UNITED KINGDOM WITHOUT INCINERATION NETWORK

UKWIN
PLANNING OBJECTION
AND COMMENTS ON
CLIMATE CHANGE ISSUES

Proposed Development:
Northacre Energy from Waste Facility (EfW)

Proposed Location:
Stephenson Road, Northacre Trading Estate,
Westbury BA13 4WD

Applicant:
Northacre Renewable Energy Ltd

Planning Reference:
20/06775/WCM

JANUARY 2021

INTRODUCTION

1. The United Kingdom Without Incineration Network (UKWIN) was founded in March 2007 to promote sustainable waste management.
2. **UKWIN objects to this proposal** and calls upon Wiltshire Council to **refuse** the planning application.
3. This submission comments on several specific issues relating to the potential climate change impacts of the proposal.
4. Unless otherwise stated, emboldening used in quotes has been added to this submission for emphasis.

OVERARCHING COMMENTS ON WEIGHTING AND POLICIES

5. The proposed Northacre Energy from Waste (EfW) incinerator would not constitute sustainable waste management. The proposal conflicts with various local and national planning policies and objectives, and the harm that the proposed facility would cause would far outweigh its benefits.
6. As with any planning application, it is for the Strategic Planning Committee to weigh the various arguments and assessments of the proposal's anticipated benefits and disbenefits, and it fall to Planning Committee Members to decide what weight to give these in the 'planning balance'.
7. Simply put, weighting is a matter for the Planning Committee Members' judgement, and in this instance there are good reasons why the Committee should give little weight to the applicant's disputed claimed benefits and greater weight to the 17th December 2020 planning objection submitted by the Council's own Economic Development and Planning team's Head of Carbon Reduction ('the Council's Climate Objection').
8. The decision by the Head of Carbon Reduction to object to this proposal is supported by academic research, including bespoken assessments carried out on behalf of Wiltshire Council by the University of Exeter.
9. UKWIN generally agrees with the University of Exeter Centre for Energy and the Environment's October 2020 Carbon Assessment Review ('the University's October 2020 Review'), including with respect to the unsuitability of using 'untreated waste to landfill' as the 'most appropriate' counterfactual waste treatment for the material that would be used as feedstock for the proposed Northacre incinerator, and the unsuitability of using CCGT as the counterfactual for any displaced electricity generation.
10. UKWIN would like to draw attention to policy WDC2 of the Wiltshire and Swindon Waste Development Control Policies Development Plan Document (adopted September 2009), which highlights the importance of climate change by stating:

    "Proposals for waste management development in Wiltshire and Swindon will be permitted where it can be demonstrated that the proposal firstly avoids, adequately mitigates against, or compensates for significant adverse impacts relating to: …air emissions and ***climate change****…Proposals for waste management development should be accompanied, where necessary, by assessments of the impacts relating to the issues listed above."*

11. This is further emphasized by the supporting text at Paragraph 4.8 of the Document which states that:

    *"Many aspects of waste management can have an impact upon climate change through the production of greenhouse gas emissions.…****New waste management development must make provisions to reduce greenhouse gas emissions and impacts upon climate change.****"*

12. Changes in Government policy and legislation subsequent to the adoption of WDC2 and the approval of 18/03816/WCM, as well as more recent guidance from the Committee on Climate Change (CCC) and others, have added weight to the importance of not allowing proposals which would have an adverse climate change impact and make it clearer that the consequence of refusal is unlikely to be waste being sent untreated to landfill but instead would be for waste to be treated in a manner that would result in a lower carbon impact than if it were to be treated at the proposed development.

13. In addition to the potential for waste to be otherwise treated at residual waste treatment facilities that would have lower climate change impacts there is a realistic prospect that some - perhaps even a majority - of the material would be reduced, reused, recycled, or composted.

14. Such diversion from incineration would in line with both the Resources and Waste Strategy and with Defra's August 2020 Resources and Waste Strategy Monitoring Report, which stated:

> *"The large amount of avoidable residual waste and avoidable residual plastic waste generated by household sources each year suggests there remains substantial opportunity for increased recycling…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."*
>
> *"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."*
>
> *"Of approximately 13.1 million tonnes of residual waste generated by household sources in England in 2017, around 7 million tonnes could be categorised as readily recyclable, 3.5 million tonnes as potentially recyclable, 1.6 million tonnes as potentially substitutable, and 1.0 million tonnes as difficult to recycle or substitute."*

15. For the reasons set out in this and other objections, it would be reasonable for Wiltshire Council to refuse planning permission for this proposal on the basis of conflict with Policy WDC2 of the Wiltshire and Swindon Waste Development Control Policies DPD.

COMMENTS ON FICHTNER'S JULY 2020 CARBON ASSESSMENT

16. There are number of grounds to criticise Fichtner's July 2020 Carbon Assessment. UKWIN's comments focus on some of the most significant aspects not already covered by the assessments from the University of Exeter.

Applicant's failure to adopt a consistent approach to biogenic carbon

17. Page 7 of Fichtner's July 2020 Carbon Assessment states:

> *"For the Carbon Assessment, only carbon dioxide emissions from fossil sources (e.g. plastics) need to be considered, as carbon from biogenic sources (e.g. paper and wood) has a neutral carbon burden"*

18. However, Fichtner's assessment does not actually treat carbon from biogenic sources as having a neutral carbon burden in all cases.

19. For emissions from incineration, the release of biogenic CO_2 is not counted. This is in line with an assessment carried out on the basis that such releases are carbon neutral.

20. However, with respect to landfill, a significant proportion of the biogenic CO_2 would not be emitted and would instead be permanently sequestered.

21. This means that, if it is assumed that the release of biogenic CO_2 is neutral because it would simply perpetuate the short carbon cycle, the removal of biogenic carbon from that short cycle should be considered to constitute negative emissions associated with landfill.

22. The applicant does not dispute the fact that biogenic carbon is sequestered in landfill, resulting in less biogenic CO_2 being released by landfill when compared with incineration where all biogenic carbon is converted into CO_2 which, without carbon capture, is immediately released into the atmosphere.

23. Although the applicant does not dispute this fact, they fail to attribute the resultant benefits to landfill in their carbon assessment, thus rendering the assessment methodologically invalid.

24. Fichtner claims on Page 11 of their July 2020 assessment that:

> *"There is considerable uncertainty in literature surrounding the amount of biogenic carbon that is sequestered in landfill. The high sequestration used in this assessment (i.e. 50%), combined with the use of high landfill gas capture rates (assumed 68% capture) is considered to be conservative. Therefore, it is not considered appropriate to give additional credit for sequestered carbon as this would result in an overly conservative assessment.*

25. It should not be accepted that two allegedly 'conservative' assumption justify a significant methodological flaw, especially when the applicant has not demonstrated that the impact of adopting these so-called 'conservative' assumptions are of a similar magnitude to their failure to take account of net differential in the release of biogenic CO_2.

26. The correct approach would be for the applicant to provide what they consider to be the most likely set of key assumptions, to apply a consistent approach to biogenic carbon, and to provide sensitivity analysis to show the impact of using alternative reasonable assumptions.

27. The net differential in the release of biogenic CO_2 is not a matter that can be dismissed as *de minimus.* The applicant adopts an assumption that 50% of the carbon is converted into landfill gas (19,154 tonnes of carbon per annum), which means that the remaining 50% (19,154 tonnes of carbon per annum) would be sequestered.

28. When incinerated, burning 1 tonne of carbon results in the release of 3.667 tonnes of CO_2. As such, it is straightforward to calculate that the sequestration of 19,154 tonnes of biogenic carbon in landfill would result in a **relative net benefit for landfill of around 70,237 tonnes of CO_2 per annum** (19,154 x 3.667) **compared to incineration**.

29. Were the additional benefit of biogenic carbon sequestration in landfill included in the applicant's calculations then the lower range of climate change impact claimed by the applicant would reduce from a benefit of 23,852 tonnes of CO_2 per annum to an **adverse impact of more than 46,385 tonnes of CO_2 per annum**.

30. Due to the significant impact that consistently accounting for biogenic CO_2 can have on the results of the applicant's carbon assessment we do not believe it is acceptable to dismiss or justify this failure by any claim that other assumptions are 'conservative'.

31. Further arguments justifying the need to consider biogenic carbon in a consistent manner are set out in an annex to this submission, and in the next sub-section of this submission.

Applicant's failure to adequately consider the biodegradability of the waste and the counterfactual of using MBT to biostabilise waste prior to landfill

32. Page 11 of the Fichtner's July 2020 Carbon Assessment states:

> *"50% of the degraded biogenic carbon is released and converted into LFG. The released carbon is known as the degradable decomposable organic carbon (DDOC) content. This assumes a sequestration rate of 50%, which is considered to be a conservative assumption and is in accordance with DEFRAs 'Energy from Waste – A Guide to the Debate'. The high sequestration used in this assessment (i.e. 50%), combined with the use of high landfill gas capture rates (assumed 68% capture) is considered to be conservative. Therefore, it is not considered appropriate to give additional credit for sequestered carbon as this would result in an overly conservative assessment"*

33. The applicant does not demonstrate why it should be concluded that 50% sequestration should be considered a 'conservative' or 'high sequestration' assumption for their proposed feedstock.

34. As 'Energy recovery for residual waste: A carbon based modelling approach' (Defra, February 2014)[1] explains:

> *"All of the carbon contained within the fossil portion of waste can be considered to be locked away in landfill, as fossil-based plastics take a very long time to degrade. As a result, it is assumed it does not result in release of greenhouse gases. Biological processes within the landfill will degrade the biogenic portion of the waste. However, not all of the carbon in this biogenic portion will degrade to form CO2 or methane and some, like the fossil carbon, will become locked away. The proportion of degradable carbon varies by material. This has been assessed for the development of the MelMod model. Values from MelMod have been used in this model and are summarised in Table 6 below."*

35. Table 6 of Defra's report is as follows:

	Proportion of waste that is biogenic C	Proportion of waste that is decomposable C	Proportion of waste in 1t	Mass of biogenic C in 1t	Mass of decomposable C in 1 t
Mixed Paper and Card	0.32	0.158	0.15	0.049	0.024
Plastics		0	0.13	0.000	0.000
Textiles (and footwear)	0.2	0.0667	0.04	0.009	0.003
Miscellaneous combustibles	0.19	0.0889	0.06	0.012	0.006
Miscellaneous non-combustibles	0.035	0	0.09	0.003	0.000
Food	0.14	0.0849	0.31	0.043	0.026
Garden	0.17	0.0872	0.03	0.005	0.003
Soil and other organic waste	0.07	0.0025	0.03	0.002	0.000
Glass		0	0.05	0.000	0.000
Metals, White Goods and Other Non-biodeg Products		0	0.02	0.000	0.000
Non-organic fines		0	0.01	0.000	0.000
Wood	0.44	0.1253	0.03	0.012	0.003
Sanitary / disposable nappies	0.15	0.043	0.04	0.007	0.002
Total			1.00	0.142	0.067

36. This table anticipates that, for untreated waste, the level of decomposable biogenic carbon varies by material would be 60% degrading for garden and food waste but only 25% for wood and 33% for textiles. Paper and card are somewhere in the middle at 49%.

37. Given the Government's approach as enshrined in the Resources and Waste Strategy and the Government's proposals in the Environment Bill it can be anticipated that there will be a significant diversion of food and garden waste away from the residual waste stream.

[1] Available from http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19019

38. As such, it could reasonably be assumed that for typical waste sent to landfill in the future a significant proportion would be material such as wood, paper and card which is less likely than food and garden waste to decompose in landfill.

39. Because the applicant has not made it clear what the composition of their anticipated feedstock will be, it cannot be ruled out that even lower levels of decomposition could be assumed compared to typical historic residual waste.

40. According to the applicant the feedstock is expected to include "*approximately 52,500 tpa of MBT SRF, fines and heavies*" that would otherwise be sent to Germany (pages 13 and 19 of Fichtner's Carbon Assessment). Our expectation is that 'MBT SRF' waste would have a lower level of decomposability compared to untreated mixed waste, not least because it can be hazardous and odorous to transport decomposing waste over long distances.

41. Despite the presence of the adjacent Mechanical Biological Treatment (MBT) facility, the applicant has failed to adequately explore the impact that MBT pre-treatment could have on the extent to which biogenic carbon would be sequestered in landfill.

42. Furthermore, as has been previously noted by Defra, using an MBT process can stabilise biowaste prior to landfill. According to 'The Economics of Waste and Waste Policy' (Defra, June 2011)[2]:

> *"MBT (mechanical biological treatment)-landfill provides the best emissions performance in terms of the treatment/disposal of residual waste. It essentially involves landfilling somewhat stabilised wastes with some material recovery. The magnitude of the environmental impact depends on the extent to which the waste is stabilised."*

43. As explained in '*Building a bridge strategy for residual waste: Material Recovery and Biological Treatment to manage residual waste within a circular economy*'[3]:

> *"…a 'Material Recovery and Biological Treatment (MRBT)' system that combines biological treatment and sorting equipment allows us to 'stabilise' the organics that are included in residual waste, so as to minimise their impact once buried in a landfill, while also helping to recover materials such as metals, plastics, paper that are still included in residual waste after separate collection…".*

44. The applicant neither explains the extent to which the adjacent MBT facility would stabilise the waste nor the impact of the proposed incinerator's relative performance were the counterfactual to be an MBT or MRBT system that maximises the stabilisation of biowaste prior to landfill.

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[2] Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69500/pb13548-economic-principles-wr110613.pdf

[3] Available from https://zerowasteeurope.eu/wp-content/uploads/2020/06/zero_waste_europe_policy_briefing_MRBT_en.pdf

45. Importantly, putting in place measures to ensure that bioactive waste is stabilised prior to landfill would completely overcome the applicant's justifications for failing to account for the climate change benefits of biogenic carbon sequestration in landfill.

46. Not only would the level of degradability be more certain, but as the level of methane would be far less the impact of any uncertainties in the amount of landfill gas that would be used for energy generation would be far less.

47. This provides yet another reason why the applicant's failure to adopt a consistent approach to the treatment of biogenic carbon is not methodologically sound.

Applicant's failure to consider incineration with carbon capture and storage as a counterfactual

48. As noted by the University of Exeter's submissions, the Committee on Climate Change (CCC) recommends the use of carbon capture for waste incineration.

49. Notably, carbon capture does not form part of the applicant's revised proposal, and the applicant does not suggest any planning conditions to require the utilisation of carbon capture technology in the future.

50. As such, it is possible that this facility would be built without carbon capture while another incineration treatment option that could treat the same mixed waste feedstock might be built with such technology or upgraded to incorporate carbon capture. It would therefore be appropriate to assess the proposal against a counterfactual of an alternative thermal waste treatment facility that used carbon capture.

51. It can be expected that the proposed Northacre facility would perform very poorly against such a counterfactual in terms of the Northacre facility's adverse climate change impacts, and that should weigh heavily against the development in the planning balance.

Applicant's failure to consider incineration with combined heat and power (CHP) as a counterfactual

52. Page 10 of Fichtner's July 2020 Carbon Assessment states that:

> *"If heat is exported, the carbon benefits of the Facility will be significantly higher… However, the scope of this carbon assessment does not cover the carbon benefits of heat export from the Facility, as at this stage of design there are currently no formal heat offtake agreements in place."*

53. However, there is every possibility that if the waste were to be treated at an alternative incinerator that it would operate as a combined heat and power (CHP) facility.

54. This means that over the 30+ operational years the applicant's proposed incinerator could be diverting significant quantities of waste from a CHP incinerator. As the applicant claims CHP is accompanied by "significantly higher" carbon benefits, the diversion of material from CHP to electricity-only incineration would, by the applicant's own logic, give rise to significant climate change disbenefits.

55. This prospect is more than a hypothetical consideration. In addition to the Government's push for emerging and existing incinerators to operate as combined heat and power facilities, there are proposal-specific reasons to expect the Northacre incinerator to be diverting material from CHP.

56. According to pages 13 and 19 of Fichtner's July 2020 Carbon Assessment the proposed feedstock for the Northacre incinerator is expected to include "*approximately 52,500 tpa of MBT SRF, fines and heavies*" and *"the waste from the MBT facility which will be processed in the Facility is currently transported to Germany".*

57. It has previously been announced that the waste being sent to Germany from the Northacre MBT plant is being treated at one or more CHP facilities.

58. For example, in February 2013 it was reported[4] that:

> *"The Northacre [MBT] facility will treat around 60,000 tonnes of solid municipal waste per year, under Hills 25-year residual waste treatment contract with Wiltshire county council, signed in May 2011…Hills has agreed a contract to supply the 28,000 tonnes of refuse derived fuel (RDF) which will be produced by the plant to utilities firm Remondis, which will use it to generate energy in* ***combined heat and power plants in Oberhausen, Germany*** *and Weurt, Holland."*

59. The applicant has not demonstrated that the climate impacts of transporting this waste to Germany are not more than offset by any increased climate change performance as a result of the use of combined heat and power.

60. According to a 2015 report from Eunomia:[5]

> *"…the relative performance of RDF export scenarios and domestic scenarios depends upon the specific nature of the infrastructure used. The results of this analysis, however, demonstrate that RDF export is currently unlikely to result in any net increase in CO2 emissions from residual waste treatment"*.

61. Whilst the applicant claims credit for avoiding the impact of waste being sent to Germany, they do not provide analysis in sufficient detail to demonstrate that this is not actually a backwards step from a climate change perspective.

[4] Available from https://www.letsrecycle.com/news/latest-news/hills-completes-24m-wiltshire-mbt-plant/
[5] Available from https://www.eunomia.co.uk/reports-tools/rdf-export-industry-group-report/

COMMENTS ON FICHTNER'S NOVERMBER 2020 RESPONSE

62. Fichtner's November 2020 Response to the University of Exeter's October 2020 Review is seriously flawed, and as such Fichtner's Response should not be relied upon in support of this planning application.

63. With respect to Fichtner's suggestion that "*the Proposed Facility will be designed, built and operated to achieve this level of efficiency [i.e. 28.15%] under planning and permitting conditions*", the November 2020 Response authors are silent about the applicant's willingness or otherwise to accept both planning and permitting condition requiring the facility to achieve and maintain 28.15% plant efficiency in order to be allowed to operate.

64. Fichtner and the applicant are also silent about the nature of any potential consequences that would befall the applicant / operator were the actual performance of their incinerator to fall below their projected level of 28.15% efficiency.

65. The burden of proof on the applicant with respect to their efficiency claims should be high, not least in light of the lack of any suitable remedy having been identified within the context of planning controls should the applicant's estimate prove overly optimistic.

66. Fichtner relies heavily on examples of kWh per tonne as supposed 'evidence' of the level of efficiency that has been achieved elsewhere, stating for example that: *"It would be more appropriate to compare the Proposed Facility with the most efficient plants shown in the Tolvik May 2020 report".*

67. However, kWh/t is indicative not just of the overall efficiency of the plant but also of the calorific value of the feedstock. A high level of kWh/t *could* be indicative of higher levels of efficiency, but it could instead be indicative of the use of higher calorific value feedstocks such as plastics.

68. The Tolvik report cited by Fichtner does not disaggregate the impact of higher levels of efficiency from the impact of using higher calorific value feedstocks such as plastic, and so Fichtner's citation of these figures cannot be relied upon to demonstrate that the claimed level of efficiency could be achieved by the proposed Northacre incineration facility.

69. The statements made at Paragraph 2.5 and Section 3.5 of Fichtner's November 2020 Response regarding the ESA's (i.e. the incineration industry's) criticisms of the Zero Waste Scotland October 2020 technical report should not be given any significant weight.

70. UKWIN says this for several reasons, including that the ESA's weak criticisms do not undermine the relevant conclusions reached in the October 2020 Zero Waste Scotland (ZWS) report. Additionally, in any case, there are arguments to suggest that the October 2020 ZWS report itself underestimates the adverse climate impacts of incineration whilst also understating the capacity of landfill to store carbon (for the reasons set out above).

71. There are reliable and material grounds for considering the October 2020 ZWS report to be overly generous towards incineration in their assessment of incineration's adverse climate impacts, and it is noted that, despite the ESA's representations on behalf of the incineration industry made at the beginning of October 2020, Zero Waste Scotland has not seen it fit to withdraw the report.

CONCLUSIONS

72. In conclusion, for the reasons set out above, substantial weight should be afforded in the planning balance to the Council's Climate Objection and little weight should be given to the applicant's October 2020 Review.

73. In conjunction with other grounds and material planning considerations, planning permission for this proposal should be **refused** on climate change grounds including conflict with Policy WDC2 and other related policies, strategies, etc.

ANNEX PROVIDING ARGUMENTS IN FAVOUR OF CONSIDERING BIOGENIC CARBON IN A CONSISTENT MANNER

74. In a report written for the European Commission, entitled 'Assessment of the Options to Improve the Management of Bio-Waste in the European Union (Annex F: Environmental assumptions)',[6] the environmental consultancy Eunomia noted that: "*…in comparative assessments between processes, it cannot be valid to ignore biogenic CO2 if the different processes deal with biogenic CO2 in different ways…*".

75. Eunomia elaborates upon this in a different report, entitled 'A Changing Climate for Energy from Waste', noting that: "*In a comparative analysis of different waste treatment technologies, the assumption that emissions of CO2 related to biogenic carbon should be ignored cannot be valid where the technologies deal with biogenic carbon in different ways. The atmosphere does not distinguish between those CO2 molecules which are from biogenic sources and those which are not. Consequently, if one type of technology 'sequesters' some carbon over time, then this function needs to be acknowledged*...".

76. This position is supported by others who have looked into the issue, including in Defra's 'Energy recovery for residual waste: A carbon based modelling approach'[7] which explains that:

> "…*not all of the biogenic material decomposes in landfill but it is all converted to CO2 in energy from waste. Landfill therefore acts as a partial carbon sink for the biogenic carbon. This is a potential additional benefit for landfill over energy from waste. There are two ways to account for this additional effect:*
>
> > • *Estimate the amount of biogenic carbon sequestered and include the CO2 produced from the same amount of carbon in the EfW side of the model (or subtract it from the landfill side)*
> >
> > • *Include all carbon emissions, both biogenic and fossil on both sides of the model*"

77. The Intergovernmental Panel on Climate Change (IPCC) advises giving credit to landfill for biogenic carbon sequestration. For example, Chapter 3 of Volume 5 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories[8] states: "*Some carbon will be stored over long time periods in SWDS [solid waste disposal sites, i.e. landfill]. Wood and paper decay very slowly and accumulate in the SWDS (long-term storage)*"

78. The same IPPC Guidelines sets out how: "*The long-term stored carbon in SWDS is reported as an information item in the Waste sector. The reported value for waste derived from harvested wood products (paper and cardboard, wood and garden and park waste) is equal to the variable 1B, CHWP SWDS DC, i.e., the carbon stock change of HWP from domestic consumption disposed into SWDS of the reporting country used in Chapter 12, Harvested Wood Products, of the AFOLU Volume*".

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[6] Available from https://ec.europa.eu/environment/waste/compost/pdf/ia_biowaste%20-%20ANNEX%20F%20-%20environmental%20assumptions.pdf

[7] Available from http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19019

[8] Available from https://www.ipccnggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_3_Ch3_SWDS.pdf