HOUSE OF COMMONS
LONDON SW1A 0AA

Mr Andre Pinto
National Infrastructure Planning
Temple Quay House
2 The Square
Bristol
BS1 6PN

24 March 2023

Medworth Energy from Waste Combined Heat and Power (EfW CHP) Facility Project

Dear Mr Pinto

Please find attached my written representations in line with Deadline 2.

Yours sincerely,

[redacted]

Stephen Barclay MP

APPLICATION BY MEDWORTH CHP LIMITED

WRITTEN REPRESENTATION PREPARED FOR RT HON. STEVEN BARCLAY MP

Dr Dominic Hogg
[redacted]

March 2023

Summary

This Written Submission highlights the unique status of EfW in the context of the NSIP process. EfW is a generator of power from both renewable and non-renewable sources. Partly because its principal function is as a means to treat waste (and not as a power generating facility), it is not affected by policies which affect most other power generating facilities. The main drivers for how waste is managed are, correspondingly, not those related to energy, but those related to waste.

Since the first NPS's were published in 2011, waste policy and law has moved on apace, and following the passage of the Environment Act and the recent Environmental Targets (Residual Waste) (England) Regulations, there are expectations for significant changes in the management of waste over the coming years.

Our main objections to the Proposed Development relate to the following:

The proposal is not a low-carbon form of power generation. The carbon intensity of generation is well in excess of the ceiling set for power stations using fossil-fuel as set out in the Energy Act 2013. There are reasons to believe that the threshold should be applied in this case also since the EfW facility will use fossil fuels in the form of plastic, fossil-based textiles, and fossil-fractions of other sources of fuel. Were that threshold to be applied in this case (which would be consistent with the Government's intent to decarbonise power generation) then this facility would be refused consent.

Because of flaws in methodology, instead of the Proposed Development offering a reduction in GHG emissions relative to landfill, we find the opposite to be the case, and by some margin. The magnitude of the increase exceeds the magnitude of change that the Applicant deems to be 'significant'.

We find the Benefits outlined by the Applicant to be of limited merit. These need to be set against the negative impacts of the Proposed Development as indicated in this report.

We see no evidence of the Applicant having given serious consideration to alternatives that it might have been expected to consider in light of its duties vis a vis the application of the waste hierarchy (as per the Waste (England and Wales) Regulations 2011). Had it done so, the development would have been far more consistent with the thrust of Government policy

in relation to waste management and a circular economy. It would also have reversed the situation we find currently applies (whereby the Proposed Development results in an increase in GHG emissions).

We believe the Applicant's assessment of waste fuel availability is flawed in that it fails to account for extant government policy. Our own initial investigation suggests that with EfW capacity that is already operational, and either in commissioning or in construction (as of 2021) is already above what is required under plausible scenarios for the evolution in residual waste quantities in future years (consistent with Government Regulations and the implementation of various policy measures). Given there is no logic in consenting facilities with a proposed 40 year life to plug what will be only temporary shortfalls, then the application should be rejected. This would be consistent with draft NPS EN-w which clearly states '*The proposed plant must not result in over-capacity of EfW waste treatment at a national or local level'.*

Even if one felt there would be sufficient waste fuel available to the Proposed Development (and we think this highly unlikely), the slender merits of this proposal have to be set against the significant negative impacts of its going ahead, not least in respect of climate change.

Contents

1.0 Introduction

This Written Representation sets out grounds for objecting to the proposal made by the Applicant.

This document is structured as follows:

1. We consider the nature of the facility, and how its nature has a bearing on the factors that ought to be considered relevant in making a decision as to the Proposed Development (as a National Strategic Infrastructure Project (NSIP)).
2. It then considers the Proposed Development as it is has been proposed by the Applicant, taking into account relevant policy and law.
3. It then reviews the benefits claimed by the Applicant for the Proposed Development.
4. It then considers the relevance of Alternatives that the Applicant could have, but apparently has not, considered. It highlights the relevance, in the context of existing policy and law, of the consideration of such alternatives.
5. Finally, it considers the matter of the need for the development.

The document is supported by comments on specific documents in 5 separate Appendices as follows (these give further detail in respect of our objections, whilst also highlighting where we believe the Applicants statements are either misleading, or incorrect):

Appendix 1: Comments on Planning Statement (APP-091)

Appendix 2: Comments on WFAA (APP-094)

Appendix 3: Comments on Project Benefits Report (APP-095)

Appendix 4: Comments on ES Chapter 2: Alternatives (APP-029)

Appendix 5: Comments on ES Chapter 14: Climate (APP-041)

2.0 Issues of Relevance to Decision-Making

The Application for the Proposed Development, by virtue of it being for an EfW facility of capacity greater than 50MW capacity, is being considered as a Nationally Strategic Infrastructure Project (NSIP), having been accepted by the Planning Inspectorate on behalf of the Secretary of State to be treated as such.

2.1 Decision-making

NSIP applications are determined in accordance with the decision-making framework set out in s.104, of the Planning Act 2008, as amended. It is as well to highlight s.104 subsections (3)-(9)in full:

(3) The Secretary of State must decide the application in accordance with any relevant national policy statement, except to the extent that one or more of subsections (4) to (8) applies.

(4) This subsection applies if the Secretary of State is satisfied that deciding the application in accordance with any relevant national policy statement would lead to the United Kingdom being in breach of any of its international obligations.

(5) This subsection applies if the Secretary of State is satisfied that deciding the application in accordance with any relevant national policy statement would lead to the Secretary of State, or the Commission, being in breach of any duty imposed on it by or under any enactment.

(6) This subsection applies if the Secretary of State is satisfied that deciding the application in accordance with any relevant national policy statement would be unlawful by virtue of any enactment.

(7) This subsection applies if the Secretary of State is satisfied that the adverse impact of the proposed development would outweigh its benefits.

(8) This subsection applies if the Secretary of State is satisfied that any condition prescribed for deciding an application otherwise than in accordance with a national policy statement is met.

(9) For the avoidance of doubt, the fact that any relevant national policy statement identifies a location as suitable (or potentially suitable) for a particular description of development does not prevent one or more of subsections (4) to (8) from applying.

The relevant National Policy Statements (NPSs), as per subsection 3 above, are, in this case, the National Policy Statement for Energy (EN-1), the National Policy Statement for Renewable Energy Infrastructure (EN-3), and the National Policy Statement for Electricity Networks Infrastructure (EN-5).

2.2 Implications of Nature of EfW for Decision-making

The nature of the Proposed Development needs to be considered. EfW facilities are a very particular case of power generating installation. First of all, they are not, first and foremost, power generating facilities: they are installations whose primary objective is the treatment of waste. This is recognised as such in EN-3 (para 2.5.18):

> ***Waste combustion plants are unlike other electricity generating power stations*** *in that they have two roles: the principal purpose being treatment of waste; and secondly the recovery of energy. The commercial rationale for waste combustion plants will include both the gate fee received per tonne of waste handled and income received from energy recovery.*

One of the consequences of their having two roles is that they are strangely untouched by the various policies mentioned in NPS EN-1 that are intended to promote decarbonisation of the power sector, both those mentioned in the extant NPS and the draft in the process of being finalised. Also, the Industrial Emissions Directive,[1] which informs permitting of incineration facilities, indicates that where installations covered by the IED are also included under the EU-(now UK-)ETS, no consideration needs to be given to GHGs in the BAT (Best Available Technology) Reference documents. Article 9 of the IED addresses the overlap between installations covered by the IED, and those under the Scope of Directive 2003/87/EC (the Emissions Trading Scheme Directive). It states:

> *1. Where emissions of a greenhouse gas from an installation are specified in Annex I to Directive 2003/87/EC in relation to an activity carried out in that installation, the permit shall not include an emission limit value for direct emissions of that gas, unless necessary to ensure that no significant local pollution is caused.*

[1] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).

2. For activities listed in Annex I to Directive 2003/87/EC, Member States may choose not to impose requirements relating to energy efficiency in respect of combustion units or other units emitting carbon dioxide on the site.

In essence, the Article seeks to address the 'overlap' between limit values in permits, and the economic incentive implied by the EU (and by implication, the UK Emissions Trading System (ETS)). Despite paragraph 1 above appearing to allude to the desirability of including GHG limit values for installations outside the ETS – including, in the UK, incineration - the IED and the associated BREF Document for incineration and the BAT Conclusions for incineration[2] include no discussion of, for example, limiting GHG emissions by, for example, sorting out fossil-derived plastics (see below).

EfW facilities are also very unusual in that whilst some of the power they generate – the portion derived from non-fossil waste fuels - is regarded as 'renewable', that is not true of all the power they generate. EfW facilities also incinerate – without exception (they would be biomass installations otherwise) – fossil-derived waste fuels (both 'plastics' in the conventional form, as well as a large (and growing) share of textiles, and varying proportions of waste electrical and electronic goods, furniture, etc.), alongside those of non-fossil origin. They generate energy from both fossil and non-fossil fuels. The parent company of the applicant puts it thus: [3]

they are not used primarily to generate energy, but rather to fulfil the waste disposal mandate. Typically, half the waste results from biogenic sources; this share therefore counts as renewable.

EfW facilities – to the extent that they are sources of renewable energy, are to a roughly equal extent, fossil-fuel powered facilities.

Whilst NPS EN-1 indicates that any applicant proposing an NSIP does not have to demonstrate 'need' for energy, no part of waste policy and law has the effect of indicating that a proposal to incinerate waste for energy trumps the sensible application of the waste hierarchy. Indeed, draft NPS EN-3 states:

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[2] Commission Implementing Decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration.

[3] MVV (2022) MVV Sustainability Report 2022.

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.

2.10.5 The proposed plant must not result in over-capacity of EfW waste treatment at a national or local level.

The subsections 4-9 to s.106 of the Planning Act have great relevance in the case of this application. No part of waste legislation has the effect of indicating that a proposal to incinerate waste for energy trumps the sensible application of the waste hierarchy, and this is recognised in the Draft NPS EN-3. The changes therein carry weight, not only by virtue of their being in the draft NPS, but because they are a reflection of changes in waste policy and law over the period since NPS EN-3 was first drafted (it was finalised in 2011, just as the UK was transposing a revised Waste Framework Directive (2008/92/EC) into law, and for which Guidance had yet to be drafted), because of a desire to reduce residual waste, and because of the rapid growth in capacity for EfW over the last fifteen years.

2.3 Climate Change Impacts of EfW

The climate change impacts of incineration are completely unlike those of the other renewable energy technologies considered under EN-3. Indeed, it could reasonably be argued that unless specific efforts were made to remove the fossil-derived fraction from the waste to be incinerated at an EfW facility, then such facilities are as much 'fossil fuel' power stations as they are sources of renewable energy (see the extract from MVV's Sustainability report above). This is not to seek to challenge the NPS's – rather, the intention is to draw attention to the relevance of other policies and enactments which give effect the Government policy.

The other characteristic of EfW facilities that distinguishes them from all other sources of power, and renewable power, under the NPS's is the fact that they use, as their fuel, something which is available to them only if a number of other possible purposes for the use of the fuel have not been found. This is the very nature of the waste hierarchy, which lies at the cornerstone of the EU Waste Framework Directive (2008/92/EC, as amended) and which was transposed into English and Welsh law through

the Waste (England and Wales) Regulations 2011.[4] These Regulations are also supported by Guidance which, unfortunately, has not been updated for many years (despite the expressed intent within the Guidance to review it annually).[5] The essence of the waste hierarchy is that policy and law should progressively push waste up the waste management hierarchy. The nature of technical and technological change is that the possibilities for doing so change over time. In addition, there is growing appreciation of the need to formulate policy and law to help ensure that the design of products and packaging facilitates reuse (of the product, or of parts thereof) and recycling at end-of-life. The movement of waste up the hierarchy is, therefore, a dynamic process. Landfill lies at the bottom of the waste hierarchy. Incineration – where it qualifies as recovery by exceeding a threshold (the R1 criterion) set in Annex II of the Waste Framework Directive – sits one rung above landfill on the waste hierarchy. It should be noted that this placing of incineration above landfill is a quirk of EU legislation:[6] many non-EU OECD countries lump the two together, notably for the purposes of regulating trans-frontier shipments of waste.[7]

It is recognised that reducing the amount of waste which remains after citizens and businesses have had the opportunity to sort waste is a sensible objective. The aim is to minimise the amount of waste to be sent to either landfill of incineration – both being considered 'leakage' of materials from useful application in a circular economy. The Environment Act 2021 lays the ground for a range of measures to be taken in respect of waste, and related to the Act, The Environmental Targets (Residual Waste) (England) Regulations 2023 came into force on January 30 2023. As noted above, the draft NPS EN-3 includes, among its changes

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[4] The Waste (England and Wales) Regulations 2011, S.I. 2011 No. 988. See also The Waste (Circular Economy) (Amendment) Regulations 2020, S.I. 2020 No.904.

[5] Defra (2011) Guidance on Applying the Waste Hierarchy, June 2011.

[6] I have described elsewhere how the EU stumbled into this situation.

[7] The relevant OECD Guidance Manual notes two definitions for R1, as does Annex IC of the EU Regulation:

Use as a fuel (other than in direct incineration) or other means to generate energy (Basel/OECD)

Use principally as a fuel or other means to generate energy (EU)

See OECD (2009) Guidance Manual for the Implementation of Council Decision C(2001)107/Final, as Amended, on The Control of Transboundary Movements of Wastes Destined for Recovery Operations, Paris: OECD, [redacted]

(paragraph 2.10.5), that new EfW must not result in over capacity of EfW waste treatment at a national or local level.

The draft revised EN-1 updates the policy context for new power development. Para 2.4.5 references the Emissions Performance Standard (EPS) as follows:

> *The EPS is a regulatory backstop to ensure that new fossil fuel-fired electricity generation contributes to electricity security of supply in a manner consistent with the UK's decarbonisation objectives. It places a limit on the carbon dioxide emissions produced by fossil-fuel generation plants, which is currently set at of 450gCO2/kWh for those plants above 50Mwe operating at baseload and which received development consent after 18 February 2014.*

The EPS was introduced in Chapter 8 of the Energy Act 2013. It applies to a generating station which uses fossil fuel, or fuel produced by gasification plant. Section 61 defines a fossil fuel as:

> *(a) coal;*
>
> *(b) lignite;*
>
> *(c) peat;*
>
> *(d) natural gas (within the meaning of the Energy Act 1976);*
>
> *(e) crude liquid petroleum;*
>
> *(f) bitumen;*
>
> *(g) any substance which–*
>
> > *(i) is produced directly or indirectly from a substance mentioned in paragraphs (a) to (f) for use as a fuel, and*
> >
> > *(ii) when burned, produces a greenhouse gas (within the meaning given in section 92 of the Climate Change Act 2008);*

The Applicant has conducted a *Waste Fuel* Availability Assessment. Waste plastic, or waste textiles of fossil origin could reasonably qualify as a fossil fuel under (g) (i) above. That being the case, an EfW facility which is an NSIP should be required to meet the EPS standard of 450g CO_2/kWh. Whether or not waste plastics and textiles fall under the definition of 'fossil fuel', the more relevant point is that this limit has been set as a means to ensure that whist the UK may still need fossil fuel power stations (not least as a dispatchable source of power to 'match' the growing fleet of intermittent renewable sources (such as wind and solar)), the Government intends to limit the carbon intensity of generation from such sources. It would be odd, after all, if 'renewable sources' were deemed to be exempt

from a carbon intensity standard which is designed to limit emissions from fossil fuel power stations. In reality, none of the Renewable Energy facilities under NPS EN-3 would exceed the NPOS threshold, with one notable exception: that exception is EfW in cases where the facility makes no attempt to remove fossil-derived plastics from the waste received at the site. This is why the matter of the design of the installation and the consideration of relevant alternatives is also an essential issue that should affect the decision making as regards the Proposed Development.

2.4 Alternatives

The Waste Hierarchy is essentially a matter of choosing between competing (in the market) alternatives. It is not, though, a simple choice where each option is to be considered 'equally attractive'. Not only does policy and legislation reflect (and to an increasing extent) the hierarchy as a priority ordering for managing waste, but those generating, holding and managing waste have duties under the Waste (England and Wales) Regulations 2011 to manage waste in accordance with that priority ordering. To the extent that policy and law enshrines the hierarchy as a priority ordering, so it does become crucial to understand whether any Proposed Development properly reflects the potential for moving waste up the hierarchy.

Technologies, and the possibilities they present, change over time. Twenty years ago, the concept of seeking to derive significant recyclables of marketable quality by sorting 'recyclables' from mixed waste was discredited. Fast forward to today, and the technology has moved on apace, with the development in near infra-red sorting, allied to exponential increases in computational power, enabling accurate sorting of recyclable fractions, notably plastics, from mixed waste. The matter of sorting additional (after separate collection) recyclables from what was previously considered 'residual' waste is a hot topic in jurisdictions where incinerators are used to treat waste. In cities such as Oslo and Copenhagen, it is recognised that burning plastics in incineration facilities is not consistent with meeting challenging targets for reducing greenhouse gas emissions. For this reason, the use of such sorting systems for extracting additional materials from mixed waste is rapidly gaining traction across Europe. One recent study has suggested that it will be difficult for EU member states to meet their

packaging waste recycling targets for plastics without deploying such facilities.[8]

NPS EN-1 states, regarding Alternatives:

> *4.4.1 As in any planning case, the relevance or otherwise to the decision-making process of the existence (or alleged existence) of alternatives to the proposed development is in the first instance a matter of law, detailed guidance on which falls outside the scope of this NPS. From a policy perspective this NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option.*
>
> *4.4.2 However:*
>
> - *applicants are obliged to include in their ES, as a matter of fact, information about the main alternatives they have studied. This should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility;*

Regarding 4.4.1 above, we would suggest that it is not possible for an Applicant to demonstrate that the duties placed upon it, by virtue of the Waste (England and Wales) Regulations 2011, have been met without demonstrating a proper consideration of alternative design configurations, taking the hierarchy into account.

[8] Eunomia (2023) Mixed waste sorting to meet the EU's Circular Economy Objectives, Report for Reloop and Zero Waste Europe, February 2023.

3.0 Development as Proposed: Key Issues

3.1 Slowing the Pace of Decarbonisation of Power

In order to contribute to decarbonisation of the grid, a basic requirement is that the proposal would have to generate power at a carbon intensity lower than the prevailing grid average. In the context of UK power generation, notwithstanding its status as an NSIP, the application contributes marginally to the UK's overall power (and heat, if used) generation.

The proposal generates, according to the Applicant, 440,000 MWh of electricity. In doing so, it emits, again according to the applicant, 273.33 thousand tonnes of CO_2. This would imply that the proposal will generate power at a carbon intensity of 621g CO_2 / kWh. One has to go far back in time to find a year when the average carbon intensity of power generation was higher than this. If the applicant is correct, and with a three year build time, it manages to have the facility operational by late 2026, then the carbon intensity of the grid average supply of electricity is expected to have fallen to between 67g CO_2/kWh (2027) and 92g CO_2/kWh (see Table 1).[9]

This proposal will clearly do the opposite of decarbonising UK power generation. It will be far more carbon intense than even the remaining fossil-derived power generation in the UK. It exceeds the EPS, discussed above, which was applied to fossil fuel in the Energy Act 2013. It is not credible to repeatedly invoke the Government's expressed desire to deliver more renewable electricity as a means to decarbonise power generation as justification for the need for a facility that generate powers, but does so at a carbon intensity which far exceeds the level that fossil-fuel powered facilities are expected to stay below.

[9] See Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal [redacted]

Table 1: Electricity emissions factors to 2100, kgCO_2e/kWh

Year	Long-run marginal				Grid average			
	Consumption-based			Generation-based	Consumption-based			Generation-based
	Domestic	Commercial/ Public sector	Industrial		Domestic	Commercial/ Public sector	Industrial	
2010	0.389	0.382	0.375	0.357	0.499	0.490	0.480	0.457
2011	0.384	0.377	0.370	0.351	0.479	0.471	0.462	0.438
2012	0.377	0.370	0.363	0.344	0.530	0.520	0.510	0.483
2013	0.368	0.361	0.355	0.336	0.493	0.484	0.475	0.450
2014	0.361	0.355	0.348	0.329	0.443	0.434	0.426	0.403
2015	0.351	0.344	0.338	0.320	0.370	0.364	0.357	0.338
2016	0.340	0.334	0.328	0.311	0.296	0.291	0.285	0.271
2017	0.330	0.324	0.318	0.301	0.265	0.260	0.255	0.242
2018	0.319	0.313	0.307	0.291	0.246	0.241	0.237	0.224
2019	0.306	0.301	0.295	0.280	0.222	0.218	0.214	0.203
2020	0.293	0.288	0.283	0.268	0.197	0.194	0.190	0.180
2021	0.279	0.274	0.269	0.255	0.217	0.213	0.209	0.198
2022	0.264	0.260	0.255	0.241	0.158	0.155	0.152	0.144
2023	0.248	0.244	0.239	0.227	0.146	0.143	0.140	0.133
2024	0.231	0.227	0.223	0.211	0.151	0.149	0.146	0.138
2025	0.213	0.209	0.205	0.195	0.131	0.129	0.127	0.120
2026	0.193	0.190	0.186	0.177	0.098	0.096	0.095	0.090
2027	0.172	0.169	0.166	0.157	0.073	0.072	0.070	0.067
2028	0.150	0.147	0.144	0.137	0.063	0.062	0.061	0.058
2029	0.126	0.124	0.121	0.115	0.054	0.053	0.052	0.049
2030	0.100	0.098	0.096	0.091	0.049	0.049	0.048	0.045
2031	0.083	0.082	0.080	0.076	0.042	0.041	0.040	0.038
2032	0.069	0.068	0.067	0.063	0.033	0.032	0.032	0.030
2033	0.058	0.057	0.056	0.053	0.026	0.025	0.025	0.024
2034	0.048	0.047	0.046	0.044	0.021	0.020	0.020	0.019
2035	0.040	0.039	0.039	0.037	0.020	0.020	0.019	0.018

Year	Long-run marginal				Grid average			
	Consumption-based			Generation-based	Consumption-based			Generation-based
	Domestic	Commercial/ Public sector	Industrial		Domestic	Commercial/ Public sector	Industrial	
2036	0.033	0.033	0.032	0.030	0.020	0.019	0.019	0.018
2037	0.028	0.027	0.027	0.025	0.018	0.018	0.018	0.017
2038	0.023	0.023	0.022	0.021	0.018	0.018	0.017	0.016
2039	0.019	0.019	0.019	0.018	0.017	0.017	0.016	0.015
2040	0.016	0.016	0.015	0.015	0.016	0.016	0.015	0.015
2041	0.015	0.015	0.015	0.014	0.015	0.015	0.015	0.014
2042	0.015	0.014	0.014	0.013	0.015	0.014	0.014	0.013
2043	0.009	0.009	0.009	0.008	0.009	0.009	0.009	0.008
2044	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
2045	0.008	0.008	0.008	0.007	0.008	0.008	0.008	0.007
2046	0.008	0.008	0.007	0.007	0.008	0.008	0.007	0.007
2047	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
2048	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
2049	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
2050	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2051	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2052	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2053	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2054	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2055	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2056	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2057	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2058	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2059	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2060	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2061	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2062	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2063	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002

Year	Long-run marginal				Grid average			
	Consumption-based			Generation-based	Consumption-based			Generation-based
	Domestic	Commercial/ Public sector	Industrial		Domestic	Commercial/ Public sector	Industrial	
2064	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2065	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2066	0.003	0.002	0.002	0.002	0.003	0.002	0.002	0.002

Source: Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal data-tables-1-19.xlsx (live.com)

To the extent that Government saw fit in the context of its Energy and Climate Strategy to set a ceiling on emissions from fossil fuel power generators, it would be illogical not to apply the same threshold to EfW (not least because the target could be met through use of advanced sorting systems discussed below). It is all the more important to do so since the various policies which the draft NPS-EN-1 sets out as applying to power generation – such as the UK-ETS - do not apply to EfW. If such a limit is applied even to facilities already included within the UK-ETS, it surely matters that the carbon intensity of generation from the Proposed Development is so high. It was for this reason, after all, that the Climate Change Committee's report noted:[10]

> *'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'.*

3.2 A Worsening of Climate Change Outcomes

In Appendix 5, we review the Applicant's assessment of the climate change impacts of the Proposed Development. Based on our review of the WFAA in Appendix 2, we question the validity of the Applicant's use of landfill as the only relevant comparator.

Nonetheless, we found the Applicant's analysis to suffer from two methodological flaws:

1. Given that the CO2 emissions from the incinerator that come from non-fossil sources are rated as zero, the analysis should have credited the landfill with sequestering the non-fossil carbon that is not emitted as either methane of carbon dioxide:
2. The analysis chose to assume that the carbon intensity of the source of power generation displaced by incineration / landfill remained constant over time. This is incorrect and inconsistence with Guidance from central government regarding appraisal of impacts of various policies and projects.

[10] Climate Change Committee (2020) Progress Report to Parliament, June 2020, [redacted]

We corrected for the first of these errors, keeping all else constant. The results are as shown in Table 2.

Table 2: Effect of Including Sequestration of Biogenic CO2 Associated with Landfill

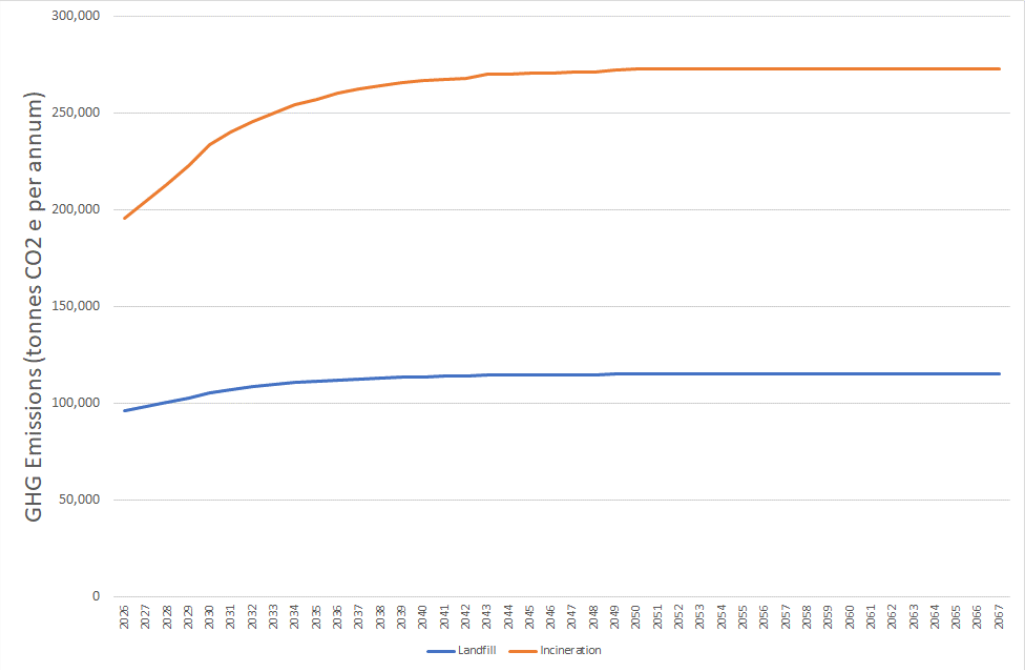
	Landfill (tonnes CO_2e)	Incineration (tonnes CO_2e)
Process Emissions (tCO_2e)	287,234	273,326
Avoided CO_2 @ 182g/kWh	-20,035	-80,080
Net emissions (tCO_2e) *(Applicant's result)*	267,199	193,246
Carbon Sequestration in Landfill	-171,846	
Net Emissions (tCO_2e), Corrected to Include Sequestration of Non-fossil CO_2 in Landfill	95,353	193,246

The figures change profoundly: the incinerator is no longer the lower emitter of greenhouse gases (expressed in terms of CO_2e).

We then implemented the second change also. Instead of using a constant figure for CO2 'saved' per unit of energy generated ($182gCO_2/kWh$), we used the long-run marginal carbon intensity related to generation (from Tables provided by what was then BEIS).[11] The annual emissions (net of 'avoided' CO_2 from power generation) from incineration and landfill evolve over time as shown in Figure 1. As power decarbonises, the credit per unit of power declines. This exerts a stronger effect on the outcome for incineration for the simple reason that it generates more energy. Over the 40 year life of the facility, the increase in emissions associated with incinerating rather than landfilling can be calculated as 5.934 million tonnes.

[11] Table 1 in Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal [redacted]

Figure 1: Evolution in Annual GHG Emissions from Incineration and Landfill Using Figures Recommended by Government for Use in Appraisal (tonnes CO_2e)



The applicant claims, in APP-0041 (ES Chapter 14, Climate), at para 14.9.48-49 (based on its own incorrect figures):

> *14.9.48 This assessment has established that the Proposed Development net GHG emissions reduction will equate to 0.004% of the UK's carbon budget for the fourth carbon budget, 0.02% of the UK's fifth carbon budget and 0.03% of the sixth carbon budget. In 2050 when the UK net carbon budget is zero (and the Climate Change Committee state that waste sector emissions can be reduced by 75% from today's levels44), the Proposed Development will have a beneficial impact equivalent to -67ktCO2e.*
>
> *14.9.49 In accordance with IEMA guidance36 for defining significance (see **Table 14.19 Significance criteria for the GHG assessment**) it is concluded that the GHG impact of the Proposed Development will have a **beneficial Significant effect**. The Proposed Development has net GHG emissions below zero, causing an indirect reduction in atmospheric GHG emissions which has a positive impact on the UK Government meeting its carbon budgets/targets.*

The highlighting in the above is the applicant's.

Given that the corrected figures reveal that GHG impact of the Proposed Development will be of a great magnitude, but of the opposite sign, one

cannot conclude other than that the Proposed Development will have a **negative Significant effect** (or that relative to the Proposed development, it is doing nothing that will have the **beneficial Significant effect**).

At paragraph 5.3.6, Draft NPS EN-1 states that "*In light of the vital role energy infrastructure plays in the process of economy wide decarbonisation, the SoS accepts that there are likely to be some residual emissions from construction and decommissioning of energy infrastructure. Government has determined that operational GHG emissions are not reasons to prohibit the consenting of energy projects and the SoS does not need to assess individual applications for planning consent against operational carbon emissions and their contribution to carbon budgets, net zero and the UK's international climate commitments*". We have highlighted above that this reasoning relates, in part, to those installations already included within other 'power sector-wide' measures, such as the UK-ETS, under which an installation producing power whilst emitting fossil CO_2 would be required to pay for allowances to cover those emissions (or invest in carbon capture utilisation / storage). EfW installations are not covered by the EU-ETS, and have no incentive, currently, to reduce GHG emissions.

The NPPF and local planning policy require that development proposals include measures to minimise GHG emissions. At paragraph 152, the NPPF states that "*The planning system should support the transition to a low carbon future in a changing climate…it should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions… and support renewable and low carbon energy and associated infrastructure*". It also requires in paragraph 154(b) that new development should be planned for in ways that "*can help to reduce greenhouse gas emissions, such as through its location, orientation and design*". This is relevant to the matter of alternatives considered below). The fact that the Proposed Development does not reduce GHG emissions, but increases them, ought to carry great weight in the decision-making process, notwithstanding the comments in draft NPS-EN1, which might reasonably apply to all other types of power installation (especially the renewable ones), not least where fossil-powered installations are subject to the EPS.

Indeed, Subsection (6) of s.104 of the Planning Act 2008 clearly states that one of the instances where the Secretary of State can decide upon an application in a manner other than through reference to the NPSs is where '*the Secretary of State is satisfied that the adverse impact of the proposed development would outweigh its benefits*.' The climate change impacts of a proposed development might reasonably be expected to weigh heavily in considering the adverse impact thereof. It would follow that whilst the NPS might indicate that operational emissions are not a reason

'*to prohibit the consenting of energy projects and the SoS does not need to assess individual applications for planning consent against operational carbon emissions and their contribution to carbon budgets, net zero and the UK's international climate commitments*', nor could they be considered irrelevant in decision making where the Proposed Development offers limited benefits, it is sensible, and in this case, we would argue, necessary to consider them in assessing the adverse impacts of a development.

Even the Applicant indicates, in its Environmental Statement, that the quantum of emissions by which landfill is better than incineration is significant. The problem is that whilst they had assumed the analysis favoured incineration relative to landfill, in fact, the opposite is true.

We must conclude that going ahead with the Proposed Development will have a significant negative impact on climate change. That is an excellent reason to have explored the operational GHG emissions (and impacts) of this Proposed Development. The Applicant itself has indicated that the quantum of the effect is significant.

4.0 Assessment of Benefits of the Proposed Application

The relevance of considering the Applicant's assessment of the benefits of the Proposed Development has been highlighted above. Where the Secretary of State '*is satisfied that the adverse impact of the proposed development would outweigh its benefits,*' then decision making need not reflect solely what is within the relevant NPS's.

We review the Applicants report in more detail in Appendix 3. In summary, however, we find:

The claim is made that the Proposed Development will make a significant contribution to the British Energy Security Strategy, In doing so, it references extracts related to nuclear power. (It also misleadingly uses the term efficiency where it actually means 'availability'.) Ironically, the 90% availability undermines the nature of the claim that seems to be being made – that EfW can 'match' for intermittency of some renewables. This is unlikely since – as the document correctly states – the Proposed Development will contribute a small (far smaller than a nuclear facility) amount to baseload capacity by burning waste on a more or less continuous basis. It will not offer 'dispatchable' power which is the type necessary to address intermittency. As such gas fired power is likely to remain the source of dispatchable power, and it seems unlikely that the facility will have a discernible effect on fuel / power imports.

Claims are made for the quantum of power generated. In its Climate report (see our Appendix 5), the applicant considers the waste that would be combusted to be waste that would otherwise have been landfilled (a point with which we disagree). It estimates that had the waste been landfilled, then it would have led to generation from landfill gas of around one quarter of the power that the Proposed Development will generate. That energy would be considered wholly renewable, and the figure is derived using a net efficiency of 36% for the conversion of gas to electricity via the landfill gas engine, which is not the most optimistic figure that could have been chosen.

The Proposed facility is estimated to generate a level of renewable energy likely to be roughly half the total of 440,000 MWh, or around

220,000MWh.[12] If one accepts the Applicant's contention that that the alternative is landfill, then the use of the waste which would otherwise be landfilled leads to a reduction in renewable energy derived from landfilling waste of (according to the applicant) 110,085MWh. In other words, the net contribution to renewable power is around 110,000 MWh (equivalent to around 14MW of additional power).

Along with this net contribution to renewable energy comes a contribution from the fossil fuel element (the plastics, and the increasing share of textiles which are fossil-derived, as well as plastic shares of various household goods, including unrecycled WEEE and furniture). Of the additional 330,000MWh of renewable and non-renewable electricity generated, therefore, around two-thirds is purely derived from fossil fuels. The carbon intensity of this additional fraction is enormous: burning plastics in the proposed incinerator, with a net efficiency of around 30%, is rather like burning oil in a facility with a generation efficiency that is roughly half that of a modern gas fired power station. The claimed benefits in terms of power use are, therefore, both too high (the net change is lower) and associated with a high carbon intensity.

The document claims a carbon saving relative to landfill which we have shown, in Appendix 5 and above, is not correct: the opposite is in fact true.

We have some doubts regarding the ability of the Proposed Development to deliver the heat claimed (even if it is ever used, and we doubt that

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[12] Note that whatever the applicant's selective choice of assumptions used to derive a figure for the fossil carbon fraction of the waste combusted (which is definitely on the low side of what would be expected - see UKWIN (2021) *Good Practice Guidance for Assessing the GHG Impacts of Waste Incineration*, July 2021, available from [redacted]), the proportion of *energy* derived from fossil derived materials is not the same as the relative contribution of carbon to the emissions (though it is expected to be similar). The Applicant's parent company, MVV, notes in its Sustainability Report: '*Typically, half the waste results from biogenic sources; this share therefore counts as renewable*' (MVV (2022) *MVV Sustainability Report 2022*). This echoes the author's experience - the figure may be above or below this value, and will fluctuate with changes in composition as consumption patterns change, recycling rates increase (as they are planned to), and as the relative proportions of different constituents of the waste stream change also. The figure of 50% provides a reasonable rule of thumb for such calculations. Note though, that with the application of advanced sorting of leftover mixed waste - which is not proposed by the applicant - the fossil carbon fraction of what is combusted would decline significantly.

companies seeking to decarbonise their heat supply would find this an attractive source) with zero penalty on the power generation side. There is no guarantee that there will be manty off-takers for the heat, and the planned delivery mechanism seems designed to be 'flexible' (i.e. cheap, as it might, potentially, not be well utilised).

The claimed benefit as regards energy security comes close to suggesting implying that all waste should simply be combusted in the interests of energy security. Were that indeed to happen, the embodied energy in materials would be lost, and the overall demand for energy would increase as a result (relative to the counterfactual where recycling and reuse are pursued, in line with the waste hierarchy);

We dispute the claim that it has been demonstrated that there will be sufficient waste available for the Proposed Development to operate (unless the intention is to undermine the hierarchy) (see Appendix 2).

An argument is made in respect of proximity, but the Applicant's own Waste Fuel Availability Assessment relies upon the Proposed Development being able to access waste within a catchment whose boundaries are artificially drawn to reflect a 2-hour journey. There is, at the same time, no indication as far as we could see of where the hazardous air pollution control residues are planned to be sent.

The claim to be managing waste in line with the hierarchy reflects a very limited perspective on the waste hierarchy. Neither the WFAA, nor the Planning Statement, let alone the assessment of Benefits, seem to have acknowledged or appreciated the significance of the Environmental Targets (Residual Waste) (England) Regulations,[13] for example.

We would agree with the applicant that applying carbon capture and storage would be beneficial, but the facility is proposed only to be carbon capture ready.

There are likely to be local economic benefits if the Proposed Development goes ahead, though the claimed contribution to employment should be considered in the context of a construction employment market that is rather over-heated at present. There would be a contribution to construction activity, clearly, and it would likely have local (temporary) multiplier effects, but any claim to support additional employment might be more difficult to

[13] The Environmental Targets (Residual Waste) (England) Regulations.

sustain given the existing demand for construction labour (which would make the 3 year build timetable somewhat challenging to meet).

There is, on the other hand, no assessment of the (negative) value associated with the disamenity that is likely to come in the stead of the facility.

5.0 Consideration of Alternatives (and the Waste (England and Wales) Regulations)

We argued above that it is difficult to demonstrate compliance with the waste hierarchy without considering 'alternatives', and that it would be very difficult indeed for any application to demonstrate alignment with the hierarchy without such consideration.

Part 5 of the Waste (England and Wales) Regulations 2011 places duties on those who import, produce, collect, transport, recover or dispose of waste. On the transfer of waste, those actors must:

> *"take all such measures available to it as are reasonable in the circumstances to apply the following waste hierarchy as a priority order–*
>
> *(a) prevention;*
>
> *(b) preparing for re-use;*
>
> *(c) recycling;*
>
> *(d) other recovery (for example energy recovery);*
>
> *(e) disposal.*
>
> *(2) But an establishment or undertaking may depart from the priority order in paragraph (1) so as to achieve the best overall environmental outcome where this is justified by life-cycle thinking on the overall impacts of the generation and management of the waste.*
>
> *(3) When considering the overall impacts mentioned in paragraph (2), the following considerations must be taken into account–*
>
> *(a) the general environmental protection principles of precaution and sustainability;*
>
> *(b) technical feasibility and economic viability;*
>
> *(c) protection of resources;*
>
> *(d) the overall environmental, human health, economic and social impacts.*

At the point where the waste which the applicant plans to receive is transferred, it would need to demonstrate that it has applied that duty.

Given the nature of the proposal, and given also the nature of the waste which the applicant plans to have transferred to it, we contend that the applicant fails in its duty to apply the waste management hierarchy. It would be consistent with that duty to introduce a high-quality, modern sorting facility for residual waste prior to the incineration facility so as to deliver more material for recycling.

This might reasonably have been considered in the consideration of Alternatives (APP-029 Medworth CHP Limited Volume 6.2 ES Chapter 2 Alternatives). However, there is no evidence that this was ever considered.

Some of the waste which the applicant has presented as being 'non-recyclable' is clearly recyclable. The Applicant's parent company, MVV, indicates, in its Sustainability report:[14]

> *Using the materials and energy contained in waste makes a major contribution towards reaching the target of building an economy that is as circular as possible. The best solution should always be to design products in such a way that they can remain in the cycle on a permanent basis, for example due to recycling, and do not become non-recyclable waste.*

The Resources and Waste Strategy states (p.137):[15]

> *Residual waste is the mixed material that is typically incinerated for energy recovery or landfilled. Much of the products and materials contained in this waste could have been prevented, reused or recycled. This is inefficient not only because materials that hold value are being lost, but also incineration and landfill are the most expensive ways to treat waste. Understanding waste composition is fundamental to the Strategy's objectives of eliminating avoidable plastic waste over the lifetime of the 25 Year Environment Plan, working towards eliminating food waste to landfill by 2030 and eliminating avoidable waste by 2050.*

The above suggests that even if EfW might deal, at a given point in time, with waste which might otherwise be landfilled, that situation represents a static (time-bound) perspective. It is self-evident that if, at a given point in time, all waste landfilled was suddenly treated through EfW, then the only way to increase recycling (other things being equal) would be to reduce the amount of waste being sent to EfW. In short, it should not be assumed that EfW always deals with waste which would otherwise

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[14] MVV (2022) MVV Sustainability Report 2022.

[15] Defra (2018) Our Waste, Our Resources: A Strategy for England, 2018.

be landfilled. Policy and law make it absolutely clear that increasing recycling and reducing residual (i.e., waste which is generated but not recycled or reused) waste is, in fact, the express intention of Government.

Bearing this in mind, it is, in the year 2023 (let alone by 2026), demonstrably feasible to install sorting facilities with the potential to extract significant quantities of recyclables, most notably, plastics, but also metals, some paper and card, and glass (and textiles), at the front of an incineration facility. The costs of including sorting of glass are higher than for the other materials but the sheer scale of the Proposed Development is such that these costs would likely be readily sustained if the facility was installed with a view to sorting all 630,000 tonnes of waste that the applicant aims to receive.

Based on figures in existing reports, themselves based on detailed reviews of plant performance, the sorting of 630,000 tonnes of waste leftover after attempts by citizens and businesses to recycle would lead to:[16]

1. extraction of the order 80-120,000 tonnes of material sorted for recycling (of which I would estimate around 40-60,000 tonnes would be plastics);
2. reduction in the net calorific value of each tonne of the residual waste of the order 20%;
3. reduction in the total calorific content of the residual waste (relative to the initial 630,000 tonnes of input waste) of around 30%;
4. reduction in the net climate impact of managing each tonne of waste of the order 0.35 tonnes CO_2 per tonne of waste treated, with this declining as both electricity and (subsequently) materials manufacture decarbonises; and
5. reduction in the emissions of the facility overall by around 220,500 tonnes as a result.

Had this been considered, the system would have had a climate change performance better than the existing landfill, rather than it performing worse (see above).

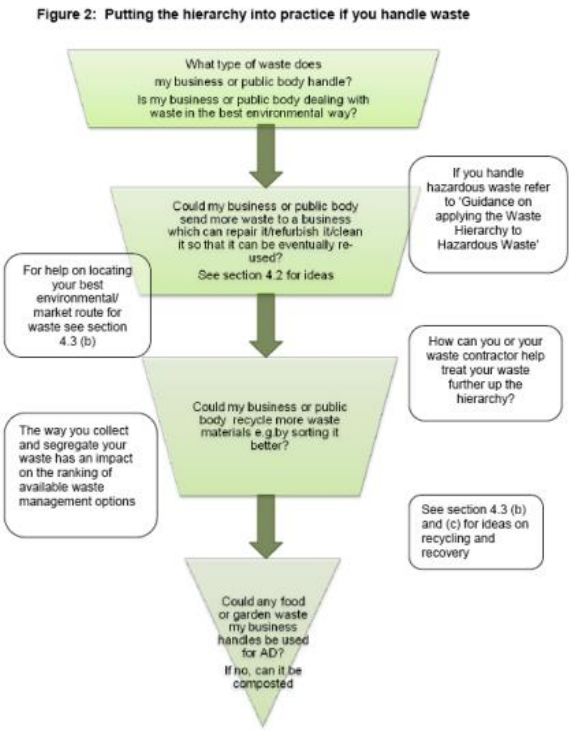
The EfW facility would, though, no longer qualify as an NSIP. As the quantity to be incinerated would be lower, and since each tonne would have a lower calorific value, it would likely generate (gross) around 45MW,

[16] Eunomia (2021) Waste in the Net-Zero Century: Testing the Holistic Resources System via Three European Case Studies, Report for TOMRA, July 2021; D. Hogg (2022) The case for sorting recyclables prior to landfill and incineration, Report for Reloop, June 2022.

delivering around 41MW (net) to users. Note, however, that a higher proportion of what is generated would be derived from non-fossil waste fuels, which NPS-3 indicates are a source of renewable energy.

Defra Guidance in respect of the waste hierarchy for those who handle waste is summarised in Figure 2 from p.11, reproduced below.[17]

Figure 2: Figure 2 from Guidance on Applying the Waste Hierarchy



The questions being asked of those who handle waste are instructive, notably:

- How can you or your waste contractor help treat waste further up the hierarchy?
- Could my business or public body recycle more materials e.g. by sorting it better?

In summary, the Applicant could have Proposed a Development that was designed to respect the waste hierarchy, and set a benchmark for the management of waste leftover after residents and businesses had engaged wit source separation of recyclables. Furthermore, the approach would have been consistent with the Government's objective of halving residual waste

[17] Defra (2011) *Guidance on Applying the Waste Hierarchy*, June 2011.

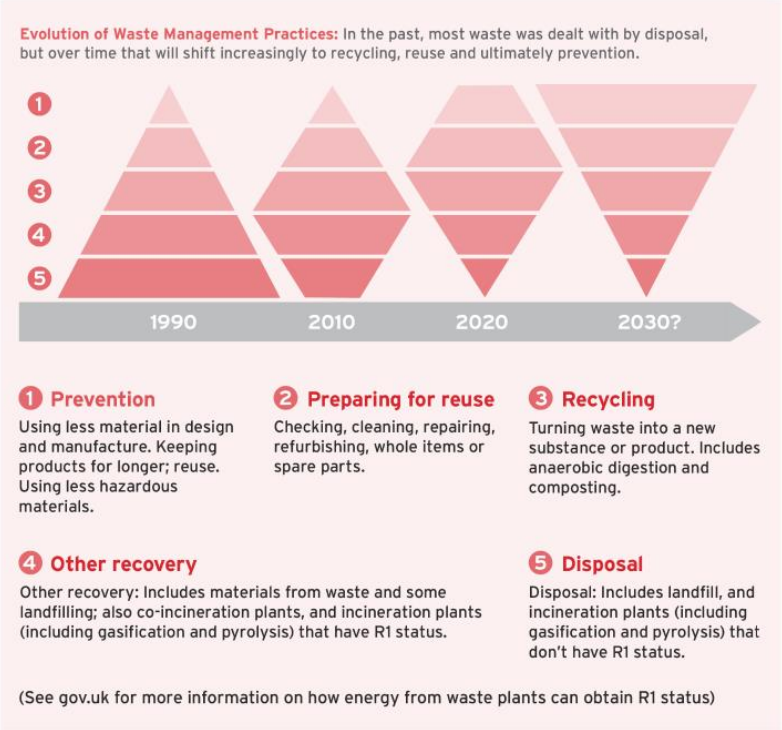
by 2042, and – had it been well designed – it would likely have made a significant contribution to supporting the meeting of recycling targets for especially plastic packaging.

6.0 Need for the Facility

The Waste Management Plan for England shows, graphically, the expected evolution of waste management in relation to the hierarchy on p15.[18]

Figure 3: Figure 2 from Waste Management Plan for England

Figure 2 Evolution of waste management practices



This also reflects the desire to halve residual waste and move waste management into the upper tiers of the hierarchy, in line with the principles of a circular economy.

We have reviewed the Applicant's Waste Fuel Availability Assessment (see our Appendix 2) and are of the view that it does not support the case for the Proposed Development. The designation of the spatial area for the 'local' (it is not very local) assessment is arbitrary and unnecessary;

[18] Defra (2021) *Waste Management Plan for England*, January 2021.

The WFAA does not seem to have attached any significance either to the Government's intention to halve residual waste by 2042, nor to the pointer in Draft NPS EN-3 (which merely aligns with policy and law) to the effect that:

> *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.*
>
> *2.10.5 The proposed plant must not result in over-capacity of EfW waste treatment at a national or local level.*

It would have been better to consider the national position prior to the local one rather than the other way round: notwithstanding the desirability of treating waste close to the place where it is generated, waste does move (sometimes, even, overseas) so that the test of capacity nationally is logically a more straightforward one (how local *is* 'local'?).

The assessment is generally backward, rather than forward looking;

Consistent with the absence of any meaningful consideration of alternatives which are more consistent with fulfilment of duties vis a vis the waste hierarchy, the WFAA frequently strays into language that suggests it has no faith in the possibility that Government objectives – on recycling, and presumably also, on residual waste - might be met.

We noted also that based on our own analysis, the capacity of EfW is continuing to grow, and figures as per 2021 were as in Table 3.

Table 3: EfW Capacity in Operation, Commissioning and Construction, 2021

	UK	England
Operating Capacity (2021)	16.370	14.870
In Commissioning	0.940	0.940
In Construction	3.745	2.703
Co-incineration (cement / lime kilns)	0.375	0.375
Total	21.450	18.908

Source: based on data in Tolvik (2022) UK Energy from Waste Statistics – 2021, May 2022.

To put these into context, the WFAA includes the following:

> *5.1.16 As it is assumed that the remaining waste was disposed to landfill, landfill rates of residual waste are estimated to be as follows:*

- *2019 - 27.5 million tonnes total residual waste arisings - (12.63 + 2.8) = 12.07 million tonnes of residual waste were sent to landfill.*
- *2020 - 26.8 million tonnes total residual waste arisings - (13.96 + 1.9) = 10.94 million tonnes of residual waste were sent to landfill.*

The above paragraph suggests that of 27.5 million tonnes of residual waste in 2019, 12.63 million tonnes were incinerated, and 2.8 million tonnes were exported as RDF, leaving 12.07 million tonnes being landfilled.

The figure for the quantity incinerated rose to 13.96 million tonnes in 2020, whilst the amount exported as RDF fell to 1.9 million tonnes, leaving 10.94 million tonnes being landfilled.

Table 3 indicates that capacity for incineration and co-incineration either operational, commissioned, or in construction, excluding any export of RDF, was 21.450 million tonnes in the UK, and 18.908 million tonnes in England. It seems increasingly likely that if - as Defra indicates - changes already in the pipeline lead to a reduction in residual waste of the order 30%, then consenting this facility will indeed lead to overcapacity for incineration.[19]

We already have far more than 50% of the 2019 quantity of residual waste being sent to EfW. The government has a target to halve residual waste by 2042. It is anticipating a significant drop (of around 30%) more or less by the time the Proposed Development would become operational. There is no benefit to consenting this Proposed Development. In light of the Regulations now seeking to halve residual waste from 2019 levels by 2042, this suggests that no more EfW is needed and that England and the UK are already approaching excess capacity.

In its June 2021 Progress Report to Parliament, the Climate Change Committee noted:[20]

> *'Decisions on…planning and expansion of waste incineration are not only potentially incompatible with the overall need to reduce [GHG] emissions but also send mixed messages and could undermine public buy-in to the Net Zero transition'.*

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[19] Defra (2022) Resource Efficiency and Waste Reduction Targets: Detailed Evidence Report, 28 April 2022.

[20] Climate Change Committee (2021) Progress Report to Parliament, June 2021

[redacted]

This message is one that the Scottish Government has taken on board recently, following a review of the role of EfW in the waste hierarchy.[21] It has accepted the recommendation from the review that 'no further planning permission for incineration facilities should be granted'.[22]

[21] Independent Review of the Role of Incineration in the Waste Hierarchy in Scotland (2022) *Stop, Sort, Burn, Bury - incineration in the waste hierarchy: independent review*, https://www.gov.scot/publications/stop-sort-burn-bury-independent-review-role-incineration-waste-hierarchy-scotland/documents/

[22] Scottish Government (2022) Putting Limits on Incineration Capacity, 16 June 2022. Putting limits on incineration capacity - gov.scot (www.gov.scot)

APPLICATION BY MEDWORTH CHP LIMITED

WRITTEN REPRESENTATION FOR RT HON. STEVEN BARCLAY MP

APPENDIX 1: COMMENTS ON VOLUME 7.1: PLANNING STATEMENT (APP-092)

Dr Dominic Hogg
[redacted]

March 2023

Summary

In this Appendix, we comment in more detail about various of the claims made in the Planning Statement (APP-092). The reason for looking more closely at the document is to challenge the Applicant's presentation of the project against existing policy and legislation.

We step through the Planning Statement Section by Section, highlighting:

1. Partial and misleading presentation of policy and legislation, as well as some very notable omissions such as The Environmental Targets (Residual Waste) (England) Regulations 2023, which although only recently passed, were consulted on last summer, and for which the ground was laid by the Environment Act 2021;
2. An unwarranted confidence that some matters of policy and law are demonstrated (and relevant) when they are not. Notable here is the Applicant's repeated reference to the role of its Proposed Development as contributing to decarbonisation and meeting carbon budgets targets. This is a serious distortion of the reality (see also our Appendix 5);
3. An unwarranted confidence that there is a need for the Proposed Development. Not least, given the lack of any appreciation of The Environmental Targets (Residual Waste) (England) Regulations 2023, the Applicant's Waste Fuel Availability Assessment is a poor attempt to demonstrate that the Proposed Development will not lead to a situation of excess capacity for EfW at a national (and, probably, also local) level (see also our Appendix 2);

We dispute the majority of the case made by the Applicant as it is presented in its Planning Balance and Conclusion. We dispute the Applicant's claim that is has demonstrated what is claimed at 5.2.2., and in particular, note that the Proposed Development is highly likely to prejudice the application of the waste hierarchy.

Were it to be consented, and were it ever to manage to generate the claimed 55MW of power for export, of which only half would be renewable, and if considered relative to landfill, only a quarter would be 'additional' renewable generation.

The Proposed Development is a climate change catastrophe. The benefits are slight, whilst the impacts would be significant and negative once operational, and the scale of disruption in the period taken to construct

and commission the facility would be disproportionate relative to the limited benefits.

Contents

1.0 Comments on the Planning Statement

In this Appendix, we comment on APP-092 - Medworth CHP Limited Volume 7.1 Planning Statement, sometimes referred to in what follows as the PS. These comments support the main case presented in the main Written Representation.

2.0 Section 1

The PS suggests, at 1.1.2, that the proposals will:

> *'recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial (HIC) waste each year'*

The applicant has nowhere demonstrated:

- That the waste it will use as fuel will be exclusively 'non-recyclable' waste. In the light of the Government's intention to halve residual waste by 2042, it is evident that some of the waste which is currently 'residual waste' is non 'non-recyclable' (not least since the Government has also set out its intent to increase recycling in the coming years);
- That such a quantity of waste would be readily available to it over even half of its suggested lifetime (see para 2.6.1 of the PS) of 40 years (and if it was able to source such a quantity, perhaps by charging lower fees to users than competitors, that this would not simply produce excess capacity elsewhere, implying limited additional electricity generation relative to the current one). The reasons are set out in our Appendix 2.

The PS states:

> *In conclusion, the Planning Statement confirms that the Proposed Development is in accordance with NPS EN-1, NPS EN-3 and NPS EN-5, as well as other important and relevant legislation and policy including the draft NPSs. It also demonstrates that the benefits of the scheme will outweigh the adverse impacts of constructing and operating the EfW CHP Facility and associated development.*

It would be odd, indeed, if the applicant were to say anything different. We highlight in this Appendix reasons why the scheme does not achieve this, and why the benefits are limited (see Appendix 3) even if the facility manages to source the waste it claims to be available, which we very much doubt for reasons indicated in Appendix 2 (we await the update to the Waste Fuel Availability Assessment with great interest).

3.0 Section 2: Proposed Development

At para 2.2.5, the PS states:

> *The EfW CHP Facility Site forms part of a wider industrial estate centred on Algores Way. The location of the EfW CHP Facility would be predominantly on an area of land currently operated as a waste and aggregates recycling facility and waste transfer station (WTS) and is accessed off Algores Way.*

We think it rather odd that the Applicant would seek to supplant a recycling facility with a recovery one. This seems, though, quite consistent with the broad thrust of the proposal, which is to place a stake in the ground for a large EfW facility which has the potential to undermine the ambition of UK Government to halving residual waste, as the Government has now enshrined in law, half way through the planned period of operation for the facility.

The Applicant states:

> *2.3.9 The EfW CHP Facility has been designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables. The CHP Connection Corridor runs along the eastern edge of the disused March to Wisbech Railway to Weasenham Lane with a spur enabling a CHP Connection to potential customers south of Weasenham Lane, including Lamb Weston. A pipe bridge would then take the CHP Connection over Weasenham Lane and the CHP Connection Corridor continues until it reaches the Nestlé Purina site.*
>
> *2.3.10 This CHP Connection would consist of a pipe to export steam and one to return the condensate (water) to the EfW CHP Facility, electrical and data cables can also be accommodated. The steam pipe would be located on a steel structure approximately 1.6m to 1.7m in height. At the point at which it would cross Weasenham Lane, it would be fixed to a pipe bridge measuring approximately 25m in length. The*

pipe bridge would have an approximate height of 7m, with a 5.5m clearance from the highway. Concrete foundations extending up to 2m below the ground would form the footings of the pipe bridge. To allow for expansion and contraction, approximately every 50-60 metres an expansion loop is located along the pipeline. perform a similar function to the expansion loops and consist of a section of corrugated pipe in the same alignment and at the same height as the rest of the pipeline.

We are rather surprised by the nature of this proposal. This proposes a pipe run at (roughly) head height to supply steam to potential users. If the facility intends to be in place for 40 years, then a better designed approach is surely warranted than one running at roughly head height mounted on steel. We question whether major businesses, themselves likely to be concerned to reduce their own GHG emissions, will find the offer of heat from the EfW attractive unless the facility was already equipped with carbon capture (and it will not be).

The PS states:

2.5.2 The EfW CHP Facility will be designed to accept residual household and industrial and commercial waste streams. The composition of residual waste received by the EfW CHP Facility, and consequently the energy generated, will vary; however, the capacity of the Facility is 625,600 tonnes per year. The EfW CHP Facility will have a generating capacity of more than 50MW. On average, approximately 60MWe is generated by the steam turbine, of which approximately 5MWe is consumed by the plant as the parasitic load, leaving up to approximately 55MWe as the net electrical output for export to local users and the electricity distribution network. Approximately 50MWth of usable steam (heat) energy would be available for export via the CHP Connection to users in the surrounding industrial estate.

As far as we are aware, the facility has no contracts with any of the local authorities from whose catchment it aims to source its feedstock. The facility would, therefore, have to attract waste from the 'spot' or 'merchant' market, where contracts / agreements tend to be of much shorter term. If the available quantity of waste is less than plentiful, it will, most likely, only acquire this quantity of waste if it keeps prices low, in which case, it may simply draw waste in from other facilities. The net contribution to generating capacity, therefore, has to be questioned.

Furthermore, if the Applicant managed to attract 635,000 tonnes of waste, notwithstanding the Applicant's claims that all this material would – in 2026 (the time at which the facility is intended to become operational (see

paras 2.4.1. and 2.5.1.) - be 'unrecyclable' is not substantiated by any evidence. Not only has Government committed to increase recycling from current levels to 65%, but the statutory target to halve residual waste by 2042 in the Environmental Targets (Residual Waste) (England) Regulations 2023 foresees that whatever residual waste is generated today, at least half will not be managed as residual waste in future. This has major ramifications for the applicant's proposal.[1] In seeking to reduce residual waste, in line the recently passed Regulations, it will be necessary to reduce waste generation, increase reuse, and increase recycling. What may be residual waste today cannot all be residual waste tomorrow if Government is to meet its target. Like the Waste Fuel Availability Assessment (see our Appendix 2), the Planning Statement is backward looking, and fails to consider not only what existing policy and law may imply for its Proposed Development, but what that policy and law might have implied for its own design (see Appendix 4).

Part 5 of the Waste (England and Wales) Regulations 2011 place duties on those who import, produce, collect, transport, recover or dispose of waste. On the transfer of waste, those actors must:

> *"take all such measures available to it as are reasonable in the circumstances to apply the following waste hierarchy as a priority order–*
>
> *(a) prevention;*
>
> *(b) preparing for re-use;*
>
> *(c) recycling;*
>
> *(d) other recovery (for example energy recovery);*
>
> *(e) disposal.*
>
> *(2) But an establishment or undertaking may depart from the priority order in paragraph (1) so as to achieve the best overall environmental outcome where this is justified by life-cycle thinking on the overall impacts of the generation and management of the waste.*
>
> *(3) When considering the overall impacts mentioned in paragraph (2), the following considerations must be taken into account–*
>
> *(a) the general environmental protection principles of precaution and sustainability;*

[1] The Environmental Targets (Residual Waste) (England) Regulations 2023

(b) technical feasibility and economic viability;

(c) protection of resources;

(d) the overall environmental, human health, economic and social impacts.

At the point where the waste which the applicant receives, it needs to demonstrate that it has applied that duty. Given the nature of the proposal, and given also the nature of the waste which the applicant plans to have transferred to it, we contend that the applicant would be failing in its duty to apply the waste management hierarchy.

Some of the waste which the applicant has presented as being 'non-recyclable' is clearly recyclable (the composition categories used by the Applicant in its Climate assessment even include a category 'recyclable paper'). It is, in the year 2023, entirely possible to install sorting facilities with the potential to extract significant quantities of recyclables, most notably, plastics, but also metals, some paper and card, and also glass. We highlight the likely benefits of doing so in our main Written Representation, as well as the fact that if it had done so, then the facility would generate (gross) around 45MW, delivering around 41MW (net) to users. It would not be an NSIP, despite its role in waste management being far more strategic that the current proposal.

4.0 Section 3: Legislation and Policy Context

The Applicant highlights the basis for the SoS's decision as per the 2008 Act:

3.1.1. Accordingly, the SoS's decision on the DCO application for the Proposed Development must be made in accordance with NPS EN-1, NPS EN-3 and NPS EN-5, unless one or more of the exceptions set out in Section 104 (subsections 4 to 8) of the 2008 Act apply.

3.1.2. In addition to NPS EN-1, NPS EN-3 and NPS EN-5, the SoS is required to have regard to factors such as any local impact report provided by a relevant local authority, the matters prescribed in The Infrastructure Planning (Decisions) Regulations 2010[10] (where relevant), and any other matters which he or she considers to be both important and relevant to their decision on the DCO application. These 'other matters' are likely to include legislation, other adopted and emerging

national and local planning policy and plans and strategies produced by the UK Government or other bodies, as may be relevant to the Proposed Development.

We indicate why EfW facilities are a very particular case of power generating installation in our main Written Representation. It is recognised that they have a dual role to play, and they also generate much of their energy – usually around half – from fossil derived material such as plastics, and fossil-derived textiles. We suggest, therefore, that the full weight of the sub-sections 3-9 of Section 104 of the Planning Act 2008 have particular significance.

We have already referred (above) to the duties in the Waste (England and Wales) Regulations 2011 (as amended). Defra Guidance reads:

3.1 What does my business or organisation have to do by law?

(a) Does your business or public body (including local authorities on behalf of householders) produce or handle waste? This includes importing, producing, carrying, keeping, treating or disposing of waste; dealers or brokers who have control of waste, and anyone responsible for the transfer of waste. […]

If yes, you need to take all such measures as are reasonable in the circumstances to apply the waste hierarchy to prevent waste, and to apply the hierarchy as a priority order when you transfer your waste to another person.

In addition, in its Guidance on the Waste hierarchy, Defra indicated that those who operate an environmental permit will be required to demonstrate that they have applied the hierarchy:

(b) Are you operating a site that requires a permit under the Environmental Permitting Regulations (England and Wales) Regulations 2010?

In addition to the duties described at (a) above, a condition in new or revised permits will place a duty on the permit holder to apply the hierarchy. For example you could minimise process loss through improvements to the way your business operates and/or considering recycling options for any waste produced at the site.

If you are an existing permit holder, this new condition will apply when your permit comes up for review. For more details, see Environmental Permitting Guidance.

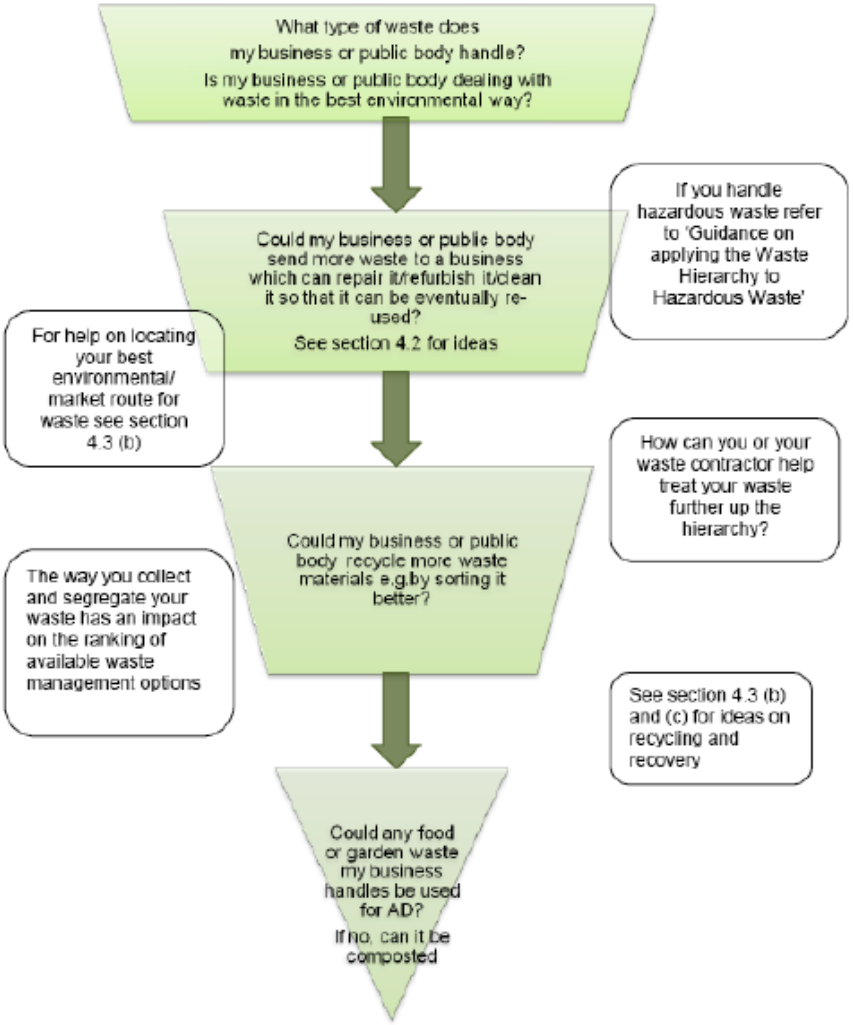
Our contention is that, given the evolving state of technology, and in particular, the potential for extracting a considerable amount of waste for

recycling from the 630,000 tonnes of waste which the applicant believes will be available to it, then the design of this facility fails to demonstrate that the applicant will have applied the waste hierarchy. In order to do so, they would need – in the case of a new facility – to demonstrate that it was not possible, using existing technology, to recycle material from the 630,000 tonnes prior to incinerating whatever remains thereafter. If they are able to do this, then it would be useful to have explained how the target of halving residual waste is to be achieved: if it is by prevention and reuse alone, then clearly that would have serious implications for the applicant's case in terms of the need for the facility.

The Figure below – taken from Defra's Guidance – suggests those handling waste ask the question 'Could my business recycle more waste materials e.g. by sorting it better?' The answer – in respect of this application - is undoubtedly 'yes'.[2]

[2] Defra (2011) *Guidance on Applying the Waste Hierarchy*, June 2011.

Figure 2: Putting the hierarchy into practice if you handle waste



Source: Defra (2011) Guidance on Applying the Waste Hierarchy, June 2011.

EfW sits 'next to bottom' of the waste hierarchy. The Waste Framework Directive, and as a result, the Waste (England and Wales) Regulations 2011, as well as the existing Guidance on application of the hierarchy, also admit the possibility that the hierarchy might not always hold firm in all circumstances:

> *But an establishment or undertaking may depart from the priority order in paragraph (1) so as to achieve the best overall environmental outcome where this is justified by life-cycle thinking on the overall impacts of the generation and management of the waste.*
>
> *(3) When considering the overall impacts mentioned in paragraph (2), the following considerations must be taken into account–*

(a) the general environmental protection principles of precaution and sustainability;

(b) technical feasibility and economic viability;

(c) protection of resources;

(d) the overall environmental, human health, economic and social impacts.

The way different EU countries apply the waste hierarchy may differ because of their energy mix (the CO2 emissions associated with a kWh of electricity vary across Europe, depending on the mix of fuels used and the efficiency of production); extent of landfill gas capture, and nature of the avoided materials.

4.1 Legislative Context

The Policy Review Section includes reference to the Waste Framework Directive (2008/98/EC), though shows limited appreciation of the 2018 revision. Nor does the review include any mention of The Waste (Circular Economy) (Amendment) Regulations 2020,[3] which updates the Waste (England and Wales) Regulations 2011, not least through directing cross-references to the amending Directive 2018/851. Importantly, the 2020 Regulation direct the waste management plan to include measures to ensure that the preparing for re-use and the recycling of municipal waste is a minimum of 65%.

There is also reference to the Incineration Directive which 'is no more' having been subsumed within the Industrial Emissions Directive. It ceased to be valid in 2014.

The Section regarding the Waste (England and Wales) Regulations 2011 (as amended) gives a partial and misleading representation of both the Regulations and of the hierarchy, as the following extract indicates:

3.2.12 The emphasis of the hierarchy in the rWFD is a preference for waste prevention and the confirmation that waste treatment involving energy generation is a recovery operation (subject to it achieving energy recovery efficiency expressed as R1 of 0.65 or more[27]).

[3] The Waste (Circular Economy) (Amendment) Regulations 2020, S.I. 2020 No. 904

That is not 'the emphasis' of the hierarchy. The Directive of 2008 did, indeed, introduce a distinction between incinerators treating municipal waste that were to be classified as recovery, and those classified as disposal. We highlighted in recent work why this distinction has become meaningless over time.[4]

A key omission on the Section on UK legislation (starts 3.2.3) is The Environmental Targets (Residual Waste) (England) Regulations 2023', which came into force on 30 January 2023, but had been consulted upon in May 2022, the way having been paved for the Regulations in the Environment Act 2021. The Applicant might have been hoping that these would never materialise, but they have, and they set the objective for England of a halving of residual waste by 2042.[5]

4.2 National Policy Statements

The Section regarding National Policy Statements (Section 3.3) of the report indicates, at Para 3.3.7 (and referencing Para 3.4 of NPS EN-1):

> *In this context, EfW is identified as a major source of large-scale renewable energy generation.*

What the NPS EN-1 actually says is that '*Future large-scale renewable energy generation*' is likely to come from, amongst other sources, EfW. That is not quite the same as indicating that EfW would be 'a major source of large-scale renewable generation'. Indeed, para 3.4.3 on NPS EN-1, which is the one which relates to EfW, indicates:

> *Only waste that cannot be re-used or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery.*

This restricts, therefore, the contribution EfW could make, whilst facilities generating more than 50MW are not the only facilities making a contribution to power generation. HM Government's Consultation on expanding the UK-ETS estimated that 52 operational plants in 2020 generated 7,762 GWh in the UK, approximately 2.5% of total UK

[4] Equanimator (2023) *Debunking Efficient Recovery: the Performance of EU Incineration Facilities*, Report for Zero Waste Europe, January 2023.

[5] The Environmental Targets (Residual Waste) (England) Regulations 2023.

generation of 311,997 GWh.[6] The facility proposed would contribute around 0.15% to UK generation, about one sixtieth what is expected from Hinkley C.

Furthermore, as we highlight in our Appendix 4, and reflecting developments in sorting technology that would not have been so apparent in 2011, the facility as planned will, if it receives residual waste which has not already been passed through an advanced sorting system, inevitably be accepting waste that could otherwise have been recycled with less environmental impact.

4.3 Other Relevant National Policy

The PS states:

> *3.4.4 Whilst the NPPF does not contain specific policies for NSIPs, it may be considered by the SoS to be an "important and relevant" consideration in decisions on such proposals, in accordance with Section 104 of the 2008 Act. In this context, the NPPF does include policies pertinent to generic development management considerations and some of its principles may be considered where relevant to the Proposed Development. These principles are concerned with (inter alia) protection and conservation of the natural and built and historic environments, climate change and flooding as well as sustainable growth, development and a strong, competitive economy.*

It is also relevant, we would suggest, that the NPPF has a core environmental objective which is one of three pillars relevant to achieving sustainable development. The environmental objective, outlined under Para 8(c) is as follows:

> *to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*

For reasons highlighted in our Appendix 5 and our main Written Representation, the Proposed Development will not mitigate climate change.

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[6] HM Government (2022) *Developing the UK Emissions Trading Scheme (UK ETS),* A joint consultation of the UK Government, the Scottish Government, the Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland, March 2022.

For reasons highlighted in Appendix 2 and our main Written Representation, this will not use natural resources prudently, and nor does its design minimise waste and pollution.

Para 134 of the NPPF states:

> *134. Development that is not well designed should be refused, especially where it fails to reflect local design policies and government guidance on design[52], taking into account any local design guidance and supplementary planning documents such as design guides and codes. Conversely, significant weight should be given to:*
>
> *a) development which reflects local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents such as design guides and codes; and/or*
>
> *b) outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.*

The references to design are echoed in the NPS EN-1 at para 4.5.3:

> *4.5.3 In the light of the above, and given the importance which the Planning Act 2008 places on good design and sustainability, the Secretary of State needs to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be. In so doing, the Secretary of State should satisfy itself that the applicant has taken into account both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located) as far as possible.*

Again, for reasons outlined in Appendix 2 and our main Written Representation, it could not be concluded that the Proposed Development has been well-designed (and others will, no doubt, articulate other reasons why that might be true).

The Section on National Planning Policy for Waste might have considered the effect of The Waste (Circular Economy) (Amendment) Regulations 2020,[7] which update the Waste (England and Wales) Regulations 2011,

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[7] The Waste (Circular Economy) (Amendment) Regulations 2020, S.I. 2020 No. 904

notably in respect of 'PART 2: Matters which must be included in waste management plans'. As noted above, these include recycling targets to be met.

As regards the National Planning Policy for Waste, despite citing (in its Appendix B) paragraphs from Section 7 (on determining planning applications), the Planning Statement omits to cite a rather important point:

> *7. When determining waste planning applications, waste planning authorities should: […]*
>
> - *recognise that proposals for waste management facilities such as incinerators that cut across up-to-date Local Plans reflecting the vision and aspiration of local communities can give rise to justifiable frustration, and expect applicants to demonstrate that waste disposal facilities not in line with the Local Plan, will not undermine the objectives of the Local Plan through prejudicing movement up the waste hierarchy;*

This is an important issue for this proposal, given its very clear potential to prejudice movement up the waste hierarchy (not least, through what is not considered in the Proposed Development).

4.4 Other Relevant National Plans and Policies

The Planning Statement mentions Our Waste, Our Resources: Strategy for England (2018), highlighting the 65% recycling target for municipal waste. This is, though, made a requirement of the Plan by the amendment to the Waste (England and Wales) Regulations 2011 as a result of The Waste (Circular Economy) (Amendment) Regulations 2020.[8] This, in turn, reflects the 2018 revision of Waste Framework Directive. The presentation in Chapter 3 of the Planning Statement effectively downplays the significance of the commitment to increase recycling rates in policy and law, and through actions consulted upon since 2019 (as described in the Waste Management Plan for England).[9] It also omits to mention the ambition in the 25 Year Environment Plan to achieve zero avoidable waste by 2050, for example. The Planning Statement does state, regarding the 25 Year Environment Plan:

[8] The Waste (Circular Economy) (Amendment) Regulations 2020, S.I. 2020 No. 904
[9] See p.26 in Defra (2021) *Waste Management Plan for England*, January 2021.

With specific regard to EfW, at page 94 the Plan states that the Government "will continue to encourage operators to maximise the amount of energy recovered from residual waste while minimising the environmental impact of managing it, for example by utilising the heat as well as electricity produced".

What this does not say is that residual waste should be maximised, which would be inconsistent with the application of the waste hierarchy. Properly understood, it indicates a desire to recover as much energy as possible from whatever remains to be incinerated, consistent with the hierarchy.

It is worth noting the reference also to the Government's Net Zero Strategy.[10] The Planning Statement offers the following:

The Strategy highlights that the Government is exploring options to reduce emissions from EfW facilities and that its approach is still under consideration.

In the summer of 2022, BEIS consulted on the expansion of the UK-ETS to include energy from waste incineration. It noted:[11]

Why we are exploring expanding the UK ETS to cover emissions from waste incineration and EfW

In their recently published progress report, the CCC stressed that Government needs to "address with urgency the rising emissions from, and use of, Energy from Waste". The report recommended that Government consult in 2022 on the introduction of a carbon tax (either as part of the UK ETS or a separate instrument) aimed at curbing rising emissions from EfW.[113] This call for evidence seeks to understand how the UK ETS could be expanded to cover waste incineration and EfW.

The UK ETS may help raise the efficiency of conventional EfW plants by incentivising more plants to supply heat (i.e. heat offtake), or by potentially encouraging residual waste to be recovered in a way which lowers overall carbon emissions, such as chemical recycling.

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[10] HM Government (2021) *Net Zero Strategy: Build Back Greener*. Note that the strategy has been successfully challenged in the courts, and a revised strategy is expected shortly.
[11] HM Government (2022) *Developing the UK Emissions Trading Scheme (UK ETS),* A joint consultation of the UK Government, the Scottish Government, the Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland, March 2022.

The UK ETS could provide an incentive for the development and uptake of decarbonisation technologies or practices to reduce emissions from waste incineration and EfW, principally by strengthening long-term investment incentives. For example, by enhancing the pre-treatment of waste before it is incinerated to reduce fossil plastic in the waste stream (a costly and intensive process).

The UK ETS could also incentivise investment into Carbon Capture and Storage (CCS) to reduce CO_2 emissions from EfW, depending on wider availability of the technology and infrastructure, and cost-benefit to the plant. Due to biogenic content present in waste streams, we recognise in the future that operators may be able to generate 'negative emissions' as a result of applying CCS equipment to EfW plants, depending on the level of biogenic CO_2 captured. For the purpose of this call for evidence, negative emissions are not covered. We will ensure that this proposal is aligned with future UK Government and Devolved Administration policy on negative emissions.

It seems clear that there is growing recognition of the fact that EfW is becoming problematic as a growing source of GHG emissions from the (otherwise) decarbonising power sector.

4.5 Summary at Close of Section 3 of Planning Statement

At the end of Chapter 3 of the Planning Statement (para. 3.6.1), the Applicant claims to have established a number of points as a result of its somewhat selective review of the legislative and planning context. Below, we step through these claims one by one, offering a view as to whether or not the Applicant has demonstrated what it claims.:

- *The need to reduce the importation of oil and gas and increase domestic renewable energy generation to boost energy security, support economic growth and decarbonise the economy are priority Government objectives.*

The first clause is not "demonstrated" by the policy review. There is clearly an intention to increase domestic renewable energy generation and this is seen - rightly - as a means by which to decarbonise the economy. However, the Proposed Development, like other EfW developments, will not decarbonise the economy. On the contrary, it increase the average carbon intensity of power generation, being roughly double the carbon intensity of gas and more than six times the average carbon intensity of the grid by the time the facility is planned to be operational (in late 2026). This is why the Climate Change Committee has highlighted the need to address

emissions from EfW, and why Government and the devolved administrations have consulted on including EfW within the scope of the UK-ETS.

• *Additional renewable energy capacity is required to support the achievement of the UK Government's climate change commitments and carbon budgets.*

As per the previous point, to the extent that Government wishes to meet carbon budgets and climate change commitments, it needs additional renewable energy capacity, but not from EfW in the form of the Proposed Development.

• *The DCO application for the Proposed Development should be assessed on the basis that the Government has demonstrated that there is a need for such energy infrastructure and the SoS should start with a presumption in favour of granting consent.*

As the Planning Statement itself notes, the Planning Act 2008 indicates this as a starting point, but not the only relevant factors in decision making. There are a number of issues that the Secretary of State may view as relevant in arriving at his decision. The NPSs EN-1 and EN-3, as well as Draft revised version thereof, recognise that EfW facilities have to respect the application of the hierarchy. It follows that whilst the need for energy does not need to be demonstrated, there is a need to demonstrate the Proposed Development's alignment with the hierarchy. Furthermore, to the extent that benefits are very limited, but impacts are significant (see our Appendix 3), this would weigh further against the Proposed Development.

• *Infrastructure investment is a key pillar underpinning the Government's wider economic policies and objectives and the economic benefits of proposals should be afforded significant weight;*

This somewhat overstates the case: it would be pointless, after all, to build infrastructure that is not needed (though there would, no doubt, be additional construction activity as a result, the potential downsides from investing in stranded assets include the waste of the embodied GHGs, and the noise and local disruption that may occur in the process. The Proposed Development has the potential to prejudice the achievement of national and local waste management objectives.

• *The waste hierarchy and the need to comply with its principles is a cornerstone of England's current waste management policy. The Proposed Development should not prejudice the achievement of local or national waste management targets in this context;*

This is correct. It is not at all clear to us that the Applicant's proposal is consistent with this.

• *There is a need to use resources efficiently. The Government encourages energy recovery from waste while minimising the environmental impact of managing it.*

This is wrong. The Government does not 'encourage energy recovery from waste'. Energy recovery from waste sits on the next to bottom rung on the hierarchy. Government has regulated to halve residual waste by 2042. That is hardly consistent with 'encouraging' energy recovery from waste in the aggregate. Government does seek to make sure as much energy as possible is generated from the waste that is incinerated. That is (or ought to be) a requirement of the permit that the Applicant will be seeking, consistent with the Industrial Emissions Directive. In other words, maximising useful recovery of heat should be a condition for the Applicant to receive a permit.

• *The Proposed Development must demonstrate good design and ensure climate change resilience. EfW facilities should be configured to provide CHP;*

Good design does not extend merely to being configured for the possibility of providing CHP. Good design ought to reflect the waste hierarchy, and the architecture of the facility should also be such as to be visually attractive.

• *The social, economic and environmental impacts of the Proposed Development must be assessed and, where appropriate, mitigated. The SoS must take into account the adverse impacts and benefits of the Proposed Development at the national, regional and local level;*

• Operational GHG emissions are not reasons to prohibit the consenting of energy projects and the SoS does not need to assess individual applications for planning consent against operational carbon emissions and their contribution to carbon budgets, net zero and the UK's international climate commitments;

This is a moot point: the NPSs suggest this is the case, but the SoS might reasonably consider this a relevant matter, not least if such impacts are considered relevant in interpreting the priority ordering in the waste hierarchy. Furthermore, the arguments given in NPS-1 in support of the above view relate to wider government policies, such as the NPS and the inclusion of power generation within the ETS, which EfW facilities are not subject to

- *The policies and proposals contained in development plan documents and other policy may be both important and relevant considerations in the decision on the DCO application but that where a conflict exists between other planning documents and the NPS, then the NPS prevails; and*
- *The EfW CHP Site is located within a WMA, as identified in the Cambridgeshire and Peterborough Minerals and Waste Local Plan.*

Responses from Cambridge County Council appear to indicate that this site was intended for operations higher in the hierarchy: one of the current occupants of the site appears to be a recycling business.

In a similar manner, Para 4.2.1 outlines a range of factors which the Applicant argues demonstrate a need for the Proposed Development. It will:

- *help meet the urgent need for new energy infrastructure in the UK, providing enhanced energy security and supporting UK Government priorities in relation to economic development;*

If this was the right form of infrastructure, this would be true, but it is difficult to sustain a view that it is. It cannot be the case that 'need' for energy justifies casting all other government policy, notably that regarding waste, to one side, especially given the disruption occasion by the compulsory purchase of land (including, if we understand correctly, using land currently used by a recycling facility so that it can be supplanted by activity further down the waste hierarchy).

- *deliver additional renewable energy capacity, supporting the achievement of the UK Government's climate change commitments and carbon budgets;*

The Applicant's proposed counterfactual in analysing climate impacts is landfilling. If one considers that, in line with the Applicant's parent company, MVV's Sustainability Report, the quantity of renewable energy generated by the applicant is roughly half the total, then it needs to be considered that landfilling would generate (using the figures from the Applicant's Climate report – see our Appendix 5) roughly half this amount. In other words, the additional renewable power capacity would be a quarter of the total generated. This comes, however, alongside the other 50% of power generated from burning fossil-derived plastics, textiles and other materials. As a result, the power generated is rather carbon intense, and offers no support to achieving climate change commitments and carbon budgets. It will actually have the opposite effect. So, yes, there is some additional renewable energy, but is accompanied by rather more energy which is incredibly carbon intense, so that on average, power will be generated at 621 g CO2 /kWh, as compared with the expected 90g

CO2/kWh in 2026 according to government projections. No one believes that decarbonisation will be assisted by generating power at almost seven times the average carbon intensity of generation in 2026.

- *provide CHP connectivity;*

The intention is to provide CHP connectivity, but the plan for doing so is hardly designed to be unobtrusive (if the facility intends to be in place for 40 years, then a better designed approach is surely warranted than one running at roughly head height mounted on steel). We question whether major businesses, themselves likely to be concerned to reduce their own GHG emissions, will find the offer of heat from the EfW attractive unless the facility was already equipped with carbon capture (and it will not be).

- *address the shortfall of non-landfill Household, Industrial and Commercial (HIC) residual waste management capacity, enabling waste to be managed further up the waste hierarchy and reducing the need to export waste for treatment abroad, consistent with the proximity principle;*

The Proposed Development has a lifetime which the Applicant states to be of the order 40 years. The Applicant's Waste Fuel Availability Assessment (WFAA) is extremely shaky, and in our view, if the WFAA is conducted professionally and objectively, and takes into account the expected impact of existing policy and law, as well as policies in the process of being implemented, then it is unlikely that there would be any shortfall in residual waste management capacity, and if there is, it would be unlikely to remain for anything other than a small number of years after the Proposed Development is planned to become operational (late in 2026).

- *secure carbon reductions associated with the diversion of residual waste from landfill; and*

The Proposed Development does not do this (see our Appendix 5).

- *deliver a range of environmental, social and economic benefits including BNG, jobs creation and investment in local supply chains.*

The proposal offers limited benefits yet creates significant impacts in respect of climate change and air pollution.

5.0 Section 4

5.1 The Need for New Energy Infrastructure

Another claim for the facility is the nature of the power it will generate:

4.2.5 EfW is a form of renewable energy recognised by NPS EN-1 (paragraph 3.4.3). NPS EN-1 highlights (at paragraph 3.4.4) that EfW can provide peak load and base load electricity on demand which is of increasing importance as the UK's electricity energy generation contains an increasing proportion of intermittent wind and solar generation. The NPS concludes that the ability of EfW (and biomass) to deliver predictable, controllable electricity is increasingly important in ensuring the security of energy supplies.

This is a confused paragraph.

NPS EN-1 states, at para 3.4.3.:

Only waste that cannot be re-used or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery. The energy produced from the biomass fraction of waste is renewable and is in some circumstances eligible for Renewables Obligation Certificates, although the arrangements vary from plant to plant;

So, EfW is only partly renewable (see above).

NPS para 3.4.4. states:

Biomass and EfW can be used to generate 'dispatchable' power, providing peak load and base load electricity on demand. As more intermittent renewable electricity comes onto the UK grid, the ability of biomass and EfW to deliver predictable, controllable electricity is increasingly important in ensuring the security of UK supplies.

It is actually very rare for EfW facilities to generate 'dispatchable power', which is usually intended to mean a source of power that can be turned on or off (by burning fuel as and when it is needed). By virtue of the primary purpose of EfW – which is the treatment of waste – very few EfW facilities are 'turned on and off' to generate a quantity of power that is varied over time. Indeed, the Applicant claims 90% availability running at its design capacity. So, it is not a dispatchable source of power, whatever NPS EN-1 may have assumed EfW might be.[12] The claim made for the facility is one that is not relevant to the Proposed Development.

[12] Some facilities in Europe which are designed to feed in heat to district heating systems are operated so that they mainly burn refuse derived fuel (RDF) in cooler months, the RDF having been baled and stored over the summer. There is no suggestion that the Proposed Development will do this.

5.2 The Need for Renewable and Low Carbon Energy Generation Capacity

At para 4.2.12, the Planning Statement claims:

> *4.2.12 In this context, EfW is identified as a major source of large-scale renewable energy generation (paragraph 3.4.3). Paragraph 3.4.5 of NPS EN-1 also summarises the Government's position that to largely decarbonise the power sector by 2030, it is necessary to bring forward renewable electricity generating projects as soon as possible and that there is therefore an urgent need.*

We have addressed these points – and why they misrepresent the role of the Proposed Development - above. What NPS-1 actually says is:

> *'Future large-scale renewable energy generation is likely to come from the following sources',*

with EfW then mentioned as one such source.

There is no indication that EfW is considered to be a 'major source' of such generation, and with very good reason (the only way it could be was if we generated vastly more residual waste than Government envisages being generates in future). It might also be considered that since 2011, when NPS EN-1 was published, there has already been a significant increase in EfW capacity. Draft NPS EN-3 notes that proposals should not result in over-capacity of EfW treatment at a national or local level. The case for further EfW capacity in England is weak, and getting weaker by the day as facilities that have been consented move into the construction phase (as with the Rivenhall facility in Essex, which is one of many facilities that have escaped the attention of those conducting the WFAA).

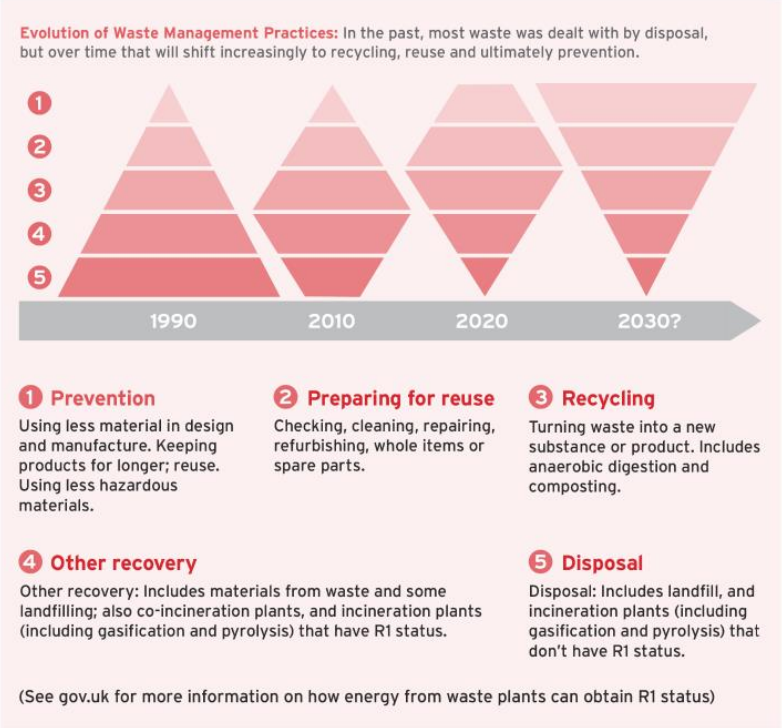
5.3 The Need to Divert Waste from Landfill

For many years, the success or otherwise of a country's waste management policy or strategy was considered in terms of 'how little is landfilled'. The concept of 'landfill diversion' arose in this context, and is utilised in some places. The waste hierarchy does not say 'divert waste from landfill': it seeks to push a growing proportion of waste into the upper tiers of the hierarchy. That is one of the reasons why The Environmental Targets (Residual Waste) (England) Regulations 2023 were passed. The Waste Management Plan for England shows, graphically, the

expected evolution of waste management in relation to the hierarchy on p15.[13]

Figure 1: Reproduction of Figure 2 from Waste Management Plan for England

Figure 2 Evolution of waste management practices



At para 4.2.19, the Planning Statement reads:

> *In this regard, Defra's Energy from waste: A guide to the debate (2014)[72] states (on page 2) that "To maintain the energy output from less residual waste resource we will need to divert more of the residual waste that does still exist away from landfill and capture the renewable energy continue the drive towards better, higher efficiency energy from waste solutions".*

This has already happened. These words were drafted almost a decade ago, and in the intervening period, EfW capacity has expanded enormously.

At para 4.2.22, the Planning Statement states:

> *4.2.22 In the context of the Government's national policy objectives for waste management, NPS EN-3 makes clear at paragraph 2.5.64 that*

[13] Defra (2021) *Waste Management Plan for England*, January 2021.

EfW facilities "need not disadvantage reuse or recycling initiatives where the proposed development accords with the waste hierarchy." Paragraphs 2.5.66 to 2.5.67 establish a requirement that applicants assess both the conformity of their proposals with the waste hierarchy and effects in respect of national and local waste plans and strategy targets, taking into account existing capacity. Draft NPS EN-3 additionally sets out that new EfW proposals should not result in over capacity of these facilities at a national or local level (paragraph 2.10.5), that proposals must be compatible with long term recycling targets and that applicants should consider existing and future capacity. These are the principal policy tests to be applied to the Proposed Development in respect of waste management.

There is (finally) much to agree on here, albeit there are other matters of relevance in the decision making also. Unfortunately for the Applicant, the apparent lack of awareness or mention (in the whole application) of the intention to halve residual waste by 2042 appears to have been overlooked, whilst the outdated WFAA understates the extent to which EfW capacity already exists (or is in construction).

Referencing the WFAA – which we have commented on in our Appendix 2 – the Applicant argues that (4.2.27):

4.2.27 On this basis, it can be concluded that the Proposed Development would not disadvantage local reuse or recycling initiatives/targets nor would it prejudice the achievement of local or national waste management targets; it would therefore meet the tests set out at paragraph 2.10.5 of NPS EN-3. Given the capacity gap identified in the WFAA, it would also not result in over capacity of EfW facilities at a national or local level, which is the test set out at paragraph 2.10.5 of Draft NPS EN-3.,

Whilst we can agree on some of the policy tests mentioned above, we completely disagree with the content of the above.

5.4 The Need to Minimise Carbon Emissions

The Proposed Development is a complete failure in this regard (see our Appendix 5).

5.5 Combined Heat and Power Connectivity

The claimed benefits of connecting up potential users of heat / colling to the facility is interesting, but as more and more business seek low carbon forms of heating, the role of EfW will, in our view, increasingly be called

into question. It is transparently obvious that the main source of revenue on the energy side will be the sale of electricity. The CHP connection, such as it is proposed, feels like an afterthought. It is a strange form of infrastructure for a development with a forty life to be proposing.

Even the claimed environmental benefits sit in an Appendix to the Climate Chapter of the Environmental Statement, and they are presented in the spirit of sensitivity analysis. It is only there that it is clearly admitted that there is likely to be a 'power penalty' for the delivery of heat (as there usually is). Hence, the options considered are:

- Electricity Only (Core Case): 55MWe of electricity.
- Electricity and Heat: 48.8MWe of electricity and 23.6MWth of steam,

Here, we see a tension between the Applicant's desire to stay above the NSIP capacity threshold, and the improved environmental performance (if one accepts the Applicant's assumptions) regarding the use of heat.

The avoided GHGs associated with heat use are likely to be determined by local considerations as to what the viable counterfactuals are. There is some appreciation of how strongly this might change in future in the Appendix 14c (Volume 6.4) to ES Chapter 14: Climate (Volume 6.2).

5.6 The Environmental, Social and Economic Benefits of the Proposed Development

We have discussed these in our Appendix 3, where we highlight the limited extent of those benefits that do actually exist, and indicate the magnitude of some of the negative impacts.

5.7 Summary Regarding Need

Subsequent sections of the Planning Statement make some acknowledgement of some negative impacts (for example, in respect of landscape. It is argued that the need for the development justifies the impact. The problem for the Applicant is that the need argument is not well supported by evidence of any quality. It is not the case, therefore, that the supposed need for the facility can outweigh, or justify, the harms that will arise from the Proposed Development.

5.7.1 Air Quality and Emissions

As regards the Section 4.4, we draw attention to our analysis in Appendix 3 as regards the impacts of air pollution from the facility.

5.7.2 Greenhouse Gas Emissions

As regards the Section 4.5, we have indicated in our Appendix 5 that the Applicant's assessment is methodologically flawed. The Applicant's belief that the Proposed Development emits less than its counterfactual, landfill, is incorrect.

6.0 Section 5

Given the above discussion, we dispute the majority of the case made by the Applicant as it is presented in its Planning Balance and Conclusion. We dispute the Applicant's claim that is has demonstrated what is claimed at 5.2.2., and in particular, note that the Proposed Development is highly likely to prejudice the application of the waste hierarchy.

Were it to be consented, and were it ever to manage to generate the claimed 55MW of power for export, of which only half would be renewable, and if considered relative to landfill, only a quarter would be 'additional' renewable generation.

The Proposed Development is a climate change catastrophe. The benefits are slight, whilst the impacts would be significant and negative once operational, and the scale of disruption in the period taken to construct and commission the facility would be disproportionate relative to the limited benefits.

APPLICATION BY MEDWORTH CHP LIMITED

WRITTEN REPRESENTATION FOR RT HON. STEVEN BARCLAY MP

APPENDIX 2: COMMENTS ON VOLUME 7.3: WASTE FUEL AVAILABILITY ASSESSMENT (APP-094)

Dr Dominic Hogg
[redacted]

March 2023

Summary

We have reviewed both the approach taken to develop, and the data used to derive, the Waste Fuel Availability Assessment (WFAA).

It would, in our view, be more logical to consider the national picture first (to check whether any additional EfW capacity is warranted) and then – if there is a capacity need - consider whether such a need exists locally. The Applicant follows the reverse approach, and in doing so, draws an arbitrary and artificial boundary within which to conduct its hunt for a means to justify 630,000 tonnes of additional EfW capacity.

The analysis is, generally, backward looking, and is frequently based on data which are not up to date (the local data relate to the year 2019). Given the difficulty in generating quality data in this area, use of landfill tax returns might have been considered a relevant approach.

Consistent with the absence of any meaningful consideration of alternatives which are more consistent with fulfilment of duties vis a vis the waste hierarchy, the WFAA frequently strays into language that suggests it has no faith in the possibility that Government objectives – on recycling, and presumably also, on residual waste - might be met.

We noted also that based on our own analysis of published data, the capacity of EfW has continued to grow, and figures as per 2021 were showing capacity in operation, commissioning or construction, and including co-incineration capacity, of 21.45 million tonnes in the UK and 18.9 million tonnes in England.

To put these into context, the WFAA includes the following:

> *5.1.16 As it is assumed that the remaining waste was disposed to landfill, landfill rates of residual waste are estimated to be as follows:*
>
> - *2019 - 27.5 million tonnes total residual waste arisings - (12.63 + 2.8) = 12.07 million tonnes of residual waste were sent to landfill.*
> - *2020 - 26.8 million tonnes total residual waste arisings - (13.96 + 1.9) = 10.94 million tonnes of residual waste were sent to landfill.*

The above paragraph suggests that of 27.5 million tonnes of residual waste in 2019, 12.63 million tonnes were incinerated, and 2.8 million tonnes were exported as RDF, leaving 12.07 million tonnes being landfilled.

The figure for the quantity incinerated rose to 13.96 million tonnes in 2020, whilst the amount exported as RDF fell to 1.9 million tonnes, leaving 10.94 million tonnes being landfilled.

It seems increasingly likely that if – as Defra indicates – changes already in the pipeline lead to a reduction in residual waste of the order 30%, then consenting this facility will indeed lead to overcapacity for incineration.[1]

We already have far more than 50% of the 2019 quantity of residual waste being sent to EfW. The government has a target to halve residual waste by 2042. It is anticipating a significant drop (of around 30%) more or less by the time the Proposed Development would become operational.

In light of the Regulations now seeking to halve residual waste from 2019 levels by 2042, this suggests that no more EfW is needed and that England and the UK are fully steaming ahead to a situation of excess capacity. Draft NPS EN-3 clearly warns against worsening that eventuality by consenting facilities that exacerbate excess capacity. To do so would definitely prejudice the movement of waste into the upper tiers of the waste hierarchy.

[1] Defra (2022) Resource Efficiency and Waste Reduction Targets: Detailed Evidence Report, 28 April 2022.

Contents

1.0 Comments on the Waste Fuel Availability Assessment (WFAA)

In this Appendix, we comment on APP-094 - Medworth CHP Limited Volume 7.3 Waste Fuel Assessment (WFAA). These comments support the main case presented in the main Written Representation.

At 2.2.17, the WFAA references the following in draft NPS EN-3:

> *A new EfW must not result in over capacity of EfW waste treatment at a national or local level (paragraph 2.10.5).*

The methodology for the WFAA is a little strange. The Applicant notes repeatedly through the application the export of waste for energy recovery (and its parent company will be familiar with waste moving across national boundaries). Waste can, and does, move, notwithstanding the attempt to ensure that installations deal with waste that is generated locally. The point, though, is that whilst the methodology for the WFAA is to start local and then take a broader view, logic, and the reality of waste movements, would suggest the opposite as the logical approach. If there is – because of the choice of the spatial area being investigated – an apparent local lack of capacity, but excess capacity at the national level, then building more capacity locally will simply worsen the problem of over-capacity at the national level. All that would happen is that the extent of under-utilised capacity would increase, with the likely effect that prices would fall, and with the possible consequence that waste otherwise being recycled is then diverted into EfW. This is, indeed, what has happened in other countries in the past.

The spatial scope of the assessment is an artificial choice. The following statement at 3.2.3 should be read in this light:

> *3.2.3 This DCO application must demonstrate that there is a need for the proposed waste management capacity and to do this requires defining a Study Area for the WFAA. Importantly though, the WFAA is a tool to illustrate that even within a restricted geographic catchment, the need for the waste management capacity offered by the Proposed Development is evident. This assessment is not a means of identifying that the Proposed Development should be tied to a specific catchment area.*

The spatially circumscribed part of the WFAA is irrelevant if there is excess capacity at the national level. The underlined sentence exhibits a misunderstanding of what influences waste movements.

Paragraph 3.3.3 goes on to say:

> *3.2.5 Professional judgement is that it is generally commercially viable to transport non-hazardous household, industrial and commercial waste from up to approximately (~) 2 hours away from the Proposed Development. Distances over 2 hours travel time from the Proposed Development become increasingly expensive for those seeking to dispose of waste. As such, a 2-hour travel time from the centre of the Proposed Development site was applied in a GIS (geographical information systems) model, which resulted in the identification of a likely 'catchment area'- see Graphic 2 Medworth Location Plan for 2 Hour Travel Time of Heavy Goods Vehicles (HGV), November 2020 on the following page.*

I think it unlikely that, especially given the way in which markets for RDF expert have developed over the last decade and more, that the above choice is based on sensible 'professional judgement'. If so, it would be useful to understand who the professional is that made this judgement. It is true, of course, that moving waste costs money, and the further it is transported, the more the transport (other things being equal – and they often are not) costs. If the cost differential justifies it, though, the waste may well move this and greater distances.

It would also be useful to know where the Applicant plans to send any air pollution control residues: will this be within a two hour transport distance?

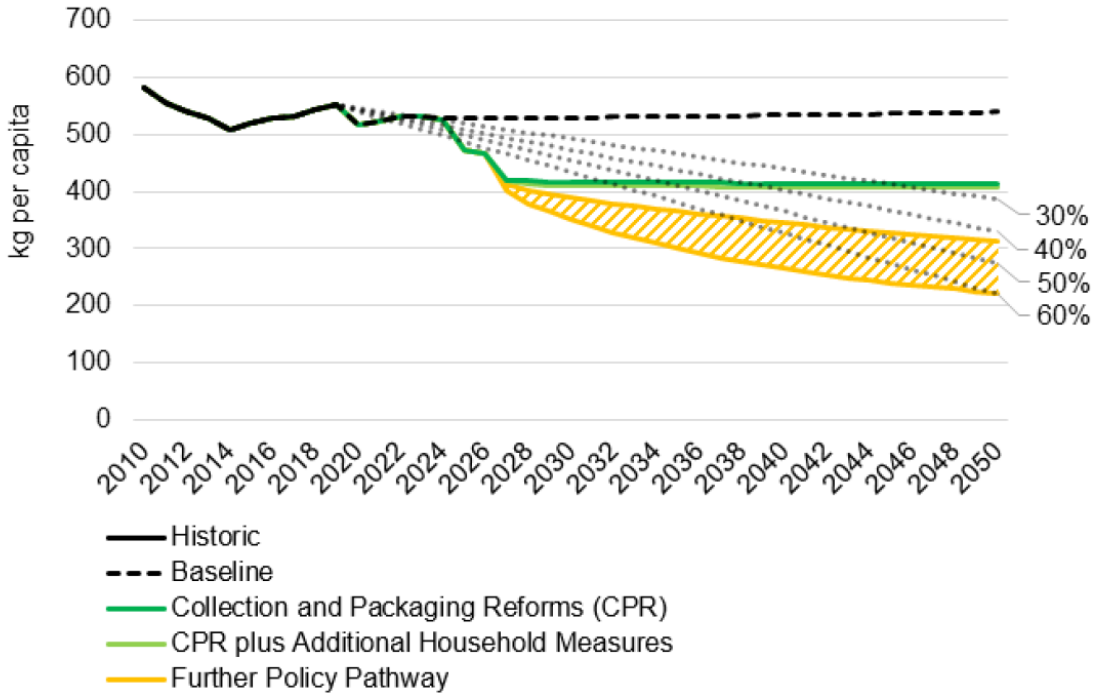
Virtually all the national sources highlighted in para 3.3.11 are outdated and many have been superseded. There is no mention, or account take of, the Detailed Evidence Report provided by Defra in support of its proposal for a residual waste reduction target.[2] This ought to be a meaningful place to start, not least because the Scenarios contained therein envisage a decline in residual waste quantities of the order 30% by the time the facility plans to be operational (see Figure 1). Given how poor data outside the 'local authority collected waste' are, it would also have been logical to triangulate the figures using landfill tax data: the merit of

[2] Defra (2022) Resource Efficiency and Waste Reduction Targets: Detailed Evidence Report, 28 April 2022.

such data is that they are linked to financial transactions, and HMRC has powers of entry to check for fraudulent declarations made by operators.

Figure 1: Reproduction of Figure 7 from Defra's Evidence Showing Effects of Planned Reforms in Collection and Packaging

Figure 7: Residual waste excluding major mineral waste after potential future policies, up to 2050



Source: Defra (2022) Resource Efficiency and Waste Reduction Targets: Detailed Evidence Report, 28 April 2022.

According to data contained in HMRC's Environmental Taxes Bulletin tables,[3] the quantity landfilled at the standard rate in the period FY 2020-2021 was 6.277 million tonnes, with 9.019 million tonnes qualifying for the Lower Rate of tax, and 6.304 million tonnes landfilled exempt from tax.

The provisional figures for FY 2021 to 2022 were 7.379 million tonnes, 9.019 million tonnes, and 6.304 million tonnes, respectively.

Provisional data for the 2021 calendar year were 7.260 million tonnes, 9.130 million tonnes, and 5.799 million tonnes, respectively.

The types of waste exempt from landfill tax are not highly sought after for incineration. The materials qualifying for the lower rate of tax should be -

[3] HMRC Environmental Taxes Bulletin.

mainly - relatively inert materials (including bottom ash from incineration where this is not beneficially used).

These figures are not irrelevant. They indicate - by the quantities available something about the amount landfilled of a type likely to be suitable for incineration. according to its characteristics, and whilst there may be some fraudulent declaration of waste which should attract the higher rate of tax as qualifying for the lower rate, the gap between the 7 million tonnes or so deemed to be landfilled at the standard rate and the 12 million tonnes identified (two years earlier)

A report by Tolvik from May 2022 (a further version of the report cited in the WFAA) indicated the capacity of existing operational EfW facilities for the whole of the UK of 16.37 million tonnes, with 14.85 million tonnes actually processed in 2021. Of the UK capacity, 1.5 million tonnes were outside England.

A further 0.94 million tonnes was in commissioning at the time (all in England).

Facilities in construction in the UK accounted for a further 4.365 million tonnes capacity, though 0.7 million tonnes capacity was the replacement of the Edmonton facility (the capacity is 0.08 million tonnes greater than the facility it replaces). Of this England accounted for a further 3.323 million tonnes, or 2.703 million tonnes accounting for the retirement of 620kt at Edmonton in London.

Table 1: EfW Capacity in Operation, Commissioning and Construction, 2021

	UK	England
Operating Capacity (2021)	16.370	14.870
In Commissioning	0.940	0.940
In Construction	3.745	2.703
Co-incineration (cement / lime kilns)	0.375	0.375
Total	21.450	18.908

Source: based on data in Tolvik (2022) UK Energy from Waste Statistics - 2021, May 2022.

We are not clear how, based on the description of sources in Table 3.2, the data in Table 4.4 have been derived with the associated EWC Codes. The methodology for doing so is unclear.

Para 4.1.8 notes:

> *4.1.8 The data in Table 4.4 HIC waste disposed to non-hazardous landfill (tonnes) demonstrates that of the almost 17.9 million tonnes of HIC arisings (as set out in Table 4.2 HIC arisings for the defined LoW codes 2019 (tonnes)), almost 2.4 million tonnes of suitable HIC waste generated within the WPAs within the spatial scope were sent to non-hazardous landfill in 2019. Most notably, Essex sent over 1 million tonnes of waste to landfill.*

Perhaps the obvious follow-up question is 'If this were true, why place the facility in Cambridgeshire?' The answer, that might quickly follow, is 'because a 600,000 tonne incinerator is in construction in Essex.'[4]

The WFAA states:

> *4.1.10 The data provides clear evidence that substantial quantities of potentially suitable material within the spatial scope of this WFAA are currently being disposed of to landfill – almost 2.4 million tonnes.*

The word 'currently' is not applicable, and the data does not provide evidence that is 'clear'. The story would be far more compelling if the study provided a clear mass balance for all the waste codes concerned, mapping the 17.9 million tonnes supposedly generated in 2019 to the 2.4 million tonnes sent to non-hazardous landfill. Has the fate of the other 15.5 million tonnes been understood?

The statement at 4.1.14 also needs qualification regarding what is and is not 'current'.

Section 4.2 is now somewhat outdated, taking into account the Government's new target to halve residual waste.[5] Some of the Plans referenced are extremely dated. Some will have predicted growth in waste arisings that did not materialise. The common tendency to apply compound growth rates will exacerbate the inaccuracy of some of the older forecasts where that growth in waste generation did not occur (as, in most places, it did not). This is, it should be said, acknowledged by the Applicant in the presentation. Some of the figures in Table 4.7 may also reflect 'old'

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[4] Essex Live (2022) *When huge £600m Rivenhall incinerator will start being built that'll make 'Willy Wonka jealous': Video shows the sheer size of the land the incinerator will be built on in the Essex countryside*, 13 May 2022. See also [redacted] and the company, Indaver's brochure, [redacted].

[5] The Environmental Targets (Residual Waste) (England) Regulations 2023.

recycling plans and targets that have been superseded. It should be borne in mind that the most recent revision of the Waste Framework Directive was in 2018 (not 2008 as the WFAA suggests) and it was at that point that much higher recycling targets were set for Member States: these were included in the Resources and Waste Strategy, and were reflected in the 25 Year Environment Plan, and now, in the Environment Act 2021 and the residual waste target for England.

As indicated previously, it is the national picture which likely provides an easier indication of whether capacity will be exceeded or not. Here, 5.1.4 is helpful:

> *5.1.4 This position was updated in May 2021 with the publication of 'UK Energy from Waste (EfW) Statistics - 2020', Tolvik Consultancy Ltd (hereinafter referred to as the 2021 Tolvik report), which stated that:*
>
> > *"Whilst COVID-19 means that, until more data is available, there is greater uncertainty than usual with respect to Residual Waste tonnages in the UK, early data suggests that Residual Waste inputs to EfWs in the UK represented 52% (2019: 46%) of the overall UK Residual Waste market." (Section 3, page 5).*

And again, the estimation of residual waste, and the quantity incinerated and landfilled at 5.1.16:

> *5.1.16 As it is assumed that the remaining waste was disposed to landfill, landfill rates of residual waste are estimated to be as follows:*
>
> - *2019 - 27.5 million tonnes total residual waste arisings - (12.63 + 2.8) = 12.07 million tonnes of residual waste were sent to landfill.*
> - *2020 - 26.8 million tonnes total residual waste arisings - (13.96 + 1.9) = 10.94 million tonnes of residual waste were sent to landfill.*

The above paragraph suggests that of 27.5 million tonnes of residual waste in 2019, 12.63 million tonnes were incinerated, and 2.8 million tonnes were exported as RDF, leaving 12.07 million tonnes being landfilled.

The figure for the quantity incinerated rose to 13.96 million tonnes in 2020, whilst the amount exported as RDF fell to 1.9 million tonnes, leaving 10.94 million tonnes being landfilled.

The more recent Tolvik report for 2021 indicates (see Table 1) that capacity for incineration and coincineration either operational, commissioned, or in construction, excluding any export of RDF, was 21.450 million tonnes in the UK, and 18.908 million tonnes in England. It seems increasingly

likely that if – as Defra indicates (see Figure 1) – changes already in the pipeline lead to a reduction in residual waste of the order 30%, then consenting this facility will indeed lead to overcapacity for incineration.

We already have far more than 50% of the 2019 quantity of residual waste being sent to EfW. The government has a target to halve residual waste by 2042. It is anticipating a significant drop (of around 30%) more or less by the time the Proposed Development would become operational. There is no benefit to consenting this Proposed Development.

In light of the Act now seeking to halve residual waste from 2019 levels by 2042, this suggests that no more EfW is needed and that England and the UK are already approaching excess capacity. This was the message of various reports from Eunomia through the 2010s. It is also the message that the Scottish Government has taken on board recently, following a review of the role of EfW in the waste hierarchy.

It would be even more obvious were companies such as the Applicant to take seriously the potential for removing further recycling from waste leftover after businesses have engaged in separation at source.

We await the updated WFAA, but based on the national situation, and taking into account the potential for removal of materials for recycling from the mixed waste, then we doubt very much that the Applicant can present a scenario in which the facility does not contribute to already excessive capacity relative to what will be needed in future unless it assumes that none of the Government's targets will be met. The WFAA comes worryingly close to constructing an argument along those lines, and its closing lines are as follows:

> *6.2.6 In this context of the above conclusions, the Proposed Development could offer up to 625,600 tonnes per annum of much needed capacity that would:*
>
> - *Deliver implementation of the waste hierarchy – a cornerstone of England's waste management policy and legislative framework – and divert waste from continued management at the bottom of the waste hierarchy (i.e., landfill) up to having value (in the form of electricity recovered from it).*
> - *Facilitate management within the UK of significant quantities of residual HIC waste exported for management abroad. This would allow waste to be managed in accordance with the proximity principle – a further fundamental pillar of England's waste management policy and legislative framework.*

Moving from landfill to incineration is a very partial – and the least sought after - 'implementation of the waste hierarchy'. Seeking to downplay the potential for recycling, as the WFAA frequently does, will ultimately undermine the decarbonisation of material producing sectors (glass, plastics, metals, textiles) through recycling and reuse, and increase, other things being equal, demand for energy at a global level.

The main problem with the local and regional analysis in the WFAA is that it looks backward, and not forward. The Proposed facility will be in place for – the Applicant suggests – 40 years. Planning for the next 40 years on the basis that the world will not have moved on from the situation in 2019 is incredibly risky.

The artificial discussion – using an arbitrarily delineated area for the analysis of capacity – relies on data of questionable quality. It is absolutely true that that waste data is almost universally poor, and one sympathises with the Applicant in seeking to gather meaningful data to represent the availability, by waste code, of fuel within a defined 'catchment', but that is why, as we indicated at the start of this document, it is more relevant to consider the national picture first to understand overall capacity, and then, and only if national capacity is in short supply, to explore whether there is a need for the facility locally. In both cases, consideration of the planned longevity of the asset (and those already in place) in the context of increasing efforts to reduce residual waste is essential: there is no point building facilities with a forty life time to plug what may be a short-term gap. It would better to allow that material to be landfilled for the intervening period, but to act to minimise the extent to which any gap exists or persists.

APPLICATION BY MEDWORTH CHP LIMITED

WRITTEN REPRESENTATION FOR RT HON. STEVEN BARCLAY MP

APPENDIX 3: COMMENTS ON PROJECT BENEFITS REPORT (APP-095)

Dr Dominic Hogg
[redacted]

March 2023

Summary

This Appendix reviews the Applicant's presentation of Project benefits (APP-095). We have reviewed some of the key claims and also estimated some of the impacts of the project. Some of the claims are overstated, others (notably the climate change impact) are presented as benefits but if properly quantified, actually materialise as negative impacts.

Claims are made for the quantum of power generated. In its Climate report (see our Appendix 5), the applicant considers the waste that would be combusted to be waste that would otherwise have been landfilled (a point with which we disagree). It estimates that had the waste been landfilled, then it would have led to generation from landfill gas of around one quarter of the power that the Proposed Development will generate. That energy would be considered wholly renewable, and the figure is derived using a net efficiency of 36% for the conversion of gas to electricity via the landfill gas engine, which is not the most optimistic figure that could have been chosen.

The Proposed facility is estimated to generate a level of renewable energy likely to be roughly half the total of 440,000 MWh, or around 220,000MWh.[1] If one accepts the Applicant's contention that that the

[1] Note that whatever the applicant's selective choice of assumptions used to derive a figure for the fossil carbon fraction of the waste combusted (which is definitely on the low side of what would be expected - see UKWIN (2021) *Good Practice Guidance for Assessing the GHG Impacts of Waste Incineration*, July 2021, available from [redacted] the proportion of *energy* derived from fossil derived materials is not the same as the relative contribution of carbon to the emissions (though it is expected to be similar). The Applicant's parent company, MVV, notes in its Sustainability Report: '*Typically, half the waste results from biogenic sources; this share therefore counts as renewable*' (MVV (2022) *MVV Sustainability Report 2022*). This echoes the author's experience - the figure may be above or below this value, and will fluctuate with changes in composition as consumption patterns change, recycling rates increase (as they are planned to), and as the relative proportions of different constituents of the waste stream change also. The figure of 50% provides a reasonable rule of thumb for such calculations. Note though, that with the application of advanced sorting of leftover mixed waste - which is not proposed by the applicant - the fossil carbon fraction of what is combusted would decline significantly.

alternative is landfill, then the use of the waste which would otherwise be landfilled leads to a reduction in renewable energy derived from landfilling waste of (according to the applicant) 110,085MWh. In other words, the net contribution to renewable power is around 110,000 MWh (equivalent to around 14MW of additional power).

Along with this net contribution to renewable energy comes a contribution from the fossil fuel element (the plastics, and the increasing share of textiles which are fossil-derived, as well as plastic shares of various household goods, including unrecycled WEEE and furniture). Of the additional 330,000MWh of renewable and non-renewable electricity generated, therefore, around two-thirds is purely derived from fossil fuels. The carbon intensity of this additional fraction is enormous: burning plastics in the proposed incinerator, with a net efficiency of around 30%, is rather like burning oil in a facility with a generation efficiency that is roughly half that of a modern gas fired power station. The claimed benefits in terms of power use are, therefore, both too high (the net change is lower) and associated with a high carbon intensity.

The document claims a carbon saving relative to landfill which we have shown, in Appendix 5, is not correct: the opposite is in fact true.

We have some doubts regarding the ability of the Proposed Development to deliver the heat claimed (even if it is ever used, and we doubt that companies seeking to decarbonise their heat supply would find this an attractive source) with zero penalty on the power generation side. There is no guarantee that there will be manty off-takers for the heat, and the planned delivery mechanism seems designed to be 'flexible' (i.e. cheap, as it might, potentially, not be well utilised).

The claimed benefit as regards energy security comes close to suggesting implying that all waste should simply be combusted in the interests of energy security. Were that indeed to happen, the embodied energy in materials would be lost, and the overall demand for energy would increase as a result (relative to the counterfactual where recycling and reuse are pursued, in line with the waste hierarchy);

We dispute the claim that it has been demonstrated that there will be sufficient waste available for the Proposed Development to operate (unless the intention is to undermine the hierarchy) (see Appendix 2).

An argument is made in respect of proximity, but the Applicant's own Waste Fuel Availability Assessment relies upon the Proposed Development being able to access waste within a catchment whose boundaries are artificially drawn to reflect a 2-hour journey. There is, at the same time,

no indication as far as we could see of where the hazardous air pollution control residues are planned to be sent.

The claim to be managing waste in line with the hierarchy reflects a very limited perspective on the waste hierarchy. Neither the WFAA, nor the Planning Statement, let alone the assessment of Benefits, seem to have acknowledged or appreciated the significance of the Environmental Targets (Residual Waste) (England) Regulations,[2] for example.

We would agree with the applicant that applying carbon capture and storage would be beneficial, but the facility is proposed only to be carbon capture ready.

There are likely to be local economic benefits if the Proposed Development goes ahead, though the claimed contribution to employment should be considered in the context of a construction employment market that is rather over-heated at present. There would be a contribution to construction activity, clearly, and it would likely have local (temporary) multiplier effects, but any claim to support additional employment might be more difficult to sustain given the existing demand for construction labour (which would make the 3 year build timetable somewhat challenging to meet).

We estimate that the damages from NOx and PM2.5 emissions from the facility will be of the order £2.0 - £4.7 million per annum in the central case, rising to £6.7 - £16.2 million in the 'high' case (expressed in 2022 £ sterling values).

We also estimate the value of the impact of the quantity of GHGs by which the Proposed Development will exceed those of landfill (see our Appendix 5). In 2026, the central value, in £2021 sterling values, would be £26.2 million, with the high end value being £39.4 million. The values increase in real £2021 terms to £59.5 million and £89.2 million, respectively, by 2050.

These are non-trivial impacts given the slender scale of the benefits, and the likely disruption associated with the build, and excludes any economic valuation of the associated disamenity that is likely to come in the stead of the facility being built.

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[2] The Environmental Targets (Residual Waste) (England) Regulations.

1.0 Comments on the Project Benefits Report

In this Appendix, we comment on APP-095 - Medworth CHP Limited Volume 7.4 Project Benefits Report. Henceforth, the document is referred to as the PBR. These comments support the main case presented in the main objection.

NPS EN-1 states:

> *4.1.3 In considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the IPC should take into account:*
>
> - *its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and*
> - *its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.*
>
> *4.1.4 In this context, the IPC should take into account environmental, social and economic benefits and adverse impacts, at national, regional and local levels. These may be identified in this NPS, the relevant technology-specific NPS, in the application or elsewhere (including in local impact reports).*

For this reason, we have considered the Applicant's presentation of benefits.

The PBR suggests, at 1.1.2, that the proposals will:

> *'recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial (HIC) waste each year'*

The applicant has nowhere demonstrated:

- That the waste it will use as fuel will be exclusively 'non-recyclable' waste. In the light of the Government's intention to halve residual waste by 2042, it is evident that some of the waste which is currently 'residual waste' is non 'non-recyclable' (not least since the

Government has also set out its intent to increase recycling in the coming years;

- That such a quantity of waste would be readily available to it over even half of its suggested lifetime (see para 2.6.1 of the PS) of 40 years (and if it was able to source such a quantity, perhaps by charging lower fees to users than competitors, that this would not simply produce excess capacity elsewhere, implying limited additional electricity generation relative to the current one).

Again, at 1.1.2, the PBR states:

> *The Proposed Development has a generating capacity of over 50 megawatts MW) and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.*

It is a well-known fact that generating electricity from waste is a relatively inefficient process when compared with, for example, generation via a combined cycle gas turbine. The generation efficiency of the installation is proposed to be around 30% gross, with 10% of what is generated used within the facility itself, leading to a net efficiency of power generation of around 27% (expressed relative to net calorific value in the waste fuel). The efficiency of electricity generation of combined cycle gas turbines (CCGT) was reported in the UK by the (then) Department of Business, Energy and Industrial Strategy as being, in 2021, 49.9% relative to gross calorific value (GCV), or 55.5% relative to net calorific value.[3]

We welcome the intent to make use of steam also (though we comment on the nature of the proposed scheme in Appendix 4), but we question why customers would make use of that steam. There are those who hold the view – and unfortunately, the classification of Energy from Waste (EfW) as a source of renewable energy tends to perpetuate that view – that EfW is a source of low carbon energy: it is not (we comment on this in our Main Submission and in more detail in Appendix 5).[4] As businesses seek to decarbonise the heat which they use, they have a range of options open to them. Heat generated from EfW which is not equipped with carbon capture and storage (CCS) will not give them anything like the same reduction in carbon emissions associated with heating that would come from, for example, use of heat pumps. It has to be questioned

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[3] D. Hogg (2023) *Debunking Efficient Recovery: The Performance of EU Incineration Facilities*, Report for Zero Waste Europe, January 2023.

[4] Ibid.

whether any potential commercial user that was at all interested in aligning itself with a net zero consistent pathway, as many seek to do, would sign up to using heat from EfW without CCS over anything other than the short term. That might help explain the fairly transparent attempt to minimise the cost of the supposed heat supply network (by keeping it above ground).

Section 1.4 states:

> *These national policy documents identify a national need for facilities such as the Proposed Development. National policy is one means of delivering government's legislative agenda which, relevant to the Proposed Development, seeks to reduce waste to landfill and to extract renewable energy from the residual waste which is burnt as fuel.*

This is a somewhat limited view of Government policy (also reflected in the Planning Statement, reviewed in Appendix 1). It is true that Government wants to reduce landfilling. It is not true that government seeks to reduce landfilling only by resort to EfW. Indeed, that is the least attractive way, consistent with Government policy, to reduce waste being landfilled. This has to be seen also in the context of the Government's target to halve residual waste, which includes the quantity being incinerated, net of any metals extracted for recycling in the process, by 2042.[5] This is a statement that is apt to mislead. It is also impossible to extract 'renewable energy' from all residual waste: only the non-fossil component can be considered a source of renewable energy. Finally, it is a condition of the permitting of an incinerator that the heat is recovered 'as far as is practicable'. It is questionable whether this facility respects that objective, and if opportunities for heat use are attractive, then the applicant should be seeking to configure the facility to maximise heat use, consistent with the Industrial Emissions Directive. There have been occasions recently where EfW facilities have been permitted without heat recovery, only for a case to be made subsequently for use of 'waste heat' as a means of providing heat to homes.

MVV's credentials are set out in section 1.2. It is interesting to note that MVV operates district heating in Germany, and in its Sustainability Report 2022, is planning to construct a carbon capture and storage plant at Mannheim in 2023:[6]

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[5] The Environmental Targets (Residual Waste) (England) Regulations.

[6] MVV (2022) *MVV Sustainability Report 2022*.

> *By adding carbon capture technologies and storing the CO_2 on a long-term basis, or putting it to other use, these plants can become large-scale industrial CO_2 sinks. We will start building a first pilot carbon capture plant in Mannheim before the end of the 2023 financial year.*

It would be useful to understand why the facility was not developed with a higher level of heat recovery in mind, and with a clear commitment to use the Mannheim experience as a basis for implementation at the Medworth facility. The former would be consistent with the IED[7] and the latter would be aligned with the view of the Climate Change Committee regarding emissions from the waste sector in the context of carbon budgets and pathways to Net Zero.[8]

Sections 2 and 3 outlines the Applicant's perspective on Policy. We cover this matter in our Appendix 1. There are some matters omitted from these Sections that are in the Planning Statement. For example, there is no reference to the reference in the Draft NPS EN-3 to the effect that (2.10.5):

> *The proposed plant must not result in over-capacity of EfW treatment at a national or local level.*

This statement recognises that the NPS's, understood in the context of wider policy as regards waste, temper the presumed need for energy with a requirement to manage waste in line with the hierarchy.

The reference to the British Energy Security Strategy includes (para 2.3.3.):

> *The strategy intends that by 2030 95% of British electricity could be low carbon and fully decarbonised by 2035 as part of a transition to reduce dependency on imported oil and gas.*

It is self-evident that this proposal is poorly aligned with this outlook. Indeed, it would make the envisaged level of decarbonisation more difficult to achieve (see Main Representation and Appendix 5).

Para 2.4.4 seeks to make the case for the proposal as a provider of baseload electricity. It references the British Energy Security Strategy, and argues that baseload sources help deal with intermittency:

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[7] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).

[8] Climate Change Committee (2020) *Policies for the Sixth Carbon Budget and Net Zero,* December 2020, [redacted]

2.4.4 The Proposed Development would generate up to 55MW electricity into the national grid. This electricity would be generated using residual waste as a fuel stock and would operate at approximately 90% efficiency such that it would provide a consistent baseload. The British Energy Security Strategy has a clear focus upon developing greater self-sufficiency within the national energy system. It also recognises that a key part of this is the balance to be struck between what is often zero carbon, renewable energy which is intermittent and the baseload (the strategy uses the context of nuclear). The Proposed Development is a renewable energy source which is not intermittent. Recognised by national policy, EfW facilities operate at over 90% efficiency meaning that EfW technologies provide reliable, baseload energy. The importance of baseload is increasingly recognised as a means of ensuring that there remains sufficient electricity at times of low wind and/or days with low levels of sunlight, times when wind and solar farms produce lower levels of electricity. This is a clear project benefit.

The references in the BESS, as noted above, are to nuclear (which makes a meaningful contribution to baseload, whereas this would deliver a marginal contribution). NPS's make use of the term 'dispatchable' to indicate the relevance of sources that can 'match' intermittent sources by being operated with varying levels of fuel input. But as the above paragraph clumsily indicates (by confusing 'efficiency' with the plant's availability – this proposal will definitely not 'operate at over 90% efficiency': this is incorrect), EfW facilities are rarely (some cases exist) operated as dispatchable sources of power. As such, they offer a very small contribution to baseload, and this proposal would not be able to 'match' the intermittent renewables. The UK's most important dispatchable source of electricity at present is gas-fired power. This has roughly half the carbon intensity of the proposed facility. The claimed 'benefit' turns out to be rather less compelling than the applicant claims.

The applicant seeks to describe the describe generation as a benefit:

2.4.5 An alternative means of quantifying the amount of energy generated is to compare it to the amount of electricity used by an average household using data on domestic electricity usage provided by BEIS[2]. Generating 55MW of electricity net and using the average mean household electricity consumption figure of 3,700kwh, the Proposed Development would generate electricity sufficient to power 118,918 homes per annum based upon its assumed level of efficiency (load factor). This amount of electricity is the equivalent electrical demand of almost all homes in Fenland and King's Lynn West Norfolk (45,6403 and 74,2404, respectively).

In the Main Written Representation, we question how this claim can be sustained if (as the applicant claims) the power is derived from waste that would otherwise have been landfilled (a view which we contest). In that case, according to the applicant, the net increase in power generation is 75% of the total, with only one third of this 75% (25% of the total) being derived from non-fossil (renewable) sources. The rest is derived from combusting material somewhat akin to oil in a power plant with half the efficiency of a gas-fired power generation facility. The claimed benefit, in other words, comes at a very considerable cost to society in terms of the climate change impacts and local air quality impacts.

Para 2.4.6 claims a carbon saving relative to landfill for this project. In Appendix 5, we indicate why this is not the case.

Para 2.4.8 seems to suggest that the CHP configuration leads to provision of heat with zero penalty in terms of power generation. We would like the applicant to consider whether this is actually the case.

The potential take-up of CHP is far from guaranteed (not least given its carbon intensity, a factor likely to make it less attractive to end users).

The claimed benefit in respect of Energy Security is inconsistent with the proper application of policy as regards the management of waste. If Energy Security was driving waste management policy, then EfW would sit at the apex of the wate hierarchy, and citizens would be urged to generated ever more waste. It is not, and they are not, and for extremely good reasons in terms of both demand for energy (for manufacture of materials) and climate change emissions. A claim is made at 2.4.10 to the effect that the WFAA has demonstrated that:

> *'there is sufficient residual waste available and that there is no requirement to import residual waste to operate the Proposed Development. The fuel security for the Proposed development is therefore assured.'*

We outline briefly why this is not the case in Appendix 2, and await with interest the Applicant's updated WFAA whereupon we will comment in greater detail.

Section 3 begins with a view on waste policy, but it is selective and lacks reference to some key policies, most notably The Environmental Targets (Residual Waste) (England) Regulations. The applicant could be forgiven, perhaps for not mentioning the Act itself – it was only recently passed into law, but the target now enshrined in law was consulted upon by Defra in the first half of 2022, and the way had been paved previously by the passage into law of the Environment Act.

The rather strange conclusion drawn from the review of policy is:

> *3.3.7 Environmental policy and legislation are therefore consistent with energy and waste specific policy and legislation in seeking to reduce the amount of waste produced, increase recycling, and promote self-sufficiency in its treatment and disposal.*

Actually, this somewhat downplays the tension that exists – and it shows little sign of being eliminated by the consultation draft NPS-EN1 and EN3 – between energy policy as set out in the NPS's and the body of waste policy (as opposed to some outdated Defra documents which have no status as 'enactments', and so, should hold no weight in the decision-making process).

The Section on Moving Waste up the Hierarchy is designed to infer that there will be not enough landfill, and not enough movement of waste up the hierarchy, so that a need for EfW arises. This is based on the WFAA which we review in Appendix 3.

The argument regarding proximity (3.3.14-16) comes close to demolishing the applicant's own argument regarding the availability of waste fuel. The WFAA indicates a 'catchment area' of the order 2 hours drive. This might not be considered especially 'proximate' where waste is concerned, and local residents might well take the view that if the waste really does materialise from locations some distance from the

The Applicant has not told us its intended destination for the hazardous air pollution control residues which will be generated by the facility. It would be useful to know.

The concluding comments at 3.4 are based on the Applicant's own WFAA, the accuracy of which, we dispute (see Appendix 3). It notes:

> *3.4.1 Research undertaken by the Applicant demonstrates that there is a significant amount of residual waste being landfilled both within a defined Study Area and nationally. Government aims to increase recycling rates consistent with the waste hierarchy. Yet even if these rates were to be achieved, there would be insufficient facilities (landfill or EfW) available to deal with future residual waste arisings. There is therefore a need for the Proposed Development to treat waste, prevent it begin landfilled and to provide extra useful and reliable energy consistent with the national policy statements referenced in the preceding section of this report.*
>
> *3.4.2 The Proposed Development would facilitate the management of significant quantities of residual waste, some of which is presently managed comparatively remote from where it is produced or is*

otherwise exported for management abroad. The Proposed Development would allow waste to be managed in accordance with the proximity principle which is a further fundamental pillar of England's waste management policy and legislative framework.

The Applicant's own Waste Fuel Availability Assessment relies upon the Proposed Development being able to access waste within a catchment whose boundaries are artificially drawn to reflect a 2-hour journey. There is, at the same time, no indication as far as we could see of where the hazardous air pollution control residues are planned to be sent.

There are benefits claimed from CHP provision:

4.2.9 The use of heat and power from a CHP facility is recognised in the national policy referenced above as beneficial in that it displaces fossil fuel derived energy otherwise required to facilitate the relevant industrial processes. This displacement has been quantified by the Applicant and is reported within Appendix 14C (Volume 6.4) to ES Chapter 14: Climate and demonstrates in Table 14C.2 Comparative sensitivity analysis of net annual emissions savings that the inclusion of CHP increases the emissions saved over a 'do nothing' landfill alternative from 73,952 tCO2 to 103,246 tCO_2 per annum based upon the current grid average. This represents a substantial project benefit.

4.2.10 The potential to supply heat to local customers can also provide benefits to their business operations. The EfW CHP Facility will be able to deliver sustainable energy at prices cheaper than those available from the electricity and gas networks. Such opportunities are clearly subject to confidential commercial discussions with the relevant customers. The supply of heat to a number of potential industrial food processing companies would enable them to further improve their own sustainability metrics, as well as lower their energy costs.

It should be highlighted that this additional benefit still leaves the Proposed Development far worse, in terms of greenhouse gas emissions, than the landfill comparator. Furthermore, there is no obvious guarantee that the heat will find a useful outlet, and the somewhat strange arrangement for its delivery – via a pipe mounted on steel at head height – is worthy of mention. Potential users will, increasingly, seek to reduce (to close to zero) the carbon intensity of heat use: it is unlikely that they will find this an attractive source from that perspective.

The Section on carbon capture readiness includes the following:

4.3.1 As the outcome of the consultation is unknown, the Applicant has ensured that the design of the EfW CHP Facility is carbon capture ready, via the following means:

- *Consistent with NPS EN-1, sufficient space is available within the site to accommodate carbon capture equipment in the future. This would include the plant and equipment to capture carbon dioxide (CO2) from the flue gas emissions of the EfW CHP Facility and its transportation to a storage facility.*
- *the steam turbine will be designed so as to be ready for the installation of controlled low pressure steam extraction.*
- *space will be available for condensate return to the main condensate system, the diversion of flue gas through the CCS facility.*
- *an additional 11/15kV circuit breaker will be installed, plus a pre-installed duct from the switch room CCS facility.*

We would like to understand the impact of introducing carbon capture on power and heat generation.

All other things being equal, we would agree with the applicant that:

'Future implementation of carbon capture would bring clear and justifiable project benefits.'

On Socio-economic benefits, Section 5.3 indicates possible benefits to the local economy:

5.3.1 The Proposed Development represents a considerable financial investment into the local economy of some £350million during the construction phase alone. Construction will take place over 3 years and employ some 700 workers with up to 500 employed on site at peak. Whilst it is difficult to predict accurately where the construction workforce will come from it is recognised in the socio economic assessment reported within ES Chapter 15 Socio economics, Tourism,

5.3.2 The construction workforce would generate indirect employment. The socio-economic assessment uses a commonly applied multiplier to indicate that an additional 777 people could be supported in employment indirectly during the construction process. Sourcing services and products from local businesses would deliver additional positive economic benefit.

It is interesting that no assessment is made of the economic impact of the facility itself (in terms, for example, of the potential disamenity associated with incineration facilities). The short-term economic benefits are not necessarily trivial for the local economy, though we note that there is

(as far as we are aware) no UK-based supplier of incinerator technology. As such, the main work is likely to be construction related. The UK is not short of such activity at this current time, with skilled construction labour in demand. On a macro-economic basis, therefore, it is somewhat difficult to attribute to the Proposed Development the claimed 'increase' in employment. Notwithstanding that point, there would be increased activity in the local economy.

It should be noted that employment (and multiplier) benefits beyond the construction period are not articulated, and in any case, any socio-economic benefits would need to consider the displaced activity associated with alternative ways of managing waste, which the applicant has assumed – wrongly, in our view (over the lifetime of the facility) – to be landfilling. The main effect of the facility would likely be to concentrate employment in one location, but depending on what one takes to /be the appropriate counterfactual, a net benefit could not be assumed to arise.

We have indicated above how limited the benefits claimed by the Applicant are: in some cases, the suggested benefit does not exist, but presents itself as a negative impact, as in the case of climate change (see our Appendix 5). Set against the slender benefits are impacts of the facility, and considering para 4.1.3. and 4.1.4. of NPS EN-1, and recognising also that s.104 subsection 7 of the Planning Act 2008 indicates that the Secretary of State might wish to consider whether the adverse impact of the proposed development would outweigh its benefits, we have sought to estimate some of the negative impacts of the Proposed Development.

Although the Air Quality assessment provides no clear indication as to what the emissions of the facility are planned to be (and there is no agreed permit), we might take from the assessment a view that the emissions of pollutants are as per the BAT Conclusions for Waste Incineration (which seems to have been the approach taken).[9] This does not completely determine emission as the BAT-AELs for incineration for many pollutants are presented as ranges.

Supposing we take the emissions of NOx from the facility. The BAT-AELs indicate a range for new facilities, but the Applicant has opted not to implement selective catalytic reduction for NOx abatement. It follows, from the BAT-AELs, that the NOx emissions will likely not be at the lower end

[9] Commission Implementing Decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration.

of the range. The upper end of the range is 120 mg / Nm^3. Typical operating conditions would lead to exhaust gas of the order 5,500 Nm^3 per tonne of waste, so that NOx emissions could be expected to be 0.66kg per tonne of waste combusted, or – for a throughput of 630,000 tonnes – 415.8 tonnes per annum. The same process for dust emissions (assumed to equate to PM_{10}) yields an annual emission of 17.3 tonnes.

Defra offers Guidance on valuing the impact of emissions of air pollutants.[10] Values are given by sector, and also, for major point source emitters, according to the stack height for emission and the population density in the surrounding area. Conversion factors are also given for the proportion of PM_{10} assumed to be $PM_{2.5}$ by sector (values are given for $PM_{2.5}$, not PM_{10}).

Taking NOx and PM2.5 together, the annual air quality damages associated with the facility are estimated to be £2.0 - £4.7 million per annum in the central case, rising to £6.7 - £16.2 million in the 'high' case (expressed in 2022 £ sterling values). These are non-trivial given the slender benefits.

We also estimate the value of the impact of the quantity of GHGs by which the Proposed Development will exceed those of landfill (see our Appendix 5). In 2026, the central value, in £2021 sterling values, would be £26.2 million, with the high-end value being £39.4 million.[11] The values increase in real £2021 terms to £59.5 million and £89.2 million, respectively, by 2050.

These are obviously far from trivial impacts.

In addition, one needs to consider the effect on local amenity of a very large, hardly attractive building, the noise and pollution associated with concentrating transport movements around the site, the impact of the facility's demand for water, and the impacts associated with management of hazardous and non-hazardous residues.

In summary, the Proposed Development offers very few benefits other than generating economic activity (along with much disturbance) in the construction phase. The construction of the facility will itself be carbon

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[10] Defra (2023) Guidance. Air quality appraisal: damage cost guidance, updated 2 March 2023, https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance#annex-a

[11] Values taken from Table 3 in Data Tables (*Data tables 1 to 19: supporting the toolkit and the guidance*) downloaded from here - https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

intense, and we suspect much more so than the Applicant has suggested (see Appendix 5). Once constructed, on the other hand, the Proposed Development will have very significant negative impacts.

APPLICATION BY MEDWORTH CHP LIMITED

WRITTEN REPRESENTATION FOR RT HON. STEVEN BARCLAY MP

APPENDIX 4: COMMENTS ON VOLUME 6.4 ES CHAPTER 2 ALTERNATIVES (APP-069)

Dr Dominic Hogg
[redacted]

March 2023

Summary

In this Appendix, we raise some concerns about the narrowness of the scope of the assessment of Alternatives. In particular, we find two key issues are not explored at all.

The first is the matter of scale, for which there is no rationale provided in the Waste Fuel Availability Assessment (which is, any case, flawed – see our Appendix 2), but on which the discussion of Alternatives is silent. The issue of site selection is discussed as though this matter can be considered to be 'a given'. It cannot be taken as such. The various requirements in NPS's to the effect that EfW should not prejudice the management of waste higher in the hierarchy make this an essential matter.

The second is the nature of the Proposed Development. Given that, in the year 2023, it is perfectly possible to instate a sorting plant in front of an incinerator dealing with waste leftover after source separation, and given that this will increase recycling, then we question how the EfW can claim to be doing anything other than burning wastes, given that a non-trivial and valuable share of the waste it plans to receive will be recyclable. This is a particularly egregious omission given the scale of the facility, the quantum of recyclables that could be extracted, and that the performance of the overall proposal would improve in terms of its GHG performance (which, as we show in Appendix 5, is – once methodological errors are corrected for - actually far, far worse than the applicant has suggested).

There are other matters of concern indicated such as the lack of reference to air pollution abatement technology, and the absence of any consideration of the technology chosen to generate power, which we should have through was rather important in this Application. These might be considered, in part, matters for the permit, and hence, for the Environment Agency, but if the need for power is paramount, then basic questions such as 'how much power will you generate and how' do seem relevant.

The matters of scale and of the design of the Proposed Development (notably, the absence of mixed waste sorting) are fundamental to the questions both of need and of the ability to demonstrate that the Proposed Development is aligned with the waste hierarchy. If the Applicant had proposed a sensible solution regarding sorting, then even if it ever managed to attract 630,000 tonnes of 'waste that would otherwise have been sent to landfill', it would generate less than 50MW of power using

the technology proposed. Ironically, whilst a far superior installation in terms of contribution to recycling, reducing residual waste, and contributing to the meeting of carbon budgets, despite that more strategic role as regards meeting the requirements of waste management policy and law, it would not be an NSIP.

Contents

1.0 Comments on Alternatives

In this Appendix, we comment on APP-069 Medworth CHP Limited, Volume 6.4 ES Chapter 2 Alternatives. Henceforth, the document is referred to as the Alternatives report. These comments support the main case presented our Written Representation.

1.1 Introduction

As we suggest in our main Written Representation, the consideration of Alternatives is not merely a matter of satisfying a procedural requirement: it is essential to demonstrate that the Proposed Development aligns with the waste hierarchy.

NPS EN-1 indicates that the relevance of alternatives in the decision-making process is a matter of law. The fact that waste management policy and law requires that the waste hierarchy is implemented as a priority ordering, and that the Waste (England and Wales) Regulations 2011 gives substance to the hierarchy, indicates that because the Regulations require those managing waste to respect this priority ordering, then the matter of alternatives assumes great significance. It is worth noting that the Regulations entered into force prior to the NPS's being published.

Section 4.4 of NPS EN-1 states:

> *"The consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner;"*
>
> *"The [SoS] should not reject an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and it should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposal;"*
>
> *"alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the [SoS] decision." and*
>
> *"alternative proposals which are vague or inchoate can be excluded on the grounds they are not important and relevant to the [SoS] decision".*

NPS EN-1 states:

> *Only waste that cannot be re-used or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery.*

References to the need to respect the hierarchy are clearly made in NPS EN-3 at paras 2.5.2., 2.5.64, and others cited below.

1.2 Site Selection Process

We highlight in our Appendix 2 the backward looking nature of the Waste Fuel Availability Assessment (WFAA). The site selection process reflect that backward, rather than forward looking perspective. It somewhat defeats all logic to posit that a facility that plans to be in place for forty years will base its site selection on what was happening seven years before it commences operation. That appears to be part of the 'logic' of 2.3.2.

The second part of the logic relates to the potential for using heat, yet the potential heat use is treated in 'sensitivity analysis' for the purposes of the climate assessment. If the site was genuinely interested in providing heat - and the proposal for the CHP connection might lead one to doubt this - then why not consider a facility delivering district heat to households and businesses? Was this considered? What would have been the implications for scaling the facility? Efficiencies of heat generation can be of the order 100% (relative to net calorific value) whereas the applicant is offering 30% (gross) and 27% (net) for electricity. It is true that electricity is a higher 'quality' of energy, but for the same level of emissions, might it not have been worth exploring the option, not least since in order to obtain a permit, the Environment Agency should be satisfied that heat has been recovered as far as is practicable?

The size of site and facility is also not explained, and no alternative sizes of facility are considered. The Report notes:

> *A site of sufficient size to accommodate the EfW CHP Facility is required. The Applicant set a minimum site area requirement of 3.5 hectares to accommodate an EfW CHP Facility of the type and size proposed. At approximately 4.0 hectares the initial site identification process confirmed that the EfW CHP Facility Site was of a sufficient size.*

There is no explanation as to the choice of capacity. This is not provided in the WFAA either. The Proposed Development would be among the top 10 EfWs by capacity in the UK, and it is proposed at a time when

capacity has increased significantly over the past decade, and when concerns have already arisen as to over-capacity.[1]

1.3 Technology and Processes

Most significantly, in our view, there is no discussion of alternative configurations for 'dealing with residual waste'. The Section regarding Technology and Processes is impressively short:

> *2.3.44 Based on MVV's experience of operating similar facilities in the UK and Europe, the proposed technology is considered to have a proven and safe track record, and therefore no alternative forms of thermal treatment technology were considered.*

That is inadequate. The Applicant is required to discharge its duties vis a vis the waste hierarchy.

EN-1 para 3.4.3 states: '*Only waste that cannot be re-used or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery"*

The Secretary of State would – if suitably advised – know that there is, in the 630,000 tonnes waste leftover after source separation, a considerable quantity of material that can be sorted from that mixed waste for it to be recycled.

Other paras from EN-3 reinforce the need to demonstrate alignment with the waste hierarchy:

EN-3, para 2.5.66 *'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.'*

EN-3, para 2.5.70 *'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*

---

[1] As long ago as 2015, Eunomia was indicating that if the UK met its recycling targets as intended, EfW capacity, along with exports of refuse derived fuel, would exceed the amount of residual waste available for such treatment by early in the 2020s. The principle reason this has not already materialised has been the slowing of growth in recycling rates, which recent and upcoming changes in Government policy and law are designed to address (see Eunomia (2015) Residual Waste Infrastructure Review (8th Issue), 22 June 2015).

appropriate type and scale so as not to prejudice the achievement of local or national waste management targets in England...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'.

The Proposed Development could have had chosen to integrate a high quality mixed waste sorting system at the front of the incineration facility. If that option, which is nowhere discussed, but of which there are existing examples in Europe, had been chosen, then based on figures in existing reports, themselves based on detailed reviews of plant performance, the sorting of 630,000 tonnes of waste leftover after attempts by citizens and businesses to recycle would lead to:[2]

1. extraction of the order 80-120,000 tonnes of material sorted for recycling (of which I would estimate around 40-60,000 tonnes would be plastics);
2. reduction in the net calorific value of each tonne of the residual waste of the order 20%;
3. reduction in the total calorific content of the residual waste (relative to the initial 630,000 tonnes of input waste) of around 30%;
4. reduction in the net climate impact of managing each tonne of waste of the order 0.35 tonnes CO_2 per tonne of waste treated, with this declining as both electricity and (subsequently) materials manufacture decarbonises; and
5. reduction in the emissions of the facility overall by around 220,500 tonnes as a result.

Had this been considered, the system would have had a climate change performance better than the existing landfill, rather than it performing worse (see our Appendix 5).

It is incumbent on the Applicant to indicate why this option was not considered. It not credible for a facility of the proposed scale to forego this opportunity. Indeed, it is the only way the Proposed Development can demonstrate alignment with the hierarchy, and satisfy the many paragraphs within the NPSs EN-1 and EN-3 (and the successor Drafts) that exhort

[2] Eunomia (2021) Waste in the Net-Zero Century: Testing the Holistic Resources System via Three European Case Studies, Report for TOMRA, July 2021; D. Hogg (2022) The case for sorting recyclables prior to landfill and incineration, Report for Reloop, June 2022.

those proposing EfW facilities to demonstrate that they are only burning what would otherwise have to be landfilled.

The sorting option should have been considered so as to demonstrate what needs to be demonstrated – that the waste which is incinerated is that which cannot (given the state of technology at the time) be recycled. As it is, the absence of consideration of this option has to be considered for what it is: a failure of the applicant to fulfil its duties vis a vis the waste hierarchy, and a clear flouting of the content of the NPSs.

Whilst we appreciate that this might be considered a matter for the permitting process, there is no discussion regarding the air quality impacts of the facility, and what abatement techniques have been chosen. Having read many documents from the applicant, it appears that cheaper, and lower performance, selective non-catalytic reduction of NOx has been chosen as the abatement technique of choice. The residents deserve better: As the BAT Conclusions for Incineration indicate, emissions can be lowered, but most likely, only using catalytic NOx removal (which is likely also to reduce emissions of chlorinated dioxins).[3] There seems to be no discussion even of the choice of generating technique: the NPSs effectively treat this installation as a source of power. If that is the case, then the choice of generating technology is relevant. Again, the BAT Conclusions indicate that better performance than the Applicant is offering should be attainable.[4]

1.4 CHP Connection

The CHP connection proposed considers alternative routes, but seems to have decided on a means of connection above ground and in a location which raises the likelihood of closing off other alternative uses of the same land, not least given the 40 year planned operational period.

1.5 Report Conclusion

The Alternatives report concludes Chapter 2 by saying:

> *The site selection process and consideration of alternatives has been wide ranging and has considered both the EfW CHP Facility and also*

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[3] Commission Implementing Decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration.

[4] Ibid.

many of the constituent parts which together form the Proposed Development. The design evolution has been informed by responses to non-statutory and statutory consultation.

We cannot agree with this statement because two crucial aspects remain effectively unexplained: what has determined the suggested quantity of waste to be managed at the site, and what alternative scales (if any) were considered? And how did the Applicant satisfy itself that it would be able to discharge its duties under the Waste (England and Wales) Regulations 2011 by incinerating every tonne of waste it planned to receive? These remain unexplained, with consideration of alternatives proceeding as though those important decisions should be taken as 'given'.

APPLICATION BY MEDWORTH CHP LIMITED

WRITTEN REPRESENTATION FOR RT HON. STEVEN BARCLAY MP

APPENDIX 5: ES CHAPTER 14, CLIMATE (APP-0041)

Dr Dominic Hogg
[redacted]

March 2023

Executive Summary

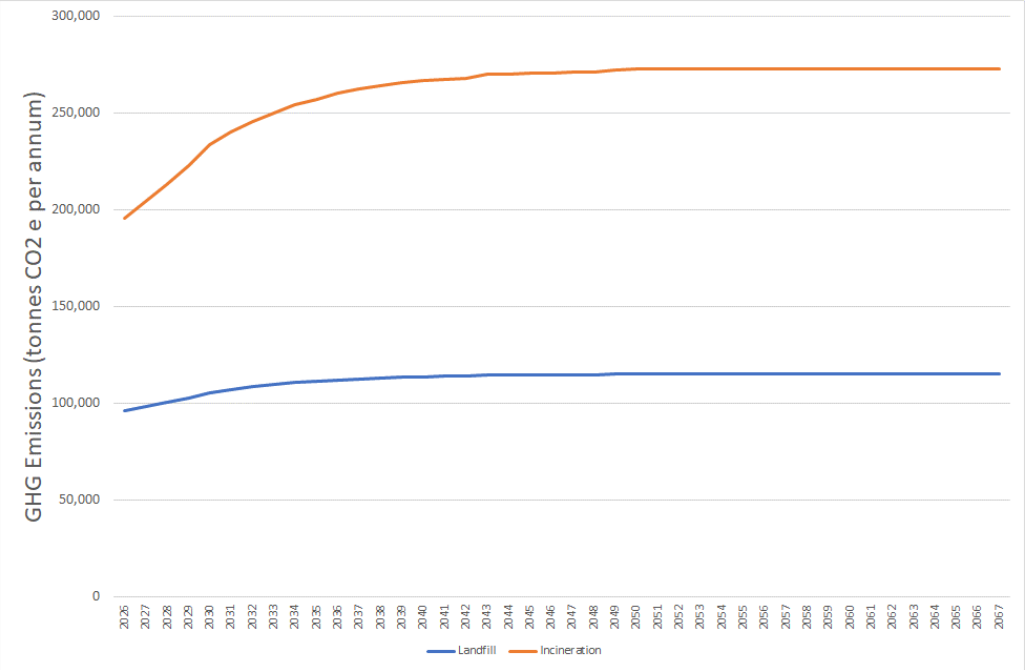
In this Appendix, we review the Applicant's assessment of the climate change impacts of the Proposed Development as presented in APP-041. Related to our review of the WFAA in Appendix 2, we question the validity of the Applicant's use of landfill as the only relevant comparator. Nonetheless, we find the Applicant's analysis to suffer from two methodological errors. Correcting for one of these – the failure to include a sequestration credit for landfill, related to the non-degraded non-fossil fraction of waste – the situation switches dramatically. Instead of EfW being 'better than' (lower GHG emissions) than landfill, the reverse is true.

We then corrected for the second error. Instead of using a constant figure for CO_2 'saved' per unit of energy generated (182gCO_2/kWh), we used the long-run marginal carbon intensity related to generation (from Tables provided by what was then BEIS).[1] The annual emissions (net of 'avoided' CO_2 from power generation) from incineration and landfill evolve over time as shown in the Figure below.

As power decarbonises, the credit per unit of power declines. This exerts a stronger effect on the outcome for incineration for the simple reason that it generates more energy. Over the 40 year life of the facility, the increase in emissions associated with incinerating rather than landfilling can be calculated as 5.934 million tonnes.

[1] Table 1 in Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal [redacted]

Evolution in Annual GHG Emissions from Incineration and Landfill Using Figures Recommended by Government for Use in Appraisal (tonnes CO_2e)



The applicant claims, in APP-0041 (ES Chapter 14, Climate), at para 14.9.48-49 (based on its own incorrect figures):

> *14.9.48 This assessment has established that the Proposed Development net GHG emissions reduction will equate to 0.004% of the UK's carbon budget for the fourth carbon budget, 0.02% of the UK's fifth carbon budget and 0.03% of the sixth carbon budget. In 2050 when the UK net carbon budget is zero (and the Climate Change Committee state that waste sector emissions can be reduced by 75% from today's levels44), the Proposed Development will have a beneficial impact equivalent to -67ktCO2e.*
>
> *14.9.49 In accordance with IEMA guidance36 for defining significance (see **Table 14.19 Significance criteria for the GHG assessment**) it is concluded that the GHG impact of the Proposed Development will have a **beneficial Significant effect**. The Proposed Development has net GHG emissions below zero, causing an indirect reduction in atmospheric GHG emissions which has a positive impact on the UK Government meeting its carbon budgets/targets.*

The highlighting in the above is the applicant's.

Given that the corrected figures reveal that GHG impact of the Proposed Development will be of a greater magnitude, but of the opposite sign, one

cannot conclude other than that the Proposed Development will have a **negative Significant effect** (or that relative to the Proposed development, it is doing nothing that will have the **beneficial Significant effect**).

We conclude that going ahead with the Proposed Development will have a significant negative impact on climate change. That is an excellent reason to have explored the operational GHG emissions (and impacts) of this Proposed Development. The Applicant itself has indicated that the quantum of the effect is significant.

Contents

1.0 Comments on Climate Report (APP-041)

In this Appendix, we comment on APP-041 - Medworth CHP Limited Volume 6.2 ES Chapter 14 Climate. Henceforth, the document is referred to as the Climate report. These comments support the main case presented in the main Written Representation.

1.1 Policies and Implications

In Table 14.2, there are various references made to policies and their implications. Regarding NPS-EN-1, it highlights that:

> *The Energy NPS aims to "speed up the transition to a low carbon economy and thus help to realise the UK climate change commitments sooner than continuation under current planning system" [1.7.2]. Note the "current planning system" as described in the Energy NPS has since been updated with more ambitious carbon reduction targets.*

It indicates that the assessment in Section 14.9:

> *is based on assessing whether the Proposed Development would impede the UK in being carbon net zero by 2050, to which EN-1 is aligned. The assessment also considers the offset of GHG emissions from the generation of electricity by the EfW CHP Facility, relative to the production of electricity from the UK grid mix.*

We show below, however, and in our Main Written Representation, that this proposal will not contribute to decarbonisation (it will increase the carbon intensity of power generation).

Also, methodologically, the assessment in Section 14.9 is flawed since it assumes that 'offsets' can be attributed to the facility as though the carbon intensity of the power displaced (by the Proposed Development or by the landfill) remains constant over the 40 year life of the facility. That

assumption is inconsistent with what Central Government indicates as the correct approach.[2]

Similarly, it notes:

> *EN-3 provides additional technology-specific guidance to complement EN-1. It states that through supporting the transition to a low carbon economy, EN-3 is considered likely to have positive effects on the climate change objective in the medium and long term [1.7.2].*

That might be true for proposals approved under EN-3 in the aggregate, but where EfW is concerned, it will not, in general, be true.

The Climate report also cites Draft EN-1:

> *Draft EN-1 acknowledges that to achieve net zero by 2050 "We will need to dramatically increase the volume of energy supplied from low carbon sources and reduce the amount provided by fossil fuels." [2.3.4] and that "Energy recovery from residual waste has a lower GHG impact than landfill" [3.3.33].*

The first part of this statement would argue against this facility: it is not a low carbon source (see our main Written Representation). The second part is worth considering in more detail. The relevant extract from the Draft EN-1 (3.3.33) is:

> *The principal purpose of the combustion of waste, or similar processes (for example Advanced Conversion Technologies (ACTs) such as pyrolysis or gasification) is to reduce the amount of waste going to landfill in accordance with the Waste Hierarchy[30] and to recover energy from that waste as electricity or heat. Only waste that cannot be re-used or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery. Energy recovery from residual waste has a lower GHG impact than landfill[31]. The amount of electricity that can be generated from EfW is constrained by the availability of its feedstock, which is set to reduce further by 2035 as a result of government policy.[32]*

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[2] BEIS (2023) *Valuation of energy use and greenhouse gas (GHG) emissions: Supplementary guidance to the HM Treasury Green Book on Appraisal and Evaluation in Central Government*, January 2023. See also supporting Data Tables (*Data tables 1 to 19: supporting the toolkit and the guidance*) which can be downloaded from here - https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal:

This Draft makes a reference – at footnote 31 - to Defra's 'Energy from waste: A Guide to the Debate'. This has often been interpreted a) as having the status of law, or policy: it does not (it attempted to synthesis research that had been commissioned by Defra), and b) as making a definitive statement applicable for all time, which it did not. The report stated, amongst other things:

> *Chapter 2 of this Guide set out two general rules for energy from waste to be a better waste management tool than landfill for a specific proposal:*
>
> *• the more efficient the energy from waste plant is at turning waste into energy, the greater the offset from conventional power generation and the lower the net emissions from energy from waste;*
>
> *• the proportion and type of biogenic content of the waste is key – high biogenic content makes energy from waste inherently better and landfill inherently worse.*

It added:

> *243. Looking to the future this is not a static picture. A number of factors including the composition of waste, the environmental impacts of alternative energy sources, and the effectiveness of landfill gas capture, are expected to change and will all have an impact on the relative merits of the two approaches.*

This statement makes clear that the picture will change over time, and lists some of the key determinants of the change. It should have included, as a key determinant, the assumption regarding the carbon intensity of energy being 'displaced' by the facility. In this regard, it indicated, at apar 41:

> *41. The energy from waste plant will generate some energy (in addition to whatever it uses to run itself). This energy substitutes for energy that would otherwise need to be generated by a conventional gas-fired power station[29], thereby saving the fossil carbon dioxide that would have been released by that power station. This means that in our comparison some of the fossil carbon dioxide released by the energy from waste plant can be offset by the saving from the gas fired power station, reducing the overall impact. The more efficiently the energy from waste plant converts the waste to useful energy, the greater the carbon dioxide being offset and the lower the net emissions.*

Footnote 29 in the above quite is somewhat important. The footnote read:

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. 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-and-greenhouse-gas-emissions-for-appraisal

What this is clearly saying is that the results of the analysis reflected assumptions regarding the carbon intensity of avoided CO_2 emissions that may have been applicable for the year 2014, but not for all time. It also directs those seeking to conduct detailed analysis to the Tales which are provided as Supplementary Guidance to HM Treasury's Green Book.[3]

It might also have added that if analysis excludes reporting of biogenic CO_2 emissions from incineration, consistency would require that a credit should be given to the biogenic carbon which is effectively sequestered (not degraded) in landfills. This was made clear in the accompanying modelling report:[4]

> *173. However, the model assumes that not all of the biogenic material decomposes in landfill but it is all converted to CO_2 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.*
>
> *174. There are two ways to account for this additional effect*
>
> *• Estimate the amount of biogenic carbon sequestered and include the CO_2 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*
>
> *175. While both approaches would address the issue of sequestered biogenic carbon the first would potentially be the better solution as it would avoid double counting carbon with other inventories.*

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[3] Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal [redacted])

[4] Defra (2014) *Energy Recovery for Residual Waste - A Carbon based Modelling Approach, Report for Defra*, February 2014 (downloadable [redacted]

The 'better solution', therefore, would see the sequestered CO_2 being deducted from the landfill emissions, or added to the incinerator emissions in a comparative analysis.

As we will see below, the Applicant's analysis is deficient both in the way it attributes 'offsets' associated with avoided power production from other sources, and in that it attributes no sequestration effect to the landfill.

1.2 Assessment of EfW (Relative to Landfill)

As regards the Assessment, the Applicant notes:

> *The GHG assessment considers the net change between two scenarios: the 'with Proposed Development' case in which the EfW CHP Facility is constructed and operated, and the 'without Proposed Development' case in which the residual waste is disposed of at landfill. The assessment also considers the offset of GHG emissions from the generation of electricity by the EfW CHP Facility, relative to the production of electricity from the UK grid mix. Table 14.17 details the life cycle stages considered in the assessment.*

The use of 'landfill' as the only counterfactual is not reasonable, not least since some of the waste could be sorted prior to combustion at the applicant's facility.

The choice of assumptions and data are not always justified or sensible. The applicant should be asked to justify the selected assumptions. We note, in particular, the following in Table 14.10 ('Desktop Data for Climate Assessment').

Table 1: Extract from Climate report, Table 14:10

Emissions factors for electricity generation/ offsetting	BEIS	BEIS emissions factors for use of UK Grid average electricity generation, as alternative to EfW or landfill gas (LFG).[65]
Emissions factors for heat generation offsetting	BEIS	Emissions factors for use of natural gas to generate heat as alternative to supply of heat from EfW Combined Heat and Power (CHP) capacity, have been sourced from the BEIS GHG reporting conversion factors 2021[71] for sensitivity analysis.

The choice of 'offsetting factors' used as credits for generating power or heat are incorrect and backward looking. For electricity, the correct approach, as noted above is to use the declining long-run marginal carbon

intensity values provided by what was previously BEIS in support of HM Treasury's Green Book. Regarding heat, the counterfactual is sometimes difficult to understand. Whilst in the past, it may have been relevant to consider the delivery of heat by EfW for heating as offsetting heat from gas-fired boilers, this is no longer true as pressure to decarbonise heat steps up. For example, were planners seek to reduce operational CO_2 emissions from new development, or where businesses seek to reduce the CO_2 associated with their energy use, the counterfactual might be 'another alternative to gas', including – at new developments, and where businesses seek to reduce dependency on gas – heat pumps, for example.

Para 14.5.1. sets out the key methodological assumption for assessing the climate impacts of the proposal:

> *The assessment is based on a reasonable worst-case scenario and comparison with the future baseline scenario whereby residual waste processed at the EfW CHP Facility would otherwise continue to be sent to landfill.*

It is not at all clear what the Applicant means in the reference to a 'reasonable worst-case scenario'. It is far from clear to us that the Climate report models 'a reasonable worst case scenario', where the Proposed Development is concerned. In para 14.5.7, it is simply stated that:

> *14.5.7 The Waste Fuel Availability Assessment (Volume 7.3) identifies that landfill disposal is the reasonable alternative for the management of residual waste proposed to be used at the EfW CHP Facility.*

That rather depends on the accuracy of the WFAA, which we dispute (see our Appendix 2).

Again, at para 14.8.15, the Climate report notes:

> *Information on the detailed breakdown of residual waste composition for relevant Waste Planning Authorities is limited in terms of consistency and quality so, for the reasonable worst-case scenario at this stage, the assessment has used information on residual waste composition available from WRAP's national survey of municipal waste for England in 2017 (published in 2020)[60], which is considered to be representative of waste that would be available for the EfW CHP Facility.*

The applicant needs to explain why, in their view, this composition represents 'the reasonable worst-case scenario'.

We struggled to comprehend the firing diagram provided as Graphic 14.2. The previous page indicates a total thermal capacity of the facility of 201MW, but the maximum thermal input in the Graphic is 105MW, and

the maximum waste throughput is indicated as 44.9 tonnes per hour, equating to a throughput of 354,000 tonnes at 90% availability.

We would like to review the figures in the WRATE GHG tool, which is a proprietary one, that are used as the basis for the calculation of '*the typical carbon content (biogenic and fossil carbon) and calorific values of different waste streams*.' Our experience with WRATE is that these are derived from a programme of analysis conducted decades ago. Categorisation of materials such as textiles are likely to be well out of date. At least 2 of the 3 sources cited – in para 14.8.19 - in support of the total carbon figure were themselves based on the old data from the National Household Waste Analysis Programme conducted in the 1990s. The 26.2% figure seems reasonable: it is the split between the fossil and non-fossil carbon fractions that is in question.[5]

Regarding embodied carbon, the Climate report notes:

> *14.9.4 The exact bill of materials required to construct the Proposed Development is unknown, so the RICS methodology to calculate embodied carbon[75] along with the ICE Database[74] has been used. The GHG emissions associated with the embodied carbon of material resources needed for the construction of the Proposed Development are estimated to be 35.55ktCO2e.*

The embodied carbon in the raw materials used in construction appears rather low given the nature and quantity of materials likely to be used. We would like to understand the basis for, and detail behind, this calculation. It appears that this is simply pro-rated to construction spend. The applicant will have some concept of what is required to build such facilities. We would like a better basis for understanding the embodied carbon figure. Expending what is already a significant quantity of GHG emissions (roughly equivalent to what might be the emissions from building around 1,000 dwellings, depending on floor space) on a Proposal of limited merits is a relevant matter. The CO_2 emissions alone would be valued at

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[5] The Applicant's parent company, MVV, notes in its Sustainability Report: '*Typically, half the waste results from biogenic sources; this share therefore counts as renewable*' (MVV (2022) *MVV Sustainability Report 2022*). This echoes the author's experience – the figure may be above or below this value, and will fluctuate with changes in composition as consumption patterns change, recycling rates increase (as they are planned to), and as the relative proportions of different constituents of the waste stream change also. The figure of 50% provides a reasonable rule of thumb for such calculations. Note though, that with the application of advanced sorting of leftover mixed waste – which is not proposed by the applicant - the fossil carbon fraction of what is combusted would decline significantly.

something of the order £9 million according to current Government appraisal methods.[6]

In Table 14.24, notwithstanding the references earlier in the document to the source, we cannot match the data on waste composition with the quoted source. We cannot easily understand why the biogenic and non-biogenic carbon figures are as they are in the assessment. I am realistic when it comes to these issues, and experienced enough to use rules of thumb for such variables, but these deviate sufficiently significantly from my rules of thumb that I am keen to understand what lies beneath them, not least since the 'deviation' favours the Applicant's case.

The basis for Table 14:25 is acceptable in most respects. The efficiency of the gas engine seems lower than it should be, figures as high as 43% being possible (so the generation of energy from landfill gas may have been understated).

The key issue is that the Table omits (see above) to credit landfill with the CO_2e associated with the non-fossil carbon which is sequestered in the landfill (because it does not biodegrade). If 50% of the biogenic carbon is converted to landfill gas, then 50% of the biogenic carbon is *not emitted* as gas and is sequestered in the body of the landfill. The equivalent CO_2 credit for the sequestration would be:

(44/12 * 46,867) = 171,846 tonnes CO_2.

If one credits the landfill with the avoided emissions of biogenic CO_2 (as one should, and in line with Defra's modelling report)[7], then instead of the incinerator emitting less CO_2e than the landfill, the situation is reversed (see Table 2). This approach is the methodologically correct one: the alternative would be to 'count' all the non-fossil CO_2 released by the incinerator, the effect of which would be the same in terms of the 'difference' between landfill and incineration. All other figures have been retained as in the Climate report. The Applicant is mistaken in believing that the Proposed Development reduces GHG emissions. It does not: it increases them.

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[6] See Values taken from Table 3 in Data Tables (*Data tables 1 to 19: supporting the toolkit and the guidance*) downloaded from here - https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

[7] Defra (2014) *Energy Recovery for Residual Waste - A Carbon based Modelling Approach, Report for Defra*, February 2014 (downloadable [redacted]

Table 2: Effect of Including Sequestration of Biogenic CO2 Associated with Landfill

	Landfill	Incineration
Process Emissions (tCO2e)	287,234	273,326
Avoided CO_2 @ 182g/kWh	-20,035	-80,080
Net emissions (tCO_2e) (as per Applicant's Climate report)	**267,199**	**193,246**
Carbon Sequestration	-171,846	
Corrected Net Emissions (tCO_2e) to Include Sequestration of Non-fossil CO_2 in Landfill	**95,353**	**193,246**

We can now understand what the additional CO_2 generated over the life of the proposal would be. The Applicant claims that over 40 years, the benefit will be 3.2 million tonnes CO_2e (Table 14.30). This is wrong.

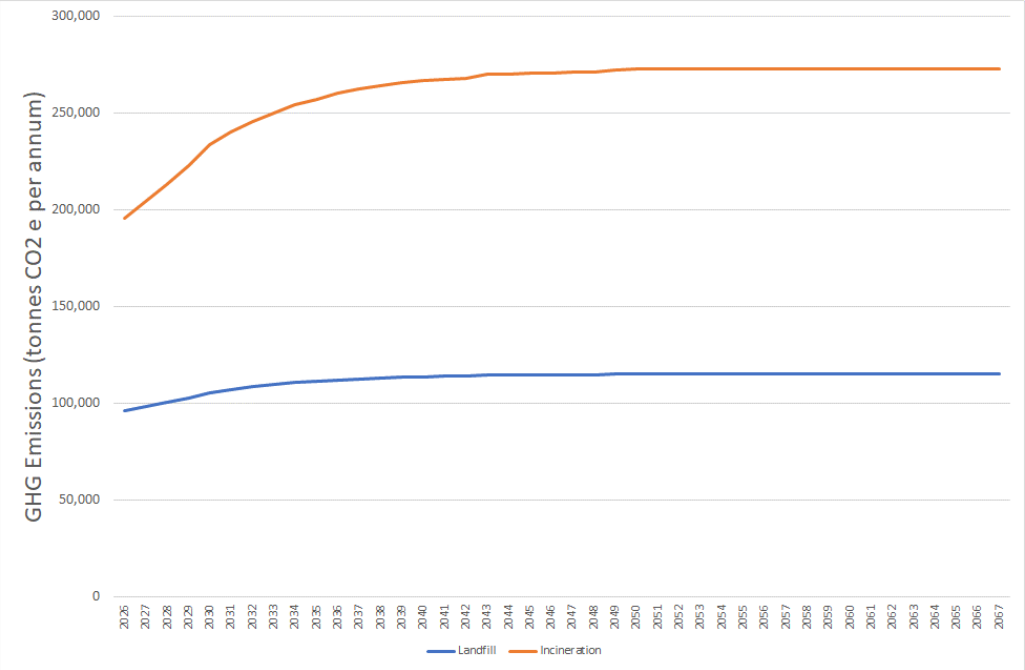
The analysis in the Climate report kept the avoided CO_2 emissions (associated with generating power) constant over the course of the analysis. If we do this, which would not be consistent with the methodological approach recommended by Government, then the additional emissions associated with the incinerator over its lifetime, relative to landfilling (which we trust will not be the counterfactual for this waste) would be:

(40 x 97,893 tonnes CO_2e) = 3.915 million tonnes CO_2e

More correctly, using the long-run marginal carbon intensity related to generation (from Tables provided by what was then BEIS)[8], annual emissions (net of 'avoided' CO_2 from power generation) would evolve as shown in Figure 1. As power decarbonises, the credit per unit of power declines. This exerts a stronger effect on the outcome for incineration for the simple reason that incineration generates more energy.

[8] Table 1 in Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal [redacted]

Figure 1: Evolution in Annual GHG Emissions from Incineration and Landfill Using Figures Recommended by Government for Use in Appraisal (tonnes CO_2e)



Over the 40 year life of the facility, the increase in emissions associated with incinerating rather than landfilling is 5.934 million tonnes.

The case is very clear-cut. By correcting only one of the methodological errors in the analysis, and keeping else constant, instead of incineration reducing GHG emissions relative to landfill, we actually find that GHG emissions increase. The extent to which incinerator is worse than landfill will increase over time as the carbon intensity of marginal power generation increases over time.

It follows that Table 14.31 is also incorrect, and wrongly indicates a favourable position for the '*with proposed development*' case.

Because of this, the discussion from Page 14-55 onwards can be disregarded. All the figures are wrong.

We note, however, the claims made in respect of the incorrect figures at 14.9.48-49:

> *14.9.48 This assessment has established that the Proposed Development net GHG emissions reduction will equate to 0.004% of the UK's carbon budget for the fourth carbon budget, 0.02% of the UK's fifth carbon budget and 0.03% of the sixth carbon budget. In 2050 when the UK net carbon budget is zero (and the Climate Change Committee state that waste sector emissions can be reduced by 75% from today's*

levels44), the Proposed Development will have a beneficial impact equivalent to -67ktCO2e.

*14.9.49 In accordance with IEMA guidance36 for defining significance (see **Table 14.19 Significance criteria for the GHG assessment**) it is concluded that the GHG impact of the Proposed Development will have a **beneficial Significant effect**. The Proposed Development has net GHG emissions below zero, causing an indirect reduction in atmospheric GHG emissions which has a positive impact on the UK Government meeting its carbon budgets/targets.*

The highlighting in the above is the applicant's. Given that the corrected figures reveal that GHG impact of the Proposed Development will be of a great magnitude, but of the opposite sign, one cannot conclude other than that the Proposed Development will have a **negative Significant effect** (or that relative to the Proposed development, it is doing nothing that will have the **beneficial Significant effect**).

At 14.9.50, the applicant mentions the CHP connection and the sensitivity analysis conducted in its Appendix 14C (Volume 6.4). We noted that there was no consideration of sequestration of non-fossil carbon in the landfill in the sensitivity analysis.

Regarding the provision of heat, we were pleased to see it confirmed – somewhere – that in the CHP configuration, there would likely be a penalty on the power generation side. On Page 14.C.4., it is noted that:

The two cases considered for the EfW CHP Facility energy export options in the sensitivity analysis are:

- Electricity Only (Core Case): 55MWe of electricity.
- Electricity and Heat: 48.8MWe of electricity and 23.6MWth of steam,

The basis for the assumptions regarding the avoided carbon intensity of energy are unclear (the footnotes in the extract below do not link to any specific source), as is the rationale for the choice of composition variants.

With respect to emissions avoided from the supply of steam, it is assumed that this would replace the use of natural gas as fuel for heating, with an associated emissions factor of 202.97g/kWh[56]. This is considered reasonable for current conditions and through to 2035; however, in the scenario presented for 2050 the sensitivity analysis has considered the case where the use of electricity for heating is more widespread and assumes a forecast emissions factor for average UK Grid electricity generation in 2050 of 6tCO_2/GWh[56]

We note in the above that the presentation of the lower carbon intensity figures for avoided power in later years should not be considered 'sensitivity analysis', but rather, as the central basis for the analysis.

It should also be noted that even if one accepts the additional benefits from heat use as they have been calculated in the sensitivity analysis, these are too small to move matters back in favour iof incineration: incineration remains worse than landfill in terms of its GHG emissions.

Finally, and following from the above, the Conclusions at 14.12 are incorrect.