



Environment Agency,
Planning Support Centre,
99 Parkway Avenue,
Parkway Business Park,
Sheffield.
S9 4WF

REF: EPR/VP3530LS/V022

19 August 2022

Dear Sir or Madam

Staged Application for a Variation to Operate Carbon Capture and Directly Associated Activities on Unit 2 and/or Unit 1 at Drax Power Station (VP3530LS)

Please find attached the application forms and supporting document “*Variation to Operate Carbon Capture and Directly Associated Activities to on Unit 2 and/or Unit 1 at Drax Power Station (VP3530LS)*” to operate up to two unit of post-combustion carbon dioxide capture activity on up to two of the existing permitted biomass generating units at Drax Power Station (one for each generating unit).

Enhanced pre-application discussions have been held with Environment Agency and the pre-application case number provide was VP3530LSV022.

As set out in our letter dated 24 June 2022 and as further set out in emails from Chris Gaughan dated 20 July 2022, this application relates to a novel and complex installation. As such, the use of a staged application process is appropriate and is sought by Drax in line with paragraph 5.13 of the EA’s Environmental Permitting: Core Guidance for the Environmental Permitting (England and Wales) Regulations 2016. We understand that this is the first proposal for such a “staged” application received by the Environment Agency and we are committed to working with you to ensure a smooth process, consistent with legislative requirements, and to ensure that any further data is provided in a timely and accurate manner, according to an agreed schedule that is reflective of Drax’s anticipated timelines for progression of the front-end engineering process that we are currently undertaking in relation to the project, and availability of the resulting data.

Drax can confirm that this Variation Application includes all of the relevant information and data available at present, including as much of the information specified on the EA’s application form and additional information required by the EA as possible. The elements of this Variation Application in respect of which all required information has been provided are set out in the table below:



Permitting Aspect	Elements Included	Variation Page Numbers
Environmental Risk Assessment	Emissions to air & discharges to water screening	12-18
Operation of Units 5 & 6	Operation, particulate abatement and Flue Gas Desulphurisation demolition	18-19
Biomass Furnace bottom Ash Handling	Changes to the current facilities and future strategy	19
Operation of Ouse Renewable Energy Plant	Removal of this permitted activity associated with the plant	20
Best Available Techniques for the control of Emission to air from the PCC	Control techniques to be used for control of NO _x ; SO _x , Particulates; Ammonia; Mercury; Aldehydes; Solvent Vapour; Chlorides; Fluorides; Metals.	20-31
Proposed Emission Limits	Emission limit proposals of the permit including for the post- combustion carbon dioxide capture activity	31
Air Dispersion Modelling	Dispersion modelling for the post-combustion carbon dioxide capture including sensitivity testing and in combination effects.	33-81
Air Emission Monitoring	Monitoring ethos including locations, monitoring equipment considerations, and reference condition proposals	84-91
Carbon Capture Process	Including technology selection, thermal integration; heat utilisation; electrical demand; maximising absorption; influent gas control; capture efficiency; exit gas controls; solvent regeneration; water demand, and dispatchable operation	91-102
Chemical and Solvent Storage	Including tank storage, container storage, delivery facilities, loading facilities and emergency response.	103-104
Management of Noise	Details of the assessment and conclusions	104-109
Site Cooling	Including system cooling and natural draft cooling	112-112



Discharges to Water	The design ethos, plant drainage, sampling methodology, and discharge limit proposals.	112-118
Waste Disposal	Waste management processes and estimated quantities	119-120
Environmental Management System	Details of the system and its future changes	120

The elements of this Variation Application where further information will be provided by Drax in future as part of the “staged” application process that is proposed are set out below. Drax is proposing that it submits this information as soon as reasonably possible after the relevant data is finalised, and in any event, Drax will aim to submit the information no later than the relevant proposed submission deadline.

Permit aspect	Case	Proposed submission deadline
Discharges to surface water	<p>The project design requirements for FEED are to ensure that there is no deterioration in relation to the power station’s current discharge requirements. However, the detail and associated surface water risk assessment have not yet been fully developed as part of the FEED process and will not be determined until the FEED design element completes.</p> <p>Drax will provide an overview of the planned water treatment facility, the expected discharge of the key species outlined in the Variation Application and updated surface water risk assessment based on the final FEED design.</p>	March 2023
Environmental Assessment Levels for Amines	The Environment Agency’s position in relation to the approach to be taken for EAL development for new amines (i.e. whether this is required to be developed by the industry or by the Environment Agency) is still to be resolved. As Drax understands it, the Environment Agency’s interim position is that the operator should provide an EAL for any	November 2023



Permit aspect	Case	Proposed submission deadline
	<p>solvent/amine released. This would take time.</p> <p>Given health-related information on the amines as substances is generally limited or aligns with the requirements of REACH, a staged approach enables further discussion and time to develop EALs. In the interim, a worst-case position can be built using both solvent specific and the existing NDMA EAL for the solvent's environmental performance.</p> <p>Drax are aware of work in development by the Environment Agency to deliver Environmental Assessment Levels for a wider range of amines and associated degradation products that is expected to deliver in Q3 2023. Drax will assess the subsequent updated EAL and where required undertake a review of the dispersion modelling in term of human health and the environment should it be required.</p>	
High pressure CO₂ venting and compression	<p>The specific detailed design on this element is dependent on transportation and storage criteria for carbon dioxide – these are yet to be finalised by National Grid Carbon Limited – the developer of the transport and storage system for the captured carbon dioxide.</p> <p>Once enough information is provided on the operation and associated substance criteria Drax will provide a design for the high-pressure venting system and an assessment of the associated environmental aspects for the venting operation.</p>	April 2023
Start up and shut down	The final PCC design is critical in defining the stable operational conditions and subsequently the associated operational	March 2023

This letter contains the confidential, commercially sensitive and proprietary information of Drax Power Limited and its Affiliates and should not be shared outside the Department of Business, Energy and Industrial Strategy without Drax's prior written consent. Please contact Drax Power Limited in the event of any request under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.



Permit aspect	Case	Proposed submission deadline
	<p>parameters to comply with Drax's regulatory obligations.</p> <p>The final PCC design will only be known at the end of the design phase of the FEED process. Drax will then provide the criterion that will define the position where a start PCC unit is deemed to be stable, and monitoring will commence.</p>	
<p>Other than normal operating conditions (OTNOC)</p>	<p>The majority of the current OTNOC scenarios identified are dependent on the operational rules and requirements of the transport and storage system being developed by National Grid Carbon Limited (referred to above). As per the High-Pressure CO2 and Venting and Compression outputs, the data is still being developed by third parties and is not under Drax control.</p> <p>Once the relevant third-party Date is received, Drax will provide a list of the identified potential OTNOC scenarios the associated impacts, risks and where possible suitable controls to manage these positions.</p>	<p>April 2023</p>
<p>Non-tower cooling</p>	<p>The project design requirements for FEED are to ensure that no solvent is released into the cooling water. However, this design element is not yet complete and so the detail cannot be provided until later within the FEED.</p> <p>Drax will provide the detailed design, maintenance and engineered controls related to controlling solvent water cross-contamination in relation to non-tower cooling.</p>	<p>March 2023</p>
<p>Key Operation control monitoring elements</p>	<p>The final PCC design is critical in defining the operational control elements that are</p>	<p>March 2023</p>



Permit aspect	Case	Proposed submission deadline
	<p>critical to effective operation control and environmental mitigation.</p> <p>Drax will provide a detailed overview of the key monitoring and control elements relating to the environmental aspects to control the PCC operation.</p>	

In setting out proposed timelines above, it should be noted that several of the elements listed are dependent on progression of the design of an independent transport and storage system which will utilise the captured carbon dioxide, and which is being separately developed by National Grid Carbon. This is an unusual position to be in as the outcomes and timings of these elements are outside the direct control of Drax. Notwithstanding this, Drax is committed to providing the information at the soonest opportunity or in accordance with the schedule and will provide progress updates on this element at regular intervals.

In submitting this Variation Application, we would reiterate that the BECCS project to which the Variation Application relates is of critical importance to the strategic ambitions of Drax Power Limited and the wider Drax Group in terms of supporting the UK in meeting its targets for the development of 5 million tonnes of greenhouse gas removals per annum by 2030. A positive determination in respect of the Variation Application will also be a key requirement in terms of the taking of a final investment decision by Drax in respect of the BECCS project, and so it is critical that the Variation Application is determined on a timely basis following the provision of all necessary information. Drax remains committed to working with the Environment Agency in a proactive and timely manner in order to facilitate a timely determination to be made in accordance with all applicable legislation.

Should you have any questions regarding the Variation Application, please direct them to Steven Foster (steven.foster2@drax.com) at Drax Power Station in the first instance.

Your faithfully

David Ball
Development Director