

**Just Transition Wakefield. Detailed submission, 22/02/2023.**

**Interested Party Number:** 20032286

**Drax Bioenergy with Carbon Capture and Storage, PINS Reference: EN01012**

0.1 I am writing on behalf of Just Transition Wakefield to comment in detail on the planning application from Drax Power to retrofit carbon capture and storage (CCS) facilities to up to two biomass generator units. This submission builds on the initial relevant representation we made in the autumn and responds to points made and responses to questions during Issue Specific Hearing 1.

0.2 We will continue to provide evidence under the same headings as in our relevant representation.

0.3 We argue that the proposal is not aligned with the National Planning Policy Framework (sustainable development criteria) because the development is not compatible with increasing productivity, supporting communities' health, protecting our natural environment or improving biodiversity. Nor will it lead to a significant near-term reduction in emissions.

## **1. The role of Drax Power and BECCS technology in combating Climate Change.**

1.1 We wish to challenge on grounds that:

- The weight of evidence against industrial biomass burning being classified as carbon neutral is mounting, including its contribution to averting climate change;
- The evidence questioning CCS as a mature, scalable technology is accumulating, for example from IEEFA (Institute for Energy Economics and Financial Analysis);
- The Government's Net Zero Strategy has been found to be in breach of the Climate Change Act;
- The energy loss to operate the CCS plant will produce less energy not more.

1.2 Evidence against industrial burning of woody biomass being classified as carbon neutral.

1.2.1 We note that the applicant has repeated (e.g. in paragraph 2.4.38 of Document 8.6.2 – Summary of Oral Case at Issue Specific Hearing 1 and Open Floor Hearing, hereafter referred to as Document 8.6.2) that this application is not about seeking permission to switch fuel from coal to biomass, and we acknowledge that. However, it IS about whether retrofitting CCS to existing biomass generators can deliver zero or negative emissions. This can only be considered once the true lifecycle emissions are transparent and widely understood.

1.2.2 We have already submitted evidence that the combustion of woody biomass is not in fact carbon neutral. This arises from Serman et al (*John D Serman et al 2018*

*Environ. Res. Lett.* 13 015007) and the EASAC report (*Forest bioenergy update: BECCS and its role in integrated assessment models, February 2022*) already quoted in our submission at deadline 1. Both of these reports build on multiple research papers, and cannot be dismissed as “just 2 academic papers”. Indeed, EASAC is a respectable policy advisory body. To summarise the case, the burning of woody biomass cannot be carbon neutral within the 2050 net zero target date (if at all) for the following reasons:

- The sequestration into replanted trees takes decades to centuries, and so emissions in 2023 from burning woody biomass will not be completely recaptured until well into the next century (or beyond, depending on the age of the trees burned);
- Replanting with monoculture softwood will never recapture all of the emitted carbon, because such plantations are less carbon dense than the original forest (in part because softwood is less carbon dense, in part because the plantation is less biodiverse than the original forest);
- If the replanted timber is subsequently re-harvested for biomass, this is likely to be before all emitted carbon from the original burn has been recaptured, in which case it will never be fully recaptured. This is picked up in paragraph 1.2.8;
- As climate breakdown intensifies, disease, drought and wildfire (which are already increasing) will slow average growth rates and destroy at least some replanted trees, again meaning that not all carbon will be recaptured;
- Because wood is less energy dense than the coal it replaced at Drax, the actual smokestack emissions/MW are **higher** than when burning coal. This created a historical carbon debt that also has to be repaid.

1.2.3 The EASAC report is explicit, concluding that only short rotation biomass could potentially be considered carbon neutral. This includes annual cropping of plants such as miscanthus, or short rotation coppice of certain trees like willow (5 to 10 year coppice cycle) and specifically excludes forest biomass from mature trees. They also note that this assessment refers only to combustion and regrowth, and excludes processing, transport and other supply chain emissions which would still need accounting for.

1.2.4 This EASAC position is supported by the statement made by Richard Griffiths in paragraph 2.4.26 of Document 8.6.2 Summary of the Oral Case at Issue Specific Hearing 1 and Open Floor Hearing, when Mr Griffiths said “*The Applicant’s position is that biomass is zero rated, not that it is carbon neutral.*” This supports our position absolutely. There is a significant gap between the emissions recorded through the carbon accounting system and the actual atmospheric emissions to the detriment of the climate. Our concern is for a safe and liveable planet for all current and future generations, which requires ALL emissions to be accounted for within the 27 years to 2050, by which time we must be at net zero if not actual zero emissions. It is clear that burning woody biomass derived from mature trees at Drax (or anywhere else) cannot deliver this promise. Later, in paragraph 2.4.27, James Peet added “...*the reason carbon accountancy practice and policy rates CO2 emissions from biomass as zero is because (unlike fossil sources) the emissions are considered short cycle.*” However, as EASAC have shown, woody biomass is NOT short cycle, and its

recapture cycle is **clearly** incompatible with the UK's legally binding commitment to net zero by 2050.

1.2.5 Paragraph 2.4.33 of Document 8.6.2 explains in detail that the government's BECCS Policy Statement under review is grappling with the same questions that we have raised above. The statement notes that **trade associations** (my emphasis) university researchers and NGOs have questioned whether BECCS can deliver negative emissions. We question what "sustainability criteria" can resolve these questions, as re-sequestration of carbon into trees cannot be artificially shortened – tree growth cannot be accelerated to recapture this carbon by 2050. Equally, it is not just this year's emissions, it is every year of operations. Put simply, emissions in 2050 will not be captured by 2050...

1.2.6 Taking this evidence to its logical conclusion, and using Drax's own figures from Appendix 1 of Document 8.6.2, we challenge Drax's claim to be net negative as a site, including the two unabated units (3&4). Data is inserted as a table below (fig 1).

**Drax emissions claims from Appendix 1, document 8.6.2**

Total Wood used	11,568,736,432.00	kg/year	
Emissions factor	1.68		
Total combustion emissions	19,383,134,614.00	kgCO2e	19,383,134.6 tCO2/Year
<b>CO2 capture claimed from smokestack</b>	<b>-9,206,989.00</b>	<b>tCO2/year</b>	Assuming a 95% capture rate
Emissions from plant total combustion emissions (Calculated)	19,383,134.60	tCO2/year	
Claimed CO2 capture	-9,206,989.00	tCO2/year	
Net combustion emissions	10,176,145.60	tCO2/year	<i>my calculation</i>
<b>Other emissions</b>			
Operational supply chain emissions	2,447,446.00	tCO2e/year	
Annualised construction emissions	4,188.00	tCO2e/year	<i>construction emissions/25</i>
Annual Solvent emissions	6,939.00	tCO2e/year	
LULUCF during operation	28.00	tCO2e/year	
Additional scope 1&2 sources associated with plant operation but not the development	160,000.00		
<b>total</b>	<b>2,618,601.00</b>		<i>My calculation</i>
claimed GHG emissions	-6,588,388.00		
<b>SB Check</b>			
Claimed CO2 Capture	-9,206,989.00		
total other emissions	2,618,601.00		
net capture	-6,588,388.00		

Fig 1

1.2.7 It is clear from the above figures, provided by Drax themselves, that they can only claim to be net negative in operation because the combustion emissions are discounted. So whilst it is possible to claim a net negative operation through the irrelevant claim that biomass combustion is zero rated (as opposed to zero carbon) this claim crumbles if true atmospheric emissions are counted. It **may** be theoretically possible for a BECCS operation to be net negative over the **full** re-growth period, but this is of little use in mitigating the current emissions driven climate emergency by 2050. Operating as zero rated not carbon neutral is still a risk to a long term stable climate.

1.2.8 If the clear-felled forests are replanted as mono-culture plantation as a future biomass source, this will completely undermine the carbon neutral argument of biomass. Firstly because, as stated in paragraph 1.2.2 bullet 3, these plantations will reach maturity in 40 to 80 years' time, well before they have recaptured the carbon lost from burning the original mature forest. But secondly, once this cycle of planting and felling is established, it leaves a permanent carbon debt in the atmosphere with no means of mitigation other than the expansion of forests globally. A cynic might say that the biomass industry is actively working against the preservation and rapid expansion of global forest systems.

### 1.3 Evidence questioning Carbon Capture and Storage as a mature, scalable technology

1.3.1 The applicant has stated that there are examples of long term functioning CCS projects, which is true up to a point. There are projects that have been in existence for a long period of time, but they have never come close to capturing 90% of emissions, never mind the claimed 95% for Power BECCS at Drax. Nor have they been trouble free – breakdowns and cost overruns are common, with units being mothballed as the price of oil varies, and all being dependent on public funding. This does not meet our definition of a mature (reliable), scalable technology. Figures from Robertson and Mousavian (*The Carbon Capture Crux: Lessons, Learned, September 2022, Institute for Energy Economics and Financial Analysis*) show that Boundary Dam, the only functioning post combustion CCS plant in the world, typically captures between 50 and 60% of smokestack carbon. It is fair to say that the electricity generating industry is littered with failed CCS projects, and in the UK, Drax have offered little (no) actual evidence that they can deliver on the required 95% capture.

1.3.2 There is one CCS plant that has met its capture targets. This is the Sleipner project in Norway. However, this is to remove carbon dioxide from natural gas extracted from a gas well, a very different context with different carbon dioxide concentrations in the feedstock, and not comparable to post combustion capture in a thermal power station, and not aiming for a 95% capture rate.

1.3.3 We recognise that the UK government has committed itself to an unproven and unreliable technology (CCS) to prevent carbon dioxide emissions releasing into the atmosphere, but to experiment with a hugely expensive high stakes project like Drax without any industrial scale trials is at best wrong-headed, and at worst will prevent the development and deployment of this technology in the future – once Power

BECCS at Drax has failed to deliver value for money for the tax-payer, the whole technology will be discredited. We acknowledge that this may not be a planning matter, but it is a significant factor in the Secretary of State's ultimate decision which is based on more than just planning issues. Therefore we feel justified in raising it here.

1.3.4 With all of the above in mind, it seems reasonable to ask two things of the Examining Authority:

- That Drax Power provide (at least in private) clear evidence that the technology will work reliably for 25 years and at the 95% average capture rate promised;
- That the Examining Authority link planning consent with Environment Agency permitting so that public finance is not provided until there is clear evidence of the efficacy of the CCS system to be installed.
- We note that for an AVERAGE (mean) capture rate of 95% over 25 years, there will have to be an effective 100% capture rate for much of the time to compensate for the times when capture rate falls below 95%. If this is not what is meant by a 95% capture rate, we insist that the basis of such a figure ("average of 95%") is explained transparently for the public and for the Secretary of State.

1.4 The Government's Net Zero Strategy and other policies

1.4.1 There has already been much debate on the UK Net Zero Strategy and its status following the judicial review. It is clear to us that with the legitimate questions about the sustainability of the biomass feedstock, highlighted in our relevant representation, our submission at deadline 1 and above, a genuinely independent body (not an industry body) needs to consider the evidence to rule definitively whether burning woody biomass derived from mature trees is actually carbon neutral **within the timeframe of the Climate Change Act** (i.e. 2050). This is important because the Examining Authority cannot recommend in the Applicant's favour if there are such doubts about the project's ability to meet its obligations.

1.4.2 In paragraph 2.4.30 of document 8.6.2, the ExA noted that "*the Policy Statement suggested that the full supply chain must be included within a GHG assessment, including from the 'eventual store' and queried if these figures are available.*" In the following paragraph (2.4.31) Matthew Fox for the applicant noted that this is for the government itself to provide, and that Richard Griffiths added that the Applicant is not seeking to create a new supply chain. Despite the Applicant's excuses, we believe that the ExA is correct to query this – whether emissions from the pipeline and storage are part of the supply chain or not, they are part of the overall process life cycle, and should be considered in the full Life Cycle Analysis. That Drax is not responsible for these emissions, (National Grid and BP will hold ultimate responsibility) Drax is surely responsible for collecting and collating the data because it relates to processes that it owns and operates. Even if it is a government responsibility, we argue that consent should not be granted until such data is available and scrutinised, because it is part of the total emissions that will contribute to the size and scale of the negative emissions (if in fact they are delivered).

1.4.3 In paragraph 2.5.11 of Document 8.6.2, Richard Griffiths says that Paragraph 3.5.3 of the draft EN-1 says that there do not appear to be any realistic alternatives to new CCS infrastructure in delivering net zero by 2050. This is of course challengeable, in that many Climate and Energy Scientists and policy makers have been clear that there are modelled fossil fuel free scenarios that can deliver net zero without CCS. These models rely on actual renewables (wind, solar, tidal, wave, geothermal, etc, not biomass) with grid storage (battery, gravitational potential energy, green hydrogen, etc) and they have shown that these are deliverable with current resource limits. Whilst this is outside the ExA's remit, government reliance on poorly tested, historically unreliable technological options needs challenging.

1.4.4 In paragraph 2.5.22 of Document 8.6.2, Mr Griffiths states that the Energy White Paper: Powering our Net Zero Future confirms that BECCS plants could deliver negative emissions “***provided that the supply chain emissions are sufficiently low***”. The reliance on carbon accounting rules rather than actual emissions makes it unclear that this condition could ever be met.

1.4.5 As we suggested in paragraph 1.2.7, Drax Power will only be able to honestly claim negative emissions once both the equivalent supply chain emissions have been securely stored in the undersea aquifer, **and** when the replanted trees have recaptured the equivalent accumulated carbon store. It is clear that these conditions will **not** be met before 2050, and so this project is **not** compatible with the net zero strategy.

1.5 Evidence on the “energy penalty from operating the CCS plant”.

1.5.1 On page 11 of Forest bioenergy update: BECCS and its role in integrated assessment models, EASAC reports a recent CCS trial at a UK BECCS facility (it is hard to imagine that this is not Drax) in which it was reported that Integrated Assessment Models (IAMs) “*generally assume a 90% or higher capture rate. However, on the basis of R&D trials at a UK facility, achieving this could reduce the overall efficiency of a BECCS-to-power facility from 36.2% without CCS to 20.9% with it, substantially lower than the efficiencies assumed within the IAMs shown in Figure 4 (Krey et al., 2019), which are between 31.3% and 38.8%.*” These energy debt figures are very different from those quoted by the Applicant for the parasitic energy load, and we ask that the research data that supports this information be properly put into the public sphere. If this is not possible for commercial confidentiality, we ask that the ExA seek this information in private and then gives public assurance that either the data used by the applicant is correct, or that the headline figures are corrected in publicly available documents.

1.6 Energy Security

1.6.1 We fully understand that in the current global security situation local and reliable energy supplies are a legitimate, even commendable, policy aim. However, it is also clear that the biomass supply chain is not local, nor is it guaranteed. The UK timber output is less than Drax's annual consumption, and considerably less than the total UK biomass power industry's needs. Therefore, this whole industry as well as the Applicant are utterly reliant on imported fuel. This is vulnerable to rising prices as

competition for woody biomass increases (including for bioplastics, sustainable construction and more).

1.6.2 The scale of the wood pellet industry is already threatening global biodiversity and is at odds with global deforestation efforts. In fact, like the net zero claims, the industry relies on administrative definitions of forest not ecological or even common-sense definitions of forest. By this, we mean that the term “forest” to the forestry industry means “an area of trees”, which includes mono-culture plantations as well as biodiverse naturalised forest. An ecologist would distinguish between the two. This was highlighted in two recent documentaries (BBC Panorama: The Green Energy Scandal Exposed and CBC The Fifth Estate: The Big Burn) which also highlighted how the forestry industry classifies naturalised biodiverse forest which includes trees from seedlings through to dead and dying old trees as “low value”. Yet to an ecologist, it is precisely the existence of a wide age range and dead and dying trees that secure the biodiversity and indicate the health of the forest ecosystem.

1.6.3 As biodiversity continues to collapse globally, this will be open to regulatory change, again threatening the supply chain and therefore threatening the investment from the public purse.

## **2. The interdependency between this application and the North Sea Pipeline and underground storage reservoir.**

2.1 While we recognise that Drax's current application is separate from any applications for a North Sea pipeline to store the CO<sub>2</sub>, we believe that the current BECCS application cannot be meaningfully examined in isolation without considering that BECCS at Drax depends on investment on a massive scale for a future pipeline to the North Sea.

2.1.1 There are three related draft Development Consent Order applications either in process or not yet started. The Power BECCS application is completely dependent on the other two DCO applications: the Humber Low Carbon Pipeline and the Undersea saline aquifer storage reservoir. Whilst Drax Power has made a statement that it wishes to take the commercial gamble of beginning construction before the other two related consents are granted, we find this approach problematic. Firstly, Drax are currently negotiating with HM Government for public money to subsidise construction. This means that the risk is not Drax's, but the Treasury's (tax payer risk). Secondly, were Drax to begin or even complete construction before final consents are granted for either of the other two DCOs, there would be unfair pressure on decision makers to grant consent for related projects because of the public money already committed to Drax.

2.1.2 This current DCO application is totally dependent on the low carbon pipeline and the carbon dioxide storage reservoir, but the pipeline and storage are not dependent on Drax. This was made clear during Issue Specific Hearing 1 and 2, for example, paragraph 2.6.8 of Document 8.6.2 states, “*Oksana Price noted that the HLCP is not dependent on any individual transmitters nor proposed schemes, but that the HLCP has been designed to accommodate those transmitters connecting*

*along its route.*” We therefore contend that the low carbon pipeline and the undersea reservoir should be consented **before** any dependent connecting schemes.

2.1.3 We also recognise that the BECCS units have to be permitted by the Environment Agency and that this process is likely to begin consultation in 2023. Therefore, we ask that final permission not only be delayed until consent is or is not granted for the related pipeline and undersea storage DCOs, but also emissions permitting is in place (which includes guarantees of 95% capture rates).

### 3. Flood Risk Assessments

3.1 On page 21 of the Flood Risk Assessment Document (Appendix 12.1, Document Reference Number: 6.3.12.1 ) it is stated *“there are no records of historical flooding in the area of Drax Power Station or within the carbon capture location boundary”*. We wish to challenge the flood risk assessment on the grounds that:

- Drax and the surrounding area is a known area of flood risk with flooding becoming more frequent. This is verified by residents and historic local press reports;
- The flood risk assessment needs to be re-evaluated to take into account the latest Climate Change Risk Assessment (CCRA 2022);
- Drax’s flood risk assessment fails to consider risks to the rail supply network which we believe is a major omission as the rail freight network crosses both the Aire and the Ouse flood plains.

3.2 Flood Risk. We submitted evidence on flood risk at deadline 1. Below is a straightforward projection for annual flood risk by 2050, based on “current” trajectories. (The current trajectory is based on IPCC data from 2021. It is known that IPCC data is 12 to 24 months old by the time it is reported, and that new evidence of accelerating sea level rise and ice melting were released in the autumn of 2022). Therefore, the projection below is NOT a carefully selected, extreme risk scenario but a relatively modest reflection of risk. The next paragraph provides the information and parameters for the map below. The map was accessed from the website Climate Central. The parameters used in the creation of this map are in the following paragraph, 3.2.1

3.2.1 About this map

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] accessed 19/2/23

#### **“Overview**

*Climate Central’s sea level rise and coastal flood maps are based on peer-reviewed science in leading journals. As these maps incorporate big datasets, which always include some error, these maps should be regarded as screening tools to identify places that may require deeper investigation of risk.*



*Outside of the United States, maps are based on global-scale datasets for elevation and tides in addition to sea level rise projections. For the 50 U.S. states, more accurate but still imperfect data are used.*

*Areas lower than the selected water level and with an unobstructed path to the ocean are shaded red. By default, areas below the water level but that appear to be protected by ridges (and in the U.S., levees) are not shaded.*

*Our approach makes it easy to map any scenario quickly and reflects threats from permanent future sea-level rise well. However, the accuracy of these maps drops when assessing risks from extreme flood events. Our maps are not based on physical storm and flood simulations and do not take into account factors such as erosion, future changes in the frequency or intensity of storms, inland flooding, or contributions from rainfall or rivers. (In other words, they do not maximise risk in their modelling)*

### **Currently selected settings**

<b>Year</b>	2050
<b>Projection Type</b>	sea level rise + annual flood
<b>Pollution Pathway or Sea Level Scenario</b>	current trajectory
<b>Luck</b>	medium
<b>Areas to show as threatened</b>	exclude areas isolated by higher land
<b>Sea-level-projection source</b>	Leading Consensus (IPCC 2021)

*"Annual flood level" is used to denote the water level at the shoreline that local coastal floods exceed on average once per year. In other words, ten floods are statistically expected to exceed this level over ten years, although some years might have two or more incidents, and other years none."*

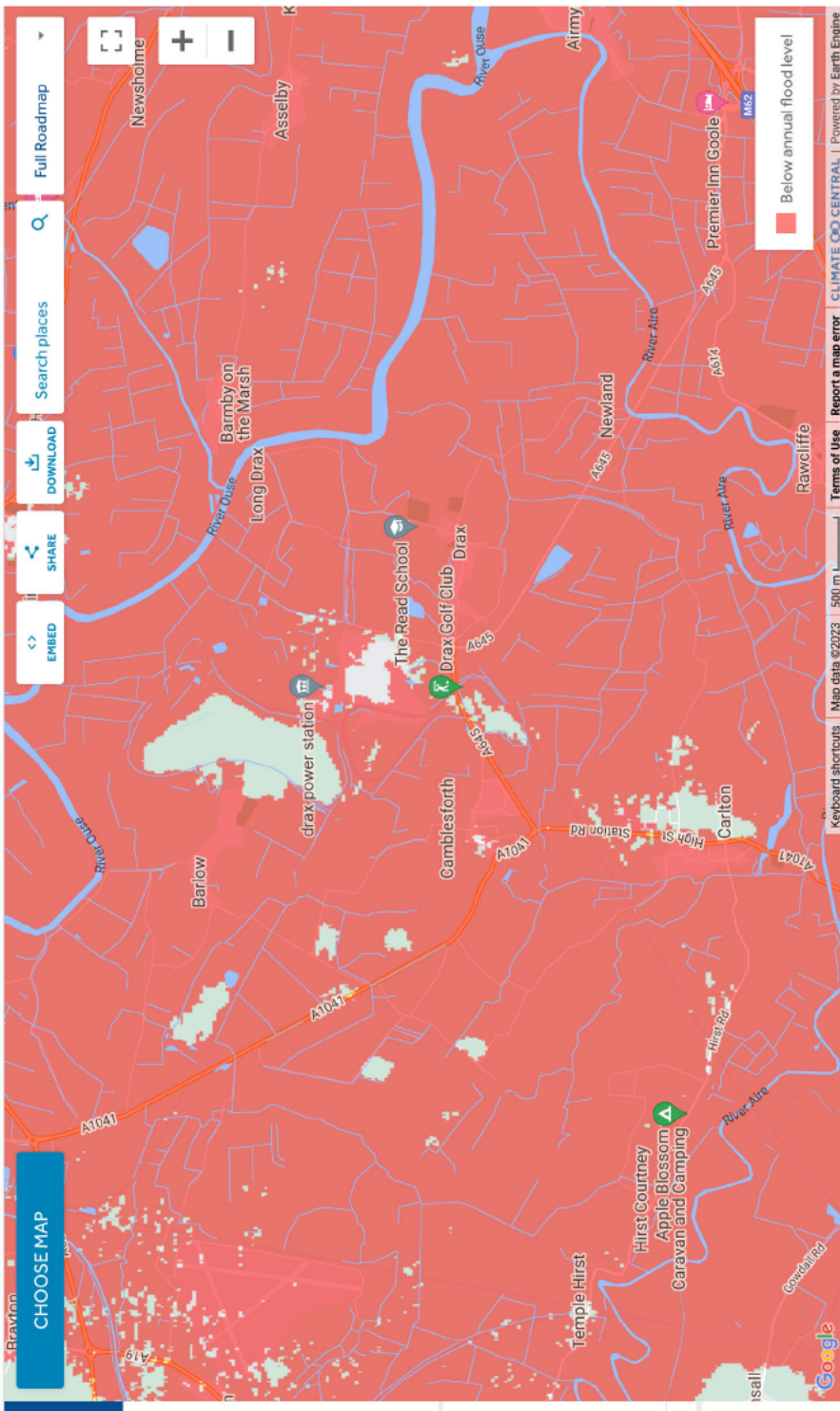
**COASTAL RISK SCREENING TOOL**  
**LAND PROJECTED TO BE BELOW ANNUAL FLOOD LEVEL IN 2050**  
 Explore sea level rise and coastal flood threats by adjusting the controls below.

[DETAILS AND LIMITATIONS](#)

YEAR  
**2050**

[CHANGE OTHER SETTINGS](#)

[Video Tutorial](#)



3.2.2 The 3<sup>rd</sup> UK Climate Change Risk Assessment requires significantly enhanced assessments. The passage below is from UK government guidance (<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#credible-maximum-scenarios>) makes this clear. It is not clear that Drax's Flood Risk Assessment took all of this guidance into account.

*Assessing credible maximum scenarios for nationally significant infrastructure projects, new settlements or urban extensions*

*Nationally significant infrastructure projects (NSIPs) are major infrastructure projects such as new harbours, roads, power stations and power lines. If you develop NSIPs you may need to assess the flood risk from a credible maximum climate change scenario. Check the relevant national policy statement.*

*In other cases, such as new settlements or significant urban extensions, you may also need to assess the flood risk from a high impact climate change scenario. In these circumstances you should use:*

- *the H++ climate change allowances for sea level rise*
- *the upper end allowance for peak river flow*
- *the sensitivity test allowances for offshore wind speed and extreme wave height*
- *an additional 2mm for each year on top of sea level rise allowances from 2017 for storm surge*

*You should treat this as a 'sensitivity test'. It will help you assess how sensitive your proposal is to changes in the climate for different future scenarios. This will help to ensure your development can be adapted to large-scale climate change over its lifetime.*

3.2.3 From the above evidence, we are clear in our expectations that whether this proposal is consented or not, by 2050, Drax Power Station and its surroundings can expect to be flooded every year on average. This includes the connecting rail network. In fact, on current trends, we expect the situation by 2050 to be worse than these projections.

## **4. Technical**

4.1 Capturing and compressing CO<sub>2</sub> takes a lot of energy: there's a high risk of the resultant shortfall in electricity production for the electricity grid being met from increased fossil gas elsewhere: a portion of Drax's own production will be used internally to power the CCS processes, further lowering the efficiency of an already old and inefficient plant, but also requiring the grid to find this additional generating capacity. It is this additional generating capacity that is likely to come from fossil gas, causing an increase in carbon dioxide emissions elsewhere in the national grid. This is clearly contrary to the Planning Systems aim to 'help increase the use and supply of renewable and low carbon energy and heat'.

4.1.1 Further, evidence is accumulating that the technical challenges of CCS will prevent its widescale roll-out and adoption, raising genuine financial and climate risks

[REDACTED]). Therefore, we are justified in asking that Drax can evidence their confidence of achieving a 95% capture rate over the operating life of the plant. The whole project relies on this 95% capture rate being achieved, yet evidence from other operating CCS plants is clear that such a high capture rate is highly unlikely, possibly even wishful thinking. See also paragraph 1.3.4 where we ask that the 95% figure is properly explained and defined.

## 5. Green Jobs, apprenticeships and the local economy

5.1 As we stated in our initial relevant representation, we believe the forecast of jobs supported by the BECCS project, based on the analysis by Vivid Economics appended to 5.3, is inflated and insufficiently supported by evidence. It was commissioned by Drax and cannot be considered as an independent study.

5.1.1 We would like to highlight that the actual number of sustained jobs at Drax, post construction, is around 375. This is made up of a mix of existing roles with a small number of new additional roles associated directly with the CCS system. Furthermore, even the construction phase roles will be almost completely recruited nationally, with very few opportunities for apprenticeships and local employment. Therefore, we believe that the long-term economic benefits to the local economy are significantly overstated.

5.1.2 As stated orally, as an organisation, we are committed to a just transition for workers in high carbon industries. It is clear that industrial scale burning of woody biomass, whether abated with CCS or not, is a high carbon industry within the legally binding 2050 net zero timescale. However, we also believe that employees and contractors at Drax have many transferrable skills, and there are alternative uses for the Drax site and grid connections that can maintain the company's viability AND protect the livelihoods of the workforce.

5.1.3 Rather than write at length in this section, we put on the record that we endorse the submissions made by Leeds Trades Council, including at this deadline (deadline 2, February 22<sup>nd</sup>).

## 6. Air pollution and Health

6.1 The CCS system that Drax Power proposes uses amine solvents to separate the CO<sub>2</sub> from the flue gases. We believe that the health risk assessments are lacking detail, in particular with respect to:

- The loss of amines from the system and their subsequent degradation into probable carcinogens;
- The lack of reliable research that would enable effective regulation and monitoring, as summarised by SEPA's report, *Review of amine emissions from carbon capture systems, Version 2.01, August 2015*.

[REDACTED]

### 6.2 Health impacts

6.2.1 The proposed solvent mix is a novel system, and subject to commercial confidentiality. The **potential** health impacts of the amines and their degradation products are such that we find this lack of transparency a public health threat.

6.2.2 We accept that it is not in Drax's interests to wantonly lose large quantities of an expensive proprietary solvent, but there is point where preserving the solvent becomes more expensive than allowing some loss. We ask that the Examining Authority seeks confidence that the precautionary principle has been properly applied. This feels another case where we have been asked to take the Applicant's word for the effectiveness of their systems, because data is not publicly available.

### 6.3 Regulation and monitoring

6.3.1 The SEPA report referenced above (paragraph 6.1) was clear that the scientific research data on amine solvents and their degradation products is not extensive, and neither is evidence about the health effects at differing exposure levels.

6.3.2 The SEPA report also highlights that chemical measuring techniques are not adequate to monitor the likely concentrations of the amines and their degradation products. We respectfully point out that the lack of knowledge and understanding is not a proxy for lack of risk. If the applicant is successful in seeking permission to retrofit these two units, this will likely be the first large-scale CCS unit commissioned, meaning that it will not just be rural East Riding communities suffering chemical fall-out, but other communities will soon join them. Again, it seems that the precautionary principle is not being applied with sufficient rigour.

6.4 In addition, Just Transition Wakefield endorses the Biofuelwatch submissions, which have been able to provide greater detail on the question of amine emissions.

6.5 Particulates. In June of this year, the Applicant will appear in the Crown Court in Leeds in a case brought by the Health and Safety Executive, relating to industrial injury to members of the workforce caused by wood dust.

6.5.1 It is well known that wood dust, particularly hardwood dust, is a carcinogen as well as a physical risk to lung function. This Development Consent Order is intended to continue the handling of woody biomass pellets, that is known to create an unsafe working environment, for a further 25 years. Unless the Applicant takes a properly responsible approach to managing health risks to the workforce, granting consent will be a breach of the rights of those members of the workforce who spend time in spaces that are highly contaminated with wood dust. Surely an investment of this size should also retrofit the working environment to be fit for a further 25 years of operation with no further health impacts on the workforce. There is no evidence that this will be the case – it is not a feature of the DCO.

## 7. Biodiversity

7.1 We have two biodiversity concerns. Locally, we have concerns that the proposal will lead to the disturbance and degradation of vital habitats and so risk harming a wide range of protected species. It is therefore not sustainable development as

defined by the National Planning Policy Framework. It fails to protect the natural environment or to enhance biodiversity, and is incompatible with:

- Commitments made in the Environment Act 2021 to support the “conservation and enhancement of biodiversity in England”
- The aims of the Defra Nature Recovery Green Paper (March 2022) “to address the drivers of nature’s decline including habitat deterioration, loss and fragmentation”.

The proposed development will adversely impact nationally-and internationally designated areas that cannot be adequately mitigated or compensated for.



The application for consent is deficient in that:

- It relies on outdated species information, including species surveys from 2018, and therefore does not properly assess the impact of the proposed development.
- It does not pay sufficient attention to the potential for damage to watercourses by sediment and accidental release of chemicals.
- The proposals for Biodiversity Net Gain do not consider rivers.
- The risk of nitrosamine deposition which could impact habitats within the surrounding protected sites is not recognised.

7.1.2 In addition to the above, we have to ask whether the proposal will protect our natural environment or improve biodiversity. It is not at all clear that the ecological mitigation plans will **improve** or increase **biodiversity**.

7.2 We also have evidence that despite Drax Group’s assertions, their wood pellet supply chain is not sustainable and in some cases is open to legal challenge. We have evidence that Drax’s supply chain in Estonia may be in breach of UK sustainability standards, and that Drax’s supply chain in British Columbia threatens critical Caribou habitats and at least partly occupy indigenous lands that neither the Canadian nor British Columbian states are legally entitled to licence. These vulnerabilities undermine the business case and therefore the application.

7.2.1 in July 2022, Cut Carbon Not Forests released a report (*Biomass Sourcing in Estonia may Violate UK Sustainability Standards for Biomass*) (see

  
 ) in which they highlight that wood pellets imported from Estonia could violate UK Sustainability criteria. The report highlights practices such as:

- *logging in protected areas (including those protected under Estonian law and those designated as Natura 2000 reserves);*
- *damage to watersheds around rivers and streams;*
- *damage to carbon-rich peat soils;*
- *logging in ways that harm biodiversity (including clearcutting and other types of harmful logging in habitat for species protected under EU and/or Estonian law due to their imperilled status); and*
- *logging culturally significant trees.*

7.2.2 In 2020, Stand.Earth, a Canadian NGO, released a report showing how the pellet manufacturing operations in British Columbia threaten biodiverse old growth forests, including boreal forest and inland temperate rainforest. They also showed

how the logging areas overlap with Caribou herd ranges. Caribou are a protected species, and most at risk from shrinking **and fragmented** habitat. It is well known that logging in blocks fragments habitat. The report was updated in 2022 with a map (fig 2 below) showing the overlap between logging areas and caribou herd ranges. The original report can be accessed here: [REDACTED]

[REDACTED] An updated map is available here: [REDACTED]

[REDACTED]. It is our view that this evidence not only questions the sustainability of some of Drax’s Canadian imports, but also the security of supply – it is not unreasonable to suppose that legislation or regulation will follow to protect the Caribou herds. Please note that Drax now owns the Pinnacle plants.

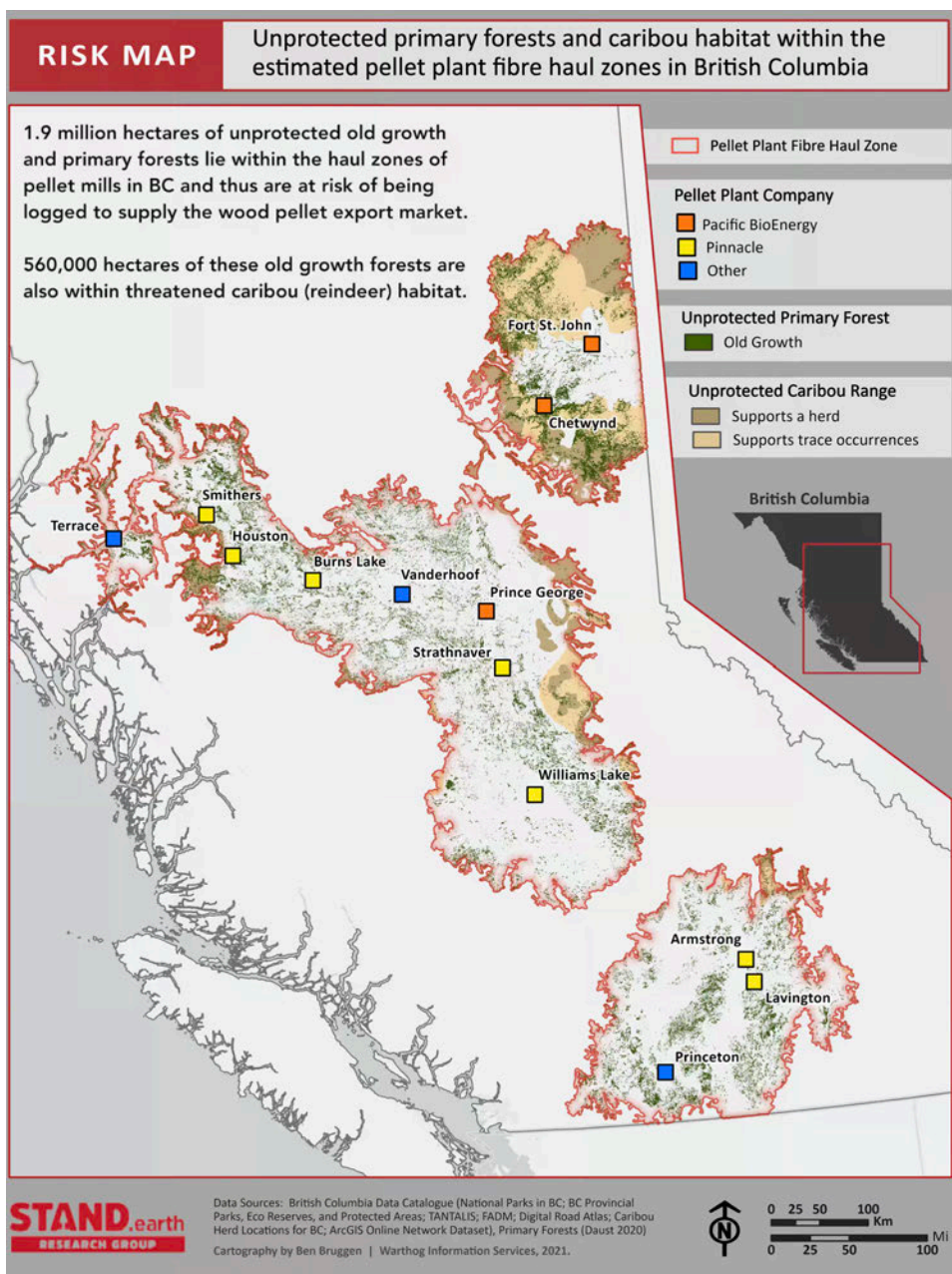


Figure 1

7.2.3 In the Southern USA, Drax owns pellet mills and buys wood pellets from Enviva. There is considerable evidence that this production is threatening rare wildlife habits and therefore endangered species.

7.2.4 For Example, as long ago as 2015, NRDC produced a fact sheet highlighting this ( [REDACTED] ) showing that *“Existing and proposed pellet mills, such as those owned by U.S. pellet manufacturing giant Enviva and British utility company Drax Power, are sited within harvest range not only of tree plantations but of unprotected, natural bottomland hardwood forests. The potential sourcing area for nearly every proposed pellet plant—and several currently operating plants—include critical habitat for up to 25 different species that are federally listed as imperiled or endangered. Seen here in totality for the first time, the pressure on forests in U.S. Southeast from the biomass industry is nearly ubiquitous.”* The report shows the threat to rare habitat across multiple states, and the then planned, now realised, growth of the industry.

7.2.5 It is clear from all three examples highlighted that the biomass industry, and therefore Power BECCS at Drax is totally reliant on an ecologically damaging and legally questionable supply chain. It is very clear that if the system of global governance continues to focus on the protection and renewal of nature following COP15 in Montreal, the whole global biomass industry is at risk. Drax are proposing to operate in this destructive manner for a further 25 years – the legality of the supply chain needs review before this operational extension can be consented. This may be beyond the UK planning framework, but could nonetheless be commented on to the Secretary of State, bearing in mind that as interested parties, we are prevented from raising matters with the Secretary of State in person.

7.2.6 With reference to paragraph 1.2.2 bullet 3, if the clear felled forests are to be replanted as monoculture plantations, typically fast growing softwoods, the biodiversity – flora, fauna and soil biota – will never recover. The lost forest species will not be able to live in densely planted conifer plantations due to lack of light, but also because the changed ecological conditions will not support the same range of biodiverse flora, fauna and fungi. Following the urgent warnings from scientists at the Biodiversity COP (COP15) this seems to be a positively dangerous approach to take, risking the liveability of our planet.

## 8.0 Conclusions

8.1 In our introduction, we argued that the proposal to retrofit CCS units to up to two of Drax Power’s generators was not aligned with the National Planning Policy Framework (sustainable development criteria) because the development is incompatible with increasing productivity, supporting communities’ health, protecting our natural environment or improving biodiversity.

8.1.1 We have shown that the development will fail to increase productivity, because electrical power output to the national grid will decrease as a result of this scheme. Further, the number of new, permanent jobs will be insufficient for the proposal to be classified as a major increase in employment opportunities for the locality, and the



intent to sell carbon credits is clearly open to legal challenge and charges of dishonesty.

8.1.2 We have shown that the development will fail to support communities' health because of the risks of emissions (particularly amines and their degradation products) and because of the on-going risks to the health of the workforce.

8.1.3 We have shown that the development will not protect our natural environment, nor will it improve biodiversity. Indeed, taken at the global scale, the development will destroy biodiversity including rare and protected species. Further, because the scheme will contribute further to atmospheric carbon dioxide levels in the years between now and the end of this century, the East Riding of Yorkshire, Lincolnshire and further afield will be increasingly vulnerable to coastal flooding from the combination of rising sea levels and intensifying storm surges.

8.2 Finally, we have shown that this development is not compatible with the UK's legally binding "net zero by 2050" target because the life cycle emissions from the continuing harvesting of forests for biomass cannot be carbon neutral within this timeframe. The use of internationally agreed "sleight of hand" rules for carbon accounting does not, sadly, mitigate actual atmospheric emissions.

8.3 Therefore, we are of one mind in saying that this development should not be consented and the recommendation to the Secretary of State should be unequivocal on this.