

HOW GREEN IS THE FLIXBOROUGH ‘GREEN ENERGY PARK’ INCINERATOR?



By Mark Bannister

‘Green Energy Park’ Proposals

North Lincolnshire Green Energy Park Limited has applied for permission to build and operate what is describes as a ‘Green Energy Park’ at Flixborough, essentially an incinerator of ‘non-recyclable waste’ with other systems to recover the heat, produce electrical energy and by-products to both mitigate the CO₂ emissions and make the operation profitable. The option of carbon capture is promised in the future to further reduce CO₂ emissions.

But is this proposal a better solution to the current system of waste disposal – i.e. landfill with methane capture and conversion to electrical energy?

Does the promised option of carbon capture in the future make it any ‘greener’?

Are there other problems with the proposal?

Here we assess the scheme using data provided by the applicant themselves.

Is the Facility Net Carbon Negative as Claimed?

Actual Emissions

In the applicant’s Environmental Statement 6.2.6 Climate [1], the actual emissions out of the chimney stack from the proposed incinerator are large at around **+410kt CO₂e** [2]. This would make it **North Lincolnshire’s 6th largest emitter** and seven times larger than the CO₂e emissions from Roxby landfill.

When North Lincolnshire as a whole should be reducing emissions by more than **-14%** each year from 2020 to meet Net Zero targets, the incinerator proposal will increase emissions in North Lincolnshire by **+6%**.

Considering 'Displaced' Emissions (Net Emissions)

The applicant declares [1], that displaced emissions, i.e. those that would otherwise occur due to the production of the heat and electrical energy by the facility, along with the emissions otherwise produced by the waste going to landfill, 'save' a total of approximately **-416kt CO₂e**.

The claim is that when the actual emissions and the 'displaced' or 'saved' emissions are added together, they give **Net Emissions of:**

+410kt CO₂e - 416kt CO₂e = -6kt CO₂e (i.e. a c1% net reduction).

It is obvious that any slight change in any of the assumptions used will change the project into an overall net emitter, so are the assumptions sound?

Digging deeper, we find some very big assumptions have been made, many of which are questionable and some completely unrealistic, with the largest one being:

The project creates electricity, with the assumption that 0.371tCO₂e/MWh would otherwise have been emitted using a combined-cycle gas turbine power station, leading to a 'saving' of -226kt CO₂e. This completely ignores that fact that any new generation capacity today would be by renewables such as wind and solar. These of course have far lower emissions, typically 0.010tCO₂e/MWh, so the 'saving' should only be -6kt CO₂e. With just this one distorted assumption removed, the whole facility becomes an enormous **Net Emitter of +214kt CO₂e per year**.

Will Carbon Capture Result in Negative Emissions?

The project claims that as it is close to the proposed Humber carbon capture 'cluster' (a carbon capture proposal for many industries around the Humber), carbon capture may be possible in the future, although there is no commitment to do so. It is to a large extent, merely 'carbon capture ready' due only to its position near the Humber.

It could be assumed that with c410kt CO₂e actual emissions going up the chimney stack every year, the proposal for carbon capture would surely aim to capture and store the majority of this, thereby gaining some green credentials.

The applicants own data [1] however, reveals the proposed amount going to carbon capture and permanent storage under the North Sea is very small at **-5.7kt CO₂ only, i.e. only a little over 1% of the actual emissions**. Costs are the reasons given, explaining why a slightly larger amount (**-36.8kt CO₂**) is proposed to be captured and sold to horticulture, relying on the assumption that greenhouse vegetable growers will relocate to take advantage of the CO₂ on offer to boost yields. Some of this CO₂ is absorbed by plants, but much appears to be lost to the atmosphere by ventilation and

ultimately the plants themselves (apart from the crop) which release the CO₂ when they rot down.

Most tellingly, this highlights the fact that the 'Green Energy Park' is, of course, run as a commercial operation, which means the CO₂ is preferably sold at profit to horticulture and not at cost when being permanently stored under the North Sea. Perhaps the sale of 36.8kt CO₂ to horticulture 'pays' for the cost of permanently storing 5.7kt CO₂?. In this case what happens if the horticultural businesses do not appear?

In summary, even if carbon capture for the project goes ahead in the future, the amounts proposed as being permanently stored are tiny at 1% of emissions. The Carbon Capture and Storage trumpet-blowing of this project is, unfortunately, complete 'greenwash'.

Will the waste arrive by rail?

The project certainly has hopes for the waste to arrive by rail, but according to the applicant this will not certainly not happen initially. This is because (once again), by the applicants own admission, it is a commercial operation and a rail operator will not commit to a standard c25 year contract until a 'critical mass' of waste movement has been achieved. Road transport will therefore bring the vast majority of waste to the facility with all the associated noise, carbon emissions (double that of rail) and increased particulate emissions for local residents. It can be expected a move to rail will only happen if an operator can be found, the cost of re-installing track found and the operating price is lower than by road transport. **Rail transport of the waste is therefore very far from guaranteed.**

Will the facility reduce recycling rates?

Controls at the facility are supposed to ensure that only residual waste will be accepted, i.e. that which cannot be recycled. The actual controls and sanctions if this does not occur appear unclear in practice, with suggestions of 'buck-passing' between hollowed-out local authorities and Environment Agency occurring in similar projects elsewhere and appear to be based mainly on the "good will" of both the supplier of waste and the facility itself. It is even suggested that the supplier of the waste is responsible for meeting the requirements on this, not the operator. **North Lincolnshire Council admitted at the hearing that it does not see how any sanctions can be applied when the target for the amount of waste recycled is "as much as is reasonable".**

The Incinerator Overcapacity Problem

The justification for building the new facility is that other facilities will close as they reach the end of their lives, as not all will be 'carbon-capture ready'. We have, however, seen that the carbon-capture proposals are very weak at 1% of emissions and there is nothing to prevent current incinerators to update their facilities and continue operating. This will result in over-capacity.

The current government target for recycling rates are (at July 2020) 65% of municipal waste by 2035. We all know the current government is highly likely to be removed at the next general election. The replacement government is quite likely to set far higher targets for recycling rates to have any chance of meeting targets to limit climate change. This will again result in incinerator over-capacity.

Other, potential new users of the same waste stream are emerging such as cement kilns and sustainable aviation fuels. Any new demand for waste will, once again, result in incinerator over-capacity.

If there is incinerator over-capacity within the UK, there is little pressure on increasing recycling rates, as the facilities will have less waste to burn and so will generate less profit. The temptation to burn waste that could actually be recycled with a little more effort is plain to see and has allegedly occurred in the past.

The conclusion is that the proposed incinerator will likely result in over-capacity and **reduce recycling rates. Far better for the environment and climate change targets would be to improve recycling rates and reduce the number of incinerators needed.**

As an example, the government recently introduced a ban on a range of plastic cups, cutlery, and food containers which will take effect in England this October, but this **does not extend to include the plastic found in pre-packaged supermarket meals.**

Notes:

**[1] North Lincolnshire Green Energy Park Volume 6 Environmental Statement
6.2.6 Climate**

<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010116/EN010116-000404-6.2.6%20-%20ES%20-%20Chapter%206%20-%20Climate.pdf>

[2] CO₂e = CO₂ 'equivalent' - is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas (e.g. methane, nitrous oxide etc), CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact over a specific time period (normally 100 years).

[3] 1ktCO₂ = 1,000 tonnes CO₂ (carbon dioxide) = 1,000,000 kg CO₂