

## ***Response to Document 9.79 / REP7-011***

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# **UKWIN'S D8 COMMENTS ON APPLICANT'S D7 RESPONSE TO UKWIN'S D6 SUBMISSION**

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### **Proposed Development:**

**Boston Alternative Energy Facility (BAEF)**

### **Proposed Location:**

**Nursery Road, Boston, Lincolnshire**

### **Applicant:**

**Alternative Use Boston Projects Limited**

### **Planning Inspectorate Ref:**

**EN010095**

### **Registration Identification Ref:**

**20028052**

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## **MARCH 2022**

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## INTRODUCTION AND OVERARCHING COMMENTS

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1. Disappointingly, it remains the case that the Applicant has failed to provide information and sensitivity analysis requested by UKWIN.
2. As such, at present there is no need for UKWIN to reassess our position that the Applicant has:
  - (a) failed to demonstrate the robustness of their case regarding the supposed need and climate change benefits of the proposal;
  - (b) failed to rule out the potential for incineration overcapacity which harms recycling; and
  - (c) failed to rule out the potential for adverse climate change impacts.
3. As such, while the Applicant claims to have already addressed the issues raised, as set out in UKWIN's summary of key differences between the position of UKWIN and of the Applicant (REP7-036) we are not satisfied with the Applicant's responses to date.
4. In their latest submission the Applicant does, however, helpfully confirm the validity of a number of the points made by UKWIN in relation to the climate change and need cases, as set out below.
5. The Applicant's latest submission also raises some new issues.
6. While the lateness of their arguments are potentially indicative that they do not form a core part of the Applicant's evidence base, we believe it would nevertheless be useful for the Examination for UKWIN to comment on them so that the Examination can come to a more informed understanding of the matters raised by the Applicant.
7. Finally, the Applicant has indicated that they would appreciate further clarification from UKWIN regarding C&I recycling, and this submission provides that additional clarity.

## COMMENTS ON SPECIFIC PARAGRAPHS OF REP7-011

Para	Applicant comment	UKWIN response
<b>2 Waste (outstanding points within Comments on the Applicant's Table 1-2 Response to REP2-058)</b>		
2.1.2	<p>The Applicant recognises that some new EfW facilities may not have been running at full capacity when the fuel assessment was updated, based on the information in the Tolvik report....</p>	<p>UKWIN notes that while the Applicant has acknowledged deficiencies in their report they have not yet rectified these shortcomings.</p>
	<p>...In UKWIN's calculations it is not clear what the existing recycling rate is for total C&amp;I wastes for the 50% and 33% calculations to be made...</p>	<p>The methodology used by UKWIN is set out on page 7 of REP6-042, with further detail clearly set out within REP2-058 (see paragraphs 21-31).</p> <p>UKWIN's calculations are based on a scenario whereby C&amp;I recycling improvements mirror the being using the Applicant's assumed level of increase in the quantity of household waste recycled.</p> <p>To apply the Applicant's assumed level of increase in the quantity of household waste recycled to C&amp;I waste UKWIN takes account of the fact that C&amp;I waste is a lightly larger proportion of the total residual municipal waste stream. As explained at paragraph 21 of REP2-058: "Household waste represents around 45% of total residual municipal waste, with the other 55% comprising commercial &amp; industrial (business) waste".</p> <p>As such, the methodology used by UKWIN does not require knowledge of current or future C&amp;I recycling rates. The 50% and 33% figures are not the assumed C&amp;I recycling rates, but instead constitute a calculation of the impact of assuming that the relative level of improvement for C&amp;I recycling was either a 50% improvement or a 33% improvement relative to the level of improvement for household waste recycling provided by the Applicant (after correction for the different in the size of the two streams).</p> <p>For the avoidance of doubt, we provide a step-by-step description of the methodology we followed, overleaf.</p>

Para	Applicant comment	UKWIN response
		<p>In summary, the process was as follows:</p> <ul style="list-style-type: none"> <li>• The applicant assumed that, in their catchment, higher household (HH) recycling rates would result in <b>5,147ktpa</b> less residual waste arising. This figure appears on page 21 of the Applicant's Addendum to Fuel Availability and Waste Hierarchy Assessment (reference REP1-018).</li> <li>• To determine how much this would mean if the same sort of improvements were made to C&amp;I recycling rates we can assume, as per REP2-058, that HH waste represents around 45% of the total residual waste stream and that C&amp;I represents the other 55%.</li> <li>• The additional impact of equivalent improvements in C&amp;I recycling – equal to the anticipated level of HH recycling improvements used by the Applicant - could therefore be calculated by multiplying the HH recycling figure of 5,147ktpa by 0.55/0.45 (i.e. by 1.222).</li> <li>• This means that an equivalent tonnage impact for improvements in C&amp;I recycling would result in a reduction of residual C&amp;I waste arisings in the Applicant's catchment area of 6,291ktpa (<math>5,147 \times 0.55/0.45</math>), i.e. a further reduction of around 6.3 tonnes of residual waste per annum for the Applicant's chosen catchment area.</li> <li>• For sensitivity, we also calculated the impact of C&amp;I recycling improvements being just 33% and 50% of the 6,291ktpa figure, accounting for the possibility that improvement in C&amp;I recycling would be at a lower level of improvement than HH recycling improvement.</li> <li>• This sensitivity analysis demonstrates that even when taking account of an improvement in C&amp;I recycling rates that are just 33% of the anticipated improved level for household waste this results in significant overcapacity, adding to the evidence base that supports UKWIN's assertion that the Boston facility could be expected to exacerbate incineration overcapacity.</li> </ul>

Para	Applicant comment	UKWIN response
	<p>...The Applicant has referenced Government provided waste data and statistics in its calculations, based on current recycling rates and future targets that will be met in line with the transition to the circular economy.</p>	<p>While the Applicant has considered the impact of improvements to recycling rates for household waste, the Applicant has yet to provide any estimates of the impact of similar improvements for C&amp;I recycling. Instead, the Applicant's fuel availability assessments assume that historic rates of residual C&amp;I waste arisings will continue without being impacted upon by Government policies, including Government recycling targets and circular economy support measures.</p> <p>The Applicant has yet to even provide sensitivity analysis to show the potential impact of these measures on the millions of tonnes of potentially recyclable C&amp;I waste that they are relying on as per of their fuel availability assessment.</p> <p>As such, UKWIN would ask that our evidence be adopted as the best available information before the inquiry on this topic.</p>
<p><b>4.2 Responses to Specific UKWIN points (Comments on Table 1-2 Response to REP2-057)</b></p>		
4.2.1	<p>On pages 15 and 16 of UKWIN's D6 submission, UKWIN shares an example from a recent assessment in December 2021, whereby the assessment assumed a 35% carbon content for RDF waste. It is acknowledged that this carbon composition is higher than the range considered in 'Climate Change – Further Greenhouse Gas Emissions Analysis and Consideration of Waste Composition Scenarios' (document reference 9.6, REP1-019)...</p>	<p>UKWIN notes that while the Applicant has acknowledged how they chose for their sensitivity analysis is out of step with evidence provided by UKWIN they are still reliant on an assessment which only assesses up to 30% carbon content and have not assessed the impacts of 35% carbon content at 40-60% biogenic fractions.</p> <p>As such, the Applicant have failed to show that the range of their sensitivity analysis is sufficient to allow for an adequate assessment of the potential adverse climate impacts of the Boston proposal.</p>

#### 4.3 Responses to Specific UKWIN points (Comments on Table 1-3 Response to REP3-037)

4.3.1	<p>...The assessments adopted in Chapter 21 of the ES (Climate Change, document reference 6.2.21, APP-059) and 'Climate Change – Further Greenhouse Gas Emissions Analysis and Consideration of Waste Composition Scenarios' (document reference 9.6, REP1-019) used design information specific to the scheme or accepted methodologies such as those provided by Defra</p>	<p>Contrary to the Applicant's claims, the approach adopted in the Applicant's climate change assessments do not follow the approach set out in Defra's 'Energy recovery for residual waste, A carbon based modelling approach, February 2014'.</p> <p>Firstly, the Defra document includes sensitivity analysis for giving additional credit to biogenic carbon sequestration in landfill. As set out in REP6-042, the Applicant do not do this either within their primary assessment or their sensitivity analysis.</p> <p>Secondly, the Defra document advocates for using a MEF which reflects the decarbonising electricity supply in line with Government Green Book guidelines. However, the Applicant use CCGT for their assessment and do not even sensitivity analysis that reflects the figures that would have resulted had they taken into account the generation-based marginal emissions factors produced by BEIS.</p> <p>Thirdly, the Applicant does not use waste composition as the starting point for the assessment and then calculate all other factors (such as electricity generation and CO<sub>2</sub> emissions in incineration and landfill) based on this in line with Defra's approach.</p>
4.3.3	<p>As stated in Paragraph 4.1.6 of this document, the sensitivity analysis in document 'Climate Change – Further Greenhouse Gas Emissions Analysis and Consideration of Waste Composition Scenarios' (document reference 9.6, REP1-019) also did not consider the effects of the recovery of 80,000 tonnes of CO<sub>2</sub> from the two Recovery plants. Therefore, the outcomes in that document are an underestimation of the potential climate benefits associated with the Proposed Facility.</p>	<p>The potential impact of taking into account the various sensitivities highlighted by UKWIN above and within REP6-042 would greatly exceed 80,000 tpa of CO<sub>2</sub>, and so the Applicant's failure to take this into account does not excuse the shortcomings in the applicant's main analysis or their sensitivity analysis.</p> <p>By way of illustration, for the year 2026 (the starting year according to the Applicant at paragraph 1.6.4 of REP1-018) the difference between the Applicant's assumed 0.371 kg/kWh (as per paragraph 21.4.78 of APP-059) and BEIS' Generation-based Long-run marginal emissions factor (MEF) of 0.189 kg/kWh (as per supporting Table 1 of BEIS' 'Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal') is around 116,000 tonnes of CO<sub>2</sub>, rising to a difference of more than 230,000 tonnes of CO<sub>2</sub> by 2042, far exceeding the 80,000 tonnes of CO<sub>2</sub> cited by the Applicant.</p>

These figures are based on the Applicant's claimed electricity export of 640,000 MWh (i.e. exporting 80MW for 8,000 hours of operation, as per Applicant assumptions). As can be seen from the table below, the difference between taking account of the recovery of 80,000 tonnes of CO<sub>2</sub> from the two Recovery plants and using the Government's MEF, over the Applicant's anticipated 25 year operational lifespan for the incinerator, amounts to more than 3 million tonnes of CO<sub>2</sub><sup>1</sup>.

**TABLE 1. GHG IMPACT OF USING THE BEIS MARGINAL ELECRCICITY EMISSIONS FACTORS FOR THE ENERGY EXPORTE FROM THE BOSTON INCINERATOR**

Year	CCGT carbon intensity (tonnes/mWh)	Tonnes CO <sub>2</sub> e from CCGT generation (CCGT × 640,000 MWh exported)	BEIS generation-based long run marginal emissions factor (tonnes/MWh)	Tonnes CO <sub>2</sub> e from long-run marginal generation (Long run marginal × 640,000 MWh exported)	Tonnes of CO <sub>2</sub> e per year overestimate of incinerator benefit (difference between CCGT and marginal figures)
2026	0.371	237,440	0.189	121,062	116,378
2027	0.371	237,440	0.173	110,659	126,781
2028	0.371	237,440	0.156	99,665	137,775
2029	0.371	237,440	0.138	88,048	149,392
2030	0.371	237,440	0.118	75,771	161,669
2031	0.371	237,440	0.096	61,307	176,133
2032	0.371	237,440	0.078	49,604	187,836
2033	0.371	237,440	0.063	40,135	197,305
2034	0.371	237,440	0.051	32,473	204,967
2035	0.371	237,440	0.041	26,274	211,166
2036	0.371	237,440	0.033	21,259	216,181
2037	0.371	237,440	0.027	17,201	220,239
2038	0.371	237,440	0.022	13,917	223,523
2039	0.371	237,440	0.018	11,260	226,180
2040	0.371	237,440	0.014	9,111	228,329
2041	0.371	237,440	0.012	7,563	229,877
2042	0.371	237,440	0.011	7,178	230,262
2043	0.371	237,440	0.011	7,031	230,409
2044	0.371	237,440	0.010	6,609	230,831
2045	0.371	237,440	0.009	5,612	231,828
2046	0.371	237,440	0.008	5,095	232,345
2047	0.371	237,440	0.007	4,698	232,742
2048	0.371	237,440	0.007	4,459	232,981
2049	0.371	237,440	0.006	4,149	233,291
2050	0.371	237,440	0.006	4,078	233,362
<b>Total</b>		<b>5,936,000</b>		<b>834,217</b>	<b>5,101,783</b>

*kgCO<sub>2</sub> per kWh = CO<sub>2</sub> per MWh*

<sup>1</sup> 5,101,783 – (80,000 × 25 years) = 5,101,783 – 2,000,000 = 3,101,783 tonnes CO<sub>2</sub>

As noted on page 56 of UKWIN’s Good Practice Guidance: “...adopting CCGT as the counterfactual for new incinerators should be considered unacceptable because this is likely to significantly overstate the carbon intensity of the energy that would be displaced by new waste incineration capacity.”

Moving to a different focus for sensitivity analysis, as requested by UKWIN but not provided by the Applicant, the impact of accounting for the additional benefit of biogenic carbon sequestration in landfill can be estimated based on the Applicant’s assumed level of decomposition.

As noted previously by UKWIN (including within the summary document REP7-036), the actual level of decomposition is expected to be lower for an RDF waste stream than has been assumed by the Applicant, so in reality the impact would be greater than estimated below.

**TABLE 2. GHG IMPACT OF GIVING CREDIT TO BIOGENIC CARBON SEQUESTRATION IN LANDFILL  
BASED ON APPLICANT’S ASSUMPTIONS AND SCENARIOS**

	Scenario A (20% carbon content)	Scenario B (25% carbon content)	Scenario C (30% carbon content)	Calculation / Source
<b>(a) Biogenic carbon (tCO<sub>2</sub>/a)</b>	120,000	150,000	180,000	Doc 9.6 Table 5
<b>(b) DDOC content (tCO<sub>2</sub>/a)</b>	60,000	75,000	90,000	Doc 9.6 Table 5
<b>(c) Sequestered biogenic carbon (tCO<sub>2</sub>/a)</b>	60,000	75,000	90,000	(a)-(b)
<b>(d) Annual avoided biogenic CO<sub>2</sub> due to biogenic carbon sequestration in landfill compared to emissions from BAEF</b>	<b>220,000</b>	<b>275,000</b>	<b>330,000</b>	<b>(c) × 44/12</b>
<b>(e) Avoided biogenic CO<sub>2</sub> in landfill over 25 years (tCO<sub>2</sub>)</b>	<b>5,500,000</b>	<b>6,875,000</b>	<b>8,250,000</b>	<b>(d) × 25</b>

This indicates that, based on the Applicant’s assumptions, the annual impact of not taking account of biogenic carbon sequestration is between 220,000 and 330,000 tonnes of CO<sub>2</sub> per year, which equates to between 5.5 and 8.25 million tonnes of CO<sub>2</sub> over 25 years.

A higher degree of sequestration would be achieved if a higher degree of biostabilisation were assumed.



UKWIN set out the above approach for correcting the failure to give credit for biogenic carbon sequestration in our Good Practice Guidance, noting that: *“Where the greenhouse gas (GHG) assessment fails to account for the impacts of biogenic carbon sequestration on relative biogenic CO<sub>2</sub> emissions it is sometimes possible for this to be corrected, even by third parties, based on the information provided within an existing climate change impact assessment report.*

*The basic formula is as follows: Sequestered (avoided) biogenic CO<sub>2</sub> = sequestered biogenic carbon x 44/12 In essence, this is determining how much CO<sub>2</sub> one could expect to have been released were the waste to be incinerated.*

*One converts carbon (C) to carbon dioxide (CO<sub>2</sub>) by multiplying it by 44/12 which is sometimes shortened to 3.667, and so can also be expressed as: Sequestered (avoided) biogenic CO<sub>2</sub> = sequestered biogenic carbon x 3.667...*

*a) If the quantity of biogenic carbon is stated and the amount of DDOC (dissimilable degradable organic carbon) is stated, then the carbon sequestered is the biogenic carbon which is not DDOC carbon: Sequestered biogenic carbon = biogenic carbon – DDOC carbon”*

In line with this approach, we note that the Applicant’s Greenhouse Gas Analysis from Waste Composition Scenarios (Document 9.6 / REP1-019) provides the biogenic carbon and total DDOC content for the facilities which allows for the values to be calculated.

As the Applicant has not provided their own sensitivity analysis to account for grid displacement factors and/or for biogenic carbon sequestration UKWIN would ask that our evidence on these topics be adopted as the best available information before the inquiry on these matters.

Based on this evidence it is fair to say that the adverse environmental impacts of the Boston proposal could be significantly worse than the Applicant has claimed in their various assessments.