



CONSULTATION REPORT

Appendix G Section 47 consultation material

Drax Bioenergy with Carbon Capture and Storage

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

Document Reference Number: 5.1.7

Applicant: Drax Power Limited

PINS Reference: EN010120



REVISION: 01

DATE: May 2022

DOCUMENT OWNER: D. Kennedy

AUTHOR: D. Kennedy

APPROVER: B. Redpath

PUBLIC

G1 Consultation Exhibition Boards

Introduction



Drax Power Limited (Drax) is proposing to develop Bioenergy with Carbon Capture and Storage (BECCS) at the Drax Power Station Site in North Yorkshire.

BECCS is a technology that has been developed to remove carbon dioxide (CO₂) from the atmosphere. Delivering BECCS will enable us to capture the carbon dioxide emitted during electricity generation, permanently removing more carbon dioxide from the atmosphere than is produced throughout the process - creating what is known as negative emissions.

Reducing emissions will be key to helping fight the global climate crisis as well as helping the UK meet its legally binding 'net zero by 2050' target. Negative emissions are a vital part of a solution that also includes decarbonising all sectors of the economy, deploying more renewables, hydrogen and electric vehicles as well as improving energy efficiency and changing the way we live.

BECCS at Drax is a "Nationally Significant Infrastructure Project" (NSIP) under the Planning Act 2008. As such we will be applying for a Development Consent Order (DCO) which would allow us to install and operate the technology.



We are holding this consultation to get your views on our proposed scheme.

The consultation runs from 1 November to 12 December 2021. You can find out more and give us your feedback by visiting our website - [\[redacted\]](#)

What is BECCS at Drax?

Drax Power Station has four generating units which use biomass to produce renewable electricity. We are proposing to install carbon capture technology on up to two of these units to remove up to 95% of the carbon dioxide from the flue gas emitted from those units.

The proposed scheme will include:

- The installation of new carbon capture technology on up to two of the existing biomass-fired generating units at Drax Power Station.
- An environmental mitigation area, designed to protect and improve habitats for local wildlife and farmland.
- An area for construction laydown, which will be used for the temporary location of offices, warehouses, workshops, open air storage areas and car parking.



For BECCS at Drax, the carbon dioxide captured will be transported via the proposed National Grid Ventures pipeline for permanent storage deep under the seabed of the southern North Sea. The transport and storage infrastructure will be developed as a separate project by National Grid Ventures. You can find out more about this pipeline project on the [National Grid Humber Low Carbon website](#).

Drax's Vision

By deploying BECCS at Drax as early as 2027, our ambition is to become carbon negative by 2030.

Experts including the Climate Change Committee agree that negative emissions technologies, including BECCS, are essential to prevent global temperatures from increasing by more than 1.5 degrees. By 2050, a significant volume of emissions will still be emitted by hard-to-decarbonise sectors such as aviation, agriculture and heavy industry. Negative emissions technologies, like BECCS, can help to offset these residual emissions and help the UK Government reach its legally binding target to bring all greenhouse gas emissions to net zero by 2050.

Our vision for a carbon negative company by 2030 is based on three core pillars:

1

BECCS at Drax will help the UK reach net zero.

Developing carbon negative technologies, like BECCS, is vital if we are to deliver for the environment and the economy. Installing BECCS technology on our existing biomass power generating units at Drax Power Station will permanently remove 8 million tonnes of carbon dioxide from the atmosphere each year – around 40% of the BECCS with power needed to meet the Climate Change Committee's Balanced Net Zero pathway.

2

BECCS at Drax will support economic growth and create and protect green jobs and skills.

Building BECCS at Drax will accelerate economic growth for the Yorkshire and Humber region, putting the region at the heart of a global green economy. The proposed scheme will also create and support over 10,000 jobs in the Humber and across the UK, through construction and operation of BECCS.

3

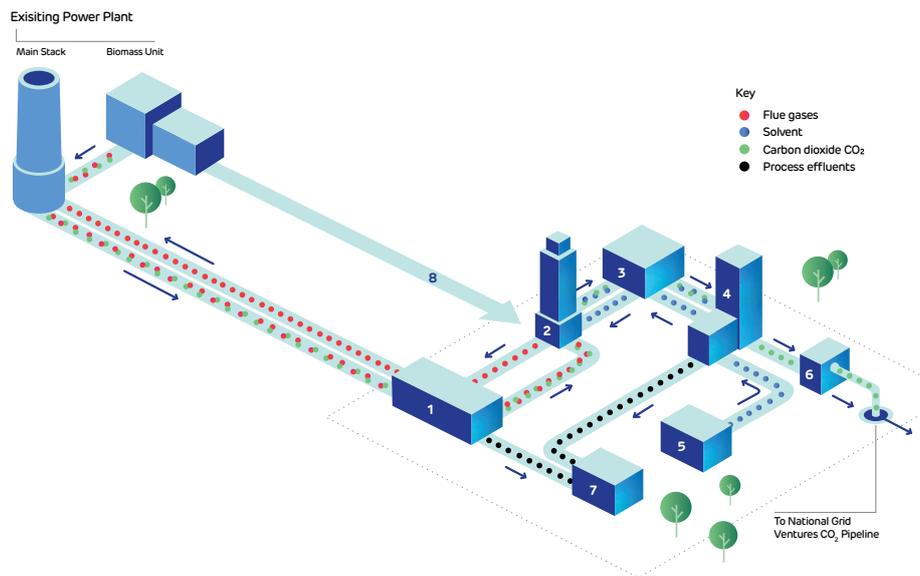
BECCS at Drax positions the UK as a global leader in developing innovative carbon capture technologies.

Developing BECCS at Drax would put the UK at the forefront of developing and exporting a vital technology that will be needed around the world to combat climate change.

How does the carbon capture technology work?

BECCS generates renewable electricity whilst capturing and permanently storing CO₂, delivering negative emissions.

Drax's biomass units already use biomass sourced from sustainably managed forests to generate electricity. With BECCS at Drax, the carbon dioxide that is emitted as part of the energy generation from biomass will be captured using carbon capture technology. That carbon dioxide will then be safely stored offshore under the seabed.



1

A flue gas pre-treatment section will remove pollutants from the gas which is emitted from the biomass unit as part of the energy generation process before the carbon dioxide is extracted.

2

An absorber column will then extract the carbon dioxide from the flue gas using an amine solvent.

3

Solvent heat exchangers will then cool the amine solvent so that it can be re-used.

4

A solvent regeneration system will then separate the carbon dioxide from the amine solvent when it is re-heated.

5

Solvent storage and make-up system ensure that the amine solvent remains in a good condition and continues to be available for the process.

6

Carbon dioxide is then transferred to the compression and processing plant where the carbon dioxide is processed for transport by pipeline for storage in safe underground deposits.

7

A carbon capture wastewater treatment plant where wastewater effluents are recovered from the process, treated and re-used.

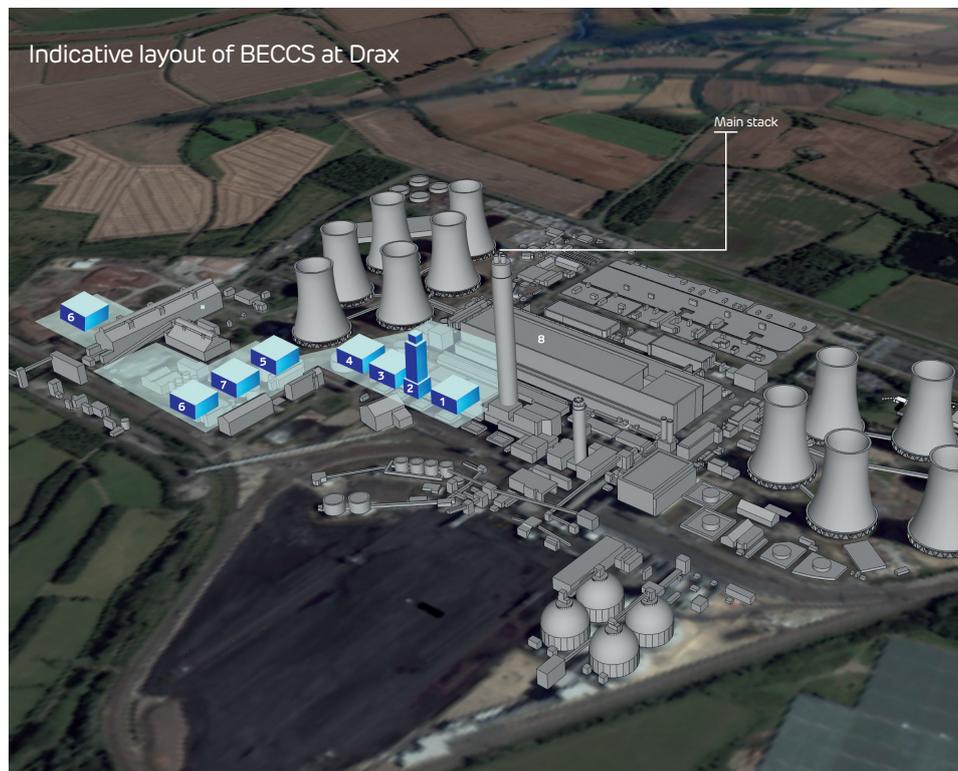
8

Steam is required for several of the carbon capture processes, the technology will therefore include steam extraction from the existing biomass units as well as new steam processing infrastructure.

What will BECCS at Drax look like?

The carbon capture technology will be integrated into the existing biomass units at Drax Power Station. The majority of the different infrastructure components will be installed to the west of the northern cooling towers, where some of the current infrastructure is planned to be demolished. This demolition is being undertaken as part of a separate project.

Below are some illustrative visualisations of BECCS at Drax which highlight what the new carbon capture technology may look like. The new infrastructure is shown in blue and the existing site infrastructure is shown in grey.



 Drax power station

 BECCS infrastructure

1. Flue gas pre-treatment

2. Absorber

3. Solvent heat exchangers

4. Solvent regeneration

5. Solvent storage

6. Compression and processing

7. Waste water treatment

8. Steam supply from existing boiler

Environmental Impact

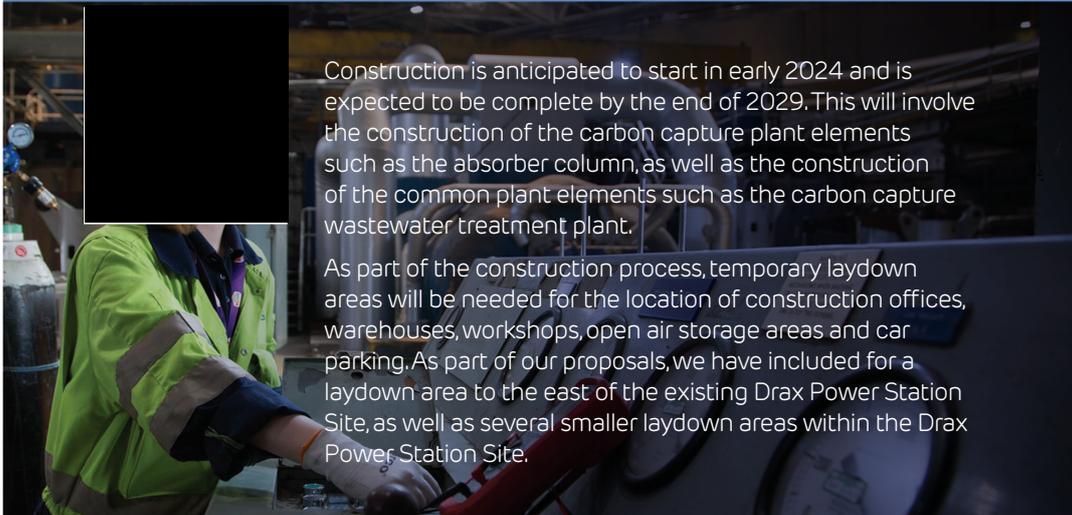
The proposed scheme is referred to as “Environmental Impact Assessment (EIA) development” under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. As a result, we are undertaking an EIA to determine the likely significant effects of BECCS at Drax on the environment, and how these impacts can be avoided, reduced or mitigated. The EIA will consider likely significant effects during construction, as well as when BECCS is operational.

The preliminary environmental assessments for BECCS at Drax have considered matters such as impacts on air and water quality, flood risk, traffic and transport, noise, ecology, heritage and landscape/visual amenity. As part of this consultation, we have produced a Preliminary Environmental Information Report (PEIR) which sets out a preliminary assessment of the likely significant effects of the proposed scheme.

You can find more information in our PEIR and its Non-Technical Summary which can be found online at: [\[REDACTED\]](#)



Construction

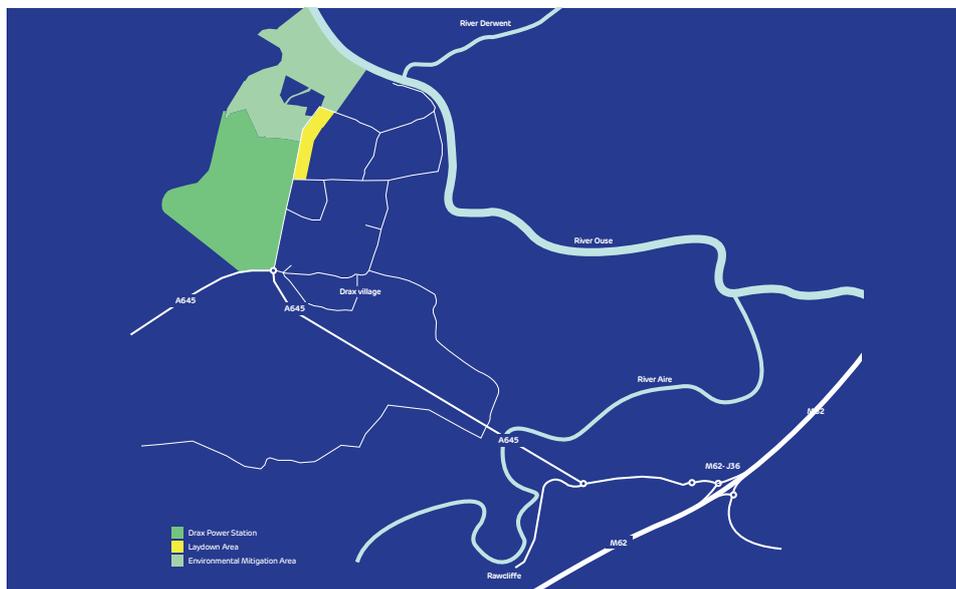


Construction is anticipated to start in early 2024 and is expected to be complete by the end of 2029. This will involve the construction of the carbon capture plant elements such as the absorber column, as well as the construction of the common plant elements such as the carbon capture wastewater treatment plant.

As part of the construction process, temporary laydown areas will be needed for the location of construction offices, warehouses, workshops, open air storage areas and car parking. As part of our proposals, we have included for a laydown area to the east of the existing Drax Power Station Site, as well as several smaller laydown areas within the Drax Power Station Site.

Transport of construction materials

Transport of construction materials will be via the road network. Construction materials will be transported by road from the M62. Larger construction elements, known as Abnormal Indivisible Loads (AILs) will be transported by road along the Goole Bypass, the M62 and then the A645 to Drax Power Station. Road modifications and temporary closures may be required at the roundabout to the south of the Drax Power Station to allow for the transport of AILs.



Construction staff

It is anticipated that a peak workforce of approximately 1,000 workers will be required during construction. Car parking spaces for construction workers will be available within the Drax Power Station Site and the proposed laydown area.

Working hours

Core construction working hours will be from Monday to Friday 7am to 7pm, and Saturdays 7am to 1pm. It is likely that some construction activities and deliveries will be required to be 24 hours at certain times. Where work is required outside of core construction hours this will be agreed in advance with the Local Planning Authority.

Planning Process



We are applying for a Development Consent Order (DCO) as BECCS at Drax is classed as a Nationally Significant Infrastructure Project under the Planning Act 2008, because it is an extension to existing biomass generating stations that have a generation capacity in excess of 50 MW. This means our proposals will be robustly examined by an Examining Authority appointed by the Planning Inspectorate before the Secretary of State for Business, Energy and Industry Strategy makes a decision on whether to grant the DCO to allow the construction and operation of BECCS at Drax.

Q4 2021	Statutory Consultation stage	Drax seeks views on its plans to install BECCS on up to two biomass units at Drax Power Station.
Q1/Q2 2022	Application submission	Drax intends to submit the DCO application in Spring 2022.
Q2/Q3 2022	Pre-Examination Period	Should the DCO application be accepted, an Examining Authority would be appointed, comprised of one or more planning inspectors from the Planning Inspectorate.
Q4 2022 / Q1 2023	Examination	A six-month examination of the application would then be undertaken, including hearings on key issues.
Q1/Q2 2023	Recommendation Period	The Examining Authority would prepare a report within 3 months of the close of examination, presenting their recommendation as to whether the DCO should be granted.
Q3 2023	Decision-making	The Secretary of State would then have a further three months to make a final decision as to whether or not to grant the DCO for BECCS at Drax.
2024	Construction	Proposed start of construction.
2029	Operation	Commercial operation of both BECCS units at Drax Power Station.

This statutory consultation is a key point in the DCO process to gather your feedback before submitting our application. All comments and responses will be taken into consideration as we continue to develop our proposals.

You can provide your feedback by visiting our website: [\[Redacted\]](#) or you can contact us on the details below.

Please provide your feedback by 11.59pm on 12 December 2021.

You can get in touch with the Drax Team on:

✉ info@BECCS-Drax.com ☎ 01757 618381 (9:00 – 18:00)

G2 Consultation Brochure

Carbon
Capture | by drax



Bioenergy with Carbon Capture and Storage (BECCS) at Drax Power Station

Consultation Brochure November – December 2021



Introduction

Drax Power Limited (Drax) is proposing to develop Bioenergy with Carbon Capture and Storage (BECCS) at the Drax Power Station site in North Yorkshire.

BECCS is a technology that has been developed to remove carbon dioxide (CO₂) from the atmosphere. Delivering BECCS will enable us to capture the carbon dioxide emitted during electricity generation, permanently removing more carbon dioxide from the atmosphere than is produced throughout the process – creating what is known as negative emissions.

Reducing emissions will be key to helping fight the global climate crisis as well as helping the UK meet its legally binding 'net zero by 2050' target. Negative emissions are a vital part of a solution that also includes decarbonising all sectors of the economy, deploying more renewables, hydrogen and electric vehicles as well as improving energy efficiency and changing the way we live.

BECCS at Drax is a "Nationally Significant Infrastructure Project" (NSIP) under the Planning Act 2008. As such we will be applying for a Development Consent Order (DCO) which would allow us to install and operate the technology.

We are holding this consultation to get your views on our proposed scheme. The consultation runs from 1 November to 12 December 2021. We have set out in this brochure the vision behind our proposals, the key elements of BECCS at Drax and information on how we will continue to develop our proposals, including early results from our Environmental Impact Assessments.

Your views are important to us and we encourage you to provide your feedback. You can find out more online at [\[redacted\]](#) and throughout this brochure.



The consultation runs from 1 November to 12 December 2021.

What is BECCS at Drax?

Drax Power Station has four generating units which use biomass to produce renewable electricity. We are proposing to install carbon capture technology on up to two of these units to remove up to 95% of the carbon dioxide from the flue gas emitted from those units.

The proposed scheme will include:

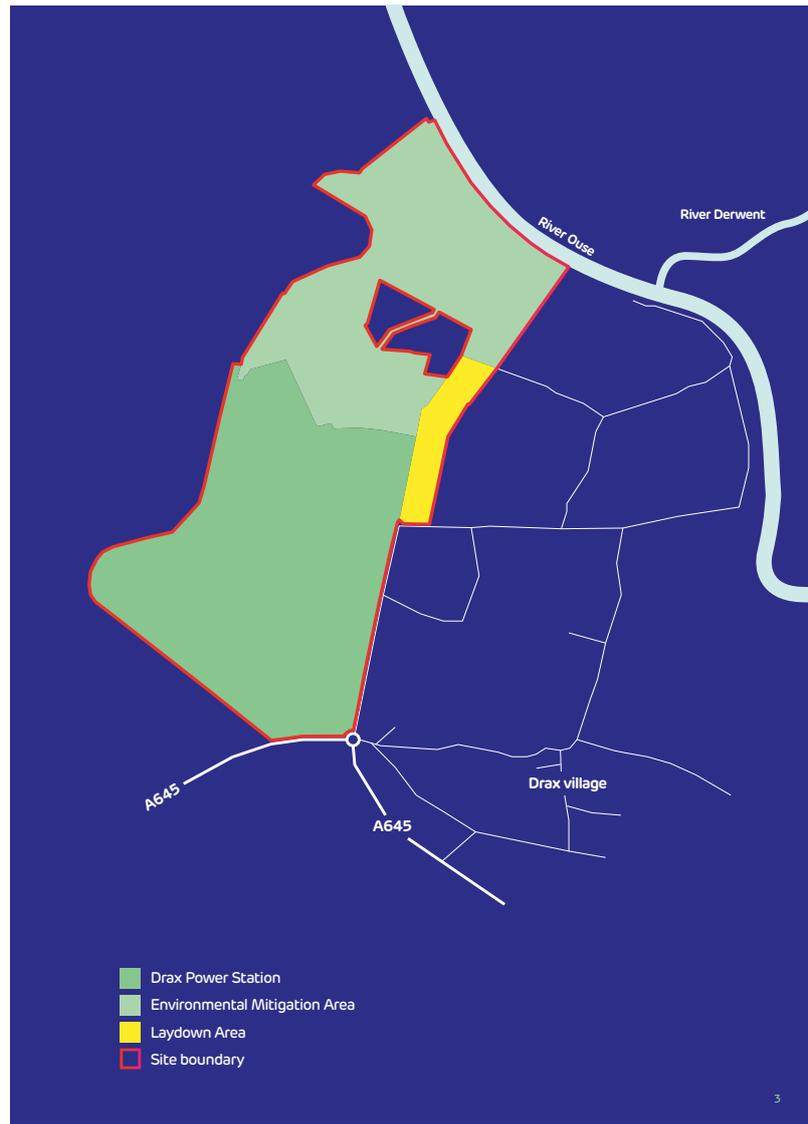
- The installation of new carbon capture technology on up to two of the existing biomass-fired generating units at Drax Power Station,
- An environmental mitigation area, designed to protect and improve habitats for local wildlife and farmland, and
- An area for construction laydown, which will be used for the temporary location of offices, warehouses, workshops, open air storage areas and car parking.

Further detail is provided in this brochure about how carbon capture technology works and the key elements of BECCS at Drax.

The units remove up to 95% of the carbon dioxide emitted from the flue gas.

For BECCS at Drax, the carbon dioxide captured will be transported via the proposed National Grid Ventures pipeline for permanent storage deep under the seabed of the southern North Sea. The transport and storage infrastructure will be developed as a separate project by National Grid Ventures.

You can find out more about this pipeline project on the National Grid Humber Low Carbon website.



The importance of negative emissions

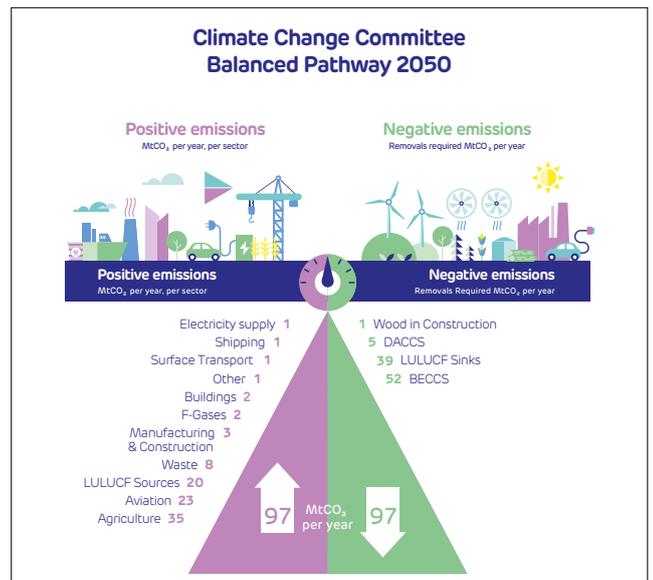
As the Intergovernmental Panel on Climate Change (IPCC) reported recently, human-induced climate change is already affecting weather and climate extremes across the globe.

The report suggests we may have to go beyond net zero by 2050 in order to avoid the worst effects of climate change.

At a global level, as well as reducing emissions, we must also capture carbon dioxide that has already been emitted and remove it from our atmosphere. Experts including the Climate Change Committee agree that negative emissions technologies, including BECCS, are essential to prevent global temperatures from increasing by more than 1.5 degrees.

✓ **8m**

BECCS at Drax Power Station could permanently remove up to 8 million tonnes of carbon per year – around 40% of the BECCS with power needed to meet the Climate Change Committee's Balanced Net Zero pathway*.



How negative emissions can help offset the carbon dioxide emissions across different hard-to-decarbonise sectors (MtCO₂ refers to 'metric tonnes of carbon dioxide')

LULUCF = Land use, land use change, and forestry
DACCS = Direct air carbon capture and storage
F-Gases = Fluorinated greenhouse gases

By 2050, a significant volume of emissions will still be emitted by hard-to-decarbonise sectors such as aviation, agriculture and heavy industry. Negative emissions technologies, like BECCS, can help to offset these residual emissions and help the UK Government reach its legally binding target to bring all greenhouse gas emissions to net zero by 2050.

The next ten years are crucial if we are to reach net zero and generate the negative emissions we need. The UK must be 78% of the way there by 2035, so quickly deploying negative emissions technologies is critical.

By deploying BECCS at Drax as early as 2027, our ambition is to become carbon negative by 2030.

Drax's Vision

Our vision for a carbon negative company by 2030 is based on three core pillars:

1

BECCS at Drax will help the UK reach net zero.



Developing carbon negative technologies, like BECCS, is vital if we are to deliver for the environment and the economy. Installing BECCS technology on our existing biomass power generating units at Drax Power Station will permanently remove 8 million tonnes of carbon dioxide from the atmosphere each year – around 40% of the BECCS with power needed to meet the Climate Change Committee's Balanced Net Zero pathway.

2

BECCS at Drax will support economic growth and create and protect green jobs and skills.



Building BECCS at Drax will accelerate economic growth for the Yorkshire and Humber region, putting the region at the heart of a global green economy. The proposed scheme will also create and support over 10,000 jobs in the Humber and across the UK, through construction and operation of BECCS.

3

BECCS at Drax positions the UK as a global leader in developing innovative carbon capture technologies.



Developing BECCS at Drax would put the UK at the forefront of developing and exporting a vital technology that will be needed around the world to combat climate change.



How does BECCS work?

BECCS generates renewable electricity whilst capturing and permanently storing CO₂, delivering negative emissions.

Drax's biomass units already use biomass sourced from sustainably managed forests to generate electricity.

With BECCS at Drax, the carbon dioxide that is emitted as part of the energy generation from biomass will be captured using carbon capture technology. That carbon dioxide will then be safely stored offshore under the seabed.

 **2050**

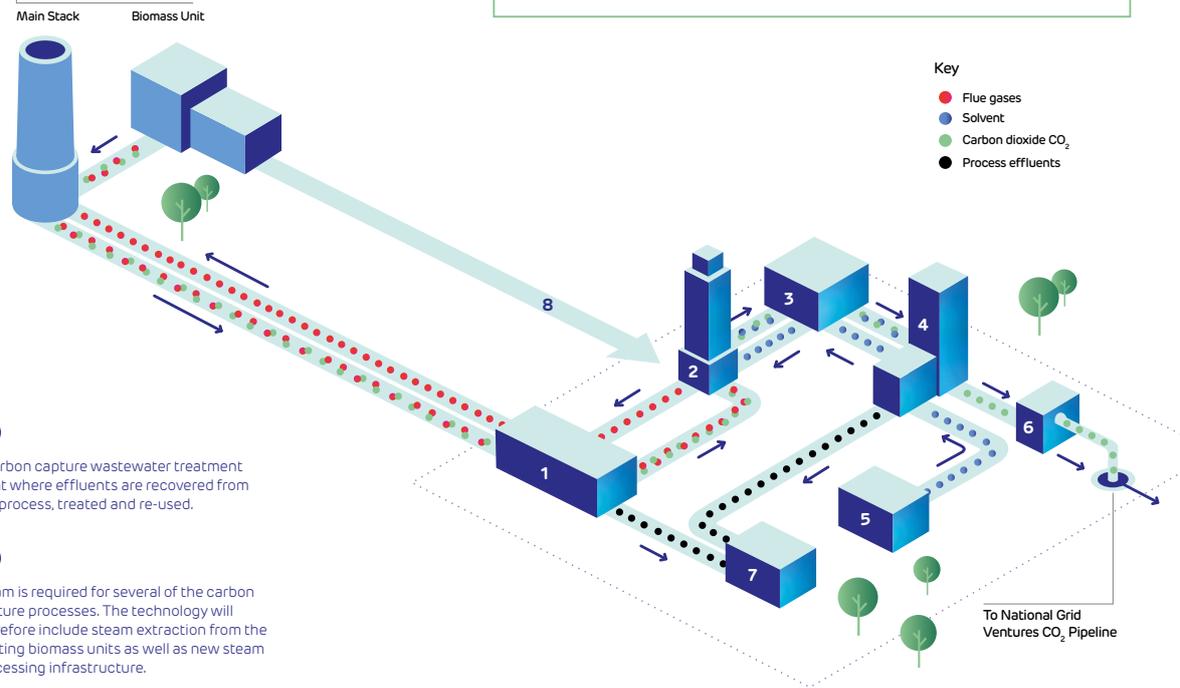
The UK won't reach its 2050 net zero target without negative emissions from BECCS, according to National Grid's future energy scenarios.

How does the carbon capture technology work?

With BECCS at Drax, carbon capture technology will be installed on up to two of the existing biomass electricity generating units at Drax Power Station. The technology will include 'carbon capture plant' components which would be connected to each of the biomass units, and 'common plant' components which would be required for both carbon capture plants.

- 1 A flue gas pre-treatment section will remove pollutants from the gas which is emitted from the biomass unit as part of the energy generation process before the carbon dioxide is extracted.
- 2 An absorber column will then extract the carbon dioxide from the flue gas using an amine solvent.
- 3 Solvent heat exchangers will then cool the amine solvent so that it can be re-used.
- 4 A solvent regeneration system will then separate the carbon dioxide from the amine solvent when it is re-heated.
- 5 Solvent storage and make-up system ensure that the amine solvent remains in a good condition and continues to be available for the process.
- 6 Carbon dioxide is then transferred to the compression and processing plant where the carbon dioxide is processed for transport by pipeline for storage in safe underground deposits.

Existing Power Plant



What are Amines?

Operating BECCS at Drax will involve the use of amines, which are used as part of the carbon capture systems. Amines are derivatives of ammonia (NH_3) and are used in many different industrial applications (for example the manufacture of dyes or pharmaceuticals). In carbon capture systems, amine-based solvents are used to separate the carbon dioxide from the flue gases through a chemical reaction. This is sometimes referred to as 'amine scrubbing'.

This amine-based carbon capture system is one of the most widely used carbon capture systems and is the only proven technology that is currently commercially available.

This process is carefully regulated by the Environment Agency through permitting regulations, emissions limits and monitoring requirements to ensure operators prevent and minimise the release of amines.

What will BECCS at Drax look like?

The carbon capture technology will be integrated into the existing biomass units at Drax Power Station.

The majority of the different infrastructure components will be installed to the west of the northern cooling towers, where some of the current infrastructure is planned to be demolished. This demolition is being undertaken as part of a separate project.

Below are some visualisations of BECCS at Drax which highlight what the new carbon capture technology may look like. The new infrastructure is shown in blue and the existing site infrastructure is shown in grey.



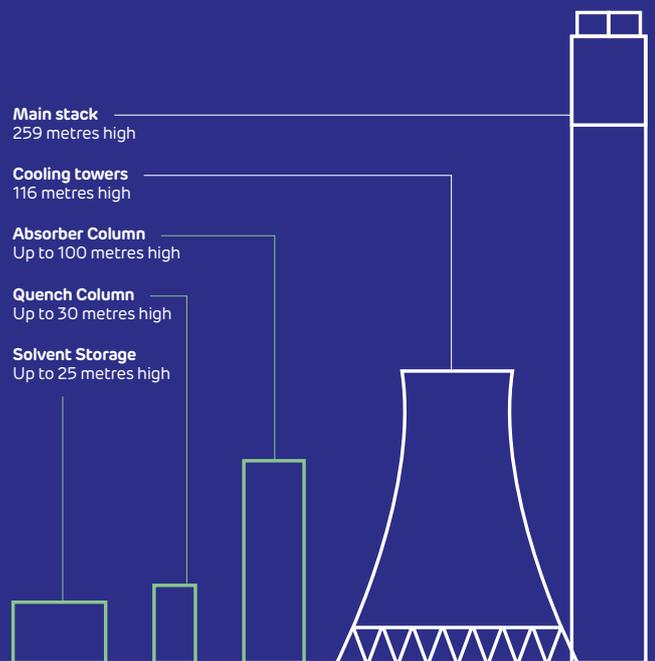
Main stack
259 metres high

Cooling towers
116 metres high

Absorber Column
Up to 100 metres high

Quench Column
Up to 30 metres high

Solvent Storage
Up to 25 metres high



This section image highlights the likely scale of new BECCS technology to be installed (in green) in comparison with the existing infrastructure (in white).



“We welcome this ground-breaking project that would remove millions of tonnes of carbon dioxide from the atmosphere, putting the District and Drax at the heart of the government’s plans for a Green Industrial Revolution.”

Selby District Council

Environmental Impact

The proposed scheme is referred to as “Environmental Impact Assessment (EIA) development” under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. As a result, we are undertaking an EIA to determine the likely significant effects of BECCS at Drax on the environment, and how these impacts can be avoided, reduced or mitigated. The EIA will consider likely significant effects during construction, as well as when BECCS is operational.

The preliminary environmental assessments for BECCS at Drax have considered matters such as impacts on air and water quality, flood risk, traffic and transport, noise, ecology, heritage and landscape/visual amenity. As part of this consultation, we have produced a Preliminary Environmental Information Report (PEIR) which

sets out a preliminary assessment of the likely significant effects of the proposed scheme. You can also find a non-technical summary of the PEIR which summarises the key findings from our preliminary environmental assessments.

The PEIR and its Non-Technical Summary can be found online at:

Following feedback received from this consultation and ongoing assessment work, we will complete the EIA and produce a detailed Environmental Statement which will report on the assessment outcomes and any proposed mitigation. The Environmental Statement will be submitted to the Planning Inspectorate as part of our DCO Application.

Construction

Construction is anticipated to start in early 2024 and is expected to be complete by the end of 2029. This will involve the construction of the carbon capture plant elements such as the absorber column, as well as the construction of the common plant elements such as the carbon capture wastewater treatment plant.

As part of the construction process, temporary laydown areas will be needed for the location of construction offices, warehouses, workshops, open air storage areas and car parking. As part of our proposals, we have included for a laydown area to the east of the existing Drax Power Station Site, as well as several smaller laydown areas within the Drax Power Station Site.

Once the construction is complete, the laydown area to the east of the Drax Power Station Site will be re-instated to its previous use.

Construction staff

It is anticipated that a peak workforce of approximately 1,000 workers will be required during construction. Car parking spaces for construction workers will be available within the Drax Power Station Site and the proposed laydown area.

 **2029**

Construction is anticipated to start in early 2024, with the first unit complete by 2027 and the second by the end of 2029.



Core construction working hours

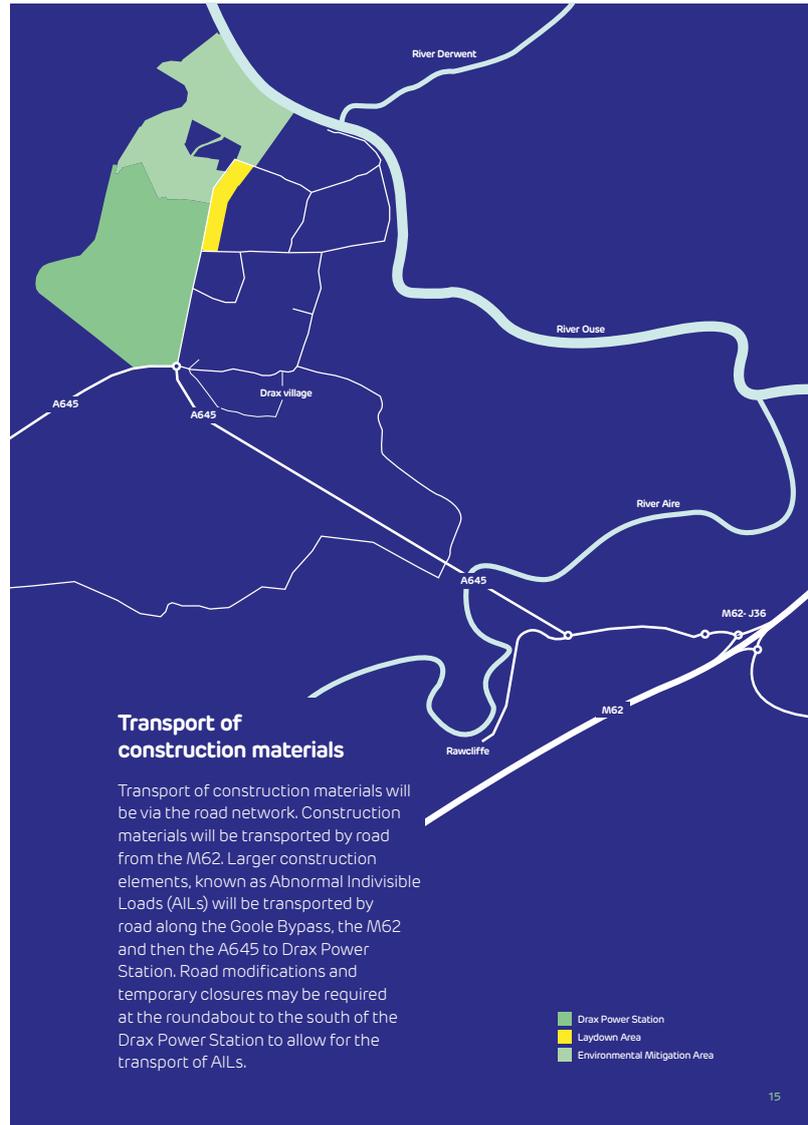
Construction working hours will be from Monday to Friday 7am to 7pm, and Saturdays 7am to 1pm. It is likely that some construction activities and deliveries will be required to be 24 hours at certain times. Where work is required outside of core construction hours this will be agreed in advance with the Local Planning Authority.

Construction impacts

As we develop the proposals, we will consider these construction activities in more detail. As part of our environmental assessments, we will set out any mitigation required during construction to prevent or reduce impacts on the environment. These will be set out in a Register of Commitments which will form part of our DCO Application, and a Construction Environmental Management Plan (CEMP) which will be prepared before construction starts.

 **100%**

In a world first, we demonstrated post-combustion carbon capture from 100% biomass feedstock.



Where does the bioenergy fit within BECCS at Drax?

Our proposals for the DCO application are focused on the carbon capture elements of BECCS. This is because the biomass units are already operational, and the transport and storage of the carbon dioxide will be delivered and managed as a separate project by National Grid Ventures.

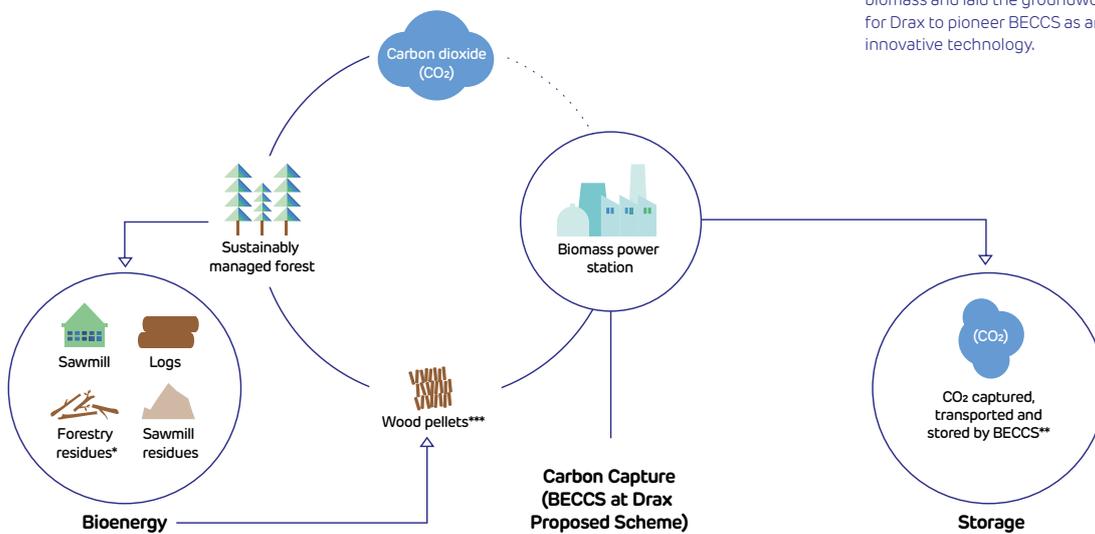
Drax is a world leader in sustainable biomass. Having developed a global sourcing policy, we were able to convert Drax Power Station in Yorkshire from using coal to sustainable biomass. This transformed the business into the largest decarbonisation project in Europe, created a robust and resilient global supply chain for sustainable biomass and laid the groundwork for Drax to pioneer BECCS as an innovative technology.



Sustainability of the biomass

Ensuring that the biomass we use is sustainable is a fundamental part of our business. Our biomass complies with stringent sustainability criteria set out in UK and EU law and meets strict certification standards.

Drax goes beyond legislated sustainability requirements with our own science-based, transparent sustainable sourcing policy. We place strong controls on our biomass, closely monitoring our supply chain and sourcing locations and ensuring close relationships with suppliers.



* Forestry residues includes branch tops and bark, thinnings and low-grade roundwood.

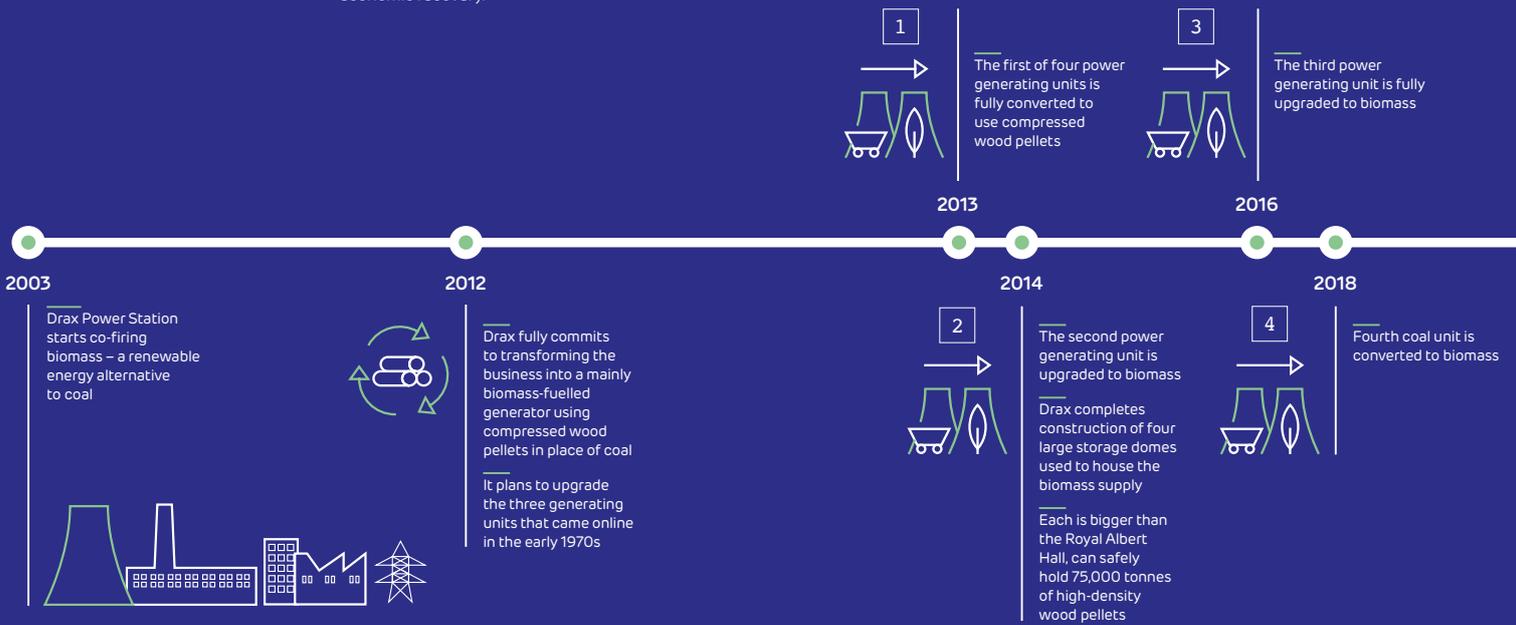
** Transport and stored in a geological storage site under the North Sea. This will be delivered by National Grid Ventures.

*** Wood pellets are generated from forestry and sawmill residues.

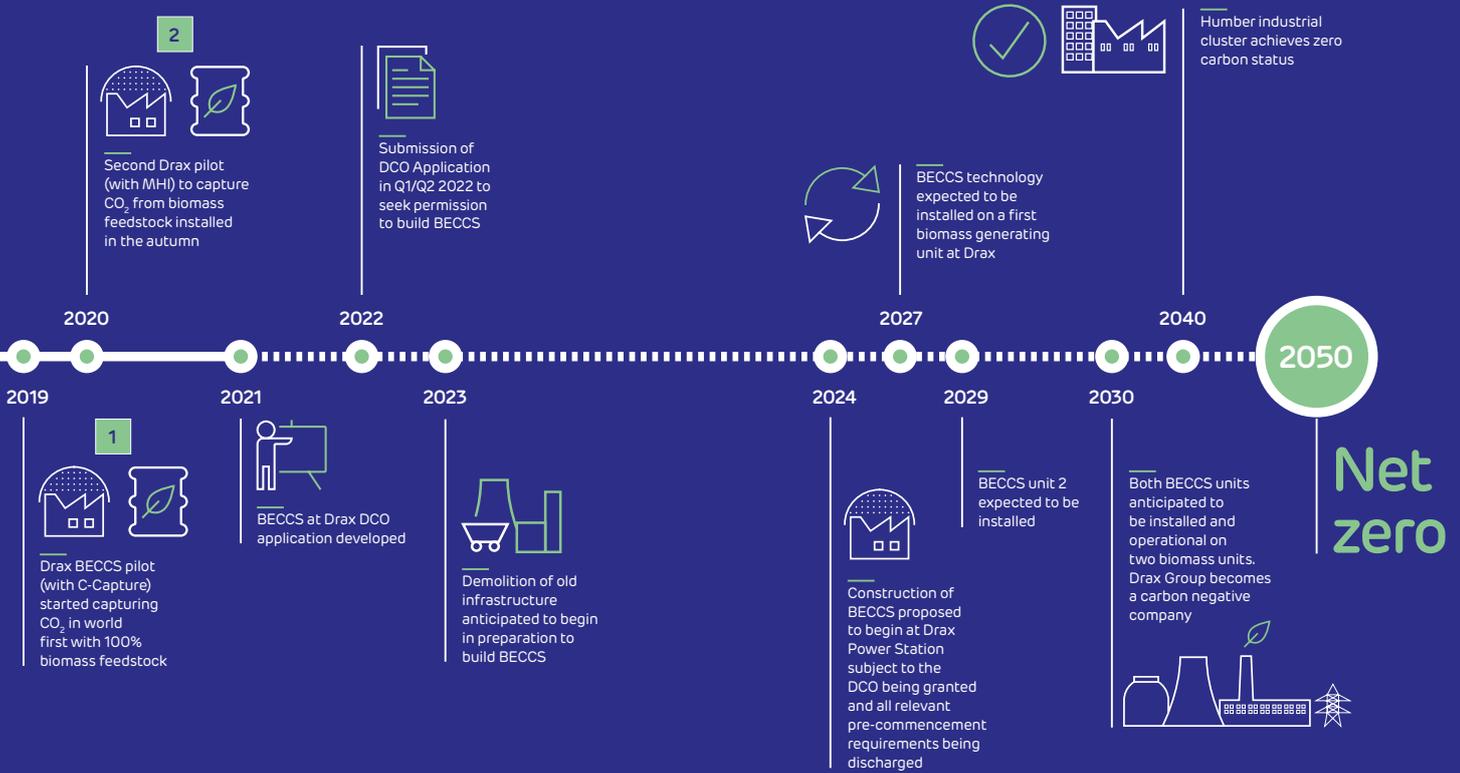
Drax timeline

Drax has led the transition to clean energy for over a decade. We've transformed from the UK's largest coal-fired power station to Western Europe's largest decarbonisation project. Now we're ready to go further. Drax now aims to help build a carbon neutral industrial cluster in the Humber.

By deploying BECCS, Drax will pioneer cutting edge technology. BECCS will produce the reliable and renewable electricity the UK needs to decarbonise the economy, as well as the negative emissions needed to offset those hard to decarbonise sectors. Developing BECCS at Drax will also create and support thousands of jobs, helping to support the region through a post-COVID economic recovery.



Drax timeline



Planning process

We are applying for a Development Consent Order (DCO) as BECCS at Drax is classed as a Nationally Significant Infrastructure Project under the Planning Act 2008, because it is an extension to existing biomass generating stations that have a generation capacity in excess of 50 MW.

The DCO will include powers required to construct and operate the project including compulsory acquisition powers for the permanent acquisition of land and / or rights over land. The DCO may also include (if required) powers for the temporary occupation of land, the extinguishment or overriding of easements and other rights over or affecting land required for the proposed scheme, the application and / or disapplication of legislation relevant to the proposed scheme, highway powers and tree and hedgerow removal, amongst other matters.

This statutory consultation is a key point in the DCO process to gather your feedback. All comments and responses will be taken into consideration as we continue to develop our proposals, before submitting our application in 2022.

You can continue to have your say even after the application has been submitted. Once submitted, you will be able to register as an Interested Party during the pre-examination period to be kept up to date as the project progresses and provide inputs during the Examination.

The Proposed Scheme would be an integral part of the future operation of the biomass generating stations, by capturing a by-product from the generation of electricity and reducing the carbon footprint in the process. In this way, the carbon capture plant is akin to a stack in a generating station; they are both an integral part of the electricity generation process.

The Proposed Scheme is therefore an extension of an existing generating station with capacity of more than 50 MW, so is a nationally significant infrastructure project ('NSIP'), as set out in the Planning Act 2008 (HM Government, 2008), Sections 14(1)(a) and 15(2). As such, the Applicant is required to request a DCO in order to construct and operate the Proposed Scheme.

						
Q4 2021	Q1/Q2 2022	Q2/Q3 2022	Q4 2022 / Q1 2023	Q1/Q2 2023	Q3 2023	2024
Statutory Consultation stage	Application submission	Pre-Examination Period	Examination	Recommendation Period	Decision-making	Construction
Drax seeks views on its plans to install BECCS on up to two biomass units at Drax Power Station.	Drax intends to submit the DCO application in Spring 2022.	Should the DCO application be accepted, an Examining Authority would be appointed, comprised of one or more planning inspectors from the Planning Inspectorate.	A six-month examination of the application would then be undertaken, including hearings on key issues.	The Examining Authority would prepare a report within 3 months of the close of examination, presenting their recommendation as to whether the DCO should be granted.	The Secretary of State would then have a further three months to make a final decision as to whether or not to grant the DCO for BECCS at Drax.	Proposed start of construction.



2029

Operation

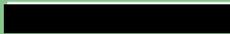
Commercial operation of both BECCS units at Drax Power Station.

Providing your feedback

The consultation will be held from 1 November to 12 December 2021 and gives you the opportunity to provide your feedback or questions on our proposals for BECCS at Drax.



Online questionnaire at:



Email us at:
info@BECCS-Drax.com



Write to us at:
FREEPOST CARBON
CAPTURE BY DRAX

Hard copy feedback forms and a deposit box will be provided at in-person consultation events.

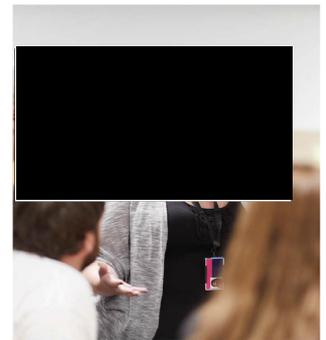
Please provide your feedback by 11.59pm on 12 December 2021.

We will be holding a series of online and in-person events as part of this consultation. This will give you the opportunity to find out more about the proposals and discuss your views directly with members of the project team face to face or on our online one-to-one chat function.

Through our online live-chat events, you can discuss your views and questions directly with members of the project team on our online one-to-one chat function. You don't need to book ahead, you simply need to go to our website during the event times and register, you will then be able to use the chat function.

The online live-chat events will be held on:

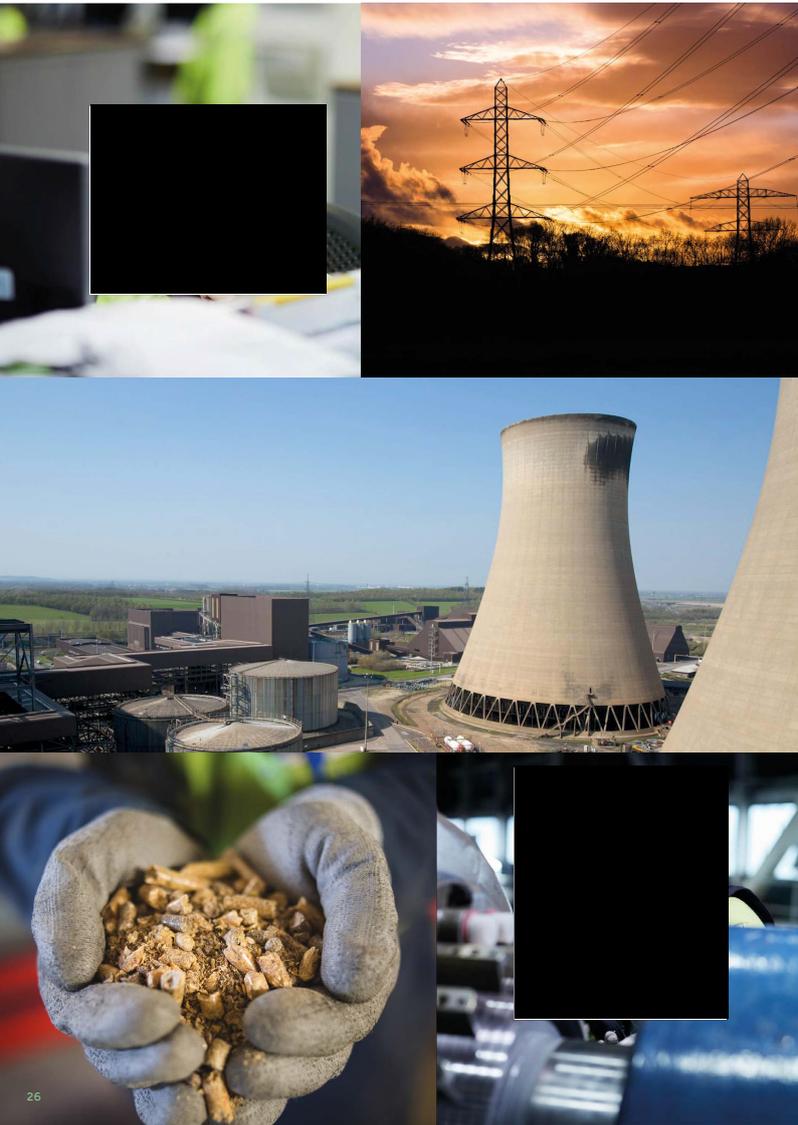
- Thursday 11 November 2021
10am – 2pm
- Thursday 18 November 2021
4pm – 8pm
- Wednesday 24 November 2021
2pm – 6pm



We will also be holding in-person exhibition events at the following dates and locations:

- Tuesday 23 November 2021,
12pm – 6pm (Drax Sport and Social Club Main Rd, Drax, Selby YO8 8PJ)
- Saturday 27 November 2021,
10am – 4pm (Junction Goole, Paradise Place, Goole DN14 5DL)
- Wednesday 1 December 2021,
1.30pm – 7.30pm (Selby Town Hall, York St, Selby YO8 4AJ)

All events will be held in line with COVID-19 restrictions and precautions. If it is not possible to hold in-person events due to restrictions relating to the COVID-19 pandemic, we would provide three further online events. We advise those interested in attending our in-person exhibitions to check our website for any updates to the events.



Throughout the consultation period, you can view hard copies of the consultation materials at the following locations:

Drax Sports and Social Club Main Road, Drax, YO8 8PJ 01757 618041	Monday	12pm – 10pm
	Tuesday	11am – 10pm
	Wednesday	12pm – 10pm
	Thursday	11am – 11pm
	Friday	12pm – 11pm
	Saturday	10am – 12pm
	Sunday	10am – 6pm
Selby Library 52 Micklegate, Selby, YO8 4EQ 01609 534521	Monday	9.30am – 7.30pm
	Tuesday	9.30am – 5.30pm
	Wednesday	9.30am – 5.30pm
	Thursday	9.30am – 12.30pm
	Friday	9.30am – 5.30pm
	Saturday	9.30am – 12pm
	Sunday	Closed
Snaith Library 27 Market Place, Snaith, Goole, DN14 9HE 01405 860096	Monday	Closed
	Tuesday	12pm – 6pm
	Wednesday	Closed
	Thursday	10am – 4pm
	Friday	Closed
	Saturday	10am – 12pm
	Sunday	Closed
Goole Library Carlisle Street, Goole, DN14 5DS 01405 762187	Monday	9.30am – 7pm
	Tuesday	9.30am – 7pm
	Wednesday	9.30am – 7pm
	Thursday	9.30am – 5pm
	Friday	9.30am – 5pm
	Saturday	9am – 4pm
	Sunday	Closed
Beverly Customer Service Centre 7 Cross St, Beverley HU17 6TB 01482 393939	Monday	9am – 5pm
	Tuesday	9am – 5pm
	Wednesday	9am – 5pm
	Thursday	9am – 5pm
	Friday	9am – 4.30pm
	Saturday	Closed
	Sunday	Closed

You can get in touch with the Drax team on:



Email us at:
info@BECCS-Drax.com



Phone:
01757 618381



Post:
FREEPOST CARBON CAPTURE BY DRAX

Subject to COVID-19 restrictions, we advise that members of the public check with the relevant venue regarding any restrictions that may be in place prior to visiting. In the event of needing to cancel the use of deposit points due to COVID-19 restrictions, materials will remain available online at [REDACTED]. Hard copies of the materials will also be made available upon request, regardless of the COVID-19 situation.

If you would like a hard copy version of this brochure or other materials you find online, you can contact us using the details below. This brochure can also be made available in large print format, braille or other languages.

Your comments will be analysed by Drax and any of its appointed agents. Copies may be made available in due course to the Secretary of State, the Planning Inspectorate and other relevant statutory authorities so that your comments can be considered as part of the DCO application process. Responses may therefore be made public however we will request that your personal details are not placed on public record. Drax and its appointed agents will hold your personal details securely in accordance with applicable data protection legislation and will use them solely in connection with the consultation process and subsequent DCO application and, except as noted above, they will not be passed to third parties. Please refer to our Privacy Notice for more details: [REDACTED]



Carbon
Capture | by drax

beccs-drax.com

G3 Consultation Poster

Consultation for Bioenergy with Carbon Capture & Storage (BECCS) at Drax

November and December 2021

Drax is proposing to develop BECCS at the existing Drax Power Station Site in North Yorkshire. BECCS is a technology that has been developed to remove carbon dioxide (CO2) from the atmosphere.

Our plan is to install carbon capture technology on up to two of our existing biomass power generating units at Drax Power Station. This will help us to permanently remove more carbon dioxide from the atmosphere than is produced across our operations.

The consultation will run from 1 November to 12 December 2021. You can find more information and provide your comments online at: [\[REDACTED\]](#)

We will be holding online and in-person events where you will be able to learn more about the proposal from members of the project team.



Online

Our live Q&A events will be held on the following dates, using our online one-to-one chat function:

Thursday 11 November 2021, 10am – 2pm

Thursday 18 November 2021, 4pm – 8pm

Wednesday 24 November 2021, 2pm – 6pm

You don't need to book ahead, you simply need to go to our website during the event times and register.

In-person

We will be holding in-person exhibition events on:

Tuesday 23 November 2021, 12pm – 6pm

Drax Sport and Social Club, Main Rd, Drax, Selby YO8 8PJ

Saturday 27 November 2021, 10am – 4pm

Junction Goole, Paradise Place, Goole DN14 5DL

Wednesday 1 December 2021, 1.30pm – 7.30pm

Selby Town Hall York St, Selby YO8 4AJ

The consultation materials can be viewed at these venues.

For opening times, please check with your local venue.

Drax Sports and Social Club
Main Road,
Drax, YO8 8PJ
01757 618041

Selby Library
52 Micklegate,
Selby, YO8 4EQ
01609 534521

Snaith Library
27 Market Place,
Snaith,
Goole, DN14 9HE
01405 860096

Goole Library
Carlisle Street,
Goole, DN14 5DS
01405 762187

Beverley Customer Service Centre
7 Cross St,
Beverley, HU17 6TB
01482 393939

If any in-person events are impacted by COVID-19 restrictions, we will make this clear on our website. Please check with the relevant venue regarding any restrictions that may be in place prior to visiting.

If you would prefer a hard copy of the consultation materials, require these in different formats or have any questions about the proposed scheme, please contact us through the following:

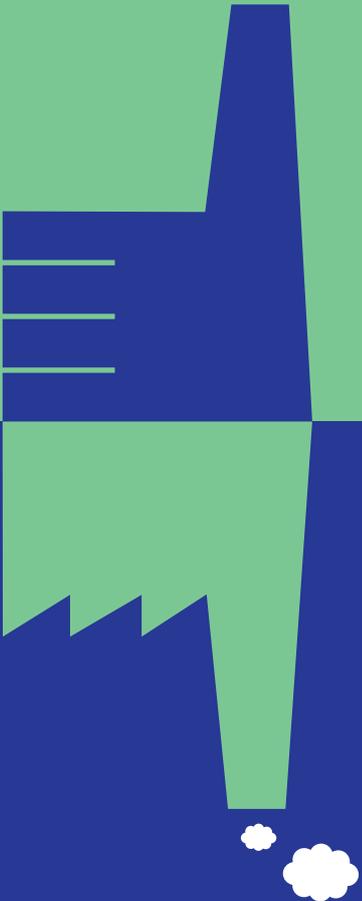
Email:
info@BECCS-Drax.com

Post:
FREEPOST CARBON CAPTURE BY DRAX

Phone:
01757 618381

Carbon Capture | by drax

G4 Consultation Postcard



Consultation for Bioenergy with Carbon Capture & Storage (BECCS) at Drax

November and December 2021

Drax Power Limited (Drax) is proposing to develop BECCS at the existing Drax Power Station site in North Yorkshire. BECCS is a technology that will remove carbon dioxide (CO₂) from the atmosphere.

Our plan is to install carbon capture technology on up to two of our existing biomass power generating units at Drax Power Station. This will help us to permanently remove more carbon dioxide from the atmosphere than is produced across our operations.

Carbon
Capture | by drax

We are holding a series of events to seek your views on our proposed Bioenergy with Carbon Capture & Storage (BECCS) scheme.

The consultation runs from 1 November to 12 December 2021.
You can find more information at: [\[REDACTED\]](#)

We will be holding online and in-person events where you will be able to learn more about the proposal from members of the project team.

Online

Our live Q&A events will be held on the following dates, using our online one-to-one chat function:

- **Thursday 11 November 2021, 10am – 2pm**
- **Thursday 18 November 2021, 4pm – 8pm**
- **Wednesday 24 November 2021, 2pm – 6pm**

You don't need to book ahead, you simply need to go to our website during the event times and register.

In-person

We will also be holding in-person exhibition events on*:

- **Tuesday 23 November 2021, 12pm – 6pm**
(Drax Sport and Social Club, Main Rd, Drax, Selby YO8 8PJ)
- **Saturday 27 November 2021, 10am – 4pm**
(Junction Goole, Paradise Place, Goole DN14 5DL)
- **Wednesday 1 December 2021, 1.30pm – 7.30pm**
(Selby Town Hall York St, Selby YO8 4AJ)

If you would prefer a hard copy of the consultation materials, require these in different formats or have any questions about the proposed scheme, please contact us through the following:

Email:

info@BECCS-Drax.com

Phone:

01757 618381

Post:

FREEPOST CARBON CAPTURE BY DRAX

(* Subject to COVID-19 restrictions. If any in-person events are impacted by COVID-19 restrictions, we will make this clear on the website.

G5 Consultation Feedback Form

Give us your views on BECCS at Drax

About you

Please provide your name.*

*these questions are mandatory

If responding on behalf of an organisation, please provide your organisation name.

Postcode*

If you would like to be kept informed of future updates for BECCS at Drax, please provide your email address.

Q1 Our vision for BECCS at Drax focuses on three core pillars: the need for negative carbon dioxide emissions, creating jobs and economic growth, and innovation in the global fight against climate change. Which of these pillars are most important to you? [please tick all that apply]

- Need for negative carbon dioxide emissions;
- Creating jobs and economic growth;
- Innovation in the global fight against climate change.

Please explain the reasons for your selection.

Q2 To what extent do you agree or disagree with Drax's approach to helping the UK reach its net zero targets by 2050?

- Strongly agree Agree Disagree Strongly disagree Don't know Neither agree nor disagree

Please explain the reasons for your selection.

Q3 To what degree do you support or oppose our proposals for BECCS at Drax?

- Strongly agree Agree Disagree Strongly disagree Don't know Neither agree nor disagree

Please see next page for further questions.

Q4 Do you have any comments on our proposals for BECCS at Drax, including on environmental impacts and the construction process?

About the consultation

Q5 Did you find all the information on BECCS at Drax that you were interested in?

Yes Unsure No

If you said No, what more information would you like to have seen?

Q6 How helpful did you find the following consultation activities?

	Very good	Good	Unsure	Poor	Very poor	Didn't use
Live-chat events	<input type="checkbox"/>					
In-person exhibition events	<input type="checkbox"/>					
Digital exhibition	<input type="checkbox"/>					
Consultation materials available (FAQs, brochure, etc.)	<input type="checkbox"/>					

Q7 Do you have any other comments or suggestions regarding this BECCS at Drax consultation?

Thank you, your views are very important to us. Please return your completed feedback form free of charge to 'FREEPOST CARBON CAPTURE BY DRAX'. This form is also available to fill out on our website

T: 01757 618 381 E: info@beccs-drax.com

G6 Consultation Social Media Posts



Drax

Just now · 🌐



We want to hear your views. 👤

Our proposed installation of bioenergy with carbon capture technology (BECCS) at Drax Power Station will permanently remove carbon dioxide (CO₂) from the atmosphere, which is vital to addressing the climate crisis. 🌍

Our public consultation will be open from 1 November 2021 to 12 December 2021.

Learn more about how to join our online consultation events.



Consultation for Bioenergy with Carbon Capture & Storage (BECCS) at Drax

November and December 2021

Carbon Capture | by drax

👍 Like

💬 Comment



Comment as Drax



Drax Village News

Private group · 1.1K members



About Discussion Topics Members Events Media

drax

What's on your mind?



Live video



Photo/Video



Poll



Drax

Just now · 🌐



We want to hear your views. 👤

Our proposed installation of bioenergy with carbon capture technology (BECCS) at Drax Power Station will permanently remove carbon dioxide (CO₂) from the atmosphere, which is vital to addressing the climate crisis. 🌍

Our public consultation will be open from 1 November 2021 to 12 December 2021.

Learn more about how to join our online consultation events.



Consultation for
Bioenergy with Carbon
Capture & Storage
(BECCS) at Drax

November and December 2021





What's on your mind?



Live video



Photo/Video



Poll



Drax

Just now · 🌐

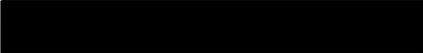


We want to hear your views. 💬

Our proposed installation of bioenergy with carbon capture technology (BECCS) at Drax Power Station will permanently remove carbon dioxide (CO2) from the atmosphere, which is vital to reaching net zero in the UK by 2050.

Our public consultation will be open from 1 November 2021 to 12 December 2021.

Learn more about how to join our in-person consultation events.



Consultation for
Bioenergy with Carbon
Capture & Storage
(BECCS) at Drax
November and December 2021



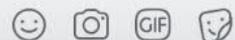
Carbon Capture | by drax

👍 Like

💬 Comment



Comment as Drax





Drax

Just now · 🌐



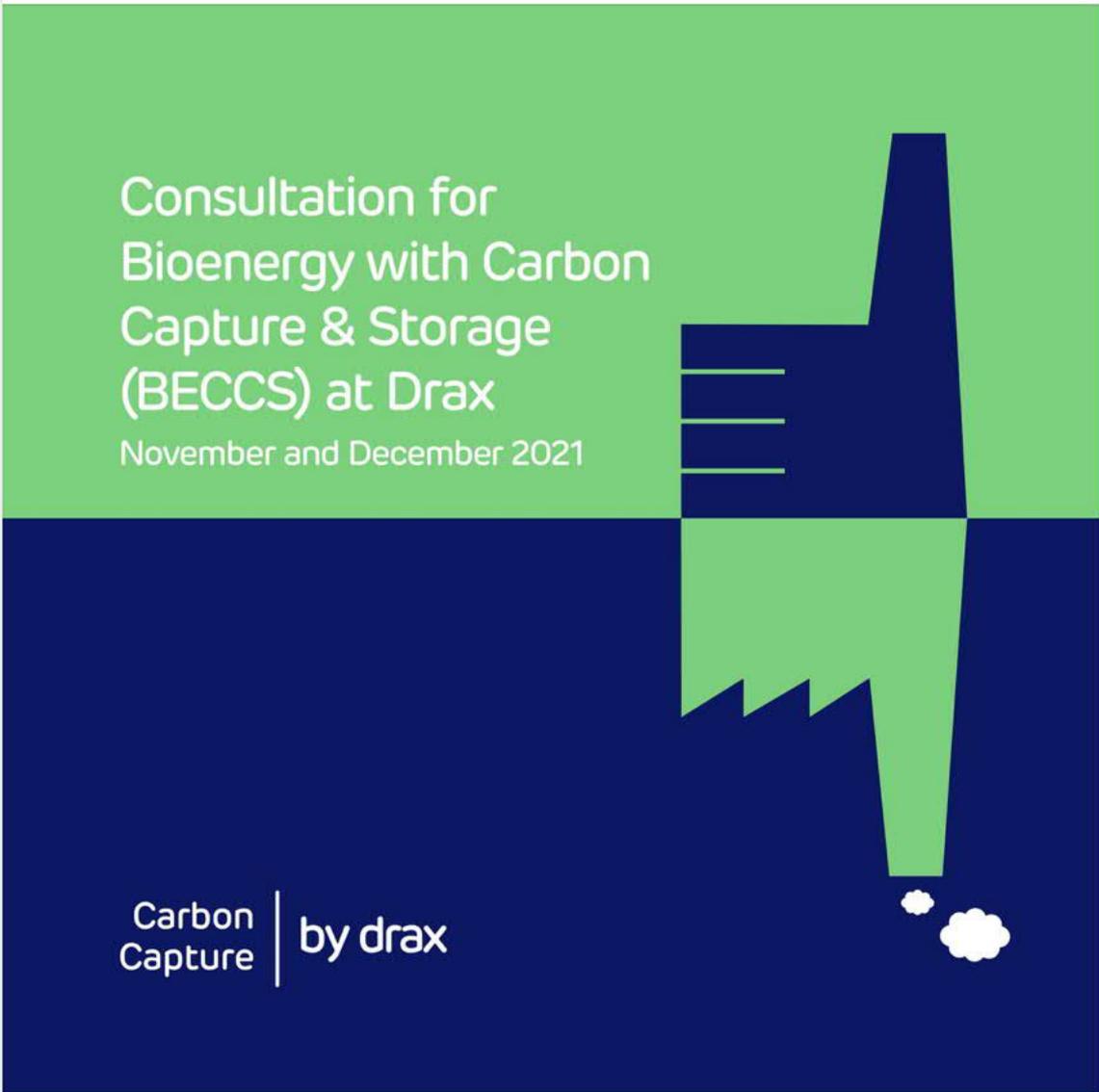
We want to hear your views. 💬

Our proposed installation of bioenergy with carbon capture technology (BECCS) at Drax Power Station will permanently remove carbon dioxide (CO2) from the atmosphere, which is vital to reaching net zero in the UK by 2050.

Our public consultation will be open from 1 November 2021 to 12 December 2021.

Learn more about how to join our in-person consultation events.

👍 [Redacted]



👍 Like

💬 Comment

➦ Share



Write a public comment...



Consultation for Bioenergy with Carbon Capture & Storage (BECCS) at Drax

November and December 2021

Carbon
Capture | by drax

drax Drax

4 November at 10:57 · 🌐

We want to hear your views. 👤
Our proposed installation of bioenergy with carbon capture technology (BECCS) at Drax Power Station will permanently remove carbon dioxide (CO2) from the atmosphere, which is vital to addressing the climate crisis. 🌍
Our public consultation will be open from 1 November 2021 to 12 December 2021. Learn more about how to join our online consultation events.

[Edit](#)

[Like](#)

[Comment](#)

[drax](#) [Comment as Drax](#)

👤 📷 📺 🗨️

drax **Drax**
Sponsored · Paid for by **Drax Corporate Limited** · 

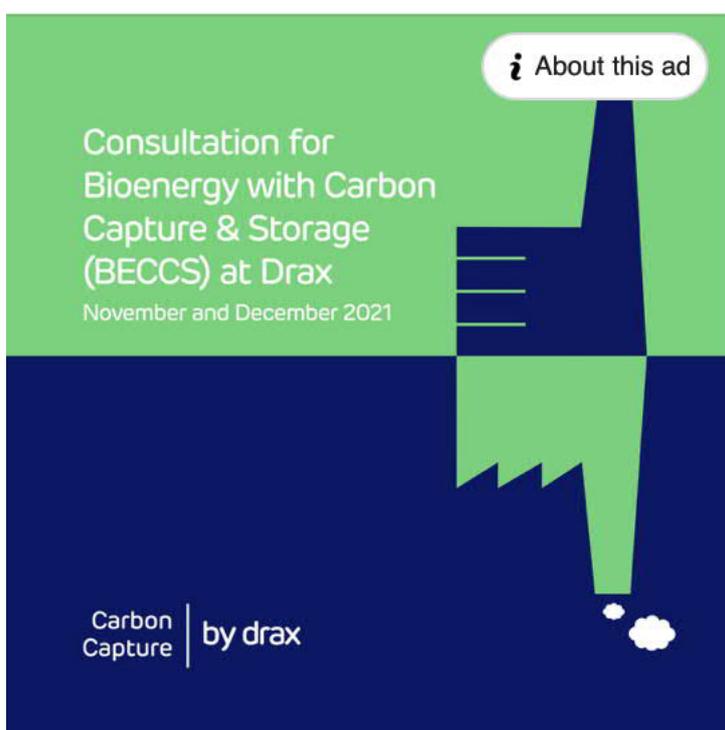


We want to hear your views.

Our proposed installation of bioenergy with carbon capture technology (BECCS) at Drax Power Station will permanently remove carbon dioxide (CO₂) from the atmosphere, which is vital to addressing the climate crisis.

Our public consultation will be open from 1 November 2021 to 12 December 2021.

Learn more about how to join our online consultation events.



Consultation for Bioenergy with Carbon Capture & Storage (BECCS) at Drax
November and December 2021

Carbon Capture | **by drax**

[About this ad](#)

Join our consultation

Welcome to the public consultatio...

[LEARN MORE](#)

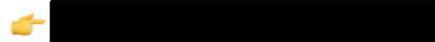
drax **Drax Group**
27,417 followers
6d • 

We want to hear your views. 

Our proposed installation of bioenergy with carbon capture technology (**#BECCS**) at Drax Power Station will permanently remove carbon dioxide (CO₂) from the atmosphere, which is vital to addressing the **#climatecrisis**. 

Our public consultation will be open from 1 November 2021 to 12 December 2021. 

Learn more about how to join our online **#consultation** events.



Consultation for
Bioenergy with Carbon
Capture & Storage
(BECCS) at Drax
November and December 2021

Carbon
Capture | by drax



G7 Consultation - PEIR NTS



PRELIMINARY ENVIRONMENTAL INFORMATION REPORT – VOL 3 – NON-TECHNICAL SUMMARY

Drax Bioenergy with Carbon Capture and Storage

Document Reference Number: 0.10

Applicant: Drax Power Limited

PINS Reference: EN010120



REVISION: 01

DATE: October 2021

DOCUMENT OWNER: WSP UK Limited

AUTHOR: J. North

APPROVER: K. Stubbs

PUBLIC

TABLE OF CONTENTS

1. INTRODUCTION.....	1
1.1. Overview	1
1.2. The Consenting Process.....	2
2. NEED AND ALTERNATIVES	4
2.1. Need for Negative Emissions.....	4
2.2. Alternatives	5
3. PROPOSED SCHEME.....	7
3.1. Site Description	7
3.2. Surrounding Area	9
3.3. Proposed Scheme.....	9
3.4. Construction.....	15
3.5. Operation and Maintenance.....	16
3.6. Decommissioning.....	16
4. APPROACH TO EIA.....	17
4.1. Purpose of the PEIR	17
4.2. Environmental Assessment Methodology	17
5. PRELIMINARY ENVIRONMENTAL ASSESSMENT	20
5.1. Introduction	20
5.2. Traffic and Transport.....	20
5.3. Air Quality.....	22
5.4. Noise and Vibration.....	24
5.5. Ecology	26
5.6. Landscape and Visual.....	28
5.7. Heritage.....	31
5.8. Ground Conditions	33
5.9. Water Environment	34
5.10. Materials and Waste	37
5.11. Climate Change Resilience.....	39
5.12. Climate - Greenhouse Gases.....	41
5.13. Population, Health and Socio Economics.....	43
5.14. Major Accidents and Disasters.....	45

5.15. Cumulative Effects	46
6. HAVE YOUR SAY.....	48
REFERENCES	49

FIGURES

Figure 1.1 - Consenting process for NSIPs.....	3
Figure 3.1 - Site Boundary Plan	8
Figure 3.2 - Surrounding Area.....	9
Figure 3.3 - Carbon Capture Infrastructure	10
Figure 3.4 - Indicative Plant Equipment Layout.....	11
Figure 3.5 - Indicative Site Layout Plan.....	14

TABLES

Table 1.1 - Sections within the NTS.....	1
Table 2.1 - Alternatives Considered for Construction, Design and Operation.....	5

1. INTRODUCTION

1.1. OVERVIEW

Drax Power Limited (“Drax”) propose to install Bioenergy with Carbon Capture and Storage (BECCS) facilities (the Proposed Scheme) within the existing power plant in North Yorkshire. BECCS at Drax is a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 (as amended). As such the Applicant must make an application for a Development Consent Order (DCO) to enable the technology to be installed.

In advance of submitting the DCO Application, Drax is holding a consultation to get your views on the Proposed Scheme. The consultation runs from 1 November to 12 December 2021. As part of this consultation Drax has prepared a Preliminary Environmental Information Report (PEIR) which sets out the preliminary findings of the Environmental Impact Assessment (EIA) process to enable the community and other stakeholders to understand the likely significant environmental effects for the BECCS facilities.

This Non-Technical Summary (NTS) presents a summary of the information and environmental assessment undertaken to date, as set out in the more technically detailed Preliminary Environmental Information Report (PEIR).

Table 1.1 is a summary of each of the sections to help you navigate the NTS.

Table 1.1 - Sections within the NTS

Section	What is included
1. Introduction	Provides an overview of this PEIR Non-Technical Summary. It also gives an overview of the consenting process.
2. Need and Alternatives	This section looks at the need for carbon reduction in energy generation and a summary of the history of the design evolution of the Proposed Scheme.
3. Proposed Scheme	This section describes the Site and what is to be built, including details of how it will be built.
4. Approach to Environmental Impact Assessment	This section explains how the preliminary environmental assessment has been undertaken and how it has been informed by consultation and stakeholder engagement.

Section	What is included
5. PEIR Results	For each of the environmental topics the section provides an overview of how the environmental effects are assessed, a description of the existing environment, overview of environmental measures to avoid or reduce environmental effects, the outcomes of the preliminary assessment of likely significant effects and next steps for assessment.
6. Have your say	This section explains what happens next in the EIA process and how you can have your say on the proposals.

1.2. THE CONSENTING PROCESS

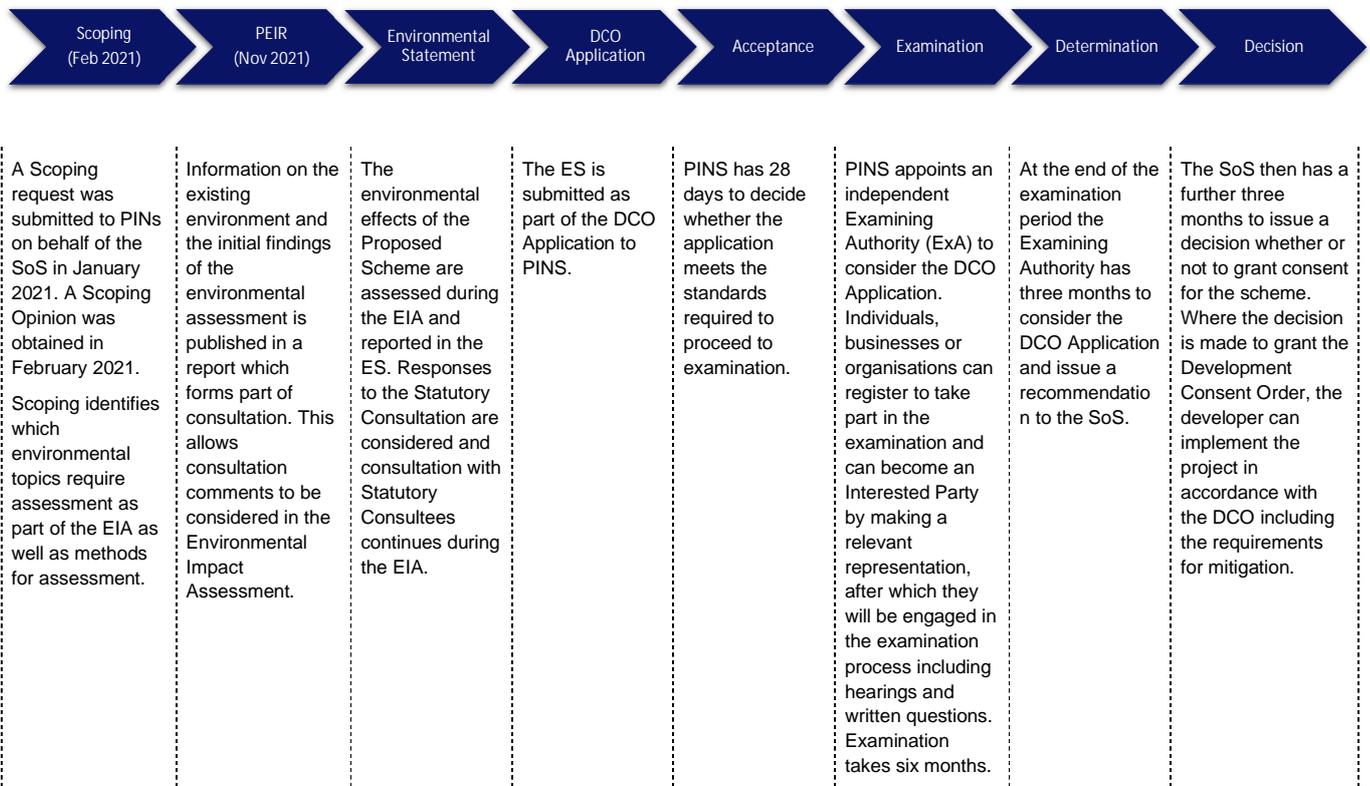
An EIA aims to identify the likely environmental effects of the Proposed Scheme, both positive (beneficial) and negative (adverse). Where significant adverse effects are likely, measures to avoid, reduce or manage those effects are presented where practicable.

Because of the nature and scale of the Proposed Scheme, it is what is called “EIA Development” and an EIA must therefore be undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, (the ‘EIA Regulations’). A Scoping Opinion which determined the topics to be addressed in detail within the EIA, was obtained in February 2021 from the Planning Inspectorate (PINS) on behalf of the Secretary of State (SoS) for Business, Energy and Industry Strategy (BEIS).

Public and stakeholder feedback is an essential component of the EIA process. The PEIR has been developed for this consultation to present the preliminary findings, including baseline data and an evaluation of potential significant effects of the Proposed Scheme.

Following feedback received from this consultation and ongoing assessment work, the EIA will be completed and an Environmental Statement (ES) will be produced to report on the assessment outcomes and any proposed mitigation. The ES will be submitted to PINS as part of the DCO Application. Figure 1.1 below provides a flowchart showing the consenting process for NSIPs, with additional detail to show the progress of the proposed BECCS DCO Application to date.

Figure 1.1 - Consenting process for NSIPs



2. NEED AND ALTERNATIVES

2.1. NEED FOR NEGATIVE EMISSIONS

The UK government has a legally binding target to bring all greenhouse gas emissions to net zero by 2050. The recent Intergovernmental Panel on Climate Change (IPCC) report released in August 2021 has further highlighted the need to implement effective solutions to reduce greenhouse gas emissions. Industry will need to play a key role in meeting this climate challenge by decarbonising their operations.

The Government's Energy White Paper: Powering our Net Zero Future, highlighted key areas for a green industrial revolution and the transition process for reaching the net zero goal. Experts including the Climate Change Committee agree that negative emissions technologies, including BECCS, are essential to meet net zero targets by 2050.

Reducing emissions will be key to helping fight the global climate crisis as well as helping the UK meet its legally binding 'net zero by 2050' target. Negative emissions are a vital part of a solution that also includes decarbonising all sectors of the economy, deploying more renewables, hydrogen and electric vehicles as well as improving energy efficiency and changing the way we live. By deploying BECCS at Drax as early as 2027, Drax's ambition is to become carbon negative by 2030.

Bioenergy with Carbon Capture and Storage (BECCS) is a technology that has been developed to remove carbon dioxide (CO₂) from the atmosphere. Delivering BECCS will enable capture of carbon dioxide emitted during electricity generation, permanently removing more carbon dioxide from the atmosphere than is produced throughout the process - creating what is known as negative emissions.

The United Nations Climate Change Conference (CoP26) scheduled for November 2021 is expected to bring parties together to accelerate action towards the goals of the Paris Agreement, and the UN Framework Convention on Climate Change.

The **Paris Agreement** is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.

The **United Nations Framework Convention on Climate Change** established an international environmental treaty to combat "dangerous human interference with the climate system", in part by stabilizing greenhouse gas concentrations in the atmosphere.

2.2. ALTERNATIVES

A number of alternatives have been looked at in terms of: (i) location of the Carbon Capture and storage technology on alternative development sites; (ii) alternative layouts of the BECCS infrastructure within the Site; (iii) alternative methods to reduce carbon emissions; and (iv) alternative construction methods.

As part of the review of alternatives, a comparison is also made against doing nothing, to look at the overall benefits of the Proposed Scheme. Table 2.1 provides a summary of the findings. Further details are provided in the PEIR in Chapter 3 (Consideration of Alternatives).

Table 2.1 - Alternatives Considered for Construction, Design and Operation

Scenario	Description	Findings
Do nothing	Continued operation of Biomass Units 1 and 2 without BECCS	This scenario is contrary to UK's goal to achieve net zero carbon emissions by 2050.
Alternative development sites	Retrofitting post combustion carbon technology at alternative power station sites	Alternative power stations were not considered viable due to the nature of the Proposed Scheme which is retrofitting post combustion carbon technology on to existing biomass generating units.
Alternative layouts	Alternative layouts within the Site Boundary. Two options were considered, including a southern and northern solution.	The northern solution was selected as it minimises effects on the operation of other parts of the power station which use the southern cooling towers. The northern solution also minimises pipe runs within the Site.
Alternative methods	Consideration of different methods of reducing post combustion carbon emissions.	Alternative methods have been investigated and discounted due to technical, economic, environmental or risk factors. Alternatives that have been considered relate to: <ul style="list-style-type: none"> ~ Steam source (i.e. extraction from existing power station or new steam generating plant equipment); ~ Non-amine Carbon Capture technology (as opposed to conventional and proven amine based solvent);

Scenario	Description	Findings
		<ul style="list-style-type: none"> ~ Solvent selection with consideration on performance and solvent degradation; ~ Review of the flue gas emissions points (i.e. release from new BECCS process equipment or re-routed back to existing stack); ~ Alternative cooling options (i.e. use of existing cooling towers or installation of new cooling towers); ~ CO₂ dehydration technology with consideration on performance and required plant maintenance; and ~ Electrical power source (i.e. from newly installed power turbines or taken from existing power station).
Alternative construction transport routes	Alternative construction transport routes for abnormal indivisible loads (AIL)	<p>The use of the existing Drax railway which delivers biomass to the Power Station, was discounted as the loads cannot fit under the railway bridges and there is limited capacity on the line.</p> <p>The upgrade of the Existing Drax Jetty, which was considered to allow the transport of construction materials by river, was discounted due to the significant environmental effects and cost.</p> <p>An alternative road route, which involved transporting AILs from the Port of Goole via Goole town centre was discounted following a route assessment which deemed it an unfeasible option.</p>
Alternative construction laydown areas	Options for alternative laydown areas within the Site Boundary for construction activities	Due to a lack of available space on the Drax Power Station Site and within Drax ownership, no alternative sites were identified.

3. PROPOSED SCHEME

3.1. SITE DESCRIPTION

The Site within which the Proposed Scheme will be located is shown in Figure 3.1 below. Positioned 5 km south east of Selby and 7.5 km north west of Goole, it covers an area of approximately 290 ha and is split into the three parcels described below.

DRAX POWER STATION SITE

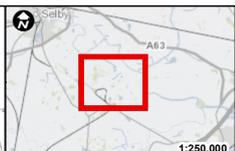
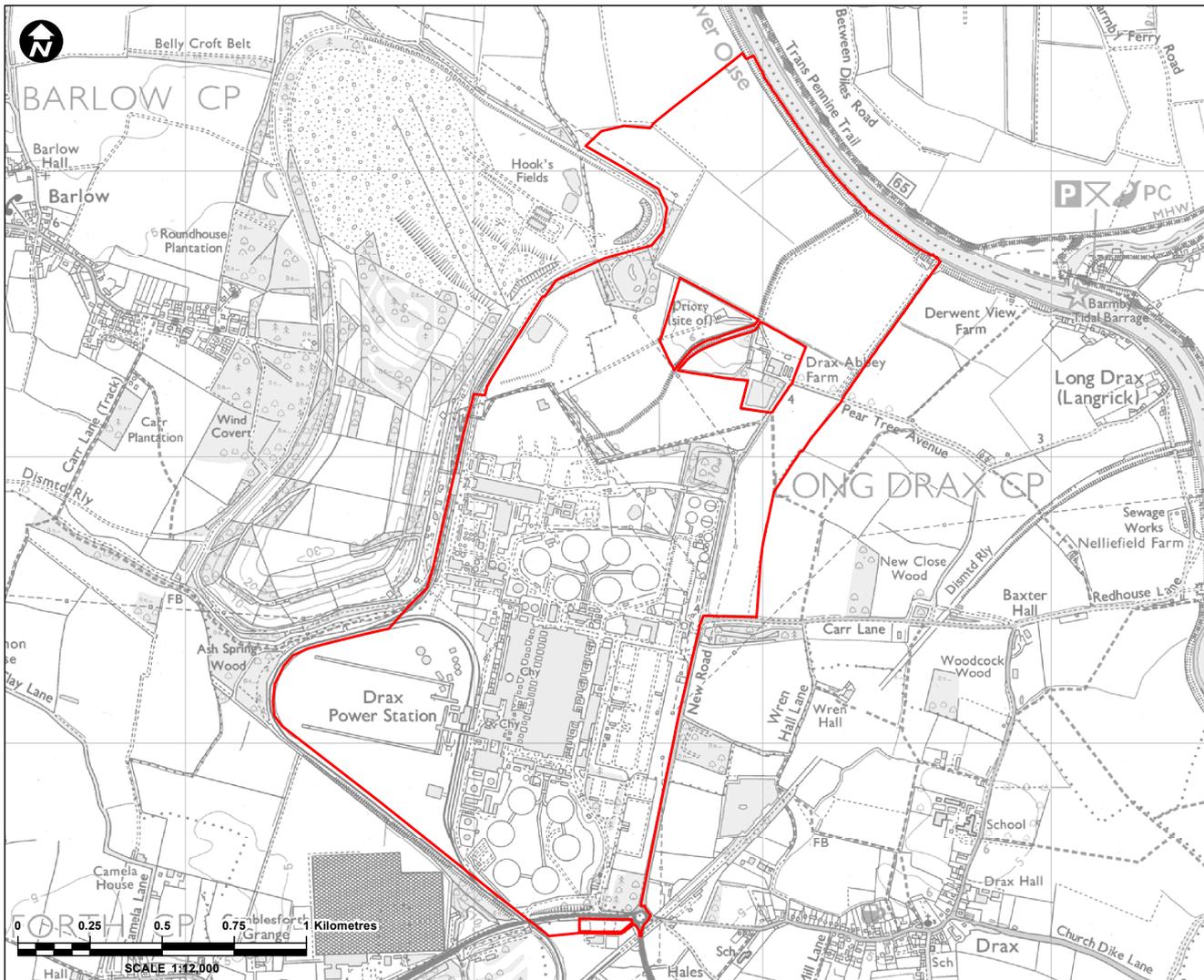
Drax Power Station Site comprises a number of large structures including a turbine hall, boiler house, a chimney and 12 cooling towers, offices, storage buildings and ash handling facilities as well as electricity infrastructure and rail infrastructure. The Power Station has been using compressed wood pellets (a form of biomass) since 2003, when it began research and development work co-firing it with coal, fully converting its first full generating unit to run only on compressed wood pellets in 2013. All coal supplies to Drax Power Station ended in 2021. There are two coal generating power units which are due for closure in September 2022. Some of this area will be where the proposed BECCS infrastructure will be installed.

ENVIRONMENTAL MITIGATION AREA

This comprises the land to the north of the Drax Power Station site and within the Site Boundary that may be used for environmental mitigation for the Proposed Scheme. This area currently supports agricultural fields and a historic landfill site. There are two Public Rights of Way (PRoW) which pass through this Environmental Mitigation Area.

LAYDOWN AREA

This is land to the east of the Drax Power Station Site, required temporarily during the construction of BECCS for the short-term storage of materials and temporary locations of construction offices, warehouses, workshops, open air storage areas, parking and related activities. This land, which is owned by Drax, will be reinstated to its original state when construction has finished.



Key:
 Site Boundary

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. Contains OS data © Crown Copyright and database right 2020 0110031673



PROJECT TITLE
DRAX BECCS DCO

DRAWING TITLE
FIGURE 3.1: SITE BOUNDARY PLAN

DRAWING STATUS			
FOR ISSUE			
DRAWN	CHECKED	APPROVED	AUTHORISED
LH	BS	MM	NA
SCALE @ A3 SIZE		DATE	REVISION
1:12,000		19/10/2021	P01
DRAWING NUMBER			
EN010120-PA-PEIR-0.10.3.1-Sheet1			

3.2. SURROUNDING AREA

The villages of Drax, Hemingbrough and Camblesforth are located within two kilometres of the Site. The surrounding area supports farmland and industrial development. Nearby is the Drax Skylark Centre and Nature Reserve, which supports nature trails and picnic areas. The actual nature reserve is on Barlow Mound, a site where un-recycled waste products from the power station were sent. The area has been reclaimed and transformed into a nature reserve which now supports a variety of species. It is open to the public and is used by schools to help children to learn about nature. These are shown in Figure 3.2.

The River Ouse lies adjacent to the Site, which further downstream forms part of the Humber Estuary Ramsar Site, Special Conservation Area (SAC), Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI). The River Derwent is the closest SAC located north of the Power Station.

Figure 3.2 - Surrounding Area



3.3. PROPOSED SCHEME

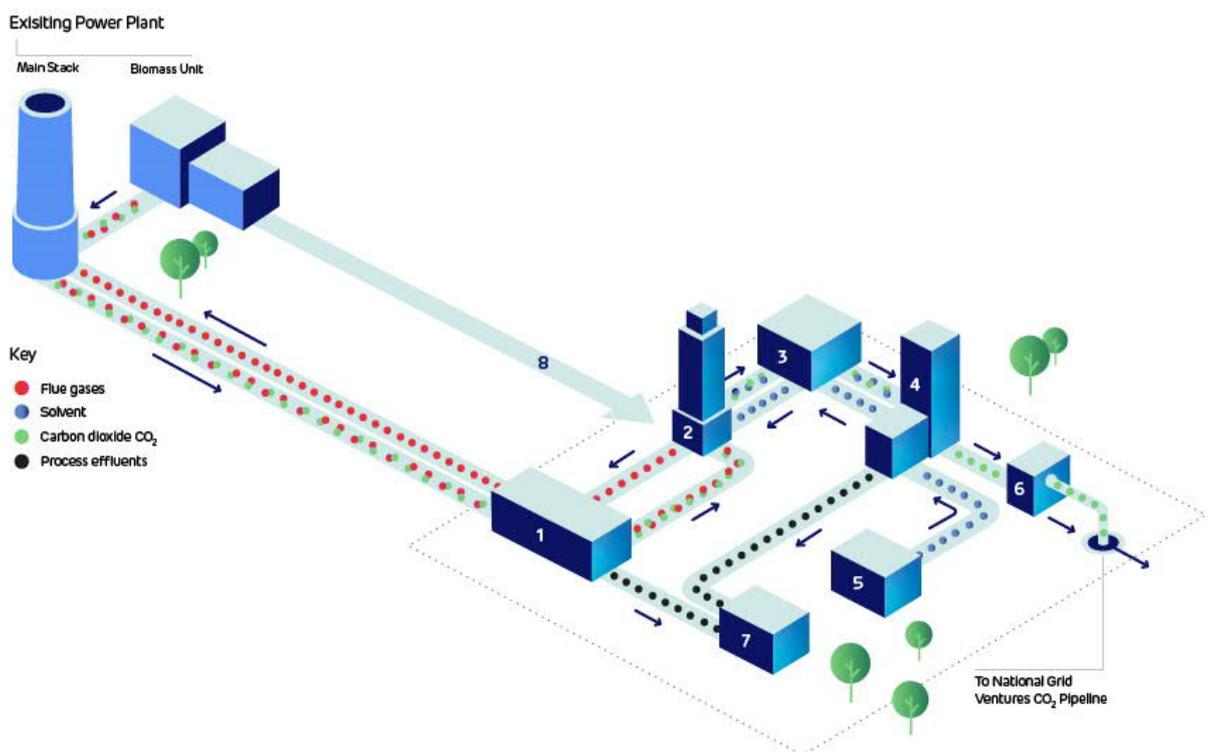
The Proposed Scheme is for the installation of post-combustion Carbon Capture technology on up to two of the existing 600 Megawatt electrical (MWe) biomass generating units (Unit 1 and 2) at Drax Power Station. The Carbon Capture technology will be an integral part of the future operation of the existing biomass generating units, and for that reason it is considered an extension to the existing generating units (for the purposes of the Planning Act 2008, therefore requiring

development consent). The Proposed Scheme will remove approximately 95% of the carbon dioxide from the flue gas, resulting in overall negative emissions of greenhouse gases.

Biomass will continue to be sourced from sustainably managed forests. The forests used to supply biomass, absorb carbon as the trees grow, therefore the carbon dioxide released when the biomass is combusted as fuel is already accounted for. By capturing and storing any carbon dioxide emitted, in safe underground deposits, the process of biomass electricity generation becomes carbon negative.

The carbon dioxide captured will undergo compression and processing before being transported via a proposed new pipeline for storage under the southern North Sea where it will be injected into geological formations below the seabed. The transport and storage infrastructure will be developed as a separate project by National Grid Ventures.

Figure 3.3 - Carbon Capture Infrastructure



The Carbon Capture infrastructure elements of the Proposed Scheme are shown in Figure 3.3. The layout of these elements within the Drax site is shown in Figure 3.4.

Figure 3.4 - Indicative Plant Equipment Layout



CARBON CAPTURE INFRASTRUCTURE

For BECCS at Drax, Carbon Capture technology will be installed on up to two of the existing biomass electricity generating units at Drax Power Station. The technology will include 'Carbon Capture Plant' components which will be connected to each of the biomass units, and 'common plant' components which will be required for both Carbon Capture Plants. Steam is required for several of the Carbon Capture processes, the technology will therefore include steam extraction from the existing biomass units as well as new steam processing infrastructure.

The associated infrastructure is required for the capture, compression and treatment of carbon dioxide (CO₂) to allow connection to a National Grid CO₂ transport system. This will be installed at Drax Power Station and integrated into the existing power generating units, cooling water systems and Main Stack. The Infrastructure (for one of the biomass generating units) is shown in Figure 3.3 and includes the following numbered elements, the maximum parameters of which are identified in Table 2.3 of PEIR Chapter 2 (Site and Project Description):

- 1) A flue gas pre-treatment section will remove pollutants from the gas which is emitted from the biomass unit as part of the energy generation process before the carbon dioxide is extracted;
- 2) An Absorber Column will then extract the carbon dioxide from the flue gas using an amine solvent;
- 3) Solvent heat exchangers will heat the carbon dioxide-rich prior to separation whilst cooling the carbon dioxide-lean solvent in preparation for another capture cycle in the Absorber Column;
- 4) A Solvent Regeneration System will separate the carbon dioxide from the amine solvent through the addition of heat in the form of steam;
- 5) The Solvent Storage and Make-up System ensures that the amine solvent remains in a good condition and continues to be available for the process by topping up any degraded quantities with new solvent;
- 6) Carbon dioxide is then transferred to a processing and compression plant where the carbon dioxide is processed for transport by pipeline for storage in safe underground deposits;
- 7) A Carbon Capture Wastewater Treatment Plant treats the used process water to recover all wastewater effluents; and
- 8) Steam is required for several of the Carbon Capture processes, the infrastructure will therefore include steam extraction from the existing biomass units as well as new steam processing infrastructure.

ENVIRONMENTAL MITIGATION AREA

Land has been identified to the north of the Drax Power Station Site for possible environmental mitigation (refer to Figure 3.5 (Indicative Site Layout Plan)). It will be designed to protect and improve habitats for local wildlife and farmland, and as such no new infrastructure is proposed for this area.

The details of the environmental mitigation to be provided within the Environmental Mitigation Area are currently being developed alongside the assessments of

landscape and visual and biodiversity effects and proposed mitigation will be set out in the DCO Application and accompanying ES.

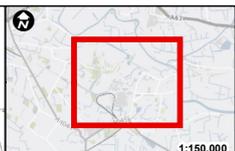
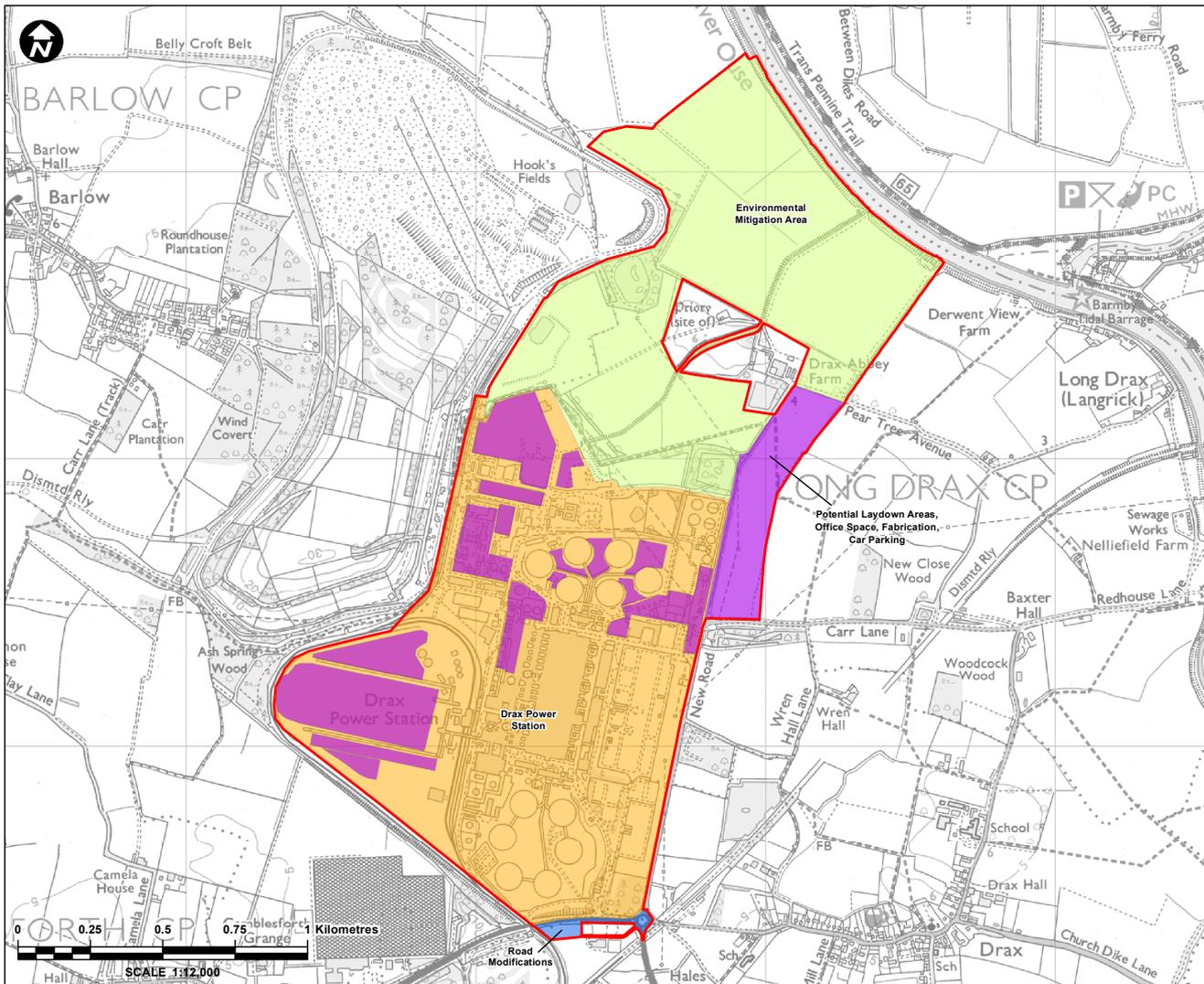
ROAD MODIFICATIONS

Road modifications may be required at the roundabout to the south of the Drax Power Station Site within the Site Boundary to allow for the transport of AILs.

Furthermore, highways power may be required for temporary works (such as the temporary removal of street furniture) to facilitate the transport of AILs to the Site.

OTHER WORKS

Other works likely to be included the Proposed Scheme include ground slab removal, security infrastructure, site lighting, site drainage, upgrade of electrical connections, electrical switch rooms, potential onsite road reconfigurations, landscaping and ecological mitigation and potential modifications to the existing electrostatic precipitators.



- Key:**
- Red line: Site Boundary
 - Land Use**
 - Orange: Drax Power Station
 - Green: Environmental Mitigation Area
 - Blue: Road Modifications
 - Purple: Potential Laydown Areas, Office Space, Fabrication, Car Parking

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. Contains OS data © Crown Copyright and database right 2020 0110031673



PROJECT TITLE
DRAX BECCS DCO

DRAWING TITLE
FIGURE 3.5: INDICATIVE SITE LAYOUT PLAN

DRAWING STATUS

FOR ISSUE			
DRAWN	CHECKED	APPROVED	AUTHORISED
LH	BS	MM	NA
SCALE @ A3 SIZE		DATE	REVISION
1:12,000		19/10/2021	P01
DRAWING NUMBER			
EN010120-PA-PEIR-0.10.3.5-Sheet1			

3.4. CONSTRUCTION

One Laydown Area has been included to the east of the Existing Drax Power Station Site which will be reinstated to arable land once construction is finished, as well as several smaller laydown areas within Drax Power Station Site (shown indicatively in Figure 3.5). These areas will support temporary construction compounds and laydown areas for construction offices, warehouses, workshops, open air storage areas and car parking.

Construction is anticipated to start in early 2024 and is expected to be completed by the end of 2029. This will involve the construction of the Carbon Capture Plant elements such as the Absorber Column, as well as the construction of the common plant elements such as the Carbon Capture Wastewater Treatment Plant.

There are currently two construction programmes being considered, Option 1 and Option 2. For Option 1 the Carbon Capture Plant for Unit 2 will be constructed first along with the Common Plant, with Unit 1 to be built afterwards. For Option 2 Units 1 and 2 will be constructed simultaneously.

Current construction assumptions

- ~ Standard construction working hours will be Monday to Friday 7am to 7pm, and Saturdays 7am to 1pm. Start-up and shutdown activities will take place during a one hour window either side of standard working hours.
- ~ Approximately 1000 workers will be required during construction peak.
- ~ Car parking spaces for construction workers will be available within the Drax Power Station Site and the proposed laydown area.
- ~ Temporary lighting will be required during construction.
- ~ Transport of construction materials will be via the road network.
- ~ Road modifications may be required at the roundabout to the south of the Drax Power Station within the Site Boundary to allow for the transport of Abnormal Indivisible Loads.

TRANSPORT OF CONSTRUCTION MATERIALS

Transport of construction materials will be via the road network. Construction materials will be transported by road from Junction 36 of the M62. Larger construction elements, known as Abnormal Indivisible Loads (AILs) will be transported by road from the Port of Goole along the A161, the M62 and then the A645 to Drax Power Station. Drax will require certain highways powers in order to temporarily remove barriers and street furniture, to carry out tree surgery and to temporarily close part of the M62 and the highway.

Construction activities will be considered in more detail as the Proposed Scheme is developed. During the environmental assessments, any mitigation needed during construction to prevent or reduce effects on the environment will be set out in a Register of Environmental Actions and Commitments which will form part of the DCO Application, and a Construction Environmental Management Plan (CEMP) which will be prepared before construction starts.

3.5. OPERATION AND MAINTENANCE

The Carbon Capture Plant associated with Unit 2 is expected to be operational in 2027, and Unit 1 in 2029. The Proposed Scheme is designed to operate 24 hours per day, seven days a week. A workforce of 50 staff will be required for operation and maintenance activities.

3.6. DECOMMISSIONING

The expected lifespan of the Proposed Scheme is 60 years. A full Environmental Departure Audit will be carried out before decommissioning the plant to examine, in detail, the environmental risks and make recommendations for any remedial action to remove the risks. This will be followed by a Final Audit to ensure that all remedial work has been completed successfully.

The decommissioning team will work with the Environment Agency to determine decommissioning requirements and works will be carried out in accordance with the necessary permits and details of the decommissioning will be recorded in a Site Closure Plan.

4. APPROACH TO EIA

4.1. PURPOSE OF THE PEIR

The PEIR has been prepared at a point in time during the EIA process when work on refining the design of the BECCS facility is ongoing, the likely significant environmental effects are still being assessed and the potential for environmental mitigation and management measures for design and construction is being fed back into the design. The timing of the consultation and publication of the PEIR at this time is deliberate to enable feedback from the consultation to influence the proposals for the Proposed Scheme as the design is finalised, and the environmental impact assessments are completed, for the DCO Application.

The purpose of the preliminary environmental assessment presented in the PEIR is to enable members of the public, consultation bodies, and other stakeholders to develop an informed view of the likely significant effects of the Proposed Scheme and comment on aspects of interest. Drax is working with stakeholders to develop additional ways in which any adverse effects of BECCS identified by this assessment, can be avoided or reduced. Feedback received through the consultation will be used to inform the ongoing development of the BECCS design, and additional measures to address any identified significant adverse environmental effects.

CONSULTATION

This PEIR forms part of the Statutory Consultation as required by the Planning Act 2008 and EIA Regulations and has been developed to help consultees take an informed view of the likely significant environmental effects of the Proposed Scheme. Details on how to provide your feedback on the PEIR are provided in Section 6 'Have Your Say' of this NTS.

4.2. ENVIRONMENTAL ASSESSMENT METHODOLOGY

This section of the NTS summarises the approach taken for the environmental assessment process to date, to identify and evaluate the likely significant effects associated with the Proposed Scheme. Environmental assessment is an iterative process, which extends from project inception through to the final design and considers a project's impact during its construction, operational and decommissioning phases.

The full findings of the EIA will be presented in an Environmental Statement (ES) and submitted as part of the application for development consent. The ES provides the public and relevant organisations (such as the Environment Agency and Natural England) with the environmental information needed to understand and comment on a development and provides decision-makers with the environmental information to allow a decision to be made on whether to grant consent for the development. Further details of the methodology are provided in PEIR Chapter 4 (EIA Methodology).

The environmental assessment considers all relevant topics or ‘aspects’ that may be impacted such as ecology, archaeology etc. These aspects were agreed with the Planning Inspectorate and other stakeholders through the Scoping Process.

A summary of the findings for each topic is provided in Section 5 of this NTS. Further detail of the findings are presented in separate chapters of the PEIR (Chapters 5 to 18).

STUDY AREA

The assessment of each topic is carried out for a ‘study area’ and will usually be different for each topic. The study area is based on the geographical scope of the potential effects of that topic, and its interactions with other topics, as appropriate. The study area is also informed by topic specific guidance and consultation with stakeholders.

BASELINE

In order to make an assessment of the likely significant environmental effects, we need information on the existing (baseline) environment along with how the environment might look in years to come without the Proposed Scheme being built (future baseline). The assessment then looks at the differences in how the environment will be without the Proposed Scheme compared to the environment with the Proposed Scheme in place. For Drax operations, the baseline considered for the assessment includes four Drax units running on biomass.

To inform the baseline, specialists collate information in relation to their topic from, for example, existing studies and on-line information, and conduct surveys, which might include ecology walkover surveys or species surveys.

ASSESSMENT OF ENVIRONMENTAL EFFECTS

The method for assessing the significance of effects will vary between topics but will consider how something might change from the baseline conditions as a result of the Proposed Scheme. This will include consideration of how sensitive that environmental component is to change, but also the duration of the effect and whether it is reversible.

Likely Significant Effects

When assessing environmental effects, we consider how significant that change might be. The significance of effect is usually described as either neutral, slight, moderate, large or very large. Moderate, large or very large effects are usually considered “significant” in EIA terms.

The assessment also considers whether those effects are direct or indirect; short, medium or long-term; permanent or temporary; and beneficial or adverse effects.

Following identification of the likely significant effects, mitigation measures are developed where practicable to avoid, minimise or remedy any adverse significant environmental impacts. We then consider the potential effects resulting from the application of those mitigation measures. These are referred to as 'residual effects'. Using noise as an example, an adverse residual effect would be the noise impacts that remain following the implementation of mitigation measures.

Mitigation measures can be divided into three categories:

Primary –are modifications to the location or design of the Proposed Scheme that are an inherent part of the project. For example, incorporation of acoustic screening to reduce noise levels.

Secondary – are actions that require further activity to achieve the anticipated outcome. These may be secured as part of the Development Consent Order requirements. Such as the requirement for further archaeological investigation or monitoring.

Tertiary – actions that occur with or without input from the EIA. Including actions that are required to meet other existing legislation or planning requirements. These are treated as an inherent part of the Proposed Scheme.

5. PRELIMINARY ENVIRONMENTAL ASSESSMENT

5.1. INTRODUCTION

This section aims to provide a non-technical summary of the environmental topic PEIR Chapters to enable the community and other stakeholders to understand the preliminary findings of the environmental assessment for BECCS. This chapter includes the following details for each of the topics.

- How the potential environmental effects for the topics have been assessed;
- The current, and where appropriate, future environmental “baseline”. The current baseline describes the environmental conditions on the Site, and its surrounds, where appropriate, now. The future baseline, considers how the environmental conditions might evolve in the future without the Proposed Scheme;
- Likely significant effects of the Proposed Scheme identified in the preliminary assessment;
- A summary of the findings; and
- The next steps for the environmental assessment of the Proposed Scheme.

5.2. TRAFFIC AND TRANSPORT

HOW HAVE EFFECTS BEEN ASSESSED?

The preliminary traffic and transport assessment consider the likely effects of the Proposed Scheme on road users and other sensitive receptors in the study area during construction, operation and decommissioning of the Proposed Scheme. The study area for the assessment considers the junctions, and the highway links between the junctions, that could potentially be affected by the Proposed Scheme. The assessment assumes that all deliveries, construction vehicles and construction workers as well as all Abnormal Indivisible Loads (AILs) which will be transported from the Port of Goole by road.

Traffic levels and highway safety issues used in the assessment have been compiled from traffic surveys (conducted in 2018), bus schedules and traffic collision data.

The assessment compares the traffic levels on the local road network with and without the Proposed Scheme. Traffic levels were projected up to 2026 to look at the effect of construction traffic and 2028 for operation. Sensitive receptors considered in the assessment included motorised and non-motorised users of the surrounding highway network, including pedestrians, cyclists and horse riders, users of the Public Rights of Way (PRoW), as well as residents within Camblesforth, Drax and Carlton.

The effects considered in the assessment included:

- Severance, where the road provides a physical barrier reducing access to the community or other facilities;

- Changes to pedestrian amenity such as exposure to greater noise and vehicle emissions; and
- Fear and intimidation as a result of the increased volume of traffic and Heavy Goods Vehicle (HGV) composition, as well as highway safety and travel delays.

BASELINE

There are three vehicle access points for the Drax Power Station, including a South Gate, North Gate and materials handling entrance. The A1041 and A645 connect the power station to the wider road network. There is no cycling infrastructure in place within the immediate vicinity. The nearest bus stop is at the South Gate Entrance and closest railway station is Snaith, over 4 miles away.

Traffic data was obtained from surveys in 2018, as such further consideration of the baseline traffic flows is being carried out to determine how these may have been affected by the COVID-19 pandemic.

LIKELY SIGNIFICANT EFFECTS

Construction and Decommissioning Phase

The potential temporary effects during construction and decommissioning are anticipated to be similar but goods will be taken away from the Site rather than to the Site for decommissioning. It is considered that with mitigation including implementation of a Construction Worker Travel Plan (CWTP) and Construction Traffic Management Plan (CTMP) and PRow Management Plan that there will be no significant effects associated with increased construction or decommissioning traffic on the local and wider highway network. With the inclusion of a strategy to manage AILs within the CTMP, including following the necessary consultation and notification process, it is also considered that there will be no significant effects associated with the movement of AILs.

There may be disruption and / or closure of footpaths and disruption in access to PRowS adjoining the Site which may increase journey times for users but these impacts will be temporary. Amenity of these routes will also be reduced due to the presence of construction plant and equipment. A PRow Management Plan will be produced to minimise disruption to users and ensure access is maintained during construction. With the implementation of mitigation, it is anticipated that no significant effects will arise.

Operational Phase

Once operational there will not be a significant increase in workers to the Drax Power Station Site. As such changes to the operational traffic flows on the road network are not expected to vary significantly as a result of operation of the Proposed Scheme. No significant operational effects for Traffic and Transport are therefore expected.

SUMMARY

With the implementation of the CWTP, CTMP (including a strategy for AILs) and a PRow Management Plan, no significant environmental effects are expected during construction, operation and decommissioning. Further consideration of traffic movements and traffic routes will be undertaken before the DCO Application is made, but it is not expected to identify significant effects.

NEXT STEPS

Further discussions will be held with the highways authorities in relation to the baseline traffic survey data in light of the effect of the COVID-19 pandemic on traffic. Discussions will also take place with North Yorkshire County Council (NYCC), East Riding of Yorkshire (ERoY) and National Highways in order to seek agreement, as far as possible, on the approach to the EIA.

Once the construction traffic numbers and routes have been developed, the construction traffic assessment for the ES will be finalised. Further junction modelling and analysis of the routes for AIL will be undertaken to identify the best option to get AIL to the Drax Power Station Site.

A full review of the committed developments and cumulative impacts will be carried out and reported in the ES.

5.3. AIR QUALITY

HOW HAVE EFFECTS BEEN ASSESSED?

The air quality assessment considers potential effects of the Proposed Scheme on human receptors, Air Quality Management Areas of Selby and neighbouring authorities, and designated ecological sites which are of importance at European and national levels.

A qualitative assessment of air emissions and dust has been conducted for the construction phase in relation to sensitive receptors within the vicinity. This considers potential combustion plant and road vehicles, in addition to the type and scale of construction activities within the Site.

A quantitative assessment of air emissions has been undertaken for the operation phase using a computer model. The assessment considers the dispersion of pollutant emissions to air within a radius of up to 15 km from the Proposed Scheme (the 'study area'). The Proposed Scheme emissions scenario has taken a worst-case approach (used for the purposes of ensuring the effects of the Proposed Scheme are not under-estimated), whereby all combustion plant will run at full load continuously and release pollutant emissions at the maximum permitted level, where applicable.

BASELINE

Air quality within the study area is mainly influenced by emissions from the Drax Power Station and other power plants (e.g. Ferrybridge waste to energy plant), emissions from traffic on local roads including the M62 motorway, and agricultural practices. Whilst air quality is influenced by these sources, local pollutant concentrations are well below relevant national air quality pollution thresholds.

LIKELY SIGNIFICANT EFFECTS

Construction Phase

During construction, it is anticipated that dust and particulate matter may arise from a range of on-site activities, including earthworks, erection of buildings and associated material handling, and construction vehicle movements. However, for almost all construction activities, the application of effective mitigation measures will prevent any significant effects occurring to sensitive receptors. Impacts from exhaust emissions from construction vehicles and non-road plant on local air quality are expected to be insignificant within the context of existing air quality conditions within the study area.

Appropriate construction mitigation measures specific to dust and air quality are outlined in Chapter 6 (Air Quality) of the PEIR. These measures will be included in a CEMP produced by the contractor for the Proposed Scheme which will contain measures to avoid, reduce or mitigate these impacts during construction.

Operation Phase

Based on modelled concentrations of air pollutants across the study area during operation, it is unlikely that the Proposed Scheme will have significant effects on air quality affecting human receptors. However, the assessment indicates that the Proposed Scheme may contribute to levels of ammonia and acid deposition over some designated ecological sites, which could be significant. This will be assessed further in the ES.

Decommissioning Phase

Effects during the decommissioning phase are anticipated to be comparable to those identified for the construction phase. Therefore, with the application of effective mitigation, potential air quality effects are not expected to be significant.

SUMMARY

Air quality within the local area does not exceed EU or UK guidelines. With the application of appropriate mitigation measures during construction and decommissioning the Proposed Scheme is not expected to have adverse effects on air quality and sensitive receptors identified.

Further consideration of the effects on sensitive ecological receptors during operation, as a result of ammonia and acid deposition, will be carried out during the EIA and reported in the ES.

NEXT STEPS

Further review of construction vehicle movements and the potential for local air quality impacts will be undertaken and reported in the ES, as further data become available for construction vehicle movements and routing. This will feed into the construction phase assessment of likely significant effects.

The assessment of air quality impacts on human and ecological receptors with respect to the operational phase will be revisited as part of the ES once further sensitivity testing of the computer model inputs has been undertaken to address assessment limitations and uncertainty identified in Chapter 6 (Air Quality) of the PEIR.

A cumulative impact assessment, which will likely focus on operational phase impacts at human and ecological receptors within the study area, will be undertaken to determine the impacts and likely significance of effects associated with emissions from the Proposed Scheme and relevant committed developments.

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

5.4. NOISE AND VIBRATION

HOW HAVE EFFECTS BEEN ASSESSED?

The noise and vibration assessment considers the potential effects of the Proposed Scheme upon sensitive receptors. The study area for construction noise and vibration assessment considers sensitive receptors within 500 m of the Site Boundary, and the operational noise and vibration assessment within 2 km of the Site Boundary. Initial consultation with Statutory Consultees was completed during the EIA Scoping Stage and long-term noise monitoring locations in proximity to the Proposed Scheme were agreed with the Selby District Council Environmental Health Officer (EHO). For the purpose of assessment, the sensitivity of any human receptor is considered 'high'. Due to the similarities in site activities it is considered that the noise generated during construction will be the same as that during decommissioning.

Further information on how noise affects biodiversity receptors is discussed in Section 5.5 - Ecology below and in Chapter 8 (Ecology) of the PEIR.

At this stage, an indicative assessment has been undertaken of construction noise. Sound levels from plant during operation were assessed against British Standard BS4142:2014 +A1:2019 which compares noise from operation of equipment against existing background noise levels. An increase of 10 dB above background levels is considered likely to indicate a significant adverse effect on sensitive receptors. Construction vibration effects have been assessed against BS5228-2.

Decibel (dB(A)) - The decibel (dB) scale is used in relation to sound because it is a logarithmic rather than a linear scale. The decibel scale compares the level of a sound relative to another. The human ear is more sensitive to some frequencies than others. The A-weighting represented as dB(A) is a filter that can be applied to measured sound pressure level at varying frequencies, to mimic the sensitivity of the human ear, and therefore better represent the likely perceived loudness of the sound.

BASELINE

A total of 11 representative sensitive receptors were selected within 2 km of the Proposed Scheme, primarily covering isolated residential properties with the potential to be affected by the Proposed Scheme.

The baseline noise environment was determined by conducting noise monitoring at locations agreed with the EHO. The monitoring results showed that the baseline noise environment is dominated by noise from the Drax Power Station, traffic using the wider road network, as well as farm machinery. The future baseline noise levels without the Scheme are not expected to change significantly.

LIKELY SIGNIFICANT EFFECTS

Assumptions have been made on the potential noise associated with construction, operational and decommissioning activities. For operation, it has been assumed based on the information available on operation of the BECCS infrastructure, that the noise levels at 1 m from all main sources will not exceed 85 dB(A). A revised assessment will be presented in the ES once further information is available.

There are no likely significant effects related to the construction or decommissioning of the Proposed Scheme. While an increase in noise level will potentially occur at sensitive receptors none are expected to exceed the daytime noise threshold of 65 dB(A).

No likely significant effects from vibration during operation have been identified.

‘Adverse impact’ is a technical description from British Standard BS4142 and does not necessarily correspond with a significant effect as defined in an EIA.

During operation the assessment has identified a potentially high adverse noise impact at receptors in the village of Barlow during daytime hours. During night time hours, a potentially high adverse noise impact has been identified at two sensitive receptors; Barlow Village and Norwood Farm and a moderate adverse noise impact has been identified at two isolated properties as well as a receptor within Drax Village.

Potential mitigation measures during construction and operation include managing construction practices, consenting for works outside of core working hours, selection of low noise equipment and construction methodologies, and use of acoustic screening. For operation, mitigation measures will likely include enclosures and screening for equipment, acoustic barriers or earth bunds, and scheduling of transportation and maintenance works during hours where impacts are limited. It is considered that with the implementation of these mitigation measures that residual effects will not be significant.

SUMMARY

The preliminary assessment against assumed worst case construction noise and vibration has identified no significant effects. Further assessment of construction noise and vibration will be required as further details of equipment and construction methodology becomes available.

Potential high and moderate adverse effects from operational noise have been identified based on assumed operational noise levels, however mitigation measures identified are anticipated to reduce this effect to not significant subject to further assessment which will be reported in the ES.

NEXT STEPS

Further consultation will be carried out with Selby District Council EHO to agree findings of the baseline noise monitoring and scope out insignificant effects.

Further assessment will be carried out on noise and vibration during the construction phase as further details of the construction equipment and construction methods become available. The next steps will also include exploration and confirmation of additional mitigation measures for operational noise as part of the ES.

5.5. ECOLOGY

HOW HAVE EFFECTS BEEN ASSESSED?

A preliminary assessment of potential effects on ecology has been completed. This has been informed by a desk study with information from the North and East Yorkshire Ecological Data Centre. Existing ecology reports previously completed for the Site were also reviewed.

A number of ecological surveys were conducted for the Proposed Scheme in 2020 and 2021. This included:

- An extended Phase 1 Habitat Survey;
- Terrestrial invertebrate surveys;
- Amphibian surveys; and
- Wintering bird surveys.

A habitat survey allows identification of the habitats present on Site, the species present in those habitats and the suitability of the habitats to support protected and

notable species. This can be used to identify impacts, suggest mitigation and can be used to identify opportunities to achieve a Biodiversity Net Gain on the Site.

BASELINE

There are no Designated Sites for biodiversity within the Site. There are 10 Designated Sites of international importance within 15 km of the Proposed Scheme, six Designated Sites of national importance within 5 km of the Proposed Scheme, and six non-statutory Designated Sites of County importance within 2 km of the Proposed Scheme.

Designated Sites are sites that are protected by legislation and include Sites of Special Scientific Interest (SSSI); Special Areas of Conservation (SAC), Special Protection Areas (SPA) and National Nature Reserves (NNR) to name a few.

Some species of wildlife are protected by UK and also sometimes European legislation because of their rarity or historical persecution. These species are called '**protected species**'. Species with conservation designations, but no legal protection are called '**notable species**'.

Important habitats including lowland mixed deciduous woodland, hedgerows and ponds have been identified within the Site Boundary. Other important habitats including mudflats, floodplain grazing marsh and traditional orchards were identified outside of the Site Boundary. Previous biodiversity records and survey work have identified the presence of badgers, bats, otters, water vole, breeding and wintering birds, amphibians, reptiles, terrestrial invertebrates, rare plants and invasive non-native plant species within the Site.

LIKELY SIGNIFICANT EFFECTS

Likely effects from construction include loss and disturbance of habitats and disturbance to protected and notable species within and adjacent to the Drax Power Station Site. These effects can be mitigated through a combination of primary and tertiary mitigation and specific method statements for ecologically sensitive works. Reinstatement and (if required) compensatory planting will be identified in an Outline Landscape and Biodiversity Strategy. This will address potential habitat loss and Biodiversity Net Gain requirements. This will be produced to reflect the design of the Proposed Scheme submitted with the DCO Application.

Potentially significant residual effects are anticipated on commuting and foraging bats, breeding and wintering birds and terrestrial invertebrates as a result of short-term habitat loss during the construction phase. These effects are likely to extend into the early operational phase while reinstated and replacement habitat matures. Further assessment will be completed as the Scheme design and mitigation measures are developed. Where possible, measures will be identified to remove residual effects on ecological features.

Operational emissions to air will include nitrogen and amines. A proportion of the emitted nitrogen will be deposited onto Designated Sites. Air quality modelling is being completed to quantify any such impacts. Prior to completion of this work and on a precautionary basis, the effects of nitrogen deposition are considered potentially significant. Completion and analysis of air quality modelling is required, to determine whether there will actually be any significant effects to Designated Sites.

Likely effects from the operation of the Proposed Scheme also include visual and noise disturbance to protected and notable species. With targeted mitigation measures, these effects are predicted to be insignificant.

SUMMARY

In summary, there could be potentially significant effects for protected and notable species during construction and the early operational phase. It may be possible to reduce the significance of these residual effects further as the Proposed Scheme design and mitigation proposals are further developed. On a precautionary basis, effects on designated sites from operational phase emissions to air could also be significant but further air quality modelling and assessment work needs to be completed to understand these effects and the outcome of this will be reported in the ES.

NEXT STEPS

Further consideration of the potential impacts on Designated Sites of international importance will be carried out through a Habitats Regulations Screening Assessment. Calculations will also be carried out to understand how a Biodiversity Net Gain of 10% could be achieved for the Proposed Scheme. For the ES further assessment of impacts and their effects on biodiversity as a result of the Proposed Scheme will be carried out on any design developments and this will include reviewing air quality modelling in relation to potential effects of operational emissions of nitrogen and amines on Designated Sites.

5.6. LANDSCAPE AND VISUAL

HOW HAVE EFFECTS BEEN ASSESSED?

A preliminary assessment has been undertaken which considers the potential effects of the Proposed Scheme on landscape character (as a resource in its own right) and on visual amenity. Following establishment of baseline landscape and visual context for the Proposed Scheme the assessment looks at the sensitivity of landscape and visual receptors and the magnitude of change against the baseline. The effect considers the proximity of the change from sensitive receptors, whether the change is adverse or beneficial, short or long term, permanent or reversible. The assessment considers the present-day and future baseline conditions, and the potential effects arising from the Proposed Scheme during its construction, operation and eventual decommissioning.

BASELINE

The Drax Power Station is a large-scale industrial site, comprising a range of tall structures which are highly visible and influential upon the surrounding landscape.

The landscape surrounding Drax Power Station forms part of the Humberhead Levels, an area of relatively flat topography with isolated pockets of high ground. It is a largely rural landscape, although punctuated by large scale infrastructure. Electricity pylons and wind farms are prominent features, particularly to the south-west and south-east. The landscape is well connected with an extensive road, rail and footpath network.

Barlow Mound, situated to the west of Drax Power Station is a local landmark, this being an area of former waste deposition from Drax Power Station. It is now well wooded and open to the public as the Skylark Centre and Nature Reserve. Other belts of mature woodland surround the power station, contributing to its context when viewed from a distance.

LIKELY SIGNIFICANT EFFECTS

It should be noted that for this section a worst-case scenario has been considered which does not take into account landscape mitigation as this is yet to be developed. Mitigation measures will be developed and incorporated into the EIA which will be reported in the ES.

Construction

The construction of the Proposed Scheme could give rise to a number of temporary or reversible impacts on landscape and visual amenity. Construction activities undertaken as part of the Proposed Scheme will include the removal of on-site features, provision of temporary soil heaps, movement of tall construction plant and the introduction of temporary infrastructure. There could also be impacts as the structures start to emerge as they are built.

Landscape Effects

There is anticipated to be a minimal change to the character and perception of the wider landscape, where Drax Power Station is perceived as a component within the landscape. In the absence of mitigation, it is anticipated that there will be minor to moderate adverse effects during construction on landscape receptors but these will not be significant.

Visual Effects

There will be some changes to views surrounding Drax Power Station and its immediate setting as a result of construction activity. In the absence of mitigation, it is anticipated that residents of properties with western facing views (along Wren Hall Lane, Carr Lane, Pear Tree Avenue and Main Road) and residents of properties with eastern facing views (along Clay Lane / Camela Lane) will experience minor to moderate, or moderate to major adverse effects. Footpath users in the immediate vicinity of Drax Power Station (including the Trans Pennine Trail and National Cycle

Route 65 to the north) and Public Rights of Way (PRoW) will experience a moderate to major adverse effect. Those effects that are predicted to be moderate to major are considered to be significant overall.

All other predicted effects on nearby residents, recreational users and travellers are not considered significant.

Operation

The Preliminary Landscape and Visual Impact Assessment within Chapter 9 (Landscape and Visual Amenity) of the PEIR considers the anticipated effects of the Proposed Scheme at Year 0 only. At this stage it is anticipated that the effects for Year 10 and Year 20 will be no worse / no more significant than those reported at Operation Year 0 as mitigation planting will have matured.

Landscape Effects

It is anticipated that there will be little change in terms of how the Proposed Scheme is perceived in the wider landscape, and as a component of the Drax Power Station. The Proposed Scheme will form a visible component of the western elevation of Drax Power Station, alongside the mass of the boiler house building and of a similar scale to nearby structures. The Proposed Scheme will contribute to the skyline profile of Drax Power Station, although this will not alter substantially.

The immediate landscape surrounding Drax Power Station (“Camblesforth Farmland” Landscape Character Area) will be subject to a moderate adverse effect. This is not considered significant on the landscape as a whole.

Visual Effects

It is anticipated that the effects on all residents within the study area could be no greater than minor to moderate adverse at Operation Year 0 and will not be significant.

Users of footpaths in the immediate vicinity of Drax Power Station, including the Trans Pennine Trail and National Cycle Route 65 to the north will experience a moderate to major adverse effect, which is considered as significant. Effects on other recreational users are assessed as not significant.

Decommissioning

At this stage of assessment, the decommissioning impacts are anticipated to be no worse than those anticipated during construction.

SUMMARY

This assessment has considered the present and future baseline condition, and the construction / decommissioning and operational effects of the Proposed Scheme on Landscape and Visual. The receptors facing adverse visual impacts are western facing residential properties along Wren Hall Lane, Car Lane, Pear Tree Avenue and the Main Road, and eastern facing properties along Clay Lane and Camela Lane, southeast facing views off Brown Cow Road, west and northwest facing views within

Drax village, northeast facing views in Camblesforth, north facing views in Carlton, and southwest facing views from Barmby on the Marsh. Visual impacts will also be present for those moving in and around the area (i.e. Public Rights of Way). These adverse visual impacts are considered to be significant effects however no mitigation measures have been proposed or agreed at this stage. The mitigation identified at the next stage will aim to reduce the potential adverse significant effects.

NEXT STEPS

The LVIA EIA will assess the potential impacts on landscape character and visual receptors during the construction, operation and decommissioning and this will include consideration of the impacts of lighting as part of a night-time assessment and the development of appropriate mitigation. Consultation will be completed with the Local Authority and stakeholders as part of the EIA process. This will be supported by an Outline Landscape and Biodiversity Strategy, a Lighting Strategy and a Design Framework.

5.7. HERITAGE

HOW HAVE EFFECTS BEEN ASSESSED?

The historic environment comprises potential buried Heritage Assets (HA) (archaeological remains and palaeoenvironmental deposits) and above ground HAs (structures and landscapes of heritage interest and their setting) within or immediately around the Proposed Scheme. This includes designated HAs and assets identified by the Local Planning Authority (LPA) (including local listing), which are protected by law or local policy.

In order to inform the assessment heritage lists from the local councils, reports of previous investigations including geophysical survey within the footprint of the Proposed Scheme, historic maps, geological data, and records from Historic England were obtained to gain information on the known heritage assets in relation to the Proposed Scheme. Information from the Heritage Impact Assessment (HIA) for the Drax Repower project was also reviewed, and a site walkover was carried out to view known assets and their setting.

The preliminary assessment has considered the likely significant effects on the historic environment from the Proposed Scheme. Medium and high value heritage assets including below ground remains and above ground structures and landscapes, lower value (non-designated) assets and the potential for currently unknown below ground assets were assessed. A historic environment desk-based assessment has also been carried out.

BASELINE

To the north of the Existing Drax Power Station is a Scheduled Monument: Drax Augustinian Priory. There is one Grade I Listed Building (12th Century Church of St Peter and St Paul), one Grade II Listed Building and one Conservation Area

(Hemingbrough) within 1 km of the Site. There are nine non-designated Heritage Assets within 500 m.

The Augustinian Priory to the north was founded in the 1130s and occupied until 1535. Proposed mining operations at Barlow Mound to the west of the Proposed Scheme, have the potential to degrade the current setting of the Drax Augustinian Priory.

Non-designated heritage assets are **buildings, monuments, sites, places, areas or landscapes identified** as having a degree of heritage significance meriting consideration in planning decisions but which do not meet the criteria for designated heritage assets and as such are not protected at a local or national level.

Within the Site Boundary there are a number of non-designated heritage assets including a Medieval fishpond associated with Drax Abbey, a Medieval fishery, a Modern boundary ditch and Roman to Modern boundary.

LIKELY SIGNIFICANT EFFECTS

Construction activities which move equipment over an area or move topsoil and any proposed landscaping activities have the potential to disturb heritage assets beneath the surface. Alterations to the drainage patterns can also result in damage to buried assets due to decomposition or destruction. The Medieval fishpond, Medieval fishery are known to be located within the Site Boundary and there is the potential for unknown buried heritage assets and palaeoenvironmental remains to be present. With the implementation of appropriate mitigation, it is not anticipated that these effects will be significant.

SUMMARY

A number of non-designated heritage assets exist within the Site Boundary and there is the potential for buried heritage assets to exist and be uncovered during construction; it is however considered that effects to these assets as a result of the Proposed Scheme will not be significant. Measures to identify and manage below ground heritage assets identified during construction will be contained within the CEMP, which may include preservation by record.

NEXT STEPS

Further consultation will be undertaken with the Local Planning Authority Archaeological Officers and Historic England to confirm that no further surveys are required and to determine the measures to be put in place to identify and manage any below ground heritage assets during construction. This might include an archaeological watching brief to identify and record assets encountered during construction, and / or targeted excavation in advance of construction.

Further consideration of palaeoenvironmental remains (buried biological materials such as pollen or seeds, providing information on past environmental conditions) will be carried out when the drainage design information is available and any mitigation that needs to be included in the drainage design can then be identified, if required.

During preparation of the ES, a review of the landscape and visual montages will be undertaken to assist with identification of changes to the setting of above ground heritage assets.

5.8. GROUND CONDITIONS

HOW HAVE EFFECTS BEEN ASSESSED?

Ground conditions refer to below ground features and include geology, soils, mineral resources and groundwater. The assessment evaluates these ground conditions and the likely significant effects that the Proposed Scheme may have on the ground conditions during construction, operation and decommissioning.

Details of the ground conditions has been taken from geological maps, flood mapping, Coal Authority maps and Agricultural Land Classification maps as well as data from previous ground investigations and a site visit (September 2021). Historical maps and past and present land uses on and around the Site have been reviewed to determine whether there is likely to be any contamination present. Further investigations and sampling and chemical testing of soil will occur before construction begins.

The assessment looks at how any substances that may be present may move and come into contact with a receptor such as the water environment, including potable water supply, humans, buildings or flora and fauna from contamination from underlying soils and groundwater. Contaminants can travel from the ground during construction through surface water or through air.

BASELINE

The major feature of the Site is the Drax Power Station, otherwise it is predominantly rural and agricultural. A historic landfill site is located in the Environmental Mitigation Area. There is the potential for contamination to be present on the Site as a result of the historic Drax activities, landfilling and agricultural activities.

Baseline information indicates that the majority of the study area is underlain by silty clay, fluvial and wind-deposited sands. The areas north of the Drax Power Station Site are underlain by clay, silt, sand and gravel. The presence of man-made ground is highly likely within the Power Station Site and Sherwood Sandstone bedrock (a Principal Aquifer) lies below the surface sediment. Beneath this bedrock there are layers of sandstone and mudstone. Four aquifers are present within the 1 km of the Site and a groundwater abstraction point is used for agriculture purposes.

LIKELY SIGNIFICANT EFFECTS

Potential impacts as a result of the Proposed Scheme include disturbing contamination within underlying soils or groundwater which will impact site users, construction workers, neighbouring receptors including people, surface- and groundwater, groundwater dependent terrestrial ecology and buildings during construction. Activities during construction also have the potential to effect agricultural soil quality.

In order to mitigate these potential impacts, measures will be implemented to prevent contamination of surface or groundwater during construction as a result of accidental spillage or leakage, manage unexpected ground contamination should it be uncovered during construction and a Soil Management Plan will be produced which will contain measures to maintain the quality of the agricultural soils during construction to prevent significant effects on farm practices. These measures will be included in the Register of Environmental Actions and Commitments (REAC) that will accompany the ES and will be taken forward into the CEMP for the Proposed Scheme.

With the implementation of these mitigation measures, no significant effects are anticipated for construction, operation or decommissioning.

SUMMARY

In summary, following implementation of mitigation measures during construction and good management practices to avoid risks of soil and groundwater pollution in line with relevant legislation, guidance and best practice, no potentially significant effects have been identified relating to Ground Conditions.

NEXT STEPS

A ground investigation will be undertaken to inform detailed design which will include soil and water testing for possible contamination. This will also be used to confirm whether materials can be reused or whether remediation is required.

An Agricultural Land Classification assessment will be carried out to determine the quality and classification of soils which may be impacted by the Proposed Scheme and suitable mitigation measures will be developed, if required.

5.9. WATER ENVIRONMENT

HOW HAVE EFFECTS BEEN ASSESSED?

The assessment considers the effects of the Proposed Scheme on the water environment. This includes features on the surface such as rivers, ponds and lakes as well as below the ground, which includes groundwater, areas where groundwater is used to supply drinking water referred to as Source Protection Zones (SPZ) and abstractions (private and non-licensed). Consideration is also given to how the Proposed Scheme could alter the flood plain and associated flood risk both now and, in the future, which also needs to account for the effects of climate change.

The assessment of the water environment considers the potential changes to the quantity of water and the associated risk of flooding as well as quality, in terms of possible pollution of surface water and groundwater.

Ordnance Survey and other maps including the Environment Agency (EA) Flood Map for Planning have been used to identify flood zones, water features and sensitive receptors within the study area.

BASELINE

The River Ouse, which is a main river, is located along the Site Boundary to the north, with Carr Dyke, an ordinary watercourse, culverted within the Drax Power Station Site. There are multiple ordinary watercourses including Carr Dyke and ponds within 500 metres of the Site. The Humber Estuary is located approximately 7.5 km downstream of the Site and has a number of ecological designations.

Rivers in England are either “main rivers” or “ordinary watercourses”. Main rivers are shown on the EA’s Main River map. The EA carries out maintenance, improvement or construction work on main rivers to manage flood risk. Lead Local Flood Authorities, district councils and internal drainage boards carry out flood risk management work on ordinary watercourses.

There are areas which are considered to be at high risk of flooding within the northern and southern parts of the Drax Power Station. Flood defences along the River Ouse protect the Drax Power Station Site from flooding. There is, however, a risk that the existing flood defences could be breached, which will lead to flooding of the Proposed Scheme.

EA records show the River Ouse and Carr Dyke are covered under the Water Framework Directive (WFD).

The Water Framework Directive (WFD) originates from the EU but has been retained in UK law following the UK’s exit from Europe. At its core it aims to prevent deterioration of the water environment and improve water quality by managing water in natural river basin districts, rather than by administrative boundaries. It looks at ecological, physico-chemical, quantitative and morphological aspects of the water environment and requires that improvements take account of economic aspects, including costs and benefits. Plans to improve the status of water bodies are set out in River Basin Management Plans (RBMPs).

Surface water runoff generated within the boundary of the Drax Power Station is managed by a drainage system within the Site that combines gravity and pumped systems with open ditches, culverts, land drainage and lagoons. They collect, manage and convey surface water runoff to Carr Dyke. From here, Carr Dyke takes the water to Lendall Drain and out to the River Ouse via the Lendall Pumping Station.

High groundwater levels are likely to occur in the area. Underlying hydrogeology includes a Principal and Secondary Aquifer, which relate to the ability of the underlying rocks to store water which can be used for water supply and may form an important source of base flow for rivers. The Site is located within a Source Protection Zone.

LIKELY SIGNIFICANT EFFECTS

Construction / Decommissioning

During construction there is a risk that surface and groundwater could be polluted through sediment run off from construction stockpiles or bare earth, or through accidental spillage of fuel and harmful substances. However, these are common risks across construction sites and appropriate mitigation measures will be detailed in a CEMP (and the appropriate document to cover decommissioning).

The construction phase of the Proposed Scheme could deteriorate the WFD status of the River Ouse, and the Principal Aquifer. To determine whether the Proposed Scheme is likely to affect the WFD status, further assessment is required in the form of a WFD Screening exercise.

Construction compounds have potential to take up space and temporarily reduce the area of flood plain available, which may increase the risk of flooding in the area. Along with the existing Drax Emergency Evacuation Plan, measures included in the CEMP will reduce the risk of flooding and the risk to sensitive receptors.

With the implementation of mitigation measures it is not anticipated that there will be significant effects to the water environment during construction. Furthermore, it has been assumed that effects during decommissioning will be no worse than those during construction.

A Flood Risk Assessment (FRA) is the formal assessment required by the Local Planning Authority from the applicant for a development when located within a Flood Zone 2 or 3 as defined by the EA, or within a Flood Zone 1 (as defined by the EA) dependent on the proposed size, land use and potential impact on watercourses.

Operation

Surface water generated as a result of the Proposed Scheme will be re-used in the cooling process. However, the Proposed Scheme may result in changes to existing ground levels and increase the amount of impermeable area within the Site Boundary. This could result in an increased risk of surface water flooding, and below ground structures may increase the risk of groundwater flooding in and around the Site. A Flood Risk Assessment will be carried out which will include a surface water

drainage strategy and the Proposed Scheme will be designed so that it does not increase flood risk elsewhere.

No changes to existing discharge permit limits are envisaged to be required, and the total discharge rate from the Site will be within the limit of the existing discharge consent. With the implementation of mitigation measures it is not anticipated that there will be significant effects to the water environment during operation.

SUMMARY

Potential effects have been identified for the construction / decommissioning and operational phases of the Proposed Scheme. Much of the potential construction effects can be mitigated through the CEMP and the Proposed Scheme will be designed so that it does not increase flood risk elsewhere. The FRA will provide a detailed assessment of flood risk and it will inform the need for flood risk mitigation measures. With the implementation of mitigation, it is not anticipated that there will be significant effects on the water environment as a result of the Proposed Scheme.

NEXT STEPS

Further consultation will be carried out with the EA to discuss and agree the baseline flood risk and climate change allowances which are to be used in the FRA and ES. The FRA will be prepared once details on the design of the surface and foul water drainage are available.

As the River Ouse and Carr Dyke are covered by a WFD designation, a WFD screening assessment will be carried out to gain an understanding of the effect the Proposed Scheme may have on these waterbodies and the need for a full WFD assessment will be discussed with the EA.

5.10. MATERIALS AND WASTE

HOW HAVE EFFECTS BEEN ASSESSED?

The assessment of materials and waste considers the effect of the construction, operation and decommissioning of the Proposed Scheme on the consumption, recovery and disposal of materials. The assessment also considers the consumption and availability of construction materials (natural and non-renewable) and landfill capacity across the region.

BASELINE

Currently, minimal quantities of material resources are consumed on the existing site. Similarly, minimal volumes of site arisings are generated by the activities on the existing site; these arisings are limited to surplus materials produced during minor repair works on existing power plant infrastructure and site access roads.

Current operational (non-ash) waste from the power generation process at the Drax Power Station Site is minimal when taking account of the current available regional capacity of waste disposal facilities (i.e. landfills, waste processing and transfer

facilities). Drax has existing measures in place for the treatment and disposal of waste through the current operation of the plant in line with a current corporate commitment to divert 95% of waste from landfill.

A REGIONAL CONTEXT

The Yorkshire and Humber region generally has a higher than average availability of construction materials in comparison to other UK regions. For example, stocks of concrete block and sales of recycled and secondary aggregate are amongst the highest in the UK. It is considered that the availability of materials for construction of the Proposed Scheme is likely to be sufficient.

Landfill capacity is likely to reduce prior to and during the construction and operation of the Proposed Scheme. Indeed, in the absence of future provision, landfill capacity in the region is unlikely to be available after 2027. However, there are waste reuse and recovery facilities available in the region to divert waste arisings generated by the Proposed Scheme from landfill and there are plans to expand existing landfill capacity in the region, as stated in the Minerals and Waste Joint Plan document produced by North Yorkshire County Council, City of York Council and North York Moors National Park Authority.

Baseline data indicates therefore that there is likely to be sufficient infrastructure and capacity for managing construction, demolition and excavation wastes from the Proposed Scheme.

The effects of the decommissioning phase of the Proposed Scheme have been excluded due to uncertainties around requirements and processes at the Proposed Scheme's end of life relating to future technologies and infrastructure. It is therefore not possible to proportionally assess impacts and effects during decommissioning.

LIKELY SIGNIFICANT EFFECTS

Effects from the consumption of materials were assessed to be 'not significant' for both construction and operation. Although mitigation measures secured through the DCO process will likely not be required, the application of best practice measures has the potential to enhance sustainability of the Proposed Scheme, for example, by responsibly sourcing materials and maximising the use of recycled content across different assets on the Proposed Scheme.

The potential for significant adverse effects from waste during construction was identified, this is due to the remaining landfill capacity for non-inert waste within the Yorkshire and Humber region which is forecast to end prior to construction completion in 2029, as such mitigation measures have been identified to maximise reuse or recovery of earthworks and aggregate. With mitigation to maximise reuse, no significant environmental effects from disposal of waste to landfill, by the Proposed Scheme is expected.

SUMMARY

The impacts of the Proposed Scheme on Materials and Waste has been assessed and considers the consumption and availability of resources, and capacity for offsite waste disposal for the development.

Due to the above average availability of construction materials the Proposed Scheme is expected to have sufficient availability of materials and no significant effects are therefore anticipated.

Despite the fact that the availability of remaining landfill capacity (non-inert waste) is forecast to end prior to construction completion, no significant effects are anticipated due to the proposed implementation of mitigation measures to maximise reuse of waste.

NEXT STEPS

A detailed assessment of waste management during operation will be carried out during the EIA which will be reported in the ES. Further consultation will be carried out with the Local Council to understand, as far as possible, future plans for landfill capacity, resource extraction and management facilities within the local region.

5.11. CLIMATE CHANGE RESILIENCE

HOW HAVE EFFECTS BEEN ASSESSED?

The climate resilience assessment considers the vulnerability of the Proposed Scheme to climate change, in particular from extreme weather and long-term climate change during the operational phase (60 years). The potential effects of climate change during construction were scoped out of the assessment at Scoping stage. It is considered that the potential effects of decommissioning of the Proposed Scheme will be similar to, and no worse than, construction and the decommissioning of the Proposed Scheme is therefore also not considered.

The assessment identifies climate variables that have the potential to impact upon the Proposed Scheme operational phase including extreme precipitation events, wetter winters and flooding, hotter summers and extreme temperature events, increased levels of humidity, extreme wind / storm events and sea level rise against the likelihood and severity of impact.

Baseline conditions (both current and future) are assessed following the Institute of Environmental management and Assessment Environmental Assessment guide to Climate Change Resilience and Adaptation.

BASELINE

Based on Met Office records the existing climatic baseline for the Proposed Scheme area (North East England) consists of a lower than average monthly rainfall of 50 mm compared to the average North East rainfall of 80 mm. The environment is influenced by the altitude of the Pennines and the North Sea which creates a cool, dull and wet

environment. Wind speed in North East England is heavily influenced by the local terrain and associated passage of depressions close to or across the UK, the period November to March has the highest mean speeds and the peak gusts follow a similar pattern.

While the North East of England region is drier than the UK average, it does experience extreme rainfall events. The heaviest rainfall events in the UK are often associated with thunderstorms, which are most likely to occur May to September with a peak in July to August.

LIKELY SIGNIFICANT EFFECTS

Potential impacts for the Proposed Scheme include damage to the Carbon Capture Plant and other infrastructure from extreme weather conditions (rainfall, storms, wind), reduced opportunities for maintenance owing to extreme rainfall events and temperatures, the need for increased maintenance due to the faster rates of deterioration of materials from increases in UV radiation or wind driven rain infiltration, and the overheating of crucial equipment (for full details refer to Chapter 14 (Climate Change Resilience), of the PEIR). The existing infrastructure, road modifications and ancillary equipment will also be subject to these extreme weather conditions.

Mitigation measures for these potential effects will include designing for peak stormwater events for surface water drainage, flood resistant wastewater treatment, emergency planning including offline periods, design to UK Building Regulations, Eurocodes and ISO standards, and appropriate material selection.

Residual significant effects have been identified in the preliminary assessment of climate when considering the resilience of the Proposed Scheme, such as the risk of fire, over heating of equipment, lightning strikes leading to power outages, and increased maintenance requirements linked to vegetation growth and dieback. Further design mitigation will be identified during the EIA as the design of the Proposed Scheme is further developed and this will be reported in the ES.

SUMMARY

A number of significant effects remain, including fire risk, overheating of equipment, lightning strikes leading to power outages and increased vegetation management requirements. Further primary and secondary mitigation measures will be confirmed within the ES and further assessment undertaken in consultation with the design team.

NEXT STEPS

Further primary mitigation measures will be confirmed within the ES and the EIA will be undertaken taking these measures into account. If required secondary mitigation and enhancement measures will be recommended in order to reduce any outstanding significant effects. This will be done in consultation with the design team.

5.12. CLIMATE - GREENHOUSE GASES

HOW HAVE EFFECTS BEEN ASSESSED?

The assessment considers the environmental impacts on climate as a result of Greenhouse Gas (GHG) Emissions from the Proposed Scheme. It considers the magnitude of the emissions compared to the baseline scenario during construction, operation and decommissioning. It includes consideration of the emissions associated with the manufacture and transport of raw materials and waste during construction, as well as the emissions from biomass supply chain and carbon dioxide capture.

The effects are assessed against the 'do nothing' scenario and data from the UK government in relation to carbon budgets.

In the 'do nothing' scenario GHG Emissions occur constantly and widely as a result of human and natural activity. This includes GHG Emissions related to energy consumption (fuel, power), industrial processes, land use and land use change.

The quantification of GHG Emissions has been assessed within Chapter 15 (Climate – Greenhouse Gases) of the PEIR. For construction this includes assessment of the 'embodied' carbon linked to manufacture and use of construction materials, transportation requirements of material and disposal of waste, and the use of plant / equipment on site. For operation this assessment looks at the biomass supply chain, ongoing maintenance requirements, operational power use, and benefits derived from the Carbon Capture process.

The effects of the decommissioning phase of the Proposed Scheme have been excluded due to the design life of 60 years and uncertainties around deconstruction techniques at the Proposed Scheme's end of life related to the carbon impact of fuels and decommissioning methodology.

BASELINE

GHG Emissions in the current baseline scenario comprise biomass combustion from two biomass units, the supply chain (e.g. for production and transport) as well as GHG sequestration (growth of biomass for fuels). These are calculated to be 1,040,165 tCO₂e per annum. Under the Intergovernmental Panel on Climate Change (IPCC) guidelines GHG Emissions from the combustion of biomass is considered as 'zero' however the Proposed Scheme is expected to be carbon negative during operation inclusive of supply chain emissions.

Carbon dioxide equivalent or "CO₂e" is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact.

LIKELY SIGNIFICANT EFFECTS

Construction phase GHG Emissions comprise 104,488 tCO₂e. The most significant construction GHG Emissions are from the use of concrete and steel for the Proposed Scheme. The embodied GHG Emissions from the construction materials comprise 80% of the construction emissions, with the remainder generated through transport, plant and waste transport categories. The estimated construction GHG Emissions divided by the Proposed Scheme lifetime is 1,741 tCO₂e per year.

The construction of the Proposed Scheme could result in moderate adverse (significant) emissions in the absence of mitigation. Design and construction mitigation measures will likely reduce the adverse effect however, these measures are still under consideration. The potential reduction in GHG Emissions from the mitigation measures are therefore not quantifiable at this stage and require further assessment. In the absence of mitigation at this stage, the residual GHG Emissions are not able to be calculated.

Based on the data available on operational GHG Emissions at the current time, the preliminary assessment findings demonstrate that the Proposed Scheme will reduce emissions by 6,784,035 tCO₂e annually. This is assessed to be a major, significant beneficial effect.

Measures that are under consideration to ensure the Proposed Scheme captures as much CO₂ as possible include selection of Best Available Technique (BAT) equipment and technology to prevent or minimise emissions and implementation of an operational planned and preventative maintenance and replacement regime. Working with suppliers to reduce supply chain carbon emissions will also minimise impacts from supply chain GHG Emissions.

SUMMARY

In the absence of any significance criteria set out in assessment guidance, the approach that all GHG Emissions are significant is adopted. The assessment has therefore identified that significant GHG Emissions will be generated in relation to construction activities, generating a significant adverse effect, however construction methodologies and mitigation measures have yet to be agreed which may reduce the magnitude of GHG Emissions.

Data gaps still remain related to the operational GHG lifecycle impacts of the Proposed Scheme; however, the preliminary assessment suggests that the Proposed Scheme will result in major significant beneficial GHG Emissions reduction. A more accurate quantification of operational GHG Emissions will be undertaken and reported in the ES as the Proposed Scheme design develops.

NEXT STEPS

The assessment of construction impacts will be reviewed as further details of mitigation are confirmed.

Data on the manufacture and use of the solvent was not available for the preliminary environmental assessment. Further consideration of the embodied emissions in the manufacture of the solvent will be carried out to fill in gaps in the data in relation to the operational GHG lifecycle impacts and this will be reported in the ES.

Further data on operational replacement and refurbishment will be sought as it is expected that some components of the Proposed Scheme will need to be replaced over the project life.

5.13. POPULATION, HEALTH AND SOCIO ECONOMICS

HOW HAVE EFFECTS BEEN ASSESSED?

Population, Health and Socio-economics considers the potential impacts of the Proposed Scheme on the local population, human health and socio-economics at a local and regional scale. The preliminary assessment evaluates the likely significant effects that the Proposed Scheme may have on the local community and businesses as well as the local and wider economy during construction and operation.

The preliminary assessment of Population, Health and Socio-economics focuses on the potential impacts associated with the generation of employment opportunities during both construction and operation; disruption to local commercial businesses (including shops and other services) during construction; and increased demand for accommodation and local facilities due to an influx of workers during construction.

The effects of the decommissioning phase of the Proposed Scheme have been excluded due to the design life of 60 years, the likely change in baseline conditions and lack of decommissioning information available. Therefore, a robust and meaningful assessment of the impacts on Population, Health and Socio-economics would be difficult to undertake.

Baseline information has been informed by data on population, labour market profiles and indices of deprivation. Public Health England data on health indicators as well as relevant local authority reports have also been used to inform the baseline.

BASELINE

The Proposed Scheme is located within the NYCC area, in the local authority of Selby in the Yorkshire and the Humber region. In 2020, the population of Selby district was 91,700 (Nomis, 2020) and was the fourth most populous of the seven local authority areas in NYCC.

Levels of employment across Selby in 2020 were slightly higher than at a regional and national level at 78.2%. In 2019, there were estimated to be 35,000 jobs in SDC, 71.4% of which were full-time and 28.6% part-time (Nomis, 2020). The service sector accounts for 70.4% of jobs.

The baseline identified a number of population and health receptors that could be affected by the Proposed Scheme. These include:

- **Businesses:** Ten commercial businesses are located within 500 m of the Site Boundary.
- **Local Accommodation:** In the towns of Selby and Goole there are 14 temporary and short-term accommodation providers, including hotels, bed and breakfasts, and serviced apartments. In addition, there is one Bed and Breakfast located in Drax village.
- **Local Facilities:** In the towns of Selby and Goole there is a diverse range of facilities including shops, parks and open spaces, medical facilities, and restaurants. These are the predominant types of services that construction workers who are temporarily relocating to the area are likely to access.

LIKELY SIGNIFICANT EFFECTS

The construction of the Proposed Scheme is likely to generate direct employment opportunities (anticipated to be a peak workforce of approximately 1,000 workers) as well as indirect and induced employment opportunities from the supply chain and construction workers spending in the local area. Although temporary in nature, this could result in moderate beneficial effects during construction. There could however be a moderate adverse effect on the capacity of temporary accommodation and local services as any influx of construction worker could result in a reduction in the availability of these services, this will however be temporary. The operational phase of the Proposed Scheme is likely to generate long term jobs (anticipated to be a workforce of approximately 50 full time staff) once it is complete, providing new employment opportunities which could result in moderate beneficial effects.

SUMMARY

At this stage of the project, it is anticipated that the construction and operation of the Proposed Scheme will have a moderate beneficial effect on employment generation but it could also have a moderate adverse effect on the capacity of temporary accommodation and local services due to an influx of construction workers in the local area. It is not anticipated to that there will be significant effects on local businesses due to disrupted access.

NEXT STEPS

The assessment is based on the best available information at the time of writing and the full assessment of the potential impacts on Population, Health and Socio-economic receptors will be undertaken during the EIA which could result in changes to effects. As the design develops, the need for an agricultural assessment will also be considered and, if required, be undertaken as part of the EIA.

Any gaps in information identified at this PEIR stage will be considered and addressed along with specific mitigation measures as part of the EIA.

5.14. MAJOR ACCIDENTS AND DISASTERS

HOW HAVE EFFECTS BEEN ASSESSED?

The major accidents and disasters (MA&D) assessment reports on the potential vulnerability of the Proposed Scheme to major accident(s) and / or disaster(s). It outlines the potential for major accidents and disasters to impact on human health and / or the environment. The assessment has considered the impacts of the construction, operation and decommissioning of the Proposed Scheme.

There is no specific guidance for assessing major accidents and disasters in EIA, however relevant guidance for risk assessment methodologies has been used to inform the assessment methodology as well as professional experience. A review of available documentation and regulatory requirements has been carried out to inform the assessment.

The potential for identified relevant major accident(s) and / or disaster(s) to result in a significant adverse environmental effect have been evaluated using a risk based approach. The approach has considered the environmental consequences of a 'Major Event', the likelihood of these consequences occurring, taking into account planned design and embedded mitigation, and the acceptability of the subsequent risk to the environment.

LIKELY SIGNIFICANT EFFECTS

The preliminary assessment did not identify any major accident or disaster events to which the Proposed Scheme may be vulnerable during construction. For the operational phase the preliminary assessment identified one Risk Event which has the potential to be a Major Event as follows: Major fire on the BECCS plant initiating a major event on the existing Control of Major Accident Hazards (COMAH) installations (sites which store quantities of dangerous substances, regulated under the Control of Major Accident Hazards Regulations 2015). Based on the assumptions and mitigation measures put forward in other relevant PEIR Chapters, it is considered that the identified potential major accident(s) and / or disaster(s) events will all be managed to be as low as reasonably practicable.

SUMMARY

A preliminary assessment of major accidents and disasters has been carried out in line with emerging guidance and using professional experience. One Major Event has been identified in the preliminary assessment relating to the potential risk of a major fire on the BECCS plant initiating a Major Event on the existing COMAH installations. Based on the assumptions and mitigation measures put forward in other relevant PEIR Chapters, it is considered that this event will be managed to be as low as reasonably practicable.

NEXT STEPS

As the design develops a review and update of the potential major accident and disaster events identified in the PEIR will be carried out and reported in the ES. The assessment will also include the major event types which could not be addressed in the PEIR due to insufficient information being available e.g. flood risk assessment and road safety data, at the time of writing.

Consultation on the proposed methodology with relevant Statutory Bodies.

5.15. CUMULATIVE EFFECTS

HOW HAVE EFFECTS BEEN ASSESSED?

The assessment of cumulative effects considers two forms of cumulative impacts:

- Intra-project combined effects – the interaction and combination of different residual (post-mitigation) environmental effects of the Proposed Scheme affecting the same Receptor; and
- Inter-project Cumulative Effects – the combined residual (post-mitigation) environmental effects of the Proposed Scheme with a committed project (or projects) affecting the same Receptor.

Intra-Project Combined Effects

The approach to the assessment of intra-project combined effects considers the changes in baseline conditions at common sensitive receptors as a result of the Proposed Scheme.

The potential intra-project combined effects will be identified within the EIA assessment by reviewing the conclusions of the technical topics and their effects on common sensitive receptors identified in the ES. Following this, the significance of the effects will be determined using professional judgement and the conclusions of the technical topics and technical specialists.

Based on the preliminary environmental assessment it is anticipated that there could be the potential for significant combined effects resulting from the interactions between the water environment, ecology, population and human health, and landscape and visual effects on sensitive receptors. This will be reviewed during the EIA and will be reported in the ES.

Inter-Project Cumulative Effects

PINS Advice Note 17 (PINS, 2019) sets out a four-stage approach to the assessment of cumulative effects:

- Stage 1: Establish the Zone of Influence (ZOI) and long list of 'other developments'.
- Stage 2: Identify short list of 'other development' for cumulative effects assessment.

- Stage 3: Information gathering for ‘other developments’; and
- Stage 4: Assessment of cumulative effects.

The inter-project cumulative effects assessment for the Proposed Scheme is currently at Stage 1. This means data has been gathered to identify those ‘other’ proposed developments that will be constructed and operated at the same time as the Proposed Scheme, that might act together to produce different effects. A preliminary review of planning applications, local plans and Nationally Significant Infrastructure Projects has been undertaken within a 15 km radius from the Proposed Scheme. This list will be reviewed, which follows the methodology for ‘Stage 2’ to identify those ‘other developments’ that will be likely to result in inter-project cumulative effects.

The cumulative effects assessment will be carried out during the EIA and will be reported in the ES.

LIKELY SIGNIFICANT EFFECTS

A preliminary assessment of likely significant cumulative effects for the Proposed Scheme has not been carried out. The assessment of cumulative effects will be carried out for the EIA and will be reported in the ES.

SUMMARY

The methodology of intra- and inter-project cumulative effects have been presented in Chapter 18 (Cumulative Effects) of this PEIR. A preliminary review of ‘other developments’ within 15 km of the Proposed Scheme has been carried out and compiled into a ‘long list’.

NEXT STEPS

The assessment of cumulative inter- and intra-project cumulative effects will be carried out during the EIA and will be reported in the ES. For inter-project effects Stages 2, 3 and 4 of the assessment will be carried out. This will include reviewing and updating the ‘longlist’ and ‘short list’ to ensure all committed developments are correct at the time of assessment. The ‘longlist’ and ‘shortlist’ of developments for consideration within the cumulative assessment and the proposed methodology for inter- and intra-project will be agreed with the relevant local authorities.

6. HAVE YOUR SAY

This NTS provides a summary of the PEIR that forms part of the pre-application consultation for the proposal for BECCS at DRAX.

The PEIR has been published as part of the consultation process, which also includes a series of community consultation events in accordance with the process set out in the Statement of Community Consultation [REDACTED].

Following consultation on the PEIR, all consultation responses received within the consultation period will be reviewed and taken into account in the ongoing EIA and project design processes, and ultimately the production of the final Environmental Statement to be submitted with the application for development consent.

- Consultation on the PEIR and the Proposed Scheme generally is from 1 November to 12 December 2021 and gives the opportunity to provide feedback or questions on the proposals for BECCS at Drax. Feedback can be provided via the following:

You can complete our questionnaire online at: [REDACTED]

Email us at: info@BECCS-Drax.com

Write to us at: FREEPOST CARBON CAPTURE BY DRAX

REFERENCES

AMEC. (2017, August). *EIA Quality Mark Article: What is this MADness?* Retrieved from IEMA: [REDACTED]

HM Government. (2020, December 18). *Guidance: National Risk Register 2020*. Retrieved from Gov.uk: <https://www.gov.uk/government/publications/national-risk-register-2020>

Landscape Institute and IEMA. (2013). *Guidelines for Landscape and Visual Impact Assessment (GLVIA3)*. London: Routledge.

Nomis. (2020). *Labour Market Profile - Selby*. Retrieved from [REDACTED]

PINS. (2019). Advice note 17: Cumulative effects.

Temple Group. (2018, June). *EIA Quality Mark Article: Major Accidents and Disasters in EIA*. Retrieved from IEMA: [REDACTED]

TUV SUD. (2018, March 2). *Disasters in EIA*. Retrieved from IEMA: [REDACTED]

Visual Capitalist . (2021, June 8th). *Race to Net Zero: Carbon Neutral Goals by Country*. Retrieved from Visual Capitalist: [REDACTED]

G8 Consultation FAQ's

Frequently asked questions

BECCS and the project

What are you planning on doing?

BECCS is a technology that has been developed to remove carbon dioxide (CO₂) from the atmosphere. At Drax Power Station we already use biomass sourced from sustainably managed forests to generate electricity, and we now plan to install BECCS technology to capture the CO₂ emitted as part of that energy generation (known as “BECCS at Drax”). This will help to take more CO₂ out of the atmosphere than we are emitting, creating what is known as negative emissions. Drax Power Station currently has four biomass units that are converted fuel boilers, capable of burning different biomass fuels. We are proposing to install carbon capture technology on up to two of these biomass power generating boilers. This will remove up to 95% of the CO₂ from the gas that is currently emitted. This CO₂ would then be transported and stored in safe underground deposits, below the Southern North Sea – which will be developed as a separate project. For more detail on our proposal please see our digital exhibition.

What is BECCS and how does it work to achieve negative carbon emissions?

BECCS uses innovative technologies to process energy generated from biomass whilst also capturing and storing the CO₂ that is created as part of that process.

Drax’s biomass units already use biomass sourced from sustainably managed forests to generate electricity. The forests used to create biomass absorb CO₂ while growing.

With BECCS at Drax, the CO₂ that is emitted as part of the energy generation from biomass will be captured using carbon capture technology, then safely stored in underground deposits. The process of electricity generation becomes carbon negative, as more CO₂ has been removed from the atmosphere than has been added.

For BECCS at Drax, the CO₂ captured will be transported via the proposed National Grid Ventures pipeline and stored under the North Sea. The transport and storage infrastructure will be developed as separate projects.

The National Grid Future Energy Scenarios report published in July said in order to reach net zero by 2050, BECCS will need to be deployed at scale in the UK by the end of the 2020s.

Why is this important?

The climate crisis is one of the biggest challenges of our time. Developing negative emissions technologies, like BECCS, is vital if we are to deliver for the environment and the economy.

Bioenergy with carbon capture and storage is a game changing negative emissions technology that permanently removes CO₂ from the atmosphere and will be needed globally to meet climate targets.

The Committee on Climate Change (CCC) and Intergovernmental Panel on Climate Change (IPCC) say negative emissions technologies will be essential because they will help to offset the emissions from other harder to decarbonise sectors like agriculture and aviation.

According to the CCC and National Grid in its future energy scenarios, the UK won’t reach its 2050 net zero target without negative emissions from BECCS technology. This is because there are sectors like aviation and some industrial processes where it will be challenging to reduce emissions to zero. Therefore, we need negative emissions to reach net zero overall.

Frequently asked questions

Is BECCS a proven technology? Will it work?

Post-combustion carbon capture is a well proven technology, with large scale projects already deployed at Boundary Dam '3' in Canada.

Drax is continuing to pilot technology, started before this proposed development, ensuring compatibility with a 100% biomass feedstock. When compared to coal flue gases, as per Boundary Dam and Petra Nova, Drax's experience with biomass means it is cleaner and easier, with much lower Nitrogen and Sulphur emissions, which are favourable for post combustion carbon capture processes.

Drax's Zero Carbon Humber partners – National Grid Ventures and Equinor – have decades of experience safely transporting gas by pipeline and injecting and storing CO₂ in saline aquifers offshore.

The North Sea is already home to significant CCS projects such as the Equinor-operated Sleipner field in the Norwegian sector which is capturing and storing around 1 million tonnes of CO₂ each year from the natural gas. Since the Sleipner project started in 1996 around 20 million tonnes of CO₂ has been safely captured and stored under the seabed.

Theoretical estimates suggest the UK could have up to 80 billion tonnes of CO₂ storage accessible offshore, and the Sleipner field CCS project demonstrates the feasibility of this technology and the potential for Britain to use the North Sea in the fight against climate change.

Is BECCS sustainable?

Research commissioned by Drax shows there is enough sustainable biomass available globally to support BECCS projects to capture up to 4GT of CO₂ without adversely impacting forest health, biodiversity or food security. This is equivalent to four times the annual CO₂ emissions from commercial aviation.

What is the project timeline?

With an effective negative emissions policy and investment framework from government we could deploy BECCS on two of our biomass generating units by 2030 – the first as soon as 2027.

2021: Drax BECCS DCO planning application developed

2027: BECCS technology installed on at least one biomass generating unit at Drax

2030: BECCS installed on two biomass units and Drax Group becomes a carbon negative company

2040: Humber industrial cluster achieves net zero carbon status

Frequently asked questions

Consenting process

What is a DCO?

A Development Consent Order (DCO) is the means of obtaining permission for the construction and operation of developments categorised as Nationally Significant Infrastructure Projects (NSIPs). This includes energy (such as this project), transport, water and waste projects that meet certain thresholds set out in the Planning Act 2008.

BECCS is classified as a Nationally Significant Infrastructure Project under the Planning Act 2008 due to the proposed carbon capture plant being an integral part of the future operation of the biomass units, and therefore an extension to the existing generating units. Therefore, its construction and operation require a Development Consent Order (DCO).

As part of the DCO process, the planning application is approved by the Secretary of State via a process administered by the Planning Inspectorate. The Planning Inspectorate will appoint an Examining Authority that has six months to examine the application, and then a further three months to prepare a report to the relevant Secretary of State, including a recommendation. The Secretary of State then has three months to make a decision on the planning application. You can find out more about the process [here](#).

Will you be consulting local communities?

Yes. We had early discussions with the local authorities and some of the core environmental bodies last year and then consulted with the local community as part of the non-statutory consultation period earlier this year. Following this we reviewed your feedback, have continued work on our environmental impact assessments, and used your feedback to develop the design for BECCS at Drax. We have now concluded the Statutory Consultation, which was held over a six-week period from November to December.

Your feedback is important to us and plays a significant part in influencing our proposals. It helps us to understand what different people, community groups, landowners and organisations feel is most important to them and how we can improve our plans.

How do you plan on informing the public about the project?

As part of our public consultation, we have communicated with the public via online chat sessions, flyers, letters, and three local in-person events. Following the end of the consultation, our website will remain online to provide information on the project.

Frequently asked questions

The impacts

How will you manage any impact from the project?

We are undertaking an EIA to determine the likely significant effects of BECCS at Drax on the environment, and how these impacts can be avoided, reduced or mitigated.

The preliminary environmental assessments for BECCS at Drax have considered matters such as impacts on air and water quality, flood risk, traffic and transport, noise, ecology, heritage and landscape/visual amenity.

As part of this consultation, we have produced a Preliminary Environmental Information Report (PEIR) which sets out a preliminary assessment of the likely significant effects of the proposed scheme. You can also find a non-technical summary of the PEIR here, which summarises the key findings from our preliminary environmental assessments.

How are you going to protect wildlife?

We always take great care to minimise the impacts of our works and will be engaging with wildlife experts, local wildlife trusts, Natural England and other relevant local community groups throughout the process.

Economic benefits

Will you create any new jobs?

Developing BECCS at Drax will spearhead a new world-leading green industry for Yorkshire and the Humber region.

The Humber region already supports 360,000 jobs, but BECCS at Drax could boost skills and create and support over 10,000 jobs locally and across the entire supply chain. By deploying cutting-edge green technologies across the Humber, this could rise to 47,800 jobs at peak, according to a report by Vivid Economics.

Will it be expensive?

Research by Baringa has found that not deploying BECCS at Drax in 2027 will cost the UK over £26bn more to achieve net zero.

G9 Consultation Press
Release

Drax launches major planning consultation at its North Yorkshire power station

Renewable energy giant Drax will launch a major public consultation on 1 November to advance its plans to deliver the pioneering negative emissions technology, bioenergy with carbon capture and storage (BECCS) at its power station in North Yorkshire.



21 October 2021
[PRESS RELEASES](#)

- Announcement comes after the Government's Net Zero Strategy outlined the vital role that BECCS could play in delivering the UK's decarbonisation ambitions.
- This week Government also selected the Drax-backed 'East Coast Cluster' as a priority Carbon Capture, Usage and Storage (CCUS) project.
- Fly-through video of BECCS facility at Drax Power Station released to support public consultation.

Drax is advancing its plans to deliver vital negative emissions technology by beginning a major planning consultation that will seek the views of the public on its proposals to develop Bioenergy with Carbon Capture and Storage (BECCS) at the Drax Power Station Site in North Yorkshire.

The announcement follows the publication of the Government's Net Zero Strategy which outlined how vital engineered Greenhouse Gas Removal (GGR) technologies, such as BECCS, could be in delivering on the UK's decarbonisation ambitions. The Strategy also stated that BECCS could achieve ambitious contributions towards the UK's 2030 climate change target, supported by significant deployment of mature BECCS technology from the late 2020s.



[SHARE](#)



Most Read



[ELECTRIFICATION](#)

Storage solutions: 3 ways energy storage can get the grid to net zero



[SUSTAINABLE BIOENERGY](#)

In addition, the announcement follows news that the East Coast Cluster, a collaboration between Zero Carbon Humber, Net Zero Teesside, and the Northern Endurance Partnership, which plans to create the UK's first net zero industrial cluster, has received government backing. Drax is an anchor project in the East Coast Cluster and the commencement of its planning consultation marks the first major action from a project in the Cluster.

Both the Humber and Teesside account for almost half of the UK's industrial CO2 emissions and decarbonising these regions will have the biggest impact on the UK's ability to reach its legally binding net zero target.

Drax's BECCS technology will permanently remove 8 million tonnes of carbon dioxide from the atmosphere each year, accelerate economic growth for the Yorkshire and Humber region and put the region at the heart of a global green economy. The proposed scheme will also create and support over 10,000 jobs in the Humber and across the UK.

Will Gardiner, Drax Group CEO, said:

“Negative emissions technologies like BECCS will play a vital role in tackling the climate crisis and the start of this consultation marks a significant milestone in our plans to deliver this innovative technology at our power station in Yorkshire.

“The Government's recently stated ambition for BECCS and backing for the East Coast Cluster further demonstrates the vital role Drax can play in helping the UK reach its ambitious net zero targets, as well as creating and protecting thousands of jobs in this country.”

BECCS at Drax is a "Nationally Significant Infrastructure Project" (NSIP) under the Planning Act 2008 and the company is therefore required to apply for a Development Consent Order (DCO) prior to the installing and operation of the technology.

Through the consultation process communities are invited to share their views on Drax's proposals. The consultation will run between 1 November and 12 December 2021 and once complete, the findings will be used to finalise Drax's planning application prior to its submission in 2022. This timeline keeps the company on-track to begin construction of BECCS in 2024, and operation as soon as 2027.

ENDS

Media contact:

Ben Wicks
Media Manager



Notes to Editors

BECCS at Drax planning consultation

- The Consultation will run between 1 November and 12 December 2021
- Information will be available online at 
- A series of virtual and in-person events will also be held during the consultation period where the public will be able to ask questions and find out more information before sharing their views.
- The BECCS fly-through video available [here](#).

Background

Forests, net zero and the science behind biomass



CARBON CAPTURE

Transporting carbon – How to safely move CO₂ from the atmosphere to permanent storage

- The Humber and Teesside industrial clusters make up 50% of the UK's industrial emissions, so decarbonising these regions will have the biggest impact on the UK reaching net zero.
- Drax would act as an anchor project for Zero Carbon Humber, protecting and creating tens of thousands of jobs, kickstarting a new green industry for the region.
- The East Coast Cluster is made up of both Zero Carbon Humber and Net Zero Teesside, supported by the Northern Endurance Partnership – a collaboration between bp, Eni, Equinor, National Grid, Shell and Total, with bp leading as operator.
- Drax is ready to invest more than £2bn in two BECCS units at Drax Power Station, with the creation of tens of thousands of jobs.
- BECCS at Drax can permanently remove at least eight million tonnes of CO2 from the atmosphere each year, whilst supporting the creation of a new global industry in the UK, delivering tens of thousands of jobs in a new green economy. This builds on what we have already achieved with sustainable biomass, in transforming a coal fired power station to become Europe's biggest decarbonisation project.
- As a part of its Net Zero Strategy, published on 19 October, the Government confirmed its ambition to see significant deployment of mature BECCS technologies by 2030.
- Alongside this Strategy, the Government also set out its intention to explore viable commercial frameworks that could support first of a kind power-BECCS.
- Drax Power Station produces 12% of the UK's renewable electricity, keeping the lights on for millions of homes and businesses.
- Drax has reduced its emissions by more than 90% in the last decade and Drax is now one of Europe's lowest carbon energy generators.

About Drax

Drax Group's purpose is to enable a zero carbon, lower cost energy future and in 2019 announced a world-leading ambition to be carbon negative by 2030, using Bioenergy with Carbon Capture and Storage (BECCS) technology.

Its 3,400 employees operate across three principal areas of activity – electricity generation, electricity sales to business customers and compressed wood pellet production and supply to third parties.

For more information visit [\[REDACTED\]](#)

Power generation:

Drax owns and operates a portfolio of renewable electricity generation assets in England and Scotland. The assets include the UK's largest power station, based at Selby, North Yorkshire, which supplies five percent of the country's electricity needs.

Having converted Drax Power Station to use sustainable biomass instead of coal it has become the UK's biggest renewable power generator and the largest decarbonisation project in Europe. It is also where Drax is piloting the groundbreaking negative emissions technology BECCS within its CCUS (Carbon Capture Utilisation and Storage) Incubation Area.

Its pumped storage, hydro and energy from waste assets in Scotland include Cruachan Power Station – a flexible pumped storage facility within the hollowed-out mountain Ben Cruachan.

Pellet production and supply:

Drax owns and has interests in 17 pellet mills in the US South and Western Canada which have the capacity to manufacture 4.9 million tonnes of compressed wood pellets (biomass) a year. The pellets are produced using materials sourced from sustainably managed working forests and are supplied to third party customers in Europe and Asia for the generation of renewable power.

Drax's pellet mills supply around 30% of the biomass used at its own power station in North Yorkshire, England to generate flexible, renewable power for the UK's homes and businesses.

Customers:

Drax is the largest supplier of renewable electricity to UK businesses, supplying 100% renewable electricity as standard to more than 370,000 sites through Drax and Opus Energy.

It offers a range of energy-related services including energy optimisation, as well as electric vehicle strategy and management.

To find out more go to the website [\[redacted\]](#)

Sign up for updates from Drax

Sign up to receive our email newsletter to receive a regular roundup of Drax Group news and announcements

Any personal data collected will be respected and protected and used for purposes of the newsletter only.

[Contact Us](#)

[Accessibility](#)

[Sitemap](#)

[Compliance](#)

[REMIT](#)

[Disclaimer](#)

[Terms of use](#)

[Modern Slavery Act](#)

[Website terms and conditions](#)

[Privacy notices](#)



Drax US



Drax Canada



Drax Global

