Planning Application Representation

WRITTEN REPRESENTATION FROM UKWIN

Proposed Development:
North Lincolnshire Green Energy Park

Proposed Location:
Flixborough Wharf, Flixborough Industrial Estate, North Lincolnshire

Applicant:
North Lincolnshire Green Energy Park Limited

Planning Inspectorate Ref:
EN010116

Registration Identification Ref:
20031828

DECEMBER 2022

UKWIN
United Kingdom Without Incineration Network

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SUMMARY

UKWIN objects due to lack of need, overcapacity risk, and adverse climate impacts.

Lack of need, and risk of overcapacity

The Applicant has not demonstrated their proposed capacity would not result in overcapacity at a local or national level, in contravention of EN-3, nor that it would not undermine long-term recycling targets.

The proposal is not 'necessary development' that would justify the proposed location, given the site's flooding issues.

Anticipated reductions in residual waste are expected to free up capacity at existing incinerators, undermining the Applicant's justification for their proposed new capacity. Reducing plastic in incinerator feedstock can increase effective capacity of UK incinerators by 21-31%, thus freeing up existing capacity.

The proposed incineration capacity would constitute a wholly unnecessary barrier to – and leakage from – the circular economy, harming recycling whilst destroying valuable materials and nutrients.

The proposal would be likely to use feedstock that could otherwise have been recycled, composted, or sent to existing incinerators, thus undermining APP-051 because the Applicant's assessment has not adequately considered those alternative options.

With respect to the range of relevant policies of Local Development Plans, the overcapacity that would result from the proposal would go against ambitions set out in various Local Development Plan strategies across the affected areas, undermining ambitions in relation to recycling, self-sufficiency, and the proximity principle.

As per REP1-023, Regulation 12 of the Waste Regulations 2011 cannot be relied upon to prevent avoidable, reusable, recyclable or compostable material being used as incinerator feedstock. Feedstock can meet the definition of RDF with only minimal recycling, meaning the fact the proposal would process RDF does not obviate concerns over incinerating material that could have been treated higher up the waste hierarchy, e.g. recyclable or compostable paper and card.

Similar concerns influenced the Kemsley North refusal, with the Secretary of State agreeing with the Examining Authority that "…the projects would divert a significant proportion of waste from recycling rather than landfill" despite the Kemsley applicant's claim the incinerator would only burn non-recyclable material.

REP1-006 does not consider the impact of achieving the Government's proposed Environmental Target to halve residual waste sent to either landfill or incineration by 2042.

The importance of accounting for Government ambitions to reduce residual waste going to incineration is made explicit in the 17th November 2022 Ministerial Statement that: "…We should be aware that generating energy from waste should not compete with greater waste prevention, reuse or recycling. **Consideration must be given to the Government's strategic ambition to minimise waste and our soon-to-be-published residual waste reduction target**…" (**emphasis added**).

The Government states that their target to halve residual waste would represent a national municipal recycling rate of 70% - 75% by 2042.

Even if no new incineration capacity enters construction beyond that already operational or being built there would be EfW overcapacity in England.

UKWIN's updated analysis, taking account of the 595,000 tonnes of Rivenhall capacity, shows the impact of English incinerator feedstock falling from the current level of around 25.4Mt to 13.4Mt by 2042 in line with Government targets.

The current 15.6Mt of operational incineration capacity in England is set to increase to 18.9Mt once those incinerators currently under construction become operational.

This combination of increased capacity and reduced feedstock would result in around 5.5 million tonnes of incineration overcapacity in England by 2042 (i.e. 18.9Mt capacity minus 13.4Mt feedstock).

Government expects their 65% recycling target to be met, alongside the halving of residual waste.

The Applicant's assessment should run to at least 2042, and ideally to 2050, in line with REP1-024 and relevant CCC advice.

UKWIN provides a summary of concerns regarding Appendix A to REP1-006 which are explored in more detail in UKWIN's D2 comments on NLGEPL's D1 RDF Supply Assessment.

In REP1-015 the Applicant makes the unsubstantiated claim that: "Air Products development plasma arc technology is still used in thermal treatment and in recovery technology – the facility was commissioned but Air Products chose to close it for commercial reasons".

If the Applicant can supply examples of anywhere across the European continent where plasma arc technology is being used at commercial scale, then UKWIN would be happy to comment on their relevance to the North Lincolnshire proposal.

UKWIN provides some examples of public statements that contradict the notion that Air Products chose to close their Tees Valley plasma arc facilities solely for commercial reasons. Air Products' failed plasma arc scheme differed from any and all of the EfW capacity currently operational, under construction, or being applied for, anywhere in the UK. The technology failures associated with Air Products' Tees Valley plasma arc project are not material to the consideration of the Flixborough proposal.

Adverse climate impacts

UKWIN is concerned about the proposal's adverse climate change impacts, both in terms of the direct and indirect emissions compared to other treatment options, including those further up the Waste Hierarchy, that the proposed capacity might be displacing.

Relying only on the Applicant's figures, net GHG emissions from the proposed project would have to be only slightly higher, or the net GHG emissions of landfill be slightly lower, for the proposal to have an adverse impact when compared to landfill. For example, increasing the landfill gas recovery rate from 68% to 75% would result in the project having a net disbenefit of between 82,698 and 135,062 tCO_2e per annum.

The Applicant separately looks at the sensitivity for 'Landfill gas recovery rate and electricity generation displacement factor' and for 'RDF Composition (Biogenic content and biodegradability of waste)'. These sensitivities could combine to create an even higher adverse impact than predicted in either sensitivity scenario.

As such, even if the Applicant's sensitivity analysis were considered adequate, it indicates that the proposed development could perform worse than landfill and, in some cases, significantly worse than landfill.

Uncertainties regarding feedstock composition and its alternative fate, the net GHG impact of the proposed development, and the net GHG performance of the baseline combine to reduce the weight to be given to the Applicant's claimed environmental benefits with respect to the Principal Issue on climate change, i.e. the overall change in greenhouse gas (GHG) emissions that may arise from the construction and operation of the proposed development.

Such an approach would be in line with that taken by the Secretary of State in the Wheelabrator Kemsley North (WKN) incinerator infrastructure decision.

For North Lincolnshire, a similar range of key uncertainties and limitations are acknowledged within the Applicant's carbon assessment. This similarly casts considerable doubt on whether the Applicant's claimed 'net benefit' can be ascertained with any great certainty given that, as with WKN, the Applicant's claims are highly sensitive to the assumptions applied.

The potential for adverse climate change impacts arising from the proposed Flixborough plant should weigh heavily against the proposal because the development consent could result in locking the UK into a development that comes with adverse GHG impacts for decades to come.

According to the Applicant, the facility would have a similar carbon performance to landfill. It is hard to see how that could be described as 'low carbon'. The plant could be considered to generate electricity with a fossil carbon intensity of 548gCO_2e/kWh, which is higher than unabated CCGT and significantly higher than the BEIS marginal electricity mix.

The NPPF Glossary is clear, "Low Carbon technologies are those that can help reduce emissions (compared to conventional use of fossil fuels)". The Applicant has failed to demonstrate that the electricity that would be exported from their proposed development would be genuinely low carbon energy.

Nothing in EN-3 prevents adverse climate change impacts from being considered material in the planning balance. We note the Court of Appeal ruling in ClientEarth, R v Secretary of State for BEIS & Anor [2021] on the interpretation of the Overarching National Policy Statement for Energy ("EN-1"). According to the Court, when considering a proposed development, the adverse impacts of GHG emissions from that development can be given "significant, or even decisive" weight in the planning balance and are even capable of being "treated as a freestanding reason for refusal".

While construction and decommissioning emissions might be relatively small portions of the overall emissions within the context of the incinerator's lifetime, given the marginal nature of the claimed climate benefits in this case the impacts of construction and decommissioning emissions could be significant to the overall conclusions. The total impact of the North Lincolnshire incinerator's construction and decommissioning emissions could be around 340,952 tonnes of CO_2e, and the Applicant has not ruled out potentially significant adverse GHG impacts arising from the project's construction and decommissioning phases.

Production of consumable material inputs for Selective Catalytic Reduction, also known as 'SCR' (e.g. lime and ammonia), should be included in the scope of ERF's anticipated climate emissions. We are not aware of the Applicant making any statement to indicate that these emissions would be insignificant within the context of how marginal the claimed benefits are for the Project.

Full consideration should be given to quantifying the emissions anticipated to be released during the incinerator's hot commissioning phase, which could last for 6 months or more. During the commissioning phase waste and fuel would be processed, and electricity would need to be imported, while electricity generation could be expected to be lower or absent.

It is not certain that the RDF proposed to be used as feedstock for the North Lincolnshire incinerator would otherwise be sent to landfill. The feedstock might otherwise be incinerated at a more efficient incinerator (and/or at a cement kiln, etc.), and elements of the material used to produce the RDF could otherwise be reduced, reused or recycled.

Assuming, as the Applicant does, that 1.1% of the feedstock would be metal is unreasonable given that the feedstock is expected to be mostly RDF where a large proportion of the metals would have been removed. It is likely that the metal that is recovered would be largely or entirely ferrous metal rather than being an even split.

The Applicant's Planning Statement [APP-035] and RDF Supply Assessments [APP-036 and REP1-006] provide a maximum metal recovery figure which is closer to the enfinium figures, and lower than the Applicant's APP-054 assumptions.

The Applicant has not demonstrated that their CO_2 would in fact displace 100% fossil CO_2, as distinct from a level of CO_2 that reflects the grid average.

The Applicant's carbon content, biogenic carbon content, and DDOC assumptions appear optimistic and contrived.

Instead of using unabated CCGT as the central case, the Assessment's central case should use the BEIS marginal figure.

In discussions with UKWIN the incineration industry regarding potential sources of heat in the event of the decommissioning of the EfW element of an EfW-powered CHP scheme, one common answer we have been provided with is that ground source heat pumps offer a reasonable alternative. As such, it would be reasonable to assess the proposal against ground source heat pumps as the comparator.

With respect to the incinerator's anticipated net electricity generation, while the Applicant assumes 100% turbine and generator availability, real world data reveals that, on average, electricity generated by incinerators was 15% lower than implied by the headline MW generation figure. This should be assessed in the Applicant's sensitivity analysis.

Concerns are raised regarding the poor efficiency of the proposed carbon capture element of the proposal. The proposal for carbon capture and storage would capture only 54,387 tonnes of CO_2 per annum (only around 6.34% of the total CO_2) and provide long-term store for only 5,723 tonnes of CO_2 per annum (a mere 0.67% of the total CO_2), whilst adding to the facility's energy demands, thereby increasing the parasitic load while reducing the amount of electricity or heat that would be available for export.

For post-combustion carbon dioxide capture (PCC) technologies the EA's BAT Guidance expects a design CO_2 capture rate of at least 95%. It is obvious that the proposed 6.34% level of carbon capture falls well short of this 95% CO_2 capture rate.

Potential adverse health impacts of amine degradation associated with the chosen carbon capture technology may prove to be a barrier to the Applicant's ability to secure an environmental permit. The EA might only permit the scheme in a form that excludes the proposed carbon capture element, thus raising questions about the deliverability of the associated claimed benefits of the scheme.

The proposal conflicts with EN-3 in relation to compliance with local waste development plans and strategies. The Applicant has not demonstrated conformity with the waste hierarchy, nor that the proposal would not prejudice the achievement of waste management targets across all the areas that could be expected to be a source of feedstock.

The Applicant is asking for planning permission to process waste from anywhere in the UK, yet they do not assess the proposal's impact on Local Development Plans across whole of the UK, and the more local assessment carried out by the Applicant fails to account for the adverse impacts of the project. As such, there is a realistic prospect that the proposed facility would conflict with the policies and ambitions set out within numerous Local Plans across the country.

INTRODUCTION

1. The United Kingdom Without Incineration Network (UKWIN) was founded in March 2007 to promote sustainable waste management.
2. UKWIN is objecting to the proposed development on the following grounds:
    a) lack of need for the proposed incineration capacity, and the threat posed by the proposal with regard to local and/or national overcapacity;
    b) the threat to recycling and the circular economy posed by this scheme; and
    c) the adverse climate change impacts associated with the direct emission of fossil CO_2 from the principal development.
3. This submission is accompanied by:
    a) UKWIN'S D2 comments on NLGEPL's D1 RDF Supply Assessment Rev 1 (Appendix A TO REP1-006)
    b) the Good Practice Guidance for Assessing the GHG Impacts of Waste Incineration (UKWIN, July 2021)
    c) UKWIN's September 2022 Incineration Overcapacity briefing and associated methodology paper and UKWIN response to the ESA
    d) Ferrous, non-ferrous, steel can, and aluminium can metal prices 2022 (LetsRecycle, 14th December 2022)

LACK OF NEED FOR THE PROPOSED INCINERATION CAPACITY AND THE RISK OF LOCAL/NATIONAL OVERCAPACITY

Relevant Principal Issues

4. This section of UKWIN WR relates primarily to the following Principal Issues:

    a) **6. Draft Development Consent Order** (Justification for associated development and other associated development);

    b) **8. Environmental Impact Assessment and Environmental Statement** (Exploration of reasonable alternatives, including locations within the site and alternative technologies);

    c) **16. Planning Policy** (Whether the Proposed Development complies with: National Policy Statement EN-1, Overarching National Policy for Energy and National Policy Statement EN-3 Renewable Energy Infrastructure; and the implications of the draft National Policy Statements on Energy and any important and relevant matters arising from them; and policies of Local Development Plans and the extent to which they are relevant and important); and

    d) **19. Waste** (Source of and content of waste for fuel and compatibility with Waste Policy and the Waste Hierarchy).

Government policy on need to avoid incineration overcapacity

5. The proposed incineration facility would result in creating or exacerbating local and/or national incineration overcapacity, in contravention of EN-3 (2021) which states: “2.10.4 As the primary function of EfW plants is to treat waste, applicants must demonstrate that proposed EfW plants are in line with Defra’s policy position on the role of energy from waste in treating municipal waste” and: "2.10.5 The proposed plant must not result in over-capacity of EfW waste treatment at a national or local level”.

6. This policy approach is especially relevant to the determination of this application, as the approach received an endorsement on the 11th of July when Defra explained how this approach was current Government policy: “The Government’s view is that Energy from Waste (EfW) should not compete with greater waste prevention, re-use, or recycling. Proposed new plants must not result in an over-capacity of EfW waste treatment provision at a local or national level”.[1]

[1] UK Parliament. Question for Department for Environment, Food and Rural Affairs. UIN 28465, tabled on 30 June 2022

7. The Government's stated position adds great weight to the current requirements of EN-3 (2011) that: "2.17.3 An assessment of the proposed waste combustion generating station should be undertaken that examines the conformity of the scheme with the waste hierarchy and the effect of the scheme on the relevant waste plan or plans where a proposal is likely to involve more than one local authority" and that: "2.17.4 The application should set out the extent to which the generating station and capacity proposed is compatible with, and supports long-term recycling targets, taking into account existing residual waste treatment capacity and that already in development".
8. These Government statements add weight to the conclusion highlighted in the Wheelabrator Kemsley North (WKN) refusal, which is further explored later in this submission, which found that large-scale development can undermine local recycling efforts and divert waste from recycling.
9. The Applicant has not demonstrated that their proposed capacity would not result in overcapacity at a local or national level, and they have not demonstrated that their proposed new incineration capacity would not undermine long-term recycling targets.
10. Government policies, such as those set out in the December 2018 Resources and Waste Strategy, emphasise the importance of moving towards a more circular economy, and of tackling plastics and food waste, meaning that these materials will increasingly no longer be available for incineration.

Government policy on the need to justify development at this location

11. In addition to the general 'need to demonstrate need' associated with this proposal, there is a special burden on the Applicant to demonstrate the need for their proposed capacity at their proposed location given the flooding issues associated with the site and the development.
12. Attention is drawn to relevant Government policy with respect to the requirement to demonstrate that the proposed facility would constitute 'necessary development' that needs to be sited at this location.
13. An example of such Government policy can be found in the NPPF at paragraph 159, and at paragraph 5.5.1 of EN-1 (2011).
14. UKWIN does not believe that the proposal constitutes 'necessary development' that would justify the proposed location given the flooding issues associated with the site and the development.

The proposed capacity could undermine recycling and the circular economy

15. Anticipated reductions in residual waste arising are expected to free up capacity at existing incinerators. This further undermines the justification put forward by the Applicant for their proposed new capacity.

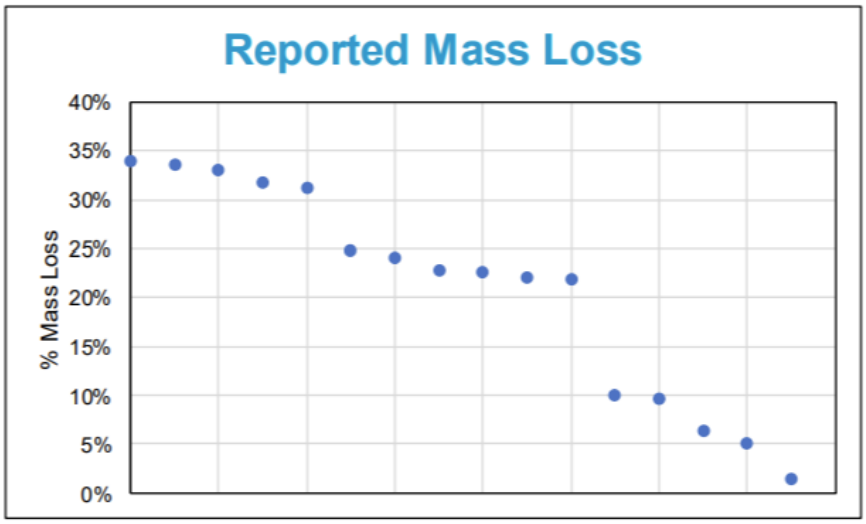
16. As set out in the technical (methodology) paper to UKWIN's September 2022 incineration overcapacity briefing (a copy of which is submitted alongside this representation), reducing the amount of plastic in the incinerator feedstock can increase the effective capacity of UK incinerators by 21-31% (with the lower end of the range assuming decreases in plastic coincide with decreases in food waste).[2]

17. Given the proposed facility would be designed to treat RDF, it is notable that it takes more than one tonne of waste to produce a tonne of RDF.

18. Tolvik has estimated moisture loss (reduction of mass) at MBT facilities in the UK to be on average around 20%, meaning incinerators taking RDF from MBT plants in effect require around 1.25 times the quantity of source ('raw') waste[3] relative to the headline incineration capacity (excluding material loss through recycling).[4]

19. Applying the Tolvik figure to the proposed North Lincolnshire capacity of up to 760,000 tonnes of RDF would give a figure of up to 950,000 tonnes of 'raw' waste, whilst applying a figure of 1.33 (see overleaf) would result in a figure of more than 1 million tonnes of waste required to produce 760,000 tonnes of RDF.

REPORTED MASS LOSS AS % OF INPUT TONNAGE FOR UK MBTS (TOLVIK 2017)



[2] 'Incineration Overcapacity Methodology: Technical paper on UKWIN's incineration overcapacity modelling' (UKWIN, September 2022). p. 7
[3] The multiplication factor is based on the formula 100 ÷ (100-N) where N is the mass loss due to moisture loss. For example 100 ÷ (100-20) = 100 ÷ 80 = 1.25
[4] Briefing Report: Mechanical Biological Treatment – 15 Years of UK Experience. Tolvik, September 2017

20. The 20% moisture loss assumption is lower than the figure used by some sources. Historic WasteDataFlow guidance from the Environment Agency advised a default adjustment factor of 1.33 “to take account of moisture loss from an MBT or similar process”, which implies 25% moisture loss as being typical.

21. This means that while the proposed North Lincolnshire incinerator might be treating “up to 760,000 tonnes of RDF and non-hazardous residual household and commercial & industrial waste per year”[5], it might require a significantly larger quantity of raw waste to be available, exacerbating the adverse impact of the proposal on recycling, the circular economy, and incineration overcapacity.

22. The proposed incineration capacity would constitute a wholly unnecessary barrier to the circular economy, and the facility could be expected to destroy valuable materials and nutrients, thus removing them from contributing to the economy.

23. As the Government's Resources and Waste Strategy puts it: "Our goal is to move to a more circular economy which keeps resources in use for longer – for that to happen, we must all reduce, reuse and recycle more than we do now...We want to minimise the amount of residual waste that we create because it is a loss to the circular economy and so will have to be replaced by using virgin materials with associated carbon emissions. Residual waste is also an indicator of avoidable waste in that residual waste will include material that could have been recycled".

24. As explained by the Climate Change Committee (CCC), moving towards a circular economy requires a move away from incineration: "Achieving significant emission reductions in the waste sector requires a step-change towards a circular economy, moving away from landfill and incineration (and the associated methane and fossil CO_2 emissions), and towards a reduction in waste arisings and collection of separated valuable resources for re-use and recycling. This applies at local, regional and national levels..."[6] (emphasis added)

25. Incineration is considered to be a ‘leakage’ from the circular economy because it results in the loss of materials and nutrients from their original cycles.

[5] Appendix A to REP1-006, p. 1.2.1.1
[6] Reducing UK emissions: 2020 Progress Report to Parliament (June 2020), p. 183

26. Furthermore, money invested in incineration cannot then be invested in better collection, sorting and treatment infrastructure, and the presence of expensive residual waste treatment infrastructure results reduces the financial incentives to reduce, re-use and recycle.

27. A basic theory of how incineration can harm recycling is that:

    a) much of what is in the incinerator feedstock is material that could and should have been collected for recycling or composting, or could have been avoided or re-used, or at the very least removed prior to incineration;

    b) the same material cannot be sent for recycling if it has been destroyed through incineration;

    c) incineration overcapacity drives down gate fees, as rather than competing with the landfill tax, incinerator operators complete with one another, and this makes recycling relatively less competitive compared to incineration;

    d) economic considerations inform both waste management practices and investment in collection, sorting, and reprocessing infrastructure; and

    e) there is a financial incentive for operators to maximise how much they burn in order to maximise the income generated from gate fees, and there are operational difficulties that can arise if an incinerator is operating below capacity.

28. The proposed capacity would impact on a market that already includes a significant quantity of incineration capacity. This means that even if the North Lincolnshire facility were to limit itself to processing feedstock that is 100% genuinely non-recyclable combustible material, over the lifetime of the facility a significant proportion of that feedstock would consist of material that would otherwise have been used to keep a different existing incinerator supplied with feedstock. This would require that existing incinerator to look further afield for their feedstock, and it could result in a lowering of standards (i.e. increasing the incineration of recyclable and compostable material), as well as increased travel distances.

29. The proposed new incineration capacity would make it more difficult for local authorities to escape unfavourable existing incinerator lock-in, hindering efforts to renegotiate existing waste contracts to remove put-or-pay clauses or minimum tonnage guarantees. This is because incineration overcapacity makes waste feedstock harder to source, thus driving down gate fees.

30. So, if Local Authorities wished to reduce their financial commitment to sending waste for incineration – in order to focus on reduction, reuse, and recycling instead – their negotiating position would be constrained by any further increase in the level of incineration capacity.

31. Similarly, as increased incineration capacity lowers incinerator gate fees, increases in incineration capacity can make it more difficult for recycling to be considered economically viable.

32. Concerns about the long-term viability of recycling and reprocessing capacity, arising from competition for feedstock, can discourage much-needed investment in the top tiers of the waste hierarchy.

33. As such, even the plausible risk of incineration overcapacity is therefore harmful for recycling, because it harms potential investment in recycling and reprocessing infrastructure.

34. If it is concluded that this proposal could plausibly result in creating or exacerbating local, regional or national overcapacity, then consenting the capacity would, directly or indirectly, also be likely to undermine recycling and waste reduction efforts.

35. The proposal would be likely to use feedstock that could otherwise have been recycled, composted, or sent to existing incinerators. This undermines the Applicant's assessment of alternatives [APP-051] because the Applicant's assessment has not adequately considered those alternative options.

36. With respect to the range of relevant policies of Local Development Plans, the overcapacity that would result from the proposal would go against the ambitions set out in various Local Development Plan strategies across the affected areas, undermining ambitions in relation to recycling, self-sufficiency, and the proximity principle.

Defra's concerns regarding the recyclability of residual waste

37. Defra's August 2020 Resources and Waste Strategy Monitoring Report revealed that most of what is currently burnt in incinerators is recyclable, stating: "Of total residual waste from household sources in England in 2017, an estimated 53% could be categorised as readily recyclable, 27% as potentially recyclable, 12% as potentially substitutable and 8% as difficult to either recycle or substitute".

38. The report from Defra observed that: "The message from this assessment is that a substantial quantity of material appears to be going into the residual waste stream, where it could have at least been recycled or dealt with higher up the waste hierarchy".

39. As noted in UKWIN's Summary of ISH1 submissions [REP1-023], Regulation 12 of the Waste Regulations 2011 cannot be relied upon to guarantee that waste would be collected and processed in ways that would prevent avoidable, reusable, and/or recyclable or compostable material from being used as incinerator feedstock.

40. The proposal for Flixborough could allow both unprocessed residual waste and RDF to be treated at the plant, although the anticipated split between the two is uncertain.

41. In 2014 Defra stated that: "…The current level of pre-treatment for RDF can be minimal, meaning that the waste is in essence very similar to unsorted waste in its nature…there is no further definition or criteria within the legislative framework that sets the level that pre-treatment MMW [mixed municipal waste] must undergo to be classed as RDF…As a result some operators class MMW as RDF after minimal treatment…"[7]

42. The UK Government ended up announcing their decision to adopt what has been described as a 'light-touch' definition of RDF which is not "too prescriptive".[8]

43. The status of that definition is unclear as it appears to be mentioned in press releases but not in recent Government documents.

44. Defra's Resources and Waste Strategy Monitoring Progress (Third edition) was published in November 2022. This report uses a definition of RDF provided by the Environment Agency in 2015 which is even lighter touch than the one announced in the press release, and simply state that RDF is: "material that is produced from waste, has undergone some sort of treatment process, and is intended for use as a fuel".[9]

45. Either way, this means that feedstock can meet the technical definition of RDF with only a minimal level of recycling, and there are no requirements in terms of the amount of effort taken to ensure that waste is fully separated and sorted prior to entering the waste stream, nor any absolute requirement that all recyclables need to be removed prior to use as incinerator feedstock.

[7] Refuse derived fuel market in England, call for evidence. Defra, March 2014

[8] New RDF Definition To Be Adopted Following Positive Feedback. Circular Online, 16th February 2017. This definition is that: "Refuse derived fuel (RDF) consists of residual waste that complies with the specifications in a written contract between the producer of the RDF and a permitted end-user for the thermal treatment of the waste in an energy from waste facility or a facility undertaking co-incineration such as cement and lime kilns. The written contract must include the end-user's technical specifications relating as a minimum to the calorific value, the moisture content, the form and quantity of the RDF."

[9] 'Research and analysis: Refuse derived fuel exports (RDF): recent trends' (Environment Agency, July 2015)

46. As such, the fact that the proposal would be taking some of level RDF does not obviate concerns that the proposal could be incinerating material that could have been treated higher up the waste hierarchy, such as recyclable or compostable paper and card.

47. Furthermore, as noted earlier, if the facility results in creating or exacerbating incineration overcapacity then this would encourage the incineration of potentially recyclable material at incinerators more generally, even if not at this specific incinerator.

Secretary of State's concerns regarding incineration diverting waste from recycling

48. In February 2021 the Business Secretary refused planning permission for the proposed Wheelabrator Kemsley North (WKN) incinerator [PINS Ref EN010083].

49. Establishing one of the reasons why it is necessary to consider whether or not need has been demonstrated for an incinerator proposed as part of the national infrastructure regime, Paragraph 4.13 of the WKN decision states: "4.1.3 The National Policy Statements set out that energy from waste is a type of infrastructure that is needed. However, the National Policy Statement for Renewable Energy Infrastructure, NPS EN-3 states that an applicant for development consent must assess 'the conformity with the waste hierarchy and the effect on relevant waste plans...' NPS EN-3, notes that the decision-maker should be satisfied, with reference to the relevant waste strategies and plans, that the proposed waste combustion generating station is in accordance with the waste hierarchy and of an appropriate type and scale so as not to prejudice the achievement of local or national waste management targets".

50. In relation to recycling, Paragraphs 4.19 and 4.20 of the WKN decision state: "4.19…the ExA [Examining Authority] noted that WKN would be in conflict with the National Planning Policy for Waste because it would put at risk the achievement of revised recycling and composting targets in the Kent Minerals and Waste Local Plan. 4.20 The Secretary of State sees no reason to disagree with the ExA's conclusions in this matter".

51. In his decision letter, the Secretary of State adopted the view of the Examining Authority that "…the projects would divert a significant proportion of waste from recycling rather than landfill" despite the Kemsley applicant's familiar claim that the proposed incinerator would only be burning non-recyclable material.

Impact on feedstock availability of Environmental Target to halve residual waste by 2042

52. As set out in REP1-023, the Applicant's Revised RDF Supply Assessment [REP1-006] does not consider the impact of the achievement of the Government's proposed Environmental Target – associated with the Environment Act (2021) – to halve residual waste sent to either landfill or incineration by 2042.

53. The importance of taking the Government's ambitions to reduce the amount of residual waste going to incineration into account is made explicit in the Ministerial Statement from The Secretary of State for Environment, Food and Rural Affairs on 17th November 2022 that: "…We should be aware that generating energy from waste should not compete with greater waste prevention, reuse or recycling. **Consideration must be given to the Government's strategic ambition to minimise waste and our soon-to-be-published residual waste reduction target**…" (**emphasis added**).

54. On page 31 of their 'Consultation on environmental targets' document (dated 6th May 2022) the Government states that their target to halve residual waste sent to either landfill or incineration by 2042 relative to the 2019 base year would represent a national municipal recycling rate for England of around 70% - 75% by 2042.

55. While the Applicant has not assessed the impact of either the higher recycling rates or the lower rates of waste arising that would need to be achieved within the operational lifetime of the proposed Flixborough incinerator in order to meet the Government's Environment Target, UKWIN has undertaken such analysis in a national context.

56. UKWIN's analysis, published in September 2022 (a copy of which accompanies this submission), found that even if no new incineration capacity enters construction beyond that already operational or being built as of 1st September 2022 then there would be EfW overcapacity in England.

57. UKWIN's work is based on the Government's estimates of residual waste arising, which cover both household waste and C&I waste of a similar composition. These figures are then reduced in line with the Government's target to halve residual waste per capita (with the rate of reduction based on the Government's own modelling approach).

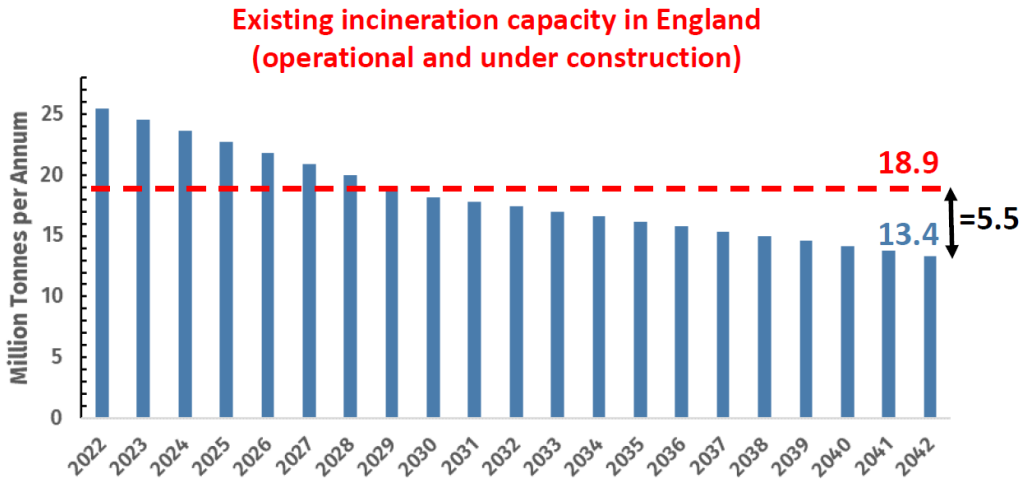
58. Figures for available feedstock are compared against public information on incineration capacity for plants that are operational and under construction. For additional context, we have also compared the figures against currently consented incineration capacity.

59. Since September the Rivenhall incinerator entered construction, giving rise to an even greater level of overcapacity. UKWIN's updated analysis, taking account of 595,000 tonnes of Rivenhall capacity, shows the impact of English incinerator feedstock falling from the current level of around 25.4Mt to 13.4Mt by 2042 in line with Government targets.

60. There is currently 15.6Mt of operational incineration capacity in England, and this is set to increase to 18.9Mt once those incinerators that are currently under construction become operational.

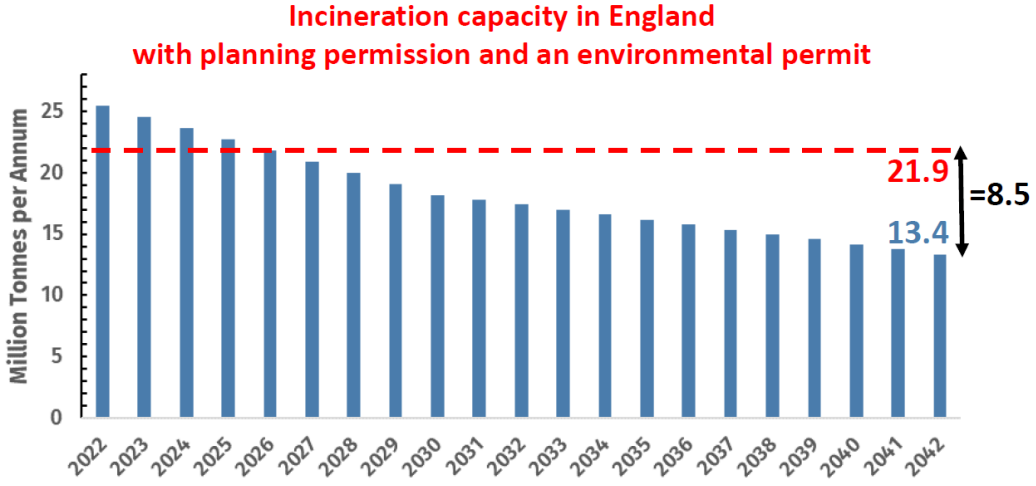
61. This combination of increased capacity and reduced feedstock would result in around 5.5 million tonnes of incineration overcapacity in England by 2042 (i.e. 18.9Mt capacity minus 13.4Mt feedstock).

CHART COMPARING POTENTIAL INCINERATION FEEDSTOCK IN ENGLAND AGAINST EXISTING INCINERATION CAPACITY



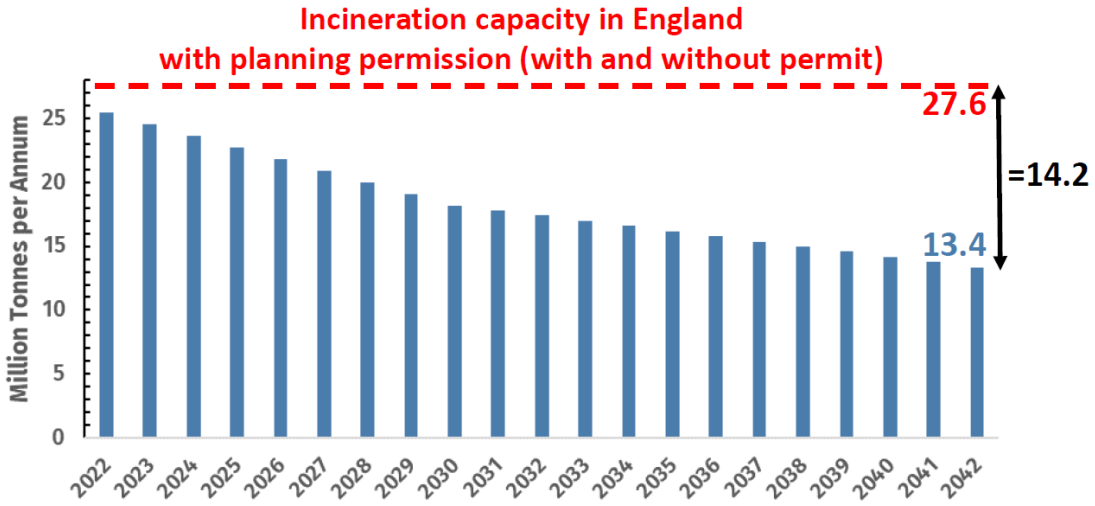
18.9Mt Capacity – 13.4Mt Feedstock = 5.5Mt Overcapacity

CHART COMPARING POTENTIAL INCINERATION FEEDSTOCK IN ENGLAND AGAINST EXISTING INCINERATION CAPACITY WITH PLANNING PERMISSION AND AN ENVIRONMENTAL PERMIT



21.9Mt Capacity – 13.4Mt Feedstock = 8.5Mt Overcapacity

CHART COMPARING POTENTIAL INCINERATION FEEDSTOCK IN ENGLAND AGAINST INCINERATION CAPACITY WITH PLANNING PERMISSION



27.6Mt Capacity – 13.4Mt Feedstock = 14.2Mt Overcapacity

62. It is worth noting that UKWIN's analysis did not include in its figures the proposed 128,000 tonne expansion of capacity at the Lostock, Cheshire incinerator, which has now been refused planning permission on behalf of the Secretary of State for Business, Energy and Industrial Strategy (as per the BEIS decision letter dated 6th December 2022).

63. Indeed, as set out in UKWIN's response to the ESA in relation to this publication (a copy of which is submitted alongside this representation), these figures are conservative and do not include a significant amount (more than 1 million tonnes) of consented capacity which we did not consider to have been 'live'.

64. Nevertheless, even if our consideration is restricted only to capacity that is currently operational or under construction, we still find that England is headed for significant national overcapacity as we move towards meeting the UK Government's target to halve residual waste by 2042.

65. As such, it can be concluded that the potential adverse impacts of the North Lincolnshire proposal on Government targets would be even greater if the proposal were assessed against the Government's target to halve residual waste.

Achievability of meeting waste targets

66. According to the Waste Management Plan for England: “The major waste reforms set out in the [Environment] Bill will support the achievement of a 65% recycling target for municipal waste by 2035” and “These measures are expected to increase recycling from households from current levels to 65% by 2035”.[10]

67. Thus, the Government expects the 65% target to be met both for household waste and municipal waste (which includes both household waste and the fraction of commercial waste which is similar to household waste).

68. The Government’s confidence about the achievability of 65% recycling by 2035 is not surprising given the progress being made in Wales.

69. According to the Welsh Government's 'Local Authority municipal waste management' statistics, Wales consistently achieved recycling rates of between 62.4% and 65.2% for each and every quarter from April 2016 through to March 2022.

70. The UK Government’s commitment to halving residual waste, and their belief that such reductions are also achievable, are set out within the Government’s Impact Assessment [REP1-025] which notes the following:

    a) “The modelled trajectories…provide further evidence that our proposed target ambition level is ambitious but achievable and that our illustrative policy pathway is a sensible illustration of the level of waste reduction that may be achieved.”

    b) “A legally binding long-term target gives a clear signal to industry of the direction of future government policy. This will increase investor confidence and encourage industry to invest in infrastructure and research that will improve the circularity of the economy.”

    c) “The target will be met by using a range of government policy levers. These levers could include regulation that puts in place rules and standards that producers must follow which will encourage all of industry to improve their products recyclability, repairability and reusability.”

[10] p. 1 and p. 26

71. Endorsing the desirability of this increased level of ambition, the Government [in REP1-024] explains how: “Tackling residual waste reduces the environmental impacts of treatment, including air, soil, and water pollution…It is more sustainable to prevent waste completely and, where waste is unavoidable, to recycle it...The proposed target can drive both waste minimisation and recycling of unavoidable waste...”.

72. This is entirely consistent with the February 2020 assertion made by the Parliamentary Under-Secretary of State for Environment, Food and Rural Affairs that: "…the measures in the Resources and Waste Strategy and the Environment Bill will enable a paradigm shift, in relation to reducing, reusing and recycling our waste, that should limit the amount that ever has to go to incineration and landfill".[11]

73. In the House of Commons on 28th March 2019 John Grogan MP questioned Michael Gove, asking: "Most studies now indicate that we have an excess of incineration capacity to deal with residual waste. Is there not a danger that, if we build more incinerators, waste that would otherwise be recycled will be diverted to those incinerators?" and the then Environment Secretary acknowledged this danger by responding: "That is a fair point".

74. A similar point is made by the Climate Change Committee (CCC), who warned in their 2021 Progress Report to Parliament (published in June 2021) that: "If EfW usage is left to grow unchecked, EfW emissions will quickly exceed those of the CCC pathway while undermining recycling and re-use efforts" (emphasis added).

75. The CCC has stated that “Defra should urgently complete and publish an up-to-date assessment of residual waste treatment capacity needs for the UK out to 2050, consistent with committed and proposed targets to improve recycling, reduce waste and reduce waste being landfilled…In line with the requirements set out in the draft National Planning Statement for Renewables, new EfW should not be built unless they can demonstrate compatibility with waste treatment capacity needs and the waste hierarchy”.[12]

76. It would be reasonable to expect Applicants to provide analysis on the same basis, i.e. to assess the impact of the UK Government’s commitments (including the commitment to halve residual waste by 2042) out to 2050.

[11] Westminster Hall debate on Industrial and Commercial Waste Incineration, 12 February 2020
[12] ‘Progress in reducing emissions - 2022 Report to Parliament (Climate Change Committee, June 2022)’, p. 394

77. The North Lincolnshire proposal should therefore be assessed on the basis that Government recycling and waste reduction targets will be met, not least because allowing incineration capacity that would only have feedstock if the targets were missed would jeopardise the achievement of those targets.

78. The Applicant's assessment should run to at least 2042, and ideally to 2050, in line with the Government's proposed Environment Target to halve residual waste [REP1-024] and the relevant CCC advice.

Summary of UKWIN's concerns regarding the RDF Supply Assessment Rev. 1 [Appendix A to REP1-006]

79. UKWIN has various concerns regarding the Applicant's RDF Supply Assessment Rev. 1 ('the Assessment') [Appendix A to REP1-006]. These concerns are explored in UKWIN's D2 comments on NLGEPL's D1 RDF Supply Assessment Rev 1 and are summarised below.

80. **Recycling rates and timescales:**

81. The Government expects the target to reach 65% recycling by 2035 to be achieved. The Assessment should be considered on the basis that this target will be met, not least because allowing incineration capacity that would only have feedstock if the target were missed would jeopardise the achievement of that target. On this basis, it is clear from the Assessment that there is no need for the proposed capacity, let alone any sort of overriding need which would justify the use of this particular site.

82. The Assessment should run to at least 2042, and ideally to at least 2050 in line with the proposed Environment Target and CCC advice respectively.

83. The Assessment should assess an ongoing fall in household waste per person and decoupling of C&I arisings from economic activity, as well as 70-75% recycling and the fall in residual waste in line with the proposed Environment Target. If need is only demonstrable with low recycling or high arisings, then this clearly indicates the proposed capacity competes with achieving Government ambitions.

84. **Treatment capacity:**

85. The Assessment understates the existing capacity by at least 1.1Mt. Correcting this figure would increase existing capacity to more than 17.3Mt.

86. Some existing permits can be expected to be varied in the medium term to allow increased capacity as a result of falls in plastic reducing the CV.

87. R1 status of existing plants is not relevant to the need assessment. Contrary to the Assessment's approach, all existing capacity should be included as existing plants, unless it can be clearly concluded that an existing plant would not be refurbished. At present those plants without R1 status do not do have it because there is little incentive to pay for the certification. These facilities are likely to qualify as R1 if they applied for this status. Older plants only need to meet the 0.60 threshold, and newer plants were designed with being able to achieve the 0.65 threshold in mind.

88. It is not safe to assume that plants will be shut down due to a lack of carbon capture in 2035. If plants are shut down, it is not safe to assume that the proposed Flixborough plant would meet future CCS requirements.

89. The Assessment should include c. 1Mtpa+ of cement kiln SRF capacity.

90. The Assessment appears to include waste material that would be unsuitable or unlikely to be feedstock for a mixed waste incinerator.

Air Products' decision to abandon the Tees Valley plasma arc project

91. In REP1-015 the Applicant asserts that "…very large scale projects have been built but then closed so that capacity is lost so there is still uncertainty on those projects that are in the pipeline…"

92. At ISH1 Mr Aumônier, on behalf of the Applicant, linked this assertion to Air Products' decision to abandon their Tees Valley plasma arc project.

93. As the transcript [EV-005] records, Mr Aumônier made a statement along the following lines: "…either they're in commissioning or under construction. That doesn't necessarily mean that in due course they will provide capacity. And we know from the Air Products development, for example, that very large scale facilities have been built to manage residual waste and then they have been closed and that capacity lost".

94. And in their REP1-015 the Applicant notes how Mr Aumônier went on to claim that: "Air Products development plasma arc technology is still used in thermal treatment and in recovery technology – the facility was commissioned but Air Products chose to close it for commercial reasons".

95. The claim that "Air Products development plasma arc technology is still used in thermal treatment and in recovery technology" is unsubstantiated.

96. If the Applicant can supply examples of anywhere in the UK, or indeed anywhere across the European continent, where plasma arc technology is being used at commercial scale then UKWIN would be happy to comment on the relevance of these examples to the North Lincolnshire proposal.

97. The notion that Air Products chose to close their Tees Valley plasma arc facilities solely for commercial reasons is contradicted by the public statements made by Air Products.

98. For example, in October 2015 Air Products' CEO stated – as part of an Earnings Call[13] in response to a question about whether the issues with the Tees Valley gasification project related to the finance (i.e. the 'waste fee, the power fee, etc.') or if it was a problem with the plasma arc technology – that: "No. It's just related to the technology. We have always said that there is a chance that the [plasma arc] technology will not work…so we are still working to figure out whether it does work or not…There's a good chance that it doesn't work, so we have to be aware of that and I have been mentioning that for the past year".[14]

99. And in January 2016 Air Products' CEO explained: "...we're in an iterative process of trying to learn how the gasifier behaves and if we can make it work on a sustainable basis. There is a still significant outstanding question about if we will ever be able to get it to work on a sustainable basis. And as I said, we have given ourselves a few months to keep trying it, but there will come a time that we might stop trying. The technology is proving to be a lot more difficult than people thought at the beginning and I have to say we haven't made a lot of significant progress since we talked to you last time".

100. In the end, Air Products gave up on their Tees Valley plasma arc projects due to what they called "design and operational challenges".[15]

101. In UKWIN's understanding, plasma arc technology is not being used for any UK incinerator and is not part of any current proposal anywhere in the UK.

102. Air Products failed plasma arc scheme differed from any and all of the EfW capacity currently operational, under construction, or being applied for, anywhere in the UK.

103. The technology failures associated with Air Products' Tees Valley plasma arc project are therefore not material to the consideration of the North Lincolnshire proposal.

[13] Air Products and Chemicals (APD) Seifollah Ghasemi on Q4 2015 Results – Earnings Call Transcript (29th October 2015)

[14] Air Products and Chemicals (APD) Seifollah Ghasemi on Q1 2016 Results – Earnings Call Transcript (29th January 2016)

[15] As per Air Products' 4th April 2016 press release entitled 'Air Products Will Exit Energy-from-Waste Business'

Scope for future incineration capacity (Waste Review 2011)

104. At Paragraph 2.4.1.3 of APP-054, the Applicant quotes the Government's Review of Waste Policy in England 2011 as stating: "Our horizon scanning work up to 2020, and beyond to 2030 and 2050 indicates that even with the expected improvements in prevention, re-use and recycling, sufficient residual waste feedstock will be available through diversion from landfill to support significant growth in this area [i.e. energy recovery], without conflicting with the drive to move waste further up the hierarchy."

105. It should be noted that:

a) At the time this statement was written, the UK's recycling target was only 50%. This ambition has since been increased to 65% and the Government are proposing to increase it further through their proposal to halve residual waste by 2042 which represents a recycling rate of around 70-75%.

b) Incineration capacity has roughly trebled since 2011, meaning that the level of increases anticipated has already occurred in any case.

c) The Government does not repeat this claim within their December 2018 Resources and Waste Strategy (which could be considered as the successor to the 2011 Waste Review)

d) The Government's current line is generally that incineration has a "role to play" but without stating that there is scope for this role to expand significantly beyond its current level.

For example, on 12th September 2018 the UK Government's then Resource Minister Thérèse Coffey gave oral evidence to the Environmental Audit Committee where she stated: "…I am not convinced that in respecting the waste hierarchy, we want to massively increase the amount of incineration that we are doing...I think, actually, there is sufficient capacity out there for incineration…"[16]

Given that incineration has increased since September 2018, it stands to reason that there is no room for further increases.

[16] Oral evidence: The National Audit Office Report on Packaging Recycling Obligations, HC 1548 (12 Sept. 2018).

Comments on Section 4.5 of the Applicant's Planning Statement [APP-035]

106. Much of the Applicant's attempt to justify their need case in their Planning Statement does not require a specific focus in this submission as the critiques would repeat points made by UKWIN with respect to other documents produced by the Applicant or as part of broader comments.

107. However, Section 4.5 of the Planning Statement ('The Contribution to Waste Management Objectives') merits specific attention.[17]

108. APP-035 paragraph 4.5.2 states that: "26 million tonnes of waste left over after recycling in the UK is turned into refuse derived fuel, exported or sent to landfill every year. Refuse derived fuel is a way of recovering energy from waste that would otherwise go to landfill. There are not enough facilities in the UK to process all the refuse derived fuel produced. 12 million tonnes a year, nearly half of the refuse derived fuel produced in the UK, is exported abroad or sent to landfill. Nearly one million tonnes of this currently travels by road to the Humber Ports and is exported".

109. This paragraph is so full of confusing statements that it is necessary to comment one sentence at a time.

110. Concerns with the statement that "26 million tonnes of waste left over after recycling in the UK is turned into refuse derived fuel, exported or sent to landfill every year" include that:

a) No statement is made regarding the evidence underpinning this statement, so it is unclear what the Applicant is referring to here.

b) The statement could easily be misinterpreted to mean that 26 million tonnes of waste is being converted into RDF either for export or landfill, which is not true.

c) RDF is not sent to landfill, and most mixed residual waste is currently incinerated rather than either converted to RDF or sent to landfill.

d) Furthermore, there is no temporal context to this statement. It is stated that a certain amount of waste "is" left over after recycling in the UK as if this were a constant. However, waste management can be expected to change over time as recycling improves and more incineration capacity which is under construction comes online. If this comment related to a specific year, then this should be stated, and the anticipated impact of current and anticipated Government policies and additional incineration capacity coming online subsequent to the period in question should be provided for context.

[17] P. 63 of APP-035

111. Concerns with the statement that “Refuse derived fuel is a way of recovering energy from waste that would otherwise go to landfill” include that:

a) Just because material is being converted into refuse derived fuel does not mean it would inevitably otherwise have gone to landfill; and

b) While incinerating a material produces energy, so does landfill gas capture. While landfill results in lower levels of energy generation, all of the energy produced by landfill is classed as renewable. This contrasts with energy from incineration which involves the burning of fossil fuels such as plastic to produce the energy.

112. Concerns with the statement that “There are not enough facilities in the UK to process all the refuse derived fuel produced” include that:

a) No evidence is cited to support this claim.

b) A reason RDF is exported relates to lower costs charged by Continental European countries where district heating schemes depend on existing incinerators that are short of feedstock.

c) Material currently being exported as RDF includes material which could be reduced, re-used and recycled in line with the waste hierarchy.

d) Incinerators can burn either MSW or RDF, and UKWIN’s evidence demonstrates that there will be significant domestic incineration overcapacity as England moves to halve residual waste arisings.

113. Concerns with the statement that “12 million tonnes a year, nearly half of the refuse derived fuel produced in the UK, is exported abroad or sent to landfill” include that:

a) RDF is not sent to landfill.

b) Looking at what has historically been exported is not relevant to considering future waste management requirements, as capacity at existing incinerators is increasingly freed up due to reductions in residual waste arising and as plants previously under construction come online.

c) UKWIN’s overcapacity analysis indicates that there will be more domestic incineration capacity than residual waste to burn, even without any RDF export.

d) The reference to “12 million tonnes” is especially problematic, not least because the actual level of RDF export from England is currently less than 2 million tonnes.

114. Concerns with the statement that “Nearly one million tonnes of this currently travels by road to the Humber Ports and is exported” include that:

a) No detail is provided on the quantity, composition, and destination of this material nor how much of it could be reduced, re-used or recycled.

b) If it is proposed that the North Lincolnshire facility would divert waste currently being sent to a CHP incinerator in Mainland Europe then that should at least be considered in the sensitivity analysis for the carbon assessment rather than only assuming the feedstock would otherwise be landfilled.

c) The Applicant’s claim that the North Lincolnshire plant could be diverting RDF from export rather than landfill raises further doubts regarding the justification for the proposed development expressed in the Applicant’s introduction to the Revision 1 RDF Supply Assessment [APP-054] that it the proposed project is needed due to “its role in treating waste that would otherwise be sent to landfill”.

ADVERSE CLIMATE CHANGE IMPACTS OF THE CO_2 EMISSIONS

Relevant Principal Issues

115. This section of UKWIN’s WR relates primarily to the following Principal Issues:

a) **2. Climate Change** (The effects of the construction and operation of the Proposed Development on climate change; The overall change in greenhouse gas emissions that may arise from the construction and operation of the Proposed Development; and Emissions of greenhouse gases arising from the development, including during its operational phase);

b) **16. Planning Policy** (Policies of Local Development Plans and the extent to which they are relevant and important); and

c) **19. Waste** (Source of and content of waste for fuel and compatibility with Waste Policy and the Waste Hierarchy).

Adverse climate change impacts associated with the direct emission of fossil CO_2 from the principal development

116. We are concerned about the proposal’s climate change impacts, both in terms of the direct emissions from the stack and indirect emissions compared to other treatment options, including those further up the Waste Hierarchy, that the proposed capacity might be displacing.

Low level of claimed benefit and high acknowledged potential for disbenefit

117. The Applicant's carbon assessment [APP-054] claims "There is a net carbon benefit of 6,066 tCO_2e per annum for the Project compared to the alternative baseline landfill scenario".[18]

118. The carbon assessment claims that the net GHG emissions for the project would, in the central scenario, be 76,008 tonnes of CO_2e per annum, compared to the landfill baseline of 82,074 tCO_2e.[19]

119. This means that, relying only on the Applicant's figures, the net GHG emissions from the proposed project would have to be only slightly higher, or the net GHG emissions of landfill be slightly lower, for the proposal to have an adverse impact when compared to landfill.

120. This is confirmed in the Assessment's sensitivity analysis, which indicates for example that:[20]

a) If the electricity generation displacement factor were reduced by 15% from 0.371 to 0.315 then this would result in the project having a net disbenefit of 20,742 tCO_2e per annum.

b) If the electricity generation displacement factor were reduced by 30% from 0.371 to 0.26 then this would result in the project having a net disbenefit of 47,551 tCO_2e per annum.

c) Increasing the landfill gas recovery rate from 68% to 75% would result in the project having a net disbenefit of between 82,698 and 135,062 tCO_2e per annum depending on the aforementioned electricity generation displacement factors.

d) If the DDOC is reduced to 41.5% then for the central biogenic carbon rate of 58.4% the net disbenefit of the project would be 51,022 tonnes of CO_2e per annum.

e) If biogenic carbon is reduced from 58.4% to 52.6% then the project would have a 50,781 tCO_2e per annum net disbenefit based on the central 46.1% DDOC rate. And if the DDOC were 41.5% then this would increase the net disbenefit to 102,160 tonnes of CO_2e per annum.

[18] APP-054, para 8.1.1.2, p. 39
[19] APP-054, Table 11, p. 40
[20] APP-054, Tables 12-14, p. 41-43

121. The Applicant separately looks at the sensitivity for 'Landfill gas recovery rate and electricity generation displacement factor' and for 'RDF Composition (Biogenic content and biodegradability of waste)'. In reality, the two sensitivities could combine to create an even higher adverse impact than predicted in either sensitivity scenario.

122. As such, even if the Applicant's sensitivity analysis were considered adequate, it indicates that the proposed development could perform worse than landfill and, in some cases, significantly worse than landfill.

123. The reasons to assess these sensitivities are set out within the Applicant's Assessment. Further reasons to assume lower electricity generation factors are set out below within the context of commenting on the Applicant's choice of default assumptions and is supported by the evidence in UKWIN's Good Practice Guidance.[21]

124. In July 2021 UKWIN published a Good Practice Guidance for Assessing the GHG Impacts of Waste Incineration. This document, which accompanies this WR, set out good practice by reference to both our own evidence-based analysis and by reference to the practices adopted and advocated for by fellow professionals in the field, alongside references to relevant Government guidance.

Weight to be given to the Applicant's claimed climate change benefits

125. The Applicant's May 2022 ES Climate Chapter (6.2.6) [APP-054] acknowledges that there is a high degree of uncertainty surrounding their claimed GHG benefits, and in this Written Representation UKWIN provides further evidence and arguments that call into question the Assessment's conclusion that the scheme would result in a net benefit rather than net disbenefit.

126. Uncertainties regarding the composition of the proposed feedstock and its alternative fate, the net GHG impact of the proposed development and the net GHG performance of the baseline combine to reduce the weight that should be given to the Applicant's claimed environmental benefits with respect to the Principal Issue on climate change, i.e. the overall change in greenhouse gas (GHG) emissions that may arise from the construction and operation of the proposed development.

127. As set out below, uncertainties regarding the claimed climate change benefits of the proposal mean that these claimed benefits should be given little or no weight in the examination of this planning application.

[21] For example, at pages 53 - 64

128. Such an approach would be in line with that taken by the Secretary of State in the Wheelabrator Kemsley North (WKN) incinerator infrastructure decision, where at Paragraph 4.41 of the decision notice the Secretary of State explains: "In its conclusions…, the ExA [Examining Authority] sets out that, given the uncertainties in the Applicant's assessment of carbon benefits, the matter should carry little weight in the assessment of WK3 and WKN… The Secretary of State sees no reason to take different view to the ExA in this matter".[22]

129. The associated Recommendation Report from the WKN Examining Authority[23] stated that: "The netting off of a proportion of GHG is not an unreasonable approach where there is a clear baseline alternative from which like can be compared with like with a high degree of confidence. However the levels of carbon benefit impact relating to the Proposed Development, as the Applicant accepts, is subject to several key uncertainties and limitations, such as the estimate of GHG emissions from landfill, the carbon intensity of marginal electricity generation and the proportions of waste types to be managed. All the available evidence casts considerable doubt on whether the 'net benefit' can be ascertained with any great certainty, given it is highly sensitive to the assumptions applied".

130. For North Lincolnshire, a similar range of key uncertainties and limitations are acknowledged within the Applicant's carbon assessment. This similarly casts considerable doubt on whether the Applicant's claimed 'net benefit' can be ascertained with any great certainty given that, as with WKN, the Applicant's claims are highly sensitive to the assumptions applied.

131. The potential for adverse climate change impacts arising from the proposed Flixborough plant should weigh heavily against the proposal because the development consent could result in locking the UK into a development that comes with adverse GHG impacts for decades to come.

132. Paragraph 4.2.1 of the Applicant's Planning Statement [APP-035] claims that "recent UK energy and climate change policy establishes clear objectives for decarbonising the power and industrial sectors and achieving the Government's legally binding commitment to achieve Net Zero in terms of greenhouse gas emissions by 2050 and decarbonisation of the energy sector by 2035".

[22] Pp. 11 and 12 of the 19th February 2021 Secretary of State Decision Letter, BEIS Ref. EN010083
[23] P. 107, paragraph 4.14.64; and CD 12.35, page 17, paragraph 3.48

133. Paragraph 4.4.1 of the Applicant's Planning Statement [APP-035] claims that: "The Project will help meet two urgent national and local needs: to reduce the amount of waste going to landfill…and to generate low carbon energy".

134. As set out above and further below, it is not safe to assume that the North Lincolnshire plant would be diverting waste from landfill.

135. In terms of the claim that the plant would "generate low carbon energy", or contribute to decarbonisation of the power sector, this claim has similarly not been substantiated.

136. As set out below, according to the Applicant, the facility would have a similar carbon performance to landfill and could give rise to net adverse GHG emissions. It is hard to see how that could be described as 'low carbon' or how it could be considered as supporting rather than undermining efforts to decarbonise or meet Net Zero comments.

137. The Applicant claims the plant is expected to emit 357,611 tonnes of fossil CO_2e per annum (356,629 from CO_2 and 982 form N_2O), of which up to 5,723 tonnes would be permanently stored.[24]

138. If, for simplicity's sake, account is not made of imported electricity nor of any other GHG costs such raw material production of reagents, this means the plant is claimed to be expected to emit 351,888 tonnes of CO_2e and to export 641,896 MWh of electricity.

139. This means that the plant could be considered to generate electricity with a fossil carbon intensity of 548gCO_2e/kWh ((351,888 ÷ 641,896) × 1,000) which is higher than unabated CCGT and significantly higher than the BEIS marginal electricity mix.

140. The NPPF Glossary is clear, "Low Carbon technologies are those that can help reduce emissions (compared to conventional use of fossil fuels)".[25]

141. The Applicant has failed to demonstrate that the electricity that would be exported from their proposed development would be genuinely low carbon energy.

142. Given the broader decarbonisation of the power sector and the high carbon intensity of the electricity that would be generated, the proposed North Lincolnshire plant could be expected to hamper efforts to decarbonise the electricity supply.

[24] P. 33 & p. 40. Note: some of the stored CO_2 would be of biogenic origin.
[25] P. 71

Comments on statements made in the Applicant's APP-054 GHG statement

Relevance of carbon emissions (EN-3)

143. Paragraph 2.4.1.7 of APP-054 quotes EN-3 as stating that for NSIP applications the decision-maker: "…does not, therefore need to assess individual applications in terms of carbon emissions against carbon budgets and this section does not address CO_2 emissions or any Emissions Performance Standard that may apply to plant."

144. As is clear from Wheelabrator Kemsley North decision, uncertainty about claimed GHG benefits can reduce the weight given to those claimed benefits.

145. Furthermore, nothing in EN-3 prevents adverse climate change impacts from being considered as a material consideration that weighs against the proposal in the planning balance.

146. We note the Court of Appeal ruling in ClientEarth, R (on the application of) v Secretary of State for BEIS & Anor [2021] EWCA Civ 43 (21 January 2021) on the interpretation of the Overarching National Policy Statement for Energy ("EN-1").

147. According to the Court, when considering a proposed development, the adverse impacts of greenhouse gas emissions from that development can be given "significant, or even decisive" weight in the planning balance and are even capable of being "treated as a freestanding reason for refusal".

Concerns regarding the Applicant's APP-054 GHG assessment

Key differences in position and areas of concern identified by UKWIN

148. The issues highlighted below will be refined and expanded upon as the basis for the Applicant's position becomes clearer.

149. The table overleaf summarises UKWIN's current view of key differences between the position taken by the Applicant in APP-054 ('the Climate Assessment') and the position UKWIN believes ought to be adopted for such an assessment.

Key disputes relating to the Climate and GHG Assessment

Issue	Applicant Climate Assessment Position	UKWIN Position
Scope of GHG assessment		
Construction and decommissioning emissions	"The construction stage of the Project has been scoped out through high-level screening calculations undertaken using values taken from published literature for the construction of similar facilities, scaled based on the area/length or operational capacity of the facility. This screening step indicated that GHG emissions for construction are not significant compared to the operational GHG emissions (<2% of direct operational CO2 emissions from the ERF over a 25-35-year lifetime) and so no further calculations have been undertaken. "Based on this, the decommissioning life cycle stage has also been excluded. There is little certainty surrounding the timing of this activity and the processes and emissions-generating activity which will occur. Decommissioning activities are similar to construction, therefore it is assumed that these emissions will be of the same order or smaller than those for the construction stage and therefore it is not considered likely that they will be significant." (para 5.3.3.3-4, p. 20)	While the construction and decommissioning emissions might be a relatively small portion of the overall emissions within the context of the lifetime of an incineration plant, given the marginal nature of the claimed climate benefits in this case the impacts of construction and decommissioning emissions could be significant to the overall conclusions. For context, when the Cornwall Energy Recovery Centre was proposed for a maximum capacity of only 240ktpa, the Applicant's evidence at the public inquiry estimated in 2010 that construction emissions would be 53,829 of CO_2e of which 52,552 tonnes of CO_2e was from the construction materials.[26] If these emissions were scaled up, and if decommissioning emission are assumed to be at the same level, then the total impact of the North Lincolnshire's construction and decommissioning emissions could be around 340,952 tonnes of CO_2e ((53,829 x (240/760 = 3.167) = 170,476) x 2 = 340,952). Hopefully construction techniques have been decarbonised to some extent since 2010, but the Applicant has not ruled out potentially significant adverse GHG impacts arising from the construction and decommissioning phases of the project.

[26] Appeal NR/08/00546/CERC. Table 23 of Annex B to Proof of Evidence on Need and Alternative Technologies of Simon Aumônier. On behalf of SITA Cornwall Limited. 14th February 2010.

Issue	Applicant Climate Assessment Position	UKWIN Position
Production of consumable material inputs for SCR (e.g. lime and ammonia)	Excluded from scope (p. 25)	Production of consumable material inputs for Selective Catalytic Reduction, also known as SCR, (e.g. lime and ammonia) should be included in the scope of ERF's anticipated climate emissions. We are not aware of the Applicant making any statement to indicate that these emissions would be insignificant within the context of how marginal the claimed benefits are for the Project.
Emissions during commissioning	Not explicitly scoped in or out, but appears not to have been fully considered within the Assessment.	Full consideration should be given to quantifying the emissions anticipated to be released during the incinerator's hot commissioning phase, which could last for 6 months or more. During the commissioning phase waste and fuel would be processed, and electricity would need to be imported, while electricity generation could be expected to be lower or absent.
Feedstock assumptions		
Alternative fate of RDF	"RDF would otherwise be sent to landfill." (p. 25 – ERF scenario)	It is not certain that the RDF would otherwise be sent to landfill. The feedstock might otherwise be incinerated at a more efficient incinerator (and/or at a cement kiln, etc.), and elements of the material used to produce the RDF could otherwise be reduced, reused or recycled. If it is sent to landfill the RDF's content might be biostabilised through an IVC process to reduce methane emissions.
Quantity and type of metal recovered from the incinerator bottom ash	Assumes 1.1% of the feedstock will be metal as a percentage of tonnage input (0.55% + 0.55%) of which 90% is recovered and an even amount is ferrous and non-ferrous metal. This equates to 0.99% of the feedstock ending up as metal recovered from the bottom ash.	Assuming 1.1% of the feedstock would be metal is unreasonable given that the feedstock is expected to be mostly RDF where a large proportion of the metals would have been removed. It is likely that the metal that is recovered would be largely or entirely ferrous metal rather than being an even split.

Issue	Applicant Climate Assessment Position	UKWIN Position
		The enfinium RDF plant shows both lower levels of RDF recovery per tonne and that the majority of this will be ferrous metal which has a lower benefit when recovered than non-ferrous. The Applicant's Planning Statement [APP-035] and RDF Supply Assessments [APP-036 and REP1-006] provide a maximum metal recovery figure which is closer to the enfinium figures, and lower than the Applicant's APP-054 assumptions.
Other model parameters		
Benefit of utilising CO_2 for horticulture	"There is a net benefit for carbon utilised in horticulture through the displacement of fossil CO2 by the proportion of CO2 from biogenic carbon within the waste combusted in the ERF. This is equal to the proportion of total carbon from biogenic sources in the RDF for each tonne of CO2 utilised." (p. 26) "Proportion of net CO2 emissions avoided through use in horticulture: [0.756 t CO2e / t CO2 utilised]" (p. 33)	The Applicant has not demonstrated that their CO_2 would in fact displace 100% fossil CO_2, as distinct from a level of CO_2 that reflects the grid average.
Waste characteristics as received at ERF	36.0% carbon content, 58.4% biogenic carbon, 46.1% DDOC (p. 31)	The Applicant's carbon content, biogenic carbon content, and DDOC assumptions appear optimistic and contrived.
Marginal electricity generation	Unabated CCGT used as central model parameter (p.34)	Instead of using unabated CCGT as the central case, the Assessment's central case should use the BEIS marginal figure.
Marginal heat generation	Unabated natural gas CHP used as central model parameter (p.34)	In discussions with UKWIN the incineration industry regarding potential sources of heat in the event of the decommissioning of the EfW element of an EfW-powered CHP scheme, one common answer we have been provided with is that ground source heat pumps offer a reasonable alternative. As such, it would be reasonable to assess the proposal against ground source heat pumps as the comparator.

Issue	Applicant Climate Assessment Position	UKWIN Position
Net electricity generation for ERF	Assumes 100% turbine/generator availability (641,896 MWh/year), i.e. that the amount of electricity generated would be the headline MW figure multiplied by the operational hours per year. No sensitivity analysis is provided.	Based on real world data set out on pages 43-52 of UKWIN's Good Practice Guidance, on average the electricity generated by incinerators was 15% lower than implied by the headline MW generation figure. This should be assessed in sensitivity analysis. While a small amount of provision is made on page 32 of APP-054 for the need to import electricity due to 'non-availability', this does not appear to account for the reduction in electricity generation that would be expected as a result of turbine / generator non-availability. Instead this figure may be focused on the need to power the ERF building while the incinerator is offline (e.g. for maintenance).

Construction and decommissioning emissions

150. As noted above, the carbon assessment for the NLGEP proposal excludes construction and decommissioning emissions, and these could be significant.

151. Simon Aumônier's proof of evidence for the St Dennis inquiry (PINS Reference APP/D0840/A/09/2113075/NWF) discusses the anticipated construction impacts of the Cornwall Energy Recovery Centre (CERC).

152. At paragraph 4.20 ('Modelling Assumptions') of Mr Aumônier's Proof of Evidence for the CERC proposal stated that: "For the purposes of the modelling, it was assumed that the residual waste treatment facility will handle 240,000 tonnes of residual waste per annum…"

153. Section 6 of Mr Aumônier's CERC Proof deals with the Carbon Balance of the proposal, and states: "This section of my Proof of Evidence…is based on a previous carbon balance assessment undertaken by ERM. The full report is presented as Annex E to my Proof. I intend to present here a summary of the work undertaken and the main findings".

154. The sub-section of Mr. Aumônier's proof entitled 'Construction Phase Method' begins at Paragraph 6.13, stating: "The GHG emissions associated with construction of the CERC were estimated using the carbon calculator developed by the Environment Agency (EA) [Guidelines to Defra's GHG Conversion Factors for Company Reporting (2007)] to calculate the embodied CO_2-eq of materials consumed, plus the CO_2-eq associated with their transportation. This also considers emissions from personal travel, site energy use and waste management. The EA carbon calculator incorporates default carbon emissions factors, and these have been retained for the carbon balance calculations".

155. Paragraph 6.14 continued: "The calculated emissions include those associated with mobilisation, such as from the transportation of construction materials from the source to the site, as well as transportation of construction personnel, using different modes of transport. They also include process emissions arising from the embodied CO_2-eq of the different construction materials, emissions from the disposal of site-derived waste and emissions from the energy used during construction activities".

156. Paragraph 6.15 concluded: "Details of the method used to calculate the GHG emissions during the construction, together with the assumptions that were made regarding the amounts of the different materials used in the construction are presented in the full report included as Annex E to my Proof of Evidence. At this stage in the CERC project, the quantities of the different construction materials and the sources of these materials cannot be defined. The amounts of construction materials are therefore estimates, and the related GHG emissions of the construction phase are necessarily indicative values".

157. At paragraph 6.22 of his CERC Proof Mr. Aumônier returned to the issue of construction emissions, where he stated his finding that: "The total estimated emissions of GHGs from the construction of the CERC are approximately 54,000 tonnes CO_2-eq. A breakdown of the source of these emissions is shown in Table 23…"

158. Table 23 set out assumptions for the construction phase of the project:

Table 23 *Carbon Balance for Construction of the CERC*

Parameter	GHG Emission (t CO_2-eq)
Construction materials	52,552
Energy use	995
Personnel transport	282
Total	53,829

159. The actual materials assumed are set out in Table 1.3 to the ERM report to which Mr. Aumônier referred, which is included as Appendix E:

Table 1.3 Input Parameters for Construction Calculation

Input Parameters	Values
Amount of steel (1)	19,000 tonnes
Amount of aluminium (1)	150 tonnes
Amount of cement (1)	14,000 tonnes
Amount of aggregates (assumed to be 50% quarried; 50% recycled) (1) (2)	67,000 tonnes (33,500 tonnes quarried; 33,500 tonnes recycled)
Amount of bricks (1)	1,100 tonnes
Amount of timber (1)	2,400 tonnes
Amount of plastics and insulation (assumed to be 100% polyethylene) (1) (2)	700 tonnes
Number of portacabins (large) (1)	10 houses
Number of portacabins (small) (1)	10 houses
Construction duration (access road) (3)	9 months
Construction duration (site) (3)	31 months
Construction cost (3)	£100 million

(1) Source: Takuma Co. Ltd, Japan (building contractor). Estimates only.
(2) Assumption made by ERM
(3) Source: SITA

Alternative fate of RDF

160. On page 25 of the ES Chapter on Climate [APP-054], as the first bullet of the ERF Assumptions column, it is stated that the carbon assessment assumes that: "RDF would otherwise be sent to landfill".

161. This assumption is somewhat odd given that, as noted above, RDF is by definition material "intended for use as a fuel".[27]

162. The Applicant's carbon assessment does not appear to give any reason for assuming that waste would only be diverted from landfill, nor is any reason provided to explain why the Applicant chose not to provide sensitivity analysis of other possible alternative fates for the feedstock.

163. No explanation is given for why, once the material has been converted into RDF, it would be landfilled rather than sent to existing thermal treatment capacity, whether that be a domestic or a foreign incinerator.

164. Indeed, paragraph 6.4.1.4 of the ES Chapter on Waste [APP-063] and paragraph 4.6.5 of the Planning Statement [APP-035] both claim that part of the rationale of the proposal is "to intercept the volume of RDF currently being exported through the Humber ports".

[27] 'Research and analysis: Refuse derived fuel exports (RDF): recent trends' (Environment Agency, July 2015)

165. Given that waste is prohibited from export for landfill, this statement presumably relates to waste being exported to existing European incinerators with vast extant CHP schemes that could otherwise be forced to source feedstock from even further afield to keep those heating schemes operational.

166. As discussed in further detail below, much of the material that is assumed to be part of the anticipated feedstock for the proposed North Lincolnshire incinerator might also be recyclable. This raises questions as to what the impact would be if it were concluded that the proposed North Lincolnshire incineration capacity might be depressing recycling.

167. It would be helpful to have an estimate from the Applicant showing the balancing point in terms of by how much the North Lincolnshire incineration plant would have to reduce recycling to result in the anticipated net GHG benefit of the proposal being expected to instead deliver a net disbenefit.

168. If the waste were to be landfilled as the Assessment assumes, for sensitivity analysis it would be informative to know what the impact would be if that same material were to be biostabilised through IVC prior to landfill to reduce methane emissions.

169. While there might currently be financial and technological challenges to implementing such an approach to biostabilising material prior to landfill, the prospect that this might become an option within the proposed lifetime of the North Lincolnshire incinerator ought to be considered.

170. According to the Zero Waste Scotland (ZWS) report entitled 'Alternative Residual Waste Treatment', carried out by Ricardo and published on the 5th of December 2022, "it is Ricardo's conviction that IVC can, subject to design and mode of operation, achieve levels of biostability in residual waste that will comply with the Scottish [biodegradable waste to landfill] ban criteria".

171. According to the ZWS report, the lifecycle assessment found that appropriately run IVC resulted in the release of only 12kg of fossil CO_2eq per tonne treated.[28]

172. The ZWS report also found that mixed waste sent to IVC would also result in 346.8 kg CO_2e of biogenic carbon being stored (sequestered) per tonne of input to MBT, resulting in net negative GHG emissions.

173. The results of the net GHG emissions once biogenic carbon storage is accounted for is set out in the table overleaf:

[28] p. 52

MBT Scenario (kg CO_2e / tonne of input)	Emissions from Table 16	Biogenic carbon stored (benefit) From Table 18	Net GHG emissions (kg CO_2e)
Dry-AD+IVC (RDF removal obligatory)	66	-45.7	20.3
IVC without RDF production	12	-346.8	-334.8
IVC with RDF production	115	-138.5	-23.5

174. As such, while UKWIN maintains that due to incineration overcapacity the plant would be likely to result in waste being diverted from the top tiers of the waste hierarchy, in light of the ZWS report it is worth considering the fact that if the North Lincolnshire plant were diverting waste form landfill the net GHG emissions from landfill could be significantly lower than the 106.5kg of CO_2e per tonne of waste landfilled figure currently assumed in Table 11 of the Applicant's carbon assessment.[29]

Quantity and type of metal recovered from the incinerator bottom ash

175. As noted by UKWIN in REP1-023, APP-054 Table 6 states that the Carbon Assessment assumes that metal extraction represents 0.99% of the total waste combusted, and that there is a 50:50 split between ferrous and non-ferrous metals.

176. REP1-023 sets out how real world data from enfinium's FM1 and FM2 RDF plants indicate that a more realistic assumption would be that between 0.61% and 0.70% of metal would be extracted as a percentage of waste combusted and that between 99.23% and 100% of this would be ferrous metal (rather than the Applicant's assumed 50:50 split).

177. As set out by UKWIN in REP1-023, reducing the quantity of metals extracted from the bottom ash and/or increasing the proportion of the metal assumed to be ferrous, to match the levels found at FM1 and FM2, would result in the Applicant's claimed 6,066 CO_2e tpa benefit of the plant turning into a disbenefit of between 3,800 tpa CO_2e and 20,501 tpa CO_2e.

178. Given that UKWIN's calculations and rationale are set out in detail in REP1-023 it is not necessary to repeat these here, but it is worth adding that there is a strong economic reason why the metals, in particular non-ferrous metals, would be extracted as part of the RDF production process.

[29] 386,698 tonnes of CO_2e from methane directly emitted from landfill gas - (47,172 from avoided electricity emissions + 270,294 from biogenic carbon stored in landfill) = 69,232 tonnes of net CO2e (as per Table 11 on p. 40 of the Carbon Assessment), which is then ÷ 650,000 tonnes of RDF (as per Table 5 on p. 31 of the Carbon Assessment), multiplied by 1,000 to give a figure in kilograms, to give 106.5 kg per tonne of RDF.

179. The difference in the split between ferrous and non-ferrous matters because page 34 of the Applicant's carbon assessment [APP-054] sets out the Applicant's assumption that recycling non-ferrous metals saves nearly 5 times more CO_2 per tonne than recycling ferrous metals.

180. According to recent industry data published by the waste industry trade press, a copy of which accompanies this submission, typical ferrous scrap metal prices in November 2022 ranged from around £120 - £245 per tonne, whereas non-ferrous metal prices in November 2022 ranged from around £250 - £6,150 per tonne

181. According to Table 8 of APP-054, the Applicant assumes the recycling benefits for avoiding ferrous and non-ferrous metals as being equivalent to the benefits of recycling steel and aluminium cans respectively.

182. The same industry source as noted above reports that in November 2022 the price range for steel cans was £120-£140 and that the price for baled or densified and strapped aluminium cans was £970-£1,050. The full 2022 range in terms of lowest and highest values reported was £120-£255 for steel cans and £970-£1,500 for aluminium cans.

183. In their Environmental Statement chapter on Climate [APP-054] the Applicant's paragraph 5.4.2.13 states that the RDF production process involves the removal of ferrous metals, but no explicit reference is made to the removal of the more lucrative non-ferrous metals by RDF producers.

184. Table 4 of Appendix 1 to REP1-015 sets out the Applicant's 'Waste Composition Assumptions Made to Enable Carbon Balance Assessment'. This claims that the Carbon Assessment assumes that the proportion of non-ferrous metal which is carried over from the base composition into the RDF composition (26%) is more than twice that assumed for the ferrous metal (12.5%).

185. Given the high market price of non-ferrous metal, it is surprising that the Applicant (at paragraph 5.4.2.13 of APP-054) only mentions ferrous metal being removed as part of the RDF production process.

186. Returning to the quantity of metal extracted, the Applicant's APP-054 figure of 0.99% of the total waste combusted is not only at odds with the FM1 and FM2 data from enfinium's RDF plant but it is also at odds with both the Applicant's Planning Statement [APP-035] and their RDF Assessments [APP-036 and REP1-006].

187. The Applicant's 0.99% assumption (i.e. assuming bottom ash contains 1.1% of input waste as metals of which 90% are recovered, 1.1% x 90% = 0.99%) implies that around 6,435 tonnes of bottom ash would be recovered per annum from 650,000 tonnes of waste (i.e. 650,000 x 0.99% = 6,435).

188. In APP-035 paragraph 4.7.5 the Applicant estimates “that up to 5,000 tonnes of scrap metal will be recovered [from the bottom ash] for recycling per annum” alongside stating that the facility would process up to 760,000 of feedstock per year.

189. The Applicant's claims regarding both the figure of up to 5,000 tonnes of metal being extracted from the bottom ash after processing 760,000 tonnes of feedstock is repeated at page iii of APP-036, and at page iii of REP1-006.

190. This implies a maximum metal recovery of 0.66% of the feedstock tonnages assuming 760,000 tonnes of feedstock per annum.

191. Even if the 5,000 tonnes of scrap metal is compared with the figure of 650,000 tonnes of feedstock per annum, metal recovery would still only reach a maximum of 0.77%.

192. This is significant because, in line with UKWIN’s sensitivity analysis in Table 2 of UKWIN’s REP1-023, even if one assumes 50% of the metal would be ferrous, reducing the metal recovery rate from 0.99% to 0.77% (i.e. 5,000 ÷ 650,000) reduces the Applicant’s claimed project benefit from 6,066 tCO2e/annum to a disbenefit of 1,431 tCO_2e/annum. At 100% ferrous metal, the net disbenefit would increase to 5,240 tCO_2e/annum.

193. As such, it appears that even the Applicant’s own evidence favours maximum metal recovery assumptions in line with UKWIN’s submission over those assumed in the Applicant’s carbon assessment.

Waste characteristics as received at ERF

194. Appendix 1 to REP1-015 sets out the Applicant’s ‘Waste Composition Assumptions Made to Enable Carbon Balance Assessment’.

195. The Applicant’s Appendix begins with the statement that: “The percentage breakdown of the RDF assumed to be received is shown in Table 1 below. This is as calculated and for the purposes of conducting an indicative carbon balance only. The presentation of the composition should not be taken to indicate either a level of precision or the predicted actual composition of the waste received”.

196. This appears to be an acknowledgement that the central feedstock modelled in the Applicant’s carbon assessment is not intended to represent the composition of the feedstock they expect to be available based on their RDF Supply Assessment or indeed the feedstock they intend to burn.

197. Or, to put it the other way, the RDF Supply Assessment does not take into account the constraints that would need to be imposed to match the feedstock profile assumed in the carbon assessment.

198. The fact that the RDF Supply Assessment does not appear to take into account any constraints in terms of matching modelled feedstock composition somewhat undermines the point made in the Applicant's written summary to ISH1 [REP1-015], where they state on page 27 for Ref 25 that: "In a dynamic market, we also have the ability to 'choose' where our waste comes from and therefore the composition of the fuel".

199. The RDF Supply Assessment's approach similarly undermines the weight to be given to the monitoring mooted in paragraph 9.1.1.6 of the Applicant's ES Chapter on Climate [APP-054], which states: "However, as noted in the sensitivity analysis, with a lower biogenic content in the RDF, this net benefit could potentially be lost. Should insufficient processing facilities exist to manage the organic fines present in MSW, these will by default remain mixed with the RDF. Therefore, monitoring of the biogenic carbon content of the RDF used at the site will be undertaken to give confidence that the net benefit in GHG emissions is being maintained or improved upon".

200. As noted in ExQ1 [PD-007], paragraph 9.1.1.6 raises questions such as "How would the monitoring regime outlined at 9.1.1.6 work in practice?" and "Whilst monitoring of the biogenic content would provide useful information after the event, how does this assist the ExA in understanding the effects of the proposed development? What controls are there in place which manage the organic fines that are present in MSW? Are there any controls that the operator could put in place to manage this content such that the GHG emissions benefit as calculated would not be lost?"

201. The RDF Supply Assessment's assumptions are also at odds with those used as the basis for the claim made at paragraph 4.7.5 on page 65 of Planning Statement [APP-035] and elsewhere that the plant would convert "around 130,000 tonnes of ash" into concrete blocks. The Applicant's carbon Assessment assumes that only around 96,525 tonnes of ash would be converted into concrete blocks. This means the Applicant's claimed benefit appears to be overstated in the Planning Statement by around 29.5% if their carbon assessment proves accurate.[30]

[30] The 96,525 tpa figure is calculated from the 'engineering design assumptions' for the percentage of ash and FGTr as a percentage of tonnage input and the percentage of ash rejected from treatment and sent to landfill, as set out on p. 32 of the ES on Climate [APP-054]. 14.6%+2.7%-2.45% = 14.85%, and 14.85% of 650,000 is 96,525 tpa.

It should also be noted that while paragraph 4.7.5 of the Planning Statement refers to this as 'recycling', using incinerator ash for concrete blocks does not count as 'recycling' in England and is not classified as recycling in UK Government statistics. This is presumably because the material is not 're'-cycled, it is moved from its original form as part of the household or C&I waste streams and then converted into an entirely different material as part of the construction stream.

202. Turning back to Appendix 1 of REP1-015, there are certainly reasons to be doubtful that the composition would be similar to that assumed in the Applicant's central analysis.

203. Firstly, the overriding focus of the carbon analysis appears to be on creating a composition to the design calorific value of around 14 MJ/kg (e.g. REP1-015 states: "Critical in this manipulation is the need to arrive at a calorific value for the indicative fuel composition that is consistent with the design of the facility").

204. However, incinerators are designed to be able to handle a range of calorific values and so in reality the calorific value could be higher or lower.

205. Rather than assessing the proposal's carbon impact by recourse to a range of waste composition scenarios, one of which matched up with a 14 MJ/kg, the Applicant instead only adopts a single scenario contrived to meet 14 MJ/kg and then for the sensitivity analysis assumes higher and lower DDOC values and levels of biogenic content but at a fixed calorific value and carbon percentage.

206. In reality, if the calorific value of the waste falls then this could require more waste to be incinerated overall. For example, the PEIR's climate assessment assumed a design calorific value 12 MJ/kg and an RDF throughput of 760,000 tpa.

207. So, given that only one feedstock scenario is fully assessed by the Applicant in their carbon assessment [APP-054] it is important that this scenario does not overestimate the climate benefit, especially given the seeming lack of controls on the feedstock composition indicated in the RDF Supply Assessment.

208. The Applicant's failure to do so means that much more weight should be given to the Applicant's sensitivity analysis which indicates net adverse GHG impact in preference to the Applicant's central analysis which indicates potential net GHG benefits.

209. Before one even gets into the detail, it is notable that it was acknowledged at ISH1 that the assessment does not include in its feedstock the c. 500 tpa of plastic rejects from the PRF process despite the incinerator being the intended destination for this material.

210. This seems indicative of a general lack of care in ensuring that the assumed composition is representative of what the plant is actually likely to treat.

211. The Applicant's Written summary of oral submissions made at Issue Specific Hearing 1 [REP1-015] records the Applicant's response that: "The Applicant explained that yes, they would expect there to be a reject rate from source segregated plastics received on site. There is always a reject rate for any materials received to any facility. Haven't taken into account that in the GHG assessment – only a maximum of 25,000 tonnes of plastics to be received and reject rate would be a small number and will be pretty insignificant amount of plastic to put back in the ERF and would not materially affect composition. APP-051 – Chapter 6 of ES – 3.2.3.9 assumptions are that approx. 24,000 tonnes would be clean and recyclable. Approx. 500 tonnes to be unsuitable material to be redirected to ERF".

212. Incinerating 500 tonnes of dense plastic produces around 1,000 tonnes of CO_2. While, on its own, this would not affect the conclusion based on the Applicant's central assumptions, it could change the outcome of some of the sensitivity analysis.

213. For example, Table 13 of the Applicant's climate assessment notes that under two of the scenarios the net benefit would be 116 and 598 tonnes of CO_2e per annum respectively, meaning that the addition of the 500 tonnes of rejected plastic to the mix could alter the conclusion in those scenarios from the project delivering a net benefit to a net disbenefit.[31]

214. If one looks at REP1-015 Table 4 ('Manipulation of overall composition of RDF') one is immediately struck by the inconsistencies and the assumptions that favour the project, with respect to the "Proportion carried over into RDF".

215. For example:

    a) It is assumed that 95% of paper and card is carried over, but only 66% of plastic film. The amount of non-ferrous metal carried over is 26%, which is more than double than the 12.5% assumed for non-ferrous metal. This means that while paper and card is only 23.5% of the base composition, it ends up representing 40% of the composition of the RDF.

    b) Wood, which could be sold to any of the many UK dedicated waste wood (biomass) plants, represents only 3.7% of the base RDF composition but 6.4% of the RDF composition.

[31] APP-054, p. 42

216. Overall, the ‘manipulation’ process adopted in REP1-015 means that 44.386% of the base composition is not carried over into the RDF (i.e. the sum of “Adjustment made to base composition, as calculated” in Table 4 indicates that only 55.614% of the base composition is carried over into the assumed RDF composition).

217. This indicates either that much of the material is expected to be removed as part of the RDF production process or that much of the material which is in the residual waste stream is either not expected to remain within the residual waste stream in the future or is deemed unsuitable for incineration. However, the implications of such an assumption are not considered in the RDF Supply Assessment.

218. As noted above, the manipulation process results in an assumption that 40% of the composition of the feedstock is paper and card.

219. This 40% assumption is far higher, for example, than the level of paper and card waste assumed by Eunomia in their report for ClientEarth.

220. As set out on page 15 of UKWIN’s Good Practice Guidance, this assumes that changes in future waste arisings would result in the proportion of paper and card in the residual waste reducing from 21% of the residual waste stream in 2021 to only 16.6% of the residual waste stream by 2035.

221. Making an assumption that the proportion of paper and card would increase significantly is ‘convenient’ for the Applicant’s carbon assessment as paper and card have a relatively high calorific value but are made of biogenic material.

222. However, for the same reason, this means that paper and card is a class of material likely to be targeted by other incinerator and dedicated biomass facility operators as well by paper and card recyclers and composters.

223. Such competition for this type of high CV biogenic material means that if the North Lincolnshire development does end up targeting such a large percentage of paper and card it raises concerns that this could come at the expense of those materials being recycled or composted.

224. Paragraph 233 of the UK Government’s EfW Guide notes: “Changes in composition due to enhanced recycling will alter the properties of the residual stream in ways such as calorific value and biogenic content. Energy from waste needs to ensure that its requirements do not act as a brake on such positive changes…”

225. As noted at paragraph 263 of the EfW Guide: “Unless it can be clearly demonstrated there is an overall environmental benefit in doing so (as an exception to the hierarchy) biogenic material that might otherwise have been separated and more beneficially processed in a different way (e.g. through AD) should not be left in or added to the RDF”.

226. Paragraph 268 of the Guide goes on to state that: “To adhere to the principles key considerations for the production and use of refuse derived fuels are: …Ensuring the hierarchy is applied and the need to maintain biogenic content in the fuel fraction is not done at the cost of potential recycling”.

227. This means that, even if the North Lincolnshire plant could have a monitoring regime which resulted in the Applicant being able to procure more high-CV biogenic material such as paper and card, the Government is concerned that such targeting could come at the expense of recycling.

228. As noted above, the Assessment does not take into account the potential adverse impacts of the proposed development on recycling which could arise from the North Lincolnshire incinerator operator pursuing the modelled feedstock.

Marginal electricity generation

229. As noted on Table 8 of APP-054, it is assumed that the marginal energy generation source is electricity CCGT with a value of 0.371 tCO2e/MWh.

230. While Table 12 of APP-054 provides sensitivity analysis for this to be reduced by 15% and 30% to 0.315 and 0.260 tCO2e/MWh, this remains unsatisfactory for four reasons:

a) We disagree that the central assumption should be CCGT for this development;

b) No account is made for this to be decarbonised in the future;

c) Other sensitivity analysis (e.g. APP-054 Tables 13 and 14) only use the central figure of 0.371, and so the cumulative impact of the other sensitivities with lower generation are not apparent; and

d) Even the Applicant’s lowest figure of 0.260 could be significantly overestimating the carbon intensity of the electricity source to be displaced compared to low-carbon renewables or nuclear sources.

231. According to paragraph 5.3.3.8 of APP-054, one of the Applicant's arguments in favour of the use of CCGT as the marginal emissions factor is the fact that the Government's EfW Guide to the Debate states: "A gas fired power station (Combined Cycle Gas Turbine CCGT) is a reasonable comparator as this is the most likely technology if you wanted to build a new power station today".

232. What this citation fails to acknowledge is that:

a) The EfW Guide was last updated in 2014, and so 'today' implies that CCGT was considered appropriate in 2014, not that it would be appropriate for an incinerator which would not become operational until the mid-2020s at the earliest; and

b) The very statement cited (footnote 29 on page 21 of the EfW Guide) goes on to state that: "When conducting more detailed assessments the energy offset should be calculated in line with DECC guidance using the appropriate marginal energy factor https://www.gov.uk/government/publications/valuation-of-energy-use-andgreenhouse-gas-emissions-for-appraisal".

233. UKWIN actually explore in detail the correct interpretation of the EfW Guide's statement in footnote 29 on within pages 53-64 of our Good Practice Guidance document, which sets out the case for the conclusion that: "When considering the carbon intensity of displaced energy it is necessary to take account of the progressive decarbonisation of the energy supply rather than simply assuming that a new energy source would displace fossil fuels [i.e. CCGT]. The carbon intensity of electricity displaced by a new incinerator can be estimated using the average BEIS Long-Run Marginal Emissions Factor (MEF) over the lifetime of the plant."

234. It shows that the clarification in footnote 29 of the EfW Guide was actually included to prevent the very misinterpation which the Applicant is promoting, with Defra noting in November 2013 that: "The detailed marginal energy mix is quite a complex concept to explain and was beyond the scope of the document. The current level of long run marginal mix [in 2013] is essentially equivalent to CCGT, as this dominates the current [2013] calculation".

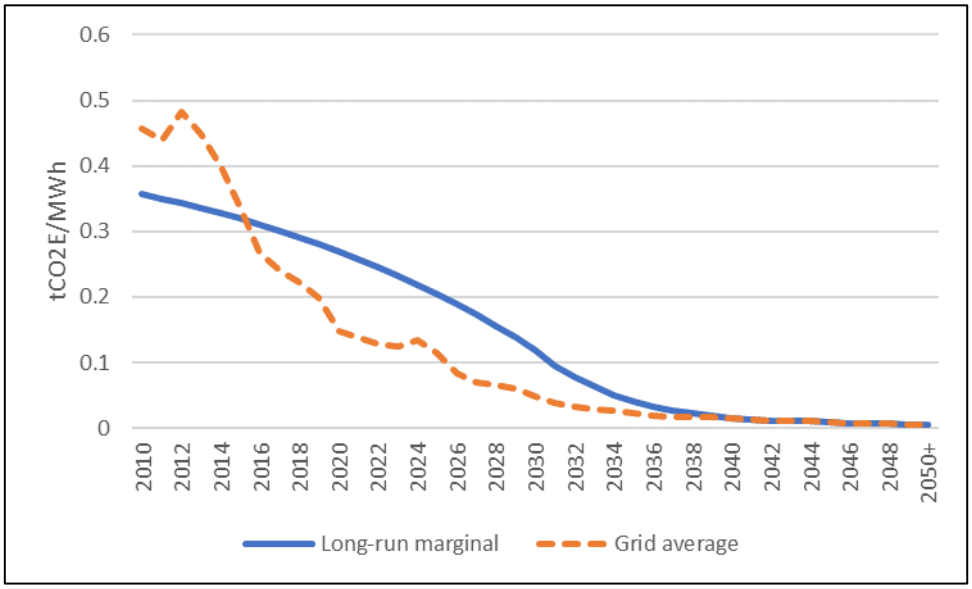
235. As noted on page 57 of UKWIN's Good Practice Guidance, in 2012 when the EfW Guide was being written, CCGT was associated with a carbon intensity of around 0.356 tCO2e/MWh and the relevant Marginal Emissions Factor was around 0.343 tCO2e/MWh.

236. So it was only because the long run marginal mix was at that time similar to CCGT that it was deemed acceptable to use CCGT as a stand-in for the more complicated long run marginal mix.

237. Since then, the 'appropriate marginal energy factor' has significantly decarbonised, with the Long-Run Marginal Emissions Factor referred to within the EfW Guide (which has now transferred from DECC to BEIS) confirming that the long-run marginal would be far lower by the time the North Lincolnshire plant will be up and running.

238. The data from 'Table 1: Electricity emissions factors to 2100, kgCO2e/kWh' of the most recent (June 2021) version of the data tables to support BEIS's supplementary guidance to Treasury's Green Book providing government analysts with rules for valuing energy usage and greenhouse gas emissions is reproduced below. Note that $kgCO_2e/kWh$ is interchangeable with tCO_2e/MWh – we are referring to the values based on the latter for consistency with the Applicant's terminology.

BEIS ELECTRICITY EMISSIONS FACTORS (JUNE 2022)



Year	BEIS generation-based long-run marginal (tCO2e/MWh)	BEIS generation-based grid average (tCO2e/MWh)
2010	0.357	0.457
2011	0.350	0.440
2012	0.343	0.482
2013	0.336	0.449
2014	0.328	0.399
2015	0.320	0.335
2016	0.311	0.268
2017	0.301	0.239
2018	0.291	0.222
2019	0.281	0.198
2020	0.270	0.148
2021	0.258	0.138
2022	0.246	0.129
2023	0.233	0.124
2024	0.219	0.135

Year	BEIS generation-based long-run marginal (tCO2e/MWh)	BEIS generation-based grid average (tCO2e/MWh)
2025	0.205	0.114
2026	0.189	0.084
2027	0.173	0.070
2028	0.156	0.065
2029	0.138	0.060
2030	0.118	0.048
2031	0.096	0.038
2032	0.078	0.033
2033	0.063	0.029
2034	0.051	0.026
2035	0.041	0.023
2036	0.033	0.019
2037	0.027	0.017
2038	0.022	0.017
2039	0.018	0.016
2040	0.014	0.014
2041	0.012	0.012
2042	0.011	0.011
2043	0.011	0.011
2044	0.010	0.010
2045	0.009	0.009
2046	0.008	0.008
2047	0.007	0.007
2048	0.007	0.007
2049	0.006	0.006
2050+	0.006	0.006

239. As can be seen from the table above, the Applicant's lowest sensitivity for electricity generation is 0.260 tCO_2e/MWh which is higher than the 2021 long-run marginal of 0.258 tCO_2e/MWh and far higher than for example the 2025 long-run marginal of 0.205 tCO_2e/MWh.

240. According to page 6 of BEIS's Valuation of energy use and greenhouse gas background documentation (October 2021): "Unlike other fuels, the emissions associated with a unit of grid electricity can vary greatly depending on the source of electricity generation. It is also important to distinguish between the average and (long-run) marginal electricity emissions factors. Whereas the average emissions factors should be used to account for emissions for the purposes of emissions foot printing, **the marginal emissions factor should be used for analysing sustained changes in energy consumption for the purposes of cost-benefit analysis, including policy appraisal**". (**emphasis added**)

241. Page 6 later states that: “The marginal electricity emissions factor is intended to reflect the change in emissions that would result from a small but sustained change in electricity consumption. **The change in electricity consumption is assumed to be constant throughout the day and year (i.e. no differentiation is made between peak and non-peak. Figures are an average for each year). The marginal plant(s) refers to what energy source(s) we expect to increase or decrease when there are marginal but sustained changes to energy demand or supply.**” (**emphasis added**)

242. So the BEIS guidance makes clear that the advice in the EfW Guidance to use the long-run marginal electricity emissions factors remains Government policy.

243. The BEIS guidance also shows that the figures indicate the impact of sustained changes not just to demand but also to supply, and that it assumes to be constant throughout the day.

244. Or, to put it another way, the ‘use case’ for adopting the BEIS long-run marginal emissions factors perfectly describes the sort of change one would expect from the proposed incinerator which is intended to operate 24/7 and thus providing baseload electricity.

245. This undermines the Applicant’s argument that CCGT is currently the correct comparator to use.

246. Furthermore, as set out in UKWIN’s Good Practice Guidance, if one is focussed on alternative sources of ‘baseload’ electricity then the correct comparator would not be CCGT (which is primarily used for ‘peaking’ capacity, not baseload) but nuclear (which, like incineration, provides 24/7 electricity).

247. Finally, it should be noted that new CCGT plants could be expected to use carbon capture with capture rates of >90%.

248. The 2009 Carbon Capture Readiness (CCR) requirements have ensured that new build combustion power plants sized at or above 300 MW in England and Wales have only been granted planning consent if they can demonstrate it is technically and economically feasible to retrofit carbon capture technology to the plant within its lifespan.

249. The Government is currently considering removing the 300 MW requirement, which could mean that in the near future all new CCGT plants would be required to demonstrate Carbon Capture Readiness.[32]

250. While the Government might also require new incineration projects to demonstrate Carbon Capture Readiness, it is plausible that this requirement would not be in place in time to apply to the proposed North Lincolnshire facility. On the other hand, it could end up applying to any CCGT plant that the facility would be displacing if it were to displace CCGT as the Applicant suggests.

Carbon Capture Concerns

251. We are concerned about the poor efficiency of the proposed carbon capture element of the proposal.

252. It appears, as per APP-054 Table 6: Model parameters – Project scenario, that the proposal for carbon capture and storage would be designed to capture only 54,387 tonnes of CO_2 per annum and provide long-term store for only 5,723 tonnes of CO_2 per annum.

253. Implementation of these proposed design features would amount to the capture of only around 6.34% of the total CO_2, and a mere 0.67% of the total CO_2 would be sent for long-term storage within concrete blocks (using the 36% Carbon content (% mass) figure from APP-054 Table 5: Waste characteristics as received at ERF).[33]

254. Even this vanishingly small level of carbon capture and storage is less than it seems because, as noted during ISH1, the carbon capture process would add to the facility's energy demands, both in terms of electricity and in terms of heat. These energy demands would increase the plant's parasitic load while reducing the amount of electricity or heat that would be available for export.

255. As such, little weight should be afforded in the planning balance to the Applicant's carbon capture plans, and great weight should be given to the climate harm that would result from the North Lincolnshire incinerator going ahead.

256. Furthermore, we also wish to draw attention to some of the uncertainties with respect to the deliverability of the proposed carbon capture element of the proposal.

[32] Decarbonisation Readiness. Joint call for evidence on the expansion of the 2009 Carbon Capture Readiness Requirements (BEIS, 2021)

[33] 36% of 650,000 tonnes of RDF = 234,000 tonnes of carbon. On combustion this carbon combines with oxygen in the air to produce 858,000 tonnes of CO_2.

257. The Environment Agency (EA) typically requires applicants for environmental permits to demonstrate that in all respects the proposed technology uses best available techniques (BAT).

258. For post-combustion carbon dioxide capture (PCC) technologies the EA's BAT Guidance, last updated on 3rd November 2022, states in Section 3 "PCC plant design and operation" that: "You should aim to achieve a design CO_2 capture rate of at least 95%, although operationally this can vary, up or down"; and at Section 3.6 "Capture level, including during flexible operation" the Guidance states: "Capturing at least 95% of the CO2 in the flue gas is considered BAT. You can base this on average performance over an extended period (for example, a year). To achieve this, you should make sure the design capture level for flue gas passing through the absorber equates to at least 95% of the CO_2 in the total flue gas from the power plant. If you process less than the full flue gas flow, your capture rate will have to be correspondingly higher".

259. It is obvious that the proposed 6.34% level of carbon capture falls well short of this 95% CO_2 capture rate.

260. It is possible that the Applicant may be able to secure some form of exception or derogation from the EA, so there is some uncertainty about whether or not issue a permit for the proposed low level of carbon capture and storage associated with the North Lincolnshire incinerator proposal.

261. Additionally, the potential for adverse health impacts of amine degradation associated with the chosen carbon capture technology may also prove to be a barrier to the Applicant's ability to secure an environmental permit from the EA.

262. As such, the EA might only permit the scheme in a form that excludes the proposed carbon capture element, thus raising questions about the deliverability of the associated claimed benefits of the scheme in the event that the carbon capture element is treated as an integral part of that scheme.

263. UKWIN raised the question at ISH1 about whether or not the Applicant was seeking an 'all or nothing' development consent due to concerns of these nature.

Conflicts with EN-3 regarding compliance with local waste development plans and strategies

264. Paragraph 2.5.66 of EN-3 states: "An assessment of the proposed waste combustion generating station should be undertaken that examines the conformity of the scheme with the waste hierarchy and the effect of the scheme on the relevant waste plan or plans where a proposal is likely to involve more than one local authority".

265. Paragraph 2.5.67 of EN-3 states: “The results of the assessment of the conformity with the waste hierarchy and the effect on relevant waste plans should be presented in a separate document to accompany the application to the IPC [i.e. the decision-maker]”.

266. Paragraph 2.5.70 of EN-3 states: “The IPC should be satisfied, with reference to the relevant waste strategies and plans, that the proposed waste combustion generating station is in accordance with the waste hierarchy and of an appropriate type and scale so as not to prejudice the achievement of local or national waste management targets in England and local, regional or national waste management targets in Wales. Where there are concerns in terms of a possible conflict, evidence should be provided to the IPC by the applicant as to why this is not the case or why a deviation from the relevant waste strategy or plan is nonetheless appropriate and in accordance with the waste hierarchy”.

267. UKWIN cannot see how it could reasonably be concluded that the Applicant (e.g. in Sections 3.7 and 5.13 of their Planning Statement) has shown that their proposal would be consistent with these EN-3 requirements.

268. The Applicant has not demonstrated conformity with the waste hierarchy, nor that the proposal would not prejudice the achievement of waste management targets across all the areas that could be expected to be a source of feedstock.

269. The Applicant is asking for planning permission (via a Development Consent Order) to process waste from anywhere in the UK, yet they do not assess the proposal’s impact on Local Development Plans across whole of the UK, and the more local assessment carried out by the Applicant fails to account for the adverse impacts of the project.

270. Common adverse impacts on waste impacts include:

a) Harm to the waste hierarchy (through harm to waste minimisation and recycling) and recycling ambitions;

b) Harm to net self-sufficiency and proximity principle (by encouraging areas to export waste rather than manage it locally); and

c) Harm to ambitions to minimise climate change impacts;

271. As such, there is a realistic prospect that the proposed facility would conflict with the policies and ambitions set out within numerous Local Plans across the country.