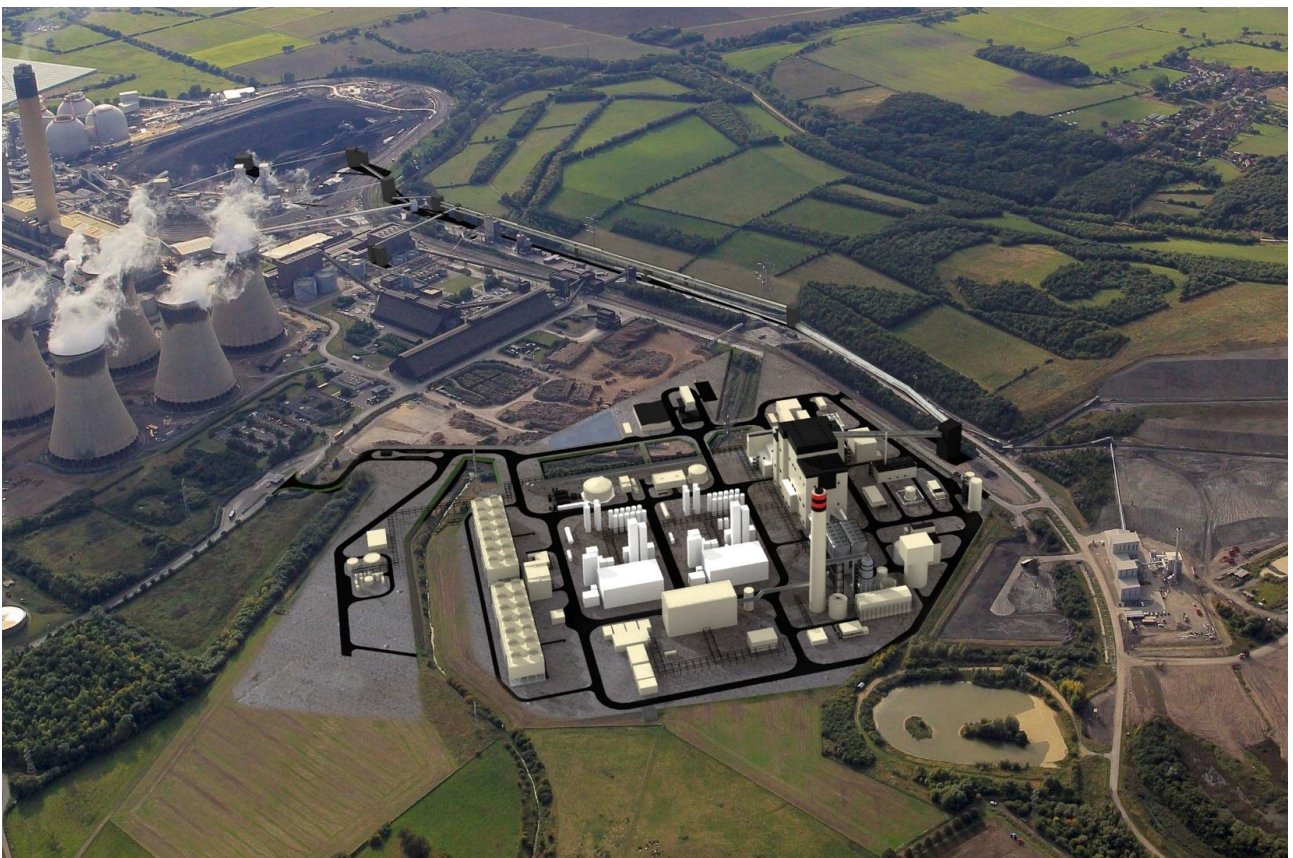


# White Rose Carbon Capture and Storage (CCS) Project

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

## Environmental Permit Chapter VI – Management and Systems



Applicant: Drax Power Limited  
Date: April 2015

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## Glossary of Abbreviations and Definitions

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

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## 1.0 INTRODUCTION

- 1.1 Capture Power Ltd (CPL) plans to construct a new 448 MWe (gross output) ultra-super critical coal fired power station. The Project will have the capacity to provide electricity sufficient for 630,000 households whilst capturing two million tonnes of carbon dioxide (CO<sub>2</sub>) per year arising from the combustion process (approximately 90% of CO<sub>2</sub> emissions generated by the plant). The generating station and the means to capture CO<sub>2</sub> together comprise the White Rose Carbon Capture and Storage (CCS) Plant.
- 1.2 The Project is a key part of the UK's development and commercialisation of CCS, which the Government is supporting through over £1billion of capital and research and development funding. Additionally, the Project will support the development of a CO<sub>2</sub> transmission pipeline (a separate project developed by National Grid Carbon Ltd (NGCL)) which it is hoped will, in the future, be used by other industries and power stations in the Yorkshire and Humber area to transport their CO<sub>2</sub> emissions for permanent storage in the North Sea in geological features.
- 1.3 The application site (henceforth the 'Project site') is located on land adjoining the existing Drax Power Station in North Yorkshire, England. CO<sub>2</sub> captured will not be stored on site as the Project will link to a CO<sub>2</sub> transport and storage solution as noted above. The Project is in line with Government strategies (for instance the CCS Roadmap (1)) for controlling the construction / operation of new electrical generation infrastructure whilst meeting carbon reduction targets for the energy sector in the UK.
- 1.4 A separate Development Consent Order has been submitted to The Planning Inspectorate and was 'Accepted for Examination' on 17 December 2015 but did not include application for a deemed Environmental Permit. Due to the proposed activities of White Rose Carbon Capture and Storage it has been agreed with the Environment Agency that the current Drax Power Limited Environment Permit (VP3530LS) can be varied to accommodate the operations of the White Rose Carbon Capture and Storage Plant.
- 1.5 This Environmental Permit application is made in order to make a variation to the existing Drax Power limited Environment Permit (VP3530LS). The application forms and the associated chapters form the application for a variation to the Environmental Permit which will seek to add the activities of the White Rose Carbon Capture and Storage project to the existing Drax Power Limited Environmental Permit

## 2.0 ENVIRONMENTAL MANAGEMENT

### Overview

- 2.1 The existing Drax Power Station has an EMS which will be amended so that its scope includes the management of the additional significant aspects and impacts associated with the operation of the WRCCS. Drax Power Station's EMS is certified to ISO 14001 and this will continue. A number of procedural changes will occur as a result of the addition of the Project and these will require the development of systems to monitor and manage the movement of raw materials, products and by products generated. Areas which will require procedural and system changes include, but are not limited to, the following areas:
- Receipt of coal, petroleum coke, biomass at the coal mills
  - Supply of oil and gas to the combustion unit/furnace
  - Biomass transfer to the Project
  - Ash receipt and onward sale as coal/biomass mix
  - Ash receipt and disposal
  - Purge water receipt (and quality controls)
- 2.2 The Project will be operated and managed by appropriately trained DPL staff and hence processes, systems and documentation will be amended to assign responsibility for the operation, maintenance and management of the Project. The Project will comply with all relevant Drax policies including the DPL Environmental Policy.

### Review of Environment Management System

- 2.3 At the end of each year, the EMS will be reviewed. This will assess the performance of the EMS according to the following measures:
- Review the effectiveness of the company environmental Policy commitments and recommend any necessary changes or actions
  - Review the reports of both internal and external environmental audits, including a review of non-conformances raised through audit or environmental incidents.
  - To consider the implications of any new, or potential future developments such as legislation, new fuels or plant modifications
  - Review the suitability, adequacy and effectiveness of the EMS, and initiate any changes resulting from this review.
  - Training review
  - Decision of communication of significant environmental aspects
  - Discuss any new environmental requirements which may have to be included into the EMS. Specifically this discussion should address the following points:
    - Continual improvement of environmental performance.
    - Maintaining Legal Compliance.
    - Prevention of pollution.

### Review and Development of Documentation

- 2.4 Comprehensive operating instructions and manuals will be developed for all key parts of the Project, as well as the changes to Drax plant, and will be updated where there are interfaces with existing infrastructure. These instructions contain information and data for operator reference and training purposes. DPL staff and operators will undertake a programme of training to operate and manage the plant. Procedures which will be developed, updated and amended include those associated with:
- Additional fuel and fuel handling plant processes and controls;
  - Boiler combustion and process controls;
  - Emissions abatement equipment;
  - Cooling water and water treatment systems;
  - Raw materials and waste management;
  - Emissions Monitoring; and
  - Maintenance



- 2.4 Drax Power Station has a methodology for identifying direct and indirect effects from its activities and to highlight the substances, risks, activities or incidents which have the potential to have a significant impact on the environment. This methodology will be employed to assess the Project and changes to the Drax plant. Any additional significant aspects and impacts will be managed by developing a procedure which assigns actions and responsibility to manage the potential impacts. Procedures are in place to identify new legislation which may require modification or assessment of operations and activities carried out on site.

### Incoming Fuels and Raw Materials Management

- 2.5 Procedures for fuel and raw materials and the existing fuel management system will be amended to ensure the correct identification and management of the risks associated with the receipt of fuels and raw materials coming on to site. This system will include provision for:
- Safe access, offloading and storage of materials
  - Sampling and characterisation of fuels prior to combustion
  - The mass of each category of fuel will be clearly and accurately categorised prior to the fuel entering the installation.
  - Confirm information by checking quantities of fuel declared by the consignor Documentation checks, and sampling where appropriate
  - Fire fighting provisions in accordance with the requirements of the local fire service
- 2.6 Enclosed conveyor systems will be used where appropriate to move processed fuels from the delivery locations to the storage silos and also from the storage silos to the boilers. Processed fuels are more susceptible to fugitive dust emissions and therefore the delivery and transfer of these materials will require careful design and management.
- 2.7 A number of raw materials are already stored on site. An inventory of raw materials will be updated to take account of any additions and volumes. These deliveries will also be managed with specific procedures developed to reduce the risks of any spillages. New storage areas will be designed to contain spillages due to tank or infrastructure failure with secondary containment where appropriate to ensure compliance with the Control of Pollution (Oil Storage)(England) regulations 2012.

### Accident Management

- 2.8 Drax Power Station will review the current Accident Management Plan to provide detailed information on the procedures employed to prevent accidents from occurring and the infrastructure and systems in place to deal with accidents if they do occur. The Accident Management Plan will also include procedures for addressing and investigating complaints about the Project performance from members of the public.
- 2.9 Due to the nature and volume of some materials stored when the Project becomes operational Hazardous Substance Consent is required in accordance with the Planning (Hazardous Substances) Regulations 1992, a Hazardous Substance Consent for the Project has been applied and granted by Selby District Council on 07/05/2014 (Decision number 2013/1186/HAZ).

### Efficiency Audits

- 2.10 A number of efficiency audits will be undertaken. Following the addition of plant and equipment associated with the Project, updated audits will be generated and will comprise the following:
- An updated water efficiency audit will be undertaken to verify that the major flows around the additional plant are in line with the design parameters. The audit will then be used to identify any systems or processes where water savings or re-use options may be investigated.
  - An updated energy efficiency audit will be undertaken to verify that the energy use around the additional plant is in line with the plant's design parameters. The audit will then be used to identify any systems or processes where energy savings may be investigated.

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- An updated waste management audit will be undertaken to identify the types of waste being generated and to ensure that the correct segregation of waste is undertaken. Opportunities for greater re-use and recycling will also be investigated to reduce the amount of waste which is being disposed of and to curtail sending waste to landfill. An additional recycling centre will be installed to service the Project and avoid lengthy truck journeys to the existing area.



## 3.0 WASTE

### Waste Management Plan

- 3.1 This Waste Management Plan forms part of the Environmental Management System for the White Rose Power Station Project. The waste plan describes the controls and reporting process to be implemented by the project Principal contractor and its respective sub-contractors during the execution of the construction. All potential waste streams generated during the various phases of the project shall be identified and where reasonably practicable the general principles of Elimination – Reduction – Recycling should be applied by all waste producers.
- 3.2 Where the production of waste is unavoidable the waste producer shall dispose of the waste in compliance with the principles set out in this document. Suitable and adequate checks shall be made during the duration of the project to ensure that waste carriers are disposing of the waste in compliance with their license. It is anticipated that waste material from the piling, excavation, and concreting activities will be retained on site for recycling and use in the permanent works.

### Project Description

- 3.3 The White Rose oxy fire & CCS Power plant FEED was signed on the 8th Dec 2013. Alstom has been contracted for the Front End Engineering and Design phase of the project to deliver basic design and integration for a complete power Plant and carbon capture system. The scope is a 'conventional' coal 300 MW net power plant including an air/Oxy fuel firing 2-pass boiler, a complete turbine island and a carbon capture chain comprising of an electro precipitator, a wet flue gas desulphurisation and a gas processing unit.

### Roles and Responsibilities

#### EHS Manager

- 3.5 The Site EHS Manager or his delegate will ensure that all contractors and their respective sub contractor's process waste materials in compliance with UK legislation and current industry best practice. The EHS Manager or his delegate will measure and record the quantity of material/ waste generated on site (in tonnes and cubic metres) that was:
- reused on site
  - recycled on site
  - reused off-site
  - recycled off-site
  - incinerated
  - land filled

#### EHS team

- 3.6 The Site EHS team will be responsible for auditing the waste management process for compliance on the project and will act as resource for help and guidance in respect of this plan.

#### Site administration manager

- 3.7 The Site administration manager will be responsible for keeping all records relating to the disposal of waste.

#### Contractors

- 3.8 Contractors and subcontractors will be contractually required to comply with all environmental requirements, including this Waste Management Plan. All companies working on site shall ensure that all reasonable steps are to be taken to ensure:
- Waste materials are removed promptly from the immediate work area
  - Waste materials are stored in suitable containers or skips

- Waste disposal carriers are licensed and dispose of waste in compliance with UK legislation
- Waste water is treated to meet standards set down in the site discharge permit
- Waste water is contained prior to treatment and subsequent discharge
- Waste materials are contained within the project boundaries to prevent escape into the general environment
- A waste transfer note is used which incorporates a written description of the hazardous properties and the appropriate code from the list of wastes.

3.9 All waste producers shall carry out assessments to ensure that waste on site is minimised and were reasonably practicable recycled. Hazardous waste producers shall inform the EHS Manager of the nature and quantities of any hazardous wastes they expect to generate during the execution of their works.

3.10 It is the responsibility of individual contractors to ensure that all waste is collected from the point of generation and stored in suitable containers prior to authorised disposal, Contractors shall incorporate a “clean as you go” regime into their work plans to minimise the amount of waste present in the work place.

### Storing Waste on Site

#### General Concepts

3.11 Where reasonably practicable waste materials shall be segregated and waste containers made available as close to the point of generation before they are removed from site or moved to a central waste management area. All domestic waste streams shall be stored in covered skips to prevent the ingress of vermin or insects, doors on covered skips should be capable of being opened and secured by a single person. Food waste generated by welfare facilities shall be stored initially in covered bins and then transferred to dedicated skips.

3.12 In order to minimise the storage of waste oils and lubricants on site contractors should where reasonably practicable enter into agreements with their plant providers to have them remove used oils and lubricants from site for subsequent disposal via an approved route. Such agreements would not remove the duty of care to ensure removal from site is via a licensed waste carrier using a licensed waste disposal facility.

3.13 Where oil, lubricants and liquid waste have to be stored on site, the storage area must be away from drains and watercourses, must be bunded, must have an impervious floor and must have an emergency spill kit.

3.14 Hazardous wastes shall be identified and kept in separate storage facilities consistent with their risks.

3.15 Gypsum based & high sulphate wastes must be stored and disposed of separately to other wastes. Waste not to be burnt on site.

#### Site Specifics

3.16 The White Rose Project will organise separate collection of waste on the construction site. The size of waste containers depends on the quantity of waste generated and the frequency of haulage. There will be three locations for separate collection of waste, located at:

- Construction site
- Laydown areas
- Welfare area - near the offices and changing rooms

3.17 The contractors will dispose of all the waste into the containers intended for the purpose, which will be located at the waste collection areas. Contractors shall undertake to collect waste separately and deposit each type of waste into the suitable containers that will be labelled appropriately.

- 3.18 Contractors shall undertake to cut the waste into appropriate form to fit the containers as snugly as possible to make it available for haulage. If waste is not appropriately prepared for haulage, the hauling company will charge Alstom for the preparation of waste and the associated costs will be passed down to the responsible contractor.
- 3.19 The White Rose Project will organise waste haulage at least once per week or several times a week, depending on the quantity of waste. The quantity, purpose and type of haulage from the construction site shall be entered in the daily reports. The waste haulage company shall take over the waste using its own transport means. The waste containers will also be provided by the hauling company.
- 3.20 All the waste that will be hauled with containers from the waste collection areas shall be weighed. The quantity of waste on the weighing sheet is the basis for invoicing for the hauled quantities of waste for individual accounting periods.
- 3.21 Record sheets on the haulage of different types of waste will be issued (filled in) by the haulage company based on regular or extraordinary haulages performed, signed by the authorised person on the construction site and include the weighing sheet. Based on the approved record sheets, the waste hauling company will prepare monthly reports on the hauled waste according to individual locations.

#### Waste from Welfare area

- 3.22 The waste collection area will be defined at a later stage. Here, only smaller quantities of waste are anticipated and no construction waste. This is why the waste will be collected in waste bins instead of large containers.
- 3.23 The types of waste that are expected to be generated in this location:

#### Mixed municipal waste

- 3.24 The waste will be collected in 80 – 1100l containers and hauled with standard waste haulage trucks according to a predefined schedule. Any haulages of larger containers shall be done on demand if the need arises. In this type of haulage (waste trucks), record sheets shall be issued once per month, and in case of haulage of large containers, the record sheets are issued each time on the basis of a weighing sheet.

#### Biodegradable waste

- 3.25 The waste will be collected in 80 – 1100l containers and hauled with standard waste haulage trucks according to a predefined schedule. Any haulages of larger containers shall be done on demand if the need arises. In this type of haulage (waste trucks), record sheets shall be issued once per month, and in case of haulage of large containers, the record sheets are issued each time on the basis of a weighing sheet.

#### Paper and cardboards

- 3.26 Paper and cardboard / Paper and cardboard packaging waste shall be collected in the same containers. The size of containers will range from 240 to 1100 litres. Paper and cardboard should not be damp when hauled; therefore a roof should be constructed above these containers. Contractors shall undertake to dispose of only dry paper and cardboard packaging. Waste shall be hauled using waste haulage trucks according to a predefined schedule. Any haulages of larger containers shall be done on demand if the need arises. In this type of haulage (waste trucks), record sheets shall be issued once per month, and in case of haulage of large containers, the record sheets are issued each time on the basis of a weighing sheet.

#### Mixed packaging

- 3.27 The size of containers for mixed packaging will range from 240 to 1100 litres. Waste shall be hauled using waste haulage trucks according to a predefined schedule. Any haulages of larger containers shall be done on demand if the need arises. In this type of haulage (waste trucks), record sheets shall be issued once per month, and in case of haulage of large containers, the record sheets are issued each time on the basis of a weighing sheet.

**Wastes whose collection and disposal is not subject to special requirements in order to prevent infection**

- 3.28 For this type of waste, special containers for single use for medical waste that can be closed thermetically and cannot be reused after they are full. They will be located close to the first aid lockers and next to the first aid booth. The waste will be hauled on call and the record sheet shall be submitted upon submittal of waste. Weighing of the waste shall be performed upon submittal using a scale brought by the hauling company.

**Other Waste Types**

- 3.29 Following the detailed studies, some additional type of wastes could be generated such as:
- Glass packaging
  - Waste printing toner containing dangerous substances
  - Fluorescent tubes and other mercury-containing waste
  - Discarded electrical and electronic equipment with screens other than those mentioned containing hazardous components
  - Discarded electrical and electronic equipment other than those mentioned in previous sections
  - Batteries and accumulators and unsorted batteries and accumulators containing these batteries
  - Photographic film and paper containing silver or silver compounds
  - Following the estimated quantities a specific storage and haulage system might be required