2.5 of NPS EN-1	This has been considered within the CLVIA.
NYCC	Knottingley Power Project, approximately 20km (12.4 miles) to the west would form a cluster with the proposed Southmoor Energy Centre and the existing Kellingley Colliery infrastructure. These developments are linked with Ferrybridge, Eggborough and Drax Power Stations by overhead electricity transmission lines and although the sites are relatively distant from each other, the White Rose CCS development could contribute to a general perception of intensification of industrialisation, particularly in east- west views along the River Aire/M62 Corridor where developments can 'line up'. Drax Power Station is offset from this corridor, but in the open landscape of the Humberhead Levels it is a focal point and can be seen in combination with other developments in some views from the River Aire/M62 Corridor. I would like to see some discussion of these issues, and justification for exclusion from the CLVIA.	Views west across the study area are considered from within the CLVIA.
NYCC	In relation to the interaction between impacts, I would also like to mention green infrastructure networks which are discussed in NPS EN-1 paras' 5.10.19-21. Have these been identified in the study?	Green Infrastructural networks have been identified within the ES. These are discussed in relation to the Landscape and Ecology Masterplan.
Canal and River Trust	We understand from the documents submitted that the proposed power station will be adjacent to the existing power station at Drax and located approximately 1km from the River Ouse. Due to existing visual impact of the power station on the landscape and the distance between the site and the river, we consider that the visual impact on the river will be minimal. However, we recommend that the ES identifies the river as a visual receptor in order that a full assessment of the visual impact is undertaken.	Viewpoint 1, 2 and 16 consider views of users of the Trans Pennine Trail which are representative of views from the river.

4.12.3 Mitigation and Conclusions

Not all landscape and visual effects can be practicably mitigated during the construction phase due to the visibility of the certain construction components, in particular the tall construction plant required. A number of measures, however, can be applied to reduce, as far as practicable, the temporary effects during the construction phase. These include:

- Limiting land clearance and occupation to the minimum necessary for the works
- Restricting construction site lighting outside normal working hours as far as practicable to the minimum required for safety and security
- Maintenance of tidy and contained site compound
- Spreading of topsoil and replacement of turf, or reseeded and planting as soon as possible after sections of work are complete.

In addition the early establishment of hedgerow planting, prior to or early within the construction programme, will help to further reduce impacts during construction. Due to the nature of the construction activities, however, the residual effects will remain as reported above.

Due to the height of certain elements of the project, visual screening with vegetation will in some cases not be possible and is unlikely to mitigate any potential landscape and visual effects. Landscape and visual mitigation measures will be aligned with mitigation required by other topic disciplines such as ecology. The integrated landscape and ecology mitigation measures will be presented in the Landscape and Ecology Masterplan.

As the identified green infrastructural corridors are outside the project footprint, no opportunities exist to physically and directly connect the network across or through the site for operational security reasons. However the landscape and ecology mitigation masterplan illustrates that there is connectivity with adjacent habitats and open space in terms of flora and fauna. Therefore the fundamental requirements of the green infrastructure corridors are maintained.

The mitigation measures outlined for the construction phase above can also be applied to reduce, as far as practicable, the temporary effects during the decommissioning phase. Assuming that these measures are applied, and that the areas of development are returned to agriculture/grassland, no significant residual effects will remain after decommissioning.

4.13 Ecology

4.13.1 Scope

Potential effects of the project on ecology comprise:

- Effects on protected species that are known to occur in the area such as bats, badgers and reptiles
- Effects on habitats in the project site area such as arable land, ponds, marshy grassland and swamp.

4.13.2 Consultation

Statutory consultees, including SDC, NYCC, ERYC, EA, HE, NE and Yorkshire Wildlife Trust (YWT), have been consulted and their views on ecology related matters, if given, are included in the technical report to the ES.

A meeting with NE took place on 24 July 2014 to discuss the need to undertake a HRA; potential air quality impacts and the potential disturbance or interference with badger setts. Furthermore, it was agreed that a SoCG would be drawn up between NE and CPL.

Initial engagement with YWT regarding opportunities to contribute to biodiversity enhancements and initiatives in the local area commenced by means of a consultation response from the Trust. It is envisaged that this engagement will be ongoing and CPL will look to explore a collaborative approach to delivering biodiversity gains for the local area through ongoing consultation.

A non-statutory public meeting was held in July 2013 where members of the public were given information about the project and given the opportunity to comment.

4.13.3 Mitigation and Conclusion

Some generic measures have been embedded into the design of the project to ensure that effects on ecology are avoided and minimised from the outset, including industry standard methods.

Although most work will occur during daylight hours, any lighting that is required for the construction and operational phases of the project will be shielded and directed away from surrounding habitat to minimise light disturbance to fauna such as foraging bats.

Use of Best Available Techniques (BAT) to minimise disturbance will include specification of efficient well maintained, quiet machinery with in-built noise attenuation. Perimeter attenuation fencing and tree screens will be also used where necessary to minimise disturbance due to noise and activity.

To mitigate against killing and injury of protected fauna by traffic and construction plant, Toolbox Talks will be delivered to all site operatives prior to the commencement of works on site (including site clearance activities), in order that all operatives are fully briefed regarding the species which may be encountered on site. Furthermore, a site speed limit will be maintained. Most activity will occur during daylight hours when species such as badgers are not active.

Measures that will be put in place to minimise potential effects from such site clearance activities as topsoil stripping, storage and earthworks, will include soil stripping management and storage techniques recommended in the Defra Code of Practice for the Sustainable Use of Soils on Construction Sites. A soil management plan will be implemented and native plants will be reintroduced to ensure that soils will be held in place and not become friable and get blown by wind off site.

The site will be accessed via New Road, connecting to the A645 and onto the A614 and M62. This will avoid or minimise effects on sensitive receptors in the vicinity of the project. The HGV route will be the existing dedicated route for the existing Drax Power Station, which will help minimise effects on sensitive receptors in the project area.

Buffer zones around field drains, dykes and ponds will be maintained during construction. Where this is not possible (i.e. drain and ditch crossings and the northern bank of Carr Dyke), best practice design and standard good construction practice will ensure the watercourses remain unaffected. All construction activity will be undertaken following the EA's Pollution Prevention Guidance and CIRIA documents will be referred to and implemented as appropriate. Such measures will be incorporated into the CEMP.

Measures will be taken to ensure that areas where vegetation is removed are not colonised by invasive plants such as Himalayan balsam, which is known to occur in the surrounding area including immediately adjacent to the jetty on the western bank of the River Ouse. These measures will include a soil management plan and reintroduction of native plant species into disturbed areas.

In order to address the loss of NERC Priority Habitats and loss of habitat used by protected species, a mitigation area will be provided to the east of Carr Dyke and this area will be incorporated into the framework Landscape and Ecology Masterplan.

4.14 Habitats

The findings of the Screening Assessment showed that an AA was required for likely significant effects on three European Sites. The likely significant effects all result from emissions to air on sensitive Annex I habitat qualifying interest features. In accordance with guidance on HRA it is intended to inform the Planning Inspectorate when preparing the Report on the Implications for European Sites (RIES). Its aim is to identify whether no adverse effect on the integrity of the European sites can be concluded or whether adverse effects on the integrity of the European sites will result.

The assessment of the projects effects on the integrity of the European sites has concluded that the project will not result in any impacts on the integrity of any of the European sites.

As no impacts on the integrity of any European sites will occur, no mitigation measures are proposed and no residual impacts on the integrity of any European sites are predicted. It should be noted that the higher emissions experienced if the project were to operate in air mode for 100% of the time during commissioning will be controlled through the implementation of the EPS during the rest of the operational life of the project.

Following submission of the necessary documents for Deadline VI in the DCO process, the RIES report was issued by PINS on 7 September 2015 confirming no impacts. The report can be found on the PINS website:

[http://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010048/2.%20Post-Submission/EIA/Habitat%20Regulations/Report%20on%20the%20Implications%20for%20European%20Sites%20\(RIES\).pdf](http://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010048/2.%20Post-Submission/EIA/Habitat%20Regulations/Report%20on%20the%20Implications%20for%20European%20Sites%20(RIES).pdf)

4.15 Environmental Permit

Discussions with the EA with regard to the project commenced in 2013 which involved introducing the project and the fundamental concepts of an OPP associated with CCS technology. One of the fundamental issues raised with the EA was the way in which the flue gas volumes and compositions would be different in comparison with a conventional pulverised fuel sub- critical power station. This was identified as a key area where discussion would be beneficial.

The EA also outlined that from their perspective, the permit application and the DCO application should be twin tracked, i.e. submitted at the same time; however, the rationale for this seemed unclear and indeed was a matter of discussion at a PINS outreach event hosted at Drax Power Station. The point made by the applicant was that if the EP application was submitted at the same time, it is entirely possible that it could be determined before the DCO would reach examination. If, through the DCO process certain changes

need to be made, then the EP could be unworkable leading to the operator having to make further changes.

Much of the information submitted as part of the DCO application has also been submitted as integral to the EP application. In addition, the ES/EIA was also submitted as part of the EP application which assisted with understanding the noise data submitted and the emissions to atmosphere data which had previously been discussed with the EA in meetings and on teleconference calls. A fundamental difficulty that was encountered when dealing with the EA regarding the DCO was that the EA would not offer formal comment on a range of matters until a permit had been determined. Even if the two applications, the DCO and EP, had been twin tracked, this would not have changed the EA’s stance regarding formal comment on specific aspects of the application that overlapped with the EP. This became evident in the EA’s relevant representation as well as the EA’s responses to questions from the Inspector during the Issue Specific Hearings (ISH).

It was agreed with the EA initially to vary the existing permit held by Drax Power Station and then, at a suitable later date, to split the permit into two separate ones for each of the existing and new power plants. This approach was adopted since a number of the conditions associated with the existing Drax power station would be mirrored for the project.

The most relevant sections which would require consideration included emissions to air and noise; the over-arching issue of BAT where no specific guidance was available at the point of submission was also a point of discussion. The EA had previously published documentation which indicated that the current EPR regime would be capable of dealing with applications for CCS plant and equipment. In describing the use of established BAT, the EA have commented as follows:

This approach works well for an established industry but is not suitable for emerging technology such as CCS. Firstly, because there is no established definition of BAT for CCS; the EC and UK demonstration programmes can be considered to be an experiment to determine what is BAT. Secondly, because it may be several years before operators submit EPR applications and we need to start assessing environmental impacts in advance so that we can develop assessments and provide pre-application guidance to potential operators.

At the point of submission the EA had not published any specific guidance documentation for operators of any type of CCS plant with regard to making an application for an EP.

Table 4.5: Breakdown of information required in the EP

Overview of EP Structure and framework of application	Outline structure of the permit application – chapter by chapter.
Basic description of STU and DAAs	Components of installation and where necessary, rationale for exclusion. Worth being aware of whether the EA feel the pipeline is a DAA. EA have relatively recently updated their guidance on ASUs in an effort to get them included as a DAA.
Basic diagram of the plant – should be available.	Layout of plant as it currently stands – are we envisaging any additional changes?
Dust abatement/were fabric filters considered for the plant? If not, why not?	Rationale for selection of ESPs and not fabric/bag filters.
Abatement technologies – what will these consist of? Both primary and secondary, e.g. Low NO _x burners, OFA for NO _x in air mode?	Primary abatement technologies and what is installed – a description of NO _x abatement (primary and secondary). Any specific issues or details regarding SCR, e.g. catalyst, operational

	temperatures, maintenance of catalyst layers and NOx removal efficiencies.
Basic Plant details – what are we going to install, sizes and capacities.	Stack height, plant capacity, CW requirements, other specific large plant and infrastructure.
Turbines – need a description and any other useful information available regarding efficiency.	Type of Turbo generator and associated efficiency.
Standby plant and capacities – Aux boiler capacity ideally needs to be fixed now.	Information now fixed and now available – Aux plant required to be modelled.
Height of stack (120m) – we will have to demonstrate that this height and design is BAT. This can be done with ADMS model.	Required for ADMS modelling.
Ash production per annum and any treatment of ash onsite? Ash quality and compliance with standards.	Ash quality and compliance with British Standard. Information included within the BoD.
Limestone use per annum? Gypsum production per annum?	Use rates of Limestone and generation rate of gypsum (high and low sulphur coals?)
Water use/received from Drax power station (Flows).	Generated in Water balance.
Water returned to Drax power station (flows) and monitoring pH/Temp/Volume and compliance with existing permit.	It is assumed that flow data and concentrations/quality parameters are fixed as previously agreed?
Application Forms.	Electronic Forms which point to relevant chapters and associated documentation
Non-Technical Summary	Develop on ES NTS generated for DCO.
Combustion Plant Activities Summary	General Overview of the plant activities – this will require input from JV partners to define BAT if not already apparent, e.g. reductions and removal efficiencies.
Environmental Priorities and Improvement Programme	To be defined through future discussion with Agency.
EP OPRA Spreadsheet	Spreadsheet which generates an application fee based on environmental risk.
Management and Management System	EMS development – this may be required to focus on specific WRCCS issues such as specific wastes generated.
Choice of technologies and BAT.	Choice of boiler and abatement equipment
Point Source Emissions to Air plus BAT discussion.	Concs, mass emission, ambient and BAT discussion
Point Source Emissions to Land plus BAT discussion	Concs, mass emission, ambient and BAT discussion
Point Source Emissions to Water plus BAT discussion	Concs, mass emission, ambient and BAT discussion
Overall BAT Discussion and Conclusion	Holistic approach
Fugitive Emissions to air and water	where and how managed
Raw Materials (Fuels including solid and liquid, Chemicals and volumes)	What other raw materials will we have on site?
Fuels and Fuel specs including Aux fuels	What will be stored, managed and burned
Accidents and Incidents	reference to the need to develop Accident Management plan
Noise and Vibration (Refer to ES studies)	-
Monitoring and standards	Compliance EN 14181
Site Closure	Site Closure plan (could offer as a pre-op?)
Groundwater impact assessment	Envirocheck
Ambient Air quality monitoring/modelling	Data and source? Justification for data
H1 x 2 one with Oxy and one with Air	EIA based on emissions data
Habitats Regulations	Should be closed out by DECC and EA as part of Section 36
Site Report	Use Geo-environmental site report generated for ES
Appendix: Non-Technical Summary	Use NTC from ES?

4.15.1 Best Available Techniques

The application of CCS from the power generation sector is an emerging technology. CCS has thus far been demonstrated by a small number of projects which have looked at either relatively small scale plants or have utilised a side stream process to capture a portion of flue gas which may then be simply released to atmosphere rather than transported and stored. Currently there are three generic CCS technologies for the power sector which are believed to represent the best options for commercial deployment: pre-combustion capture, post combustion capture and Oxyfuel which is a hybrid technology. The project is an Oxyfuel derivative. Oxyfuel technology provides some inherent benefits:

- Generation of a relatively pure CO₂ stream for transport and storage
- Significant reduction in NO_x generation through nitrogen removal
- No significant increase in use of chemicals for CO₂ capture
- No requirement for energy input for recovery of solvents
- Flexible operation with the ability to meet the future demands of National Grid.

It would be incorrect to suggest that Oxyfuel technology in terms of CCS is BAT, until there are a number of plants which have been operating for a reasonable amount of time it is not possible to demonstrate which technology may be most suitable for CCS. Indeed, there may be a number of specific considerations which may favour one CCS technology over another for a given installation with respect to location, fuel type and flexibility of operation.

Currently there is no BAT guidance available against which CCS technologies can be appraised. The EA have stated that CCS plants will be permitted under the existing regime and that there is no need to amend or modify the way in which applications involving CCS plants are determined.

The project will be located to the North of the existing Drax power station on an area of land which is almost identical to the area permitted for the OREP. In this sense the area of land has previously been appraised in terms of the risks associated with the addition of large combustion plant onsite, albeit a different technology for generating electricity and capturing the CO₂. Operating in 'Oxy-mode' or capture mode, the plant is a more benign plant than the OREP when considering emissions to atmosphere, this is due to the significant reduction in nitrogen entering the boiler as well as the iterative cycling of flue gas through the boiler hence resulting in the flue gas passing through the abatement systems multiple times. In addition, the flue gas condenser removes moisture from the flue gas which comprises a sulphur and nitrogen load prior to CO₂ processing and compression.

The project will benefit from a number of interconnections with the existing power station including fuel, water and process effluents, raw materials such as limestone and certain waste management facilities.

Water for a number of purposes will be abstracted from the existing Drax power station's abstraction facility and discharged through the existing stations purge facilities hence there is no requirement for modification of the abstraction and discharge facilities. The current station's abstraction licence is capable of meeting the demands of the project. Previous discussions with the EA identified this point and specifically the issue of the use of the abstraction licence for the project. Where necessary and in order to meet the current permit's discharge limits, the project will treat some of its process effluents in order to ensure compliance.

Raw materials including fuel will be conveyed to the project with interconnections into the existing station's limestone and gypsum storage facilities. Conveyors will run adjacent to the haulage roads to the project.

Waste will be managed according to the types and volumes of wastes generated, the generation of ash from the project will result in ash either being transported from the station by truck or by rail or disposed of on Barlow mound.

Other areas which this application for a variation to the existing EP will cover includes:

- Emissions to air from an additional point source including dispersion modelling
 - Modelling undertaken for both air and oxy modes of operation assuming baseload operation
 - Assessment of impacts on human and ecological receptors
 - Generation of a HRA
- Noise generated during operation
 - Noise modelling undertaken
 - Assessment criteria agreed with SDC following discussion through PEIR
- Management of the installation
 - Environmental management and compliance with specific standards and regimes
- Energy efficiency
 - Energy recovery processes and approaches in managing efficiency for the CCS plant
- H1 EIA assessments for both air mode and oxy mode operation
- EP OPRA spreadsheet.

4.15.2 Emissions to Air

The project has been designed to be capable of operating in both air mode (non-capture) and oxy mode (carbon capture). In air mode, the plant operates as a high efficiency, conventional pulverised fuel power station utilising atmospheric air. There are a number of elements of the design which are considered BAT whilst operating in air mode and these include:

- Design of ultra-supercritical boiler
- Low NO_x burners
- Electrostatic precipitators
- Selective Catalytic Reduction (SCR)
- Use of Flue Gas Desulphurisation (FGD)
- Hybrid Cooling Towers.

In terms of emissions generated which are regulated through the Industrial Emissions Directive (IED), the plant has been modelled operating in air mode assuming base load operation over the course of a year. The plant is capable of complying with IED limits through the range of part load operation to full load. Air dispersion modelling has been carried out looking at the fuels which generate the greatest pollutant loads which are then treated through the flue gas abatement plant.

Whilst operating in air mode the plant is designed to achieve an efficiency of approximately 43.5% and will have a gross output of 448MWe. This is achieved through the design of the ultra-supercritical boiler which utilises high temperatures and high pressures compared with a sub-critical boiler resulting in greater energy derived from the fuel being passed into the supercritical fluid. The use of supercritical technology for new pulverised fuel combustion plant is considered BAT.

Operating in Oxy-mode changes the physical volume and component concentrations of the emissions to atmosphere from the plant. The volumetric flow rate of emissions exiting the stack decreases significantly due to the removal of nitrogen entering the boiler and a recirculation of flue gas which generates a rich CO₂ stream. The recirculation of flue gas results in the flue gas passing through the abatement plant numerous

times prior to emission and reduces the load of a number of pollutants associated with combustion of pulverised fuels. Once the CO₂ is removed from the flue gas, a reduced and more concentrated flue gas is generated with the resultant pollutant loads increasing in concentration, some of these concentrations approach and can breach the IED limits which assume a standard fossil fuelled plant emitting a significantly greater volume of flue gas. Operation in Oxy-mode has been modelled using air dispersion modelling and the impacts of operating in Oxy-mode have been shown to be lower than operating in air-mode. Proposals have been made to the Agency to consider a mass/unit of energy metric to assign to the emissions; however, the EA are yet to agree to this type of metric.

Whilst operating in Oxy-mode the additional infrastructure associated with the generation and capture of the CO₂ stream is required to operate. This results in an increase in the parasitic load across the installation and hence reduction in net output and efficiency. The ASU which generates a high purity oxygen stream and removes atmospheric nitrogen from the combustion gases resulting in a significantly reduced NO_x load emitted from the installation which is an inherent characteristic of the Oxyfuel technology. Recirculation of the flue gas into the boiler and through the flue gas abatement technologies results in further reductions in NO_x and SO₂ loads being emitted.

The operation of the installation in oxy-mode inevitably results in a reduction in efficiency due to the increase in parasitic load from associated plant. This reduction in efficiency is currently synonymous with all CCS technologies. Generally speaking, lower efficiency in an unabated plant would equate to increased emissions to atmosphere per unit of electricity generated. However, in oxy-mode operation this is not the case with lower emissions being generated per unit of electricity generated in comparison with air mode operation.

4.15.3 Noise Emissions

Noise generated through the operation of the main power plant and associated activities, e.g. conveyors has been modelled using specific modelling software (Cadna-A 4.3). The software take account of local terrain and buildings as well as materials and acoustic enclosures and mitigation. The model generated has been updated through a number of iterations following its development as part of the PEIR submitted last year. Modelling of the plant allowed for identification of specific noise sources and their impacts on specific receptors around the plant. This resulted in mitigation being added and improved for certain specific pieces of equipment and infrastructure.

Noise was discussed in depth with SDC's EHO following the submission of the PEIR information and agreement reached on what achievable noise levels could be reached at specific locations and the criteria of assessment for the relevant time of day. These data were also presented following re-iteration of the noise model in the DCO application. Discussion with various stakeholders followed by significant engineering design work has resulted in a design which should now meet agreed criteria.

4.15.4 Management of the Installation

Drax currently manages the operation of the existing Drax power station through an Environmental Management System (EMS). The EMS at Drax complies with BS EN ISO14001 and there are two surveillance visits every year and a recertification visit every three years. Internal audits are also undertaken to ensure compliance with the EMS. It is anticipated that a similar EMS will be established by the O&M operator of the OPP.

Management of the environmental aspects of the project will take place at all levels of the organisation. The Plant Manager will have overall responsibility for the implementation of the EMS and for environmental compliance and performance of the business. The Plant Manager will maintain an overview and strategic control by means of:

- Inclusion of environmental issues in the regular management meetings/ reports of senior management
- Ensuring that environmental issues are adequately incorporated into all Company Business Plans and Capital Approval processes approving and reviewing the Environmental Policy at appropriate intervals.

Each Board Member will have overall responsibility for the environmental aspects of their area of management although the majority of the responsibilities for plant management will fall to the Operations Director. They maintain an overview and strategic control by a range of actions, including:

- Providing adequate resources and training for implementing and maintaining the system on a day-to-day basis
- Regularly setting and reviewing environmental performance and objectives.

4.15.5 Energy Efficiency

The project will employ a high efficiency ultra-supercritical boiler which generates high pressure and high temperature steam as a supercritical fluid. Due to the significant difference in the design and thermodynamics of a supercritical boiler, the efficiency of a plant can approach 44% of the conversion of energy in the fuel to electricity. Generally speaking this means that the pollutant load generated per unit of electricity generated is significantly lower than sub-critical systems.

With regards to project and CCS plants in general, it is recognised that there will always be an impact on overall plant efficiency due to the increased parasitic load of the additional plant and infrastructure associated with the CCS elements of the plant. Regardless of the type of technology applied, fitting CCS to a plant will inevitably result in a reduction in efficiency. Although, with an abated plant the emissions to atmosphere generated will be significantly reduced.

Systems to recover and re-use energy generated through processes, e.g. heat generated through compression systems and cooled fluids generated through the operation of the ASUs have been designed to reduce efficiency losses and integrate systems across the plant where feasible.

Key considerations with regard to energy and efficiency as part of the basis of design:

- The ethos of high efficiency against CO₂ emissions
- Ultra-supercritical technology and the inherent high efficiency of the steam cycle
- Heat integration with the ASU, recognising there are some operational and efficiency synergies of integrating the two technologies
- Use of high efficiency systems e.g. boiler design, high efficiency turbine cylinders, water cooled technology improving efficiency over air cooled, high efficiency motors and VSDs
- Identification of infrastructure that have greatest impact on parasitic load, e.g. ASU, GPU, FGD, compression systems
- Options explored to minimise parasitic loads across the plant and integrate systems.

4.15.6 H1 Tool

Two versions of the H1 tool have been generated which cover operations in air mode and operation in oxy mode. The rationale behind the development of the two versions of H1 stem from discussion had in October 2014 regarding the EPS and various aspects surrounding the implementation. Discussion

involving the PINS, NE and the EA as well as CPL requested that air dispersion modelling and the associated HRA should be modified to account for the possible impact of the 3 year window of commissioning over which a CCS plant would not be required to comply with the EPS. Subsequent discussions with the EA suggested that two scenarios should be modelled. For this reason, two versions of the H1 tool have been developed, one which encompasses generation in Oxy mode and one which encompasses generation in air mode. This then allows for the total spectrum of emissions to be considered, although once the 3 year window has passed, the EPS will constrain the plant to operate for no more than approximately 56% of the year in air mode.

4.15.7 EP OPRA Tool

The EP OPRA spreadsheet tool calculates the cost of the application based on data input. Generally speaking the score is largely generated from the existence of the existing power station and hence a number of data entries cannot be changed. Certain additions may also not impact the score due to the capping of a specific number of entries.

4.16 Statements of Common Ground

A SoCG is a written statement prepared jointly by the applicant and another party, setting out any matters on which they agree, disagree or remain in negotiation. As well as identifying matters which are not in real dispute, it is also useful if a statement identifies those areas where agreement has not been reached. The statement should include references to show where those matters are dealt with in the written representations or other documentary evidence.

As a useful tool in the DCO process, the Government recognises that producing these statements requires a lot of work from all parties but believes that SoCG are very helpful in ensuring that the examination focuses on the material differences between the main parties. Effective use of such statements leads to a better and more efficient examination process. The topics on which agreement might be reached in any particular instance (or those areas where agreement might not be reached) will depend on the matters at issue and the circumstances of the case but early identification of these topics helps the ExA to focus the examination on the most important issues.

For the project work began with statutory bodies at an early stage in order to agree SoCG during the pre-application period with the aim that an initial agreement was reached before the preliminary meeting is held. It is expected that these statements will continue to evolve including in some cases during the Examination period in the light of discussions between the applicants and other parties.

A SoCG can cover any issue which may be relevant between the parties involved. The table below provides a summary of matters as of 6 November 2015.

Table 4.6: Matters Agreed relating to Statements of Common Ground

SoCG organisation	Matters Agreed	Matters not yet agreed	Sign off Complete
Yorkshire Wildlife Trust (YWT)	Survey Data / Water Bodies / Badgers / Reptiles / Mitigation Measures (Skerne Wetlands and Barlow Common) & method for Securing Mitigation	None	Yes – 31/07/2015
Environment Agency (EA)	Environmental Permit / Air Quality / Flood Risk / Surface Waters / Water Abstraction, Treatment and Effluent Discharge / Groundwater and Land Contamination / Impact on Drinking Water	None	Yes – 05/08/2015

	Safeguarding Zones / Ecology / Waste and Environmental Management / Combined Heat and Power / Carbon Capture and Storage		
	The following non-exhaustive list of matters will be assessed and (where appropriate) controlled in the context of the EP variation application:		
	<ul style="list-style-type: none"> • Air quality effects from stack emissions; • The need for amendments to existing discharge consents/licences; • Impact on Drinking Water Safeguarded Zones; • Operational noise. 		
Canal and River Trust (CRT)	Use of Water-borne Transport within the DCO / Scope for additional use of Water-borne Transport / Use of Rail	Sustainable Transport Management Plan requested by CRT	Yes – 11/06/2015
Natural England (NE)	Habitats Regulations Assessment / Protected Species / DCO Requirements. In principle letter agreed regarding Badger License (applied 20 July 2015)	None	Yes – 26/06/2015
SDC/NYCC	Description of the Project / Relevant planning history Local planning designations / Relevant planning policy / The need for the Project / Site selection and alternatives / Limits of deviation and detailed design / Good design / Combined heat and power / Carbon capture and storage and carbon capture readiness / Sustainability and climate change / Access and public rights of way / Minerals and waste / Environmental Impact Assessment / The benefits and adverse effects of the Project / The scope of the draft DCO and the draft requirements / The need for a development consent obligation / The site raising and preparation works planning application	<p>The landscape and visual effects of the Project</p> <p>Operational noise effects and the wording of requirement 23 'Operational noise' including certain noise limits to be included in that requirement</p> <p>The extent of the pre-construction surveys on New Road</p> <p>The destination and use of the peat currently stored on the Project site</p> <p>The location and associated details regarding the proposed temporary topsoil store</p>	07/10/2015
HE	Impact on Cultural Heritage / DCO Requirements	None	Yes – 23/06/2015

All SoCG have now been signed and agreed between the Applicant and the required parties, therefore all agreements made and agreed mitigation measures proposed are included within the DCO. However, as the decision period is still open the DCO is subject to change until the SoS issues their decision statement.

4.17 Other consents

As part of the DCO process, there has been a need to work towards gaining various other environmental consents which will impact upon the environmental management of the project.

The DCO and EP include the majority of consents and licences that would be required under other legislation for the construction and operation of the project. There are however various consents and licences that are being, or will be advanced separately, from the DCO application. The applicant maintains a consents register which includes all consents and licences that are to be obtained either as part of the DCO and EP or are to be applied for separately. An extract of this register showing the key other consents is provided in Appendix B.

4.18 Prospective Environmental Management

As part of the DCO process, physical environmental mitigation, management and additional survey work is secured through Requirements. This will ensure that Environmental Management is considered beyond the DCO stage.

At the time of writing, the current Draft DCO can be found on the PINS website by following the link below: [http://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010048/2.%20Post-Submission/Procedural%20Decisions/Examining%20Authority's%20revised%20draft%20Development%20Consent%20Order%20\(dDCO\).pdf](http://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010048/2.%20Post-Submission/Procedural%20Decisions/Examining%20Authority's%20revised%20draft%20Development%20Consent%20Order%20(dDCO).pdf)

It is possible that the ExA or SoS will alter the Draft DCO as part of the remaining phases of the DCO process. The latest version will be updated to PINS website.

The table below highlights the Requirements of the Draft DCO and highlights those which have an impact on the Environmental Management of the project. Once the Draft DCO is finalised these Requirements will commit the Applicant to construct and operate the project in a way that will ensure that the prospective commitments are maintained.

Table 4.7: Draft DCO Requirements and how they relate to Environmental Management.

Requirement	Topic	Environmental Management Issue
4, 5, 6	Detailed Design, Provision of landscaping, Implementation and Maintenance of Landscaping	Landscape and Visual Impact
12	Surface and Foul Water Drainage	Surface Water
13	Flood Risk Mitigation	Flood Risk Assessment
14	Contaminated Land and Groundwater	Geology
15	Archaeology	Archaeology
16, 17, 18	Biodiversity Mitigation and Management Plan, European Protected Species, Construction Environmental Management Plan	Ecology, Air
19, 24	Construction Traffic Routing and Travel Plan, Operational Traffic Routing and Travel Plan	Transport, Air
20, 23	Construction and Operational Noise	Noise
22, 27	Restoration of Temporarily and Permanently Used Land	Land Restoration
26	Construction and Operational Waste Management	Waste
31	Employment, Skills and Training Plan	Socio-Economic

In addition to the Requirements which will be imposed through the DCO, the EP, once granted by the EA, will impose its own set of limits for noise, air and energy efficiency and contamination control.

In addition to the DCO Requirements, Appendix C shows a table which brings together all mitigation needs (from the ES and all application and supporting documentation) and where and how these are to be secured in requirements or through other binding and enforceable mechanisms.

Appendix C aims to provide an audit trail of the controls and mitigation measures upon which the project would rely to avoid, reduce and/or off-set significant effects and impacts (these controls and mitigation measures are contained within the ES (DCO Document Refs. 6.1 to 6.4) and other Application and Examination documents. In addition it sets out how the controls and mitigation measures have been, or

would be secured through the DCO, including the requirements contained at Schedule 2 and/or other consenting and regulatory regimes.

4.19 Conclusions and Lessons Learnt

Environmental reporting has been a large part of the DCO process for the project. The information has produced a detailed EIA and as part of the Examination Phase, helped to ensure that the examination deadlines have been met and have led to a set of draft requirements that will ensure the necessary mitigations are delivered in project execution and operations. The Key Conclusions that can be raised from this work can also be taken as lessons learned. These include:

Early Consultation, including meetings with key consultees, ensures that matters are raised early to allow time for matters to be resolved.

A decision on Screening ensures that the discussions on EIA and Environmental reporting can be planned early.

Generation of a thorough PEIR enables issues raised at the PEIR stage to be discussed and closed off prior to the development of the ES. It makes the process of updating the PEIR to ES smoother.

Meetings and Meeting minutes are a key part of the Environmental information process. It will be necessary to ensure that any meeting minutes generated are agreed by both parties so that during the Examination Phase there is a known position on key issues.

Engaging Consultees on the Environmental Permit ensures that PINS have the information they require during the Examination phase.

Preparation of the Statement of Common Ground early encourages dialogue between key consultees with the aim to resolve any issues before the end of Examination.

Early discussions with all management levels of Drax Power Ltd assisted with the preparation of environmental information, such as the interconnection works.

The FEED and DCO processes are not easily aligned. The DCO process may raise environmental management issues which will need design details to close off, this may impact upon the FEED process, which may not be at the appropriate stage where final design detail can be agreed.

The full documentation generated for the project is available on PINS website by following the link below:

<http://infrastructure.planningportal.gov.uk/projects/yorkshire-and-the-humber/white-rose-carbon-capture-and-storage-project/>

5 Transport and Storage

5.1 Introduction

The Offshore Scheme boundary with the Onshore Scheme is at Mean Low Water Spring (MLWS) tide at a landfall near Barmston on the Holderness coastline, East Riding of Yorkshire. This also marks the division of the relevant offshore and onshore consenting regimes. The Offshore Scheme is for the construction of a 90km subsea pipeline to an offshore platform approximately 80km offshore, connected via a number of injection wells to a geological storage site. The pipelines of the Onshore and Offshore Schemes are of equivalent diameters and are sized to accommodate up to 17 million tonnes (Mt) of CO₂ emissions per year, but in the first phase an initial load of up to 2.68Mt per year will be stored.

5.1.1 Onshore Transport Scope

The Onshore Transport Scheme is collectively termed the Yorkshire and Humber CCS Cross Country Pipeline (shortened to the “Onshore Scheme”) and consists of the construction of a Cross Country Pipeline and associated infrastructure, including Pipeline Internal Gauge (PIG) Traps, a Multi-junction, three Block Valves, a Pumping Station (collectively termed “Above Ground Installations” or “AGIs”) and any necessary interconnecting local pipelines and associated works.

5.1.1.1 Screening and Scoping Requests and Opinions

Notice was given to the Planning Inspectorate on 18 January 2013 of the proposal to provide an ES in support of the Yorkshire and Humber CCS Cross Country Pipeline DCO application. This obviated the need to request a Screening Opinion to determine the need for formal EIA, and the EIA moved straight to the scoping stage.

There are two main stages in the scoping process. Firstly the applicant compiles information to allow them to form a view as to the scope of issues that should be covered in the main ES. This stage is usually recorded in the form of an EIA Scoping Report and is based on initial consultation, data searches and baseline surveys, as appropriate. The second stage in the scoping process is for the decision maker to issue a Scoping Opinion, in which they outline what they expect to be covered in the ES, having also formally consulted a range of statutory bodies, and having taken into account the information provided by the applicant in their Scoping Report, and any other information they may have available.

All the DCO documents, including those referred to in this report, are available on the PINS National Infrastructure Planning website on the page covering the Yorkshire and Humber CCS Cross Country Pipeline:

<http://infrastructure.planningportal.gov.uk/projects/yorkshire-and-the-humber/yorkshire-and-humber-ccs-cross-country-pipeline/>

A request for a Scoping Opinion, enclosing a Scoping Report (Document 6.4.2), pursuant to Regulation 8(1) of the Infrastructure Planning (Environmental Impact Assessment) Regulation 2009 (as amended) was made on 13 February 2013. A Scoping Opinion was received in March 2013 (Document 6.4.3), which provided comments from the Secretary of State (SoS) on the proposed scope of the EIA, and included

copies of responses received from the Consultation Bodies (please refer to Chapter 4 of the ES, EIA Consultation (Document 6.4).

The Scoping Opinion included specific comments on the approach to the ES and topic areas set out in the Scoping Report (Document 6.4.2). Table 2 in Section 3 of each of the individual Topic Chapters of the ES (Documents 6.6 – 6.15) detail how these specific comments were taken into account in the preparation of the individual technical Chapters of the Environmental Statement (Documents 6.6 to 6.15 inclusive) Document 6.4.4 provides a collated version of these responses in a summary table, to demonstrate how the assessment has taken account of the Scoping Opinion.

5.1.1.2 *Early non-statutory consultation*

Two non-statutory consultations were undertaken on the proposals; these are known as Stages 1 and 1A. These gave the local community and other consultees the opportunity to comment on strategic options, route corridor options, potential locations for AGIs and the design style of the Pumping Station. Both of these rounds of non-statutory consultation were undertaken prior to EIA Scoping.

The Stage 1 consultation was undertaken between 27 June and 12 August 2011. The aim of the Stage 1 consultation was to provide an opportunity for consultees to comment upon the Strategic Options, (which are described in Sections 2.1.1 to 2.1.18 of Chapter 2 Onshore Scheme Description and Alternatives (Document 6.2)) and the Route Corridors (described in Sections 2.2.1 to 2.2.13 of Chapter 2 Onshore Scheme Description and Alternatives (Document 6.2)). Both the Strategic Options report (Document 7.8.1) and the Route Corridor Study (Document 7.8.2) were used to inform the consultation.

A full list of materials used for consultation during Stage 1 is provided in Section 5.4.5 of the Consultation Report (Document 5.1).

The feedback received during the Stage 1 Consultation was used to inform the selection of the Preferred Route Corridor, which is described in Section 2.4 of Chapter 2 Onshore Scheme Description and Alternatives (Document 6.2).

The Stage 1A Consultation was undertaken between 19 June and 30 July 2012. The aim of the Stage 1A Consultation was to provide an opportunity for consultees to comment on the Site Options for the AGIs (please refer to Section 2.5 of Document 6.2) the architectural design styles for a Compressor ¹ and Pumping Station (please refer to Sections 2.5.9 to 2.5.10 of Document 6.2) and Route Corridor Options for the White Rose CCS Project (please refer to Section 2.8 of Document 6.2).

The feedback received during the Stage 1A Consultation was used to inform the selection of the Preferred AGI Site Options and architectural concept (please refer to Sections 2.8.1 to 2.8.12 of Document 6.2) and the selection of the Preferred Route Corridor for the White Rose CCS Project (please refer to Sections 2.8.9 to 2.8.13 of Document 6.2).

5.1.1.3 *PEIR development and consultation*

Under the EIA Regulations² there is a requirement to prepare PEI to be issued as part of the formal consultation under Section 42 and Section 47 of the Planning Act 2008. PEI for the onshore scheme was

¹ Please refer to Sections 1.3.8 and 2.9.2-2.9.3 of Chapter 2 Onshore Scheme Description and Alternatives of the ES (Document 6.2)

² Infrastructure Planning (Environmental Impact Assessment) Regulations 2009

presented in the form of a PEIR. The PEIR provided a ‘snapshot’ of the environmental information available during statutory consultation on the Preferred Scheme.

The purpose of providing this information is to ensure that those responding to the consultation are able to have regard to the likely environmental issues and effects arising from a proposed development. A copy of the PEIR is included as Appendix 6 to the Consultation Report (Document 5.1).

The main information in the PEIR was provided in a series of tables for each of the environmental technical topic areas. The tables provided information about the environmental baseline and the potential environmental effects that could be experienced by receptors. It also provided initial information about possible mitigation measures and likely residual effects, taking these measures into account.

On 23 September 2013, National Grid launched the Stage 2 consultation on its proposed application for the Yorkshire and Humber Cross Country Pipeline DCO. This stage of consultation was the statutory consultation required under Section 42 and community consultation under Section 47 of the Planning Act 2008, and statutory publicity under Section 48 of the Planning Act 2008. This Stage 2 consultation concluded on 1 November 2013. National Grid sought views on the Preferred Onshore Scheme, as described in the Preferred Scheme Report (Document 7.8.14), and made available the PEIR, as set out above.

A number of the Section 42 consultees provided responses in relation to the PEIR. These were NE, English Heritage (EH) (now Historic England), Spaldington Parish Council (SPC), EA, Marine Management Organisation (MMO), Public Health England (PHE), ERYC, NYCC and SDC. Copies of the responses are provided in Document 6.4.6. Each of the technical chapters in the Environmental Statement explains how these comments were taken into account within the final ES where relevant.

During the Stage 2 consultation National Grid received a consultation response from the owner of the land on which the Pumping Station was originally proposed to be located, requesting that an alternative location immediately to the north be considered. Following an evaluation of the suggested alternative site National Grid completed a further, localised, consultation exercise with affected parties and held a further public exhibition. This consultation is described as Stage 2A and was undertaken from 12 February until 14 March 2014. Section 4.4 of Chapter 2 of the ES (Document 6.2) describes the changes to the Pumping Station that were made following consideration of this feedback.

It was also necessary to prepare an addendum to the original PEIR, to highlight PEI that was specific to the new Pumping Station location. This report was therefore referred to as the PIER Addendum (a copy of the PEIR addendum is provided in Appendix 7 of the Consultation Report (Document 5.1)). PEI tables were prepared to provide updated information where there was considered to be a difference between the PEI for the alternative site and that originally proposed. The Section 42 parties that responded to the PEIR Addendum were NE, EH, MMO, PHE and ERYC. Each of the technical ES chapters explains how these comments have been taken into account within the ES, where relevant.

5.1.1.4 EIA development and consultation

Non-statutory consultation was undertaken throughout the development of the EIA for the Onshore Scheme in the form of Thematic Group meetings with stakeholders that share similar interests and individual stakeholder meetings. The Thematic Groups were used to inform the scope and methods of the EIA and were held under the following headings:

- Water Thematic Group

- Ecology Thematic Group
- Archaeology Thematic Group
- Landscape Thematic Group.

Details of the Thematic Groups are provided in the ES in Section 2 of Chapter 4 EIA Consultation (Document 6.4).

In addition to thematic groups individual stakeholder meetings were held throughout the development of the EIA. These were undertaken with individual stakeholders to discuss specific issues relevant to each. Details of the individual stakeholder meetings are provided in Section 5 of Document 6.4.

5.1.1.5 *Project's current state*

The ExA completed examination of the Onshore Scheme on 19 May 2015. The ExA conclusions and recommendations were sent to the SoS for Energy and Climate Change on the 19 August 2015. The SoS will decide whether or not to grant the DCO no later than 19 November 2015. The environmental mitigation which is secured through specific Requirements set out in Schedule 3 of the DCO and the Deemed Marine Licence Conditions set out in Schedule 10 are subject to the DCO being awarded and any changes made by the Secretary of State.

5.1.1.6 *Other environmental consents and legislation*

The project will be subject to specific Requirements set out in Schedule 3 of the DCO and the Deemed Marine Licence Conditions set out in Schedule 10. Following the granting of the DCO and prior to the commencement of construction, National Grid will need to discharge many of these Requirements and Conditions and will also need to obtain a number of other consents, licences and permits. The Planning Act 2008 provides the statutory powers pursuant to S.120 and 150 for DCOs to apply modify or exclude a statutory provision and consents to be included within the decision on a DCO. The consents that are being sought both within and outside of the DCO are listed in Appendix C of the Construction Report (Document 7.6).

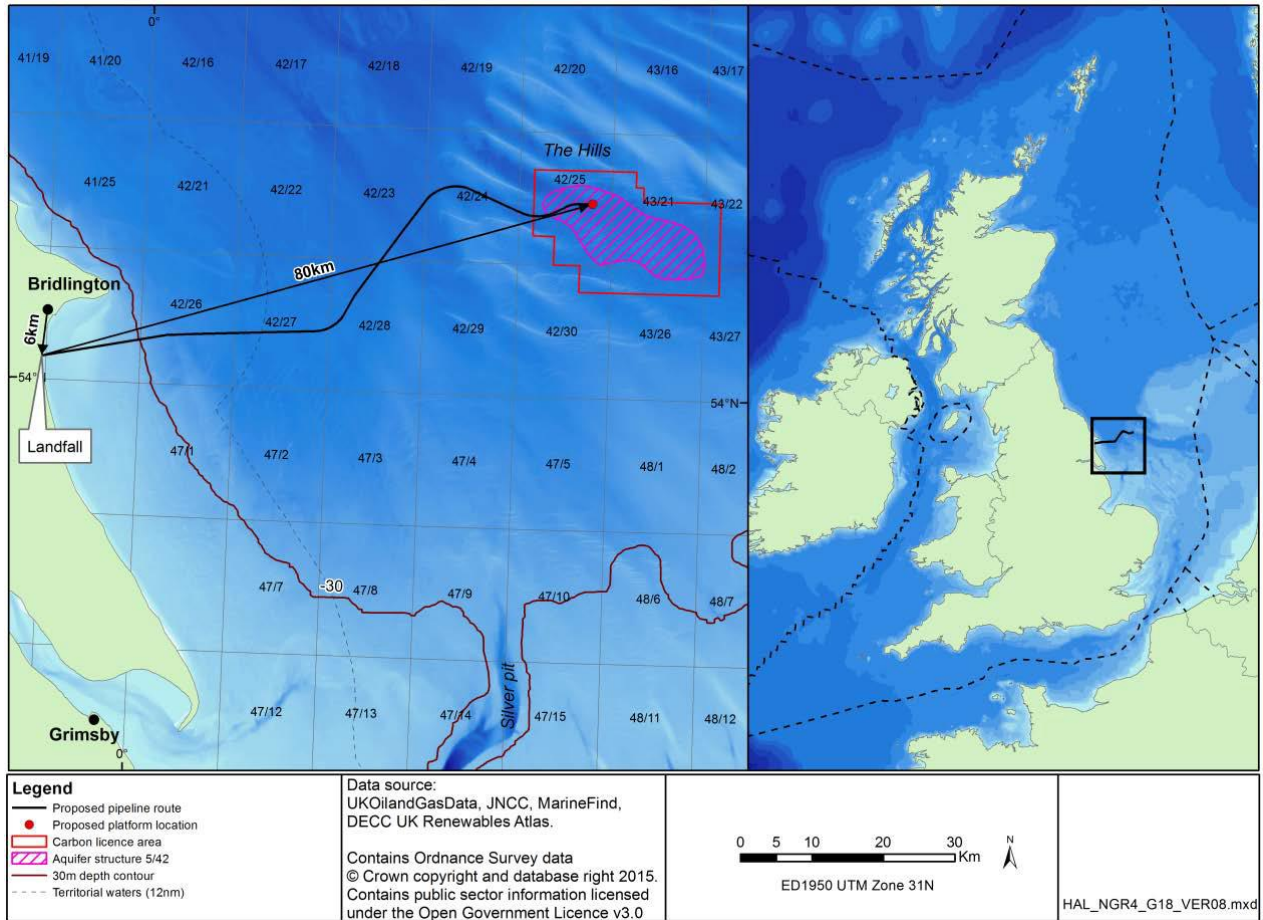
5.1.2 *Offshore Transport Scope and Storage*

Following a review of former gas field data and the capacity and nature of a number of saline aquifer structures, the latter were chosen to be the focus of further study. The selected site (originally known as 5/42, now named Endurance) was chosen on the basis of its location relative to the coast and therefore transport distance from source emitter(s) to storage site, its potential storage capacity, and absence of observed geological faults in the storage site sealing formations, which is important in ensuring secure long-term storage of CO₂. National Grid obtained a CO₂ appraisal and storage licence (CS001) to cover this site, the first in the UK; in November 2012 (licence area is shown in Figure 5.1).

An appraisal programme was undertaken to further understand the viability of the Endurance structure which involved the drilling of an appraisal well to allow sampling of the saline aquifer water, undertake injection testing, and take cores of the various geological formations present (e.g. caprock, Bunter Sandstone). The appraisal showed that no hydrocarbons were present in the target formation, that the injectivity and porosity of the sandstone were suitable for CO₂ injection, and confirmed the composition of the caprock sealing structures.

5.1.2.1 General

Figure 5.1: The Location of the Offshore Scheme



An ES has been produced in accordance with the Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999 (as amended) under which the submission of an ES to the SoS for Energy and Climate Change is required in support of this type of development application. The ES documents the results of the EIA process at the FEED, highlighting environmental sensitivities, identifying potential hazards, assessing/predicting risks to the environment and identifying practical mitigation and monitoring measures to be carried forward into detailed design installation and operations.

5.1.2.2 Environmental Assessment Process

The EIA process was initiated at an early stage in project planning. Information was collected relating to the natural environment and other users of the sea at or within a distance from the proposed pipeline route and surface facilities where interactions were foreseeable. These data were gathered using both desk-based and field-based techniques, and were synthesised and important features and sensitivities identified and raised in scoping (see Table 5.1)

Table 5.1: Structure of the Environmental Statement

The ES is comprised of 8 sections, a non-technical summary and appendices. Figures and tables are interspersed throughout the document.	
Non-Technical Summary	Intended as a comprehensive standalone summary of the ES, its findings and conclusions.
Section 1: Introduction	Provides an overview of the Offshore Scheme background, its context within the wider Yorkshire and Humber CCS project, and the purpose and scope of the ES.
Section 2: Legal & Policy Framework	The section is intended to provide an overview of the legislative, permitting and planning regime associated with offshore aspects of the project, including all of those relevant to the Offshore Scheme
Section 3: Project Description	Provides an overview of the proposed programme of works, including options appraisal for each stage, and a detailed outline of selected options.
Section 4: Environmental Description	An overview of the ecological, physical and socio-economic character of the area of relevance to the Offshore Scheme.
Section 5: Assessment Methodology and Screening	Introduces the methods used to identify, screen and assigned significance of effect to those activity/environmental interactions identified through a screening process against defined significance criteria. Those activities identified as being sources of potentially significant effects are summarised before being assessed further in the ES.
Section 6: Assessment	Provides a detailed assessment, including of cumulative effects, of those activities identified as being sources of potentially significant effects in the ES.
Section 7: Issue Management and Conclusion	Lists the environmental commitments made throughout the Environmental Statement and those responsible for ensuring they are undertaken. An overview and conclusion of the assessment findings.
Section 8: References	A list of all references cited in the text.
Appendix A: Glossary	A list of definitions for technical terms used in the text.
Appendix B: Legislation and Policy	A comprehensive overview of the legislative basis regulating all aspects of the Offshore Scheme.
Appendix C: Conservation Sites and Screening	A tabulation of the conservation sites and species relevant to the Offshore Scheme. The results of a screening of potential interactions with qualifying features of sites are provided.
Appendix D: Seabed Features and Habitats	An overview of the seabed mapping and interpretation

An environmental scoping document for the Offshore Scheme was published in December 2014 with the aim of facilitating that all relevant environmental information, stakeholder issues and potential impacts had been considered, as well as providing a summary of the project and an overview of the approach to assessment. Feedback received from stakeholders through the scoping process and how this has been integrated into the ES is summarised below.

For the ES, the interactions between the proposed activities and the environment together with issues raised through consultation with government bodies, the public and relevant stakeholders were identified at the screening and scoping stages of the EIA process using defined severity criteria. The approach and methods utilised in undertaking the EIA for the Offshore Scheme were outlined in the scoping document and updated based on feedback.

Activities associated with the installation and operation of the subsea pipeline and storage facilities have been screened for their potential interactions with the environment, other users and legislative and policy requirements. The activity/environment interactions were identified and screened using a range of sources, including:

- Regional and site specific environmental data
- Typical vessel specifications (e.g. for pipeline installation and support)
- Typical jack-up drilling rig specifications

- Experience of relevant aspects and operations of analogous projects (albeit for natural gas or oil) in the North Sea and elsewhere
- Reviews and assessments of the environmental effects of similar operations gained from experience of offshore oil and gas operations
- Peer reviewed scientific papers describing the effects of specific and analogous interactions
- Other publicly available “grey” literature
- DECC OESEA Environmental Reports and underpinning studies
- OSPAR QSR2010 and Defra’s Charting Progress 2
- Conservation site designations, potential designations, and site advice etc.
- Initial consultation feedback
- Applicable legislation, guidance and policies
- Licence constraints
- Input to the EIA process through scoping with relevant statutory advisors and stakeholders
- Marine ecology (plankton, cephalopods, benthos, fish and shellfish, marine mammals, birds, conservation sites and species)
- Geology, substrates and coastal processes
- Oceanography and hydrography
- Climate and meteorology
- Other users of the sea (fishing, shipping, defence, offshore renewables, oil and gas, recreational)
- Marine cultural heritage
- Landscape and seascape.

A set of criteria determining the magnitude and significance of an effect offshore were developed and presented in the scoping document using a combination of: UKOOA Environmental Impact Assessment Guidelines (UKOOA 1998), UK MSFD initial proposals for GES, the GVLIA, the Marine Policy Statement and East Marine Plans, the High Level Marine Objectives, as well as expert judgement, and have been modified following responses to scoping. These have been used to consider the potential effects of the scheme in terms of screening potential effects; summaries are provided in Section 5.2.1.

5.2 Information and Data Development

5.2.1 Onshore

Information and data were collated throughout the development of the Onshore Scheme and were used to refine the Onshore Scheme from the Strategic Options through to the Proposed Scheme that was subject to the DCO Application in June 2014 (as amended through the examination process). Data was collated from both desk based sources, data requests to stakeholders and on site surveys.

Both desk based data, and data collected through surveys, were entered onto a Geographical Information Systems (GIS) so that environmental constraints could be mapped and effects avoided or minimised through the routeing and design process for the Onshore Scheme.

Environmental constraints data is presented in the figures which accompany each of the ES technical chapters (Documents 6.6 – 6.15) and in Documents 2.72 (Plans of Statutory Non-Statutory Environmental Sites and Features) and Document 2.73 (Plans of Statutory Non-Statutory Sites and Features of the Historic Environment).

These data sets should be referred to and updated with any new survey and desk based information that is available prior to and during the construction of the Onshore Scheme.

5.2.2 Offshore

The wells would be drilled using a combination of water and oil based muds; the rock cuttings from drilling with the latter would be contained on board the rig for disposal onshore. A number of techniques would be used to collect data about the sealing caprock and reservoir intervals within the wells to add to the existing dataset used to characterise the storage site.

The first phase of CO₂ injection into the Endurance site would involve the drilling of three wells. During normal operations two wells would be used for injection with the third providing redundancy to maximise system availability. A number of techniques would be used to collect data about the sealing caprock and reservoir intervals within the wells to add to the existing dataset used to characterise the storage site.

Activities associated with the installation and operation of the subsea pipeline and storage facilities were screened for their potential interactions with the environment, other users of the sea and legislative and policy requirements. Data sources include regional and site specific environmental data, the project description, peer reviewed and other literature, any licence constraints, applicable legislation, guidance and policies and the initial consultation and scoping feedback. The screening was used to filter the project activities, which have the potential to result in likely significant effects for particular areas of the environment, including other users. The key areas identified for further assessment by the screening were: atmospheric emissions, physical disturbance, physical presence, discharges and waste and noise. Assessment summaries for these are provided at Section 5.4.

5.3 Onshore Transport Environmental Information

This chapter contains a summary of each aspect of the EIA, as well as sections on the Environmental Permit and BAT.

For each section of the Environmental Information Chapter there will be a narrative on the:

- Scope that each section covers
- Mitigation that has been applied to the project as a result of the assessment
- The details of consultation that took place regarding mitigation
- Any conclusions developed
- How the associated activities/processes could be managed during the implementation phase.

The following sections summarise the results of the EIA and the mitigation that has been applied. As set out in Section 1.2 consultation has been undertaken regularly throughout the development of the Onshore Scheme and accompanying EIA. During this consultation, mitigation measures have been discussed and agreed with relevant stakeholders. Where consultation has resulted in an amendment to the mitigation proposed in the ES, this is discussed in the relevant sections below. Notwithstanding the above, the application documents should be referred to for full details.

Mitigation measures are secured either as Requirements in Schedule 3 of the final draft DCO (Document 3, Revision G) or the Code of Construction Practice (CoCP) (Document 7.5, Revision E), which is in itself subject to a Requirement (Requirement 14 of the draft DCO (Document 3.1, Revision G)). The Onshore Scheme will need to be constructed, operated, maintained and decommissioned in accordance with these Requirements and documents.

5.3.1 Air

The Air Quality Assessment is presented in Document 6.12 of the DCO application.

A qualitative dust assessment was undertaken which considered the potential effects of construction activities including soil stripping, earthworks and the potential for mud and soil to be deposited on local roads by construction traffic (referred to as 'track out'). A number of potentially dust sensitive receptors, including people living close to the Onshore Scheme and construction routes, as well as ecological receptors and recreational resources such as footpaths and Rights of Ways were identified.

Consideration was given to the potential effects of emissions from construction traffic; however, the methodology used only requires detailed modelling where traffic increases are above a set value. The predicted traffic increases were well below this value and the effects from the construction of the Onshore Scheme are not therefore likely to be significant.

Minimising dust and other emissions to air during construction will be achieved by adopting the good site practices identified in Sections 2 and 8 of the CoCP (Document 7.5, Revision E) which is secured through Requirement 14 of the draft DCO (Document 3.1, Revision G). These include the use of road sweepers, minimising the handling of soil and dusty materials, proposed planning of the construction site layout so that machinery and dust causing activities are located away from receptors where possible and damping down using water where appropriate.

Both SDC and ERYC were consulted on the content of the CoCP (Document 7.5, Revision E) and are in agreement (please refer to the signed SoCG Documents 9.3 and 9.2) that the content of the CoCP is appropriate and the requirement that construction works must be carried out in accordance with the CoCP provides an appropriate mechanism for managing construction practices in relation to air quality and dust.

5.3.2 Noise

The Noise and Vibration Assessment is presented in Document 6.13 of the DCO application.

The assessment considered the effects of construction noise on those living close to the Onshore Scheme and to roads that will be used by construction traffic. It also considered the potential for noise to be generated during operation and maintenance of the Onshore Scheme.

Sources of noise and vibration during construction and decommissioning include construction traffic, plant and machinery. The noisiest aspects of construction are likely to be construction traffic, piling, earth moving and testing of the pipeline. However, as the construction crews will pass along the pipeline, noise effects will mostly be an intermittent effect, rather than an effect throughout the construction period. The exception to this is at the AGI construction sites and special crossings, where works will take longer.

The assessment considered the effects of noise and vibration generated during the construction, operation and decommissioning of the Onshore Scheme. Noise and vibration effects are primarily associated with the construction and decommissioning of the Onshore Scheme, with operational effects limited to the Barmston Pumping Station. There will be no constant operational noise and vibration effects from the Pipeline, PIG Trap, Camblesforth Multi-junction or the three Block Valve sites. There will however be potential noise effects as a result of occasional venting at the AGIs, required to allow routine maintenance.

The potential effects of construction noise have been minimised by avoiding residential areas as far as possible during pipeline routeing and the careful routeing of construction traffic, working hours and the application of noise thresholds. The following sections summarise how noise from the Onshore Scheme will be minimised and how consultation responses have been taken into account in determining mitigation measures.

The working hours included in the first draft of the DCO and assessed as part of the EIA limited construction work between the hours of 07:00 and 19:00 from Monday to Saturday and between 07:00 and 17:00 on Sundays and Bank Holidays except in the event of an emergency, or unless otherwise agreed in writing by the relevant local planning authority. These construction hours will enable the construction of the Pipeline during one pipeline construction ‘season’ (April to September) reducing the risk for construction to span two seasons leaving land temporarily sterilised over the winter months and creating additional disturbance.

Concerns were raised however by ERYC over the construction hours at the Pumping Station at Barmston due to the increased build time of 24 months and the low background noise levels in the area. ERYC recommended 08:00-18:00 Monday-Friday and Saturday mornings 07:00 to 13:00 with no working on Saturday afternoons 13:00 to 19:00, Sundays or bank holidays. To address the concerns raised National Grid revised the working hours so that except in the event of an emergency or unless otherwise agreed in writing by the relevant planning authority, construction work must only take place between the hours of 07:00 and 19:00 from Monday to Saturday and between 07:00 and 17:00 on Sundays and Bank Holidays except that during the winter months (October to February) construction work at the Barmston Pumping Station must only take place between the hours of 08:00 and 18:00 from Monday to Saturday; and may not take place on Sundays or Bank Holidays. The working hours are secured through Requirement 15 in the final draft of the DCO (Document 3.1, Revision G).

Commitments are made in the final draft of the DCO (Document 3.1, Revision G) to limit the working hours in many areas and to limit the maximum noise levels allowed over the working day at the nearest noise sensitive receptor. Originally the limits included and assessed as part of the EIA were 70dB LAeq, 12h for normal daytime operations (Monday to Friday), reducing to 65dB LAeq, 12h between the hours of 19.00 and 23.00 hours with a limit of 55dB LAeq, 1h between 23.00 and 07.00 hours. However following consultation with both SDC and ERYC on the draft DCO concerns were raised by both Local Authorities over the thresholds proposed due to the low background noise levels in the area noting that 65-45dB(A) may be a more appropriate range. To address concerns raised the limits were reduced. The limits, which are therefore secured through Requirement 15 in the final draft DCO (Document 3.1, Revision G), are set out in Table 5.2 below.

Table 5.2: Construction Noise

Effect assessment period		Construction noise threshold (at the nearest façade)
Day of week	Time of day	SPL, dB LAeq,T
Mondays – Fridays	07.00 – 19.00	65
Saturday	07.00 – 19.00	65
Monday – Saturday	19.00 – 23.00	55
Sundays and Bank Holidays	07.00 – 19.00	65 in respect of pipeline construction works; 55 in respect of – AGI construction works; and Construction work related to the crossing of the River Ouse in the areas delineated as “pipeline envelope temporary construction area 4” on onshore scheme map 1

Effect assessment period	Construction noise threshold (at the nearest façade)
	of 10 of figure 3.2 of the onshore scheme description (given application document reference 6.3) of the environmental statement.
	19:00 – 23:00
Each day	23:00 – 07:00
	55
	45

In addition to working hours and to ensure the noise thresholds outlined above are achieved, additional noise mitigation measures set out in Section 7 of the CoCP (Document 7.5, Revision E) will be implemented, as necessary, throughout the construction of the Onshore Scheme.

Operational effects are limited to the Barmston Pumping Station as there are no operational noise sources from the Pipeline, PIG Trap, Camblesforth Multi-junction or the three Block Valve sites. To ensure operational noise will be controlled a limit has been set by Requirement 15 of the final draft DCO (Document 3.1, Revision G) that when fixed plant / machinery located at Barmston Pumping Station operates the rating noise level at the property located at national grid reference 515432, 461508 (Rose Cottage), being the nearest existing receptor, for that permanent fixed plant /machinery will not exceed 26.7 LA90,T, being the lowest background noise level recorded in July 2013 at that property.

During the operation of the Onshore Scheme, venting is required at the PIG Trap, Multi-junction, Block Valves and Barmston Pumping Station for both the maintenance of AGIs and planned internal inspections of the Pipeline. To ensure the control of noise during the venting periods limits have been placed on the noise threshold at the nearest noise sensitive receptor. These are secured through Requirement 24 (venting for AGI maintenance) and Requirement 25 (venting for pipeline inspections) of the final draft DCO (Document 3.1, Revision G). In addition Requirement 26 of the final draft DCO (Document 3.1, Revision G) sets out the process which needs to be undertaken to notify residents that would experience noise levels above 60 dB(A) LAeq, 1hr and users of a public right of way or other public highway that are likely to experience noise levels above 70dB(A) LAeq, 1hr during venting operations.

5.3.3 Surface Water and Flood Risk

The Water Resources and Flood Risk Assessment (FRA) are presented in Document 6.6 and the standalone Flood Risk Assessment is presented in Document 5.2 of the DCO application.

The EIA considered the effects of the Onshore Scheme on surface water resources, including commercial fisheries, drinking water abstractions, and water dependent nature conservation sites.

The potential for effects on water resources is greatest during the construction of the Onshore Scheme. This is mainly due to the risk of pollution during the construction stage, where construction activities are in close proximity to watercourses or at one of the 142 watercourse crossings the Cross Country Pipeline is required to make, or where agricultural drains have to be re-routed. Pollution of watercourses could also result in secondary effects on commercial fisheries, water supplies and water dependent nature conservation sites.

Once operational, the effects of the Cross Country Pipeline are reduced, although there remains the potential for adverse effects associated with the AGIs as a result of new hardstanding areas that increase surface water runoff rates.

Flood risk has been assessed along the Onshore Scheme and has considered the existing risk of flooding from rivers and ordinary watercourses crossed by and close to the Onshore Scheme as well as temporary and permanent risk of flooding as a result of hardstanding areas for temporary construction facilities and the permanent footprint of the AGIs.

The EA, SDC, ERYC, NE, IDB and the CRT were all consulted during the development of the EIA and feedback was taken into account in the development of mitigation measures. A summary of consultation responses, and an explanation of how feedback has been taken into account, is provided in Table 6 of Document 6.6.

For surface water quality, construction work will be undertaken in accordance with Section 9 of the CoCP (Document 7.5, Revision E) and Requirement 9 of the final draft DCO (Document 3.1, Revision G) and appropriate method statements, and consents/ licenses obtained from environmental regulators including the EA. Good Practice will be implemented in accordance with the most up to date guidance at the time of construction. Mitigation measures will be implemented to:

- Manage the generation of runoff containing mud and silt
- Ensure suitable storage and spillage emergency response is in place
- Control the use of herbicides during site clearance
- Manage waste water disposal
- Re-route and reinstate agricultural drainage
- Preventing debris entering temporary or permanent drainage systems
- The storage of materials or spoil within the flood plain will be avoided where possible
- Or alternatively gaps will be left in linear stores.

Twelve watercourses, including all but one of the WFD watercourses (Bracken Beck), will be crossed using non-open cut techniques without the need to dig a trench, these are listed in Document 6.3.1.

The Main Work Contractor will be required under the Main Works Contract to develop and keep updated a project specific Water Management Plan and a Pollution Prevention and Control Plan in accordance with Requirement 9 of the final draft DCO (Document 3.1, Revision G). There is a requirement for these plans to be approved by the relevant planning authority in consultation with the EA and the construction works must be carried out in accordance with the approved plans.

During operation the potential remains for adverse effects associated with the AGIs as a result of new hardstanding areas that increase surface water runoff rates. A detailed drainage design for each site, needs to be produced and approved by the relevant planning authority in consultation with the Environment Agency, prior to commencement of construction and the method of drainage must be designed in accordance with the principals set out in the SuDS Manual (CIRIA 2007). Hard engineering solutions should only be used when SuDS measures have been ruled out and this process should be documented. The surface water drainage for each AGI should be designed to discharge to one of the following listed in order of priority:

- An adequate soakaway or other infiltration system
- A watercourse
- A sewer.

There must be no increase in surface water runoff from any of the AGI sites as a result of the Onshore Scheme development. As the existing sites are permeable, runoff rates from the current site would equate to the 'Greenfield runoff rate'. This should be achieved through provision of sufficient storage and

attenuation. The drainage should also be designed to ensure that there is sufficient attenuation and long term storage to accommodate a 1 in 30 year storm within the drainage network.

At AGIs there will be no ground raising on site associated with the Onshore Scheme however, critical infrastructure within instrument buildings will be raised. The levels to which the critical infrastructure needs to be raised at each of the AGIs are included in FRA (Document 5.2).

5.3.4 Geology

The Geology, Hydrogeology and Ground Conditions assessment is presented in Document 6.7 of the DCO application.

The EIA considered the potential for any existing ground contamination to affect the Onshore Scheme as well as the potential effects of the Onshore Scheme on the soils, geological and hydrogeological characteristics within the Onshore Scheme area.

Potential effects that could occur during the construction phase are those associated with spillages and leaks of fuel and chemicals during the operation of construction plant, degradation of soil quality during the handling and movement of soils, as well as dewatering affecting groundwater levels. Other effects may occur from the use of herbicides during site work used to inhibit the growth of vegetation.

Effects during the operational phase of the Onshore Scheme are limited to the operation of Barmston Pumping Station and associated with the storage of fuel and chemicals at the site.

The main mitigation measure to prevent adverse effects on soils, geology and hydrogeology during all phases of the development of the Onshore Scheme is to ensure good site practice and management. These good working practices are set out in Section 13 and 14 of the CoCP (Document 7.5, Revision G) which is secured through Requirement 14 of the final draft DCO (Document 3.1, Revision G).

5.3.5 Socio-economic

The Socio-economic assessment is presented in Document 6.15 of the DCO application.

The presence of construction traffic and the construction activity itself could potentially deter local people from using local facilities, particularly where roads are busier than normal.

Potential effects on local businesses located along the main access routes could result from traffic disruption, which may lead to local people and visitors avoiding travelling to local amenities and community facilities including shops, restaurants and cafes and tourism and recreational facilities due to severance and increased journey times. However, this would be only a temporary, localised effect during the construction phase, rather than a permanent increase in traffic, which means the overall magnitude of effects, will be low. Residents could also experience increased journey times on commutes to work places and schools and nurseries. Schools and nurseries are receptors of high sensitivity due to high socio-economic value and limited capacity to absorb change.

There is the potential for disruption of access to, or use of, Barmston Beach during the landfall works. A section of the beach at Barmston Sands of up to 200m in length will be closed for around six months to allow the construction of the landfall, joining the Cross Country Pipeline with the Offshore Pipeline.

Mitigation measures set out in Sections 2 and 6 of the CoCP (Document 7.5, Revision E) will ensure socio-economic effects are minimised during the construction of the Onshore Scheme.

5.3.6 Transport

The Traffic Transport and Access Assessment is presented in Document 6.14 of the DCO application.

The main approach to minimising any effects is the short duration of the construction period, which will endure for one pipeline construction season (April to September inclusive). The increases in construction traffic will not be constant for the whole of this period, as construction activities will move up the pipeline route. However, there will be areas where there is a higher concentration of construction traffic at static sites which include the AGIs and construction compounds.

During the operation of the Onshore Scheme none of the AGIs will be manned and traffic movements associated with the maintenance and operation will be minimal and mostly result in Light Good Vehicle (LGV) trips.

Section 6 of the CoCP (Document 7.5, Revision E) identifies the main principles to be applied to the management of traffic throughout the duration of the construction period, one of which will be to require the Contractor(s) to develop a Traffic Management Plan. This is secured through Requirement 18 of the final draft DCO (Document 3.1 Revision G). This plan will include a strategy for traffic management and measures for informing construction traffic of local access routes, road restrictions, any timing restrictions, and where access is prohibited. It will also include a mechanism for responding to traffic management issues arising during the works (including concerns raised from the public) including a joint consultation approach with relevant highway authorities.

5.3.7 Landscape

The Landscape and Visual Assessment is presented in Document 6.11 of the DCO application.

The Landscape and Visual Amenity (LVIA) assessment considered the; Landscape effects of the Onshore Scheme; how it could change the character and quality of the landscape resource and how it is experienced Visual effects of the Onshore Scheme; how it could change views which are experienced, people's perception and their response to changes in visual amenity.

The scope of the LVIA was agreed in consultation with relevant statutory consultees, comprising: NE, EH, Forestry Commission (FC), NYCC, SDC, ERYC, and PINS, though no comments were received from the FC.

The presence of the AGIs in a rural landscape has the greatest potential to affect the landscape character and visual amenity of the study area. The siting of the AGIs has taken this into account where possible. The Pumping Station at Barmston is the largest AGI and for operational reasons it must be sited at the coast which tends to be more open, with fewer tall trees and limited scope to use natural landform to avoid effects. It therefore has the greatest potential to affect the landscape.

Construction works are temporary, although a small number of mature trees will need to be removed which has some potential to cause localised landscape and visual effects.

In order to minimise effects to the landscape and visual receptors the Onshore Scheme has been carefully routed to avoid a number of important receptors. For example, this includes avoiding all areas of woodland along, minimising the removal of mature trees and avoiding trees with existing preservation orders and locating the Pipeline away from settlements.

A range of primary and secondary measures are included in the final draft DCO (Document 3.1, Revision G) to mitigate the impacts of the Onshore Scheme. The mitigation strategy is based on the following objectives:

1. To avoid impacts where possible through considered alignment of the Onshore Scheme
2. To seek opportunities for landscape reinstatement and enhancement
3. To integrate proposed above ground elements into the landscape through responsive design

Reinstatement of farmland will ensure that the long-term landscape and visual effects of the Pipeline are minimal. All reinstatement planting (hedgerows and trees) will be carefully designed to ensure it blends in with adjacent vegetation. Four trees will be planted for every mature tree removed and smaller trees will be replaced on a one-for-one basis. All trees and hedgerows will be maintained for five years following construction to ensure they have the best chance of establishment.

The AGIs have been sited to avoid locations which are prominent within the landscape and utilising existing locations in close proximity to areas of woodland and or locally enclosed topography. In addition visual screening landscape planting at each of the AGI sites will help to integrate them into the landscape setting in the medium to long term and provide landscape enhancement. The landscape planting at each AGI with the exception of the Pumping Station will be implemented in accordance with the following plans:

- Drax PIG Trap 10-2574-PLN-01-0327 A (Document 2.23)
- Camblesforth Multi-junction 10-2574-PLN-01-0328 B (Document 2.30)
- Tillingham Block Valve 10-2574-PLN-01-0329 A (Document 2.37)
- Dalton Block Valve 10-2574-PLN-01-0331 A (Document 2.44)
- Skerne Block Valve 10-2574-PLN-01-0330 A (Document 2.51).

The design of the Barmston Pumping Station comprises of an architectural response to the character of the local landscape setting so that it integrates with the local landscape and minimises any urbanising influence on the surrounding landscape. The Pumping Station must be designed in accordance with the Barmston Pumping Station Parameter Plan 10-2574-PLN-01-0346 Rev B and in accordance with the principals of Chapter 8 of the Design and Access Statement (Document 7.3). These are secured through Requirement 5 of the final draft DCO (Document 3.1, Revision G).

5.3.8 Ecology

The Ecology and Nature Conservation Assessment is presented in Document 6.9 of the DCO application.

An ecological assessment has been undertaken to identify and assess the potential construction and longer term effects resulting from the Onshore Scheme on ecological receptors (designated sites, species and habitats). The assessment identified all valued ecological receptors and the effects of the Onshore Scheme, and in turn outlined appropriate mitigation and compensation measures to avoid, reduce or offset potential adverse effects. Where opportunities existed, measures to provide beneficial effects were also identified.

The assessment was based on initial desk-based studies followed by the completion of a series of habitat and species surveys undertaken since early 2012 to identify key ecological features. The ecological

baseline condition upon which the assessment was based was formulated by the outcome of these two stages.

The Onshore Scheme has been routed and designed to avoid or minimise potential effects on statutory and non-statutory designated sites. There are two statutory designated sites that cannot be avoided by the Onshore Scheme. The River Hull and Headwaters SSSI is crossed at two locations, however as set out in Section 10.3.17 of the CoCP (Document 7.5, Revision E) this will be crossed using a non-open cut technique thereby avoiding any direct effects on this site. This is secured through Requirement 14 of the final draft DCO (Document 3.1, Revision G). The Hudson Way Local Nature Reserve (LNR) is also crossed by the Onshore Scheme, however temporary habitat loss will be minimised and any habitats affected promptly reinstated.

The Onshore Scheme crosses a variety of habitats ranging from arable and improved grassland, to scattered scrub and trees. During the construction of the Onshore Scheme habitat will be temporarily lost to facilitate the installation of the Pipeline. However following installation these habitats will be fully reinstated. At AGI locations areas of habitat will be lost, however areas of new habitat will be created within the planting areas including new sections of hedgerow and areas of scrub and tree planting.

In addition to habitats baseline surveys identified a number of legally protected faunal species including badger, bats, otters, great crested newt, reptiles and breeding and wintering birds. Mitigation measures include appropriate timing of the works, prompt reinstatement, landscape planting and limited night time working and appropriate lighting designs.

Further ecological surveys will be conducted prior to the Main Construction Works as required to inform applications for protected species licences and as set out in Requirement 7 of the final draft DCO (Document 3.1, Revision G, Schedule 3). The need for additional licences for bats and badger will be reviewed at that stage. Surveys will also inform the preparation of method statements for construction activities in the vicinity of SSSIs (for example River Hull and Kelk Beck part of River Hull Headwaters SSSI) and in the vicinity of non-statutory designated Local Wildlife Sites.

The MWC will be required under the Main Works Contract to carry out construction activities in accordance with a Scheme of Ecological Mitigation and Reinstatement containing, as relevant, the survey results and ecological mitigation measures for species and habitats that are not subject to the need for a licence, and which are included in the Environmental Statement as set out in Requirement 8 of the final draft DCO (Document 3.1, Revision G Schedule 3). The Scheme of Ecological Mitigation and Reinstatement will cover the measures listed in Section 10.3.3 of the CoCP (Document 7.5, Revision E).

5.3.9 Archaeology

The Archaeology and Cultural Heritage Assessment is presented in Document 6.10 of the DCO application.

The archaeology and cultural heritage assessment considered physical effects on archaeological features as a result of construction and effects on the setting of heritage assets. Physical effects, either complete or partial loss of a feature, were considered on all assets which lie completely and/or partly within the Onshore Scheme. Setting effects were also assessed for those assets where the Onshore Scheme, in particular the AGIs, may affect their heritage setting.

Desk based research and archaeological fieldwork identified 1,433 heritage assets in the Onshore Scheme study area dating from prehistoric through to modern periods. Early consultation with stakeholders such as

English Heritage, close working with the design team and the completion of non-intrusive surveys (site walkover and geophysical survey of the route) have resulted in a large number of archaeological assets being avoided through careful routeing. However it was not possible to avoid all identified assets and the installation of the Onshore Scheme will result in effects on a number of assets including an Iron Age ladder settlement, two deserted/shrunken medieval villages, a Roman roadside settlement, a possible prehistoric settlement and two areas of possible Roman pottery production.

Mitigation measures will be employed during the construction of the Onshore Scheme to minimise effects. Measures will include archaeology evaluation, full excavation and archaeological watching brief.

Archaeological WSI will be submitted to and approved by the relevant planning authority (in consultation with the planning archaeologists at ERYC and NYCC and English Heritage (now Historic England), as appropriate) in advance of works commencing as set out in Requirement 12 of the final draft DCO (Document 3.1, Schedule 3). The WSI shall identify areas where a programme of archaeological investigation (evaluation, mitigation, excavation, built heritage recording and watching brief) is required, and the measures to be taken to protect or preserve in situ or by record any significant archaeological remains that may be found. Any archaeological investigations or watching briefs must be carried out in accordance with the approved WSI.

5.3.10 Survey background data

Baseline environmental survey data used to inform both the design of the Onshore Scheme and the EIA is set out within Chapter 6 of each of the technical chapters of the ES. The environmental baseline was established using both desk based data sources and site survey data. Table 5.3 below references where site survey data is presented in the application documents.

Table 5.3: Survey Data

EIA Chapter	Survey Data
Water Resources and Flood Risk	Baseline Conditions Chapter 6 of Document 6.6 Water Quality Baseline Data Document 6.6.5
Geology Hydrogeology and Ground Conditions	Baseline Conditions Chapter 6 of Document 6.7 Report on Ground Investigation Report No 762402 Document 6.7.1 Report on Ground Investigation Report No. 762402/T2 Document 6.7.2 Report on Ground Investigation Report No. 762402/RVX-4 Document 6.7.3 Report on Ground Investigation Report No. 762402/RLX-3 Document 6.7.4 Report on Ground Investigation No. 762402/RLX-5 Document 6.7.5 Report on Ground Investigation Report No. 762402/RVX-6 Document 6.7.6 Report on Ground Investigation Report No. 762402/L Document 7.6.7
Land Use and Agriculture	Baseline Conditions Chapter 6 of Document 6.8
Ecology and Nature Conservation	Baseline Conditions Chapter 6 of Document 6.9 Hedgerow Survey Report Document 6.9.3 Badger Survey Report Document 6.9.4 Great Crested Newt Survey Report Document 6.9.5 Bat Survey Report Document 6.9.6 Otter and Water Vole Survey Report Document 6.9.7 Reptile Survey Report Document 6.9.8 Ornithological Report Document 6.9.9 Barn Owl Report Document 6.9.10

EIA Chapter	Survey Data
	Barmston Landfall Intertidal Survey Report Document 6.9.11
Archaeology and Cultural Heritage	Baseline Conditions Chapter 6 of Document 6.10 Geophysical Survey Document 6.10.5
Landscape and Visual	Baseline Conditions Chapter 6 of Document 6.11 AGI ZTVs Document 6.11.5
Air Quality	Baseline Conditions Chapter 6 of Document 6.12
Noise and Vibration	Baseline Conditions Chapter 6 of Document 6.13 Noise Survey and Results (Document 6.13.3)
Traffic Transport and Access	Baseline Conditions Chapter 6 of Document 6.14 Automated Traffic Count Data Document 6.14.2
Socio-economics Recreation and Tourism	Baseline Conditions Chapter 6 of Document 6.15 Beach User Report (Document 6.15.1) Statistics (Document 6.15.3)

5.3.11 Other Consents

The project will be subject to specific Requirements set out in Schedule 3 of the DCO. During determination, following grant of the DCO and prior to the commencement of construction, National Grid will obtain a number of consents. The Planning Act 2008 provides the statutory powers pursuant to S.120 and 150 for development consent orders to apply modify or exclude a statutory provision and consents to be included within the decision on a DCO. The consents that are being sought both within and outside of the DCO are listed in Appendix C of the Construction Report (Document 7.6).

5.3.12 Key Consultees

Consultation has been undertaken throughout the development of the Onshore Scheme and EIA. Consultation feedback has informed both the design of the Onshore Scheme and the development of mitigation measures. The key consultees that are relevant to each EIA chapter are listed in Table 5.4 below.

Table 5.4: Key Consultees

EIA Chapter	Key Consultees during the development of the EIA
Water Resources and Flood Risk	Environment Agency Internal Drainage Boards (Selby, Ouse and Humber, Beverley and North Holderness) Natural England Selby District Council East Riding of Yorkshire Council Canal and Rivers Trust Marine Management Organisation Yorkshire Water
Geology Hydrogeology and Ground Conditions	Environment Agency Natural England Selby District Council East Riding of Yorkshire Council
Land use and Agriculture	-
Ecology and Nature Conservation	Environment Agency

EIA Chapter	Key Consultees during the development of the EIA
	Forestry Commission Marine Management Organisation Natural England Yorkshire Wildlife Trust Selby District Council East Riding of Yorkshire Council
Archaeology and Cultural Heritage	Historic England (formally English Heritage) Humber Archaeology Partnership North Yorkshire County Council
Landscape and Visual	North Yorkshire County Council Selby District Council East Riding of Yorkshire Council Natural England Historic England (formally English Heritage) Forestry Commission
Air Quality	Selby District Council East Riding of Yorkshire Council
Noise and Vibration	Selby District Council East Riding of Yorkshire Council
Traffic Transport and Access	Highways England (formally the Highways Agency) North Yorkshire County Council East Riding of Yorkshire Council
Socio-economics and Recreation and Tourism	North Yorkshire County Council East Riding of Yorkshire Council Ramblers Association Visit Hull and East Yorkshire

Prior to and during the construction of the Onshore Scheme there is a requirement to agree certain plans with the relevant planning authorities in order to discharge a number of the DCO Requirements, some of which in turn require consultation with other stakeholders. These stakeholders include the relevant Highway Authority (HA), EA, NE, County Archaeologist and the MMO. Where the relevant planning authority is required to consult with one of these organisations in discharging a Requirement, this is stated in the relevant Requirement.

5.3.13 Development of the Order Limits (also known as Red Line Boundaries) (has the location/route/RLB changed as result of environmental process)

The Onshore Scheme has developed over time and the consideration of alternatives has responded to the completion of environmental and engineering studies, feedback from consultation and other external factors.

The Development of the Onshore Scheme is illustrated on Figure 1.1 in Chapter 2 of the ES, Onshore Scheme Development and Alternatives (Document 6.2). The Onshore Scheme has evolved from Strategic Options in early 2011 through to the Proposed Scheme published as part of the DCO Application in June 2014.

Three Strategic Options were considered, and these are described in Section 2.1 of Document 6.2 and the Strategic Options Appraisal Report, June 2011 is presented in Document 7.8.1. The Area of Search, covering all three Strategic Options, contained numerous environmental constraints. Direct effects on these constraints were largely avoided by careful routeing. Environmental effects are also a factor of route length and longer routes carry potential to affect a greater number of receptors, even if in each case the nature and magnitude of effects may be similar. As a result the potential for significant environmental effects was considered likely to be lower on the Northern Strategic Routeing Option than the other two options.

Following the appraisal process the Northern Strategic Routeing Option was considered to be most preferable option for the following reasons:

- The lowest likelihood of significant effects on the environment
- The lowest resource requirements, during both construction and operation
- The fewest potential effects on the agricultural resource
- The least complex to construct and operate in health and safety terms
- The most likely to be delivered most quickly and at the lowest capital cost.

In addition, the Northern Strategic Routeing Option was considered in the Strategic Options Appraisal (Document 7.8.2) to offer good future connectivity to the Aire Valley power stations and could ultimately be suitable to become an integral part of a wider CCS network serving the Yorkshire and Humber Region.

Following the selection of the preferred Strategic Option a Route Corridor Study was undertaken to identify potential route corridor options. The Route Corridor Study is described in Sections 2.2-2.4 of Document 6.2 and the Route Corridor Study Report, November 2011 is presented in Document 7.8.2. The Route Corridor Study took into account the following environmental and engineering principles, as follows:

- Where practicable, statutory and non-statutory designations were avoided. Where it was not possible to avoid such features, mitigation measures would be implemented
- Potentially difficult construction areas, such as side slopes, solid rock strata, and complex river crossings were avoided wherever practicable. Where practicable, the Route Corridor Options traversed steep slopes directly, because construction on severe side slopes has associated health and safety/engineering implications associated with stability of construction machinery, and would require significant benching earthworks to create a safe working area
- To reduce the head pressure from CO₂, the Route Corridor Options routeing sought to minimise changes in elevation
- The Route Corridor Options routeing sought to allow crossing points, such as rivers, major roads, railways, sub-sea pipelines and sub-sea cables were designed to be crossed at right angles, so far as was practicable
- Safe access for construction
- Adherence to separation distances
- Ease of access (i.e. near to / access from a public road, connecting road network suitable for HGVs)
- Avoidance, as far as possible, of centres of population and close proximity to other buildings or dwellings.

The Draft Route Corridor Study was consulted on as part of the Stage 1 Consultation and the Preferred Route Corridor as set out in the Preferred Corridor Report (Document 7.8.3) was announced in November 2011.

Following the identification of the Preferred Route Corridor AGI Site Option Appraisals were undertaken to identify potential site locations for the AGIs. The AGI Site Options Appraisal is described in Section 2.5-2.7 of Document 6.2 and presented in the following documents.

- Compressor Site Options ³ Appraisal Report June 2012 (Document 7.8.4)
- Block Valves Site Options Appraisal Report June 2012 (Document 7.8.5)
- Pumping Station Site Options Appraisal Report (Document 7.8.6).

Siting considerations were similar to the environmental, socio economic, technical and routeing considerations used for the Route Corridor Study, but in addition the following considerations were also used:

- Capacity to accommodate required land take
- Ease of access (i.e. near to / access from a public road, connecting road network suitable for HGVs)
- The avoidance, as far as possible of centres of population and close proximity to other buildings or dwellings (i.e. separation distance)
- Inconspicuous location (where possible) , taking account of possible visual effects / screening compatibility
- Avoidance, where possible of identified environmental features / designations
- Most viable location to accommodate alignment / routeing of a pipeline with the Preferred Route Corridor
- Generally level site to accommodate a possible installation/facilities required
- The avoidance, as far as possible, of difficult ground conditions (working in rock, peat alluvium, evidence of subsidence / mineral extraction); construction areas side slopes, gradients
- Avoidance, where possible, of areas of potential flood risk
- Access to telecommunications and electricity supply (line of sight for communications satellites).

Alongside the AGI Site Options Appraisals architectural responses were developed for a Compressor Station ⁴ and a Pumping station. Three Options were produced:

- Option 1 – Farmstead – a conceptual approach appropriate for an agricultural or residential setting
- Option 2 - Contemporary – a conceptual approach appropriate for a more industrial/urban setting
- Option 3 – Landscaped – a conceptual approach for a more sensitive environmental setting.

The AGI Option Appraisal Reports and the three architectural options were consulted on during the Stage 1A Consultation. The Above Ground Installations Preferred Options Report (Document 7.8.8) was published in October 2012.

In parallel with the AGI siting studies further technical and environmental investigations and surveys, including protected species surveys and geophysical surveys, were undertaken within the Preferred Route Corridor to develop a potential area within which the Pipeline would eventually be routed. This process ensured, for example, that wherever practical, appropriate buffers were maintained between the area within which the Pipeline would eventually be routed and known Great Crested Newt Ponds, Badger Setts, and that the area avoids known archaeology and other sensitive receptors. The outcome of these surveys was used to develop a refined route to identify a Preferred Onshore Scheme.

The Preferred Onshore Scheme is described in Section 4 of Document 6.2 and the Preferred Scheme Report is presented in Document 7.8.14. This formed the basis of the Statutory Stage 2 Consultation.

Feedback from the Stage 2 Statutory Consultation resulted in changes to the location of the Pumping Station, these are described in Section 4.3 of Document 6.2. In addition to these changes, further environmental and technical survey work continued, including drainage surveys, and these resulted in the

³ Please refer to Sections 1.3.8 and 2.9.2-2.9.3 of Chapter 2 Onshore Scheme Description and Alternatives of the ES (Document 6.2)

⁴ Please refer to Sections 1.3.8 and 2.9.2-2.9.3 of Chapter 2 Onshore Scheme Description and Alternatives of the ES (Document 6.2)

boundary of the Onshore Scheme being further refined, whilst remaining within the limits that were consulted upon during the Stage 2 Consultation to the Proposed Scheme published as part of the DCO Application in June 2014. The Proposed Scheme is described in the Proposed Scheme Report (Document 7.8) and Chapter 3 of the ES, Onshore Scheme Description (Document 6.3).

5.4 Offshore Transport and Storage Environmental Information

5.4.1 Environmental Information

The key areas identified by the screening, mentioned in Section 5.2.2, for further assessment by the screening were: atmospheric emissions, physical disturbance, physical presence, discharges and waste, noise and accidental events. Assessment summaries for these are given below.

Additionally, a number of existing, proposed and reasonably foreseeable projects or activities for which there is a possible interaction with the Offshore Scheme were identified and subject to cumulative effects assessment. A set of criteria determining the magnitude and significance of effect were developed and presented in the scoping document and were used to consider the potential effects of the Offshore Scheme. More detail is provided in Sections 5 and 6 of the Environmental Statement.

5.4.2 Atmospheric Emissions

Gaseous emissions associated with activities to be undertaken during the development of the Offshore Scheme would contribute to atmospheric Greenhouse Gas (GHG) concentrations (which primarily includes CO₂), regional acid loading and tropospheric ozone, which are related to both global climate change and air quality effects. Predicted effects from climate change include, amongst other things, an increase in global temperature and potentially more frequent extreme weather events.

The principal GHG of concern is CO₂ as it constitutes both the largest component of global combustion emissions (in 2014 CO₂ from UK sources is provisionally estimated to have comprised 82% of all UK GHG emissions at 422 million tonnes) and remains in the atmosphere for a long time such that emissions made today continue to contribute to global warming effects for some time. Emissions metrics were used to estimate the quantity of greenhouse and other gases which could be produced during the installation and operation of the Offshore Scheme and their relative contribution to atmospheric GHG loading (CO₂ equivalent emissions).

The principal source of emissions from the Offshore Scheme are those associated with installation activities (e.g. pipelay, drilling of injection wells), with some operational emissions from diesel combustion on the Normally Unattended Installation (NUI) and regular maintenance and bunkering trips. These emissions would be small when compared to other sources of emissions on the UKCS and would be negligible in the context of the captured emissions which will be transported and stored at the site annually. The total estimated CO₂ associated with installation of the Offshore Scheme are approximately 59,100 tonnes CO₂ equivalent. Operational emissions are estimated to be approximately 600 tonnes CO₂ equivalent per year or 11,800 tonnes for the first phase. There would be some minor fugitive emissions and occasional venting of small quantities of CO₂ during system maintenance.

Additionally, to provide an indication of the relative emissions associated with the construction and operation of the Offshore Scheme in the context of captured emissions, a partial life-cycle assessment considered wider project emissions sources such as from the quantity of steel and concrete expected to be used to construct and install the pipeline, NUI, wells and all installation and operational combustion

emissions. In the context of wider UK emissions these emissions and any related effects are considered to be negligible and of low significance, and there would be a positive effect when considering wider project aims to transport and store CO₂ in the long-term.

5.4.3 Physical Disturbance

Physical disturbance of the seabed will be generated from a number of installation activities including from the intertidal cofferdam and nearshore pipeline trench, seabed pre-sweeping, and the placement of the jack-up rig and installation of the Endurance NUI. Potential effects initially identified include interactions with coastal processes, benthic fauna effects on habitat, and interactions with submerged cultural heritage.

5.4.3.1 Geology

The offshore pipeline route was subject to initial desk-based study to determine any potential environmental and other constraints on routeing (including other users and seabed features). This study led to the generation of a series of optimised routes influenced by geology and geomorphology (e.g. shallow subcropping or outcropping bedrock and the large sand ridges of the Sand Hills) and other considerations (e.g. existing pipelines, abandoned wells, the location of the Hornsea Round 3 wind zone, and chartered wrecks). The final chosen route was subject to a series of surveys designed to understand the nature of the seabed (physical and ecological), shallow geology, and to detect the presence of any obstructions, including wrecks.

5.4.3.2 Substrates and Coastal processes

A combination of the location of the landfall and expected longshore transport rates at that location, the proposed timing (summer months) and duration of the installation activities (approximately six months), and the potential loss of excavated sediment in the context of wider annual inputs to the sedimentary system along the Holderness coast, indicates that effects are likely to be negligible. Desk-based study of historical trends in beach and cliff erosion at the landfall site and projected future retreat rates have been used to inform the beach cofferdam and nearshore trench depth and the landward distance from the cliffs at which the microtunnel shaft will be set. These depths and distances are such that there should be no exposure of the pipeline or microtunnel shaft to coastal processes for the project lifetime. The cofferdam and trenches would be backfilled with excavated sediments.

Further offshore seabed pre-sweeping will be undertaken across larger sandwaves in order to reduce the possibility of freespans occurring on installation, and subsequently from interaction with mobile bedforms. Material will be temporarily stored on a dredging vessel and deposited at a licensed disposal site. Little information is available on the recovery of sandwaves following pre-sweeping activity. However, a study undertaken on the pre-sweeping and trenching of two pipelines in the Dutch sector of the southern North Sea revealed that megaripples had formed within five months of work being completed, with larger sandwaves expected to have a recovery time in the order of four years. The deposit of protection materials to remediate freespans is not expected on installation; however should freespans be observed during subsequent inspection survey, remedial rock placement may be required.

In view of the proposed timing and mitigation for intertidal and nearshore construction (including measures built into project design such as suitable pipeline burial depths and cliff crossing methods), it is considered that there will be a negligible to moderate magnitude of effect, with an associated low level of significance.

5.4.3.3 Potential Sources of Ecological Effect

The effects of seabed disturbance on seabed animals possibly include mortality as a result of physical trauma, smothering by displaced and re-suspended sediment and habitat modification. The benthic communities found along the pipeline route (including the intertidal area) and storage site extend over a wide area of the southern North Sea, although there is local variation associated with sediment type and depth. The duration of effects on benthic community structure are related to individual species' biology and to successional development of community structure. The majority of seabed species recorded from the European continental shelf are known or believed to have short lifespans (a few years or less) and relatively high reproductive rates, indicating the potential for rapid population recovery, typically between one to five years. The species composition and inferred life history characteristics of the seabed communities present in the pipeline and storage areas, indicates they are likely to be relatively resilient to the effects of sediment mobilisation and it is therefore considered probable that both the physical habitat consequences and benthic community effects of physical disturbance of the seabed from pipeline installation, rig and NUI placement activities will fully recover within a five to ten year period, leading to the conclusion that there will be a localised negligible to major (for benthic fauna) level of effect at the seabed with an associated medium level of significance.

5.4.3.4 Cultural Heritage

Although there are relatively few archaeological sites known to be in proximity to the pipeline route or storage site there is the potential to encounter other material associated with recent 19th and 20th century activity and former human occupation of the southern North Sea dating to past glacial periods when sea-levels were lower than present day. Much of the area covered by the pipeline route and storage area does not apparently fit within areas, which are likely to have a good probability of supporting prehistoric remains and material that could be present is likely to be secondarily derived, as the area has been subject to extensive reworking by glacial and marine action. Known locations of heritage features will be avoided by installation activities. Where there are any unexpected finds, these would be reported and treated in keeping with best practice guidance. In view of available mitigation, it is regarded that any effect would be negligible and of low significance.

5.4.4 Physical Presence

Sources of potential physical presence effects were identified for the pipeline and NUI installation vessels, drilling rig, supply and support vessels, and the presence of the subsea pipeline, protection materials (e.g. at pipeline and cable crossings) and NUI through project life.

The sources of effect primarily relate to disturbance of mobile fauna (e.g. birds, marine mammals) during installation and other user concerns (e.g. fisheries, shipping, recreational sailing) due to temporary exclusion from the pipeline route area during installation, and subsequent medium-term (40 years) exclusion within a 500m safety zone around the NUI. There will also be some additional shipping traffic associated with routine maintenance and bunkering operations (approximately once every 6-7 weeks), pipeline inspection (annual or longer) and time-lapse seismic. All of the installation vessels will not be present at the same time and the time to complete the installation is relatively short (six months), taking place during summer months.

5.4.4.1 Potential Sources of Ecological Effect

The distance of the Offshore Scheme activities from relevant seal haulout sites and related conservation sites (Humber Estuary SAC and Wash and North Norfolk Coast SAC), the low number of individual marine mammals likely to be present over the area of the Offshore Scheme at any one time and the limited temporal and spatial footprint of activities are such that effects are considered to be negligible and of low significance for marine mammals in relation to the presence and/or movement of vessels.

The presence and/or movement of vessels during pipelay and NUI installation activities could potentially disturb seabirds foraging from Flamborough Head during the breeding season and into the post-breeding season as activities are proposed to take place in the summer months. Interactions with activities such as preening, bathing and displaying, are not considered likely due to the distance between installation activities and the boundary extension of the Flamborough & Filey Coast pSPA (approximately 8km from the landfall and 4km from the pipeline route). While the mean foraging ranges of many birds (guillemot, gannet, fulmar, kittiwake and razorbill) will bring them either within the pipeline route or NUI location during the installation period, the range of some species is sufficiently large that this may limit their sensitivity to activities. Pipeline installation activities are expected to be comparable to shipping in terms of magnitude for bird disturbance effects due to physical presence, and the species noted above have been judged to have a low to moderate sensitivity to disturbance by shipping traffic. Disturbance effects for alcids from shipping tends to be in the range of hundreds of metres, unlike divers which show avoidance behaviour at more than 1km and shy species such as common scoter which have shown flight responses in large flocks at 2km. Given the absence of such shy species (such as common scoter), particularly during the installation period, effects are considered to be negligible and of low significance.

5.4.5 Noise

Anthropogenic noise in the marine environment is widely recognised as a potentially significant concern, especially in relation to marine mammals. There is increasing recognition that masking (when an extraneous sound covers a desired signal) of communication and echolocation by marine mammals may be a significant mechanism of effect. In addition to sensory mechanisms of effect, it is also possible that physical effects of intense noise (e.g. pile driving) may occur at very close range to the noise source.

The principal sources of noise associated with the installation and operation of the Offshore Scheme are the potential driving of six 55m piles into the seabed using a hydraulic hammer and repeat seismic survey associated with storage site monitoring. Sound propagation modelling was undertaken for both the piling and the monitoring seismic survey. The results indicated sound levels from piling at 500m from the source would be less than 175dB; the seismic survey sound levels at that range were around 190dB.

Sound levels known to cause acute auditory damage and PTS, as determined by Southall et al. (2007), will be very localised to the immediate vicinity (ca. 1m) of the seismic source array or the piling. Given the operational mitigation procedures (see below), exposure of any marine mammals to this sound level is very unlikely. On average, the seismic surveying could theoretically affect around three individual harbour porpoise, if there is no behavioural avoidance or mitigation. The probability of significant numbers of animals belonging to other species within this range is very low, and risks are further reduced by the limited duration and operational mitigation.

There is a larger spatial range of definite audibility, and possible behavioural effect. The ecological significance of these potential effects is unknown, although given recorded population densities in the area

there is at most a possibility of sound pollution levels sufficient to result in behavioural modification of a few tens of individual harbour porpoise, or a small number of individual common dolphins or minke whale. This level and duration of disturbance is very unlikely to have significant effects over an individual lifespan or at a population scale.

The piling and monitoring seismic surveys would be carried out in accordance with established regulatory controls and mitigation procedures including application of the JNCC guidelines including observations by MMOs and use of soft-start procedures. In view of the sensitivities of the area and the mitigation procedures proposed, it is concluded that the activity poses a low risk of significant impact on marine mammals at an individual or population level. Similarly, no effects are predicted on habitats of potential conservation interest in the area. Significant effects on fish ecology, or on fishing activity are considered unlikely. Potential short term disruption to fishing activities will be mitigated by notification and liaison mechanisms. The overall effect of piling and seismic noise is predicted to be negligible and of low significance.

5.4.6 Discharges to Sea

Sources of discharge include drill muds and cuttings, cementing and other chemicals associated with drilling, completion operations, discharges of other commissioning or operational chemicals, and the discharge of saline aquifer water from the Bunter outcrop.

5.4.6.1 Drilling Discharges

The drilling of the three injection wells, which are planned for the Endurance site, will result in sources of discharge into the water column and onto the seabed including chemicals and cuttings. A surface hole will initially be drilled using seawater; the resulting cuttings (rock chips arising from the drilling process) will be deposited on the seabed in the immediate vicinity of the well. These are likely to disperse under the strong tidal currents experienced in this area of the southern North Sea. Lower holes will be drilled using either Water Based Muds (WBM) or Oil Based Muds (OBM). Discharge of the latter is effectively banned, though their use has been selected in this case due to a particular technical requirement relating to the geology of the formations being drilled. Cuttings contaminated with oil based muds are returned to the drilling rig and contained in skips prior to being shipped to shore for treatment and disposal. Estimated OBM cuttings production for one injection well is in the region of 227 tonnes: this would result in a total of approximately one hundred and seventy 4-tonne skips being transferred to shore.

Little or no detectable effects of WBM discharges in shelf waters have been identified across a number of research experiments and other studies. Cuttings deposition modelling was undertaken for the discharge of WBMs relating to all three wells. Discharges from the rig are predicted to disperse over a wide geographical area, but with peak settling rates occur within an oval area orientated northwest to southeast with a maximum deposited load of 0.014g/m², which is well within the natural erosion/deposition rates recorded in the coastal North Sea (20-200g/m²/year). Such levels are considered unlikely to have significant ecological effects through smothering or physical disturbance. The overall effect of such discharges is predicted to be negligible and of low significance.

While some chemicals associated with drilling, commissioning work and the operation of the facility may be discharged to sea; during normal operations there will be little to no continuous chemical use. An initial range of chemicals have been identified at this stage in project planning, and any others that may be selected during detailed design would be chosen based upon their effectiveness and environmental impact

and all would be subject to a chemical risk assessment as part of applications for relevant chemical permits.

5.4.6.2 *Discharge of Saline Aquifer Water from the Bunter Outcrop*

As CO₂ is injected into the storage site and occupies space previously occupied by saline water the pressure within the storage site is expected to increase. The release of this pressure is expected to manifest itself via a flow of saline water from the storage site into the wider Bunter Sandstone formation. To the east of the storage site the Bunter Sandstone outcrops to the seabed and saline water may be released at this point. A peak flow of saline aquifer water of 5,000m³/day has been estimated to be released from the Bunter outcrop for the first phase of storage. Modelling of this discharge was undertaken assuming two scenarios: a diffuse discharge occurs over the main extent of the Bunter sandstone at the outcrop, or a nominal point source discharge at the outcrop. The modelling outputs indicated that in both scenarios the high salinity water would be dispersed into the surrounding seawater and its salinity would rapidly reduce to background concentrations. It was concluded that the overall effect of such discharges, should they occur, is predicted to be negligible and of low significance. It is important to note that no CO₂ will be released at the Bunter outcrop.

5.4.6.3 *Accidental Events*

Two sources of accidental event were identified: hydrocarbon and chemical releases associated with the drilling rig and NUI operation and with CO₂ leaks from the subsea pipeline and store.

5.4.6.4 *Chemicals and Hydrocarbon Releases*

Evaluating spill risk requires consideration of the probability of an incident occurring and the consequences of the impact. The Offshore Scheme pipeline and storage site will contain dense phase CO₂, but with no hydrocarbons expected in the Endurance storage formation. Sources of liquid hydrocarbons associated with the Offshore Scheme would include diesel fuel, helicopter fuel, lube fluid and hydraulic fluids. These hydrocarbons, as with drilling (including organic phase fluid) and other chemicals, are limited in quantity to the inventory contained on the vessels, drilling rig and NUI, in use, or being transferred.

Spills from rigs and support vessels are largely preventable through provision of appropriate equipment, maintenance and training. A number of other mitigation measures will be in place to avoid, as far as possible, spills from storage, bunkering and supply operations, and general rig operations. Such measures may include processes and procedures, storage of hoses in a safe area away from risk of physical damage, inspection of hose couplings, critical valves to be locked and controlled by permit, and general good housekeeping.

Given the nature and quantity of the hydrocarbons that could be spilled and the frequency of previous significant incidents on the UKCS, it is considered a remote likelihood that either a significant spill would occur, or that effects would be greater than negligible in magnitude.

5.4.6.5 *Carbon Dioxide Releases*

The principal sources of leaks from CO₂ transport and storage projects are regarded to be mechanical (e.g. from a pipeline rupture) or geological (e.g. cap rock seal failure).

The risk of any leakage of CO₂ from the storage site is regarded to be low based on the characteristics of the selected site, project design and minimisation of operational risks through maintenance and training. The options assessment for southern North Sea storage sites and the selection of the Endurance storage structure took account of the ability of the store to contain CO₂ in the long-term (e.g. an absence of observed faults penetrating to the top Bunter sand, and further geotechnical and modelling studies). The risk of any containment failure within the injection wells will be minimised through the use of CO₂ resistant cement to secure the lower hole liner. The liner is likely to be constructed of chrome super duplex steel due to its inert nature and resistance to CO₂, however final selection of liner materials will be made during detailed well design. Temperature and pressure sensors will be used to provide feedback on well operation and integrity.

The risk of leakages and ruptures from the subsea pipeline have been minimised in proximity to the platform, a NUI, through pipeline routing and a dropped objects assessment. These low risks can be maintained through operational controls on both platform and jack-up rig crane use, with any unusual loads being subject to individual risk assessment.

Along the pipeline route between the landfall and NUI, pipeline and installation design has reduced potential risks from interactions with other users e.g. through use of concrete coating, appropriate design standards, and burial. The final installed location of the pipeline will also be charted to inform all navigational and other users (e.g. fisheries). The pipeline and installation design have considered potential physical interactions with strong seabed currents and bedforms, to reduce the risk of freespan which could pose both navigational hazards and loss of pipeline integrity. The pipeline will be monitored during operation in terms of flow and physical integrity.

The characteristics and potential effects of CO₂ releases to the water column from pipeline ruptures or longer term chronic releases have been subject to modelling, field and laboratory experiments and comparison with natural CO₂ seeps through a number of research programmes and individual studies. While short-term large scale releases of CO₂ may generate significant changes in seawater pH (up to 1.22 units), recovery is likely to be rapid, with effects highly localised around the release location. Assuming an ambient seawater pH of 8.1, an absolute and highly localised reduction to pH 6.9 is unlikely to elicit long-term responses in most animals, though could generate mortality of some individual animals in proximity to the source.

The presence of strong tidal currents and turbulent waters in this area of the southern North Sea suggests that any short-term leak will be rapidly dispersed and carried away from the release location reducing any longer-term interaction at the site. Longer-term chronic emissions from storage site leaks could produce effects at the seabed and in the water column. However, even under this scenario, the return to normal pH levels in seawater can be expected to occur within days for the pelagic system on cessation of CO₂ entering the environment. Depending on the release rate or flux, such effects may be comparable to those from natural CO₂ seeps, or those which have been assessed in relation to wider ocean acidification.

Set in the context of the wider anthropogenic emission of CO₂ to the atmosphere, any such leak would be minor and the likelihood of chronic uncontrollable releases occurring is considered to be remote.

5.4.7 Socio-Economic

The coastal landscape of this part of the Wolds is highly valued for recreation and landscape value and is a designated Heritage Coast. To the south, the inland area between Bridlington in the north and Hornsea in

the south comprise largely treeless open coastal farmland and a low population density centred on a few small towns and villages (e.g. Barmston). There are two Marine Conservation Zones (MCZs) within the inshore area.

The Holderness Inshore candidate MCZ located 6km to the south of the landfall was recommended for designation by JNCC and Natural England to protect a mixed zone of cobbles, mixed sediment, sand and chalk, alongside patches of peat and clay that provides habitat for bryozoan turf, sponges, crabs and tope, among others. The Holderness Offshore recommended MCZ is located 11.4km offshore of the landfall and 3.5km to the south of the pipeline route, at water depths of 10-50m. Broad scale features of the site include subtidal mixed and coarse sediments, which support infaunal and epifaunal communities of polychaete, bivalve, burrowing amphipod, bloodworm, sea squirt, tube worm and a range of encrusting bryozoans. Additionally, the zone is important for crustaceans including brown crab and lobster which contribute to the significant inshore fishery of this area (see Section 4.15 of the ES). Neither of these MCZs was taken forward for designation in 2013; however the Holderness Inshore MCZ is currently subject to consultation as part of the next tranche of MCZs. For both sites, Defra indicated that there was a need for better understanding of the socio-economic impacts from designation with regard to the renewable energy and fishing sector.

5.4.8 Other Consents

5.4.8.1 Offshore Pipeline

This section sets out the necessary Offshore Consents which would be obtained during the Transport and Storage Project.

Table 5.5: Offshore Pipeline Consents

Title	Consent requirement	Relevant legislation
Pipeline Agreement for Lease	A lease is required to lay, maintain and operate a pipeline within territorial waters. Agreement for Lease provides option for a Lease.	<i>Crown Estate Act 1961</i>
Seaward Exploration Licence (Extension to existing licence for further 3 years from 8 September 2014)	To enable exploration (survey, seismic, shallow drilling etc.) within UKCS	<i>The Petroleum Act 1998 (as amended)</i> <i>The Energy Act 2008 (as amended)</i>
Environmental Statement (ES)	Development - for offshore pipeline (>40km) and Storage site infrastructure, including well drill, pipeline, NUI - all offshore elements up to landfall (mean low water spring tides) It should be noted that one single Environmental Impact Assessment and Environmental Statement will cover both the offshore pipeline and store.	<i>Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended); The Energy Act 2008 (as amended)</i>
Pipeline Works Authorisation (PWA), including Deposit Consent (DEPCON)	Offshore pipeline construction	<i>The Petroleum Act 1998 (as amended)</i> <i>The Energy Act 2008 (as amended)</i> <i>The Marine & Coastal Access Act 2009</i>
Marine Licence	Deposit of any material associated with the pipeline. N.B this consent will only be required if any pre-construction activities become necessary i.e. crossings prior to award of Pipeline Works Authorisation (PWA) / Deposit Consent (DEPCON).	<i>Marine and Coastal Access Act 2009</i> <i>The Energy Act 2008 (as amended)</i>

Title	Consent requirement	Relevant legislation
Consent to locate pipeline (PETS)	Offshore Pipeline	<i>The Energy Act 2008 (as amended)</i>
Pipeline Operation (PETS)	Offshore pipeline - Direction that ES not required and chemical permit.	<i>Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended); The Energy Act 2008 (as amended)</i> <i>Offshore Chemical Regulations 2002 (as amended)</i>
EU ETS	Greenhouse Gas Emissions Permit and Carbon Dioxide Allowances.	<i>The Greenhouse Gas Emissions Trading Scheme Regulations 2005 (as amended)</i>
Notification of intention to construct pipeline (HSE)	Offshore Pipeline Construction	<i>Pipeline Safety Regulations 1996 (Reg 20)</i>
Notification of intention to construct pipeline (DECC)	Offshore Pipeline Construction	<i>The Energy Act 2008 (as amended)</i>

This ES has been submitted to the Secretary of State for Energy and Climate Change in support of a Carbon Storage Development Plan (CSDP), a Crown Estate lease and a permit for the storage of CO₂ in a geological formation, under the Petroleum Act 1998 (as amended) and the Energy Act 2008 (as amended).

Pipeline Works Authorisation

A Pipeline Works Authorisation (PWA), for which an ES is required, must have been issued before construction of a pipeline or pipeline system begins.

In line with the Oil & Gas Authority's (OGA's) guidelines in preparation for submission of the application of the PWA discussions with both the OGA and the HSE have been undertaken to discuss the proposed scheme and the regulatory requirements involved. A draft submission was provided to the OGA on 10 August 2015.

Consent to Locate Pipeline & Pipeline Operation

Both the Consent to Locate Pipeline and Pipeline Operation notifications are electronic notifications submitted via the DECC Portal. Both notifications fall under the Pipeline Works Authorisation and are specifically for developers to notify DECC when they intend to construct the pipeline.

EU ETS

Under the EU Emissions Trading's Scheme (ETS) legislation all relevant installations must be registered with the relevant authority once they are operational. It is important to note however that design should encompass the measurement, monitoring and verification requirements of the EU ETS Directive and associated legislation and regulation.

5.4.8.2 Offshore Storage

The principle offshore storage consent to be obtained during the WR FEED Project is the Storage Permit for the Endurance store. A Storage Permit will be awarded by DECC once a number of component parts have been agreed. These include an ES (in accordance with the EIA guidelines), Carbon Storage

Development Plan, Provisional Monitoring Plan, Provisional Post Closure Plan plus agreement on Financial Securities.

Table 5.6: Offshore Storage Consents

Title	Consent requirement	Relevant legislation
<i>Environmental Statement (ES)</i>	<i>Development - for offshore pipeline (>40km) and Storage site infrastructure, including well drill, pipeline, offshore installation - all offshore elements up to landfall (mean low water spring tides). It should be noted that one single Environmental Impact Assessment and Environmental Statement will cover the offshore pipeline, offshore facilities and Carbon storage activities.</i>	<i>Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended); The Energy Act 2008 (as amended)</i>
<i>Carbon Storage Development Plan</i>	<i>Development: required to carry out storage activities including installation.</i>	<i>The Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 (as amended)</i>
<i>Provisional Monitoring Plan</i>	<i>The Storage Permit application will consist of a number of separate documents (see left) together with an Environmental Statement (see above).</i>	<i>The Petroleum Act 1998 (as amended)</i>
<i>Provisional Post Closure Plan</i>		
<i>Financial Securities</i>		
<i>Carbon storage licence</i>	<i>Work on the licence CS001 during FEED will be in two parts: (1) the extension of the Licence Area to cover the full extent of the Endurance storage site; and (2) the amending of the licence from Appraisal Term to Operational Term as part of Storage Permit award.</i>	<i>The Energy Act 2008 (as amended) Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 The Petroleum Act 1998 (as amended)</i>
<i>Carbon Storage Lease</i>	<i>Property rights over the 3D geographical area matching that for which a storage permit has been granted.</i>	<i>The Energy Act 2008 (as amended)</i>
<i>MOD notification</i>	<i>MOD notification to site rig and permanent offshore installation.</i>	<i>Condition of CS001 Licence</i>
<i>HSE notification of rig movement</i>	<i>Notify HSE when offshore installation is due to enter relevant waters (including territorial waters).</i>	<i>Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995</i>
<i>PON14a</i>	<i>Survey for drilling rig and survey for storage site – installation.</i>	<i>Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended); Offshore Petroleum Activities (Conservation of Habitats) (Amendment) Regulations 2007</i>
<i>Notification of Well Ops (WONS)</i>	<i>Application for consent for drilling the development wells, which includes details of the proposed well operations.</i>	<i>Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended)</i>
<i>Drilling Operation (PETS)</i>	<i>Application for environmental permitting via DECC's 'Portal Environmental Tracking System (PETS)</i>	<i>Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended) Offshore Chemical Regulations 2002 (as amended)</i>
<i>Consent to locate rig (PETS)</i>	<i>Well operations and consent to site drilling rig</i>	<i>The Energy Act 2008 (as amended)</i>
<i>Oil Pollution Emergency Plans (OPEP)</i>	<i>Well operations and NUI (operational phase) – arrangements for responding to incidents which cause marine pollution by oil.</i>	<i>The Merchant Shipping (Oil Pollution Preparedness, Response and Co-</i>

Title	Consent requirement	Relevant legislation
	A platform specific OPEP and a separate rig specific OPEP plus an interface between the two will be required.	operation Convention (OPRC) Regulations, 1998 (as amended) Offshore Installations (Emergency Pollution Control) Regulations 2002
500m Safety zone	Subsea infrastructure (platform automatically granted 500m safety zone under Petroleum Act 1987).	The Petroleum Act 1987
Consent for stabilisation material (PETS)	Application for stabilisation/protection material at NUI.	The Energy Act 2008 (as amended)
Consent to locate installation (PETS)	Consent to site NUI	The Energy Act 2008 (as amended)
"Production" Operation (PETS)	Operation and chemical permit for the permanent offshore facilities. "Production" in this instance refers to the nomenclature of the application on the Portal system – there is no production at the storage facilities.	Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended) Offshore Chemical Regulations 2002 (as amended) The Energy Act 2008 (as amended)
EU ETS	Greenhouse Gas Emissions Permit and Carbon Dioxide Allowances.	The Greenhouse Gas Emissions Trading Scheme Regulations 2005 (as amended)

5.4.8.3 Decommissioning

Table 5.7: Decommissioning Consents

Title	Consent requirement	Relevant legislation
Decommissioning Programme	Decommissioning of offshore installations and pipelines	Petroleum Act 1998 (as amended) The Energy Act 2008 (as amended) Marine and Coastal Access Act 2009

5.4.9 Prospective Environment Management

5.4.9.1 Operational Monitoring

During operations the NUI systems, wells and storage site would be monitored using a combination of pipeline and wellhead metering, gauges of well temperature and pressure, and repeat seismic survey to monitor the position of the CO₂ in the geological store. Additional monitoring methods could include a micro-seismic network, sonar landers to detect gas bubbles and autonomous underwater vehicles equipped with sonar and water sampling to try and detect for leaks. Such additional environmental monitoring may be undertaken where this is deemed necessary.

Following the cessation of CO₂ injection the wells would be plugged to provide a permanent seal (taking account of the properties of CO₂). Monitoring of the storage site following the end of project life would be undertaken to confirm that the CO₂ does not leak.

5.4.9.2 Post Decommissioning

Project life is expected to be 40 years, following which time the NUI, pipeline and wells will be decommissioned consistent with the prevailing legislation and regulator guidance at that time. Under the current decommissioning regime the NUI would need to be removed and returned to shore for reuse or

disposal, and the pipeline would be subject to a comparative assessment as to whether all or part of the pipeline would need to be removed or could be left in place. The removal of the facilities and pipeline would be subject to options appraisal at the time of decommissioning, and while a meaningful assessment of such options cannot be made at this time, they would be subject to EIA during preparation and update of relevant decommissioning programmes/post-closure plan for the facilities.

The site facilities will be decommissioned following cessation of CO₂ injection in keeping with a decommissioning programme as required under the Petroleum Act 1998. In addition to the Petroleum Act requirements, the CCS Directive¹⁵ (transposed through The Storage of CO₂ (Licensing etc.) Regulations 2010) requires the submission of a provisional post-closure plan, covering the period following cessation of CO₂ injection and during subsequent monitoring, to be approved prior to the issue of a storage permit.

An updated post-closure plan will be required towards the end of project life which will detail how the site is to be sealed and how injection facilities will be removed. The directive states that the post-closure period will, unless otherwise agreed with the competent authority, be a minimum of 20 years, within which time the site will be monitored and maintained by the operator and routinely inspected by a competent authority. Following this period, the legal obligations of the site are transferred to the competent authority if all evidence suggests the CO₂ will be permanently contained (Article 18 of Directive 2009/31/EC).

5.4.10 Best Available Techniques

Best available technology (BAT) is a term applied with regulations on limiting pollutant discharges with regard to the abatement strategy; currently the preferred term is “best available techniques”. Similar terms are best practicable means or best practicable environmental option.

BAT is a principle defined in the EU directive Industrial Emissions Directive (IED), 2010/75/EU. The purpose of the IED is to prevent and control pollution from various sectors, such as energy industries.

Currently there is neither established definition of, nor guidelines for, BAT specifically for the transmission or storage of CO₂. The IPPC Directive sets out general principles which include the requirements that all the appropriate preventive measures are taken against pollution, in particular through application of the best available techniques and that no significant pollution is caused.

The project is specifically aimed at providing a significant reduction of CO₂ emissions from emitters within the Humber cluster (and possibly beyond). These emitters will be able to use the CCS facilities to reduce emissions and also opt to use CCS facilities as proof of BAT within any future permit application. Currently CO₂ does not fall within the scope of IPPC emission limit values (ELVs) which are based on BAT, however CO₂ is the subject of Greenhouse Gas Emissions Trading Regulations.

The CCS project has committed to minimize any impact to the environment (waste, water, air and land) during the construction and installation of the CCS facilities and have conducted EIA and Environmental Hazard Identification workshops during FEED. All actions arising from these studies/ workshops are currently being managed to close out during the FEED phase of the project or will be further developed during detailed design.

The procurement specifications issued by NGCL require that best available and proven technology should be provided. Equipment and techniques would be assessed prior to initial installation or use; any changes or modification necessary or replacements would be similarly assessed. New technologies, which may have become available and that have been proven to be effective, will be considered for inclusion.

5.4.11 Conclusions and Lessons Learned

Through a systematic evaluation of the activities relating to the proposed Offshore Scheme and their interactions with the environment, a variety of potential sources of effect were identified, the majority of which were of limited extent and duration and considered minor. Those activities identified as being of potentially greater concern were assessed further: as summarised in this chapter. A number of mitigation measures and environmental management actions are highlighted in Offshore ES to be taken forward into detailed design and final development planning and execution.

The overall conclusion of the Environmental Assessment is that, with the implementation of the proposed mitigation and risk reduction measures and commitments in Offshore ES, the installation and operation of the Offshore Scheme will not result in significant adverse effects on the environment or other users.

6 Glossary

Meaning or Explanation	Meaning or Explanation
AA	Appropriate Assessment
ADMS	Atmospheric Dispersion Modelling System
AGI	Above Ground Installation. These are structures and engineering such as elements of block valves and pumping stations that will be required to be above the ground.
Air-mode	The mode of operation when the power plant is operating in a “conventional” air fired mode. The downstream capture of CO ₂ is not possible in this mode.
AILs	Abnormal Indivisible Loads
ALA	Acquisition of Land Act 1981.
AOD	Above Ordnance Datum.
Applicant	DCO applicant, CPL or NGCL as the case may be
Application	The Application for a Development Consent Order made to the Secretary of State under Section 37 of the Planning Act 2008 in respect of the Project, required pursuant to Section 31 of the Planning Act 2008 because the Project is a Nationally Significant Infrastructure Project under Section 14(1)(a) and Section 15 of the Planning Act 2008 by virtue of being an onshore generating station in England or Wales of 50 Megawatts electrical capacity or more or a pipeline as the case may be.
Appropriate Assessment	An assessment carried out under the Habitats Directive where a plan or project is likely to have significant effects upon a European site designated for its nature conservation value.
AQCS	Air Quality and Control Systems
ASU	Air Separation Unit.
AQMAU	Air Quality Modelling and Assessment Unit
BAT	Best Available Techniques.
BoD	Basis of Design
Block Valve	Block valves are required for isolation and monitoring of the Pipeline. These would include buried pipework, valves, an instrument building and a vent stack.
BS	British Standard
CAA	Civil Aviation Authority.
CABE	The Commission for Architecture and the Built Environment
Capture Power Limited	A joint venture comprised of Drax CCS Ltd, Alstom UK Holdings Ltd and The BOC Group Ltd
CCS	Carbon Capture and Storage.
CEMP	Construction Environmental Management Plan.
CHP	Combined Heat and Power.
CIRIA	Construction Industry Research and Information Association
CLVIA	Cumulative Landscape and Visual Impact Assessment
CO ₂	Carbon Dioxide.
CO ₂ pipeline	The National Grid Carbon Limited Yorkshire and Humber CCS cross-country CO ₂ pipeline that will be used for the onward transportation of CO ₂ captured from the combustion flows of the coal-fired power plant for permanent storage beneath the North Sea.
Coal-fired power plant	The generating station forming part of the project, primarily fuelled by coal, but with the ability to co-fire biomass, that will be capable of generating up to 448 megawatts gross of electricity, including CO ₂ capture facilities.
CoCP	Code of Construction Practice

COMAH Regulations	Control of Major Accident Hazards Regulations 2015.
CPL	Capture Power Limited.
CSDP	Carbon Storage Development Plan
CRT	Canals and Rivers Trust
CW	Cooling Water
DAA	Directly Associated Activities
dB	Decibels
DCLG	Department for Communities and Local Government.
DCO	Development Consent Order
DCS	Distributed Control System
DECC	Department of Energy and Climate Change
DEPCON	Deposit of Materials on the Seabed Consent
DMP	Dust Management Plan
DSEAR	Dangerous Substances Explosive Atmospheres Regulations
DTM	Digital Terrain Model
EA	Environment Agency
EC	European Community
ECITB	The Engineering Construction Industry Training Board
ECoW	Ecological Clerk of Works
EEPR	European Energy Programme for Recovery
EH	English Heritage
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
ELV	Emission Limit Value
EMF	Electro-Magnetic Frequency
EMS	Environmental Management System.
EN-1	Overarching National Policy Statement for Energy.
EP	Environmental Permit.
EPA	The Environmental Protection Act 1990.
EPR	Environmental Permitting Regulations
EPS	Emissions Performance Standard
ERYC	East Riding of Yorkshire Council
ES	The Environmental Statement documenting the findings of the EIA.
ESP	Electrostatic Precipitator
EU	European Union.
EU ETS	European Union Emissions Trading System.
European site	A term used to refer collectively to Special Areas of Conservation, Special Protection Areas or Ramsar Sites.
ExA	Examining Authority
Existing Power Station site	All of the land comprised within the existing Drax Power Station site.
Exception Test	A planning principle that requires applicants for projects in Flood Zones 2 and 3 to demonstrate that it will be safe and have wider sustainability benefits for the community.
Explanatory Memorandum	A document that explains the intended purpose and effect of a DCO and the authorisations and powers that it seeks.

FC	Forestry Commission
FEED	Front End Engineering and Design.
FGD	Flue Gas Desulphurisation.
Formal Consultation	Statutory consultation in accordance with S.42, 46, 47 and 48 of the Planning Act 2008.
FRA	Flood Risk Assessment.
Funding Statement	A statement setting out how the Applicant intends to fund any compulsory acquisition of land required or any compensation claims made by parties that may be affected by the project.
FWQ	First Written Question
GE	General Electric
GES	Good Environmental Status
GHG	Greenhouse gas. Gaseous emissions associated, which are related to global climate change.
GIS	Geographic Information System
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GPU	Gas Processing Unit.
ha	Hectares. A metric measurement of area.
HA	Highways Authority.
HE	Historic England
HET	Historic Environment Team
HGV	Heavy Goods Vehicle.
Host local authorities	The local authorities whose area the project site is within being Selby District Council and North Yorkshire County Council.
HPA	Health Protection Agency
HRA	Habitats Regulations Assessment.
HSC	Hazardous Substances Consent.
HSE	The Health and Safety Executive.
IDB	Internal Drainage Board.
IED	Industrial Emissions Directive.
ISH	Issue Specific Hearings
Informal Consultation	Non-statutory consultation (i.e. not carried pursuant to S.42, 46, 47 and 48 of the Planning Act 2008).
IPPC	Integrated Pollution Prevention and Control
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
KKD	Key Knowledge Deliverable
km	Kilometres.
Land Plan	A plan showing all of the land that is required for the project and/or over which rights are to be sought as part of the DCO.
Laydown Area	Land within the Project Site to be used for temporary laydown and construction areas.
LCA	Landscape Character Area.
LGV	Light Goods Vehicle
LiDAR	Light Detection And Ranging

Limits of deviation	The lateral limits shown on the Works Plan(s) and the vertical limits (upwards and downwards) determined by reference to the section plan(s) submitted as part of the Application and within which the project may occur.
LIR	Local Impact Report
LNR	Local Nature Reserve
Local Development Plan	A statutory document or a set of documents prepared and adopted by a planning authority which set out the local policies governing development within its administrative area. The local development plan document can be made up of a number of DPDs.
Local Impact Report	A report prepared by a local authority identifying the impacts of a Nationally Significant Infrastructure Project upon its area.
LVIA	Landscape and Visual Impact Assessment.
m	Metres.
MCZ	Marine Conservation Zone
MLWS	Mean Low Water Spring
MMO	Marine Management Organisation
MOD	Ministry of Defence
MSFD	Marine Strategy Framework Directive
Multi-Junction	An above ground facility at the connection point of a number of buried Pipelines which accommodates Pig Traps for each Pipeline (to allow the inspection and maintenance of the Pipeline) and connecting pipework with isolation valves.
MWC	Main Works Contractor
MWe	Megawatts Electrical
NATS	National Air Traffic Services
NE	Natural England
NERC	Natural Environment Research Council
NFU	National Farmers' Union
NG	National Grid
NGCL	National Grid Carbon Ltd
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project (defined in the Planning Act 2008)
NTC	Non-Technical Chapter
NTS	Non-Technical Summary
NUI	Normally Unattended Installation
NYCC	North Yorkshire County Council
OBM	Oil Based Muds
OESEA	Offshore Energy Strategic Environmental Assessment
OFA	Overfire air
Ofgem	Office of Gas and Electricity Markets
OfWat	The Water Services Regulation Authority
OGA	Oil & Gas Authority
Onshore Scheme	The construction of a Cross Country Pipeline to transport the CO ₂ to the sea shore to feed the offshore scheme.
Offshore Scheme	An offshore pipeline to transport the CO ₂ to a permanent storage site beneath the North Sea
OPEP	Oil Pollution Emergency Plan

Operational area	The area of land required by the project when operational.
OPRA	Operational Risk Appraisal
OREP	Ouse Renewable Energy Plant
Order	The White Rose CCS (Generating Station) Order or The Yorkshire and Humber (CCS Cross Country Pipeline) order, being the DCOs that would be made by the Secretary of State authorising the project as the case may be.
Order Land	The land to which the Order relates and comprising all the land within the Order Limits that is required for the project.
Order Limits	The limits of the land to which the Application relates and shown on the Land Plans and Works Plans within which the project must be carried out and which is required for its construction and operation.
OS	Ordnance Survey
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
Other Consents and Licences document	A document setting out the other consents and licences that are required for the construction and operation of the project and that are being advanced separately to the DCO Application.
Oxy-mode	The mode of operation when the power plant is operating on oxygen rather than air allowing the downstream capture of CO ₂ .
Oxy-Power Plant	The whole power plant comprising the boiler, turbine/generator, gas clean up, gas processing unit, air separation unit, cooling water system, materials handling systems and all other balance of plant items required to generate power and deliver CO ₂ to the transport and storage system.
PC	Process Contribution
PEC	Predicted Environmental Concentration
PEI	Preliminary Environmental Information.
PEIR	Preliminary Environmental Information Report (term defined in the Planning Act 2008) and a requirement for NSIPs that are EIA development
PETS	Portal Environmental Tracking System: DECC's new environmental permitting system accessed via the UK Energy Portal
PFA	Pulverised Fuel Ash
PHE	Public Health England
PIG	Pipeline Internal Gauge
PIG Trap	PIG receiver (also launcher)
PIL	Person with an Interest in Land
PINS	Planning Inspectorate
PPG	Planning Practice Guidance.
PPS	Planning Policy Statements.
Project	The White Rose project, the Oxy-Power Plant Generating Station or Carbon transportation and as the case may be
pSPA	Potential Special Protection Area
PTS	Permanent Threshold Shift
Pumping Station	A Pumping Station would re-pressurise the Carbon Dioxide to maintain the pressure in the Pipeline e.g. before it is piped offshore.
PWA	Pipeline Works Authorisation
RIES	Report on the Implications for European Sites
RLB	Red Line Boundary
SAC	Special Area of Conservation

SCR	Selective Catalytic Reduction
SDC	Selby District Council
s44	Person with an Interest in the Land (PIL) as defined by the Planning Act 2008
SOAR	Strategic Options Appraisal Report
SoCC	Statement of Community Consultation
SoCG	Statement of Common Ground
SoS	Secretary of State
SMP	Soil Management Plan
SM	Scheduled Monument
SPA	Special Protection Area.
SPC	Spaldington Parish Council
SPL	Sound Pressure Level
SSSI	Site of Special Scientific Interest.
Statement of Reasons	A statement setting out the reasons and justification for the compulsory acquisition of land or rights in land within the Order Limits.
Statutory Consultation	Consultation in accordance with S.42, 46, 47 and 48 of the 2008 Act.
STU	Stationary Technical Unit
SuDS	Sustainable Drainage Systems.
T&S	Transport and Storage
the 2008 Act	The Planning Act 2008 which is the legislation in relation to applications for NSIPs, including pre-application consultation and publicity, the examination of applications and decision making by the Secretary of State.
The Site	The Project Site or the Order limits.
UKCS	UK Continental Shelf
UKOOA	UK Offshore Operators Association
VCA	Vehicle Certification Agency
VSD	Variable Speed Drive
WBM	Water Based Muds
WFD	Water Framework Directive
WONS	Notification of Well Ops
Works Plan	Plan(s) showing the Works Numbers referred to at Schedule 1 of the Order and submitted with the Application.
WR	White Rose
WRCCS	White Rose Carbon Capture & Storage
WSI	Written Scheme of Investigation.
YWT	Yorkshire Wildlife Trust
ZTV	Zone of Theoretical Visibility

Appendices

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Appendix A DCO Document Register

Document	Explanation
Access Plan	Identifying any new or altered means of access, stopping up of street or roads or any diversions, extinguishments or creation of rights of way or public rights of navigation.
Alternatives	Part of the ES setting out alternatives considered in terms of design, layout etc. of the project within the Drax site.
Application covering letter	Specifying the development to which the application relates (which category or categories of S.14-30 of the PA 2008 the development falls within); briefly describing the development; and listing the application documentation.
Application fee	£4,500 fee
Application form	Application Form for the Order in the form prescribed under s37 (3)(b)
Location Plan	Showing location of site
Application Index (including electronic indexing)	Structured electronic application index for arranging the application documents in the form of an excel spreadsheet (template provided by PINS on request prior to submission of the application).
Master Glossary	Glossary of terms used in the application documents
Habitats Regulations 'Screening Assessment'	Required to demonstrate compliance with Habitats Regulations. Objective will be to produce a 'No Significant Effects Report' that demonstrates no impact on European Sites. Will also be necessary to complete HR Screening and Integrity Matrices to support application.
Book of Reference	Details all relevant landholdings and interests/rights which might be required for or interfered with by the proposed project. To be read in conjunction with Land Plan.
Carbon Capture Readiness/Carbon Capture and Storage Statement	Required to address policy requirements of NPS EN-1. At this stage envisaged would be relatively brief statement crossing referencing to other documents where appropriate.
Carbon Statement/Climate Change Assessment	Required to address policy requirements of NPS EN-1. Lifecycle assessment to demonstrate the overall plant efficiency in terms of carbon, in addition to the primary objective of capturing CO ₂ . How project takes account of climate change adaptation/mitigation.
CHP Assessment	Required to address policy requirements of EN-1. Assessment of the feasibility for CHP, including identification of potential heat users. Needs to take account of EA CHP Ready guidance.
Consultation Report (incl. exhibition/presentational materials; survey proforma etc.)	Must demonstrate that applicant has had regard to any relevant responses to S.42, S.47 and S.48 consultation and that PA 2008 consultation requirements have been met. All expected to input to Darzin.
Copy of Notices	Document containing copies of all notices published in newspapers relating to S.47 and S.48 consultation/publicity.
Design and Access Statement	Covering design approach and evolution, use, amount, scale parameters, external appearance, landscaping and access.
Draft Development Consent Order (DCO)	To include relevant provisions, any 'limits of deviation' and 'requirements'.
Draft Heads of Terms for Development Consent Obligation	
Draft Statements of Common Ground	No requirement to submit with application but PINS recommend submitting drafts if possible.
EIA Scoping Opinion	Scoping Opinion issued by PINS
Environmental Statement, Appendices and NTS	Reports the findings of the EIA including identification of impacts and mitigation.

Document	Explanation
Explanatory Memorandum	To explain the purpose and effect of the provisions within the Draft DCO.
Flood Risk Assessment	Assessing effect of the development on flood risk and addressing the 'sequential' and 'exception' test, if applicable. Some integration may be necessary with NGC's approach.
Grid Connection Statement	Detailing who will be responsible for designing and building the connection to the electricity grid.
Habitats Plan	Identifies any sites of landscape or habitat importance with an assessment of any potential impact on these from the development
Historic Environment Plan	Identifies any sites of heritage or archaeological importance with an assessment of any potential impact on these from the development
Land Plan	Identifying land required for, or affected by the development; any land over which it is proposed to exercise powers of compulsory acquisition or any rights to use land; any land in relation to which it is proposed to extinguish easements or other private rights etc; and any special category or replacement land. Can also show permanent and temporary (e.g. construction laydown) of land within DCO boundary. Plots of land which are numbered plus any occupiers of the land. Land Plan will have scale requirements. Who sets these and what are they?
Nature Conservation and Habitats Plan Assessment	Identifying any statutory or non- statutory nature conservation features/sites (e.g. geological/landscape importance); protected species habitats, other important habitats or diversity features; and water bodies in a river basin management plan, together with an assessment of any effects on such sites, features habitats or bodies likely to be caused by the development.
Other Plans, drawings and sections necessary to describe the development (Scope to be defined Legal/Planning and EIA team)	Showing details of design, external appearance and the preferred layout of buildings or structures, drainage, surface water management, means of vehicular and pedestrian access, car parking and means of landscaping (could include location, site layout, elevation, section, floor and roof plans). Should be drawn to an identified scale (not smaller than 1:2500) and show direction 'north'.
Planning Statement	Presents the developments in the context of national, regional, and local planning policy, along with justification of the need for the development in policy terms
Section 55 Checklist (Review of S.55 list)	Review of documentation and required deliverables against S.55 checklist
Statement whether the proposal engages matters set out in section 79(1) of the EPA 1990 (where applicable)	To set out how applicant proposes to mitigate or limit statutory nuisance. 8-10 page document.
Statement of Reasons	Required where the application involves any compulsory acquisition.
Funding Statement	Required where there is compulsory acquisition of land or rights in land. Must explain funding provisions in place for this and also to deal with any claims (e.g. in relation to blight).
Transport Assessment	Considering transport effects of the development.
Travel Plan	Setting out measures to control traffic during construction and operation, including promotion of sustainable modes.
Works Plan	Proposed location and limits of the development works in relation to existing features
Other Consents and Licences	Document identifying other consents and licences required for DCO not to be included in DCO. Should identify the consent/licence required, consenting body and timetable for obtaining that consent/licence. Intended to provide examining authority with sufficient comfort matters are in hand and the consents/licences will be forthcoming.
Sustainability Statement	See comment re: Carbon Assessment above. This was on the previous application document list.
Framework Site Waste Management Plan	Setting out the approach to waste minimisation and management during construction
Framework Construction and Environmental Management Plan (CEMP)	Setting out approach to managing and mitigating construction effects

Appendix B OPP Other Consents

Consent	Consenting Body	Agreement/ Comments	Action to be taken	Application Status
1. Consents required for the generating station				
Electricity Generation Licence under Section 6 of the Electricity Act 1989 (licences authorising supply, etc)	Gas and Electricity Markets Authority	n/a	None required.	Consent received from Ofgem on 24 July 2015
Environmental Permit for the operation of the generating station under the Environmental Permitting (England and Wales) Regulations 2010	The Environment Agency ('EA').	<p>Application is for a variation to the existing Drax Power Station Environmental Permit ('EP'). Initial meetings regarding air emissions and transition from air to oxy-mode operations have taken place.</p> <p>As agreed with the EA the plan is to divide the amended permit into two separate permits (existing Drax power station and OPP) at an appropriate point in the future.</p>	Discussions on-going with the EA.	<p>Application submitted to the EA on 8 April 2015 and received on 10 April 2015 (Ref. EPR/VP3530LS/V012).</p> <p>The EA confirmed application was 'duly made' as of 25 June 2015 on 29 June 2015. Responses to remaining questions issued to the EA on 4 August 2015.</p>
Water Abstraction Licence under Section 24 of the Water Resources Act 1991 (as amended)	The EA	No amendment proposed at this time. Considered that there is sufficient 'headroom' within existing licence provisions.	None required.	n/a
Consent under Section 23 of the Land Drainage Act 1991 (prohibition on obstructions etc in watercourses, known as land drainage consent)	<p>Local lead drainage authority/ internal drainage board (Shire Group of Internal Drainage Authorities)* or EA.</p> <p>*The EA is no longer the consenting body in all cases. This is due to amendments made through the Flood and Water Management Act 2010.</p>	<p>Meetings held with Internal Drainage Board ('IDB') regarding works potentially impacting Carr Dyke.</p> <p>Applications for crossing Carr Dyke, infringing on the 7m access strip and discharging into the watercourse have been discussed.</p>	IDB application to be submitted.	An application for consent under the Land Drainage Act was submitted to the IDB on 6 June 2015. The IDB granted consent on 11 August 2015 for the 7m access strip; surface water discharge; pedestrian footbridge; and infrastructure bridge.

Consent	Consenting Body	Agreement/ Comments	Action to be taken	Application Status
Consent for Hazardous substances under the Planning and Hazardous Substances regulations, 2009 (as amended)	Selby District Council ('Selby DC')	Consent to store Hazardous Substances onsite.	None required.	Consent received from Selby DC on 7 May 2014

Consent	Consenting Body	Agreement/ Comments	Action to be taken	Application Status
European protected species licence (for badgers) under The Conservation of Habitats and Species Regulations 2010	Natural England ('NE')	Consent to close badger setts if a buffer zone around the sett cannot be established.	Formal submission of Badger Licence application.	Draft Badger Licence application submitted. Letter received from NE (dated 14 August 2015) confirming 'no impediment' to a licence being issued, should the DCO be granted.
Building Regulations Approval under Building Regulations 2000 (as amended)	Selby DC	n/a	Detailed design to be completed before Building Regulations application(s) can be made. This will follow the DCO being made by the SoS.	The appointed contractor will submit applications during project execution
2. Consents required for the grid connection				
'Bilateral Connection Agreement' for entry into the National Grid/National Transmission System for the export of electricity from the site and a 'Construction Agreement'	National Grid Electricity Transmission plc ('NGET')	n/a	n/a	Applicant has entered into connection agreement with NGET on 1 June 2015.
3. General construction/other consents				
Construction Noise Consent under Section 61 of the Control of Pollution Act 1974	Selby DC	n/a	n/a	The appointed contractor will apply to Selby DC during construction if required.
Permit for Transport of Abnormal Loads under Road Vehicles (Authorisation of Special Types) (General) Order 2003 or from SoS under the Road Traffic Act 1988	VCA (the Executive Agency of the Department for Transport), Highways Agency ('HA'), local highway authority (North Yorkshire County Council) or the police and bridge owners (if any) as appropriate.	n/a	n/a	The appointed contractor will apply during construction in advance of any loads and when there is required information available as to the number and scheduling of loads.
Regulatory Reform (Fire Safety) Order 2005.	Local fire and rescue authority (the Health & Safety Executive has enforcement responsibility on construction sites).	Requires a 'Fire Safety Risk Assessment' for construction and operation, with an 'Action Plan' from this.	n/a	Will be sought, after the DCO has been made by the SoS in advance of construction activities in consultation with local fire and rescues authority and HSE.

Appendix C Mitigation Measures

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
1.	Volume 1, Chapter 5, Section 5.2.1	Materials will be screened prior to use, in order to avoid introducing any potential contamination source to the Project site.	Construction	Requirement 4(3) secures the approval of the material to be used for site raising comprised within Work Nos. 1A and 1B.
2.	Volume 1, Chapter 5, Section 5.4.1	Emissions to air will meet the UK applicable standards and limits.	Operation	<p>The Environmental Permit ('EP') for the existing Drax Power Station provides controls in relation to emissions to air (see Schedule 4). The EP will be varied to cover the Project.</p> <p>As agreed with the EA the plan is to divide the amended permit into two separate permits (existing Drax power station and OPP) at an appropriate point in the future.</p> <p>In addition, the Energy Act 2013 section 57 imposes a duty on operators of any fossil fuel plant (such as that proposed) to limit annual CO₂ emissions.</p>
3.	Volume 1, Chapter 5, Section 5.4.1	The Project will include flue gas cleaning equipment to reduce the particulate air pollutants and SO _x and nitrogen oxides (NO _x) created during combustion.	Operation	To be secured via the controls prescribed within the Environmental Permit. Details regarding the flue gas abatement plant have been included in the EP application for a variation and include the use of electrostatic precipitators, selective catalytic reduction and flue gas desulphurisation to reduce emissions of particulates, oxides of nitrogen and sulphur dioxide respectively to comply with specific limits.
4.	Volume 1, Chapter 5, Section 5.4.7	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.	Operation	To be secured via the controls prescribed within the EP.
5.	Volume 1, Chapter 5, Section 5.4.7	Effluents with the potential for causing chemical contamination of receiving waters will be routed to the effluent neutralisation plant.	Operation	To be secured via the controls prescribed within the EP. The discharge limits within the existing Drax EP will remain in place and will not be varied thus ensuring no impact from the Project.
6.	Volume 1, Chapter 5, Section 5.4.7	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.	Operation	To be secured via the controls prescribed within the EP. The discharge limits within the existing Drax EP will remain in place and will not be varied thus ensuring no impact from the Project.
7.	Volume 1, Chapter 5, Section 5.4.7	Sanitary and domestic waste water will be discharged to the existing Drax treatment plant.	Operation	Requirement 12 secures the approval and implementation of both temporary and permanent surface and foul water drainage.
8.	Volume 1, Chapter 5, Section 5.5.1	No work will take place on Sunday or bank holidays (other than in exceptional circumstances).	Construction	Requirement 20 limits construction working hours, subject to the specified exceptions

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
9.	Volume 1, Chapter 5, Section 5.5.3	To aid reinstatement, and also to minimise damage to the sub-soil, the storage areas will be covered with geotextile membranes.	Construction	Requirement 18 secures the approval and implementation of a Construction and Environmental Management Plan ('CEMP'). This must be in accordance with the principles in the ES and it is proposed that the requirement will also refer to the Mitigation Annex. The draft CEMP states that the final CEMP will include a soil management plan (para 5.2).
10.	Volume 1, Chapter 5, Section 5.5.3	Laydown Area 7 - Woody vegetation will be retained along the fringes of the areas as practicable.	Construction	Requirement 18 secures the approval and implementation of a CEMP, which must be in accordance with the ES. The draft CEMP states that the final CEMP will include a biodiversity measures (para 5.2).
11.	Deadline 2 LIR Response, Ref 59, NYCC Response to ExA FWQ 2.3	Possession of the laydown areas will only be taken when construction is to start, so (whilst not anticipated) if construction did not commence immediately after the DCO was made and requirements discharged, then the laydown areas would not be affected until a later date.	Construction	In line with standard commercial practice, taking possession of the laydown areas will occur once a final investment decision on the Project has been, made and once the Project has obtained the necessary consents (including discharging requirements) and is ready to commence construction.
12.	Volume 1, Chapter 5, Section 5.6.5	Lighting design will be undertaken for both construction and operation in compliance with guidance issued by the Institution of Lighting Engineers (Guidance Notes for the Reduction Obtrusive Light 2005) and the publication by Department for Communities and Local Government (DCLG) Lighting in the Countryside: Towards Good Practice.	Construction and Operation	Requirements 8 and 9 respectively secure the approval of external lighting for the construction and operational phases of the Project.
13.	Volume 1, Chapter 5, Section 5.9.3	The Project has been designed to ensure, as far as practicable, structures and equipment will be made from recyclable materials so that during decommissioning the materials can be reused or recycled elsewhere.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme that would cover aspects relating to the re-use and recycling of materials.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
14.	Q10.2 Applicant's Response to First Written Questions	Using clay will minimise the requirement for primary aggregates, reduce transport and traffic movements on the public highway and demonstrates the re-working and re- use of secondary and recycled aggregates generated through other construction and demolition activity.	Construction	The undertaker will consider the precise make-up of site raising materials closer to the start of construction, and requirement 4 secures the approval of the materials to be used for site raising.
15	Q10.2 Applicant's Response to First Written Questions	Limestone will be sourced from local licensed quarries, where possible, to minimise the transport and traffic impacts on the local network.	Construction	Requirement 4 secures the approval of the materials to be used for raising the site. The undertaker will consider suppliers of materials at the appropriate stage closer to the start of construction and will seek to use local quarries for limestone where possible, as indicated. Exactly where limestone will come from depends on a number of practical and commercial factors which cannot currently be determined.
16.	Volume 1, Chapter 5, Section 5.9.3	The design of the coal milling plant and boiler for the Project will be optimised to produce PFA and FBA of a quality that allows them to be sold on the market and therefore the proportion of ash sent to landfill is expected to decrease.	Operation	To be secured via the controls prescribed within the EP. The EPC contract will contain a Minimum Functional Specification for the plant. This will include a targeted ash quality as per EN450 standard: Fly ash for concrete. Definition, specifications and conformity criteria to maximise the scope for the commercial use of ash.
17.	Volume 1, Chapter 5, Section 5.9.3	Amenity issues (litter, dust, odour and vermin etc.) will be mitigated through covered containerisation and appropriate dust and odour control equipment as required by the Environmental Permit.	Construction and Operation	Requirement 18 secures a CEMP that will cover such matters during the construction phase. Operational effects will be controlled through the EP. Requirement 26 secures approval and implementation of waste management plans for both the construction and operational phases.
18.	Q3.5 Applicant's Response to First Written Questions	Coal crushing will be undertaken via vertical spindle roller mills which will comply with DSEAR:2002 (Dangerous Substances Explosive Atmospheres Regulations). Compliance with DSEAR will ensure that dust emissions are controlled to minimise health and safety concerns as well as explosion risks. The mills and pulverized fuel system will be pressurized systems that are fully enclosed to prevent the leak of any products. Planned maintenance procedures will be employed to ensure operational safety, integrity and availability of the pulverised fuel systems.	Operation	Operations will be permitted through a variation to the existing environmental permit for Drax Power Station site, which requires the operator to prevent fugitive emissions to atmosphere and would apply to, amongst other equipment and activities, dust emissions from coal crushing and handling of furnace bottom ash. Compliance with the EP, DSEAR and health and safety policy will ensure the prevention and reduction of dust emissions associated with the plant.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
19.	Q3.5 Applicant's Response to First Written Questions	Furnace Bottom Ash (FBA) will be dealt with through a wet, submerged scraper conveyor system. In addition to the FBA, ash from Boiler Economiser and Selective Catalytic Reduction system will be conveyed to the submerged scraper conveyor system where it is mixed with the furnace bottom ash. The combined wet ash stream is removed by the bottom ash conveyor system, dewatered and then feed into a covered conveying system depositing the ash into dedicated silo and ready for onward transport. The use of a wet system both cools the ash and will provide dust suppression.	Operation	Operations will be permitted through a variation to the existing environmental permit for Drax Power Station site, which requires the operator to prevent fugitive emissions to atmosphere and would apply to, amongst other equipment and activities, dust emissions from coal crushing and handling of furnace bottom ash. Compliance with the EP, DSEAR and health and safety policy will ensure the prevention and reduction of dust emissions associated with the plant.
20.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2	An overarching Construction Environmental Management Plan (CEMP) will demonstrate how risks will be managed, how mitigation will be delivered by the construction contractor and the how the effectiveness of mitigation will be monitored. This will include mitigation measures for avoiding spills and leaks of materials used during the construction process, such as fuels, oil and lubricants. The CEMP will be developed in consultation with the EA and the site contractor.	Construction	Requirement 18 secures a CEMP that would cover such matters and incorporate the mitigation measures within the ES.
21.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2 Volume 2, Chapter D, Geology Technical Report, Section 5.4	Minimisation of materials moved onto and around the site through careful design of the site and the construction schedule.	Construction and Decommissioning	Requirement 26 requires approval and implementation of waste management plans for both the construction and operational phases.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
22.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2 and 5.4	Fill material used during site raising will be validated prior to use and tracked from origin.	Construction and Decommissioning	Requirement 4(3) secures the approval of materials to be used for site raising. The CEMP (Requirement 18) will contain procedures to validate the suitability of imported materials. Requirement 27 secures the approval and implementation of a decommissioning scheme, which must cover restoration works and the condition of the land.
23.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2	Minimisation of removal from site of materials during construction through reuse where appropriate on site.	Construction	Requirement 26 secures the approval and implementation of a waste management plan for the construction phase.
24.	Volume 2, Chapter D, Geology Technical Report, Section 5.2 and 5.4	The disposal of waste, including any surplus spoil, will be managed so far as is reasonably practicable to maximise the environmental and development benefits from the use of surplus material and reduce any adverse environmental effects of disposal.	Construction and Decommissioning	Requirement 26 requires the approval and implementation of a waste management plan for the construction phase. Requirement 27 secures the approval and implementation of a decommissioning scheme that would cover aspects relating to the re-use and recycling of materials.
25.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2 Volume 2, Chapter D, Geology Technical Report, Section 5.4	Minimising the potential to create pathways for contaminants to travel to the Sherwood Sandstone aquifer through appropriate design of pilings. Planning and preparing for piling works will follow a separate Foundation Works Risk Assessment, and the construction activities will be undertaken in reference to Environment Agency guidance, specifically "Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention".	Construction and Decommissioning	Requirement 14 secures the approval and implementation of a scheme to deal with contamination. Requirement 18 secures the approval and implementation of a CEMP, including details of piling. Requirement 27 secures approval and implementation of details of the decommissioning scheme.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
26.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2	If contamination that has not been previously identified is encountered on the Site, no further development would take place which could disturb that contaminated material until a site investigation had been carried out and mitigation measures approved and applied. Moreover, the safety officer (or similar) will ensure that a workers' Safety Information Sheet is prominently displayed in rest/mess rooms and wash rooms covering such matters as hygiene, work practices and clothing requirements.	Construction	Requirement 14 secures the approval and implementation of a scheme to deal with contamination. The draft CEMP states that the final document will include a health and safety plan (para 5.2).
27.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2	In the unlikely scenario that contamination is found on Site and requires remediation, risk assessments and a remediation strategy would be used to outline the treatment of the contaminated materials.	Construction	Requirement 14 secures the approval and implementation of a contamination scheme including an assessment report and remedial measures.
28.	Volume 2, Chapter D, Geology Technical Report, Section 5.2	In the unlikely event that soil gas is identified as a risk requiring vapour / gas mitigation measures, monitoring would be carried out and the necessary gas mitigation measures would be applied.	Construction	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP states that the final document will include a Soil Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
29.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2 and 5.4	A Waste Management Plan will be developed building on the Framework Waste Management Plan supplied in Volume 3, Section R. The plan will identify: <ul style="list-style-type: none"> responsibilities for waste management; the waste category and quantities of materials generated; measures to minimise waste generation; opportunities for recycling and/or re-use; proposed treatment and disposal routes; and licensing requirements. The Waste Management Plan will also include an audit programme to be undertaken to demonstrate compliance with statutory requirements.	Construction and Decommissioning	Requirement 26 secures approval and implementation of waste management plans for the construction phase. Requirement 27 secures approval and implementation of details of the decommissioning works.
30.	Volume 2, Chapter D, Geology Technical Report, Section 5.2 and 5.4	Provision will be made for a suitable environmental specialist to identify any 'special waste' as defined in the Special Waste Regulations 1996 so that it can be suitably managed and disposed of during works.	Construction and Decommissioning	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP states that the final document will include a Site Waste Management Plan (para 5.2). The draft CEMP also identifies that waste management and monitoring will be dealt with in the final document (para 4.5). Requirement 27 secures approval and implementation of details of the decommissioning works. The scheme must be in accordance with the principles set out in the environmental statement.
31.	Volume 2, Chapter D, Geology Technical Report, Section 5.2	Appropriate precautions will be taken if materials containing asbestos are encountered. The contractor will observe the exposure limits and measurement methods for asbestos, set out in the Control of Asbestos Regulations (2012).	Construction	These matters are dealt with through the Control of Asbestos Regulations 2012. In addition, the draft CEMP states that the final document will include a Site Waste Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
32.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2	A Soil Management Plan (SMP) which will form part of the CEMP will be developed in line with DEFRA guidance document. The main objective of the SMP is to mitigate impacts to soils by preserving the ecologically (and economically) valuable topsoil in managed stockpiles that would otherwise be buried, compressed, mixed or lost. Topsoil in stockpiles are maintained until such time as they can be utilised on site for rehabilitation of land following decommissioning, e.g. on the construction camp and laydown areas.	Construction	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP states that the final document will include a Soil Management Plan (para 5.2).
33.	Volume 1, Chapter 6, Section 6.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.2 and 5.4	A separate Sediment Control Plan (SCP) which will form part of the CEMP will be designed and followed by contractors throughout the construction process. This will outline the routine working and emergency procedures for the control and mitigation of erosion and dust generation during excavations and soil handling, such as stockpiling soil away from watercourses and undertaking earthworks during dry weather conditions where possible.	Construction and Decommissioning	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP states that the final document will include a Soil Management Plan, a Surface and Ground Water Management Plan and a Site Emergency Response Plan (para 5.2).
34.	Volume 1, Chapter 7, Section 7.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.3	All areas where potentially polluting substances will be stored and used will be designed with appropriate bunding to industry standards. Bunds will provide 110% of stored volume and be constructed of impermeable materials.	Operation	This is a requirement of the Control of Pollution (Oil Storage) England Regulations 2001 and also the EA's Pollution Prevention Guidelines. To be secured via the controls prescribed within the Environmental Permit
35.	Volume 1, Chapter 7, Section 7.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.3	Fuel will be offloaded at the existing Drax Power Station and transferred to the Site. Management procedures for waste transport on to /off the Site will be in place, and regularly audited.	Operation	The DCO includes Work No. 2 which includes the infrastructure to transfer fuel to the Project. Requirement 4(4) secures the details of the fuel transfer infrastructure at the site. In relation to waste, requirement 25 secures the approval and implementation of an operational waste management plan.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
36.	Volume 1, Chapter 7, Section 7.2.2 Volume 2, Chapter D, Geology Technical Report, Section 5.3	The Project Site will be operated in accordance with best working practices and measures to protect the land and water environment will be in accordance with those set out in relevant Environment Agency Pollution Prevention Advice and Guidance (PPG) notes	Operation	Requirement 12 secures the approval and implementation of details of the permanent surface and foul water drainage. Requirement 14 secures the approval and implementation of a scheme to deal with contamination, including a management plan in respect of contaminants remaining on site.
37.	Volume 1, Chapter 7, Section 7.2.2	Water abstraction will be within the current licence conditions, and these will continue to be monitored by Drax Power Limited, and regulated and permitted by the EA.	Operation	The current abstraction licence limits abstraction from the River Ouse and the associated uses of the water. The volumes permitted in the licence do not require any variation and currently the uses remain the same.
38.	Volume 2, Chapter D, Geology Technical Report, Section 5.4	The construction laydown area will be reinstated following after construction and returned to agricultural use where appropriate.	Operation	Requirement 22 secures the approval and implementation of a scheme for the restoration of land used temporarily during construction.
39.	Volume 2, Chapter D, Geology Technical Report, Section 5.4	Management of excavated topsoils in stockpiles is a key element of the mitigation.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme including its phasing and the works to restore the land to an agreed condition. The scheme must be in accordance with the principles set out in the ES.
40.	Volume 2, Chapter D, Geology Technical Report, Section 5.4	Site investigations will be undertaken before decommissioning to assess the potential for contamination from the operational phase. If the potential for contamination exists, no material will be moved until the risks of that contamination have been assessed and can be appropriately managed.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme including its phasing and the works to restore the land to an agreed condition. The scheme must be in accordance with the principles set out in the ES.
41.	Volume 2, Chapter D, Geology Technical Report, Section 5.4	Following decommissioning rehabilitation of land areas designated to be returned to agricultural use if appropriate.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme including its phasing and the works to restore the land to an agreed condition. The scheme must be in accordance with the principles set out in the ES.
42.	Volume 1, Chapter 6, Section 6.3.2	Full compliance with Construction Design and Management Regulations 2007 and other Health and Safety legislation will apply throughout any works on the Site (including any pre- construction activities).	Construction	Legislation such as that cited (now in the Construction (Design and Management) Regulations 2015) applies to the construction of the Project and provides a system of regulation.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
43.	Volume 1, Chapter 6, Section 6.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.4	A temporary site emergency response and contingency plan will be developed in consultation with the Environment Agency (EA), Selby District Council (SDC) and the EPC contactor. The plan will include measures (e.g. egress and access routes, safe refuge) for safety of people working on Site should flooding occur and affect non-raised areas such as the construction laydown areas.	Construction and Decommissioning	Requirement 13 requires the approval and implementation of a flood risk mitigation scheme during construction. The draft CEMP states that the final document will include a Site Emergency Response Plan (para 5.2). Requirement 27 secures the approval and implementation of a decommissioning scheme which is the appropriate time to consider detailed matters of safety and flood risk. The scheme must be in accordance with the principles set out in the ES.
44.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2	As a precautionary approach for excavation work, if contamination that has not been previously identified is encountered on the Site, no further development would take place (except to the extent that would not disturb that contamination) until a site investigation was carried out and mitigation measures were approved by SDC and applied.	Construction	Requirement 14 secures the approval and implementation of a contamination scheme including an assessment report and remedial measures.
45.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2	All dewatering activities during excavation and foundation works will include monitoring of water discharges or sediment laden runoff, and will be treated prior to discharge to nearby watercourses. Water with high fine particle content will transit through a sedimentation pond.	Construction	Requirement 12 secures the approval and implementation of temporary surface and foul water drainage systems, including means of pollution control. The draft CEMP identifies dewatering as an activity to be monitored (para 4.5).
46.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2	Performance of the construction site drainage network, including foul drainage provisions, will be monitored regularly for water quality before discharge.	Construction	Requirement 12 secures the approval and implementation of temporary surface and foul water drainage systems, including means of pollution control. The details are required to be in accordance with the principles set out in the ES. The draft CEMP identifies drainage performance and water quality monitoring as an activity to be dealt with in the final document (para 4.5).
47.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2	In the event of accidental spills involving hydrocarbons, any contaminated water will be isolated at the closest intermediate point of intervention and appropriately treated or discharged of.	Construction	The draft CEMP identifies that the final document will include a Site Emergency Response Plan (para 5.2) which will set out the procedures to be followed for emergencies and incidents (as per para 4.7).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
48.	Volume 1, Chapter 6, Section 6.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2	The finished floor level on the Site will be raised above the 1 in 200 year tidal (including the impact of climate change) flood level (i.e. 5.13 m Above Ordnance Datum) with appropriate fill material, including capping layers and granular drainage layers.	Construction and operation.	The Project includes site raising, the material used and the finished floor level are to be approved under requirement 4(3). Requirement 13 requires the approval and implementation of flood risk mitigation.
49.	Volume 1, Chapter 6, Section 6.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2, 5.3 and 5.4	The Project Site will be constructed in accordance with best working practices and measures to protect the water environment will be in accordance with those set out in relevant EA Pollution Prevention Advice and Guidance (PPG) notes.	Construction, Operation and Decommissioning	The draft CEMP identifies that the final document will include a Surface and Ground Water Management Plan and a Site Emergency Response Plan (para 5.2). Requirement 12 secures the approval and implementation of the permanent surface and foul water drainage systems. Requirement 18 secures the approval and implementation of a CEMP. Requirement 27 secures the approval and implementation of a decommissioning scheme, which must be in accordance with the principles in the ES, and is the appropriate point at which to consider detailed matters to protect the water environment.
50.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2	A separate Sediment Control Plan (SCP) will be designed and followed by contractors throughout the construction process. This will outline the routine working and emergency procedures for the control and mitigation of erosion and dust generation during excavations and soil handling, such as stockpiling soil away from watercourses and undertaking earthworks during dry weather conditions where possible.	Construction and Decommissioning	The draft CEMP states that the final document will include a Site Emergency Response Plan, a Soil Management Plan and a Surface and Ground Water Management Plan (para 5.2). The final CEMP will be secured by requirement 18. Requirement 27 secures the approval and implementation of a decommissioning scheme which is the appropriate time to consider detailed matters relating to soil. The scheme must be in accordance with the principles set out in the ES.
51.	Volume 1, Chapter 6, Section 6.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.2	The CEMP will include provision for a temporary sustainable drainage system to deal with surface water runoff and a water quality monitoring system during the construction phase.	Construction	Requirement 12 secures the approval and implementation of temporary surface water drainage details, which must be in accordance with the CEMP. The draft CEMP identifies that the final document will include a Surface and Ground Water Management Plan (para 5.2) and water quality monitoring (para 4.5).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
52.	Volume 1, Chapter 7, Section 7.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	The process water required for and liquid effluents resulting from the Project will be managed by new proposed processing and treatment infrastructures and management systems.	Operation	Process water will be provided under the current abstraction licence. The management and discharge of liquid effluents will be secured via the controls prescribed within the EP.
53.	Volume 1, Chapter 7, Section 7.3.2	All water abstraction and discharge required during the operation will be within the current abstraction licences and discharge consents.	Operation	Process water will be provided under the current abstraction licence. The management and discharge of liquid effluents will be secured via the controls prescribed within the variation to the Environmental Permit.
54.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	Operational effluents including oil-contaminated, chemically- contaminated, fuel, oil and cooling- water effluents will be discharged to an intercept pit, and waste water treatment plant, before being monitored and discharged via the existing Drax Power Station system.	Operation	To be secured via the controls prescribed within the EP
55.	Volume 1, Chapter 7, Section 7.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	A completely new separate surface water management system will be introduced to manage surface water (rain water) runoff after development.	Operation	Requirement 12 secures the approval and implementation of the permanent surface water drainage details.
56.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	The exact quantities and nature of effluent discharge will be communicated and agreed with the EA prior to operation.	Operation	To be secured via the controls prescribed within the EP.
57.	Volume 1, Chapter 7, Section 7.3.2	Additional surface water runoff generated will be attenuated within the Site by providing a storage basin and then will be discharged to River Ouse under the existing Drax Power Station discharge consent.	Operation	Requirement 12 secures the approval and implementation of the permanent surface water drainage details. Any discharge to the River Ouse would need to comply with the terms of the existing EP (as varied to include the Project).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
58.	Volume 1, Chapter 7, Section 7.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	Surface water runoff, processing and waste water discharges to adjacent water bodies will be treated to the acceptable standards agreed with the EA by providing waste water treatment basin, siltation basin, surface water basin, separation ponds and a comprehensive monitoring system.	Operation	Requirement 12 secures the approval and implementation of the permanent surface water drainage details. The EP will define discharge parameters and monitoring / reporting regime.
59.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	Data from the continuous and regular monitoring of water discharges will be integrated into the Project's distributed control system (DCS) with relevant signals operating control-room alarms. Historical records of up to 10 years will be stored within the DCS and will be retrievable on demand.	Operation	To be secured via the controls prescribed within the EP.
60.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	Abstraction volumes exact quantities required will be communicated and agreed with the EA prior to operation and a regular flow monitoring system will be in place to record any adverse changes in water quality and quantity so as to not affect other local users (agricultural, domestic and industrial users).	Operation	Abstraction from the River Ouse will comply with the terms of the abstraction licence.
61.	Volume 1, Chapter 7, Section 7.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	All areas where potentially polluting substances will be stored and used will be designed with appropriate bunding to industry standards. Bunds will provide 110% of stored volume and be constructed of impervious materials.	Operation	This is a requirement of the Control of Pollution (Oil Storage) England Regulations 2001 and also the EA's Pollution Prevention Guidelines. To be secured via the controls prescribed within the Environmental Permit
62.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	In the rare event of an oil spill into the bund system, the oil can be pumped out for re-use if possible, or disposed of in an environmentally acceptable manner.	Operation	This is a requirement of the Control of Pollution (Oil Storage) England Regulations 2001 and also the EA's Pollution Prevention Guidelines. To be secured via the controls prescribed within the EP.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
63.	Volume 1, Chapter 7, Section 7.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	Emergency and contingency plans will be developed to safeguard operational activity, Site users and quality of surface water.	Operation	Drax currently operates a certified Environmental Management System (EMS) which includes the management of incidents and accidents. The scope of the EMS will be modified to include the aspects and impacts of the White Rose CCS. The Environmental Permit will require a management system which identifies and minimises the risks of pollution including those arising from operations, maintenance, accidents, incidents and non-conformance.
64.	Volume 1, Chapter 7, Section 7.3.2 Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.3	The Project will be controlled under a variation to the existing Drax Power Station EP.	Operation	An application to vary the existing EP to include the Project has been submitted to the EA. As agreed with the EA the plan is to divide the amended permit into two separate permits (existing Drax power station and OPP) at an appropriate point in the future.
65.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.4	The construction laydown areas will be reinstated after construction and is intended to be returned to agricultural use where appropriate.		Requirement 22 secures the approval and implementation of a scheme for the restoration of land used temporarily during construction.
66.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.4	Decommissioning activities will be undertaken through the development of a Decommissioning Plan (DP). The Contractor will be required to adhere to the DP. It will include mitigation measures for avoiding spills and leaks of materials used during the decommissioning process, such as fuels, oil and lubricants. Within the context of surface water quantity and quality, the DP considers the drainage and water quality monitoring systems to deal with surface water runoff, sediments and contaminants migration during the decommissioning phase.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme which is the appropriate time to consider detailed matters relating to prevention of pollution. The scheme must be in accordance with the principles set out in the ES.
67.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.4	The Project will fully comply with technical guidance and best practices documents relevant to the decommissioning and other Health and Safety legislation that will apply throughout any works on the Site.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme. The scheme must be in accordance with the principles set out in the environmental statement. Health and safety and related legislation and practice that is relevant at that time will apply to decommissioning works.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
68.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.4	If contamination or risk that has not been previously identified is encountered on the Site, no further decommissioning works would take place (except to the extent that they would not disturb or diffuse that contamination or risk) until a site investigation was carried out and mitigation measures were approved by the EA and SDC and applied.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme which is the appropriate time to consider detailed matters relating to contamination. The scheme must be in accordance with the principles set out in the environmental statement.
69.	Volume 2, Chapter C, Surface Water and Flood Risk Technical Report, Section 5.4	The Safety Officer will ensure that a Workers' Safety Information Sheet is prominently displayed in rest/mess rooms and wash rooms covering hygiene, work practices, clothing requirements etc.	Decommissioning	Health and safety and related legislation and practice that is relevant at that time will apply to decommissioning works.
70.	Volume 2, Chapter A, Air Technical Report, Section 7.2.1	The CEMP will contain a specific Dust Management Plan.	Construction	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES. This will include a scheme to control dust. The draft CEMP identifies earthworks and monitoring of dust as matters to be included (para 4.5) and that the final CEMP will include an Air Quality and Dust Management Plan (para 5.2).
71.	Volume 2, Chapter A, Air Technical Report, Section 7.2.2	The name and contact details of person(s) accountable for air quality and dust issues on the site boundary will be displayed. The head or regional office contact information will be displayed.	Construction	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES, and which must include a scheme to notify residents of significant construction impacts and for the handling of complaints (18(2)(a)). The draft CEMP identifies a framework for community liaison during construction (para 2.5).
72.	Volume 2, Chapter A, Air Technical Report, Section 7.2.3	All dust and air quality complaints will be recorded, causes will be identified, appropriate measures will be taken to reduce emissions in a timely manner, and the measures taken will be recorded.	Construction	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES, and which must include a scheme to notify residents of significant construction impacts and for the handling of complaints (18(2)(a)). The draft CEMP identifies earthworks and monitoring of dust as matters to be included (para 4.5) and that the final CEMP will include an Air Quality and Dust Management Plan (para 5.2).
73.	Volume 2, Chapter A, Air Technical Report, Section 7.2.3	The complaints log will be made available to SDC.	Construction	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES, and which must include a scheme to notify residents of significant construction impacts and for the handling of complaints. The draft CEMP identifies a framework for community liaison during construction, including a complaints system (para 2.5) and that the final CEMP will include a Stakeholder Communications Plan (para 5.2). This will be secured by requirement 18(2)(a).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
74.	Volume 2, Chapter A, Air Technical Report, Section 7.2.3	Any exceptional incidents that cause dust and/or other emissions to atmosphere, either on or off site will be recorded, including the action taken to resolve the situation in the log book.	Construction	Requirement 18 secures the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies earthworks and monitoring of dust as matters to be included (para 4.5) and that the final CEMP will include an Air Quality and Dust Management Plan (para 5.2).
75.	Volume 2, Chapter A, Air Technical Report, Section 7.2.4	Daily Regular on- and off-site inspections will be undertaken, where receptors (including roads) are nearby, to record any evidence of dust mobilisation and deposition. Inspection results will be recorded and the log will be made available to the local authority.	Construction	Requirement 18 is to be amended to require the CEMP to include monitoring and reporting, and already requires the CEMP to be in accordance with the principles in the ES. The draft CEMP already includes provision for monitoring generally (para 4.5) and in relation to each management plan (para 5.3).
76.	Volume 2, Chapter A, Air Technical Report, Section 7.2.4	Regular site inspections will be carried out to monitor compliance with the site DMP, inspection results will be recorded, and an inspection log will be made available to the local authority.	Construction	Requirement 18 is to be amended to require the CEMP to include monitoring and reporting, and already requires the CEMP to be in accordance with the principles in the ES. The draft CEMP already includes provision for monitoring generally (para 4.5) and in relation to each management plan (para 5.3).
77.	Volume 2, Chapter A, Air Technical Report, Section 7.2.4	The frequency of site inspections by the person accountable for air quality and dust issues on site will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Construction	Requirement 18 is to be amended to require the CEMP to include monitoring and reporting, and already requires the CEMP to be in accordance with the principles in the ES. The draft CEMP already includes provision for monitoring generally (para 4.5) and in relation to each management plan (para 5.3).
78.	Volume 2, Chapter A, Air Technical Report, Section 7.2.5	Site layout will be planned so that machinery and dust causing activities are located away from receptors, as far as is possible.	Construction	Requirement 18 requires the CEMP to include a scheme for the control of dust, and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
79.	Volume 2, Chapter A, Air Technical Report, Section 7.2.5	Solid screens or barriers will be erected around dusty activities or the site boundary that are at least as high as any stockpiles on site.	Construction	Requirement 18 requires the CEMP to include a scheme for the control of dust, and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
80.	Volume 2, Chapter A, Air Technical Report, Section 7.2.5	Site fencing, barriers and scaffolding will be kept clean using wet methods where appropriate.	Construction	Requirement 18 requires the CEMP to include a scheme for the control of dust, and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
81.	Volume 2, Chapter A, Air Technical Report, Section 7.2.5	Materials that have a potential to produce dust will be removed from site as soon as possible, unless being re-used on site.	Construction	Requirement 18 requires the CEMP to include a scheme for the control of dust, and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
82.	Volume 2, Chapter A, Air Technical Report, Section 7.2.5	Soil stockpiles will be covered, seeded, or fenced or dampened down to prevent wind whipping where appropriate	Construction	Requirement 18 requires the CEMP to include a scheme for the control of dust, and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
83.	Volume 2, Chapter A, Air Technical Report, Section 7.2.6	All construction vehicle engines will be switched off when stationary for prolonged periods.	Construction	Requirement 18 secures the approval and implementation of the CEMP and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
84.	Volume 2, Chapter A, Air Technical Report, Section 7.2.6	A maximum speed-limit of 15 mph will be imposed and signposted on surfaced and 10 mph on unsurfaced haul roads and work areas all site roads and work areas.	Construction	Requirement 18 secures the approval and implementation of the CEMP and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
85.	Volume 2, Chapter A, Air Technical Report, Section 7.2.7	Only cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction will be used.	Construction	Requirement 18 secures the approval and implementation of the CEMP and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
86.	Volume 2, Chapter A, Air Technical Report, Section 7.2.7	An adequate water supply on the site will be provided for effective dust / particulate matter suppression / mitigation, using non-potable water where possible and appropriate.	Construction	Requirement 18 secures the approval and implementation of the CEMP and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
87.	Volume 2, Chapter A, Air Technical Report, Section 7.2.7	Enclosed chutes and conveyors and covered skips will be used.	Construction	Requirement 18 secures the approval and implementation of the CEMP and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
88.	Volume 2, Chapter A, Air Technical Report, Section 7.2.7	Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment will be minimised.	Construction	Requirement 18 secures the approval and implementation of the CEMP and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
89.	Volume 2, Chapter A, Air Technical Report, Section 7.2.7	Equipment will be readily available on-site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods in order to minimise dust emissions.	Construction	Requirement 18 secures the approval and implementation of the CEMP and requires the CEMP to be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
90.	Volume 1, Chapter 7, Section 7.4.2	The plant will operate using Best Available Techniques (BAT) - Flue gas from the boiler will enter the electro-static precipitator where fly ash will be removed, then pass through wet flue gas desulphurisation where acidic gases such as sulphur oxides and hydrogen chloride will be captured and removed. The plant will also include selective catalytic reduction (SCR) to reduce the emissions of NOx.	Operation	To be secured via the controls prescribed within the EP.
91.	Volume 1, Chapter 7, Section 7.4.2	Air-mode operation will be minimised as far as possible.	Operation	Whilst acknowledging that the power plant can operate in non-CCS mode (known as “air mode”) and does have to run in such mode at certain times (e.g. for a brief period on plant start up), it is constrained in such operation by existing provisions resulting from the Energy Act 2013 and its associated regulations.
92.	Volume 1, Chapter 8, Section 8.4	There will be no incineration of waste materials on site.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme, including means of removal of materials arising, and at which point detailed matters relating to waste can be appropriately considered.
93.	Volume 1, Chapter 8, Section 8.4	Where required standard dust control mitigation measures will be used such as wetting of tracked surfaces, wetting of stockpiles and covering of Heavy Goods Vehicles (HGVs) loads exiting the site.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme at which point detailed matters relating to waste can be appropriately considered.
94.	Volume 1, Chapter 8, Section 8.4	The volume of traffic involved during decommissioning will be less than during construction and will not lead to significant air quality effects at roadside receptors.	Decommissioning	The assessment of the likely volume of traffic during decommissioning is a professional opinion based on the nature of the works likely to be undertaken. The assessment of potential air quality impacts follows that judgement, and therefore significant effects are not predicted.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
95.	Volume 1, Chapter 7, Section 7.5.3	Construction working hours will be 0700 to 1900 Monday to Friday and 0700 to 1300 on Saturdays. No work will take place on Sunday or bank holidays (other than in exceptional circumstances). The workings hours do not apply to construction works which do not exceed a noise limit of 50dB (a) at the DCO Order limits (and are covered by a prior agreement of Selby District Council), or for the delivery or removal of materials, plant, machinery and abnormal indivisible loads and finally to emergency situations.	Construction	Requirement 20 secures the construction working hours.
96.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.2	The conveyor system has been assumed to be fitted with a local shielding/enclosure. The conveyor drives are either located in transfer towers in which case it is assumed that the transfer tower provides acoustic screening, or they are assumed to be enclosed. For sources such as conveyor drives and tails that are located inside transfer towers a reduction of 15 dB(A) has been assumed, and for conveyor belts and idlers noise levels are assumed to reduce by 10 dB(A).	Operation	To be secured via operational noise which will specify noise limits at relevant receptors, and will require monitoring, mitigation where required and will deal with tonality. Requirement 23 secures an operational noise mitigation scheme.
97.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.4	The gypsum silo dewatering system will be enclosed inside a penthouse placed on top of the concrete silo. This penthouse will be constructed with single steel sheet cladding.	Operation	To be secured via the controls prescribed within the EP. Requirement 4(4) secures the approval of the gypsum handling transport infrastructure, including conveyors and other plant and buildings. Requirement 23 secures an operational noise mitigation scheme.
98.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.3	The limestone ball mill sets (2 x 100%) will be located inside a building which will limit the transmission of the internal emitted noise to the outside environment. The limestone preparation building walls and roof will provide an average sound insulation R = 35 dB(A).	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
99.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.5	Air compressors will be located inside noise hoods. Noise hoods will be located inside a light construction steel machine house. Air intakes of compressors and air intake/outlet of noise hoods will be equipped with silencers.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
100.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.5	Expansion turbines will be located inside noise hoods and there will be in-line silencers between the expansion turbines and the cold box.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
101.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.5	The molecular sieve will have in-line silencers for pressure valves, acoustic insulation on piping and a blow-off silencer between the expansion turbine and the cold box.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
102.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.5	Large motors associated with pumps will be fitted with low-noise cooling fans. Additionally sound insulation will be provided for the piping if required. For large pumps, noise hoods will be considered, if required.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
103.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.5	Low noise valves will be specified as required. For gas and steam service, special-design low-noise valves are preferred or alternatively in-line silencers may be used. For liquid flows, valves will be selected that will prevent cavitation, erosion, and vibration.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
104.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.5	Acoustic sound insulation for piping will be provided where required.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
105.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.6	The turbine hall building walls and roof will provide sound insulation. Furthermore, the vertical walls will have a sound absorbing inner liner in order to limit the reverberant noise level due to sound reflections.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
106.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.6	Silencers will be provided for the air inlet and outlet openings for the turbine hall building.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
107.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.6	Sound insulation will be achieved by installing the main pump and its coupling inside an acoustic enclosure.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
108.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.7	The boiler hall building walls and roof will provide a significant sound insulation. In this case the design work undertaken to date showed that cladding, but no acoustic absorption is required to control the noise contribution from this source.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
109.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.7	Silencers for air outlet openings will be provided for some openings.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
110.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.7	The maximum surface sound pressure level (free-field conditions) at a distance of one meter from any equipment item in the boiler area, other than mentioned above, will be limited to an overall sound power level of 85 dB(A).	Operation	The Control of Noise at Work Regulations 2005 establishes that the upper exposure action value is set at a daily or weekly average noise exposure of 85 dB, above which the employer is required to take reasonably practicable measures to reduce noise exposure, such as engineering controls or other technical measures. The use of hearing protection is also mandatory if the noise cannot be controlled by these measures, or while these measures are being planned or carried out. Requirement 23 secures an operational noise mitigation scheme.
111.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.8	To reduce the noise emission of upstream ducts, silencers or insulation will be provided upstream of the primary air fan. The downstream duct is located within the building and does not require specific mitigation. In order to meet the noise limits, as far as practicable, at off-site receptors the primary air fan (fan casing plus drive) will be enclosed in a building or acoustic enclosure.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
112.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.9	To reduce the noise emission of upstream ducts, silencers or insulation will be provided upstream of the forced draft fan. In order to meet the noise limits, as far as practicable, at offsite receptors, the forced draft fan (fan casing plus drive) will be enclosed in a building or acoustic enclosure.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
113.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.10	The sound power level will be emitted by the whole electrostatic precipitator units including precipitator insulated walls and roof, insulated flue gas ducts between air heater and precipitator, hammer drives, high voltage transformers and blow tanks for fly ash. The noise level will be limited to the lowest practicable level.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
114.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.11	To reduce the noise emissions of the induced draft fan, it will be necessary to put a sound insulation cover on the fan casing, typically made of minimum 250 mm of high density mineral wool (~130 kg/m ³) + 1.6mm heavy visco-elastic layer fixed on the inner side of the jacketing steel sheet + 1 mm jacketing steel sheet. To reduce the noise emission of upstream and downstream ducts, insulation will be provided. In order to fulfil the far field noise requirement, the whole induced draft fan (fan casing plus drive) will be by a noise barrier (without roof).	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
115.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.12	No air intake louvers will be installed on the northeast and southeast sides of the buildings.	Operation	Factored into the plant design. Requirement 23 secures an operational noise mitigation scheme.
116.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.12	The vent for the vacuum pump will be equipped with a suitable silencer (with an attenuation of about 10 dB(A)).	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
117.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.12	Each oxidation air blower will be equipped with an acoustic enclosure, and with a silencer inside the outlet pipe. A silencer will be installed on each blower air intake opening made in the building wall (in the southwest direction).	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
118.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.13	The sound power level at the stack mouth including self-induced noise caused by the flow will be specified to the supplier to not exceed 103 dB(A).	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
119.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.14	For the noise prediction calculation one cooling tower bank, consisting of 28 cells has been considered. For the complete cooling tower (wet air inlet, dry air inlet and outlet) silencers or sound absorbing louvers are likely to be required.	Operation	To be included in plant design. Requirement 23 secures an operational noise mitigation scheme.
120.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.15	The main cooling water pumps will be located inside a building.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
121.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.16	The de-mineralised water production plant will be housed inside a building, which will limit the noise emissions to the outdoor environment.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
122.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.17	The equipment for compressed air production will be housed inside a building which will significantly limit the transmission of the internal noise to the outside environment. Suitable silencers will be installed in the compressor air inlet/outlet ducts.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
123.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.18	The equipment for fly ash air production will be housed inside a building which will significantly limit the transmission of the internal noise to the outside environment.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
124.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.19	The fuel oil pumps will be housed inside a building which will significantly limit the transmission of the internal noise to the outside environment. No acoustic measures are necessary, and standard weather protection will be provided for the air intake louvers.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
125.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.20	The sound power level will be limited to the lowest level practicable. Noise levels have been specified based on test data. Potential noise mitigation measures may include silencers and insulation, which will be specified during the detail design stage.	Operation	To be included in plant design. Requirement 23 secures an operational noise mitigation scheme.
126.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.1 Volume 1, Chapter 7, Section 7.5.3	Plant design has included noise mitigation. The EPC contractor will ensure procurement of low noise equipment (transformers, cooling tower fans etc).	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
127.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.1 Volume 1, Chapter 7, Section 7.5.3	Plant design has included noise mitigation including the addition of silencers on air intakes/outlets and upstream/downstream of main boiler fans.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
128.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.1 Volume 1, Chapter 7, Section 7.5.3	Plant design has included noise mitigation including using acoustic screens or enclosures on major outdoor items such as pumps, motors and conveyors.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.
129.	Volume 2, Chapter B, Noise and Vibration Technical Report, Section 5.2.1 Volume 1, Chapter 7, Section 7.5.3	Plant design has included noise mitigation including acoustically insulating valves and pipes.	Operation	Embedded in the plant design. Requirement 23 secures an operational noise mitigation scheme.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
130.	Q4.2 Applicant's Response to First Written Questions	Layout of construction laydown areas will be developed during detailed design to ensure that no significant noise effects result from these activities within the criteria established by the ES.	Construction	Requirement 4(2) secures the approval of the detailed design of laydown areas, including specifically the layout. Requirement 18 secures that the CEMP must be in accordance with the measures set out in this mitigation annex. The Draft CEMP (Document 6.4.1) states that it will include (amongst others) a Noise and Vibration Management and Monitoring Plan (at paragraph 5.2).
131.	Q4.11 Applicant's Response to First Written Questions	The Jetty will be used during the construction period only and it is not required for the operation of the facility although could be employed during maintenance activities subject to relevant consents being obtained.	Operation	The DCO seeks consent for the use of the jetty laydown area only during construction. Use beyond that would be subject to obtaining any necessary consents at the time.
132.	Q4.11 – Applicant's Response to First Written Questions - Appendix 1 - Evaluation Of Noise Implications From AIL Importation Via Jetty	Source noise levels (Lw) of the equipment (crane and generators) to be used on site via measurement or supplier specification will be compliant with the Lw used in this modelling assessment. If the Lw levels are greater than those modelled (Table 2.1), it is recommended that the operation is re-assessed, and alternative equipment procured if practicable.	Construction	Requirement 18 secures that the CEMP must be in accordance with the measures set out in this mitigation annex. The Draft CEMP (Document 6.4.1) states that it will include (amongst others) a Noise and Vibration Management and Monitoring Plan (at paragraph 5.2).
133.	Q4.11 – Applicant's Response to First Written Questions - Appendix 1 - Evaluation Of Noise Implications From AIL Importation Via Jetty	If Lw levels are significantly lower (> 5 dB lower) than the modelled (for the importation of materials into the jetty), it is recommended that the operation is re-assessed to establish if further mitigation is required to meet noise criterion.	Construction	Requirement 18 secures that the CEMP must be in accordance with the measures set out in this mitigation annex. The Draft CEMP (Document 6.4.1) states that it will include (amongst others) a Noise and Vibration Management and Monitoring Plan (at paragraph 5.2).
134.	Q4.11 – Applicant's Response to First Written Questions - Appendix 1 - Evaluation Of Noise Implications From AIL Importation Via Jetty	Avoid night time use of the jetty wherever possible. In the event that the need for night time operations is identified, then good construction practice requiring notification to the residents would be recommended. The reduction that is required in the noise level to meet the night time criterion could be achieved by limiting the number of lifts to one per night, and therefore careful scheduling of the work would be sufficient to meet the criterion.	Construction	Requirement 20 controls the constructions hours for the Project and the circumstances in which activities outside the 'core hours' are permitted. Requirement 18 secures the inclusion of a residents' notification scheme within the CEMP. Requirement 18 secures that the CEMP must be in accordance with the measures set out in this mitigation annex. The Draft CEMP (Document 6.4.1) states that it will include (amongst others) a Noise and Vibration Management and Monitoring Plan (at paragraph 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
135.	Q4.11 – Applicant's Response to First Written Questions - Appendix 1 - Evaluation Of Noise Implications From AIL Importation Via Jetty	<p>If continued night time operations at the jetty are identified to need to occur, the installation of a barrier around the generators would be required to reduce noise levels.</p> <p>Typically this type of mitigation would reduce noise levels by approximately 5 to 10 dB(A).</p>	Construction	Requirement 18 secures that the CEMP must be in accordance with the measures set out in this mitigation annex. The Draft CEMP (Document 6.4.1) states that it will include (amongst others) a Noise and Vibration Management and Monitoring Plan (at paragraph 5.2).
136.	Schedule 2 Article 2 Requirements – Referred to within Applicant's Statement of Common Ground with North Yorkshire County Council and Selby District Council	Noise mitigation measures and acoustic ventilation are to be implemented at receptor number 1 (Foreman's Cottage) and receptor number 5 (Drax Abbey Farm), including a programme for their implementation, with the aim to achieve an acceptable noise level inside bedrooms between the hours of 2300 and 0700, consistent with World Health Organisation guidelines and British Standard 8233 (30 dB LAeq, 2300 and 0700), as far as reasonably practicable.	Operation	Requirement 23 secures operational noise limits and mitigation.
137.	Schedule 2 Article 2 Requirements – Referred to within Applicant's Statement of Common Ground with North Yorkshire County Council and Selby District Council	<p>Construction work or the delivery or removal of materials, plant and machinery or the delivery of abnormal indivisible loads,</p> <p>(a) do not exceed a noise limit of 50dB(A) at the Order limits 45dB LAeq, night (2300 to 0700 hours), and 55 dB LAeq, (during evening and weekend periods defined in BS5228- 1:2009 Table E.1) at any residential property specified in Table 3.1, Chapter B, Volume 2 of the environmental statement.</p>	Construction	Requirement 20 controls the constructions hours for the Project and the circumstances in which activities outside the 'core' hours are permitted.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
138.	Chapter I, Ecology Technical Report, Table 4.1	Avoidance through the retention of peripheral habitat, including ditches, arable field margins and hedges.	Construction, Operation and Decommissioning	<p>Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).</p> <p>Requirements 5 and 6 secure the approval, implementation and maintenance of a landscaping scheme which must be in accordance with the indicative landscaping and biodiversity plan.</p> <p>Requirement 16 secures the approval and implementation of a biodiversity mitigation management plan which must be in accordance with the measures set out in the ES.</p> <p>Requirement 27 secures the approval and implementation of a decommissioning scheme which must be in accordance with the principles in the ES, and at which point detailed matters relating to habitats can be appropriately considered.</p>
139.	Chapter I, Ecology Technical Report, Table 4.1	Loss of habitat will be addressed through the provision of a flood attenuation pond. These will be fitted with membranes around the edges to increase water holding capacity to allow reed and marginal plants to establish.	Construction, Operation and Decommissioning	<p>Requirements 5 and 6 secure the approval, implementation and maintenance of a landscaping scheme. Requirement 16 secures the approval and implementation of a biodiversity management plan.</p> <p>Requirement 27 secures the approval and implementation of a decommissioning scheme which must be in accordance with the principles in the ES, and at which point detailed matters relating to habitats can be appropriately considered.</p>
140.	Volume 1, Chapter 6, Section 6.6.2	Measures will be taken to avoid direct disturbance to NERC Priority Habitat types (including reedbed, hedgerow, arable land, lakes, ponds, rivers, streams and ditches).	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).
141.	Volume 1, Chapter 6, Section 6.6.2	Staff will be made aware of the local species and a site specific speed limit will be maintained in order to reduce the likelihood of killing and injuring protected fauna.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that staff will be trained in relation to potential environmental impacts (para 4.4) and that the final document will include a Biodiversity Management Plan (para 5.2).
142.	Volume 1, Chapter 6, Section 6.6.2	Peripheral habitat will be retained in the north-east of the operational area where possible.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
143.	Volume 1, Chapter 6, Section 6.6.2	A buffer will be retained around any ponds or ditches that are retained to prevent pollution and siltation during construction and operation.	Construction and Operation	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2). Requirements 5 and 6 secure the approval, implementation and maintenance of a landscaping scheme. Requirement 16 secures the approval and implementation of a biodiversity mitigation and management plan.
144.	Volume 1, Chapter 6, Section 6.6.2	Any ponds lost in the operational area will be netted prior to construction to confirm the presence of smooth newts. Any populations found will be translocated to a suitable habitat.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).
145.	Volume 1, Chapter 6, Section 6.6.2	A 30m (100m during piling) buffer zone will be established around suitable bat roosting trees adjacent to the site during construction. In instances where a buffer zone cannot be maintained, a pre-construction survey will be undertaken to confirm bats remain absent.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).
146.	Volume 1, Chapter 6, Section 6.6.2	Scrub vegetation will be maintained at the fence line in the centre of the operational area ensuring the retention of bat foraging habitat and maintenance of a connectivity route between two pipistrelle roosts. The majority of construction work will occur during daylight hours.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
147.	Volume 1, Chapter 6, Section 6.6.2 Chapter I, Ecology Technical Report, Table 4.1	Above ground vegetation clearance (staged) will occur between August and October in order to minimise effects on reptiles (and will aim for the most optimal time period for clearance in September which corresponds with an activity peak but avoids the breeding bird season). Clearance will be conducted incrementally in stages to allow reptiles to move away of their own accord. The ground will be maintained in this cleared state until construction commences to discourage reptiles from re-colonizing the area Fencing will be used prevent to reptiles from re-colonising the site if needed (until construction is complete). Potential reptile hibernation sites will be fenced off and alternative hibernacula provided. Where these measures are not possible excavation within the reptile hibernation season will be supervised by an Ecological Clerk of Works (ECoW).	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).
148.	Chapter I, Ecology Technical Report, Table 4.1	Where possible peripheral ditches plus a 5m buffer zone will be retained thus avoiding impact on reptile habitat and providing a refuge for any individuals moving away from the site. On the south side a 7 m buffer zone will be established.	Construction, Operation and Decommissioning	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2). Requirements 5 and 6 secure the approval, implementation and maintenance of a landscaping scheme. Requirement 16 secures the approval and implementation of a biodiversity management plan.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
149.	Chapter I, Ecology Technical Report, Table 4.1	It is possible that water vole may recolonize suitable habitat in and around the Project site prior to the Project being implemented. The 5 m buffer area around ditches and ponds will prevent any impact on water vole should this occur. Where this is not possible, i.e. a water vole crossing over Carr Dyke and where ponds are to be lost and the northern margin of Carr Dyke, it will be necessary to conduct pre-construction surveys. In the event that water voles are found the area where they have been identified will be subject to progressive strimming so that they move out and use the south bank of Carr Dyke only. This should be carried out under the supervision of a suitably experienced and qualified ecologist.	Construction, Operation and Decommissioning	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2). Requirements 5 and 6 secure the approval, implementation and maintenance of a landscaping scheme. Requirement 16 secures the approval and implementation of a biodiversity management plan. Requirement 17 secures a scheme of protection and mitigation for protected species where this is identified as necessary.
150.	Volume 1, Chapter 6, Section 6.6.2	A Badger Licence will be agreed with Natural England which will provide details of specific mitigation measures.	Construction	The Conservation of Habitats and Species Regulations 2010 apply controls to protected species. In addition, requirement 17 secures the approval and implementation of a scheme of protection and mitigation for protected species if required.
151.	Volume 1, Chapter 6, Section 6.6.2	Mitigation areas will be provided within the Project site to reduce impacts on habitats and fauna.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).
152.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.2 Volume 1, Chapter 6, Section 6.6.2	Any lighting that is required for the construction and operational phases of the Project will be shielded and directed away from surrounding habitat to minimise light disturbance to fauna such as foraging bats.	Construction and Operation	Requirements 8 and 9 secure the approval and implementation of schemes for external lighting for the construction and operational phases respectively.
153.	Volume 1, Chapter 6, Section 6.6.2	Where it is necessary to clear vegetation, clearance works will take place outside of the bird breeding season.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
154.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.3 Volume 1, Chapter 6, Section 6.6.2 Volume 1, Chapter 7, Section 7.6.2	Use of Best Available Techniques (BAT) to minimise disturbance will include specification of efficient well maintained, quiet machinery with in- built noise attenuation. Perimeter attenuation fencing and tree screens will be also used where necessary to minimise disturbance due to noise and activity.	Construction and Operation	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Noise and Vibration Management Plan and a Biodiversity Management Plan (para 5.2). Requirement 11 secures the approval and implementation of the temporary and permanent means of enclosure of the site.
155.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.4 Volume 1, Chapter 6, Section 6.6.2	To mitigate against killing and injury of protected fauna by traffic and construction plant, Toolbox Talks will be delivered to all site operatives prior to the commencement of works on site (including site clearance activities), in order that all operatives are fully briefed regarding the species which may be encountered on site. Furthermore, a site speed limit will be maintained. Most activity will occur during daylight hours when species such as badgers are not active.	Construction	Requirement 18 secures the approval and implementation of the CEMP, which must be in accordance with the principles in the ES. The draft CEMP identifies that staff will be trained in relation to potential environmental impacts (para 4.4) and that the final document will include a Biodiversity Management Plan (para 5.2).
156.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.5	Air Quality and Emissions of Construction Dust. Measures that will be put in place to minimise potential effects from such site clearance activities as topsoil stripping, storage and earthworks, will include soil stripping management and storage techniques recommended in the Defra Code of Practice for the Sustainable Use of Soils on Construction Sites.	Construction	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan (para 5.2).
157.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.5 Volume 1, Chapter 6, Section 6.6.2	A soil management plan will be implemented and native plants will be reintroduced to ensure that soils will be held in place and not become friable and get blown by wind off site.	Construction	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include an Air Quality and Dust Management Plan and a Soil Management Plan (para 5.2).
158.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.5	The site will be accessed via New Road, connecting to the A645 and onto the A614 and M62. This will avoid or minimise effects on sensitive receptors in the vicinity of the Project.	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan. The draft CEMP identifies that the final document will include a Traffic Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
159.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.5	The HGV route will be the existing dedicated route for the existing Drax Power Station, which will help minimise effects on sensitive receptors in the Project area.	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan. The draft CEMP identifies that the final document will include a Traffic Management Plan (para 5.2).
160.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.5	All construction activity will adhere to the Environment Agency's Pollution Prevention Guidance and CIRIA documents will be referred to as appropriate and these measures will be contained the adopted Construction Environmental Management Plan (CEMP).	Construction	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Surface and Ground Water Management Plan (para 5.2).
161.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.6 Volume 1, Chapter 6, Section 6.6.2	Buffer zones around field drains, dykes and ponds will be maintained during construction. Where this is not possible (i.e. drain and ditch crossings and the northern bank of Carr Dyke), best practice design and standard good construction practice will ensure the watercourses remain unaffected.	Construction	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Surface and Ground Water Management Plan (para 5.2).
162.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.7 Volume 1, Chapter 6, Section 6.6.2	Measures will be taken to ensure that areas where vegetation is removed are not colonised by invasive plants such as Himalayan balsam, which is known to occur in the surrounding area including immediately adjacent to the jetty on the western bank of the River Ouse. These measures will include a soil management plan and reintroduction of native plant species into disturbed areas.	Construction	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Soil Management Plan and a Biodiversity Management Plan (para 5.2). Requirements 5 and 6 secure the approval and implementation of a landscaping scheme, including tree and shrub planting.
163.	Volume 2, Chapter I, Ecology Technical Report, Section 4.3.8	In order to address the loss of NERC Priority Habitats and loss of habitat used by protected species, a mitigation area will be provided to the east of Carr Dyke.	Construction	Requirements 5 and 6 secure the approval and implementation of landscaping scheme which must be in accordance with the indicative landscaping and biodiversity framework plan. Requirement 16 secures the approval and implementation of a biodiversity management plan which must be in accordance with the measures set out in the ES.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
164.	Volume 1, Chapter 7, Section 7.6.2	Suitable habitat for breeding birds (hedges and woodland strips and buffers around field margins) will be retained to preserve nesting and foraging resource.	Operation	Requirements 5 and 6 secure the approval and implementation of landscaping scheme which must be in accordance with the indicative landscaping and biodiversity framework plan. Requirement 16 secures the approval and implementation of a biodiversity management plan which must be in accordance with the measures set out in the ES.
165.	Volume 1, Chapter 7, Section 7.6.2	Enhancement areas for birds will be designed in conjunction with enhancement areas for badgers and other species as part of the overall Landscape and Ecology Masterplan for the Project.	Operation	Requirements 5 and 6 secure the approval and implementation of landscaping scheme which must be in accordance with the indicative landscaping and biodiversity framework plan. Requirement 16 secures the approval and implementation of a biodiversity management plan which must be in accordance with the measures set out in the ES.
166.	Applicant’s Statement of Common Ground with North Yorkshire County Council and Selby District Council	It is agreed that a Biodiversity Mitigation and Management Plan will be used to guide and deliver the on- site mitigation.	Construction and Operation	Requirement 16 secures the approval and implementation of a biodiversity mitigation and management plan which must be in accordance with the measures set out in the ES and this mitigation annex.
167.	Deadline 2 LIR Response, Ref 29, NYCC/SDC Local Impact Report Response	The Biodiversity Mitigation and Management Plan will show that access for badgers to the mitigation area will be retained through badger gates within the perimeter fence. These will be at either end of Carr Dyke. This will give animals opportunity to use the species rich grassland for spring and summer foraging, whilst the berry bearing shrubs will provide autumn foraging.	Construction and Operation	The revised Indicative Biodiversity and Landscaping Plan includes these measures, and is secured through the landscaping schemes and biodiversity mitigation scheme secured under requirements 5 and 16.
168.	Volume 1, Chapter 8, Section 8.6	In advance of decommissioning ecological surveys will be undertaken to identify whether protected species may be at risk from dismantling and demolition activities.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme, which must be in accordance with the principles in the ES.
169.	Volume 1, Chapter 8, Section 8.6	Suitable mitigation measures will be agreed with Natural England (or its successor organisation) and applied before works begin.	Decommissioning	Requirement 27 secures the approval and implementation of a decommissioning scheme, which must be in accordance with the principles in the ES.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
170.	Chapter I, Ecology Technical Report, Table 4.1	The short section of plantation woodland within the Construction Laydown Area (No.6) will be reinstated following construction.	Construction, Operation and Decommissioning.	Requirements 5 and 6 secure the approval and implementation of landscaping scheme which must be in accordance with the indicative landscaping and biodiversity framework plan. Requirement 16 secures the approval and implementation of a biodiversity management plan which must be in accordance with the measures set out in the ES. Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Soil Management Plan and a Biodiversity Management Plan (para 5.2).
171.	Applicant's Response to First Written Questions Q6.3	A pre-construction otter survey will be undertaken at the jetty as otters are known to occur in the wider area. The pre-construction checks for otter (and other protected species) will be captured in the CEMP.	Construction	Requirement 17 secures the implementation of pre-construction surveys in respect of protected species. The details of surveys will be defined in the biodiversity mitigation and management plan secured by Requirement 16.
172.	Applicant's Response to First Written Questions Q6.3	Pre-construction surveys for otter in the Carr Dyke area will be undertaken to confirm that there are no holts or couches that could be disturbed will be undertaken.	Construction	Requirement 17 secures the implementation of pre-construction surveys in respect of protected species. The details of surveys will be defined in the biodiversity mitigation and management plan secured by Requirement 16.
173.	First PINS Questions Applicants Response to Q6.8	Mitigation measures will include sett closures as well as zone protection incorporating fencing around relevant setts. The briefing note provided (Confidential Q6.8 - Appendix 1 - Briefing Note On Badgers) updated information on which setts are now likely to require closure under licence, and which are likely to be subject to zone protection.	Construction and Operation	These matters are defined in the Badger Licence (NE reference: 2014-5716-SPM-NSIP Customer C145388) which is currently being considered by NE.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
174.	Volume 2, Chapter H, LVIA Technical Report, Section 5.1 and referred to in Section 5.3 Volume 1, Chapter 6, Section 6.7.2	Limit land clearance and occupation to the minimum necessary for the works.	Construction and Decommissioning	In determining the Project site consideration was given to reducing land areas, laydown areas were reduced from the potential areas identified during consultation. Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2). Requirement 22 will secure the restoration of land used temporarily for construction. Requirement 27 secures the approval and implementation of a decommissioning scheme, which must be in accordance with the principles in the ES.
175.	Volume 2, Chapter H, LVIA Technical Report, Section 5.1 and referred to in Section 5.3 Volume 1, Chapter 6, Section 6.7.2	Restrict construction site lighting outside normal working hours as far as practicable to the minimum required for safety and security.	Construction and Decommissioning	Requirement 8 secures the approval and implementation of a scheme for external lighting for the construction phase.
176.	Volume 2, Chapter H, LVIA Technical Report, Section 5.1 and referred to in Section 5.3 Volume 1, Chapter 6, Section 6.7.2	Maintenance of tidy and contained site compounds.	Construction and Decommissioning	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. Requirement 11 secures the approval and implementation of the means of enclosure for the site during construction. Requirement 26 secures the approval and implementation of a decommissioning scheme, which must be in accordance with the principles in the ES.
177.	Volume 2, Chapter H, LVIA Technical Report, Section 5.1 and referred to in Section 5.3 Volume 1, Chapter 6, Section 6.7.2	The spreading of topsoil and replacement of turf, or reseeded and planting as soon as possible after sections of work are complete.	Construction and Decommissioning	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Soil Management Plan (para 5.2). Requirement 27 secures the approval and implementation of a decommissioning scheme, which must be in accordance with the principles in the ES.
178.	Volume 2, Chapter H, LVIA Technical Report, Section 5.1 Volume 1, Chapter 6, Section 6.7.2	The early establishment of hedgerow planting prior to, or early in the construction programme.	Construction	Requirement 18 requires the approval and implementation of a CEMP which must be in accordance with the principles in the ES. The draft CEMP identifies that the final document will include a Biodiversity Management Plan (para 5.2).

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
179.	Volume 2, Chapter H, LVIA Technical Report, Section 5.2	Planting will be undertaken to the north of the site of Drax Augustinian Priory (outwith the Scheduled area) to be shown on the Landscape and Ecology Masterplan.	Operation	Requirements 5 and 6 secure the approval and implementation of a landscaping scheme and specify that it must include planting between Work No 1A and Drax Augustinian Priory SM.
180.	Deadline 2 LIR Response, Ref 26, NYCC/SDC Local Impact Report	To ensure adequate and proportionate landscape and biodiversity mitigation, options are currently being refined in full consultation with local stakeholders. This will chiefly take the form of off- site ecological enhancement areas (which are likely to confer other benefits including but not limited to, public access, landscape amenity, surface water management).	Construction and Operation	Off-site biodiversity contributions have been agreed with statutory consultees and are to be secured by a Section 106 Agreement.
181.	Volume 2, Chapter E, Transport Assessment , Section 5.1	The CEMP would highlight how pedestrian and cyclists would access the site, how these trips would be diverted should roads or routes be required to be closed as part of these works, and define the traffic routes for construction traffic to follow (i.e. defining the specific routes that construction traffic must take – via the M62 dedicated route). Potentially, this CEMP could be expanded to include all construction workforce vehicles, so as to prevent the use of the route from the west through Snaith and Carlton.	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan which must include measures to encourage use of sustainable transport modes by construction personnel.
182.	Volume 2, Chapter E, Transport Assessment , Table 4.19	It is expected that the contractor team, through the CEMP and Travel Plan will spread shift patterns to ensure vehicular impacts are minimised.	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan. The draft CEMP identifies that the final document will include a Traffic Management Plan (para 5.2).
183.	Volume 2, Chapter E, Transport Assessment , Section 5.1	Peak spreading of HGV movements.	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan. The draft CEMP identifies that the final document will include a Traffic Management Plan (para 5.2).
184.	Volume 2, Chapter E, Transport Assessment , Section 5.1	The existing Drax Travel Plan will be modified to incorporate additional operational workers.	Operation	Requirement 24 secures the approval and implementation of an operational traffic routing and travel plan. This can build on and take account of the travel plan for the existing Drax Power Station.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
185.	Volume 1, Chapter 6, Section 6.9.2 Volume 2, Chapter E, Transport Assessment , Table 4.16 and 4.17	Implementation of a Travel Plan for construction workers emphasising car-sharing., shift-working and peak spreading.	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan. The draft CEMP identifies that the final document will include a Traffic Management Plan (para 5.2).
186.	Volume 2, Chapter E, Transport Assessment , Table 4.16	Use of existing dedicated HGV route. Delivery timings to be monitored to avoid congested periods (managed via Construction Environmental Management Plan).	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan. The draft CEMP identifies that the final document will include a Traffic Management Plan (para 5.2).
187.	Volume 2, Chapter E, Transport Assessment , Table 4.16	Abnormal Load Routing to be agreed with local highway authorities on planned routes. Street furniture to be removed in advance. Travel of AILs in convoy where practical, and off-peak.	Construction	Requirement 19 secures the approval and implementation of a construction traffic routing and travel plan which must include details in relation to AIL. The draft CEMP identifies that the final document will include a Traffic Management Plan (para 5.2).
188.	Volume 1, Chapter 6, Section 6.9.2	To reduce the impacts of the Project on the surrounding highway network, two junctions will be constructed: one off New Road and one off Pear Tree Avenue (to serve as an emergency entrance / exit) in order to allow access into construction laydown areas. These junctions will be temporary in nature and will be returned to their existing state following the end of the construction period. Given the impact of the peak construction would be short in nature (i.e. less than 6 months) and that outage periods last only for around 4 months (of which there is a 1 month intense usage) it is not proposed to provide any permanent specific highway works associated with capacity improvements.	Construction	The DCO includes the highways works and accesses on New Road and Pear Tree Avenue, including the restoration of those to be removed (articles 10 and 11). Requirement 10 requires the approval and implementation of highways access points.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
189.	Volume 1, Chapter 6, Section 6.9.2	To reduce the impacts of the Project on the surrounding highway network, a four-arm crossroad junction will be constructed on New Road to the north of the existing Drax Power Station materials handling entrance. This junction will allow access into both the Construction Laydown Areas as well as into the 'Operational Area'.	Construction	The DCO includes the highways works and accesses on New Road. Requirement 10 requires the approval and implementation of highways access points.
190.	Volume 1, Chapter 6, Section 6.9.2	In order to facilitate operation of the above mentioned junctions, a stretch of carriageway of around 150 m in length will be realigned and widened to provide two full lanes on New Road.	Construction	The DCO includes the highway works to widen the carriageway of New Road. Requirement 10 requires the approval and implementation of highways access points.
191.	Volume 1, Chapter 6, Section 6.9.2	The four-arm crossroad junction on New Road to the north of the existing Drax Power Station will be controlled by traffic signals during construction. The junction itself will be retained following the start of the operational period of the Project; however, the eastern arm of the junction will be removed in order that the junction becomes a simple T-Junction.	Construction	The DCO includes the highways works and accesses on New Road, including the restoration of those to be removed (articles 10 and 11). Requirement 10 requires the approval and implementation of highways access points.
192.	Volume 1, Chapter 7, Section 7.9.2	Operational HGV traffic for the Project (and for Drax Power Station) will travel to and from the site via specified local routes, specifically the dedicated HGV route from the M62 (junction 36) to the Project site via the A645.	Operation	Requirement 24 secures the approval and implementation of an operational traffic routing and travel plan.
193.	NYCC/SDC Statement of Common Ground	Dilapidations surveys of certain highways are required prior to use of them by Project construction traffic.	Construction	Requirement 19 secures that the construction traffic routing and travel plan must include pre-construction surveys of certain roads and agreement as to the standard the roads must be returned to by the undertaker.
194.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.1	The Project will keep SDC and NYCC informed on the progress of the Project.	Construction	CPL would offer a monthly forum during construction to keep SDC and NYCC informed on the progress of the Project. The draft CEMP (secured by Requirement 18) identifies that the final CEMP will include a stakeholder communications plan.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
195.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.1	CPL and the councils will further publicise the Project and its scale so local and regional businesses are aware of the development and can plan accordingly.	Construction	Through CPL newsletter (already in place), to be published at regular intervals.
196.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.1	CPL and the national government will publicise the Project so that the wider business community is aware of the CCS development and its wider implications for the future of UK economic growth.	Construction	Such publicity will occur through the announcements to be made by CPL and the Government in relation to the Project, its funding and progress.
197.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.2 Volume 1, Chapter 6, Section 6.10.2	As far as possible and practicable with availability of the necessary skills, the workforce will be recruited from the local area.	Construction	Measures to promote local employment are secured through Requirement 31.
198.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.2 Volume 1, Chapter 6, Section 6.10.2	A Construction Method Statement and / or local procurement policy will be discussed with the contractor to address recruitment opportunities. A register will be created for interested companies and individuals to express their interest in tendering for work or seeking employment.	Construction	The register is already in place through the supplier contact form for the Supplier Database on the Project website. The register in respect of individuals seeking employment will be in place in due course, and will be brought forward as part of the local employment scheme secured under Requirement 31.
199.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.2	A specialist contractor will be appointed which will be responsible for appointing specialist local subcontractors through the register.	Construction	GE is both a shareholder of CPL (the Applicant) and is to be the main contractor for the Project.
200.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.2	The requirements of the Construction Regulations 2007 as amended and subsequent amendments will be adhered to.	Construction	The Construction (Design and Management) Regulations 2015 will apply (replacing the 2007 Regulations).
201.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.2	The current footpath which traverses the site will be rerouted along the northern boundary of the site as per the agreed footpath diversion order.	Construction	NYCC has made and confirmed the footpath diversion order, which is reflected on the access and rights of way plans. Requirement 7 secures the approval and implementation of a rights of way management plan.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
202.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.3 Volume 1, Chapter 7, Section 7.10.2	CPL and SDC will engage with research centres to promote increased innovation and technological development.	Operation	This is secured by Requirement 31 which ensures promotion of local employment, skills and training.
203.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.3 Volume 1, Chapter 7, Section 7.10.2	CPL will engage with local stakeholders at an early stage to gain an understanding of the skills requirements and promote local suppliers.	Operation	This process has already begun, by way of the DECC CCS Supply Chain Events. The next one takes place in July 2015. Going forwards CPL's participation in engagement with local stakeholders is secured Requirement 31.
204.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.3 Volume 1, Chapter 7, Section 7.10.2	CPL and SDC will engage with local educational providers to ensure the numbers of skilled workers available locally are maximised.	Operation	CPL's engagement with local education providers will be secured by an appropriate requirement. All sub-contractors employing in excess of 20 employees will be required to support The Engineering Construction Industry Training Board (ECITB) Apprentice placement scheme. The ratio of apprentice placements to the number of employees will be highlighted in the IR tender documents and form part of the contractual acceptance.
205.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.3	CPL will develop a site safety plan. This will include regular training and safety inspections.	Operation	The Health and Safety at Work Act 1974 and related regulations (e.g. COMAH) and guidance will be applied which will require the development of a site safety plan to regulate site activities to achieve a high safety standard.
206.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.4	Opportunities will exist for local contractors and workers to be involved in the non-technical aspects of the decommissioning and will be procured through the register as for the construction phase.	Decommissioning	It is anticipated that at an appropriate time before decommissioning, a supplier database will be established. This is likely to be a similar process to that already in place for the construction phase through the supplier contact form for the Supplier Database on the White Rose CCS website.
207.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.4	Any potential redeployment of staff ahead of closure will be managed in advance. Options such as early retirement or transfer to other facilities owned by Project partners will be investigated in consultation with staff ahead of closure.	Decommissioning	This will be achieved through the operator's human resources procedures and employment law in place at the time.
208.	Q11.4 Applicant's Response to First Written Questions	The White Rose CCS website will be maintained which will allow members of the public to ask questions regarding the project or raise issues of concern. The website will also be kept up-to-date to ensure that any new information regarding the project is made available.	Construction	Requirement 18 secures that the CEMP must include a scheme for construction stage notifications to residents and for handling complaints. The draft CEMP (secured by requirement 18) identifies that the final CEMP will include a stakeholder communications plan.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
209.	Q11.4 Applicant's Response to First Written Questions	Quarterly meetings with the Parish Councils in the local area will be held to answer any questions about the project.	Construction	Requirement 18 secures that the CEMP must include a scheme for construction stage notifications to residents and for handling complaints. The draft CEMP (secured by requirement 18) identifies that the final CEMP will include a stakeholder communications plan.
210.	Q11.4 Applicant's Response to First Written Questions	A newsletter will be generated to keep the public informed regarding progress on the development and any issues which are pertinent to the local stakeholders.	Construction	Requirement 18 secures that the CEMP must include a scheme for construction stage notifications to residents and for handling complaints. The draft CEMP (secured by requirement 18) identifies that the final CEMP will include a stakeholder communications plan.
211.	Volume 2, Chapter F, Socio-economic Characteristics Technical Report, Section 4.7.4	Health and safety during construction will be managed in accordance with the regulations and guidelines in force at the time.	Decommissioning	The health and safety legislation and rules applicable at the time of decommissioning will apply to the Project and provide necessary regulation of activities.
212.	Deadline 2 Response to LIR, Ref 56, NYCC/SDC Local Impact Report	The Applicant anticipates including a Visitor Centre as part of the Project and that this would provide an excellent educational facility for the local area covering the specific project, as well as the wider carbon capture and storage industry.	Operation	The visitor centre is included within the description of Work No. 1A (Schedule 1 to the DCO) and if provided, approval of its detailed design is secured under requirement 4.
213.	Volume 1, Chapter 6, Section 6.10.2	If work needs to be undertaken outside of normal working hours (0700 to 1900 Monday to Friday, and 0700 – 1300 on Saturdays) it will be subject to the requirements outlined in the DCO.	Construction	Requirement 20 secures the construction working hours and the approval of any exceptions.
214.	Volume 1, Chapter 6, Section 6.10.2	Temporarily occupied land will be returned to its former use through stockpiling and careful management of topsoil during construction and reinstatement measures at the end of construction.	Construction	Requirement 22 secures the approval and implementation of a scheme for the restoration of land used temporarily.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
215.	Volume 2, Chapter G, Archaeology Technical Report, Section 5.1 Volume 1, Chapter 6, Section 6.8.2	<p>Construction impacts will be mitigated by a staged programme of archaeological works, in accordance with the Archaeology: Written Scheme of Investigation March 2015. The archaeological works will be based on the results of previous archaeological works within the Inner Study Area, as well as the results of the further evaluation programme.</p> <p>The archaeological works will concentrate on areas which are considered to be of moderate to high archaeological potential based on the results of the previous archaeological works and are likely to comprise: a programme of strip, map and record in areas of moderate to high potential; and archaeological monitoring of groundworks where appropriate.</p>	Construction	Requirement 15 secures the approval and implementation of a scheme of archaeological investigation which must be in accordance with the principles set out in the ES.
216.	Volume 2, Chapter G, Archaeology Technical Report, Section 5.1 Volume 1, Chapter 6, Section 6.8.2	A community heritage project into the documentary evidence for the WW1 airship construction works at Barlow could help offset the effects on the archaeology of the site. Preliminary discussions with Barlow Parish Council have been undertaken and CPL recognises that this could become part of the 'legacy' of the archaeological work. As indicated in the response to FWQ9.3 (Document Ref. 9.1), should the Project progress through to construction, CPL would support this element. However, this project is not considered mitigation since it is not linked to any impacts of the Project and this has been agreed with HE.	Construction	Discussions with Barlow Parish Council and Historic England are on-going. It is intended that a MoU outlining the objectives, roles and programme for this project will be completed by the end of July 2015.

Item	Source	Mitigation or Measure to prevent, reduce, offset and minimise impacts	Project Stage	Securing Mechanism
217.	Volume 2, Chapter G, Archaeology Technical Report, Section 5.1 Volume 1, Chapter 6, Section 6.8.2	The boundary with Drax Augustinian Priory will be clearly marked by fencing and construction vehicles will not enter this area.	Construction	Requirement 11 secures the approval and implementation of construction stage means of enclosure. Construction sites must remain securely fenced.
218.	Volume 2, Chapter G, Archaeology Technical Report, Section 5.1 Volume 1, Chapter 7, Section 7.8.2	To minimise the operational effect on the setting of Drax Priory, a strip of landscaping is proposed between the scheduled area and Drax Power Station. The framework landscape and biodiversity plan has identified an area of tree planting along the southwest side of the SM, between the Carr Dike and the pond to the northwest.	Operation	Requirements 5 and 6 secure the approval and implementation of a landscaping scheme and specify that it must include planting between Work No 1A and Drax Augustinian Priory.

