

Deadline 1 submission – from James Hewitt

Summary

This submission questions the area of land-take proposed and what an approved DCO would entitle the Applicant to do.

It suggests there would be merit in the Applicant providing a clear table summarising estimates which fully account for CO₂ emissions attributable to the proposed works and their operation, and the counterfactual – especially if the table considers scenarios other than the best case. This would seem appropriate given the lack of demonstrable success of schemes of comparable scale and fuel. It would also seem appropriate given uncertainty concerning (i) the mix of (fossil-based and biogenic) waste being burned, noting the expiry date of the Applicant's current contract with Western Riverside Waste Authority and (ii) whether the burning of biogenic waste emits no CO₂ if its feedstock originates outside the UK.

It contrasts the life of the proposed works with that of other projects and considers the availability of sites for permanent disposal.

It considers whether the likely annual average CO₂ capture rate will be sufficient to match what is needed to achieve (net) Zero by 2050 or before the global carbon budget is exhausted (which may be sooner).

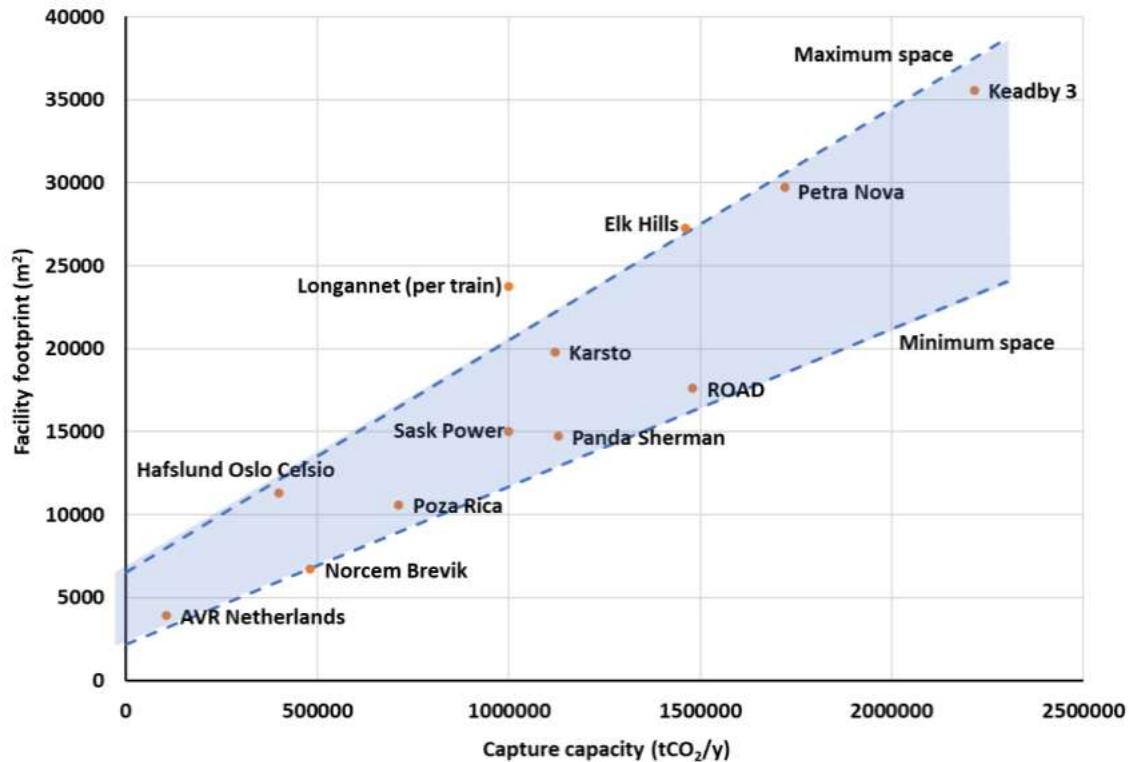
It proposes that the tanks for temporary storage of liquified CO₂ is to the North of Riverside 1 and Riverside 2.

My full submission follows.

(The symbols § and §§ denote paragraph and section breaks.)

Detail

1 - Further to the hearings between the 5th and 7th of November, the following chart reinforces the view that the land-take sought by the Applicant is well in excess of need. If the proposed project were to capture 1.7 million tonnes of CO₂ in a year [see Note 1 below], the chart indicates that the land take required is unlikely to exceed three hectares – less than half the eight hectares which the Applicant asserts is needed (Clause 6.6.2 in “*Statement of Reasons*”). §



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[The chart is a copy of Figure 3 of “*Carbon capture from energy-from-waste (EfW): A low-hanging fruit for CCS deployment in the UK?*” by The Oxford Institute for Energy Studies dated May 2024.]

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2.1 - Obtaining Nationally Significant Infrastructure status may serve to facilitate land acquisition by the Applicant, especially parts of Crossness Nature Reserve and its buffer zones - which might not otherwise be available. Subject to the content of the proposed DCO (as indicated in clause 4.5.1 of the “*Statement of Reasons*”), the Applicant may be under no obligation to proceed with the proposal and may opt instead to profit by developing the land acquired or from its disposal to others not bound by the DCO. §

2.2 – The Applicant (or its successor) might justify doing so as compensation for having been misled by government into the need for the (currently) proposed works. Misled into assuming that sites for permanent disposal of liquid or dense-phase CO₂ are certain to be ample and to operate as proposed without delay and would charge “gate fees” which the Applicant can accommodate. Misled also into assuming that government will underwrite the Applicant’s losses if its proposal underperforms or ceases to be commercially viable. Misled into assuming that government will not change its mind and decide that combustion of waste deriving from wood-based products originating outside the UK is not carbon neutral – thereby rendering void any carbon removal credits on which the Applicant (and those who

provided finance for the proposed works) relied on when making its Final Investment Decision. §

2.3 – Due diligence might already suggest that such assumptions are untenable.

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3.1 – It would be helpful if the Applicant lists - in a single, clear table - credible estimates of the flow of CO₂ of not only constructing and operating the proposed works, but also the “do nothing” counterfactual. §

3.2 - The latter would reflect the net sequestration of unpaved land and the loss of sequestration and soil carbon pertaining to earth brought into the site (to raise or leave the land or form embankments). §

3.3 – The former should include reflect the probability that the proposed works will not achieve anything like the carbon capture rate specified by the Applicant. Such a capture rate would be less than the minimum required to meet the UK’s Net Zero by 2050 target. Given the lack of progress, that minimum should be greater than envisaged under the Climate Change Act 2008 (2050 Target Amendment) Order 2019 – and would rise the longer the delay in operating this and other carbon capture and permanent disposal projects. This is implicit in the Climate Change Committee’s “*2024 Progress Report to Parliament*”. For example, its Executive Summary includes a section heading “*Urgent action is needed to get on track for the UK’s 2030 target*” and the following two sentences “*The UK’s Third National Adaptation Programme (NAP3) lacks the pace and ambition to address growing climate risks which we are already experiencing*” and “*Our assessment is that only a third of the emissions reductions required to achieve the 2030 target are currently covered by credible plans*”. §

3.4 – The former should also include the additional CO₂ emissions which would occur at power stations elsewhere in order to compensate for the decline in the amount of electricity which Riverside 1 and Riverside 2 dispatch when operating the proposed works. There would be no such decline in the “do-nothing” counterfactual. Those additional emissions would of course need to be abated (requiring yet more generation and so on). Given their primary purpose is to burn waste, it is far more likely that Riverside 1 (and, once complete, Riverside 2) dispatch electricity as base load rather than intermittently. §

3.5 – The viability of the proposed works will depend partly on the financial cost of emitting unabated CO₂ when the UK’s (equitably proportioned) share of the global carbon budget is exhausted – which may be much sooner than 2050. The 5% or more of the post-combustion CO₂ from Riverside 1 and Riverside 2 which the Applicant does not plan to capture in the proposed works will make the Applicant one of the UK’s leading net emitters of CO₂. §

3.6 – The price which the Applicant assumes it would be obliged to pay the shipping enterprise which transports the liquified CO₂ to such sites for permanent disposal as may then be available would presumably change if demand from others (especially those who are better able to pay) is more intense than the Applicant has assumed. The most advanced such site, Northern Lights’ “Longship”, is already fully committed – according to “*An analysis of Stockholm Exergi’s proposed flagship BECCS installation*” by FERN (dated November 2024). That study states “*It is unclear why the Longship project has signed contracts to store more CO₂ than initial capacity, but in 2023 the Global CCS Institute reported that “according to verbal reports from Equinor and Gassnova, the Northern Lights capacity is now fully booked.” On top of their signed contracts, Northern Lights have partnered with British electricity from waste plant Cory, whose operators, Cory Group, plan to capture 1.5 Mt/year*

from 2030". That "plan" presumably relates to Cory's announcement dated the 13th of May 2022 of a Memorandum of Understanding between it and Northern Lights. Proposed disposal sites in the depleted Viking field area may not be in operation by 2030. Access to these may be more costly than the Applicant has assumed. This is not least because the current proposal to re-purpose an aging, low pressure gas pipeline used to transport gas from that area to the coast may be unsuitable. It may need to be replaced by a high-pressure pipeline designed to operate safely when transporting dense-phase CO₂ (from a cluster of heterogenous sources). §

3.7 – If the design life of the proposed works really is 50-55 years, then it would be helpful to understand why this is much longer than proposed for other post-combustion CO₂ capture facilities.

Page 8 of "*Close-Out Report Capture and Compression - Rotterdam Opslag en Afvang Demonstratieproject*" dated February 2018 and funded by the Dutch government, the EU and the Global CCS Institute states "*the Capture Plant includes all the major characteristics a full-scale commercial plant would require. These including: Design life of 126 000 operating hours over 20 years*".

20 years is also the duration for a carbon capture contract referred to as follows in the Annual Report for 2023 of the Danish firm Ørsted: "*In December, we embarked on the construction of the two carbon capture and storage (CCS) facilities in our project Ørsted Kalundborg CO₂ Hub, which has been awarded a 20-year contract by the Danish Energy Agency (DEA)*".

On page 10 of the publication referred to in item 3.6 above FERN mentions that Stockholm Exergi "*project removing 0.8 million tonnes CO₂ a year over a 10-year period, with a 90% capture rate, and for their plant to run for "at least" 40 years (with normal maintenance)*". (Ten years is much less than the 50-55 suggested for the proposed works.)

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4.1 – The table should explicitly include CO₂ which would be attributable to the Applicant's long-promoted proposals to supply heat to the Bexley area if it were ever built. §

4.2 - The table should not reflect the current mix – because this has evolved without combustion of fossil-based waste being subject to the UK Emission Trading System. The displacement of fossil-based waste for incineration elsewhere and its replacement by biogenic waste of the same calorific value would, self-evidently, make no net difference. §

4.3 – The table should also be subdivided so as to reflect a range of realistic scenarios. For example, changes in the mix of fossil-based and biogenic waste and the expiry in 2032 of Cory's 30-year waste management contract with Western Riverside Waste Authority. §

4.4 – The Applicant suggests that the life of the proposed works would be 50 or 55 years. During that time, especially in the near future, improvements should be expected to the regulation of what is currently waste of fossil-based material. For example, single-use products might be prohibited, the implementation of Extended Producer Responsibility, and incentives (including levies on raw material use). The amount of residual waste may decline steeply as consumption and the economy change in response to the impact of the collapsing climate and rising costs of disposal. These changes may have a substantial impact on the purported benefits of the proposed works. The financial risks to the Applicant of such changes will presumably not be underwritten by government. Explanations for the scenario's underlying the table's estimates should be included as notes. §

4.4 – By 2032, very little if any of the life of the proposed works will have elapsed. The quality and/or quantity of truly residual waste received by Western Riverside Waste Authority may be less than needed by Riverside 1 or Riverside 2. If so, Cory – as that authority’s waste manager – may redirect what would have been sent for recycling to its Riverside energy from waste facilities, maximising its revenue from gate-fees and the dispatch of electricity and minimising recycling / a circular economy. The wording of the contract to start from 2032 let by Western Riverside Waste Authority might rule out such a conflict of interest. A note explaining how this real and perhaps substantial risk to the mix of fossil-based and biogenic waste available should be made in the text explaining the table’ scenarios.

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5.1 - If, as suggested in item 1 above, the proposed works were to capture 1.7 million tonnes of CO₂ in a year while clause 1.1.2 of the “*Statement of Reasons*” anticipates than 1.3 million tonnes of CO₂ would be captured, then this implies a capture rate of nearly 80%. The discrepancy between this and the minimum capture rate of 95% proposed in that clause warrants explanation. The Government’s “*Industrial Decarbonisation Strategy*” dated March 2021 requires annual average capture rates of 90%. Government plans for Net Zero are to be re-submitted early in 2025, having twice been ruled unlawful by the High Court. §

5.2 - If the discrepancy is attributable to a “typographic” error (perhaps introduced to enhance the apparent credentials of the proposal), then the Application should be corrected to better reflect reality. §

5.3 - Neither Riverside 1 nor Riverside 2 – especially the first - may have been designed with post-combustion CO₂ in mind. If the capture rate partly depends on the composition of the flue gas from Riverside 1 and eventually perhaps Riverside 2, there may be merit in requesting that the Applicant refers to this for the Examination, identifying how the flue gas of each would be treated prior to entering the proposed works.

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6 – If the temporary storage spheres / cylinders for liquified CO₂ were constructed to the north of Riverside 1 and Riverside 2, they would be close to where that CO₂ would be loaded onto ships for transport to a site for permanent disposal. Being closer to or on the River Thames might be cooler than where currently proposed – helping minimise the cost of keeping the CO₂ liquified. They might not be visible from much of Norman Road. Being on piles, they would have less impact on CO₂ sequestration and soil carbon than if constructed as currently proposed.

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Note 1 - The Applicant’s “*Environmental Statement: 6.1 – Chapter 13: Greenhouse Gas*” suggests CO₂ emitted by burning fossil-based waste in Riverside 1 and Riverside 2 amounts to 440,360 and 417,523 tonnes respectively (Table 13-7) and this accounts for 49.34% of the sum of CO₂ emissions from burning waste from fossil and biogenic material (clause 13.6.8). Based on those figures, no more than about 1.7 million tonnes of CO₂ could be captured.