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Climate Change, Air Quality, Health and Permit

Appendix SO1 to Proof of Evidence of
Stephen Othen
R1 Calculation

	A	B	C	D	E	F	G	H	I
1	PROFORMA FOR DETERMINING ENERGY EFFICIENCY USING R1								
2	Site name, address and grid reference	Portland Energy Recovery Facility	EPR Permit reference (if known)				 Environment Agency		
3	Operator name	Powerfuel Portland Limited	Application fee (£)	2000					
4	Details of who to contact if we have any queries regarding this form								
5	What data has been used in the application? →		Design data						
6	Indicative R1 factor (subject to confirmation)	0.76	Quantity in reporting year	Units	U _c	Properties (Average over reporting year)	Units	Note which parameters that have been estimated	Reference to Supporting information
7	Climate change correction factor (optional)								
8	R1 after CCF adjustment								
9	1. Gross electricity meter (Electricity produced at turbine)		160648	MWh					See Application Support
10	2. Electricity exported - Net input/output meter		136648	MWh					See Application Support
11	3. Electricity imported - Net input/output meter		616	MWh					See Application Support
12	4. Other fuel inputs								
13		4.1 Light fuel oil	176.631	litres		0.93	kg/l		See Application Supporting Information
14						42700	kJ/kg		
15		4.2 Natural gas		Nm ³		34200	kJ/Nm ³		
16									
17		4.3 LPG		Nm ³			kg/Nm ³		
18							kJ/kg		
19		4.4 Other fuels similar to light fuel oil		litres			kg/l		
20							kJ/kg		
21	5. Primary combustion air (as supplied to furnace)		785596195	m ³		0.8831	kg/Nm ³		See Application Supporting Information
22						130	°C		
23						106.05	kJ/kg		
24	6. Secondary combustion air (as supplied to furnace)		481118881	m ³		0.9581	kg/Nm ³		See Application Supporting Information
25						115	°C		
26						90.9	kJ/kg		
27	7. Recycled flue gas (as supplied to furnace)			m ³			kg/Nm ³		
28							°C		
29						0	kJ/kg		
30	8. Heat exported outside R1 boundary								
31		8.1 steam exported		tonnes			°C		
32							kPa		
33							kJ/kg		
34		condensate returned		tonnes			°C		
35							kPa		
36							kJ/kg		
37		8.2 hot water exported		tonnes			°C		
38							kPa		
39							kJ/kg		
40		hot water returned		tonnes			°C		
41							kPa		
42							kJ/kg		
43									
44	9. Internal steam use								
45		9.1 for soot blowing (no backflow)		tonnes			°C		
46							kPa		
47							kJ/kg		
48		9.2 for steam driven devices		tonnes			°C		
49							kPa		
50							kJ/kg		
51		backflow as steam		tonnes			°C		
52							kPa		
53							kJ/kg		
54		9.3 for trace heating		tonnes			°C		
55							kPa		
56							kJ/kg		
57		backflow as condensate		tonnes			°C		
58							kPa		
59							kJ/kg		
60		9.4 for re-heating flue gas		tonnes			°C		
61							kPa		
62							kJ/kg		
63		backflow as condensate		tonnes			°C		
64							kPa		
65							kJ/kg		
66		9.5 for concentration processes		tonnes			°C		
67							kPa		
68							kJ/kg		
69		backflow as condensate		tonnes			°C		
70							kPa		
71							kJ/kg		
72		9.6 for building, equipment, tank heating		tonnes			°C		
73							kPa		
74							kJ/kg		
75		backflow as condensate		tonnes			°C		
76							kPa		
77							kJ/kg		
78		9.7 for deaeration and demineralisation		tonnes			°C		
79							kPa		
80							kJ/kg		

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Appendix SO2 to Proof of Evidence of
Stephen Othen
Engagement with Ministry of Justice

APPENDIX SO2 – PORTLAND ERF – POWERFUEL NOTE ON THE MINISTRY OF JUSTICE DISTRICT HEATING OPPORTUNITY

1. The location of the Appeal Site provides a clear opportunity to provide heat to the two local prisons, HMP The Verne and HMP YOI Portland (the **Prisons**). These buildings have high levels of consistent heat demand, a policy incentive to decarbonise, and the credit-worthiness to support the upfront capital investment. These advantages clearly differentiate the Portland ERF from the MVV Canford proposal and other UK ERF proposals.
2. Powerfuel first approached the Ministry of Justice regarding the potential for the ERF to provide heat in September 2020. At an early stage the Ministry of Justice confirmed it was seeking low carbon solutions for electricity and heat supply across its estate. The October 2021 Government net zero strategy¹ reinforced this position, noting the aim to reduce direct emissions from public sector buildings by 50% by 2032 and 75% by 2037.
3. The district heating opportunity has also been discussed with the Cabinet Office, the Department for Business, Energy and Industrial Strategy and the Department for Energy Security and Net Zero, all of which recognise the benefits and policy-compliant nature of a district heating arrangement for the Prisons, on a cost and carbon reduction basis, should the ERF be consented.
4. Following the initial meeting in December 2020 extensive engagement continued until October 2021. This included over 50 email exchanges and numerous telephone discussions and video calls between both the principal parties and also planning and technical advisers on both sides.
5. The Ministry of Justice shared gas and half-hourly electricity usage data for the Prisons with Powerfuel to allow its technical advisers to understand the demand profiles. The Ministry of Justice also instructed its technical advisers, AECOM, to engage with Powerfuel's technical advisers to discuss the proposal and confirm that the proposal was technically viable.
6. Powerfuel's Environmental Impact Assessment (**EIA**) consultant team reviewed two proposed district heating network routes from the ERF to the Prisons and confirmed in an EIA Addendum submitted to Dorset Council in August 2021 that installation of the pipe network along either proposed route would not result in any significant adverse environmental effects, on the basis that the infrastructure would be installed within existing roads.
7. The district heating network would need to be approved under a separate planning application should the ERF be consented. However, given that installation would be in existing hard surfaced roads, the advice from technical and environmental advisers and the undoubted benefits of a district heating network; Powerfuel is advised that it is highly unlikely planning permission would not be granted. As such, there is no identified reason that it could not be delivered, assuming commercial terms could be agreed between the parties which is anticipated.
8. A Memorandum of Understanding was progressed and negotiated between Powerfuel and the Ministry of Justice Sustainability Team (**Sustainability Team**). Edits were made by the Sustainability Team in early July 2021 with email confirmation that, if accepted by Powerfuel, the document would then be "top and tailed" for signature. As such, Powerfuel consider this document to be in agreed form (see Annex A).

¹ Net Zero Strategy: Build Back Greener, October 2021

9. In late July the Sustainability Team requested a delay in signing the Memorandum of Understanding until concerns and a holding objection submitted to Dorset Council relating to potential health impacts of the ERF submitted by the Ministry of Justice Property Team (**Property Team**) in November 2020 had been addressed by Powerfuel.
10. Powerfuel met with the Property Team and its planning adviser in July 2021 and submitted further information to Dorset Council in August 2021. Following this the Property Team submitted a second consultee response to Dorset Council in October 2021 where it delegated any further review of the ERF's impacts to Dorset Council. At this juncture, the positions of the Sustainability and Property Teams were not aligned, with the latter seemingly influenced by and sensitive to local objections to the ERF scheme. However, the Property Team did ultimately remove its objection in February 2023.
11. In mid-October 2021 the Sustainability Team informed Powerfuel that the Property Team had asked them to holdoff signing the Memorandum of Understanding until the formal planning application had been approved, to avoid the risk that the Ministry of Justice could be seen as endorsing the scheme or influencing the outcome.
12. As a result of the Property Team request the Memorandum of Understanding remained unsigned, as is the current position.
13. However, given the prolonged engagement with the Sustainability Team and its planning and technical advisers, the progression to an agreed form Memorandum of Understanding and the clear direction and objective of Government policy to ensure the decarbonisation of public sector buildings; there is a clear rationale and incentive for the Ministry of Justice to act as a cornerstone offtaker for a district heat network using heat produced by the ERF which, in time, could result in further expansion of the network to other parts of Portland.
14. The situation with the Portland ERF is a clear illustration, formally recognised by Government, of the difficulties in fully securing a heat offtake solution prior to the granting of planning permission for the ERF itself. In short, at the pre-determination stage, there are too many conflicting interests and a lack of certainty over delivery of the ERF, which in combination frequently result in the offtaker deferring their position.
15. Based on the stage of progression made with the Sustainability Team, the substance of the engagement and the clear mutually beneficial outcomes, Powerfuel believes there are very strong prospects that if the Portland ERF is consented, a district heating scheme will be delivered on Portland in conjunction with the Ministry of Justice.

ANNEX A**MEMORANDUM OF UNDERSTANDING****RE: HEAT SUPPLY FROM POWERFUEL PORTLAND HEATING NETWORK**

This non-binding Memorandum of Understanding ("**MoU**") dated 2021,
has been reached by and between:

- (i) **POWERFUEL PORTLAND LIMITED** (Company number **11831492**) whose registered office is at 2nd Floor Regis House, 45 King William Street, London, United Kingdom, EC4R 9AN; ("**Powerfuel**"); and

- (ii) **MINISTRY OF JUSTICE**

 ("**Customer**"), each a "**Party**" and

together, the "**Parties**".

1 BACKGROUND

- 1.1 **Powerfuel** is working on the commercialisation / development of a heat network ("**HN**") in the vicinity of Portland Port, Castletown Road, Portland, Dorset ("**HN Site**"), being "**the Powerfuel Heat Network**". It is proposed that the HN will provide low-carbon space heating and hot water ("**Heat**") to certain public sector, commercial and residential customers located on and around the HN Site.

- 1.2 The development of the proposed HN forms part of Powerfuel's wider plans for delivering a combined heat and power station at the HN Site, using refuse derived fuel ("**RDF**") in a high efficiency "Energy Recovery Facility" ("**ERF**"). The ERF is a low carbon project (producing power and heat that qualifies as being around 50% renewable based on the biogenic content in the RDF). The ERF has committed to operate as a net carbon neutral infrastructure facility from operational commencement. Powerfuel anticipates that the ERF should secure planning permission in or around Q3 2021 (the "**ERF Planning Permission**").

- 1.3 The ERF Planning Permission does not include the HN as part of its red line

application but Powerfuel will promptly work up a planning application for the HN (the “**HN Planning Application**”) and should as a minimum be able to operationalise the HN when the ERF becomes operational. If it proceeds to development, the HN should deliver heat to its firstcustomers by late 2024.

- 1.4 Should the Customer wish to receive Heat prior to that date, then subject to permitting and construction timetables and sequencing, there is an option to commence Heat delivery using the proposed HN infrastructure prior to the actual operational commencement of the ERF, using temporary alternative low carbon heat sources, including for example renewable fuelled mobile generation.
- 1.5 The Customer has two premises in the vicinity of the HN Site known as HMP The Verneand HMP Young Offenders Institute Portland and has a material future requirement for low-carbon Heat. The drawing in **Appendix 1** shows the ERF and the two Customer Premises.
- 1.6 Powerfuel has been advised by ARUP on the initial design and feasibility of the HN and may involve a contractor or partner in the detailed design of the HN. Powerfuel has provided a copy of one of the application documents entitled “CHP heat plan (including R1)” produced as part of the application for the ERF Planning Permission.

2 INTENTION

The intention of this MoU is to set out the basis upon which the Parties shall collaborate and work together in respect of the supply of Heat from the Powerfuel Heat Network (or its nominee) to the Customer.

3 MUTUAL COMMITMENTS

Each Party commits to the other Party that it shall collaborate in respect of:

- (a) the connection of the Customer to the HN; and
- (b) the supply of Heat from the Powerfuel Heat Network (or its nominee) to theCustomer

subject to the Parties agreeing the specific terms of such connection and supply.

4 POWERFUEL PORTLAND LIMITED COMMITMENTS

Powerfuel commits to the Customer that it shall:

- (a) provide all technical information the Customer reasonably requires in respect of the:
 - (i) design and development of the Customer's connection to the HN; and
 - (ii) supply of Heat to the Customer; and
- (b) keep the Customer updated with regards the Heat Network Investment Programme application or other grant or support programmes.
- (c) keep the Customer updated with regards the ERF Planning Permission and the HN Planning Application.
- (d) keep the Customer updated with regards the development of the HN and the date it expects the Powerfuel Portland Heat Network (or its nominee) will be able to commence delivering Heat to the Customer.

5 CUSTOMER COMMITMENTS

The Customer commits to Powerfuel that it shall:

- (a) provide all information reasonably necessary for the Powerfuel Portland Heat Network (or its nominee) to:
 - (i) design and develop the Customer's connection to the HN; and
 - (ii) supply Heat to the Customer.
- (b) keep Powerfuel updated with regards the Customer's current and future demand for Heat; and

6 GOOD FAITH

Each Party commits to the other Party that it shall at all times exercise good faith and act in the intended collaborative and cooperative spirit of this MoU.

7 LEGAL EFFECT – NON-BINDING

- (i) The Parties acknowledge and agree that nothing within this MoU is intended to be legally binding or to create any legal relations between the Parties; and that
- (ii) The Customer makes no commitment whatsoever to the use of the HN and remains free to select the method of providing Heat to its premises without being required to either consult with or seek the prior agreement of Powerfuel.
- (iii) This MoU can be ended at any time and by either Party, upon one Party giving notice in writing to this effect to the other Party.

8 CONFIDENTIALITY

Each Party agrees that it shall keep all confidential information it is provided by the other Party arising out of or in connection with the HN confidential and not disclose such information to any third party without the prior written consent of the other Party.

Signed for and on behalf of **POWERFUEL PORTLAND LIMITED** by:



Signature:

Name: Steven McNab

Position: Director

Date: 12 July 2021

Signed for and on behalf of **MINISTRY OF JUSTICE**

by: Signature:

Name:

Position

:Date:

Appendix 1

Figure 2: DHN potential consumer map



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Appendix S03 to Proof of Evidence of
Stephen Othen
Revised Carbon Assessment

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Portland ERF

Powerfuel Portland Ltd

Carbon Assessment

Document approval

	Name	Signature	Position	Date
Prepared by:	Stephen Othen		Technical Director	24/10/2023
Checked by:	James Sturman		Lead Environmental Consultant	24/10/2023

Document revision record

Revision no	Date	Details of revisions	Prepared by	Checked by
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01	04/07/2021	Revised for Regulation 25 submission	SMO	RSF
02	19/07/2021	Revised to add Bridgwater ERF	SMO	RSF
03	28/07/2021	For issue	SMO	JRS
04	24/10/2023	Revised for Inquiry	SMO	JRS

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1 Introduction

1.1 Background

Powerfuel Portland Ltd is proposing to build an Energy Recovery Facility (ERF) facility (the ERF) at a site within Portland Port on the Isle of Portland in Dorset.

The ERF will be a single stream design and has been designed to treat 183,000 tonnes of refuse derived fuel (RDF) per year (the nominal design capacity), with a 10% design tolerance to treat up to 202,000 tonnes per annum (the maximum capacity). The ERF will generate at least 20.1 MWe at the nominal design capacity with at least 17.1 MWe available for export.

This carbon assessment has been updated from the version submitted in support of the planning application, in order to take account of the following:

- changes to the plant design;
- changes in carbon factors and waste data published by government organisations; and
- the increased levels of shore power which are now considered to be needed.

1.2 Objective

The purpose of this Carbon Assessment is to determine the relative carbon impact of processing waste in the ERF, compared to alternative disposal routes. This has been assessed at the nominal and maximum capacities. The sensitivity of the results to changes in grid displacement factors and landfill gas recovery rates has also been assessed.

Initially, landfill has been used as the comparator as this is the primary alternative treatment route available for residual waste. This is because the UK does not have enough ERF capacity to treat all residual waste, so quite a lot of residual waste goes to landfill. If a new ERF is built in the UK, this means that less waste overall will be sent to landfill and therefore, at a national level, the correct comparator is landfill. This approach is supported by national guidance, specifically “Energy from Waste: A Guide to the Debate” and “Energy recovery for residual waste – A carbon based modelling approach”, both published by DEFRA in 2014.

However, it is acknowledged that residual waste produced in Dorset does not all go to landfill at present and so the specific waste which would be processed at the Portland ERF might not currently go to landfill. Therefore, as requested by Dorset Council for the planning application, the relative carbon benefits of the Portland ERF compared to alternative sites for an ERF in Dorset, elsewhere in the UK and Europe have also been considered, as well as the relative carbon benefits compared to current residual waste management routes in Dorset, which are a combination of landfill and ERFs outside Dorset. However, these comparisons do not take account of the second order effects, as any ERF which is currently processing residual waste from Dorset would need to secure waste from elsewhere and it is likely that the replacement waste will currently be going to landfill.

The carbon benefits of the project can be increased by exporting heat to a district heating scheme and power to ships moored in the port. These have also been considered.

2 Conclusions

2.1 Comparison with landfill

1. The carbon emissions have been calculated for the ERF. This takes account of:
 - a. carbon dioxide released from the combustion of fossil-fuel derived carbon in the ERF;
 - b. releases of other greenhouse gases from the combustion of waste;
 - c. combustion of gas oil in auxiliary burners; and
 - d. carbon dioxide emissions from the transport of waste, reagents and residues.
2. The ERF has been given credit for exporting electricity, displacing carbon emissions from other power stations. The power displacement factor used in the main assessment was obtained from the UK fuel mix table and reflects the marginal source of displaced electricity, which is currently gas-fired power stations. It is considered that the construction of the ERF would have little effect on how other renewable energy plants operate and that a gas-fired power station is a reasonable comparator for the purposes of this assessment.
3. The net emissions for the ERF (items 1 and 2) have been compared with the net carbon emissions from sending the same waste to landfill, taking account of:
 - a. the release of methane in the fraction of landfill gas which is not captured; and
 - b. emissions offset from the generation of electricity from landfill gas.
4. In the base case, the ERF is predicted to lead to a net reduction in greenhouse gas emissions of approximately 29,700 tonnes of CO₂-equivalent (CO₂e) per annum compared to the landfill counterfactual if operating at the nominal design capacity. At the maximum design capacity, this increases to 41,800 tCO₂e per annum.
5. There is the potential for the benefit of the ERF to be increased.
 - a. If the ERF were to export power to ships moored in Portland Port, avoiding the operation of diesel engines, then the carbon benefit of the ERF over landfill would increase by around a further 6,000 to 6,700 tCO₂e per annum.
 - b. If the ERF were to export heat as well as power, the carbon benefit of the ERF over landfill would increase by around a further 3,000 tCO₂e emissions per annum.

Hence, the overall benefit of the ERF at the nominal design capacity, while exporting heat to a district heating scheme and power to ships moored in the port, is estimated to be about 36,500 tCO₂e per annum. This would be increased if operating at the maximum design capacity.

6. The sensitivity of this calculation to different grid displacement factors and different landfill gas recovery rates has also been considered. The lower figures used in the sensitivity analysis for grid displacement factor would only be relevant if the ERF were to displace other renewable sources of electricity. The results of the sensitivities for the base case provide a net reduction of greenhouse gas emissions within a range of -10,600 to +81,400 tonnes of CO₂e emissions per annum. There is only a predicted increase in greenhouse gas emissions if there is a high landfill gas capture rate, a low grid displacement factor, no heat export and no export of power to ships, which is a very unlikely combination of circumstances.
7. The benefit of the ERF over its lifetime will vary depending on how the electricity grid develops and when shore power and district heating are implemented. However, we have included an illustrative conservative calculation which shows that the ERF could reduce greenhouse gas emissions by at least 124,000 tCO₂e over its lifetime compared to landfill, allowing for gradual decarbonisation of the electricity grid and improved landfill performance as well as incremental take-up of shore power and district heating.

2.2 Comparison with other alternatives

1. As requested by Dorset Council, the carbon emissions have been calculated for managing Dorset's waste in a range of alternative ERFs:
 - a. Current UK plants – Lakeside and Marchwood.
 - b. Current overseas plants – near Rotterdam and Gothenburg.
 - c. Potential plants at four allocated sites in Dorset.
2. The differences between these plants are due to different transport distances for the waste and different energy efficiencies, with the European plants recovering more heat.
 - a. The proposed Portland ERF, as the base case, has higher transport emissions than the other sites in the Dorset Waste Plan, but this is more than offset by the potential benefits of shore power.
 - b. The additional transport emissions for shipping waste to European plants is outweighed by the benefits of district heating at those plants, but the proposed Portland ERF has the lowest emissions of all the options if both shore power and district heating are implemented.
3. Dorset's waste is currently managed by a combination of landfill, UK ERFs and export to Europe. Compared to this baseline, the Portland ERF is predicted to lead to a net reduction in greenhouse gas emissions of approximately 9,900 tonnes of CO₂-equivalent (CO₂e) per annum if operating at the nominal design capacity. At the maximum design capacity, this increases to 13,650 tCO₂e per annum, with further increases if shore power and district heating are implemented.
4. The benefit of the Portland ERF over its lifetime will vary depending on how the electricity grid develops and when shore power and district heating are implemented. However, we have included an illustrative conservative calculation which shows that the ERF could reduce greenhouse gas emissions by around 276,900 tCO₂e over its lifetime compared to the current solution for Dorset's residual waste.

3 Comparison with Landfill

3.1 Energy Recovery Facility

The combustion of waste generates direct emissions of carbon dioxide. It also produces emissions of nitrous oxide, which is a potent greenhouse gas.

Methane may arise in minimal extents from the decomposition of waste within the waste bunker; however, decomposition will be actively avoided, and methane is not regarded to have relevant climate impacts in quantitative terms from the ERF. In addition, combustion air will be drawn from the bunker area. This means that any methane which does form from the decomposition of waste within the bunker will be drawn into the combustion chamber and burnt. As the methane would have arisen from biodegradable waste, any carbon dioxide produced by burning that methane will also be derived from biodegradable waste. Therefore, methane arising from the decomposition of waste within the bunker has been excluded from the assessment.

Exporting energy to the grid offsets greenhouse gas emissions from the generation of power in other ways. In the case of the ERF, the displaced electricity will be the marginal source which is currently gas-fired power stations. It is considered that the construction of the ERF will not significantly affect how nuclear, wind or solar plants operate. Therefore, the use of a gas-fired power station is considered a reasonable comparator when assessing the grid offset of the ERF. This is discussed in further detail in section 3.1.3.

The following sections provide detail of the calculation of the carbon burdens and benefits associated with the ERF. Unless otherwise specified, all values presented are on an annual basis.

3.1.1 Waste Throughput and Composition

The ERF will be designed to process waste with a range of NCV's in accordance with the firing diagram for the ERF. Therefore, the hourly throughput will vary in accordance with the NCV of waste that is processed. A lower NCV of waste is typically associated with a lower fossil carbon content, therefore each tonne processed will have lower associated carbon emissions.

This assessment has been undertaken based on two waste compositions. The first is based on the nominal NCV and processing capacity of the ERF while the second is based on waste with a lower NCV and increased capacity up to the design threshold.

Waste composition data has been taken from different published sources to determine a composition which best reflects the design NCV of the ERF. The waste is a mixture of Commercial and Industrial (C&I) waste and municipal waste, so data has been taken from two sources to produce the assumed waste composition for the ERF.

- WRAP Cymru: "Commercial and Industrial Waste in Wales", January 2020. This report gives an estimate for C&I waste for 2017. We are not aware of a more recent report for English waste.
- WRAP: "National Municipal Waste Composition, England 2017", January 2020. We have used the Residual Municipal Waste composition from Table 3, which is a mixture of household and commercial waste.

We have used about one third C&I waste and two-thirds municipal waste. In both cases, since the waste will be processed before being delivered to site, we have removed 90% of glass and WEEE and 80% of bricks and rubble from these waste compositions. We have also removed 90% of plastic bags to reflect the significant change in this waste stream since the data was collected in 2017. This gives waste with a NCV of 11 MJ/kg, which is the design NCV at the nominal design point.

For the maximum capacity case, the waste composition has been adjusted by removing 23% of the dense plastics, given the government’s focus on this waste stream.

Table 1 below shows the characteristics of the assumed waste compositions that are relevant to the Carbon Assessment. We have used about one third C&I waste and two-thirds municipal waste.

Table 1: Waste characteristics

Waste Scenario	Carbon content (% mass)	Biocarbon (% carbon)	NCV (MJ/kg)	Waste throughput (tpa)
Nominal capacity	28.42	55.93	11	182,640
Maximum capacity	26.07	59.97	9.95	201,912

3.1.2 Direct Emissions

The combustion of waste generates direct emissions of carbon dioxide, with the tonnage determined using the carbon content of the waste.

For this Carbon Assessment, only carbon dioxide emissions from fossil sources (e.g. plastics) needs to be considered, as carbon from biogenic sources (e.g. paper and wood) has a neutral carbon burden. The biogenic material in the residual waste which is being processed is considered to be ‘waste’ material. This means that there is no requirement to consider, for example, any land use implications in producing the biogenic material as, unlike energy crops which are grown for combustion, biogenic waste already exists.

The UK Government’s document “Energy from Waste: A Guide to the Debate” states, in paragraph 40, “Considering the energy from waste route, if our black bag of waste were to go to a typical combustion-based energy from waste plant, nearly all of the carbon in the waste would be converted to carbon dioxide and be released immediately into the atmosphere. Conventionally the biogenic carbon dioxide released is ignored in this type of carbon comparison as it is considered ‘short cycle’, i.e. it was only relatively recently absorbed by growing matter. In contrast, the carbon dioxide released by fossil-carbon containing waste was absorbed millions of years ago and would be newly released into the atmosphere if combusted in an energy from waste plant.” For landfill, paragraph 42 states “Burning landfill gas produces biogenic carbon dioxide which, as for energy from waste, is considered short cycle.” Therefore, this carbon assessment is in line with government guidance for exactly this type of assessment.

It has been assumed that all of the carbon in the waste is converted to carbon dioxide in the combustion process as, according to Volume 5 of the Intergovernmental Panel on Climate Change (IPCC) Guidelines for Greenhouse Gas Inventories, it can be assumed that waste incinerators have combustion efficiencies of close to 100%. The mass of fossil derived carbon dioxide produced is determined by multiplying the mass of fossil carbon in the waste by the ratio of the molecular weights of carbon dioxide (44) and carbon (12) respectively as shown in the equation below:

$$\text{Mass of } CO_2 \text{ out} = \text{Mass of C in} \times \frac{Mr CO_2}{Mr C}$$

Where Mr = molecular weight. The total fossil derived carbon emissions are presented in Table 2.

Table 2: Fossil CO₂ emissions

Item	Unit	ERF – Nominal	ERF – Maximum
Fossil carbon in waste	t C	22,873	21,071
Fossil derived carbon dioxide emissions	t CO₂	83,869	77,259

The process of recovering energy from waste releases a small amount of nitrous oxide and methane (from incomplete combustion), which contribute to climate change. The impact of these emissions is reported as CO₂e emissions and is calculated using the Global Warming Potential (GWP) multiplier. In this assessment the GWP for 100 years has been used.

Emissions of nitrous oxide and methane depend on combustion conditions. Nitrous oxide emissions are also influenced by flue gas treatment systems and the types of reagents used. These details are based on the final design of the ERF, which is not available at this stage. Therefore, default emission factors from the IPCC have been used to determine the emissions of these gases, as shown in Table 3.

Table 3: N₂O and CH₄ assumptions

Item	Unit	Value	Source
N ₂ O default emissions factor	kg N ₂ O/tonne waste	0.044	IPCC Guidelines for Greenhouse Gas Inventories, Vol 2, Table 2.2 Default Emissions Factors for Stationary Combustion in the Energy Industries, Municipal Wastes (non-biomass) and Other Primary Solid Biomass, using a NCV of 11 MJ/kg
CH ₄ default emissions factor	kg CH ₄ /tonne waste	0.33	
GWP – N ₂ O to CO ₂	kg CO ₂ e/kg N ₂ O	310	United Nations Framework for Climate Change Global Warming Potentials
GWP – CH ₄ to CO ₂	kg CO ₂ e/kg CH ₄	25	

Nitrous oxide and methane emissions from both the biogenic and non-biogenic fractions are considered as a carbon burden. Both the biogenic and non-biogenic fractions of waste have the same default emissions factor. Table 4 shows the emissions of nitrous oxide and methane and the equivalent carbon dioxide emissions.

Table 4: N₂O and CH₄ emissions

Item	Unit	ERF – Nominal	ERF – Maximum
N ₂ O emissions	t N ₂ O	8.04	8.88
Equivalent CO₂ emissions	t CO₂e	2,491	2,754
CH ₄ emissions	t CH ₄	60.27	66.63
Equivalent CO₂ emissions	t CO₂e	1,507	1,666

The ERF would be equipped with auxiliary burners which would burn gasoil and would have a capacity of about 60% of the boiler capacity; assumed to be approximately 41.86 MWth. The auxiliary burners would only be used for start-up and shutdown. We have assumed that there would be 10 start-ups a year, which is a conservative assumption, and that the burners would operate for 18 hours total for start-up and shut down. Hence, the approximate total fuel consumption can be calculated as follows:

$$41.86 \times 10 \times 18 = 7,533.9 \text{ MWh}$$

Each MWh of gasoil releases 0.256¹ tonnes of carbon dioxide, so the emissions associated with auxiliary firing would be 7533.9 x 0.256 = 1,929 t CO₂e. This is the same for both cases.

Table 5 shows the total direct equivalent carbon dioxide emissions for the combustion of waste in the ERF.

Table 5: Total equivalent CO₂ emissions from the combustion of waste

Item	Unit	ERF – Nominal	ERF – Maximum
CO ₂ emissions	t CO ₂	83,869	77,259
N ₂ O emissions	t CO ₂ e	2,491	2,754
CH ₄ emissions	t CO ₂ e	1,507	1,666
Burner emissions	t CO ₂ e	1,929	1,929
Total emissions	t CO₂e	89,796	83,607

3.1.3 Grid Offset

3.1.3.1 Displacement Factor

Sending electricity to the grid offsets the carbon burden of producing electricity using other methods. In the case of an energy from waste plant, such as the ERF, the displaced electricity would be the marginal source which is currently gas-fired power stations, for which the displacement factor is 0.372 t CO₂e/MWh². Electricity generated by the ERF would be exported to the National Grid. DEFRA's 'Energy from Waste – A Guide to the Debate 2014' (specifically, footnote 29 on page 21) states that "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". Therefore, the assessment of grid offset uses the current marginal technology as a comparator.

¹ DESNZ – Greenhouse gas reporting: Conversion factors 2023

² DEFRA – Fuel Mix Disclosure Table – 01/04/2022 – 31/03/2023

It is considered that the construction of the ERF will have little or no effect on how nuclear, wind or solar plants operate when taking into account market realities (such as the phase-out of nuclear plants and the generous subsidies often associated with the development and operation of wind and solar plants).

Current UK energy projections³ indicate that nuclear power stations will continue to be used over the coming decade, but it is generally expected that there will be a reduction in the number of nuclear plants up to 2050⁴. It is understood that nuclear power stations operate as baseload stations run with relatively constant output over a daily and annual basis⁵, with limited ability to ramp up and down in capacity to accommodate fluctuations in demand. Power supplied from existing nuclear power stations is relatively low in marginal cost and has the benefit of extremely low CO₂ emissions. The Committee on Climate Change (COCC's) 2019 report on achieving net zero by 2050⁶ includes nuclear power in all scenarios for future energy generation up to 2050.

Combined cycle gas turbines (CCGTs) are the primary flexible electricity source. Since wind and solar are intermittent, with the electricity supplied varying from essentially zero (on still nights) to more than 16 GW (on windy or sunny days), CCGTs supply a variable amount of power. However, there are always some CCGTs running to provide power to the grid.

Gas engines, diesel engines and open cycle gas turbines also make a small but increasing contribution to the grid. These are mainly used to provide balancing services by balancing intermittent supplies. As they are more carbon intensive than CCGTs, it is more conservative to ignore these.

In addition, bidding of energy-from-waste plants into the capacity market mean that they are competing primarily with CCGTs, gas engines and diesel engines. It is therefore considered that CCGT is the correct comparator and may possibly be conservative.

It is acknowledged that the UK government has recently set a target which will require the UK to bring all greenhouse gas emissions to net zero by 2050. Taking this into consideration, in the future, it is anticipated that the power which the ERF will generate will displace other forms of power generation, including renewable energy power stations. However, at this stage the mix of future generation capacity additions to the grid that might be displaced by the project is uncertain, and the emissions intensity of future displaced generation cannot be accurately quantified. Therefore, for the purposes of this assessment, it has been assumed that the ERF will displace a gas fired power station as this is considered a reasonable comparator.

In the decision letter on the Development Consent Order for the Riverside Energy Park, a large energy-from-waste plant (ref. EN010093, dated 9 April 2020), the secretary of state said in paragraph 4.12 that "CCGT is the appropriate counterfactual against which the Development should be assessed." This supports the approach taken in this carbon assessment.

The effect of changing the grid offset displacement factor has been considered as a sensitivity in Section 3.4.3.

³ <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2018>

⁴ National Grid's Future Energy Scenarios, 2019

⁵ <https://www.ofgem.gov.uk/data-portal/electricity-generation-mix-quarter-and-fuel-source-gb>

⁶ Committee on Climate Change, "Net Zero: the UK's contribution to stopping global warming), May 2019

3.1.3.2 Shore Power

It is intended that the plant will be able to export power to ships moored in Portland Port which currently run their own engines. This would cover vessels from the Royal Fleet Auxiliary (RFA) and cruise ships. The carbon intensity of ship-board power is relatively high, so displacing this type of electricity would have an increased carbon benefit compared to displacing grid power.

- Powerfuel Portland Ltd has estimated that the demand for shore power would be around 29,639 MWh in 2027, increasing to 32,931 MWh by 2047. This assumes that –the RFA ships spend 390 ship-days in port a year and 65 cruise ships visit Portland each year with a gradual increase in the fraction of ships which are capable of taking power from the shore.
- Ship engines have a specific diesel fuel consumption of 180 to 200 g/kWh. The carbon intensity of diesel fuel is 3,203.9 kgCO₂e/te⁷. Hence, the carbon intensity of shore power is 0.577 tCO₂e/MWh or more.

As this is not certain, we have assessed the carbon offset for the ERF with and without shore power.

3.1.3.3 Electricity only

The amount of carbon dioxide offset by the electricity generated by the ERF is calculated by multiplying the net electricity generated by the grid displacement factor. The ERF will be designed to generate at least 20.1 MWe and export at least 17.1 MWe.

The carbon dioxide offset by electricity generation is counted as a carbon benefit and is shown in Table 6 below.

Table 6: ERF electricity offset

Item	Unit	ERF – Both cases	
Without Shore Power			
Net electricity export	MW	17.1	
Net electricity exported	MWh	136,800	
Total CO₂ offset through export of electricity to grid only	tCO₂e p.a.	50,890	
With Shore Power			
		2027	2047
Shore power output	MWh	29,639	32,931
CO ₂ offset through shore power	tCO ₂ e p.a.	17,093	18,991
Electricity output to grid	MWh	107,161	103,869
CO ₂ offset through export to grid	tCO ₂ e p.a.	39,864	38,639
Total CO₂ offset through exported electricity	tCO₂e p.a.	56,957	57,631

⁷ DESNZ – Greenhouse gas reporting: Conversion factors 2023

3.1.3.4 Heat Export

This assessment assumes that any heat output from the ERF will offset emissions from natural gas boilers. Table 7 details the assumptions for heat export. The average heat output from the ERF is assumed to be 2.29 MW, which is based on a heat network being constructed to supply the Osprey Leisure Centre, HMP The Verne, HMP YOI Portland and the Comer Homes development.

A boiler efficiency of 90% has been assumed, to determine the quantity of natural gas combusted that the exported heat would offset. This is then converted to a carbon dioxide offset by multiplying the amount of natural gas displaced by the grid displacement factor for natural gas.

The export of heat will reduce the electrical output of the Facility. The reduction in electrical output is determined using the Z ratio, which has been estimated based on guidance from the combined heat and power quality assurance (CHPQA) scheme. Assuming an average heat export of 2.29 MWth, the electrical output would be **16.75 MWe**.

Table 7: ERF heat export assumptions

Item	Value	Source
Boiler efficiency	90%	Typical boiler efficiency
Natural gas offset factor	0.2042 kg CO ₂ /kWh	DESNZ "Greenhouse gas reporting: conversion factors 2023"
Z ratio	6.6	CHPQA Guidance note 28

Table 8 details the carbon dioxide offset through natural gas offset and the reduced carbon dioxide electricity offset as a result of the lower electricity export.

Table 8: ERF heat and electricity export offset

Item	Unit	ERF – Both cases	
Heat output	MWth	2.29	
Total heat output	MWh	18,307	
Natural gas offset	MWh	20,341	
CO₂ offset through natural gas offset	t CO₂e p.a.	4,154	
Without Shore Power			
Net electrical output (with heat output)	MWe	16.75	
Total electricity generated (with heat output)	MWh	134,026	
CO₂ offset through generated electricity to grid only	t CO₂e p.a.	49,858	
With Shore Power		2024	2045
Shore power output	MWh	29,639	32,931
CO ₂ offset through shore power	tCO ₂ e p.a.	17,093	18,991
Electricity output to grid	MWh	104,387	101,095
CO ₂ offset through export to grid	tCO ₂ e p.a.	38,832	37,607
Total CO₂ offset through exported electricity	tCO₂e p.a.	55,925	56,599

3.2 Landfill

When waste is disposed of in landfill, the biogenic carbon degrades and produces landfill gas (LFG). LFG is comprised of methane and carbon dioxide, so has a significant carbon burden. Some of the methane in the LFG can be recovered and combusted in a gas engine to produce electricity.

3.2.1 Emissions

The emissions associated with LFG can be split into:

1. carbon dioxide released in LFG;
2. methane released in LFG; and
3. methane captured and combusted in LFG engines and flares, producing carbon dioxide as a result of the combustion.

Since 1 and 3 result in the release of carbon dioxide derived from biogenic carbon in the waste, these should both be excluded from the calculation. Therefore, the focus of this calculation is the methane which is released to atmosphere. This is calculated as follows:

1. The biogenic carbon in the waste comes from the waste composition, discussed in Section 3.1.1 above.
2. 50% of the degraded biogenic carbon is released and converted into LFG. The released carbon is known as the degradable decomposable organic carbon (DDOC) content.
 - a. This assumes a sequestration rate of 50%, which is considered to be a conservative assumption and is in accordance with DEFRA's 'Energy from Waste – A Guide to the Debate' (2014).
 - b. There is considerable uncertainty in literature surrounding the amount of biogenic carbon that is sequestered in landfill. The high sequestration used in this assessment (i.e. 50%), combined with the use of high landfill gas capture rates (assumed 68% capture) is considered to be conservative. Therefore, it is not considered appropriate to give additional credit for sequestered carbon as this would result in an overly conservative assessment.
3. LFG is made up of 57% methane and 43% carbon dioxide, based on a detailed report carried out by Golder Associates for DEFRA⁸.
4. Based on the same report, the analysis assumes 68% of the LFG is captured and that 10% of the remaining 32% is oxidised to carbon dioxide as it passes through the landfill cover layer. The unoxidized LFG is then released to atmosphere.
5. Based on the same guidance, 90.9% of the captured LFG is used in gas engines to generate electricity, although 1.5% of this captured LFG passes through uncombusted and is released to atmosphere. The remainder is combusted in a flare. We have assumed that the flares fully combust the methane.

Table 9 outlines the LFG assumptions and Table 10 shows the equivalent carbon emissions associated with landfill.

⁸ Review of Landfill Methane Emissions Modelling (WR1908), Golder Associates, November 2014

Table 9: LFG assumptions

Item	Value	Source
DDOC content	50%	DEFRA Review of Landfill Methane Emissions Modelling (WR1908) (2014)
CO ₂ percentage of LFG	43%	
CH ₄ percentage of LFG	57%	
LFG recovery efficiency	68%	
Molecular ratio of CH ₄ to C	1.33	Standard Values
Molecular ratio of CO ₂ to CH ₄	2.75	
Molecular ratio of CO ₂ to C	3.67	
Global Warming Potential – CH ₄ to CO ₂	25	United Nations Framework for Climate Change Global Warming Potentials

Table 10: LFG emissions

Item	Unit	ERF – Nominal	ERF – Maximum
Biogenic carbon	tonnes	29,033	31,571
Total DDOC content (biogenic carbon not sequestered – degradable)	tonnes p.a.	14,517	15,785
Methane in LFG ⁹ , of which:	tonnes p.a.	11,033	11,997
- Methane captured	tonnes p.a.	7,502	8,158
- Methane oxidised in landfill cap (capping material)	tonnes p.a.	353	384
- Methane released to atmosphere directly	tonnes p.a.	3,177	3,455
Methane leakage through LFG engines	tonnes p.a.	102	111
Total methane released to atmosphere	tonnes p.a.	3,280	3,566
CO₂e released to atmosphere	tCO₂e p.a.	81,992	89,158

The value for biogenic carbon in Table 10 above is calculated by multiplying the annual tonnage of waste by the carbon content percentage of the waste, and then again by the percentage of the carbon which is derived from biogenic sources.

3.2.2 Grid Offset

The methane in the LFG that has been recovered can be used to produce electricity. This electricity will offset grid production, and results in a carbon benefit of sending waste to landfill as per Section 3.1.3. The assumptions for the amount of LFG methane captured and used in a typical LFG engine are shown in Table 11.

⁹ Calculated as (Total DDOC content) x (% of landfill gas that is methane) x (molecular ratio of methane to carbon)

Table 11: LFG grid offset assumptions

Item	Value	Source
Landfill gas recovery efficiency	68%	DEFRA Review of Landfill Methane Emissions Modelling (Nov 2014)
Methane captured used in LFG Engines	90.9%	
Methane leakage through LFG engines	1.5%	
LFG engine efficiency	36%	
Methane net calorific value	47 MJ/kg	Standard value

The power produced by the LFG engine is based on the amount of methane, the heat content of methane and the engine efficiency, as per the assumptions in Table 11. The power generated by the LFG engines and the carbon dioxide offset are shown in Table 12.

Table 12: LFG grid offset

Item	Unit	ERF – Nominal	ERF – Maximum
Methane captured, of which:	tonnes p.a.	7,502	8,158
- Methane flared	tonnes p.a.	682	742
- Methane leakage through LFG engines	tonnes p.a.	102	111
- Methane used in LFG engines	tonnes p.a.	6,718	7,305
Fuel input to LFG engines	GJ	315,738	343,334
Power generated	MWh	31,574	34,333
Total CO₂e offset through grid displacement	t CO₂e p.a.	11,745	12,772

3.3 Transport

There would be carbon emissions associated with the transport of waste and reagents to the ERF, and the transport of residues (i.e. Incinerator Bottom Ash (IBA) and Air Pollution Control Residues (APCr)) from the process to their respective waste treatment/disposal facilities. The assumptions for determining these emissions are presented in Table 13. These all assume that all transport is by road.

If waste and/or residues are transported by ship, then the emissions would be reduced. This is because there would be no net carbon emissions associated with sea transport because it is envisaged that this would divert RDF to Portland Port from existing shipments that currently pass through the English Channel. Therefore, this has not been considered further and the assessment of transport impacts is considered to be conservative and worst case as a proportion of the waste is expected to be delivered by ship.

Table 13: Transport assumptions

Parameter	Unit	Value	Source	
Articulated lorry load size – waste to landfill	tonnes	24	Project-specific assumption. (65% by bulker, 35% by RCV)	
Articulated lorry load size – waste to the ERF	tonnes	24	100% by bulker	
Articulated lorry load size – Export of APCr	tonnes	27.1	Project-specific assumption	
Articulated lorry load size – Export of IBA	tonnes	12		
Articulated lorry load size – Import of lime	tonnes	27.5		
Articulated lorry load size – Import of activated carbon	tonnes	21		
Articulated lorry load size – Import of ammonia	tonnes	10		
Articulated lorry load size – Import of fuel oil	tonnes	32		
Articulated lorry load size – Export of ferrous metals from the ERF	tonnes	17		
Articulated lorry CO ₂ factor – 100% loaded	kg CO ₂ /km	0.91733		DESNZ “Greenhouse gas reporting: conversion factors 2023” HGV (all diesel) Articulated (>3.5- 33t)
Articulated lorry CO ₂ factor – 0% loaded	kg CO ₂ /km	0.61562		
Waste distance to landfill (one way)	km	80		
Waste distance to the ERF (one way)	km	160	Max transport distance.	
IBA distance to recovery	km	160	Transport to Avonmouth	
APCr distance to recovery	km	160	Transport to Avonmouth	
Ferrous metals distance to recovery	km	5	Local outlet	
Lime distance to the ERF	km	350	Transport from Buxton	
Activated carbon distance to the ERF	km	300	Assumption	
Ammonia distance to the ERF	km	300	Assumption	
Fuel oil distance to the ERF	km	50	Assumption	
		Nominal	Maximum	
Mass of waste	tonnes	182,640	201,912	
Mass of IBA (15% of waste)	tonnes	27,396	30,287	
Mass of APCr (3.4% of waste)	tonnes	6,210	6,865	
Mass of recovered ferrous metals (10% of ash)	tonnes	2,740	3,029	
Mass of lime (estimated)	tonnes	3,700	3,700	

Parameter	Unit	Value	Source
Mass of activated carbon (estimated)	tonnes	53	53
Mass of ammonia (estimated)	tonnes	900	900
Mass of fuel oil (from earlier)	tonnes	595	595

The carbon burden of transporting the waste is determined by calculating the total number of loads required and multiplying it by the transport distance to generate an annual one-way vehicle distance. This is multiplied by the respective empty and full carbon dioxide factor for HGVs to determine the overall burden of transport. It is recognised that this is conservative, as it may be possible to coordinate HGV movements to reduce the number of trips.

Table 14: Transport calculations

Parameter	Unit	Waste to landfill	Waste to the ERF	IBA to recovery	APCr to recovery	Lime to the ERF	Carbon to the ERF	Ammonia to the ERF	Fuel oil to the ERF	Total for ERF
ERF – Nominal										
Tonnage	tonnes p.a.	182,640	182,640	27,396	6,210	3,700	53	900	595	
Number of loads required	p.a.	7,610	7,610	2,283	230	135	3	90	19	
One-way distance	km	80	160	160	160	350	300	300	50	
One-way total vehicle distance per year	km	608,800	1,217,600	365,280	36,800	47,250	900	27,000	950	
Total CO₂ emissions	t CO₂e p.a.	933	1,867	560	56	72	1.4	41	1.5	2,600
ERF – Maximum										
Tonnage	tonnes p.a.	201,912	201,912	30,287	6,865	3,700	53	900	595	
Number of loads required	p.a.	8,414	8,414	2,524	254	135	3	90	19	
One-way distance	km	80	160	160	160	350	300	300	50	
One-way total vehicle distance per year	km	673,120	1,346,240	403,840	40,640	47,250	900	27,000	950	
Total CO₂ emissions	t CO₂e p.a.	1,032	2,064	619	62	72	1.4	41	1.5	2,862

3.4 Results

3.4.1 Energy Recovery Facility – power only

The results of the assessment are shown below. It can be seen that there is a net carbon benefit of about **29,700 tonnes of carbon dioxide equivalent emissions per annum** for the ERF compared to sending the same waste to landfill, increasing to **41,800 tonnes of carbon dioxide equivalent emissions per annum** in the maximum capacity case. These figures increase further if power is exported to ships in port.

Table 15: Summary – power only

Parameter	Units	Nominal	Maximum
Releases from LFG	t CO ₂ e	81,992	89,158
Transport of waste and outputs to landfill	t CO ₂ e	933	1,032
Offset of grid electricity from LFG engines	t CO ₂ e	-11,745	-12,772
Total landfill emissions	t CO₂e	71,180	77,418
Transport of waste to and outputs from the ERF	t CO ₂ e	2,600	2,862
Offset of grid electricity with ERF generation	t CO ₂ e	-50,890	-50,890
Emissions from the ERF	t CO ₂ e	89,796	83,607
Total ERF Emissions	t CO₂e	41,506	35,580
Net Benefit of the ERF	t CO₂e	29,674	41,838
Net Benefit with shore power, 2027	t CO ₂ e	35,741	47,906
Net Benefit with shore power, 2047	t CO ₂ e	36,415	48,580

Another way of expressing the benefit of the ERF is to consider the additional power generated by recovering energy rather than sending the waste to landfill and calculating the effective net carbon emissions per MWh of additional electricity exported.

The effective net carbon emissions per MWh of additional electricity exported for the ERF is calculated as follows in the nominal case:

1. Additional power exported = 136,800 – 31,574 = 105,226 MWh
2. Net Carbon released = (89,796 + 2,600) – (81,992 + 933) = 9,471 tCO₂e
3. Effective carbon intensity = 9,471 ÷ 105,226 = 0.09 t CO₂e/MWh

A similar calculation for the maximum case gives an effective carbon intensity of -0.036 t CO₂e/MWh.

3.4.2 Energy Recovery Facility – CHP mode

The results of the assessment are shown below for the plant operating in CHP mode. It can be seen that there is a net carbon benefit of about **32,800 tonnes of carbon dioxide equivalent emissions per annum** for the ERF compared to sending the same waste to landfill, which is an improvement of over **3,000 tonnes** over the power-only case. In the maximum capacity case, this increases to **44,960 tonnes of carbon dioxide equivalent emissions per annum** and further increases if power is exported to ships in port.

Table 16: Summary – CHP

Parameter	Units	Nominal	Maximum
Releases from LFG	t CO ₂ e	81,992	89,158
Transport of waste and outputs to landfill	t CO ₂ e	933	1,032
Offset of grid electricity from LFG engines	t CO ₂ e	-11,745	-12,772
Total landfill emissions	t CO₂e	71,180	77,418
Transport of waste to and outputs from the ERF	t CO ₂ e	2,600	2,862
Offset of boiler natural gas use	t CO ₂ e	-4,154	-4,154
Offset of grid electricity with ERF generation	t CO ₂ e	-49,858	-49,858
Emissions from the ERF	t CO ₂ e	89,796	83,607
Total ERF Emissions	t CO₂e	38,384	32,458
Net Benefit of the ERF	t CO₂e	32,795	44,960
Net Benefit with shore power, 2027	t CO ₂ e	38,863	51,027
Net Benefit with shore power, 2047	t CO ₂ e	39,536	51,701

Again, the effective net carbon emissions can be calculated, allowing for the benefit of displacing heat. The effective net carbon emissions per MWh of additional electricity exported for the ERF is calculated as follows:

1. Additional power exported = 134,026 – 31,574 = 102,452 MWh
2. Net Carbon released = (89,796 + 2,628 – 4,154) – (81,992 + 933) = 5,317 tCO₂e
3. Effective carbon intensity = 5,317 ÷ 102,452 = 0.052 t CO₂e/MWh

A similar calculation for the maximum case gives an effective carbon intensity of -0.079 t CO₂e/MWh.

3.4.3 Sensitivities

The two key assumptions in this carbon assessment are the grid displacement factor for electricity and the landfill gas capture rate.

- There is some debate over the type of power which would be displaced and so we have considered the effect of using lower figures, which would only be relevant if the ERF were to displace other renewable sources of electricity. The lowest figure, 0.157 t CO₂e/MWh, is the long run marginal generation-based emission factor for 2027 (the likely opening year) taken from the “Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal”, published by BEIS.
- The Golders Associates report for DEFRA states that the collection efficiency for large, modern landfill sites was estimated to be 68% and the collection efficiency for the UK as a whole was estimated to be 52%. There have been suggestions in other guidance that a conservative figure of 75% should be used. The sensitivity of the results to this assumption has also been assessed below.

Table 17 shows the estimated net benefit of the ERF (in power-only mode), in tonnes of carbon dioxide equivalent emissions per annum, for different combinations of grid displacement factor and landfill gas capture rate. Table 18 shows the same for the ERF in CHP mode. Both tables are based on the nominal design case. In both cases, the results have been shown with and without shore power.

It can be seen that there is a benefit for all LFG capture rate and grid displacement factor combinations, except for a very high LFG capture rate and a low grid displacement factor with no shore power.

Table 17: Sensitivity analysis – power only

Grid Displacement Factor (t CO ₂ e/MWh)	LFG Capture Rate			
	75%	68%	60%	52%
Without Shore Power				
0.372	11,352	29,674	50,613	71,553
0.227	-3,435	14,416	34,817	55,218
0.157	-10,573	7,050	27,191	47,332
Shore Power (2027)				
0.372	17,419	35,741	56,680	77,620
0.227	6,930	24,781	45,182	65,582
0.157	1,866	19,490	39,630	59,771
Shore Power (2047)				
0.372	18,093	36,415	57,354	78,294
0.227	8,081	25,932	46,333	66,734
0.157	3,248	20,871	41,012	61,153

Table 18: Sensitivity analysis – CHP Mode

Grid Displacement Factor (t CO ₂ e/MWh)	LFG Capture Rate			
	75%	68%	60%	52%
Without Shore Power				
0.372	14,473	32,795	53,735	74,674
0.227	89	17,940	38,341	58,742
0.157	-6,855	10,768	30,909	51,050
Shore Power (2027)				
0.372	20,540	38,863	59,802	80,742
0.227	10,454	28,305	48,706	69,106
0.157	5,584	23,208	43,349	63,489
Shore Power (2047)				
0.372	21,214	39,536	60,476	81,415
0.227	11,605	29,456	49,857	70,258
0.157	6,966	24,589	44,730	64,871

4 Alternatives for Dorset Waste

Dorset Council has asked for the carbon emissions from the proposed ERF to be compared with four alternatives:

- The carbon emissions of sending the RDF to other ERFs in the UK;
- The carbon emissions if sending the RDF to other ERFs overseas;
- The carbon emissions of managing the RDF in ERFs within Dorset on allocated sites (Insets 7-10 of the new Waste Plan); and
- The current combination of waste management approaches in Dorset.

Each of these alternatives has been considered below.

4.1 Portland ERF for Dorset Waste

In this section, we have focussed on the treatment of waste generated in Dorset. This is different to the assessment in section 3, which considered waste which could have been delivered from anywhere within the catchment area considered in the transport assessment.

The proposed ERF is 60 km from Canford Magna, which produces around 82,600 tonnes of RDF per annum. Considering the other main conurbations in Dorset, the proposed ERF is a similar distance away from Poole and Bournemouth, but only 20 km from Dorchester. This suggests that Dorset waste would travel around 55 km on average to the site. In order to present a fair comparison, the carbon emissions for the proposed ERF have been calculated using this distance, rather than 160 km as in the main assessment. This gives waste transport emissions of 642 tCO₂e. All other emissions are unchanged.

4.2 Other ERFs

The direct carbon emissions from combusting waste are the same whether it is combusted at Portland or elsewhere. This means that, from a carbon perspective, the only differences between ERFs at different locations are the transport impacts for transporting waste and any differences in the carbon displaced by generating power or heat. We have set out these differences for the different ERFs below, and then presented the results for all ERFs in a single table in section 4.2.4.

4.2.1 Existing UK ERFs

We consider that the primary focus here is on RDF produced at the Canford Magna MBT plant. The remaining waste for the proposed ERF could come from a wider catchment area in Dorset, which could be closer to or further away from the alternative ERF. We have therefore compared two existing ERFs with the proposed ERF and one which will shortly be operational.

Marchwood

Marchwood ERF is the closest alternative and is currently used by Dorset Council. It is 47 km from Canford Magna, 50 km from Bournemouth and 80 km from Dorchester, which means that waste would be transported around 50 km on average (giving waste transport emissions of 583 tCO₂e per year).

According to its 2022 annual report to the Environment Agency, the Marchwood ERF exported 561 kWh/te of waste processed and the NCV of the waste was 9.309 MJ/kg.. This gives an efficiency of 21.70%.

Lakeside

Lakeside ERF near Slough is currently used by Bournemouth, Christchurch and Poole (BCP) Council for waste from Poole. It is around 145 km away from Bournemouth and Canford and 181 km from Dorchester, which means that waste would be transported around 150 km on average (giving waste transport emissions of 1,750 tCO₂e per year)

According to its 2022 annual report to the Environment Agency, the Lakeside ERF exported 648 kWh/te of waste processed and the NCV of the waste was 9.63 MJ/kg. This gives an efficiency of 24.22%.

Bridgwater

The Bridgwater ERF is currently under construction, is reported to be due to complete commissioning this year, and would have a capacity of around 112,000 tonnes per annum. Bridgwater is included in the future Dorset baseline, as it is not large enough to be a direct alternative to the proposed ERF.

Once it is operational, it is expected to receive waste from Canford Magna, although this would be replaced by the proposed Portland ERF, if consented. It is around 120 km from Canford Magna, which gives waste transport emissions for 182,640 tpa of 1,399 tCO₂e per year (for direct comparison purposes with the Portland ERF, as the Bridgwater plant could not actually process this much waste.)

According to the environmental permit decision document, the Bridgwater plant has a net electrical efficiency of 22.14%, which means that it would be expected to export 15.44 MWe if it could process the same waste as the proposed ERF.

4.2.2 Other ERFs in Europe

Comparing the carbon emissions for waste exported to ERFs in Europe is complex, because there are a number of significant uncertainties. While the direct emissions from combusting the waste are the same, the transport emissions are very different, the type of electricity which is displaced may be different and the potential for exporting heat will be different.

1. Transport

- a. RDF is transported to Europe by ship from a number of ports. In some cases, the RDF is transported by road to the east of England before being shipped, but we have assumed that waste from Dorset would go to a local port (Southampton). The waste would be transported from the port to the ERF by road as well and this distance could be similar to the distance to Portland ERF. Hence, we can assume that the road emissions are the same in both cases (583 tCO₂e per year).
- b. According to data in WRATE, the Environment Agency's modelling tool, carbon emissions from ship transport of waste are 0.00849 kgCO₂e per tonne of waste per km.
- c. Hence, if 183,000 tonnes of waste is shipped from Southampton to Rotterdam (about 290 nautical miles or 537 km), the emissions would be $0.00849 \times 183,000 \times 537 \div 1000 = 834$ tCO₂e per year. If the same waste is shipped to Gothenburg (about 830 nautical miles, or 1,537 km), the emissions would be 2,387 tCO₂e per year.

2. Electricity displacement

- a. The type of electricity displaced depends on the country which the waste is sent to. The five primary destinations for RDF from England are The Netherlands, Sweden, Germany, Norway and Denmark.

- i. Sweden and Norway generate most electricity from renewables and export electricity to other European countries. This means that generation of electricity from waste is likely to lead to a reduction in fossil fuel generation elsewhere in Europe.
 - ii. The Netherlands, Denmark and Germany also use a reasonable quantity of renewables but not as much as Sweden and Norway, so it is likely that generation of electricity from waste is likely to lead to a reduction in fossil fuel generation. The Netherlands and Germany, in particular, still generate more electricity from coal than in the UK but also generate power from natural gas.
 - b. The UK also imports electricity from Europe, particularly France and The Netherlands, and the electricity grid on mainland Europe is generally more integrated between different countries. This means that electricity generated from energy-from-waste plants in The Netherlands, for example, could displace UK electricity, in much the same way that electricity generated from UK energy from waste plants does.
 - c. Hence, it is likely that the carbon benefits of power displacement will be similar for European plants.
3. Heat displacement
 - a. More European plants are connected to district heating systems than UK plants. Many are connected to extensive systems with multiple heat sources and users. Therefore, there is more potential for heat displacement for plants in Europe.
 - b. As demonstrated in the main assessment, displacing heat has a carbon benefit. We have assumed that the European plants export three times as much heat as assumed for the Portland ERF, giving a heat efficiency of 9.84%. We have also assumed that the European plants have the same electrical efficiency as Portland, but that this would be reduced by the additional heat export, giving an electrical efficiency of 23.0%.
4. Waste displacement
 - a. A final complicating factor is that European ERFs, particularly those linked to district heating schemes, are probably still running at capacity and significant quantities of waste is being sent to landfill. This means that burning UK waste in these plants means that some other European waste is not being burned and is probably being landfilled. This factor has not been taken into account.

4.2.3 Other ERFs in Dorset Waste Plan

We have assumed that an ERF constructed at one of the sites in the Dorset Waste Plan would be identical to that proposed at Portland, with a nominal design capacity of 183,000 tpa. This means that the only differences, in carbon terms, would be the distance travelled to deliver waste, the potential for exporting heat and the potential for exporting power directly to users. The direct emissions to atmosphere and the benefits of displacing other forms of electricity by exporting to the grid would be identical for all cases.

The four sites are discussed in detail in the Comparative Assessment against Waste Local Plan Allocated Sites. The points which are relevant for the carbon assessment are covered below. In particular, we have not considered whether an ERF of this size is deliverable at these sites and note that the site at Mannings Heath Industrial Estate, Poole, is too small for an ERF of the same capacity as the proposed development at Portland.

1. Eco Sustainable Solutions, Parley
 - a. The site has some potential for district heating but no specific heat users have been identified.

- b. The site is 10-15 km from Poole and Bournemouth, 50 km from Dorchester and 16 km from Canford Magna MBT plant. This suggests that Dorset waste would travel around 15 km on average, releasing 175 tCO₂e per annum.
2. Canford Magna, Poole
 - a. The site has potential for district heating for Magna Business Park, but no specific heat users have been identified.
 - b. The site already includes an MBT plant and produces 60,000 tonnes per annum of RDF for export to Europe. This RDF could be processed in an ERF with no transport.
 - c. The site is 10-15 km from Poole and Bournemouth and 40 km from Dorchester. Allowing for zero transport for the RDF already present, this suggests that Dorset waste would travel around 10 km on average, releasing 117 tCO₂e per annum.
3. Mannings Heath Industrial Estate, Poole
 - a. The site may have potential for district heating as it is in an industrial estate but no specific heat users have been identified.
 - b. The site is 10 km from the centres of Poole and Bournemouth, 40 km from Dorchester and 6 km from Canford Magna MBT plant. This suggests that Dorset waste would travel around 10 km on average, releasing 117 tCO₂e per annum.
4. Binnegar Environmental Park, East Stoke
 - a. There is no potential for district heating.
 - b. The site is 20-30 km from Dorchester, Poole and Bournemouth, and 24 km from Canford Magna MBT plant. This suggests that Dorset waste would travel around 25 km on average, releasing 291 tCO₂e per annum.

4.2.4 Results for Alternative ERFs

The results for the different ERFs are set out below. For the proposed ERF, three cases are shown.

- Base case (export of electricity to grid only);
- With shore power (SP); and
- With shore power (SP) and district heating (DH).

These are then presented in order of net emissions, showing the difference from the base case.

Table 19: Comparison of ERF options

	Marchwood	Lakeside	Portland	Binnegar	Parley	Canford Magna	Mannings Heath	Gothenburg	Portland + SP	Rotterdam	Portland + SP + DH
Transport	1,316	2,483	1,375	1,025	908	850	850	3,758	1,375	2,207	1,375
Heat offset	0	0	0	0	0	0	0	-11,215	0	-11,215	-4,154
Power offset	-45,039	-50,290	-50,890	-50,890	-50,890	-50,890	-50,890	-47,794	-57,631	-47,794	-56,599
Direct emissions	89,796	89,796	89,796	89,796	89,796	89,796	89,796	89,796	89,796	89,796	89,796
Net emissions	46,073	41,989	40,281	39,931	39,815	39,756	39,756	34,545	33,540	32,995	30,418
Difference from base case	5,792	1,708	0	-350	-466	-525	-525	-5,736	-6,741	-7,286	-9,863

All figures are in tCO₂e per year. All figures are rounded.

This table shows that there is relatively little difference between the different UK options. While Portland, as the base case, has higher emissions than the other sites in the Dorset Waste Plan, this difference is outweighed by the benefits of shore power. Similarly, while the additional transport emissions for shipping waste to European plants is outweighed by the benefits of district heating, the final Portland option, incorporating both shore power and district heating, has the lowest emissions of all.

4.3 Existing Management of Dorset Waste

Dorset Council has asked that the carbon emissions of the ERF be compared with the current management of Dorset's waste from council collections. When the planning application was submitted, the baseline was developed from the following data.

1. Household waste

In 2021, we understood that residual waste generated in Dorset was exported from the county to energy from waste plants elsewhere in the UK or to landfill sites elsewhere in the UK (specifically Hampshire and Somerset), and some was converted to RDF and exported to Europe. According to the DEFRA Dataset ENV18-LACW 2018/19, 51,344 tonnes was sent to landfill and 109,984 tonnes was sent to ERF from the whole of Dorset (including Bournemouth and Poole). Some of the waste sent to ERFs was sent to Veolia's plants in Hampshire and to the Lakeside EfW in Slough, while some is treated at the Canford Magna MBT to produce RDF which was exported to Europe via Southampton.

2. Commercial waste

It is unclear where the commercial waste generated in Dorset is treated. A baseline report prepared by consultants on behalf of the Bournemouth, Dorset and Poole waste authorities in October 2017, provided estimates of C&I waste arisings in the waste plan area and indicated that 92,558 tonnes of waste was sent to landfill.

In preparation for the Inquiry, Tolvik has used data from Waste Data Interrogator to identify where residual waste from Dorset and BCP¹⁰ went in 2022. This shows that 70,233 tonnes of residual waste was sent to landfill and 70,768 tonnes of waste was exported as RDF. Given this more recent data, we have assessed a baseline case where all of the waste which is currently sent to landfill and all of the RDF is sent to the new ERF, together with enough waste diverted from other UK ERFs to fill the plant. This is a snapshot for illustrative purposes.

Considering the nominal design case, this means that waste is diverted from three routes.

1. ERF in the UK – 42,640 tonnes (61,912 tonnes in the Maximum Case).

This is considered in section 4.2. We have assumed that half of the waste is sent to Marchwood and half to Lakeside.

2. ERF in Europe – 70,000 tonnes.

This is considered in section 4.2.2. We understand that Canford is currently producing 82,600 tonnes of waste per annum for energy recovery. We have assumed that the waste goes to a plant in the Netherlands.

3. Landfill in the UK – 70,000 tonnes

This is considered in the main assessment.

We have combined these three routes to form a new baseline, and compared this with the proposed development in Table 20 below.

¹⁰ Bournemouth, Christchurch and Poole

Table 20: Summary, Current Dorset Baseline

Parameter	Units	Nominal	Maximum
Baseline			
Releases from LFG	t CO ₂ e	31,425	30,910
Transport of waste and outputs to landfill	t CO ₂ e	358	358
Offset of grid electricity from LFG engines	t CO ₂ e	-4,502	-4,428
Total landfill emissions	t CO₂e	27,281	26,840
Transport of waste to and outputs from alternative ERFs	t CO ₂ e	1,292	1,483
Offset of heat from alternative ERFs	t CO ₂ e	-4,298	-3,888
Offset of grid electricity with alternative ERF generation	t CO ₂ e	-29,446	-31,185
Emissions from the alternative ERFs	t CO ₂ e	55,380	54,622
Total Alternative ERF Emissions	t CO₂e	22,928	21,033
Total Baseline Emissions	t CO₂e	50,209	47,872
Proposed ERF			
Transport of waste to and outputs from the ERF	t CO ₂ e	1,375	1,507
Offset of grid electricity with ERF generation	t CO ₂ e	-50,890	-50,890
Emissions from the ERF	t CO ₂ e	89,796	83,607
Total ERF Emissions	t CO₂e	40,281	34,225
Net Benefit of the Proposed ERF	t CO₂e	9,928	13,647
Net Benefit with shore power, 2027	t CO ₂ e	15,995	19,714
Net Benefit with shore power, 2047	t CO ₂ e	16,669	20,388

Therefore, the benefit of the proposed ERF over current residual waste management approaches for Dorset Waste is estimated to be around 9,900 tCO₂e per annum, increasing to 13,600 tCO₂e per annum in the maximum case with lower CV waste. This does not take account of the additional benefits associated with the provision of shore power from the proposed Portland ERF, which would otherwise not be available and which would improve the benefit by around 6,000 – 6,700 tCO₂e per annum, or the potential benefit of district heating, which is a further 3,000 tCO₂e per annum (see section 3.4.2).

We have considered the sensitivity of these results to the grid displacement factor for electricity and the landfill gas capture rate, as before, noting that we have assumed that the grid displacement factor for all electricity generated by all plants is the same. It can be seen that there is a benefit for all LFG capture rate and grid displacement factor combinations, except for a very high LFG capture rate with no shore power.

Table 21: Sensitivity analysis – Dorset Baseline case – power only

Grid Displacement Factor (t CO ₂ e/MWh)	LFG Capture Rate			
	75%	68%	60%	52%
Without Shore Power				
0.372	2,905	9,928	17,953	25,978
0.227	-3,518	3,324	11,143	18,962
0.157	-6,619	136	7,855	15,574
Shore Power (2027)				
0.372	8,972	15,995	24,020	32,046
0.227	6,847	13,689	21,508	29,327
0.157	5,821	12,575	20,295	28,014
Shore Power (2047)				
0.372	9,646	16,669	24,694	32,719
0.227	7,998	14,840	22,659	30,478
0.157	7,203	13,957	21,676	29,396

Table 22: Sensitivity analysis – Dorset Baseline case – district heating

Grid Displacement Factor (t CO ₂ e/MWh)	LFG Capture Rate			
	75%	68%	60%	52%
Without Shore Power				
0.372	6,027	13,049	21,075	29,100
0.227	6	6,848	14,667	22,486
0.157	-2,901	3,854	11,573	19,293
Shore Power (2027)				
0.372	12,094	19,116	27,142	35,167
0.227	10,371	17,213	25,032	32,851
0.157	9,539	16,293	24,013	31,732
Shore Power (2047)				
0.372	12,768	19,790	27,816	35,841
0.227	11,522	18,364	26,183	34,002
0.157	10,921	17,675	25,394	33,114

4.4 Future management of Dorset Waste

Once the Bridgwater ERF is operational, we understand that the RDF from Canford Magna will be transported to Bridgwater rather than to Europe. Therefore, we have considered an alternative baseline for Dorset's waste, where 70,000 tpa is sent to Bridgwater ERF rather than to Europe.

Table 23: Summary, Future Dorset Baseline with Bridgwater ERF

Parameter	Units	Nominal	Maximum
Baseline			
Releases from LFG	t CO ₂ e	31,425	30,910
Transport of waste and outputs to landfill	t CO ₂ e	358	358
Offset of grid electricity from LFG engines	t CO ₂ e	-4,502	-4,428
Total landfill emissions	t CO₂e	27,281	26,840
Transport of waste to and outputs from alternative ERFs	t CO ₂ e	1,263	1,455
Offset of heat from alternative ERFs		0	0
Offset of grid electricity with alternative ERF generation	t CO ₂ e	-28,744	-30,550
Emissions from the alternative ERFs	t CO ₂ e	55,380	54,622
Total Alternative ERF Emissions	t CO₂e	27,899	25,527
Total Baseline Emissions	t CO₂e	55,180	52,367
Proposed ERF			
Transport of waste to and outputs from the ERF	t CO ₂ e	1,375	1,507
Offset of grid electricity with ERF generation	t CO ₂ e	-50,890	-50,890
Emissions from the ERF	t CO ₂ e	89,796	83,607
Total ERF Emissions	t CO₂e	40,281	34,225
Net Benefit of the Proposed ERF	t CO₂e	14,899	18,141
Net Benefit with shore power, 2027	t CO ₂ e	20,966	24,209
Net Benefit with shore power, 2047	t CO ₂ e	21,640	24,882

Therefore, the benefit of the proposed ERF over future residual waste management approaches for Dorset Waste is estimated to be around 14,900 tCO₂e per annum, increasing to 18,100 tCO₂e per annum in the maximum case with lower CV waste. This does not take account of the additional benefits associated with the provision of shore power from the proposed Portland ERF, which would otherwise not be available and which would improve the benefit by around 6,000 – 6,700 tCO₂e per annum, or the potential benefit of district heating, which is a further 3,000 tCO₂e per annum (see section 3.4.2).

5 Lifetime Benefit

The benefits discussed above all relate to a single year. The ERF is expected to start operating in 2027 and to have a life of at least 25 years, so the carbon benefits will accumulate over time. However, the benefits will vary over time as a number of the key assumptions will vary.

In this section, we have considered the lifetime benefits of the ERF on an illustrative basis. We have varied a number of assumptions with time.

1. The government's policy is to decarbonise grid electricity, which means that the benefit of displacing electricity will reduce. We consider, as explained in section 3.1.3, that the correct comparator at present is power from CCGTs and that this will remain the case for some time.

DESNZ has published a set of UK long run marginal generation-based emission factors¹¹ for each year until 2010. These start at 0.157 kg CO₂e/kWh in 2027 and drop to 0.002kg CO₂e/kWh by 2051. However, these are only relevant if the ERF were to displace other renewable sources of electricity (which we do not consider to be the case as justified in section 3.1.3) and as such the long run generation based factors are considerably more conservative than the grid displacement factor used in the main assessment.

Taking this into consideration, it is not considered that the DESNZ long-run generation-based factors are representative of the types of power station which would be displaced by the ERF in the short to medium term. The current grid displacement factor is 0.372 tCO₂e/MWh. Comparatively, the DESNZ long-run generation grid factor for 2023 is 0.227 tCO₂e/MWh. As this is lower than the current grid situation, in order to update the DESNZ long-run generation grid factors but continue to recognise the UK Government targets to Net Zero (and 0.002 tCO₂e/MWh grid displacement factor) by 2050, we have created a set of adjusted factors which start from 0.372 tCO₂e/MWh in 2023 and follow the same rate of change to 2050 as the original DESNZ factors. Although this should provide a more accurate reflection of the near future, it is recognised that it remains difficult to accurately predict the exact rate of grid decarbonisation into the longer term. The effect of these factors has been considered as a sensitivity.

2. Shore power is assumed to ramp up linearly from 29,639 MWh in 2027 to 32,931 MWh in 2047.
3. District heating is assumed to take longer to be developed. First users are assumed to be connected in 2027, with a linear ramp up to the full heat export of 18,307 MWh by 2037, 10 years after the plant opens. (This is expected to be conservative as key potential heat users (including the 2 prisons) are interested in a heat supply much sooner, whereas new housing that may connect to the heat network is likely to be delivered in stages).
4. Landfill gas capture rates are assumed to increase gradually from 68% in 2027 to 75% in 2047, as it is likely that landfill performance will improve.

It is likely that waste composition will vary, but we consider that it is not possible to predict waste composition over 25 years and so we have not allowed for this. Variations in waste composition could make the performance of the ERF compared to landfill better or worse.

With these assumptions, the net benefit of the Portland ERF over landfill over 25 years is estimated to be 124,349 tCO₂e. The net benefit per year and the cumulative benefit over time are illustrated below in Figure 1, which shows that the Portland ERF gives a benefit until 2043.

We have also considered the lifetime benefit compared to the current baseline for Dorset Waste. This is estimated to be 276,891 tCO₂e, with a net benefit in each year. The net benefit per year and the cumulative benefit over time are illustrated below in Figure 2.

¹¹ Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal, BEIS, 2023

We have also considered the sensitivity of both cases to using our adjusted grid displacement factors. This increases the lifetime benefit, to 154,697 tCO₂e against landfill and 282,852 tCO₂e against the current Dorset Baseline.

Figure 1: Lifetime Carbon Benefit Compared to Landfill

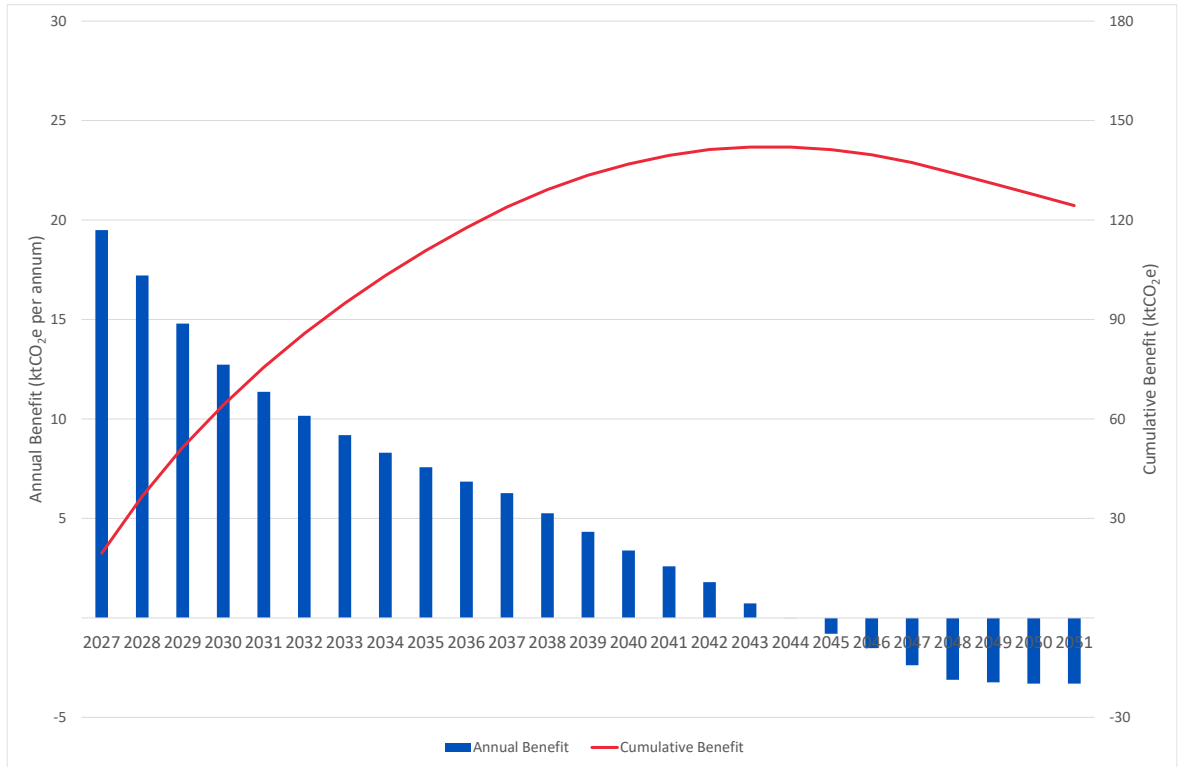
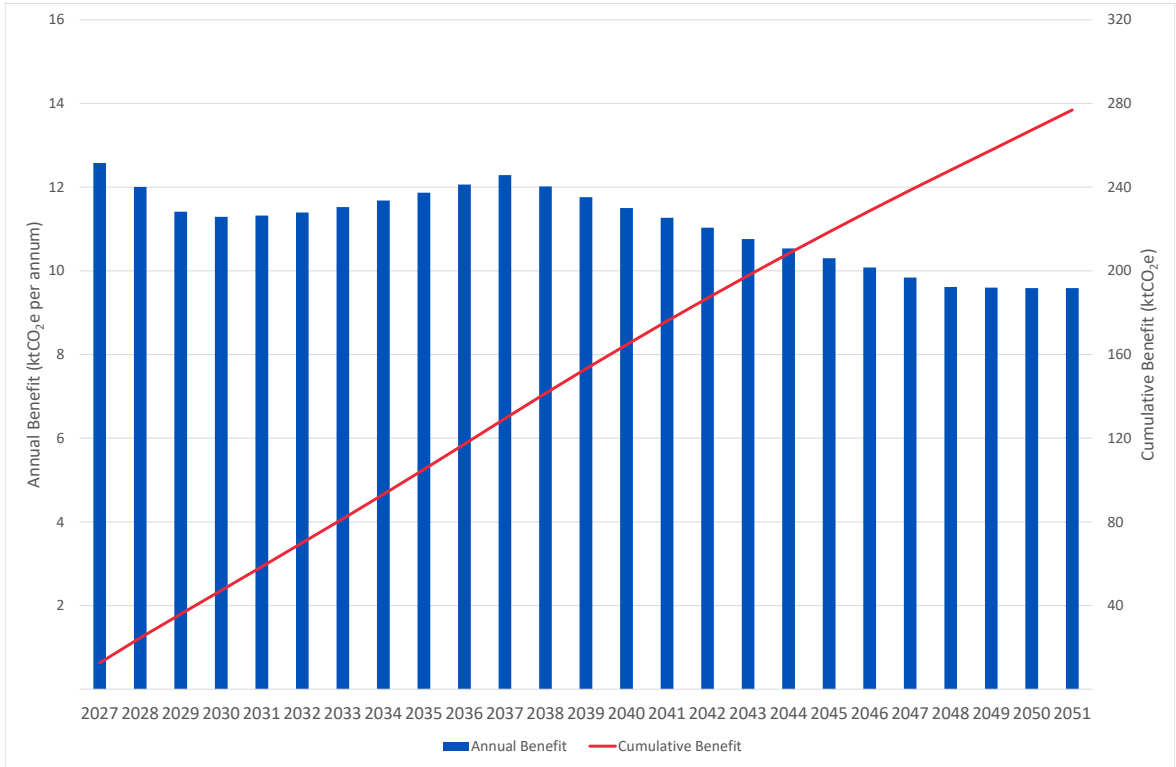


Figure 2: Lifetime Carbon Benefit Compared to Current Baseline



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**Appendix SO4 to Proof of Evidence of
Stephen Othen
Extracts from Previous Inquiry Reports**

1. Javelin Park
2. Hatfield
3. Ratty's Lane
4. REP DCO
5. Waterbeach
6. Brookhurst Wood
7. Kemsley
8. Consett



Department for Communities and Local Government

Nick Roberts
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Our Ref: APP/T1600/A/13/2200210

Your Ref: NR/1422

6 January 2015

Dear Sir

**TOWN AND COUNTRY PLANNING ACT 1990 – SECTION 78
APPEAL BY URBASER BALFOUR BEATTY
LAND AT JAVELIN PARK, NEAR HARESFIELD, GLOUCESTERSHIRE
APPLICATION REF: 12/0008/STMAJW**

1. I am directed by the Secretary of State to say that consideration has been given to the report of the Inspector, Brian Cook BA (Hons) DipTP MRTPI, who held a public local inquiry between 19 November and 13 December 2013 and between 14 – 29 January 2014 into your client's appeal against Gloucestershire County Council's (the Council) refusal to grant planning permission for an Energy from Waste (EfW) facility for the combustion of non-hazardous waste and the generation of energy, comprising the main EfW facility, a bottom ash processing facility and education/visitor centre, together with associated/ancillary infrastructure including access roads, weighbridges, fencing/gates, lighting, emissions stack, surface water drainage basins and landscaping, in accordance with application ref 12/0008/STMAJW dated 31 January 2012.
2. On 16 July 2013, the appeal was recovered for the Secretary of State's determination, in pursuance of section 79 of, and paragraph 3 of Schedule 6 to the Town and Country Planning Act 1990, because the appeal involves proposals of major significance for the delivery of the Government's climate change programme and energy policies.

Inspector's recommendation and summary of the decision

3. The Inspector recommended that the appeal be allowed and planning permission granted subject to conditions. The Secretary of State agrees with the Inspector's analysis, except where indicated below and he has decided to allow the appeal and grant planning permission. A copy of the Inspector's report (IR) is enclosed. All references to paragraph numbers, unless otherwise stated, are to that report.

Procedural matters

4. In reaching this position, the Secretary of State has taken into account the Environmental Statement (ES) which was submitted under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations, the two further statements submitted under Regulation 22(1) and the further clarification and errata statements (IR8). The Secretary of State considers that the ES and the further information provided complies with the above regulations and that sufficient information has been provided for him to assess the environmental impact of the proposals.

Matters arising after the close of the inquiry

5. The Secretary of State has taken account of the fact that, following the close of the inquiry, two matters occurred on which the comments of the main and Rule 6 parties were requested by the Planning Inspectorate on 10 March 2014 (IR17). On 18 February 2014 the Court of Appeal decision in *Barnwell Manor Wind Energy Limited v East Northamptonshire DC, English Heritage, National Trust and Secretary of State for Communities and Local Government* [2014] EWCA Civ 137 (*Barnwell Manor*) was handed down (IR18). In addition, on 6 March 2014, the Government issued the National Planning Practice Guidance (the Guidance) (IR19).
6. Subsequently, on 1 August 2014, the Secretary of State received a letter from GlosVAIN which purported to describe new information, relevant to the Secretary of State's decision on this appeal. GlosVAIN's letter was circulated to interested parties on 16 September 2014. On 16 October 2014, the Secretary of State circulated the responses received and also invited comments on his publication of new planning policy and new planning practice guidance on waste.
7. In coming to his decision on the appeal before him, the Secretary of State has taken account of all the representations referred to in paragraphs 5 and 6 above, which are listed at Annex A to this letter.
8. The Secretary of State is also in receipt of further correspondence following the close of the inquiry which is again listed at Annex A. He has carefully considered these representations but does not consider that they raise new matters that would affect his decision or require him to refer back to parties on their contents prior to reaching his decision. Copies of the representations referred to in paragraphs 5-8 will be provided on application to the address at the bottom of the first page of this letter.

Policy considerations

9. In deciding the appeal the Secretary of State has had regard to section 38(6) of the Planning and Compulsory Purchase Act 2004 which requires that proposals be determined in accordance with the development plan unless material considerations indicate otherwise.
10. In this case the development plan consists of the Waste Core Strategy (WCS) (2012), the saved policies of the Waste Local Plan (WLP) (2004) and the Stroud District Local Plan (SDLP) (2005). The Secretary of State considers that the policies identified in

IR30 – 39 are the most relevant policies to this appeal. The Secretary of State has had regard to the Inspector's remarks about the emerging Stroud District Local Plan (IR41) and he is aware that the Plan's examination in public is due to resume shortly.

11. The Secretary of State observes that Planning Policy Statement 10: *Planning for Sustainable Waste Management* was cancelled with the publication of the new waste policy and guidance in October 2014. With that exception, he has had regard to those documents identified by the Inspector at IR42. The Secretary of State has also taken into account the Guidance published in March 2014; and the policy and guidance on waste published on 16 October 2014;
12. In accordance with section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 (the LBCA), the Secretary of State has paid special attention to the desirability of preserving those listed structures potentially affected by the scheme or their settings or any features of special architectural or historic interest which they may possess.

Preliminary Matters

13. The Secretary of State has had regard to the Inspector's remarks at IR16 and IR21 about his role in relation to the WCS and about his former links with Gloucestershire including its County Council, and the fact that parties were made aware of those points.
14. In relation to the residual Municipal Solid Waste (MSW) treatment procurement project and the preparation of the WCS, the Secretary of State has taken account of the Inspector's timeline at IR964 and his comments at IR965. The Secretary of State sees no reason to disagree with the Inspector's analysis and conclusions about the way the WCS should be interpreted (IR966 – 992) including the weight to be given in this particular case to the Framework in respect of policy on the historic environment (IR989).
15. The Secretary of State has carefully considered the Inspector's comments about the procurement process (IR993 – 996) and he agrees with the Inspector (IR997) that this is not a matter he should take into account in his determination of this appeal.

Main Issues

16. The Secretary of State agrees that the main issues in this appeal are those identified by the Inspector at IR998.

Delivery of the Government's climate change programme and energy policies

17. The Secretary of State has noted the Inspector's introductory remarks at IR999-1009 and, like the Inspector, he considers that the two issues are firstly, the extent to which the appeal proposal would represent a renewable and low carbon source of energy and secondly, the contribution, if any, it would make towards cutting greenhouse gas emissions (IR1010).
18. The Secretary of State agrees with the Inspector's analysis in respect of renewable and low carbon energy (IR1011-1017) and endorses his summary (IR1018) that

national energy policy confirms that there is an urgent and continuing need for new renewable electricity generating projects and recognises that even small scale projects have a valuable contribution to make. He also agrees that there is no limit to the provision that can come forward and no threshold below which the renewable energy contribution from a mixed scheme should be disregarded in some way and that EfW is a potential source of such energy which unlike weather dependant sources can provide a dependable peak and base load power on demand (IR1018). Like the Inspector, the Secretary of State considers that, with around half its exported electricity classified as renewable, the scheme would accord with national energy policy in this regard (IR1019).

19. The Secretary of State has given careful consideration to the Inspector's assessment of greenhouse gas emissions IR1020-1032. In terms of whether the proposal would be inherently better than landfill with regard to greenhouse gas emissions, the Secretary of State agrees with the Inspector that the EfW facility proposed would be better than landfill since there can be no methane released to the atmosphere as a result of the process (IR1033).
20. Turning to whether the proposal can be classified as low carbon, for the reasons given at IR1034-1035, the Secretary of State agrees with the Inspector that Government energy policy confirms that CO₂ emissions from schemes like the appeal proposal are not a barrier to consent (IR1035).
21. For the reasons given by the Inspector at IR1036, the Secretary of State agrees with the Inspector's conclusion that the appeal proposal would contribute to the Government's overall policy for energy production over the period to 2050 and would do nothing to hinder its climate change programme. He agrees too that this would be a benefit of the scheme to which considerable weight should be attributed in the planning balance (IR1037).

Whether the appeal proposal would be acceptable 'in principle' under WCS policy WCS6

22. Having had regard to the Inspector's introductory remarks at IR1038-1042, the Secretary of State shares his view that, in principle, planning permission should be granted for the appeal proposal under policy WCS6 subject to compliance with its criteria a, b and c. He has gone on to consider those criteria.
23. The Secretary of State has carefully considered the Inspector's reasoning and conclusions on how the General and Key Development Criteria apply to this appeal (IR1043-1057). He has considered the representation dated 29 October 2014 submitted by GlosVAIN which argues that a localised height restriction applies to the appeal site but, having taken account of the Inspector's remarks at IR1123-1124, he does not consider that the height restriction relating to the planning consent for warehousing on the site amounts to a localised height restriction applicable to the appeal before him. He agrees with the Inspector's conclusion at IR1057 that the appeal proposal would be within the parameters of the guidance that underpins that part of the General Development Criteria in Appendix 5 as adopted. Like the Inspector (IR1057), the Secretary of State agrees that it is incompatible with the content of the WCS to object to the appeal proposal for reasons of height and scale.

24. For the reasons given by the Inspector at IR1059-1064, the Secretary of State agrees with the Inspector's conclusion that an Appropriate Assessment is not required and there is no conflict with WCS policy WCS6(b) (IR1065).
25. In relation to the matter of dealing only with the County's waste, the Secretary of State has carefully considered the Inspector's assessment and his conclusion that the appeal proposal does not conflict with WCS policy WCS6(c) (IR1071). The Secretary of State has also had regard to the policy and guidance on waste which he published in October 2014. Under the heading "Do the self-sufficiency and proximity principles require each waste planning authority to manage all of its own waste?", the guidance (reference ID: 28-007-20141016) states that, "though this should be the aim, there is no expectation that each local planning authority should deal solely with its own waste to meet the requirements of the self-sufficiency and proximity principles". The guidance goes on to observe that "the ability to source waste from a range of locations/organisations helps ensure existing capacity is used effectively and efficiently, and importantly helps maintain local flexibility to increase recycling without resulting in local overcapacity". The Secretary of State considers that his recently published guidance on this matter is a material consideration which carries significant weight in relation to the matter of dealing only with the County's waste.
26. The Inspector also states (IR1071) that, in the absence of the condition which the Council wish to impose, criterion WCS6(c) can have no practical effect once planning permission has been granted. Having taken account of the Inspector's analysis at IR1296-1297 and the guidance referred to in the preceding paragraph, the Secretary of State shares the Inspector's view (IR1297) that there is some doubt whether suggested condition 30 is necessary or reasonable and that there is little doubt that it would be very difficult to enforce in the circumstances described by the appellant with respect to waste transfer station waste. He sees no reason to disagree with the Inspector's advice that suggested condition 30 should not be imposed. In these circumstances, and bearing in mind the Inspector's remarks at IR1067 – 1068 and the fact that the Council accepts that criterion (c) is complied with at the point the appeal falls to be determined (IR1069), the Secretary of State concludes that the appeal proposal does not materially conflict with WCS policy WCS6(c).
27. The Secretary of State has considered carefully the Inspector's conclusions (IR1072) on whether the appeal proposal would be acceptable 'in principle' under WCS policy WCS6. For the reasons set out above, the Secretary of State considers that there would not be any material conflict with WCS policy WCS6(b) or (c). In terms of compliance with WCS6(a), the Secretary of State agrees with the Inspector's approach in first considering the proposal against WCS policies WCS14 and WCS17. The Secretary of State addresses these matters below.

The character and appearance of the Vale landscape and the setting of the Cotswolds AONB

28. The Secretary of State has noted the Inspector's introductory comments (IR1073-1082), and his approach to his consideration of this issue (IR1083-1091). He has carefully considered the Inspector's assessment as set out at IR1092 -1163 and he shares the Inspector's views both with regard to a fallback position of B8 warehousing (IR1102) and his characterisation of the site as urban fringe (IR1103).

29. Turning first to landscape impact, for the reasons given by the Inspector at IR1105 - 1121, the Secretary of State concurs with the Inspector's conclusion (IR1122) that there would be no conflict with WCS policy WCS14. In terms of visual impact, the Secretary of State also agrees with the Inspector's reasoning at IR1123 – 1151 and shares his view (IR1152) that there would be no conflict with WCS policy WCS17.
30. The Secretary of State has carefully considered the Inspector's comments on the proposal's effect on the setting of the Cotswolds AONB at IR1153 – 1162. For the reasons given at IR1154-1156, in common with the Inspector (IR1157) the Secretary of State concludes that the first indent of policy WCS14 would be met. He also agrees with the Inspector that, in the views out from the AONB, the expanse of the landscape is such that any impact would be mitigated by the design measures proposed (IR1159). The Inspector goes on to conclude that in looking towards the AONB it is only in the immediate vicinity of the building that there would be any significant interruption of the view (IR1160). The Secretary of State agrees with that assessment, and agrees too (IR1161) that the appeal proposal would cause no material difference in the light of the other developments and transport corridors nearby. He therefore endorses the Inspector's conclusion that there would not be any conflict in this regard with WCS policy WCS14 (IR1163).
31. The Secretary of State agrees with the Inspector that the way that WCS policy WCS6 and Appendix 5 work together means that the appeal site is allocated in the WCS unfettered both in terms of the type of strategic residual recovery facility that might be accommodated, and the scale of the buildings that might be constructed. He agrees too that while the development plan does not 'rubber stamp' the proposal, what amount to matters of principle cannot now be raised against the proposed development, when they should have properly been included within the WCS as constraints on the form of development that could come forward on this particular allocated site (IR1164).
32. The Secretary of State also agrees with the Inspector (IR1165) that, based on the available evidence, the appeal site should be considered as being on the urban fringe. He notes the Inspector's comment that it is an urban fringe that has been advancing into the Vale landscape over a period of at least 40 years and it is planned to continue that progress. He agrees too with the Inspector's conclusion that the landscape has the capacity to absorb this additional development (IR1165).
33. The Secretary of State acknowledges that considerations of visual impact are complex; particularly in light of the fall-back development of B8 warehousing that could take place. He agrees with the Inspector that a building of the size proposed on such an open site cannot be other than prominent in view although the appellant's Zone of Visual Influence shows that those views may be more limited than are indicated by the bare earth Zone of Theoretical Influence (IR1166). The Inspector goes on to argue that this is an inevitable consequence of the unfettered allocation of the site in WCS policy WCS6. The Secretary of State sees no reason to disagree with the Inspector's conclusion (IR1166) that the appellant has addressed the factors set out in WCS Appendix 5 to successfully deal with that consequence.
34. The Secretary of State endorses the Inspector's conclusion (IR1167) that the appeal proposal would not conflict with either WCS policy WCS14 or WCS policy WCS17.

He agrees too that by virtue of the way those two policies are drawn into Appendix 5 there would be no conflict either with WCS policy WCS6(a) (IR1167).

The effect that the appeal proposal would have on the setting of the various heritage assets in the vicinity of the appeal site

35. The Secretary of State has given careful consideration to the Inspector's comments on the scheme's potential impacts on the setting of the various heritage assets in the vicinity of the appeal site (IR1169-1185). He has taken account of the view of the Council that the proposal would cause harm to the significance of 12 designated heritage assets whereas the appellant considers that this finding would apply to only two, Hiltmead Farmhouse and St Peters Church, Haresfield (IR1178). For the reasons given by the Inspector (IR1173 - 1183), the Secretary of State agrees with the Inspector that, generally, Mr Grover (for the Council) has interpreted the setting of each heritage asset to be far too extensive and, for the most part, incorrectly characterised settings as rural (IR1183). The Secretary of State sees no reason to disagree with the Inspector's assessments of the scheme's impacts on St Peter's Church, Haresfield (IR1175 – 1177), Haresfield Court (IR1180) and Haresfield Hillcamp and Ring Hill Earthworks (IR1181). He also concurs with the Inspector's analysis with regard to the heritage assets he references at IR1183, including the Grade II* listed Hardwicke Court.
36. Having had regard to the Inspector's analysis at IR1186 – 1188 and his view that the position taken by English Heritage is in fact contrary to its own guidance and not supported by evidence before the inquiry, the Secretary of State gives very little weight to the views of English Heritage in his determination of this case.
37. In accordance with the LBCA, the Secretary of State attaches considerable weight and importance to the harm which would be caused to designated heritage assets.
38. He agrees with the main parties (IR1184) and the Inspector (IR1191) that, in this case, the heritage assets most affected by the appeal scheme would be St Peter's Church, Haresfield (Grade II* listed) and Hiltmead Farmhouse (Grade II listed) and that, in the case of these two assets, the scheme's impact on setting would harm the significance of the asset.
39. The Secretary of State has considered the Inspector's remarks at IR1191. He agrees with the Inspector that the level of harm would not be 'substantial' in the terms set out in the Framework but he considers that, in accordance with s.66 of the LBCA, the preservation of setting is to be treated as a desired or sought-after objective, and considerable importance and weight attaches to the desirability of preserving the setting of listed buildings when weighing this factor in the balance. The Secretary of State takes the view that it does not follow that if the harm to heritage assets is found to be less than substantial, then the subsequent balancing exercise undertaken by the decision taker should ignore the overarching statutory duty imposed by section 66(1) and he therefore sees a need to give considerable weight to the desirability of preserving the setting of all listed buildings.

Other matters

Residential amenity

40. The Secretary of State has carefully considered the Inspector's assessment of residential amenity at IR1195-1201. For the reasons given by the Inspector at IR1199, he agrees that there would not be an overbearing effect on either Hiltmead or the Hiltmead Traveller's site. The Secretary of State agrees too that although the Lodge is somewhat nearer and the appeal development would be visible from it, for the reasons given by the Inspector at IR1200, the effect would not be overbearing (IR1201).

Need

41. Whilst the Inspector refers to the draft revision of PPS10 (IR1202) and the Companion Guide to PPS10 (IR1221), both of which have been superseded, the Secretary of State agrees with the Inspector's reasoning and conclusions on need at IR1202-1225. Like the Inspector (IR1204), the Secretary of State attributes considerable weight to the fact that the appeal development would achieve an upward shift in the waste hierarchy. The Secretary of State sees no reason to disagree with the Inspector's view that there is insufficient evidence before him to undermine the statistical basis on which the WCS has been adopted or require a reassessment of the residual waste for which other recovery facilities should be provided (IR1215). He accepts the Inspector's conclusion that while residual waste from outside the County may well be managed at the proposed facility, that would not be contrary to Government policy and should not be a factor that weighs against the appeal proposal (IR1224). He agrees too that the residual waste to be managed through other recovery facilities is set out in a recently adopted local plan and, like the Inspector, he finds no evidence that satisfies him that those figures do not remain robust (IR1225). The Secretary of State agrees with the Inspector's view that the quantitative need for recovery capacity is therefore established and the appeal proposal would make a very significant contribution to that need (IR1225).

Alternative technologies

42. Turning to the Inspector's consideration of the alternative technologies which were promoted at the inquiry (IR1226-1231), for the reasons given in those paragraphs the Secretary of State agrees with his conclusion that no weight should be given to the argument that alternative technologies should be considered, but rather, that the essence of the issue for determination in this appeal is whether the land use implications of the chosen technology are acceptable at the appeal site (IR1231).

Perception of harm

43. The Secretary of State has carefully considered the Inspector's assessment on this matter set out at IR1232 – 1248 and he too concludes that minimal weight should be attributed to the claimed land use consequence of the perceived harm to health and that limited weight should be given to this issue in the planning balance (IR1249).

Consequences of the appeal not succeeding

44. It is common ground between the main parties that the consequence of the appeal being dismissed would be the continued disposal of the County's residual municipal solid waste to landfill (IR1250). For the reasons given by the Inspector (IR1250 – 1256), the Secretary of State agrees with him that some weight should be attributed to the expectation that dismissal of this appeal would result in a delay of some years at least in moving away from disposal to landfill of the County's residual municipal solid waste (IR1256-1257).

Highway safety

45. For the reasons given by the Inspector at IR1258 -1261, the Secretary of State agrees with his conclusion that there would be no policy conflict arising from this issue and, as such, this is not a matter to which any weight should be attributed either way in the balance (IR1262)

Legal arguments

Priority considerations of alternatives (Persistent Organic Pollutants)

46. The Secretary of State has considered carefully the Inspector's comments on this issue at IR1263 – 1269 and agrees with him that the duty under Article 6(3) of Regulation (EC) No. 850/2004 rests with the Environment Agency, not the local planning authority (IR1270). He sees no reason to doubt that in issuing the Environmental Permit the Environment Agency has discharged that duty (IR1270).

Localism

47. For the reasons given by the Inspector at IR1271 – 1274, the Secretary of State agrees that in this case, the spirit of the Localism Act has been followed.

The best interests of children

48. The Secretary of State has carefully considered the Inspector's assessment of this issue (IR1275 – 1280), the evidence of Mr Ttofa (IR940 -941) and the evidence of Mr Phillips (IR449 – 450). He agrees with Mr Philips (IR449) that the issues raised by Mr Ttofa in this regard and which relate to health, visual, financial and environmental impacts have been comprehensively addressed in the submitted evidence and he has given that evidence very careful consideration. He has also taken account of the fact that neither the Inspector (IR1279) nor Mr Phillips (IR450) consider that there is any suggestion that, in this particular case, the interests of children are any different from the interests of the general public. In these circumstances, the Secretary of State does not consider that the best interests of the children have a material impact on the planning balance in this case.

Conditions

49. The Secretary of State has considered the conditions recommended by the Inspector and set out at Annex B to the IR, the Inspector's comments at IR1281-1316, national policy set out at paragraphs 203 and 206 of the Framework and the planning

guidance. For the reasons given by the Inspector (IR1281-1316), he is satisfied that the proposed conditions, as reproduced at Annex B of this letter, are necessary and meet the tests identified at paragraph 206 of the Framework.

Planning balance

50. The Secretary of State finds that a number of matters weigh in the balance in favour of the appeal proposal, namely the contribution to the Government's overall energy policy and climate change programme, to which he attributes considerable weight; management of waste that is now consigned to landfill further up the waste hierarchy, to which he attributes considerable weight; a significant contribution towards a recently established quantitative need for residual waste recovery capacity, to which he attributes considerable weight; and the adverse consequences of the appeal not succeeding; to which he attributes some weight.
51. In terms of Framework paragraph 134, the Secretary of State finds that the planning balance falls in favour of the appeal scheme with the result that the less than substantial harm to the significance of the two heritage assets identified is outweighed. However, two matters weigh in the balance against the appeal proposal. The first is the desirability of preserving the settings of the heritage assets to which s66 of the LBCA requires that considerable importance and weight must be attributed. The Secretary of State finds in this case that the weight to be applied by s66 is in fact limited, given the extent of the harm to heritage assets which he has identified. With regard to the second matter, namely the perception of harm to the health of the local community, this is a matter to which the Secretary of State attributes limited weight.

Overall conclusions

52. The Secretary of State concludes that the appeal proposal would comply with the relevant development plan policies and is satisfied that for the purposes of paragraph 134 of the Framework, the less than substantial harm to the settings, and thus the significance of the two heritage assets, is outweighed by substantial public benefits. He concludes that there are no other material considerations to indicate that the appeal should be determined other than in accordance with the development plan. For this reason, the Secretary of State has concluded that the appeal should be allowed.

Formal decision

53. Accordingly, for the reasons given above, the Secretary of State agrees with the Inspector's recommendation. He hereby allows your client's appeal and grants planning permission for an Energy from Waste (EfW) facility for the combustion of non-hazardous waste and the generation of energy, comprising the main EfW facility, a bottom ash processing facility and education/visitor centre, together with associated/ancillary infrastructure including access roads, weighbridges, fencing/gates, lighting, emissions stack, surface water drainage basins and landscaping, in accordance with application ref 12/0008/STMAJW dated 31 January 2012 subject to the conditions set out at Annex B to this letter.
54. An applicant for any consent, agreement or approval required by a condition of this permission for agreement of reserved matters has a statutory right of appeal to the

Secretary of State if consent, agreement or approval is refused or granted conditionally or if the Local Planning Authority fail to give notice of their decision within the prescribed period.

55. This letter does not convey any approval or consent which may be required under any enactment, bye-law, order or regulation other than section 57 of the Town and Country Planning Act 1990.

56. This letter serves as the Secretary of State's statement under Regulation 21(2) of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

Right to challenge the decision

57. A separate note is attached setting out the circumstances in which the validity of the Secretary of State's decision may be challenged by making an application to the High Court within six weeks from the date of this letter.

58. A copy of this letter has been sent to Gloucestershire County Council, Stroud District Council, Gloucestershire Vale Against Incineration (GlosVAIN) and Gloucestershire Friends of the Earth Network (GFOEN). A notification letter has been sent to all other parties who asked to be informed of the decision.

Yours faithfully

Christine Symes

Authorised by the Secretary of State to sign in that behalf

996. Notwithstanding Mr Christensen's evidence, Mr Wyatt disagreed with him (UBB/INQ/17, paragraph 125) and such a position formed no part of Mr Simons's closing submissions for SDC. Mr Watson offered that while Mr Christensen's objective would be a desirable outcome of a decision that the appeal should be dismissed for planning reasons, it could not lawfully be the reason for coming to that decision.

997. No legal challenge has been made to the award of the contract by GCC. It is not within the remit of the Secretary of State to review that award as part of these appeal proceedings which must be determined in accordance with s38(6) of the 2004 Act. Insofar as the award of the contract is capable of being a material consideration at all it is, in the circumstances described, one to which I consider the Secretary of State should attribute no weight in coming to his decision.

Main Issues

998. From the foregoing I consider the main issues to be:

- (a) The effect that the appeal proposal would have on the delivery of the Government's climate change programme and energy policies.
- (b) Whether the appeal proposal would be acceptable 'in principle' under WCS policy WCS6.
- (c) The effect that the appeal proposal would have on the character and appearance of the Vale landscape and the setting of the Cotswolds AONB.
- (d) The effect that the appeal proposal would have on the setting of various heritage assets in the vicinity of the appeal site.

Delivery of the Government's climate change programme and energy policies.

Introduction

999. Energy policy is an important component of the Government's climate change programme. There is a legally binding commitment to cut greenhouse gas emissions by at least 80% by 2050 compared to 1990 levels (CD6.5, paragraph 2.2.1). In achieving the transition to a low carbon economy the UK needs to wean itself off the current high carbon energy mix to reduce greenhouse gas emissions and to improve the security, availability and affordability of energy through diversification (CD6.5, paragraph 2.26). Renewable energy infrastructure includes energy from biomass and/or waste (CD6.6, paragraph 1.8.1).

1000. Support for the transition to a low carbon future in a changing climate and encouraging the use of renewable resources by, for example, the development of renewable energy is one of the 12 core principles set out in the Framework (CD6.1, paragraph 17). The same policy document states that:

- Planning plays a key role in supporting the delivery of renewable and low carbon energy and associated infrastructure which is further said to be central to the economic, social and environmental dimensions of sustainable development (paragraph 93).
- Local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low

carbon sources to help increase the use and supply of renewable and low carbon energy (paragraph 97).

- Local planning authorities should not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and should also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions (paragraph 98).

1001. The Framework specifically does not contain policies for nationally significant infrastructure projects which are determined in accordance with the Planning Act 2008 procedures and the relevant national policy statements (CD6.1, paragraph 3). However, the same paragraph confirms that those national policy statements form part of the overall framework of national planning policy and are a material consideration in decisions on planning applications (my emphasis).

1002. This is entirely consistent with what is said about the role of the particular national policy statement in the planning system in both the Overarching National Policy Statement for Energy – (EN-1) (CD6.5, section 1.2) and in similar terms in the National Policy Statement for Renewable Energy – (EN-3) (CD6.6, section 1.2). Since their publication both have been accepted as relevant in all decisions on EfW appeals [90].

1003. The Framework does not contain specific waste policies either since national waste policy is published as part of the national Waste Management Plan for England (CD7.30). PPS10, and any revision to it published during the consideration of this appeal⁴⁴, is incorporated into the national Waste Management Plan for England. Nevertheless, regard must be had to the policies in the Framework so far as relevant to decisions on waste planning applications (CD6.1, paragraph 5).

1004. The Waste Management Plan for England very explicitly incorporates the Government Review of Waste Policy in England 2011 and specifically refers to A Guide to the Debate as providing factual information to those interested in the development of facilities to efficiently recover energy from residual waste (CD7.30, page 13).

1005. I consider UBB's characterisation of the status of these documents [89] to be broadly correct. A Guide to the Debate is, in my view, a very clear and helpful document that assists understanding of many of the issues of relevance to the determination of this appeal. Given the status it has been afforded in the recently published Waste Management Plan for England, Mr Watson cannot be entirely correct in saying that it cannot be relied upon for any definitive information on the question of low carbon generation although he is right to note that it is a non-technical publication (GV1, paragraph 311). Nor, in my view, can he be correct as to the weight that should be attributed to arguments based upon it [806]. For UBB Mr Phillips considered that it was deserving of considerable weight (UBB/INQ/17, paragraph 30) while for SDC Mr Simons felt it should be afforded significant weight (SDC/INQ/3, footnote 5, page 35). There is little between these two assessments, with which I concur.

⁴⁴ Inspector note: At the time of writing Ministers are considering the consultation responses.

1006. The appeal proposal would have a dual role. First, it would manage by means of combustion some 190,000 tonnes of non-hazardous residual MSW and C+I waste per annum, the overwhelming majority of which is currently disposed of to landfill. Second, the process would have an installed electricity generating capacity of some 17.4 Megawatts of which 14.5 Megawatts would be exported to the local network while the remainder would be used in the operation of the facility [47]. The facility has been designed and would be constructed in CHP ready mode with its R1 status confirmed by the EA [9]. This is the highest level of certification available prior to actual construction and operation of a facility [94].
1007. Renewable energy is that which comes from renewable non-fossil sources. The appeal proposal would use residual waste as the fuel source. Typically, such wastes contain a significant proportion of materials like food and wood (the 'biogenic' materials) and energy produced from this material is considered to be renewable. However, residual waste also contains wastes, such as plastics, manufactured from 'fossil' fuels. Energy from this fraction of the waste stream is not renewable and, for a mixed waste stream such as that in the appeal proposal, the energy recovered is considered to be only a partially renewable energy source (CD7.9, paragraph 18).
1008. UBB's case on this is put in detail by Mr Aumonier (UBB 5) and by Mr Phillips in closing [89 to 138]. In short, this is that there is an urgent need to divert the County's waste from landfill; much needed renewable energy with potential exploitation of CHP would be provided thus increasing energy security and assisting the achievement of renewable energy targets; and carbon dioxide otherwise emitted in the generation of energy would be reduced and harmful methane emissions from landfilling would be displaced [138].
1009. GlosVAIN accepts that renewable energy would be generated from the biogenic fraction of the waste and that this electricity would be classed as low carbon [785]. Nor does GlosVAIN challenge the need for renewable generating capacity [786]. However, it does challenge assumptions made by UBB and thus the actual contribution that would be made believing the renewable element to be considerably overstated [787 to 792]. GlosVAIN also considers even the lower carbon savings now claimed to be overstated since no allowance is made by Mr Aumonier in his WRATE model for the decarbonisation of the electricity grid to 2030 [795]. Finally, GlosVAIN does not accept that the facility would ever operate in CHP mode thus rendering its efficiency less than claimed [801]. SDC takes a similar position in that regard [707 to 715].
1010. What therefore appears to me to be in issue is first, the extent to which the appeal proposal would represent a renewable and low carbon source of energy and, second, the contribution, if any, it would make towards cutting greenhouse gas emissions. The weight that should be attributed in any planning balance to these two benefits claimed for the proposal can then be assessed.

Renewable and low carbon energy

1011. Residual waste typically contains many items that will have come from biological sources and the carbon stored within them is known as biogenic carbon. Other items that will be present such as plastics are manufactured using fossil fuels such as oil and the carbon embedded in them is known as fossil carbon. Biogenic carbon is also termed short cycle carbon because it was only

recently absorbed in growing matter. On the other hand, fossil carbon was absorbed millions of years ago and would be newly released to the atmosphere if combusted (CD7.9, paragraphs 37 to 38). These are principally accounting conventions when calculating contributions to global warming; the atmosphere does not distinguish between CO₂ released from a biogenic or fossil source (CD7.9, paragraph 37 and footnote 26).

1012. The extent to which the energy produced by the appeal proposal can be classed as renewable therefore turns on the proportion of biogenic material in the residual waste stream that would be treated. In the submitted application documents the renewable energy was assessed as 56% of the total ([48] and UBB1, paragraph 5.3.31) although this was revised to 52.6% by Mr Roberts (UBB1 Y, paragraph 8) as a result of further calculations by Mr Aumonier. For the reasons Mr Watson sets out (GV1, paragraphs 264 to 279) GlosVAIN calculate the figure as 47.8%.

1013. UBB used data for the County to assess the composition of MSW and EA Wales data for C+I waste composition (UBB5 I, paragraph 2.1.3). This is somewhat dated being from 2007, 2008 and 2010. The WDA has to accept the waste that is provided to it by the WCAs (whose collection arrangements may change) and UBB recognise that the make-up of the waste that the facility would deal with will likely change over its operational lifetime [110]. There it is said that UBB could preferentially select C+I waste with a high biomass content which would enhance the renewable energy produced. Ironically, if GlosVAIN is correct about the extent to which the WDA has overstated the MSW that would arise over the lifetime of the facility, the opportunity for UBB to do so may well present itself.

1014. In these circumstances there is therefore some uncertainty about the proportion of the energy that would be produced that could be correctly classed as renewable at any point in the facility's operational life. Although Mr Watson suggested that it may actually be lower than he calculated (GV1, paragraph 276) he did not put a figure on this [792].

1015. However, it seems to me that this is not relevant to this particular issue. I was not directed to any policy statement that sought to set a threshold for renewable energy above which a proposal must remain to be classed as making a contribution to the nation's renewable energy requirements. On the contrary, the evidence is that even the contribution made by small schemes is to be welcomed [111].

1016. Moreover, EN-1 confirms that to meet the target of sourcing 15% of the total UK energy across all sectors from renewable sources by 2020 '*...new projects need to continue to come forward urgently...*' (CD6.5, paragraph 3.4.1). While it goes on to suggest that by that date 30% or more of the UK's electricity generation at all scales 'could' come from renewable sources, there was no evidence to support Mr Watson's assertion that there was 'no doubt' that the proportion of electricity supply coming from renewable energy would exceed 15% well before 2020 (GV1, paragraph 100). Even if that assertion is proved to be correct, as Mr Aumonier points out, it is but a point on a trajectory towards maximising the contribution from renewables, rather than a ceiling on that contribution (UBB5/REB/A, paragraph 50). This is reinforced later in the same section of EN-1 (CD6.5, paragraph 3.4.5).

1017. Furthermore, the same section of EN-1 confirms EfW as one of the five sources of future large-scale renewable energy generation, the others being onshore and off shore wind, biomass and wave and tidal (CD6.5, paragraph 3.4.3). It goes on to say that renewable energy from the combustion of waste in EfW plants such as that proposed satisfies what Mr Phillips described as the four 'D's: dependable, diversified, distributed and dispatchable energy [107].

1018. In summary therefore, national energy policy confirms that there is an urgent and continuing need for new renewable electricity generating projects and recognises that even small scale projects have a valuable contribution to make. There is no limit to the provision that can come forward and no threshold below which the renewable energy contribution from a mixed scheme should be disregarded in some way. EfW is recognised as a potential source of such energy which unlike weather dependent sources can provide dependable peak and base load power on demand.

1019. The appeal proposal would export some 14.5 Megawatts to the local grid with around half classified as renewable. The appeal scheme would therefore accord with national energy policy in this regard. I return to consider the low carbon nature of the proposal below.

Greenhouse gas emissions

1020. Guide to the Debate contains a useful section on this and compares EfW with landfill (CD7.9, paragraphs 33 to 44). This is relevant to the consideration of this appeal since the appeal proposal is designed to manage residual waste, that is waste which remains after the prevention, preparing for reuse and recycling initiatives and activities of both the WCAs and the commercial and industrial waste generators have been brought to bear. Currently, this waste is largely landfilled by the WDA and the private sector.

1021. In short, managing untreated mixed waste by either combustion in an EfW plant or deposit in a landfill will release gases that contribute to global warming. However, whereas landfill will release both CO₂ and methane, an EfW process emits only CO₂. Methane is currently assessed as being 25 times more damaging (CD7.9, paragraph 35) although this multiplier may be increased (UBB5 I, paragraph 1.3). Whether EfW produces a lower volume of greenhouse gases than landfill is a complex assessment that needs to be undertaken on a case-by-case basis (CD7.9, paragraph 42). Nevertheless, there are two general rules that apply. These are (CD7.9, paragraph 43):

- The proportion and type of biogenic waste is key with high biogenic content making EfW inherently better and landfill inherently worse.
- The more efficient the EfW plant is at turning waste into energy, the greater the carbon offset from conventional power generation and the lower the net emissions from EfW.

1022. UBB has used WRATE to assess the CO₂ equivalent savings that would be achieved by the appeal proposal. This is explained by Mr Aumonier in his evidence (UBB5, section 5.5) and set out in detail in UBB5 I. GlosVAIN is highly critical of the approach used (GV1, paragraphs 323 to 359).

1023. Some of these criticisms do not stand scrutiny. The assumption in the model that the electricity exported from the appeal proposal would displace that

otherwise produced by a CCGT should not be criticised. This is what Guide to the Debate identifies as the current standard comparator since this is the marginal technology choice if building a new power station [115]. As already discussed [1005] this document is one which should be afforded considerable weight as part of Government policy.

1024. In contrast to GlosVAIN, the change to Footnote 29 in the Guide to the Debate that Mr Watson draws attention to (PINQ4) still does not advocate the use of the long run marginal supply as the comparator. In addition, he may well be right that Dairy Crest provides a major opportunity to match available heat load with potential heat supply from the appeal proposal. Mr Aumonier did not rule this out although he accepted that it was a long shot [711]. However, for the 'win-win' opportunity Mr Watson claims to be realised, there would need to be an available site and a clear proposal at or nearer to the Dairy Crest plant; none has been put forward at this Inquiry. Mr Watson's argument is therefore a theoretical one to which very little weight should be given.

1025. Nor is it wrong to consider the savings by comparison with greenhouse gas emissions from landfill. That is the waste management method that is used now and would be used in the near future at least should the appeal proposal not come forward [477].

1026. Having said that, WRATE is clearly very sensitive to the default assumptions embedded in the model and those fed into it. That much is clear since while the model used for the submitted the planning application assessed the carbon benefit as some 40,480 tonnes CO₂ equivalent (UBB5, paragraph 183), that undertaken by Mr Aumonier estimated the saving to be 19,714 tonnes CO₂ equivalent (UBB5, paragraph 181). Although Mr Aumonier explains the reasons for this (UBB5, paragraphs 183 to 184), it does tend to lend support to some of the criticisms identified by Mr Watson (GV1, paragraph 329).

1027. Guide to the Debate confirms that generating heat and electricity together through CHP typically produces much greater efficiencies, in excess of 40% (CD7.9, paragraph 121). As set out above from the same source, the more efficient the EfW plant is, the greater the carbon offset [1021]. It is not therefore surprising that Mr Aumonier does not dispute (UBB5/REB/A, paragraph 23) Mr Watson's evidence that incinerators are particularly inefficient generators of electricity although this can be improved by operation as CHP (GV1, paragraph 348).

1028. From this it seems to me therefore that the carbon offset that would be achieved, the extent to which the appeal proposal can be considered low carbon and therefore the contribution to reducing greenhouse emissions that would be made by the appeal proposal, will be influenced by the potential for CHP to be realised.

1029. That no contracts exist between UBB and potential users of any heat is entirely to be expected at this stage of the process towards a planning permission and this has been accepted in other appeal decisions of this nature [120]. Nevertheless, UBB has identified what it considers to be a number of potential users through the heat user study presented by Mr Aumonier (UBB5C). However, Mr Simons neatly summarised the difficulty with this evidence based as it is largely on conversations and correspondence entered into by Mr Aumonier but not available to the Inquiry for reasons of commercial sensitivity [711].

Equally concerning is the observation in Guide to the Debate that while many EfW plants are built 'CHP ready' a lack of heat customers, due either to location or the relative cost of alternatives, means that they operate in the less efficient electricity-only mode (CD7.9, paragraph 81). Mr Watson's evidence was that only three out of 25 plants actually export heat (GV1, paragraph 357).

1030. Given that the WCS is technology neutral it would have not been sensible to examine the CHP potential of every site from the outset of the site selection process. To have done so and then sieved out those with no or only poor potential in relation to only one of the many waste management uses envisaged by the WCS may have excluded sites which in all other respects would have been suitable. I therefore agree with the position of UBB that it was right to investigate this matter once a shortlist of sites had been drawn up on the basis of the full range of criteria [122].

1031. No party to the Inquiry suggested that any of the other sites allocated in the WCS had a CHP potential the same as or better than the appeal site [123]. However, retrofitting existing developments with the necessary infrastructure to accept heat from an external source such as the appeal proposal was said by GlosVAIN to be problematic [797], an assertion that did not seem to be challenged by UBB [124].

1032. There are nevertheless a number of potential housing and commercial developments proposed in the immediate vicinity of the appeal site where this would not be a barrier if the necessary infrastructure was included from the outset. These are the northern part of Javelin Park, Quedgeley East and the extension to Hunts Grove. Mr Wyatt however confirmed in answer to my question that there was no specific policy requirement for the developers of these proposed sites to specifically consider the utilisation of any heat available locally. Such use could come forward however as an 'Allowable Solution' under policy ES1 of the SDLP submitted for examination for addressing regulated CO2 emissions targets (CD5.4, page 138). Taking this into consideration I generally agree with UBB about the prospects of the potential for CHP being taken up at one of these sites being realistic although I would not put it as high as Mr Phillips did [126].

1033. To summarise, whether the appeal proposal would be inherently better than landfill with regard to greenhouse gas emissions would depend on the biogenic composition of the wastes. There is no evidence that the content of the residual waste would be determined by the management route chosen. Whatever the biogenic content of the residual waste was at any point in time the EfW facility proposed would be better than landfill in terms of greenhouse gas emissions since there can be no methane released to atmosphere as a result of the process.

1034. However, whether the proposal can be classified as low carbon seems to me uncertain. Although UBB argue that EfW is low carbon the sources quoted for this assertion (Guide to the Debate, EN-1, EN-3 and various appeal decisions) [109], do not put it in quite those terms. In fact Guide to the Debate comes closest to that characterisation when it refers to energy from waste as a partially renewable energy source, '*sometimes referred to as a low carbon source*' (CD7.9, page 1) and, in the context of financing, says (CD7.9, pages 6 to 7) that resources will be put to '*...optimising the role of energy from waste in the hierarchy and as a source of low carbon energy*' (my emphasis throughout).

1035. Indeed EN-3 recognises that CO2 emissions may be a significant adverse impact of waste combustion plant (CD6.5, paragraph 2.5.38) which seems to me inconsistent with an assertion that EfW technology is low carbon. However, Government energy policy confirms that CO2 emissions are not reasons to prohibit the consenting of projects which use these technologies [113]. Furthermore, EN-3 sets that recognition within the context of section 2.2 of EN-1 which is generally about the road to 2050, the transition to a low carbon economy and the decarbonisation of the power generation sector by moving away from fossil fuels. The clear message, therefore, is that in that overall context CO2 emissions from schemes like the appeal proposal are not a barrier to consent.

Conclusion on this issue

1036. There is no development plan policy directly relevant to this issue. In terms of national policy the appeal proposal would:

- Provide an uncertain but not insignificant proportion of the exported electricity generated in the form of nationally needed renewable energy.
- Provide that proportion in a form that was dependable, diversified, distributed and dispatchable.
- Displace fossil fuel generated electricity for that proportion of the generated power and, if the potential is realised, heat that is classed as renewable.
- Displace methane emissions that would arise from continued landfilling of the residual wastes which would be managed at the facility.

1037. The appeal proposal would therefore contribute to the Government's overall policy for energy production over the period to 2050 and would do nothing to hinder its climate change programme. This would be a benefit of the scheme to which considerable weight should be attributed in the planning balance.

Whether the appeal proposal would be acceptable 'in principle' under WCS policy WCS6

Introduction

1038. The part of paragraph 18 of *Tesco* that Mr Elvin emphasised is quoted above [500]. He set out the whole paragraph in his closing submissions (GCC/INQ/13, paragraph 15). There it also says that '(the carefully crafted and considered development plan) *is intended to guide the behaviour of developers and planning authorities*'. This is echoed in the WCS itself where the reason for following a site allocations approach rather than one that is criteria-based is to '*...provide greater certainty for residents and businesses about what may come forward and where, but will also increase confidence within the waste industry as to the availability of suitable sites...which will in turn...improve the prospects of delivery.*' (CD5.1, paragraph 4.81). Clearly therefore a prospective developer is entitled to read the WCS and understand from it what might be acceptable on any given plot of land, particularly those specifically allocated for waste uses.

1039. GCC does not dispute that the recent strategic allocation of the appeal site in WCS policy WCS6 means that the principle of its development for waste management facilities is established [498]. Following *Tesco* and reading the



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Our Ref: APP/M1900/V/13/2192045

16 July 2015

Dear Madam

**TOWN AND COUNTRY PLANNING ACT 1990 (SECTION 77)
APPLICATION BY VEOLIA ENVIRONMENTAL SERVICES LTD
CONSTRUCTION AND OPERATION OF A RECYCLING AND ENERGY
RECOVERY FACILITY – LAND AT NEW BARNFIELD, HATFIELD
APPLICATION REF: 6/2570-11**

1. I am directed by the Secretary of State to say that consideration has been given to the report of the Inspector, David Richards BSocSci Dip TP MRTPI, who held an inquiry on dates between 10 September and 25 October 2013 in relation to your application under Section 77 of the Town and Country Planning Act 1990 for the demolition of existing library buildings and construction and operation of a Recycling and Energy Recovery Facility (RERF) for the treatment of Municipal, Commercial and Industrial Wastes together with ancillary infrastructure, including bulking/transfer facilities, administration/visitor centre, landscaping, habitat creation, drainage and highway improvement works (application ref 6/2570-11 dated 16 November 2011).
2. On 28 January 2013, the Secretary of State directed, in pursuance of Section 77 of the Town and Country Planning Act 1990, that your application be referred to him instead of being dealt with by the waste planning authority, Hertfordshire County Council (HCC), because the proposal involved matters giving rise to substantial cross boundary or national controversy.
3. The Secretary of State issued his decision in respect of the above application in his letter dated 7 July 2014. That decision letter was the subject of an application to the High Court and was subsequently quashed by order of the Court dated 22 January 2015. The application therefore falls to be reconsidered anew by the Secretary of State.

Inspector's recommendation

4. The Inspector recommended that the application should be refused. For the reasons given below, the Secretary of State agrees with the Inspector's conclusions and with his recommendation. A copy of the Inspector's report (IR) is enclosed. All references to paragraph numbers, unless otherwise stated, are to that report.

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be treated at a number of smaller sites each of which would have less environmental impact than the application proposal, - appears attractive, there are no alternative proposals either in the development pipeline, or promoted by landowners/developers of a scale sufficient to address the identified problem (IR979). Nothing in the representations from the parties in response to his correspondence of 20 March and 27 April 2015 leads the Secretary of State to reach a different view on this matter.

36. The Secretary of State agrees with the Inspector that it is significant that no alternative proposal is being progressed through the WSALDD, or by way of a planning application; and he acknowledges some force in WHBC's argument that while the Waste Disposal Authority and the successful contractor are pursuing the current application there is little incentive for any other proposals to come forward, particularly as far as local authority collected residual waste is concerned (IR980). He also agrees with the Inspector that the WCS does allow for a more dispersed pattern of provision, and that it would be reasonable to expect that HCC and Veolia have considered what options would be available to them in the event of planning permission being refused (IR980). He notes the Inspector's view that there is little reason to doubt that this would involve a continuation of landfill, at least while alternative methods of treatment to take waste up the hierarchy, which may well include energy from waste by incineration, were progressed (IR980). Veolia's response to his correspondence of 20 March and 27 April 2015 states that HCC's interim contracts rely largely on energy recovery facilities, but he does not consider that the nature of the interim contracts has a significant bearing on the planning balance in this case.
37. The Secretary of State agrees with the Inspector that the evidence does not rule out an alternative solution for the treatment of residual waste, which may involve a more dispersed pattern of provision, but he agrees that an alternative solution is likely to involve considerable delay and that plant capable of handling lesser tonnages would not necessarily be proportionately smaller, or less visually intrusive than the New Barnfield proposal (IR981). The representations from the parties received in response to his correspondence of 20 March and 27 April 2015 do not lead the Secretary of State to reach a different view in relation to the availability of alternative sites in the short to medium term.

Urgency of need

38. The Secretary of State has given careful consideration to the timescale over which the proposal would be implemented if permission were granted (IR982), and he agrees with the Inspector that similar delays could be expected before alternative provision comes on stream (IR982). He also agrees with the Inspector that, with the exception of the permission at Ratty's Lane, there is no other treatment capacity in the pipeline which could accept the volumes of residual waste predicted in the WCS (IR983). Nothing in the representations from the parties in response to his correspondence of 20 March and 27 April 2015 leads the Secretary of State to reach a different view on this matter.

Carbon balance and climate change

39. The Secretary of State agrees with the Inspector's assessment of carbon balance and climate change issues at IR984-989. In reaching this view he has had regard to post inquiry representations in 2014.

979. A key plank of WHBC's argument is that the WCS requires provision of a range of sites, and that waste arisings could be treated at a number of smaller sites, each of which would have less environmental impact than the appeal proposal. While this argument is attractive on its face, there are no alternative proposals either in the development pipeline, or promoted by landowners/developers of a scale sufficient to address the identified problem. [94, 371, 456]
980. It is significant that no alternative proposal is being progressed through the WSALDD, or by way of a planning application. I acknowledge some force in WHBC's argument that while the WDA and the successful contractor are pursuing this Application there is little incentive for any other proposals to come forward, particularly as far as LACW waste is concerned. The WCS does allow for a more dispersed pattern of provision, and it would be reasonable to expect that HCC and Veolia have considered what options would be available to them in the event of planning permission being refused. On the evidence available there is little reason to doubt that this would involve a continuation of landfill, at least while alternative methods of treatment to take waste up the hierarchy, which may well include EFW by incineration, were progressed. [97, 128, 238]
981. The evidence does not altogether rule out an alternative solution for the treatment of residual waste, which may involve a more dispersed pattern of provision. It is apparent that the WCS and WSALDD have been progressed on that basis. However I accept that this is likely to involve considerable delay. As was pointed out at the Inquiry, plant capable of handling lesser tonnages would not necessarily be proportionately smaller, or less visually intrusive than the New Barnfield proposal. A plant capable of processing 200,000 tonnes may still require a building of some 30 metres in height, with flues in excess of 65 metres, which would have a substantial physical presence. [62, 100, 238, 440]

Urgency of need

982. In the light of the ASA, finding alternative acceptable sites will not be an easy task. Experience with large and medium scale waste projects suggests that they are likely to be hard fought and unwelcome to local communities. If this scheme does get permission it would be some 10 years from the start of procurement to the commencement of operations, and 7 years since the submission of the planning application. Such lead times do not seem unusual for significant pieces of infrastructure, and similar delays could be expected before alternative provision comes on stream. [442]
983. HCCs existing contracts for disposal to landfill and incineration at Edmonton expire in 2017. The planning application for Westmill landfill only runs until 2017, albeit that it is likely that void capacity is likely to remain after that. With the exception of the permission at Ratty's Lane (which could process some 100,000 tonnes of residual C & I waste if built) there is no other treatment capacity in the pipeline which could accept the volumes of residual waste predicted in the WCS. [80, 439]

Carbon Balance and Climate Change

984. Mr Kerr's evidence (for WHBC) was designed to show that, by reducing the overall distance travelled by waste, a two or three site strategy would achieve significantly greater climate change benefits in reducing carbon emissions than the single facility proposed at New Barnfield. The figures originally put forward by Mr Kerr were challenged by Veolia, and a revised set of figures agreed at the

Inquiry (Doc INQ/V/22). The comparative figures for alternative strategies were as follows (figures in tonnes CO₂ equivalent per annum (t CO₂ eq)

Baseline situation – transport of waste to landfill	932 t CO ₂ eq
Central facility at New Barnfield	409 t CO ₂ eq
Dispersed (three site) strategy	280 t CO ₂ eq

[136, 245]

985. In response Mr Aumônier referred to Veolia's WRATE analysis, and compared the annual transport emissions with Veolia's assessment of the overall benefits of the scheme in electricity only mode resulting from avoided landfill emissions, offset electricity generation and materials recovery. This amounted to 61,000 t CO₂ eq per annum for the baseline year of 2020/21.³⁴¹ This assessment is based on the treatment of 352,000 tpa of residual waste. Not all the waste treated will be MSW, and it is necessary to make an adjustment to reflect this. Mr Kerr's figure was 222,235 tpa and on this basis Mr. Aumônier considered it reasonable to assume that 63% (38,500 t CO₂ per annum) would be attributable to MSW. [196, 198, 245]
986. I accept, as Mr Beglan pointed out in closing for WHBC (INQ/WHBC/1 para 26 ii), that the absolute figures for the reduction in km tonnes travelled, vehicle kilometres and CO₂ emissions would appear striking. However using the revised calculations that were agreed by Mr Kerr at the Inquiry, a saving of 129 t CO₂ eq per annum due to reduced transport represents a very small proportion of the overall saving, approximately 0.33% of the overall greenhouse gas emissions that would be avoided every year by the RERF. Over the projected 25 year life of the project, the emissions saving on transport would be less than 10% of the emissions saved by the plant in a single year of operation.
987. I accept the likelihood that some gas emissions from landfill would also be recovered for use in electricity generation, which would partially offset the savings made by the RERF. However the fact that continued reliance on landfilling for this type of waste is inherently undesirable for policy and environmental reasons cannot be set aside lightly. While it is likely that there would be some savings in waste miles and consequent emissions, these would be heavily outweighed by the overall climate change benefits of energy recovery. Even a short delay in the provision of alternative treatment facilities such as the RERF would eliminate any carbon change benefits arising from a reduction in waste miles travelled. [138, 330]
988. The applicant's WRATE assessment was also criticised by Herts WoW and Hatfield FoE. The concern expressed was that without access to the full WRATE analysis, Herts WoW and their consultants were unable to verify the climate change benefits made by Veolia, and accordingly that no weight should be given to these in the overall assessment of the scheme. The particular data sought concerned user defined processes, for which Veolia claimed commercial confidentiality as a justification for withholding them. Nevertheless, a peer review was commissioned from AEA Technology which confirmed that the processes to be used are reasonable waste management processes and that they

³⁴¹ V/7.4 Mr Aumonier did not accept Mr Kerr's underlying assumptions, but was content to use his figures for the purpose of examining the substance of the objection.

are correctly modelled in the assessment, as well as endorsing the assessment as a whole. I have no reason to discount the findings of AEA Technology on this matter. [195, 197, 683]

989. Herts WoW also challenged the use of Combined Cycle Gas Turbine (CCGT) as an appropriate comparator for electricity generated by the proposed RERF in Veolia's WRATE analysis. However, the recent DEFRA document '*Energy from Waste - A guide to the debate Feb 2013*' (CD E7) provides support for the use of CCGT in making such an assessment at the present time. Footnote 29 on page 18 states that 'A gas fired power station (Combined Cycle Gas Turbine - CCGT) is the current standard comparator as this is the 'marginal' technology if you wanted to build a new power station'. It is not disputed that the absolute level of climate change benefit will vary over time, as the energy mix changes and decarbonises. However it is reasonable to make the assessment of benefits using the marginal technology at the present time as the appropriate comparator.

Opportunities for Combined Heat and Power

990. The EA has confirmed that the RERF has the potential to comply with the R1 criterion operating in electricity only mode, and therefore should be treated as a recovery facility. Nevertheless, it is accepted that the climate change benefits would be substantially greater if it were to provide Combined Heat and Power (CHP). The plant would be CHP ready, with medium pressure steam off-takes capable of providing steam or hot water up to 120°C for district heating. However there are as yet no firm proposals for CHP. The Applicant's experience of the costs of district networks and the associated timing issues meant that it was not considered appropriate to include proposals for a heat network in the waste contract. [199]
991. There are acknowledged problems in negotiating contracts for CHP in advance of the grant of planning permission, in that there is no certainty for potential users that the scheme will ultimately come forward. Veolia has prepared a heat plan but it was not before the Inquiry as it was considered by the Applicant to contain commercially sensitive information. A summary report was included in Mr Aumonier's evidence at Appendix K. Detailed costs estimates are not included in the summary report, but only broad indications of cost with no specific figures attached.
992. Potential heat consumers within 2 km, 4 km, 8 km and 15 km radii were identified. The assessment involves a high level review of the potential for a heat network, and tentatively identifies a reasonable rate of return on investment to support the commercial and industrial sectors and the significant educational area. It acknowledges uncertainties in respect of the Renewables Obligation/Renewable Heat Incentive which have implications for the further development of a network and its extension to include residential areas. Of the two options considered to offer most potential, Option 1 would deliver heat to the commercial area to the south of New Barnfield (Travellers Lane Industrial Area), the Education sites adjacent to Junction 3, the commercial area of Hatfield to the north-west (across the A1 (M)) and the commercial area to the north east, near the station. The cost of crossing the motorway is acknowledged as a specific issue. Option 2 would cover the same areas, with the addition of an industrial site to the west (on St Alban's Road), and commercial sites near to the town centre.



Ministry of Housing,
Communities &
Local Government

Our ref: APP/M1900/V/18/3195373

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19 July 2019

Dear Sir

**TOWN AND COUNTRY PLANNING ACT 1990 – SECTION 77
APPLICATION MADE BY VEOLIA ES (HERTFORDSHIRE) LIMITED
LAND AT 2 RATTY'S LANE, HODDESDON, HERTFORDSHIRE EN11 0RF
APPLICATION REF: 7/0067-17**

1. I am directed by the Secretary of State to say that consideration has been given to the report of Mrs J A Vyse DipTP DipPBM MRTPI, who held a public local inquiry between 19 June and 25 September 2018 into your client's application to Hertfordshire County Council for planning permission for demolition of existing buildings and structures associated with existing rail aggregates use and construction and operation of an Energy Recovery Facility for the treatment of municipal, commercial and industrial wastes; importation, storage and transfer of local authority collected healthcare waste, together with ancillary infrastructure including an administration/visitor centre; incinerator bottom ash storage shed; grid connection compound; car, HGV, bus and visitor parking areas; rail sidings improvements; weighbridges and weighbridge office; two portacabin offices; sprinkler tank and pump room; drainage connection to the River Lee; security fencing; landscaping and highways improvements to Ratty's Lane, in accordance with application ref: 7/0067-17, dated 20 December 2016.
2. On 1 February 2018, the Secretary of State directed, in pursuance of Section 77 of the Town and Country Planning Act 1990, that your client's application be referred to him instead of being dealt with by the local planning authority.

Inspector's recommendation and summary of the decision

3. The Inspector recommended that the application should be approved, and planning permission be granted subject to conditions.
4. For the reasons given below, the Secretary of State agrees with the Inspector's conclusions, except where stated, but disagrees with the Inspector's recommendation. He has determined that planning permission should be refused. A copy of the Inspector's report (IR) is enclosed. All references to paragraph numbers, unless otherwise stated, are to that report.

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overriding reason for locating the development outside those clearly preferred areas, and like the Inspector finds no policy conflict in this regard (IR17.53).

Carbon balance and climate change

19. For the reasons given in IR17.54-17.64 and IR18.3-18.4, the Secretary of State agrees with the Inspector that there would be a saving in greenhouse gas emissions compared to the status quo. He further agrees that there would be no conflict with policy 10 of the WCS, with the National Planning Policy for Waste, section 14 of the Framework, or the principles of NPSs EN-1 and EN-3 (IR17.64).

Air/Water Quality and Health

20. For the reasons given in IR17.65-17.81 and IR18.5 and IR19.2, the Secretary of State agrees with the Inspector that the proposed ERF would not be a significant contributor to the overall nitrogen loading of aquatic habitats in the Lee Valley (IR17.74) and that while it would result in small but quantifiable increases in ambient concentrations of some airborne pollutants, any potential damage to health of those living close by is likely to be very small, if detectable at all (IR17.81 and IR18.5). He notes that there is nothing in the evidence before the Inquiry to indicate that such matters could not properly be controlled through the permitting process, and therefore agrees with the Inspector that there would be no conflict with the National Planning Policy for Waste in this regard (IR18.5). He further notes that the Inspector sets out that it is well established that it is for the permitting process (and not the planning regime) to regulate the incineration process and emissions arising from that process in the interests of preventing pollution and protecting public health. He therefore agrees that limited weight attaches to the perception of harm, particularly in relation to health matters, given the fears expressed by local people (IR19.2).

Heritage assets

21. For the reasons given in IR17.82-17.108 and IR18.6, the Secretary of State agrees with the Inspector that there would be no direct physical impact on any heritage asset, and that whilst the development proposed would be seen from numerous heritage assets in the locality to varying degrees, there would be no harm to the heritage significance of any asset. He further agrees that there is no conflict with policies 11, 13, 17, 18 or 19 of the WCS, policy HA6 of the emerging Broxbourne Local Plan or section 16 of the Framework (IR17.108). As the Secretary of State has found no harm, the provisions of paragraph 196 of the Framework do not come into play (IR17.109).

Ecology and wildlife

22. In reaching his conclusions on this matter, the Secretary of State has taken into account the Inspector's analysis and conclusions on likely significant effects in IR17.110-17.148 and IR18.7, as well as her further analysis and conclusions in AR1.1-8.2. For the reasons set out in these paragraphs, the Inspector has found that overall the development proposed would not result in a likely significant effect alone, or in combination with other plans and projects, on either Wormley-Hoddesdon Park Woods SAC or Epping Forest SAC (AR8.1). However, during the construction phase, dust is an emission of relevance to both the Lee Valley SPA and Ramsar and could potentially result in a likely significant effect. The integrity of the SPA and the Ramsar could also be affected by lighting during the construction phase, and noise and lighting once operational. She notes that in these circumstances an Appropriate Assessment would be required (AR7.1-7.2). The Secretary

that it was necessary to insert a policy into the WCS dealing with urgent need.

11.148 It has been argued that the capacity gap and need to address it provide the exceptional circumstances to override planning policy and allow the application. The application of special circumstances, however, is not there until all possibilities for dealing with Hertfordshire's waste have been examined. This is currently not the case. Both the County Council and Veolia have pursued this option at Ratty's Lane because it is available and offers financial gains for both parties.

Conclusion

11.149 When Ratty's Lane was being considered at the New Barnfield Inquiry, Veolia and Hertfordshire County Council were quite clear that the site was inappropriate for an ERF. It is difficult to understand how Ratty's Lane could be inappropriate three years ago but is appropriate now. The site is the same size, in a flood plain and ground water protection zone next to the Lee Valley Regional Park, adjacent to a SPA and not far from an SAC. It is situated in the south east corner of Hertfordshire, away from the major centres of population and has poor access.

11.150 It should be acknowledged that if this proposal goes ahead a burden would fall disproportionately on Hoddesdon and surrounding communities. The irony of the fact that Broxbourne sends all of its waste to Edmonton, 9 miles away, and has raised no objection to the siting of an ATT plant and an AD catering for 160,000 tpa of C& I waste will not be lost on the many residents who oppose this scheme.

11.151 This proposed ERF is wrong on planning grounds and the harm which would be done by it cannot be outweighed by other factors. We strongly urge that this proposal is rejected.

12. THE CASE FOR HERTS WITHOUT WASTE (RULE 6(6) PARTY)

(The case for Herts Without Waste is reported substantially in the form of the closing submissions)⁵⁹⁷

12.1 We thank the Inspector and the Secretary of State for providing us with the opportunity to fully participate in the planning Inquiry. As set out in our opening statement, our focus at this Inquiry has been on wider than local issues, rather than site-specific ones. Our evidence and questioning of witnesses has, therefore, centred around matters such as climate change, the circular economy and resource productivity, as well as incineration overcapacity and the associated lack of need for the proposed facility, which all support the case for refusal.

12.2 In our closing statement we address the extent to which the proposed development is consistent with the development plan for the area, especially in terms of energy and heat recovery and of impacts on climate change. We also address the extent to which the proposed development is consistent with

⁵⁹⁷ Doc 86 See also the proof of Dr Webb and supporting documents (HW2-HW6.1) and Doc 2

national policies for waste and for energy, including compliance with the European Union's Circular Economy Package. In these local and national policy contexts we address the weight to be afforded to various matters in the planning balance and conclude with the implications of not proceeding with the scheme.

Climate Change

- 12.3 One of the matters identified as being of likely interest to the Secretary of State is the extent to which the proposed development is consistent with national planning policies, including those within the National Planning Policy Framework (the Framework) that relate to the delivery of the Government's climate change programme.
- 12.4 The Framework's Glossary definition of 'low carbon energy' includes the following clarification: '*Low carbon technologies are those that can help reduce emissions (compared to conventional use of fossil fuels)*'.⁵⁹⁸
- 12.5 Our evidence demonstrates that, due to its high carbon intensity relative to the conventional use of fossil fuel, energy generated by the proposed incinerator would not meet the NPPF definition of 'low carbon'. The proposal therefore goes against Government ambitions to tackle climate change and to decarbonise the electricity supply.⁵⁹⁹
- 12.6 The Secretary of State saw fit to call this planning Inquiry to test the extent to which the development proposed is consistent with the development plan for the area, in particular the Hertfordshire Waste Development Framework, adopted in November 2012.⁶⁰⁰
- 12.7 The fact that the applicant is proposing to burn reusable, recyclable, compostable and/or avoidable material means that their proposal goes against Policy 10 of the Hertfordshire Waste Core Strategy (WCS) which requires that: '*Proposals for waste management facilities must have regard to measures that minimise greenhouse gas emissions...*'.⁶⁰¹ (emphasis added) Similarly, the proposal runs contrary to the '*need to reduce greenhouse gas emissions associated with waste management,*' identified at Paragraph 2.46 in the Hertfordshire Waste Core Strategy.⁶⁰²
- 12.8 Both these principles contained within the WCS are consistent with the latest Government thinking, as set out in the Government's 25 Year Environment Plan⁶⁰³ and elsewhere in relation to resources and waste management and should be given full weight.⁶⁰⁴
- 12.9 The importance of carrying out a proposal-specific comparative analysis of climate change impacts is underlined in the Government Review of Waste Policy in England which states: '*...while energy from waste has the potential to deliver carbon ... benefits over sending waste to landfill, energy recovery also*

⁵⁹⁸ Annex HW4 (section 10) to the proof of evidence of Herts Without Waste; CD D1 Page 55; NPPF July 2018 (pages 70-71)

⁵⁹⁹ Herts Without Waste proof of evidence HW2 (paragraphs 15 and 16)

⁶⁰⁰ CD C1 WCS

⁶⁰¹ HW2 (paragraph 30); CD C1 (page 62)

⁶⁰² HW2 (paragraph 31)

⁶⁰³ CD J17

⁶⁰⁴ HW2 (paragraph 32)

produces some greenhouse gas emissions. It is important to consider the relative net carbon impact of these processes, and this will depend on the composition of feedstocks and technologies used⁶⁰⁵

- 12.10 The need to carry out proposal-specific analysis is also acknowledged by Planning Inspector Middleton in his dismissal of an appeal for an Energy from Waste plant at Lock Street, St Helens, where he stated that: *'In certain circumstances generating electrical energy from waste can contribute to carbon emissions to a greater extent than depositing the same material as landfill. It is therefore not a simple exercise to demonstrate that an EfW will have a positive effect on overall carbon emissions'*.⁶⁰⁶
- 12.11 The Government's Resource Minister has made it clear that: *'A comparison of the CO₂ impact of waste going to energy from waste and landfill is included in the analysis of the 2014 report 'Energy recovery for residual waste: A carbon-based modelling approach'. No formal analysis has been undertaken since this report was published'*.⁶⁰⁷
- 12.12 The evidence of Herts Without Waste demonstrates that when one applies the DEFRA modelling methodology⁶⁰⁸ cited by the Resource Minister, in conjunction with data supplied by the applicant regarding the technology and composition⁶⁰⁹ relevant to this proposal, then it becomes clear that the facility proposed for the Ratty's Lane site would be around 67,616 tonnes of CO₂e per year worse than sending the same waste directly to landfill, which equates to the ERF being more than 2 million tonnes of CO₂e worse than landfill over 30 years.⁶¹⁰
- 12.13 Our evidence also demonstrates that the fossil carbon intensity of the proposed incinerator would be around 0.561kg CO₂e/kWh, which is significantly higher than the conventional use of fossil fuel is associated with the performance of a Combined Cycle Gas Turbine (CCGT) which is around 0.340kg CO₂e/kWh.⁶¹¹
- 12.14 During re-examination, the applicant's climate change witness refused to say that the proposal would have a lower carbon intensity than the current marginal energy mix. The question put to Mr Aumônier by the applicant's advocate was whether, if permission were granted for the Ratty's Lane ERF scheme now, this would be a less carbon intensive scheme or a more carbon intensive scheme in terms of the broad scan of the electricity grid now. Mr Aumônier restated this question as asking whether the Ratty's Lane proposal would be more or less carbon intensive than the current grid mix. When Counsel confirmed this, asking *'Where does it [the proposal] sit in that spectrum of cleaner or dirtier?'*, Mr Aumônier replied that *'It's part of the mix'*, i.e. the applicant's climate change witness was not willing to state that the applicant's proposed facility was cleaner than the current grid mix, let alone the future decarbonised grid mix.⁶¹² Herts Without Waste's evidence shows

⁶⁰⁵ Annex HW4 Section 7; CD D10 (paragraph 209)

⁶⁰⁶ HW4 Section 8, citing CD F8 Paragraph 30 from the Lock Street, St Helens decision (PINS Ref: 2224529)

⁶⁰⁷ HW4 Section 6; CD D9

⁶⁰⁸ CD J20

⁶⁰⁹ Included in CD J24

⁶¹⁰ HW2 (paragraphs 13 and 17); HW4 Table O

⁶¹¹ HW2 (paragraphs 14 and 17); HW4 Table O; HW4 Paragraphs 18-27; HW6

⁶¹² Mr Aumônier in re-examination (4 July 2018)

how the fossil carbon intensity of the proposed facility is more than twice the BEIS marginal emissions factor (MEF) for 2020 (which is 0.270kg CO₂e/kWh).⁶¹³

- 12.15 The use of the MEF as the counterfactual, instead of CCGT, is the correct approach according to DEFRA's February 2014 'Energy recovery for residual waste: A carbon based modelling approach'⁶¹⁴, which states that: *'It is assumed that the source of energy being replaced would have been generated using a plant with the carbon intensity (emissions factor) of the marginal energy mix in line with HMT Green Book guidance on appraisal and evaluation...'*⁶¹⁵
- 12.16 The associated footnotes (footnotes 20 and 21) make it clear that whilst CCGT was an appropriate counterfactual to use in 2014, it would not remain appropriate. This is because of the progress being made to decarbonise the UK's electricity supply. One of the footnotes states that: *The marginal energy factor relates to the generation of an additional unit of grid electricity. There will be a range of different plants generating so the carbon intensity will be a mix of these. As this mixture will change with time so will the emissions factor ... Currently [i.e. in February 2014] this is approximately the same as CCGT hence its use as the baseline value, however, this factor should only be used as a guide - use of the marginal factor is the correct approach for detailed analysis.*⁶¹⁶
- 12.17 Further confirmation of the appropriateness of using the MEF rather than CCGT for more detailed analysis when comparing landfill and incineration, is provided in the following statement of the DEFRA document: *'...Up to now we have used the comparator of CCGT to estimate the CO₂ offset from energy generation. More correctly we should use the marginal energy mix which represents the carbon intensity of generating an additional kW of electricity. Currently [i.e. in February 2014] this is comparable to CCGT as this is the marginal technology, however, as renewable energy and nuclear make a greater contribution to the marginal energy mix this will change and the result will be a significant drop in the carbon intensity of the marginal energy mix.'*⁶¹⁷
- 12.18 This is consistent with the advice contained in the Government's Energy from Waste (EfW) Guide, which states: *'... When conducting more detailed assessments the energy offset should be calculated in line with DECC guidance using the appropriate marginal energy factor ...'*⁶¹⁸
- 12.19 The current BEIS Guidance on Valuation of Energy Use and Greenhouse Gas Emissions⁶¹⁹ makes clear that the approach adopted by Herts Without Waste and its consultants, Only Solutions LLP (OS), is correct and that the approach proposed by the applicant's climate change witness is inconsistent with Government guidance.⁶²⁰

⁶¹³ HW2 (paragraph 14); HW4 Paragraph 18-27; HW6

⁶¹⁴ CD J20

⁶¹⁵ HW4 Sections 60-64; CD J20 (paragraph 68)

⁶¹⁶ HW4 Sections 60-62; CD J20 (paragraph 68 and associated footnotes 20 and 21)

⁶¹⁷ HW4 Section 63, J20 Paragraph 119

⁶¹⁸ HW4 Section 64; CD D5 (paragraph 41 Footnote 29 on page 21)

⁶¹⁹ CD J25

⁶²⁰ Annex HW6 (Section 12) to HW2

rejected previously as representing a suitable alternative site when the New Barnfield scheme was being promoted. Veolia's case then, as recorded by the Inspector,⁷⁴⁷ was that:

It [the Ratty's Lane site] is not in an Area of Search in the WCS and is in the south-east of the county, not well located to waste arisings and collections. It was promoted by Veolia for a SRF power station with additional natural gas fired generation to serve North London and with the SRF to arrive by rail. It needed the rail feed because it is a compact site which could not accommodate the road-based collections needs of this county and so could not accommodate the kind of EfW plant proposed, let alone the front-end recycling facility too. It is a site safeguarded as an aggregates railhead in the statutorily adopted Hertfordshire Mineral Local Plan Review of 2007. The landowners may well wish to remove that designation, but it is there in the statutory development plan and the Veolia DCO⁷⁴⁸ application was objected to by HCC for that and highway reasons. Veolia may well have been hopeful that these objections could be resolved but the fact is that the application was withdrawn and they remain as acknowledged constraints. The site has never, either separately or in combination with Site 12, been put forward by the Waste Planning Authority as an allocation in the whole WSA process.

17.52 As noted previously, the facility now proposed is smaller than the New Barnfield scheme and can physically be accommodated on the site. Moreover, arrangements are now in place to retain and utilise the existing rail head: as confirmed later in this Report, I find no material conflict with the safeguarding policy in this regard. Furthermore, whilst the earlier DCO application for development on the site was subject to objections from the highway authority, no such objections are raised in relation to the current proposal.

17.53 All in all, I am content that the ASA, as updated, represents a proportionate response, providing a sufficient level of detail to allow a conclusion to be reached on the suitability and availability of potential alternatives and is thus adequate for its intended purpose. As was the case at New Barnfield, *'while some of the professional judgements and rankings made in the ASA may be open to question, the assessment of site availability appears to be based on a sound and candid appraisal of the large number of sites considered.'*⁷⁴⁹ Having regard to the provisions of policy WSA2, I am satisfied that there is no obvious alternative site identified within the WSA or in areas of search C, D or E that would perform significantly better in environmental terms that is suitable for the use proposed and is available for a development of the scale proposed. Given the compelling need for the proposed development, that represents an overriding reason for locating the development outside those clearly preferred areas. I find no policy conflict in this regard.

Carbon balance and climate change [7.166-7.183, 7.190, 7.192, 8.22, 8.26, 8.171, 9.50, 9.181, 9.182, 10.37, 11.43, 11.48, 11.49, 12.3-12.31, 12.38, 12.75-12.78, 13.18]

17.54 In terms of carbon savings, with the facility operating in electricity only mode,

⁷⁴⁷ Inspector's Report paragraph 132

⁷⁴⁸ Development Consent Order

⁷⁴⁹ Paragraph 962 of the Inspector's report

using an assumption regarding the electricity offset by the proposed ERF in its first year of operation (taken as 2021) and taking account of the 'build margin' or counterfactual referred to by the Green Investment Group (GIG), the savings are predicted by the applicant to be more than 8,000 tonnes CO₂ eq per annum. Dr Webb on the other hand, for Herts Without Waste, considers the predicted savings to be an over-estimate, suggesting that the facility would generate some 64,256 tonnes CO₂ eq per annum more than sending the same waste directly to landfill.⁷⁵⁰ A Table set out in Mr Aumônier's Rebuttal proof⁷⁵¹ summarises the key differences between the two approaches.

- 17.55 Planning policy does not set targets or limits on different technologies, the policies being technology neutral, and there is no need for emissions to be assessed against carbon budgets in order to satisfy energy policy. However, as acknowledged by DEFRA in the introduction to its discussion document *Energy recovery for residual waste - A carbon-based modelling approach*,⁷⁵² while there is a wide range of factors that ultimately determine if energy from waste is the best solution for a given situation, its potential carbon benefits are a key consideration. In essence, the carbon case for energy from waste being preferred to landfill is based on the premise that the climate change impact of producing energy from the waste in terms of CO₂ equivalent, is less than the potential impact from the methane that would be emitted if the waste were to go to landfill.⁷⁵³
- 17.56 The stated aim of DEFRA's modelling approach was *'to develop a simple model that allows variation of the critical factors and assumptions which impact on the carbon based environmental case for using energy from waste, relative to the alternative of landfill, for residual waste.'*⁷⁵⁴ Through the model, it also sought to *'Identify the balance point for this choice and understand how it is reliant on underlying assumptions.'*⁷⁵⁵ It makes it very clear that *'As with all modelling, the results should be used with a suitable degree of caution. The scenarios have been developed to understand likely trends and should not be considered predictions. There are uncertainties in many of the assumptions and while the model's sensitivity to these has been examined, one should avoid placing too much weight on exact figures but rather focus on the general trends they exemplify'*⁷⁵⁶ Notwithstanding these caveats, it seems that the Herts Without Waste report which informed Dr Webb's evidence⁷⁵⁷ used the modelling assumptions set out in the DEFRA discussion document as if they were actual predicted values of variables within the model. That has the potential to introduce elements of bias into the assessment.
- 17.57 As set out above, the figure referred to by the applicant takes account of the 'build margin' or counterfactual referred to by the GIG, namely a Combined Cycle Gas Turbine (CCGT). Herts Without Waste challenged the use of that as an appropriate comparator for electricity generated by the proposed ERF. However, since electricity generated by the ERF would be exported to the grid,

⁷⁵⁰ HWW Document HW6 paragraph 6 on page 2

⁷⁵¹ Pages 8-13 of his Rebuttal proof

⁷⁵² CD J20 page 5 paragraph 29

⁷⁵³ Ibid paragraph 30

⁷⁵⁴ Ibid paragraph 25

⁷⁵⁵ Ibid paragraph 26

⁷⁵⁶ Ibid paragraph 202

⁷⁵⁷ HWW document HW4 Report on Climate Change impacts of the Rye House Energy Recovery Facility

I see no reason why, consistent with DEFRA's *Guide to the Debate*, that energy should not be assumed to substitute electricity that would otherwise have been generated by a CCGT. The same argument was also put to the New Barnfield Inspector who noted that the *Guide to the Debate* provides specific support for the use of CCGT in making such an assessment.⁷⁵⁸ That Guide is still current, with footnote 29 on page 18 confirming that '*A gas fired power station (Combined Cycle Gas Turbine – CCGT) is the current standard comparator as this is the 'marginal' technology if you wanted to build a new power station*'. As noted by the New Barnfield Inspector, *it is not disputed that the absolute level of climate change benefit will vary over time, as the energy mix changes and decarbonises. However, it is reasonable to make the assessment of benefits using the marginal technology at the present time as the appropriate comparator*. In light of the current guidance, I have no reason to take a different view and consider that the appropriate counterfactual has been used by the applicant.

17.58 As confirmed in Table 1 of the DEFRA modelling document, its assumptions exclude related carbon savings both from metals recovery and recycling following the incineration process, and from the recycling of incinerator bottom ash (IBA) on the basis that levels vary from plant to plant and that handling methods vary. They are similarly excluded from the Herts Without Waste assessment. However, metals recovery and IBA recycling as a secondary aggregate are a clearly stated and integral part of the process planned for Ratty's Lane. As noted in Table 1, the impact of excluding those elements underestimates the related carbon benefits. Taking account of these impacts would have the effect of moving the 'balance point' in favour of EfW.

17.59 I recognise that metals do not *have* to be passed through incineration to be recycled. I also recognise that there would be no front-end pre-treatment of the waste as part of the development for which permission is currently sought. However, whilst the residual waste that would comprise the feedstock is source segregated where possible, that fraction sent to landfill would clearly include metals that would not otherwise be recycled. The DEFRA guidance specifically acknowledges that metal recycling from bottom ash and ash recycling would benefit EfW over landfill, shifting the balance point.⁷⁵⁹ In light of that, I consider that Herts Without Waste may have overestimated the net carbon emissions of the proposed facility potentially by as much as 33,487 tonnes CO₂ eq per annum based on the evidence of the applicant.⁷⁶⁰

17.60 Landfill gas capture can provide a valuable source of renewable energy. Herts Without Waste relies on a landfill gas engine electricity generating efficiency of 41%. However, that does not reflect the net electrical efficiency of landfill engines at 36% once parasitic losses etc. are accounted for. On the evidence of the applicant, once that is factored in, it would appear that the Herts Without Waste assumption results in up to a 14% over-estimate of CO₂ from energy generated.

17.61 Not all methane is captured from landfill sites. Whilst the Herts Without Waste

⁷⁵⁸ Inspector's Report paragraph 989

⁷⁵⁹ J20 paragraph 167

⁷⁶⁰ Table 2 in the rebuttal proof of Mr Aumonier (187 tonnes CO₂ eq per annum in relation to IBA recycling, plus 33,300 tonnes CO₂ eq per annum in relation to metals recovery)

report relies on a 75% capture figure, Table 10 of the DEFRA model confirms this as being towards the likely maximum. In evidence in chief, Mr Aumônier referred to ongoing research,⁷⁶¹ which suggests that a more realistic figure would be 55-65% over the managed gas extraction phase, decreasing over the lifetime of the landfill site, all of which indicates further overestimations in the Herts Without Waste report.

- 17.62 Other differences related to compositional analysis of the waste stream. In response to Mr Aumônier's rebuttal, Herts Without Waste submitted a further document (HW6) which, among other things, assessed the proposal based on the applicant's composition profile. As a consequence, Herts Without Waste acknowledged a related improvement in the performance of the ERF compared to landfill in the region of some 3,360 tonnes CO₂ eq per annum.⁷⁶²
- 17.63 The applicant criticised the Herts Without Waste report for not taking account of the potential for the plant to operate in Combined Heat and Power (CHP) mode. Clearly, higher savings would be achieved when operating in CHP mode. However, whilst the plant would be constructed to be CHP ready, with a readily accessible local market including nearby industrial and glasshouse development, the scheme before the Inquiry does not include heat generation at this time. That was also the case with the New Barnfield scheme. In that instance the Inspector concluded that little reliance could be placed on the contribution of CHP to energy recovery.⁷⁶³ I have no reason to take any different view and am satisfied that for the purposes of this section of my Report, any benefits accruing from CHP should not be counted towards potential carbon savings at this time.
- 17.64 All the modelling that has been carried out is underlain by assumptions and there are uncertainties with all such matters. Nevertheless, the approach endorsed by the Herts Without Waste report appears to largely ignore the purpose of the DERA model and the related guidance. On the evidence before me, I am of the view that it under-estimates the carbon savings that would be achieved by the development proposed. Even based on the BEIS MEF as the counterfactual as preferred by Dr Webb, the evidence of the applicant⁷⁶⁴ is that there could still be a saving in electricity only mode over landfill of some 2,969 tonnes CO₂ eq per annum. All in all, I am satisfied that there would be a saving in greenhouse gas emissions compared to the status quo, where a sizeable fraction of the residual waste is sent to landfill. In light of the forgoing, I find no conflict with policy 10 of the WCS, with the National Planning Policy for Waste, or section 14 of the National Planning Policy Framework. There would be no conflict either with the principles of NPSs EN-1 and EN-3 which together and among other things commit to renewable energy, a low carbon economy and achieving energy security, all of which are key objectives of Government policy.

Air/Water Quality and Health [6.1, 7.86, 7.116-7.125, 7.145, 7.146, 8.164, 8.166-8.168, 9.192-9.200, 10.34-10.37, 11.37-11.39, 11.82, 11.83, 11.121, 13.9-13.15, 13.50]

- 17.65 The Hoddesdon Society, the Joint Parish Councils and Herts Without Waste,

⁷⁶¹ See footnote 3 on page 12 of his Rebuttal proof

⁷⁶² HW6 paragraph 6 Original figure for HWW was 67,616 tonnes CO₂ eq per annum, reducing to 64,256 tonnes CO₂ eq per annum on the basis of the updated composition.

⁷⁶³ Inspector's Report paragraphs 996 and 1008

⁷⁶⁴ Table 2 in the proof of Mr Aumônier



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Your ref : EN010093

09 April 2020

Dear Mr Wilkinson

PLANNING ACT 2008

APPLICATION FOR THE RIVERSIDE ENERGY PARK GENERATING STATION ORDER

1. Introduction

1.1 I am directed by the Secretary of State for Business, Energy and Industrial Strategy (“the Secretary of State”) to advise you that consideration has been given to the report dated 9 January 2020 of the Examining Authority (“the ExA”), Jonathan Green, who conducted an examination into the application (“the Application”) submitted on 15 November 2018 by Cory Environmental Holdings Limited (“the Applicant”) for a Development Consent Order (“the Order”) under section 37 of the Planning Act 2008 (“the 2008 Act”) for the Riverside Energy Park onshore generating station and associated development (“the Development”).

1.2 The Application was accepted for examination on 14 December 2018. The examination began on 10 April 2019 and was completed on 9 October 2019. A number of changes were made to the Application during the examination. The details of these changes were made available to interested parties and examined by the ExA.

1.3 The Order, as applied for, would grant development consent for the construction and operation of an onshore generating station of around 96 megawatts (“MW”) in the London Borough of Bexley in Belvedere adjacent to an existing energy from waste facility. The Development would include:

- an energy recovery facility with a generating capacity of around 76MW utilising a total annual waste throughput of up to 805,920 tonnes per annum;
- an anaerobic digestion facility with an annual waste throughput of up to 40,000 tonnes per annum of green and food waste;
- enabling infrastructure for Combined Heat and Power;
- solar voltaic panels with a generating capacity of around 1MW;

comply with this requirement would put the Applicant in breach of the Order. The Secretary of State agrees with the ExA that this should ensure the Development will not breach the principals of the waste hierarchy. The Secretary of State also agrees with the ExA that projections on the availability of waste fuel stock is subject to uncertainty, and that the Applicant's projections took into account the Mayor of London's policies on reducing waste arising and increased recycling and reuse rates [ER 5.2.34], and the issue of whether or not the volume of waste fuel stock available will allow the Applicant to make use of the total capacity of the Development is a commercial matter for the Applicant [ER 5.2.37].

4.10 After having regard to the consideration set out in Chapter 3 [ER 3.1.3 - 3.1.11] of the ExA's Report, and in particular the conclusions on the principle of the Development in ER 4.4.1 – 4.4.5 and the ExA's findings in Chapter 5 of the Report, the Secretary of State is satisfied that making the Order would be consistent with EN-1 and EN-3. Taken together, these National Policy Statements set out a national need for development of new nationally significant electricity generating infrastructure of the type proposed by the Applicant. The Secretary of State notes that the ExA is satisfied that the Applicant has given consideration to design and to alternatives to the Development, and that the requirements of EN-1 in this regard have been met [ER 4.4.6].

Carbon Emissions

4.11 A number of Interested Parties objected to the Development due to the level of carbon emissions it would emit. These include concerns regarding:

- the ability of the Development to meet the lower Carbon Intensity Floor ("CIF") target of around 300 grams of CO₂/kWh (a measure of the carbon impact of generating energy from waste) which is likely to be in place when the CIF is reviewed in 2025;
- the failure to meet the likely new 2025 CIF level may lead to a breach of the Emissions Performance Standards ("EPS") for 2030 set in the Mayor of London's London Environment Strategy 2018;
- the use of Combined Cycle Gas Turbines ("CCGT") as the electricity generation source that would be displaced by the Development;
- whether the gross electrical efficiency of 34% assumed by the Applicant was exceptionally high;
- the inclusion of carbon equivalent savings from the reduction of emissions from landfill sites and combined heat and power in the carbon calculation for the Development;
- the incineration of recyclable or reusable waste; and
- whether successful deployment of a combined heat and power network from the Development is feasible.

The Secretary of State's Conclusion

4.12 The Secretary of State agrees with the ExA's conclusion that the current CIF level is the relevant minimum level of carbon emissions against which the Development should be assessed [ER5.3.22], CCGT is the appropriate counterfactual against which the Development should be assessed [ER 5.3.24]. The Secretary of State also agrees that as the Order includes provisions to ensure compliance with the waste hierarchy therefore inclusion of the carbon equivalent benefit of diverting waste from landfill is acceptable, and that the carbon equivalent benefit of the Development would be higher if the maximum throughput of waste fuel stock was assumed [ER 5.3.26]. If the CIF is to change in the future to meet the EPS for 2030, then the Development will, as part of London's waste infrastructure, have to play its part. As the Mayor's analysis shows the most recently assessed baseline CIF for London is 700 grams of CO₂/kWh and will have to improve to meet the targets by a combination of further development of CHP infrastructure and

greater recycling of fossil carbon containing feedstocks (in particular plastics). The Secretary of State also agrees with the ExA that the Applicant has included provisions to improve the likelihood of successful development of combined heat and power. The Secretary of State therefore agrees with the ExA's overall conclusion that the Development meets the carbon emissions targets currently in place for energy from waste.

Total Capacity

4.13 The Secretary of State is aware that during the examination, the Applicant argued that an overall MW capacity and a tonnage capacity for waste fuel stock should not be included in the Order on the basis that any increase in generating capacity would be met through the deployment of improved technology without resulting in any impacts above those already assessed in the Environmental Statement for the Development, or through a variation to the Environmental Permit for the Development through the Environmental Permitting Regime.

The Secretary of State's Conclusion

4.14 The Secretary of State accepts that for renewable energy projects, a maximum generating capacity is not required as any new technology that might be installed will be constrained by the parameters set within the Order which set the envelope within which the environmental statement was compiled such as, but not limited to, building design and maximum permitted noise levels. However, the Secretary of State does not accept the Applicant's argument for not including a cap on the maximum waste fuel throughput on the basis that there is a possibility that an increase in waste throughput might lead to impacts on areas beyond those that would be considered as part of any variation to the Environmental Permit. The Environmental Statement for the Development, in particular the air quality and traffic assessments, have been carried out on the basis of a "worst case scenario" waste throughput. The Secretary of State notes that during the examination a requirement was added to the DCO to limit the maximum waste throughput. However, the Secretary of State considers that the maximum throughput capacity for an energy from waste plant is the equivalent of the maximum generating capacity for a fossil fuel generating station. The Secretary of State has therefore included a maximum waste throughput cap for both the energy from waste and anaerobic digestion elements of the Development in Schedule 1 of the draft Order to ensure that the Development remains within the envelope of that assessed worst case.

Carbon Capture Readiness ("CCR")

4.15 As set out in EN-1 and EN-2 – the National Policy Statement for Fossil Fuel Electricity Generating Infrastructure, all commercial scale fossil fuel generating stations with a capacity of 300MW or more must be 'Carbon Capture Ready' ("CCR"). Applicants are required to demonstrate that their proposed development complies with guidance issued in November 2009 or any successor to it.

The Secretary of State's Conclusion

4.16 As the combustion element of this Application seeks consent for an electricity generating facility with a total generating capacity of under 300 MW using waste as fuel, the Secretary of State is satisfied that this is not a development to which the CCR requirement applies.

Combined Heat and Power ("CHP")

4.17 EN-1 requires that applications for thermal generation stations under the Planning Act 2008 should either include CHP, or evidence that opportunities for CHP have been explored where the proposal is for a generating station without CHP. The Secretary of State notes that the Application was accompanied by a CHP Assessment which concluded that the capital cost of the development of a heat network would not be off-set from the revenues that could be expected,



The Planning Inspectorate
Yr Arolygiaeth Gynllunio

The Planning Act 2008

Riverside Energy Park

Examining Authority's Report
of Findings and Conclusions

and

Recommendation to the Secretary of State for
Business, Energy and Industrial Strategy

Examining Authority

Jonathan Green

9 January 2020

carbon impact than 655,000 tonnes when account was taken of the net carbon benefit of diverting waste from landfill.

Conclusions on carbon emissions.

- 5.3.20. The Applicant and the GLA were not able to agree on the impact of the Proposed Development on carbon emissions.
- 5.3.21. The GLA challenged the high level of energy efficiency being assumed for the ERF. The Applicant asserted that these levels, while above those reached by other plants, were achievable with the latest technology. I have not received any evidence indicating that this level of energy efficiency cannot be achieved by the Proposed Development. My assessment of the evidence presented is that if the high levels of energy efficiency are achieved then the ERF would meet the CIF level of 400gCO_{2e}/kWh in electricity only mode and would operate below this level with heat export. I consider the potential for heat export in the following section.
- 5.3.22. The GLA also highlighted the intention set out in the LES to tighten the CIF level to around 300 grams/kWh when this is reviewed in 2025. I recognise that this forms part of the GLA's forward plans but I consider that the CIF level of 400g of CO_{2e}/kWh in place at the time of the Examination is the relevant yardstick against which the Proposed Development should be judged. On this basis I accept that the CIF can be met by a high efficiency plant of the sort proposed.
- 5.3.23. The second area of disagreement is on the counterfactual assumed for electricity generation. The Applicant has assumed that the ERF, as a new generator, will displace electricity generated by an existing CCGT plant, in line with DEFRA advice. CCGT is taken as the marginal generating technology with CO₂ emissions of 357g of CO₂/kWh. The GLA argued that the counterfactual for CO₂ emissions should be taken as the long run marginal emissions rate from new plant which is shown in BEIS projections to decline significantly in coming years.
- 5.3.24. Although CO₂ emissions from plant built in coming years may be lower than CO₂ emissions from the ERF, that plant is not, in my view, the plant that will be displaced from generating if the ERF comes into operation. The plant displaced would be plant which has a higher marginal operating cost than the ERF and which is flexible enough for its output to be ramped up or down in response to market conditions. I consider that CCGTs are currently the plant meeting those conditions and are therefore the appropriate counterfactual against which to compare the ERF in making calculations of CO₂ emissions.
- 5.3.25. The GLA challenged the Applicant's assumption that incineration of waste in the ERF would displace that waste being sent to landfill. In the GLA's view waste sent for incineration would be waste which would otherwise be reused or recycled. I have considered compliance with the waste hierarchy in the previous section and concluded that the proposed Waste



Ministry of Housing,
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Local Government

David Adams
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Our ref: APP/E0535/W/19/3225123
Your ref:

15 June 2020

Dear Sir

**TOWN AND COUNTRY PLANNING ACT 1990 – SECTION 78
APPEAL MADE BY AMEYCESPA (EAST) LIMITED
LAND AT LEVITT'S FIELD, WATERBEACH WASTE MANAGEMENT PARK, ELY
ROAD, CAMBRIDGESHIRE
APPLICATION REF: S/3372/17/CW**

1. I am directed by the Secretary of State to say that consideration has been given to the report of John Woolcock BNatRes(Hons) MURP DipLaw MRTPI, who held a public local inquiry on 5-8, 12-15 and 19-20 November 2019 into your client's appeal against the decision of Cambridgeshire County Council to refuse your client's application for planning permission for a waste recovery facility (Waterbeach Waste Recovery Facility – WWRF) comprising the erection and operation of an energy from waste facility to treat up to 250,000 tonnes of residual waste per annum, air cooled condensers and associated infrastructure, including the development of an internal access road; office/welfare accommodation; workshop; car, cycle and coach parking; perimeter fencing; electricity sub-stations; weighbridges; weighbridge office; water tank; silos; lighting; heat offtake pipe; surface water management system; hard standings; earthworks; landscaping and bridge crossings, in accordance with application ref: S/3372/17/CW, dated 21 September 2018.
2. On 3 June 2019, this appeal was recovered for the Secretary of State's determination, in pursuance of section 79 of, and paragraph 3 of Schedule 6 to, the Town and Country Planning Act 1990.

Inspector's recommendation and summary of the decision

3. The Inspector recommended that the appeal be dismissed.
4. For the reasons given below, the Secretary of State agrees with the Inspector's conclusions, except where stated, and agrees with his recommendation. He has decided to dismiss the appeal and refuse planning permission. A copy of the Inspector's report (IR) is enclosed. All references to paragraph numbers, unless otherwise stated, are to that report.

Ministry of Housing, Communities & Local Government
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removing plastics. But there would be commercial pressure to treat waste with a high calorific value to maximise energy output. The only planning controls proposed on feedstock for the WWRF are a requirement for residual waste, of which at least 75,000 tpa suitable for thermal treatment would arise from other WWMP facilities. Neither would guarantee a high biogenic content. On the contrary, the definition of residual waste as that left over when all the recycling possible has been done could result in a lower biogenic content in the waste stream as methods are devised and implemented in future to recycle waste with biogenic content that is currently difficult or uneconomic to do at present. Whether an operator could at all times maintain the appropriate biogenic content of waste treated in the WWRF introduces some doubt, over the lifetime of the WWRF, about the actual climate change benefits that would result from the scheme attributable to a significant reduction in GHG emissions when compared with landfill. [370]

557. CBWIN/UKWIN also query the appellant's use of CCGT as the marginal electricity source for the grid displacement factor. The energy mix for electricity generation on the grid is changing and with increasing decarbonisation the appropriate comparator for electricity generated by the WWRF would change. Whilst becoming more dated with the passage of time, Defra's 2014 advice that CCGT is a reasonable comparator as the most likely technology for new power stations, remains extant guidance (CD17.33 page 21). It is therefore reasonable to apply this comparator in making carbon assessments today, but to also acknowledge that the rate of future decarbonisation of electricity generation for the grid could have a significant effect on the outcome of these assessments in the longer term.
558. The appeal scheme would be CHP ready and includes provision for a heat offtake pipe extending southwards along the A10 to the CRP roundabout. The proposed plant would have the potential to become a CHP facility if a viable user for the heat was available. If the plant were to operate successfully by providing heat to other users, its CHP ability would add significantly to its overall efficiency in energy terms and the contribution that the WWRF would make to GHG emissions and climate change objectives. However, there are currently no firm proposals to take advantage of the heat. There is no evidence that any of the existing businesses and commercial enterprises nearby in the industrial estates and CRP have made any commitment to take heat from the WWRF.
559. WNT with a planned 8,000 to 9,000 dwellings and associated urban infrastructure could potentially use some of the heat at times, but there is no provision to do so in the first phase of this development. Furthermore, there is nothing to indicate a likelihood that subsequent phases would do so. In the absence of a heat user that could make effective use of the heat consistently throughout the year it is difficult to see how a viable CHP scheme could be achieved here. I consider that more substantial evidence about likely commitments from potential heat users would be necessary for any meaningful weight to be given to the CHP benefits of the WWRF. Otherwise, I find that it is a potential that should not be given much weight in determining this appeal. [132,153,179,235,243,323,328,428]
560. The appellant's carbon assessment takes into account, based on conservative assumptions, emissions from HCVs transporting waste. Recycling



Appeal Decision

Inquiry sat on: 29-31 October; 1, 5-7 and 12-13 November 2019

Accompanied site visit made on 8 November 2019

by I Jenkins BSc CEng MICE MCIWEM

an Inspector appointed by the Secretary of State

Decision date: 27th February 2020

Appeal Ref: APP/P3800/W/18/3218965

Former Wealden Brickworks, Langhurstwood Road, Horsham, West Sussex, RH12 4QD

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
 - The appeal is made by Britaniacrest Recycling Ltd against the decision of West Sussex County Council.
 - The application Ref WSCC/015/18/NH, dated 9 March 2018, was refused by notice dated 11 July 2018.
 - The development proposed is a recycling, recovery and renewable energy facility and ancillary infrastructure.
-

Decision

1. The appeal is allowed and planning permission is granted for a recycling, recovery and renewable energy facility and ancillary infrastructure at the Former Wealden Brickworks, Langhurstwood Road, Horsham, West Sussex, RH12 4QD in accordance with the terms of application Ref. WSCC/015/18/NH, dated 9 March 2018, subject to the conditions set out in the Schedule of Conditions at the end of this decision.

Procedural matters

2. In this case an Environmental Statement, March 2018¹ (ES), which includes consideration of cumulative impact, was submitted in support of the application. Other information, such as proofs of evidence, was submitted for the purposes of the Inquiry. In reaching my conclusions, I have taken account of the environmental information which I consider to be sufficient to assess the likely environmental impact of the proposal.
3. In addition to an accompanied site visit, which is referred to in the summary information above, I undertook unaccompanied visits around the area within which the appeal site is located before, during and after the Inquiry.

Main Issues

4. Whilst the Council's refusal notice cited 6 reasons for refusal, prior to the start of the Inquiry the Council confirmed that, following consideration of legal

¹ CD29.

of the appeal scheme would significantly outweigh the associated harm to the significance of designated heritage assets.

87. I conclude that the effect of the proposal on the significance of designated heritage assets would be acceptable, and it would not conflict with the aims of WLP Policy W15. This is a view shared by the Council.⁷⁹ Furthermore, Historic England has confirmed that it does not object to the scheme.⁸⁰ These matters add further weight to my conclusion.

Other matters

Renewable and low carbon energy

88. The Framework indicates that renewable energy covers those energy flows that occur naturally and repeatedly in the environment, including from biomass. Whilst the proportion of the electricity generated by the proposal that would comprise renewable energy is a matter of debate, it appears likely, given the anticipated sources of feedstock, that the energy generated would be likely to be partially from renewable sources and in this respect the scheme would gain some support from the Framework as well as WLP Policy W10(d) and HDPF Policy 35. Furthermore, the ES indicates that the proposed facility would be configured to be able to export heat and the appellant's *Local Area Potential Heat Users Search* report identifies a potential opportunity to provide heat to the brickworks adjacent to the site, which it indicates is likely to be a large industrial heat user.⁸¹ It indicates that should planning permission be granted the opportunity would be pursued further. I consider that it would be possible to ensure that the scheme would have the capability to export heat through the imposition of a suitable condition, which has been suggested by the Council. I conclude that the scheme would be consistent with the aims of WLP Policy W10(d), HDPF Policies 35 and 36 as well as the Framework, insofar as they seek to ensure, where appropriate, that development includes measures to promote the use of renewable energy and heat recovery.
89. I have had regard to the views expressed by a number of interested parties that the proposal would not represent a low carbon solution.⁸² The Framework simply defines low carbon technologies as those that can help reduce emissions (compared to the conventional use of fossil fuels). There is no dispute that the carbon intensity of the electricity generated by the proposal would be likely to be lower than that associated with coal fuel and in that context could be considered to be low carbon in my view.⁸³ However, the appellant acknowledges that is not the case in relation to all fossil fuels, for example, electricity generated by a Combined Cycle Gas Turbine in baseload mode would represent a lower carbon source of electricity than the proposal. Viewed solely in that context, the low carbon credentials of the proposal would appear to be relatively poor.⁸⁴ However, in my view that is not the end of the matter.
90. The appellant has indicated that at present, residual active waste arising from the process stream of which the existing appeal site operation forms part, is

⁷⁹ CD71, ID41 and ID62.

⁸⁰ CD50.

⁸¹ CD29 ES Volume 1 para 2.4.3, CD32 Appendix F..

⁸² For example, ID52/94.

⁸³ Appendix A Only Solutions Climate Change Report figure 1 to Maureen Darrie's proof of evidence, para 2.14 of Christopher LeCointe's rebuttal proof of evidence.

⁸⁴ ID95para 13, ID99 para 27, ID52/94.

converted to RDF and exported to continental Europe for recovery. Furthermore, it identifies that much of the residual waste arising within the catchment for the proposed facility is now exported to energy from waste facilities in Holland and Germany.⁸⁵ It appears to me that dealing with the residual waste in an energy from waste facility onsite rather than exporting the RDF to a similar facility in continental Europe would be likely to provide transport related carbon savings, which would help to mitigate climate change in keeping with the aims of the Framework and local policies such as HDPF Policy 24, 35 and 36.

91. NI4H and others⁸⁶ have also expressed the concern, supported by an 'Only Solutions LLP report', that, in comparison with sending the residual waste to landfill, the proposal may generate more greenhouse gas emissions (GHG). The EFWG indicates that *'in carbon terms, currently energy from waste is generally a better management route than landfill for residual waste. However, while it is important to remember this will always be case specific and may change over time, two rules apply: the more efficient the energy from waste plant is at turning waste into energy...the lower the net emissions from energy from waste; and, the proportion and type of biogenic content of the waste is key.'* As I have indicated, whilst it would be possible to ensure that the facility meets the requirements of the R1 energy efficiency formula, the precise mix of feedstock is not known and so the merits of landfilling versus energy from waste in GHG terms cannot be determined with certainty at this stage. Nonetheless, to my mind, this particular comparison between landfilling and the proposed process is anyway of limited relevance in this case. Diversion of the residual waste, which would otherwise be subject to the proposed energy recovery from waste route, to landfill would be contrary to the aims of the up to date WLP and national policy, which seeks to drive the management of waste up the Waste Hierarchy; a position acknowledged by NI4H.⁸⁷ Furthermore, if not handled at the proposed facility it appears more likely that residual waste would be exported for recovery, rather than being sent to landfill.
92. I conclude overall, as the precise mix of feedstock it would handle cannot be known at this stage, there is significant uncertainty around the credentials of the facility in terms of a low carbon technology. However, in the particular circumstances of this case, it would be likely to deliver carbon savings when a wider view is taken. I conclude that the proposal would be likely to help to mitigate the impact of climate change, in keeping with the aims of the Development Plan and the Framework. However, given the uncertainties involved regarding the scale of any such benefits, I give this matter little weight. Whilst National Policy Statements EN-1 and EN-3 give support to technologies of the type proposed, notwithstanding the associated CO₂ emissions, I give those provisions little weight, not least as the appeal scheme falls below the threshold for Nationally Significant Infrastructure Projects to which the Policies are directly relevant.⁸⁸

⁸⁵ CD29 Volume 1 para 3.26, para A1.6 of Appendix 1 to Christopher LeCointe's rebuttal proof of evidence.

⁸⁶ For example, ID52/94.

⁸⁷ ID99 para 26.

⁸⁸ Rebuttal proof of evidence of Christopher LeCointe, ID95 para 19.



The Planning Inspectorate
Yr Arolygiaeth Gynllunio

The Planning Act 2008

Wheelabrator Kemsley Generating Station (K3)

and

**Wheelabrator Kemsley North (WKN) Waste to Energy
Facility**

Examining Authority's Report
of Findings and Conclusions

and

Recommendation to the Secretary of State for
Department for Business, Energy & Industrial Strategy

Examining Authority

Grahame J Kean BA (Hons), Solicitor HRA

19 November 2020

4.14. GREENHOUSE GASES AND CLIMATE CHANGE

Policy Considerations

- 4.14.1. The CCA2008 (as amended) commits the UK government to reducing greenhouse gas emissions by at least 100% of 1990 levels by 2050 (a net zero carbon target for the UK).
- 4.14.2. The 2011 Carbon Plan (Carbon Plan) is the UK's national strategy under CCA2008 for delivering emissions reductions through Carbon Budgets (2023-27) and preparing for further reductions to 2050. The Third, Fourth and Fifth Carbon Budgets, set through the Carbon Budget Orders 2009, 2011 and 2016, are set out in paragraph 6.2.2 of ES Chapter 6 [APP-058].
- 4.14.3. The Carbon Plan, pp93-99 describes a three-pronged strategy of: preventing waste arising; reducing methane emissions from landfill; and efficient energy recovery from residual waste. Paragraphs 2.130-2.132 describe energy from waste as a sustainable biomass source and low carbon heat source for large-scale CHP opportunities. Paragraph 2.224 states that "*efficient energy recovery from waste prevents some of the negative greenhouse gas impacts of waste in landfill and helps to offset fossil fuel power generation*".
- 4.14.4. The Waste Management Plan for England, December 2013 (WMPE) states that the Government prioritises efforts to manage waste in line with the waste hierarchy and reduce the carbon impact of waste, and supports efficient energy recovery from residual waste – of materials which cannot be reused or recycled – to deliver environmental benefits, reduce carbon impact and provide economic opportunities.
- 4.14.5. The Clean Growth Strategy for the UK, 2017 (CGS) notes significant progress made in decreasing Greenhouse Gas (GHG) emissions from waste going to landfill and adopts goals of being a 'zero avoidable waste economy' by 2050 and diverting all food waste from landfill by 2030.
- 4.14.6. Although not adopted national policy the National Infrastructure Assessment, 2018 (NIA) recommends that more use of alternative treatment for food waste and plastic in particular is encouraged to reduce GHG emissions. On page 34 it states:

"The successful delivery of a low cost, low carbon energy and waste system requires... encouraging more recycling, and less waste incineration."
- 4.14.7. The UK Committee on Climate Change (UK CCC) has a statutory role to advise government under CCA2008. The Committee's 2017 and 2018

reports to Parliament⁷ identify significant policy gaps for meeting carbon budgets. On page 8 in the 2017 report, the Committee stated that:

- 4.14.8. *"New policies are needed across the economy. By 2030, current plans would at best deliver around half of the required reduction in emissions, 100-170 MtCO₂e per year short of what is required by the carbon budgets."*
- 4.14.9. The latest advice to Government regarding necessary actions for the UK to achieve the carbon emission reductions enshrined in law via the CCA2008 is the UK CCC's report: Reducing UK emissions: Progress Report to Parliament, was laid before Parliament on 25 June 2020 (June 2020 CCC Progress Report) [REP7-030]. It identifies for the first time the need to address emissions from waste incineration, warning against the continued 'dash for incineration' as it competes with recycling, and expressly advises:
- "New plants (and plant expansions) above a certain scale should only be constructed in areas confirmed to soon have CO₂ infrastructure available and should be built "CCS1 ready" [Carbon Capture and Storage] or with CCS".*
- 4.14.10. Chapter 7 of the sectoral scenarios report from the UK CCC, p201 lists "incineration with energy recovery" among technology options for landfill waste diversion, as noted in [ES Chapter 6 [APP-058] paragraph 6.2.16.
- 4.14.11. The UK CCC's 2019 report states that electricity generation needs to be almost fully decarbonised by 2050 and that industry will require greater deployment of carbon capture, utilisation and storage (CCUS), use of hydrogen, and electrification. As to waste management it suggests that no biodegradable waste should be landfilled after 2025 and that recycling rates of 70% should be targeted, further reducing residual waste.
- 4.14.12. NPS EN-1 states that while:
- "the UK economy is reliant on fossil fuels, and they are likely to play a significant role for some time to come... the UK needs to wean itself off such a high-carbon energy mix: to reduce greenhouse gas emissions, and to improve the security, availability and affordability of energy through diversification" (paragraphs 2.2.5 and 2.2.6)".*
- 4.14.13. Paragraph 2.2.4 states that not all aspects of Government energy and climate change policy will be relevant to NSIP decisions or planning decisions by local authorities, and the planning system is only one of several vehicles that helps to deliver Government energy and climate change policy.

⁷ Committee on Climate Change (2017): Meeting Carbon Budgets: Closing the policy gap. 2017 Report to Parliament, London: Committee on Climate Change. Committee on Climate Change (2018): Reducing UK emissions. 2018 Progress Report to Parliament, London: Committee on Climate Change.

- 4.14.14. Paragraph 3.4.3 notes only that the energy produced in EfW facilities *"from the biomass fraction"* of residual waste is regarded as renewable. Section 4.6 supports CHP for thermal generating stations including (paragraph 4.6.8) on the grounds of the efficiency of displacing conventional fossil-fuelled separate heat and electricity generation.
- 4.14.15. Paragraph 5.2 states that:
- "CO2 emissions are a significant adverse impact from some types of energy infrastructure which cannot be totally avoided (even with full deployment of CCS technology). However, given the characteristics of these and other technologies, as noted in Part 3 of this NPS, and the range of non-planning policies aimed at decarbonising electricity generation such as EU ETS (see Section 2.2 above), Government has determined that CO2 emissions are not reasons to prohibit the consenting of projects which use these technologies or to impose more restrictions on them in the planning policy framework than are set out in the energy NPSs (e.g. the CCR and, for coal, CCS requirements). Any ES on air emissions will include an assessment of CO2 emissions, but the policies set out in Section 2, including the EU ETS, apply to these emissions. The [decision making body] does not, therefore need to assess individual applications in terms of carbon emissions against carbon budgets and this section does not address CO2 emissions or any Emissions Performance Standard that may apply to plant."*
- 4.14.16. The EU emissions trading scheme (ETS) does not apply to waste combustion installations and paragraph 3.51 of the Budget 2018 states *"In the unlikely event no mutually satisfactory agreement can be reached and the UK departs from the EU ETS in 2019, the government would introduce a Carbon Emissions Tax to help meet the UK's legally binding carbon reduction commitments under the Climate Change Act. The tax would apply to all stationary installations currently participating in the EU ETS from 1 April 2019"*.
- 4.14.17. Low-carbon technologies are defined in the NPPF as *"...those that can help reduce emissions (compared to conventional use of fossil fuels)." A core planning principle of the NPPF is that the planning system should "...support the transition to a low carbon future in a changing climate"*. Paragraph 154 states that in determining planning applications for renewable and low carbon development:
- "local planning authorities should not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions."*
- 4.14.18. KCC's MWLP states in its spatial vision at paragraph 3.0.2 that it aims to drive waste up the Waste Hierarchy and *"ensure that requirements such as a Low Carbon Economy (LCE) and climate change issues are incorporated into new development."* A strategic objective is to:
- "Ensure minerals and waste developments contribute towards the minimisation of, and adaptation to, the effects of climate change. This*

includes helping to shape places to secure radical reductions in greenhouse gas emissions and supporting the delivery of renewable and low carbon energy and associated infrastructure."

4.14.19. Policy DM 1 requires design proposals for waste development to minimise greenhouse gas emissions and other emissions. In addition the notes to Policy DM 12 state that climate change should be considered in the evaluation of significant cumulative effects on the environment.

4.14.20. SBC's Local Plan at paragraph 4.1.50 indicates the need to move beyond adaptation to the impacts of climate change, reducing greenhouse gas emissions where possible, by among other things:

"Encouraging the use of renewables and energy efficiency improvements (inc. micro-renewable energy and free-standing projects), identifying the potential for decentralised, renewable or low carbon energy supplies and for co-locating heat customers and suppliers."

4.14.21. Policy DM20 is generally permissive of development of renewable and low carbon energy sources subject to various environmental, planning and social criteria. Policy CP4 seeks to maximise opportunities for including sustainable design and construction techniques including the use of recycled and recyclable materials, sustainable drainage systems, carbon reduction and minimising waste.

4.14.22. Policy DM19.2 promotes waste reduction, re-use, recycling and composting, where appropriate, during both construction and the lifetime of the development and the location and design of development:

"to take advantage of opportunities for decentralised, low and zero carbon energy, including passive solar design, and, connect to existing or planned decentralised heat and/or power schemes".

4.14.23. Policy DM19 encourages measures to address and adapt to climate change, including:

"c. Recognition that retaining and upgrading existing structures may be more sustainable than building new whilst making the most of opportunities to improve water and energy efficiency in the existing stock."

The Applicant's case

4.14.24. ES Chapter 6 [APP-058] assesses the likely significant effects resulting from the K3 and WKN Proposed Developments as a consequence of GHG emissions and the resultant impact on climate change. It is supported by ES Appendices 6.1, 6.2 and 6.3 containing details of the GHG emissions calculations for respectively, the K3 Proposed Development, WKN Proposed Development and Practical Effect of K3 Proposed Development [APP-031, APP-032, APP-033].

4.14.25. The likely significant effects of GHG emissions from the K3 and WKN Proposed Developments have been assessed in ES Chapter 6 [APP-058]. The global atmospheric mass of relevant GHGs and consequent warming

potential, expressed in CO₂-equivalents, is considered a high sensitivity receptor affected by each of the K3 and WKN Proposed Developments.

- 4.14.26. Net total GHG emissions from operation of the K3 and WKN Proposed Developments have been calculated based on their waste throughput, combustion processes and treatment of residues. A particular feature of the assessment of these emissions is a comparison to baseline GHG emissions from landfill disposal of waste and from conventional electricity and heat generation.
- 4.14.27. Construction and decommissioning stage impacts have also been evaluated and are considered not to be material to the total GHG emissions over the K3 and WKN Proposed Developments' lifetimes, which are dominated by the combustion of waste and generation of energy. The K3 Proposed Development is in any case already largely constructed.
- 4.14.28. The significance of the impact of "net" GHG emissions from the K3 and WKN Proposed Developments has been evaluated with regard to change from the baseline and in the context of climate change and waste policy.
- 4.14.29. All calculations of GHG emissions were undertaken with the waste sector life-cycle analysis software tool 'WRATE'. The WRATE calculations are found in ES Appendices 6.1, 6.2 and 6.3. [APP-031, APP-032, APP-033]
- 4.14.30. Key uncertainties and limitations to the assessment concern the estimate of GHG emissions from landfill in the baseline scenario, the carbon intensity of marginal electricity generation in the baseline that is displaced, and the characteristics of the waste managed (its biogenic to fossil carbon ratio and its energy content), which affect both the baseline and the K3 and WKN Proposed Development scenarios.
- 4.14.31. The K3 Proposed Development is predicted by the WRATE analysis to cause total emissions of approximately 255 thousand tonnes of fossil carbon-dioxide equivalent (ktCO₂e) per year of operation. However, compared to the baseline of impacts from landfill waste disposal and electricity generation that it would avoid, the net effect of the K3 Proposed Development as a whole is predicted to be a reduction in GHG emissions of 232 ktCO₂e/annum, which would be a beneficial effect that is considered significant.
- 4.14.32. The practical effect of the K3 Proposed Development, increasing the energy output of the Consented K3 Facility and also increasing its waste throughput by 130,000 tonnes per annum, is predicted by the WRATE analysis to cause a net total GHG emissions reduction of approximately 60 ktCO₂e per year of operation. This is the balance of process emissions from waste combustion, transport and facility operation compared to the baseline of impacts from landfill waste disposal and electricity generation that it would avoid. The predicted 60 ktCO₂e per annum net GHG emission reduction would be a beneficial effect that is considered significant.
- 4.14.33. Although unavoidable uncertainties in the estimation of baseline waste management and displaced electricity generation emissions, limit the
- WHEELABRATOR KEMSLEY GENERATING STATION (K3) AND WHEELABRATOR KEMSLEY NORTH (WKN) WASTE TO ENERGY FACILITY: EN010083
REPORT TO THE SECRETARY OF STATE: 19 NOVEMBER 2020

certainty with which the net benefits of the K3 Proposed Development's practical effect (increases to the Consented K3 Facility waste throughput and electricity generation) can be predicted, the K3 Proposed Development as a whole can be said with higher confidence to perform well in GHG emission terms, due to its efficiency as CHP facility.

- 4.14.34. The WKN Proposed Development is predicted by the WRATE analysis to cause a total of approximately 163 ktCO₂e per year of operation.
- 4.14.35. However, compared to the baseline of landfill waste disposal and electricity generation that it would avoid, the net effect of the WKN Proposed Development is predicted by WRATE be a GHG emissions reduction of approximately 64 ktCO₂e per annum. This predicted 64 ktCO₂e per annum net GHG emission reduction would be a beneficial effect of the WKN Proposed Development that is considered significant.
- 4.14.36. There are unavoidable uncertainties in the estimation of baseline waste management and displaced electricity generation emissions which could affect the net GHG balance predicted for the WKN Proposed Development. Based on the WRATE analysis, a net GHG emissions reduction is considered more probable than a net emissions increase compared to the baseline, but the amount can only be stated with limited confidence as it is highly sensitive to the assumptions applied.
- 4.14.37. In the case of both the K3 and WKN Proposed Developments, potential further mitigation measures have been considered, but no additional mitigation for the operational phase, within the Applicant's control at the development site, has been proposed or is considered to be required.
- 4.14.38. Although construction-and-decommissioning stage emissions would be limited, good-practice measures to reduce GHG emissions are recommended for the WKN Proposed Development, consistent with guidance from the Institute of Environmental Management and Assessment (IEMA)
- 4.14.39. As GHG impacts are global, all cumulative sources are relevant: this is taken into account in the defined 'high' sensitivity of the receptor and statement that any additional GHG emissions may be considered significant. Additional cumulative effects of greater significance than reported, due to other specific local development projects or the combination of the K3 and WKN Proposed Developments, are not predicted.

Examination

- 4.14.40. In its ExQ3 questions [PD-014] and replies from the Applicant [REP5-011] KCC [REP5-036] and SBC [REP5-027] the ExA clarified the following matters. KCC also replied [REP7-027] to the Applicant's Response to ExAQ3 [REP5-011].
- 4.14.41. KCC states in its reply to ExQ1A.1.3 [REP4-015] that without knowing how much of the feedstock is anticipated to come from landfill as opposed to exported RDF, it is not possible to determine whether the

claimed carbon benefits of the WKN Proposed Development - in particular, those based upon avoided emissions from landfill - would actually materialise.

- 4.14.42. The table in the Appendix to KCC D5 Submission [REP5-042] suggests that the available feedstock going to landfill is substantially less than the RDF currently exported. This is said to be supported by the analysis set out by KCC in its D5 Comments [REP5-038] on the Applicants Response to ExQ1A.1.3 and D5 Response [REP5-036] to ExQ3, demonstrating for example that tonnages of waste types unsuitable for input to EfW are included in the generic category HIC, confirming that waste types are captured that would not be suitable for incineration with energy recovery, inflating the tonnage of waste that might be available for the proposed plants. Corrections to the starting dataset presented by the Applicant reduces the available waste to 0.65 Mt. (pages 3-6 [REP5-038]). Thus it was argued that the claimed carbon benefit for diversion from landfill would in fact be very limited, and the majority of material likely to be sourced would be RDF currently offshored.
- 4.14.43. As to whether there had been any circumstances related to climate change that had changed since publication in 2011 of NPS EN-01 or NPS EN-03 and the consequences thereof, the Applicant acknowledged the UK's ratification of the Paris Agreement in November 2016, seeking a more stringent control on the increase in the global average temperature than was agreed at the 2010 UN Climate Change Conference. The UK Parliament's declaration of an environment and climate emergency in May 2019 and amendment of the CCA2008 to ensure the net UK carbon account for 2050 is at least 100% lower than the 1990 baseline ("net zero").
- 4.14.44. In addition, the Applicant noted the Riverside Energy Park DCO (EN010093) granted on 9 April 2020 [REP5-013] showed that a development that accorded with the NPSs did not lead to the UK being in breach of its international obligations. Further, that *R (Client Earth) v The Secretary of State for Business, Energy and Industrial Strategy [2020] EWHC 1303 (Admin)* [REP5-014] confirms that the SoS is entitled to grant development consent for major energy projects, notwithstanding that they might have significant impacts in terms of greenhouse gas emissions.
- 4.14.45. SBC requested that a Requirement be included in the DCO to ensure the use of low or zero emission HGVs to negate air quality impacts. The Applicant and SBC then agreed that an appropriate number and specification of electric charging points should be provided to serve the WKN Proposed Development, to be reflected via an alteration to the dDCO. Further modelling of the carbon burden from the transportation of waste to the site [REP5-015] prompted the Applicant to reply that a significant adverse impact on carbon emissions in SBC's area was not considered likely, and so a requirement for the use of low or zero emission HGVs would not be necessary or reasonable and in any event there would be no direct control over vehicles used by transporters of the

waste fuel who had to comply with current EU HGV Emissions Standards which incentivise the use of zero and low emission vehicles.

- 4.14.46. KCC in its D2 Submission of 23 March 2020 [REP2-044] drew attention to the Brookhurst Wood appeal decision [REP5-039] in contrast to which the Proposed Development is being promoted as an energy scheme through the DCO process, rather than a waste management facility through the established local waste planning process. The appeal decision noted the precise mix of feedstock the scheme would handle could not be known, there was significant uncertainty around the credentials of the facility in terms of a low carbon technology. Electricity generated by a Combined Cycle Gas Turbine (CCGT) in baseload mode would represent a lower carbon source of electricity than the proposal and the low carbon credentials of the proposal were of little weight as the scheme was a waste management facility not an energy generating scheme, therefore NPSs were given little weight. The Inspector also noted that if not handled at the proposed facility, residual waste would likely be exported for recovery, not sent to landfill. Thus, KCC argues that as the WKN Proposed Development is not an NSIP, compliance with NPSs ought only to be given greater weight with respect to consideration of Project K3.
- 4.14.47. SBC in its LIR [REP1-012] supported objections by KCC that the Proposed Development was not necessary to meet waste requirements for Kent, and conflicted with policies of self-sufficiency and promotion of recycling. SBC is concerned that the development would result in significant carbon impacts and draw substantial HGV traffic into the borough with negative effects on climate change.
- 4.14.48. SBC in its D4 Submission dated 5 May 2020 and Appendix 1 - Climate & Ecological Emergency Action Plan [REP4-025, REP4-026], commented on climate change and potential air quality impacts arising from lorry routing. SBC declared a climate and ecological emergency in June 2019 and the Climate and Ecological Emergency Action Plan was approved by Cabinet on 22 April 2020, containing short and long term actions to achieve carbon reduction and borough-wide net zero carbon by 2030. SBC accepts the Proposed Development is a form of renewable energy under NPS EN-3, however states that it would have "significant adverse impacts upon carbon emissions" within the Borough, citing KCC's view as WPA that the development on the scale proposed is not required to meet waste requirements in the latest WNA, based on the policy of providing self-sufficiency for the disposal of waste in Kent. SBC supports KCC's objections and submits that the Proposed Development would result in unnecessary HGV movements into the borough and the wider Kent area on a significant scale, with subsequent negative effects on climate change. It supports KCC concerns relating to the carbon impacts arising from the development that the development is not compatible with its waste hierarchy and promotion of recycling.
- 4.14.49. Other outstanding matters at the close of the Examination appear from the Applicant's SoCG with KCC [REP8-013], primarily that the level of carbon benefit impact relating to the proposal is disputed and the

reliability of any claimed benefit in terms of reduced carbon emissions is disputed.

- 4.14.50. As to carbon balance the Applicant notes that the Consented K3 Facility in its operational state is a Good Quality CHP and would continue as such, at the increased generating capacity and tonnage throughput. Changes to efficiency criteria in the latest CHPQA guidance mean that the WKN Proposed Development would not be considered as Good Quality CHP. However, the Applicant's Carbon Assessment conservatively models an electricity only facility and the Applicant states that positive weight should be given to Project WKN given it would be CHP ready and located where there remains a good prospect of identifying customers for the heat produced. The Applicant states its carbon assessments adopt a conservative approach in assuming a biodegradable content of 45% and maintains that a far greater proportion of fuel for the Proposed Development would be derived from residual wastes currently disposed to landfill than from RDF.
- 4.14.51. KCC's position is that the carbon assessments are overoptimistic in terms of assumed biogenic content which skews the results, making the plant performance appear more favourable in terms of avoided carbon. The absence of a sensitivity analysis that takes a more conservative view in light of forthcoming changes in waste management practice flaws the assessment.
- 4.14.52. Further, the lack of guaranteed heat utilisation in Project WKN shows that the combined projects would not represent Good Quality CHP and therefore to grant consent would be contrary to national energy policy. The absence of evidence to indicate that the additional throughput to the Consented K3 Facility would contribute any additional heat over and above what could be supplied by that facility as permitted, means the same could be said of that proposal if taken as a stand-alone matter. The majority of waste is likely to come from onshoring RDF currently exported to CHP plants that would be classed as Good Quality. The Applicant's own Carbon Assessment demonstrates that this management route is preferable to burning the waste in a plant in the UK (in this case Kent) that will not be operating as Good Quality CHP as demonstrated by the Applicant's own evidence/CHP assessment.
- 4.14.53. Finally, the carbon contribution of waste incineration plants is identified as a focus of action by the statutory Climate Change Committee's most recent report to Parliament. From the above, and the lack of any carbon capture or storage proposals, the County Council considers that consenting the proposals would be contrary to the most current standing advice to national government on meeting the statutory carbon emission reduction targets of the CCA2008. It would also be contrary to the Government Resources and Waste Strategy that includes a specific action to improve the efficiency of EfW plants by encouraging use of the heat the plants produce.
- 4.14.54. The June 2020 CCC Progress Report identifies for the first time the need to address emissions from waste incineration, warning against the

continued 'dash for incineration' as it competes with recycling, and expressly advises that "New plants (and plant expansions) above a certain scale should only be constructed in areas confirmed to soon have CO₂ infrastructure available and should be built "CCS1 ready' or with CCS". It also confirms that the Government Contract for Difference support scheme to renewables is only available to Waste to Energy plants with CHP indicating that plants without should not be regarded as supplying renewable energy.

4.14.55. The Applicant also maintains there is no planning policy requirement to attain R1 status; it is a measure within the WFD to ensure energy recovery facilities achieve an appropriate level of efficiency and an industry standard that the Applicant meets and exceeds. The fuel for the Proposed Developments incorporates residual wastes currently sent to landfill and using these wastes instead to recover energy (even before the facilities achieve R1 status) would deliver the waste hierarchy.

4.14.56. KCC argues that management of waste at a plant simply able to recover some energy from waste does not automatically qualify as Other Recovery rather than disposal. For example landfills can recover energy via landfill gas engines yet are always defined as disposal facilities. The key test is that an incineration plant taking mixed waste needs to be accredited to R1 status to not be regarded as "disposal". That was the purpose of introducing the R1 formula, therefore, until a plant achieves R1 status, it ought to be regarded as a disposal facility. The EPR leaves unchanged MWLP Policy CSW8 which states "*Facilities using waste as a fuel will only be permitted if they qualify as recovery operations as defined by the Revised Waste Framework Directive*" which by virtue of the footnote refers to the need for such plants to achieve R1 status (Annex II of WFD).

4.14.57. KCC also cited in its closing submissions [REP8-016] the Court of Appeal judgement on Heathrow expansion *R (Friends of the Earth) v Secretary of State for Transport and Others [2020] EWCA Civ 214*, concerned with the formulation of the 'Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England'. KCC considered it relevant in the context of the impact of carbon emissions that would result from the Proposed Development. However in that case it was held:

"We have not found that a national policy statement supporting this project is necessarily incompatible with the United Kingdom's commitment to reducing carbon emissions and mitigating climate change under the Paris Agreement, or with any other policy the Government may adopt or international obligation it may undertake"

Conclusion

4.14.58. Considering SBC's request for a new Requirement in the DCO to ensure the use of low or zero emission HGVs, I am persuaded by the Applicant's arguments that given the difficulty in enforcing such a requirement against third party contractors and the existing standards of emissions to which HGV operators are held, this would not be necessary or

reasonable. Otherwise, the Applicant has included in its Preferred DCO that an appropriate number and specification of electric charging points should be provided to serve the WKN Proposed Development which is suitable for the purpose

4.14.59. It is not in dispute that Project K3 and Project WKN are both facilities proposed for the incineration of waste with energy recovery, which if they achieved R1 status, would represent Other Recovery facilities for the purposes of the waste hierarchy which sit above 'disposal'. The decision whether R1 status is achieved or not, is a matter for the EA. I cannot with a high level of confidence assume that either project within the Proposed Development would achieve R1 status.

4.14.60. As noted elsewhere and in particular Section 3.11 and Section 6.6 of this Report, in relation to the WKN Proposed Development neither NPS EN-1 nor EN-3 apply as such, they remain important and relevant considerations but primacy is given to the development plan.

Level of carbon benefit

4.14.61. The conclusions of the Applicant's modelling of the practical effects of the K3 Proposed development claim that treatment of an additional 130ktpa of waste would:

- deliver carbon benefits over the current management methods due to increased diversion from landfill and improved energy efficiency performance of the facility;
- avoid a net burden of between c59.5 and 63.3ktCO₂e in 2020 (depending on the composition and CV of the waste diverted from Landfill);
- transporting process residues has a carbon burden but a small impact on the overall carbon benefits of diverting waste from landfill; and
- Treatment of 657kt of waste would help minimise waste to landfill and generate additional renewable energy in heat for the DS Smith Kemsley Paper Mill and electricity for export to the national grid.

4.14.62. However it is inappropriate to take into account the full 657kt of waste in respect of the K3 Proposed Development since it is only the additional 130ktpa that would be processed as a result of an eventual successful application. An avoided carbon burden of 17.7ktCO₂e (or 26.9ktCO₂e applying the sensitivity analysis) associated with the processing of 527kt of waste at the Facility is presented as a net benefit but in reality this is an existing impact that is associated with the already Consented K3 Facility. Nevertheless there would, in the Applicant's terms be a net benefit to be derived from the additional 130ktpa that would result from the approval of the application.

4.14.63. Similar conclusions are found by the Applicant for the WKN Proposed Development in respect of the proposed treatment of an additional 390ktpa of waste at the Facility, save that the net avoided carbon burden is said to be between c63.8 and 98.3ktCO₂e in 2020. However it appears from the relevant carbon assessment [APP-032] that the more relevant figures to be taken forward for overall assessment of the WKN Proposed

Development are the burden of between 31.6ktCO₂e to 50.1ktCO₂e (paragraphs 4.1.2 and 3.2.1) associated with the processing of 390kt of waste at the Facility, itself a significant carbon burden, to which is added emissions from onward transportation of process residues from the facility, making an overall carbon burden of between c33.7ktCO₂e and c52.8ktCO₂e. For the K3 Proposed Development the practical effect of consent would be a carbon burden including an onward transportation burden, of between c15.6ktCO₂e and c24.4ktCO₂e.

- 4.14.64. The netting off of a proportion of GHG is not an unreasonable approach where there is a clear baseline alternative from which like can be compared with like with a high degree of confidence. However the levels of carbon benefit impact relating to the Proposed Development, as the Applicant accepts, is subject to several key uncertainties and limitations, such as the estimate of GHG emissions from landfill, the carbon intensity of marginal electricity generation and the proportions of waste types to be managed. All the available evidence casts considerable doubt on whether the "net benefit" can be ascertained with any great certainty, given it is highly sensitive to the assumptions applied.
- 4.14.65. It should also be borne in mind that (notwithstanding any definitional need for the facilities found in NPSs) if the Proposed Development is not necessary to meet waste requirements for Kent or the area covered by SEWPAG, the carbon burden resulting from the proposed facilities would needlessly increase that burden to no particular purpose. Yet at the same time it would contribute to an increased risk of failure to meet international commitments. This is obviously more so in the case of the WKN Proposed Development than in the case of Project K3, which on the Applicant's own analysis would be predicted to cause a total of approximately 163 ktCO₂e each year of operation from waste combustion and transport. This would be a considerably significant regular discharge of greenhouse gas in its own right over the lifetime of the development, expected to have an operating life of up to 50 years.
- 4.14.66. CO₂ emissions can be a significant adverse impact of waste combustion. Overall I conclude that given the level of uncertainty as to whether and if so what level of "net carbon benefit" would obtain in respect of the Proposed Development this should be accorded little weight. However there are material differences between the effects of the WKN Proposed Development and the practical effect of the K3 Proposed Development such that whilst the combined proposal would be inherently energy inefficient, the significant weight that should be given to the environmental burden of the WKN Proposed Development should not apply to the K3 Proposed Development.

Limited nature of diversion from landfill

- 4.14.67. The comparative scenario relating to landfilling of all waste that would otherwise be managed through the proposed facilities is also concerning, as KCC point out. The waste would arise in Kent where a significant proportion would be diverted from recycling rather than landfill, or further afield where it will have been planned for through Local Plan making processes. It is also commonly understood that emissions from

fossil sources would not occur with plastic waste stored in landfill which would not break down and result in GHG emissions for a considerable time, whereas recycling would ensure the carbon stored in fossil sources is not immediately emitted.

- 4.14.68. The RDF export scenario modelled as a sensitivity found that "*...carbon impacts could be up to circa 13ktCO₂e lower than the Proposal. This is predominately associated with the fact that the European WtE is modelled as CHP, whereas the Facility is conservatively modelled as electricity only.*" (page 15 ES Appendix 6.2 – WKN Proposed Development Carbon Assessment [APP-032]). Reviewing the available evidence I see no good reason why the Proposed Development would necessarily have a significantly lesser carbon impact than if the waste were managed via the European RDF export route or supplied to domestic EfW plants with CHP. By the same token it seems to me just as likely that without the Proposed Development, rather than waste being landfilled, it would compete with management through other routes, including other EfW plants and export as RDF.

Level of guaranteed heat utilisation: WKN Proposed Development

- 4.14.69. The Brookhurst Wood appeal decision [REP5-039] is significant because although consent was granted for an EfW plant with 230,000 tpa of C&I and/or Municipal Solid Waste (MSW) of which 50,000 tpa would be recycled, and 180,000 tpa residual waste being combusted to generate electricity and potentially heat, the Inspector found that as an electricity production scheme fired by fuel that is primarily fossil-derived material, it had poor carbon credentials, compared with other energy generators such as CCGT, and as a waste management scheme it had poor carbon credentials compared with export of RDF, the accepted alternative waste management solution for the proposed feedstock. This would suggest that the Proposed Development would struggle to demonstrate compliance with NPS commitments on carbon emission reduction or WLP objectives of securing low carbon solutions.
- 4.14.70. In turn this would make it difficult to adhere to the views concerning climate change adaptation expressed in NPS EN-1 (paragraph 4.8.1) and EN-3 (paragraph 2.3.1) that if new energy infrastructure is not sufficiently resilient against the possible impacts of climate change, it will not be able to satisfy the energy needs as outlined in the NPS.
- 4.14.71. Some matters of climate change adaptation overlap with other principal issues, and in Section 6.19 of this Report I have considered flood risk including in the context of climate change.
- 4.14.72. Neither facility is certain to meet the R1 energy efficiency test. However KMWLP policy, unchanged by the EPR, aims to secure that any additional capacity that produces energy maximises the CV of the waste, harnessing as much of the energy produced as possible, as soon as possible. Taking together both projects within the Proposed Development the proposal would be inherently energy inefficient, not meeting the test of Good Quality CHP, and not making best use of the CV of the proposed feedstock.

- 4.14.73. The need for the UK to continue to transition to a low-carbon electricity market is underlined by the 2015 United Nations Framework Convention on Climate Change (“UNFCCC”) Paris Agreement and the importance of this cannot be overestimated. The June 2020 Progress Report, in confirming that the Government Contract for Difference support scheme to renewables is only available to EfW plants with CHP, is also a significant indicator that plants without CHP should not be regarded as supplying renewable energy.
- 4.14.74. However despite the uncertainties inherent in calculating the net carbon benefit of the K3 Proposed Development’s practical effect, I recognise that the K3 Proposed Development as a whole could be said with higher confidence to perform better in GHG emission terms, due to its greater efficiency as a CHP facility. This is a positive benefit.
- 4.14.75. It would also comply with Swale Local Plan Policy DM19.c, concerned with adaptation to climate change, by retaining and upgrading an existing structure rather than building new.

4.15. GROUND CONDITIONS

Policy Considerations

- 4.15.1. In addressing land use matters Section 5.10 of NPS EN-1 notes that the reuse of previously developed land for new development can make a major contribution to sustainable development. It also advises that for developments on previously developed land applicants should ensure that they have considered the risk posed by land contamination.
- 4.15.2. Paragraph 178 of the revised NPPF states that planning decisions should ensure that a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities. The Framework also encourages the use of previously developed land. At the local level Swale Local Plan Policy ST1 applies national policy in respect of contaminated, unstable and previously developed land.

The Applicant’s Case

- 4.15.3. Chapter 9 of the ES [APP-061] assessed the effect of the Proposed Development on ground conditions. The assessment was based on information relating to the history, geology, hydrology and hydrogeology of the Site as well as ground investigations previously undertaken in the vicinity of the Site.
- 4.15.4. No significant issues were raised by the key consultees as a result of the scoping exercise in relation to ground conditions. No specific ground investigation supported the WKN Proposed Development; the information used to determine the significance of potential effects of the Proposed Development focused on ES Appendix 9.1, Desk Study Ground Conditions



Department for Levelling Up,
Housing & Communities

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Our ref: APP/X1355/W/22/3294182

Your ref: DM/20/03267/WAS

By email only

26 June 2023

Dear Sir

**TOWN AND COUNTRY PLANNING ACT 1990 – SECTION 78
APPEAL MADE BY MR MARK SHORT, PROJECT GENESIS LIMITED
HOWNSGILL INDUSTRIAL ESTATE, CONSETT, DURHAM DE8 7EQ
APPLICATION REF: DM/20/03267/WAS**

This decision was made by the Parliamentary Under-Secretary of State for Local Government and Building Safety, Lee Rowley, on behalf of the Secretary of State

1. I am directed by the Secretary of State to say that consideration has been given to the report of Stephen Normington BSc DipTP MRICS MRTPI FIQ FIHE, who held a public local inquiry on 9-12 and 16-19 August 2022 into your client's appeal against the decision of Durham County Council to refuse your client's application for planning permission for an Energy from Waste Facility, in accordance with application Ref. DM/20/03267/WAS, dated 5 November 2020.
2. On 26 May 2022, this appeal was recovered for the Secretary of State's determination, in pursuance of section 79 of, and paragraph 3 of Schedule 6 to, the Town and Country Planning Act 1990.

Inspector's recommendation and summary of the decision

3. The Inspector recommended that the appeal be allowed and planning permission be granted subject to conditions.
4. For the reasons given below, the Secretary of State disagrees with the Inspector's recommendation. He has decided to dismiss the appeal and refuse permission. A copy of the Inspector's report (IR) is enclosed. All references to paragraph numbers, unless otherwise stated, are to that report.

Environmental Statement

5. In reaching this position, the Secretary of State has taken into account the Environmental Statement which was submitted under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Having taken account of the Inspector's comments at IR1.8, the Secretary of State is satisfied that the Environmental Statement

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complies with the above Regulations and that sufficient information has been provided for him to assess the environmental impact of the proposal.

Matters arising since the close of the inquiry

6. A list of representations which have been received since the inquiry is at Annex A. The Secretary of State is satisfied that the issues raised do not affect his decision, and no other new issues were raised in this correspondence to warrant further investigation or necessitate additional referrals back to parties. Copies of these letters may be obtained on request to the email address at the foot of the first page of this letter.

Policy and statutory considerations

7. In reaching his decision, the Secretary of State has had regard to section 38(6) of the Planning and Compulsory Purchase Act 2004 which requires that proposals be determined in accordance with the development plan unless material considerations indicate otherwise.
8. In this case the development plan consists of the County Durham Waste Local Plan (April 2005) Saved Policies (CDWLP) and the County Durham Plan (Adopted 2020) (CDP). The Secretary of State considers that relevant development plan policies include those set out at IR4.4.
9. Other material considerations which the Secretary of State has taken into account include the National Planning Policy Framework ('the Framework') and associated planning guidance ('the Guidance'), as well as those documents set out in IR4.5.
10. In accordance with section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 (the LBCA Act), the Secretary of State has paid special regard to the desirability of preserving those listed buildings potentially affected by the proposals, or their settings or any features of special architectural or historic interest which they may possess.

Main issues

Principle of development on the Hownsgill Industrial Park

11. For the reasons given at IR12.2-12.7, the Secretary of State agrees that proposed development would not be inconsistent with the land use aspirations of Policy 2 of the CDP, particularly as Policy 61 supports the use of employment sites for such waste management uses (IR12.7). He further agrees that the location of the proposed development would, in principle, conform with the siting guidance provided in the National Planning Policy for Waste (IR12.5).

Waste disposal or recovery?

12. For the reasons given at IR12.8-12.11, the Secretary of State agrees with the Inspector that the proposal needs to achieve R1 status in order to conclusively demonstrate that it comprises a recovery operation that would move the management of waste up the hierarchy and demonstrably meet the requirements of Policy 47 of the CDP (IR12.11). For the reasons given at IR12.12-12.15, he further agrees that Planning Condition 20 provides an appropriate mechanism to ensure that the proposed facility can only commence operations when R1 status has been achieved, and that it is appropriate to consider the proposed development as a recovery facility rather than a waste disposal

facility (IR12.15). Like the Inspector at IR12.16 he finds no conflict with the waste hierarchy, which places energy recovery above disposal.

Need for the proposed facility

13. For the reasons given at IR12.17-12.35, IR12.151-152 and IR13.1, the Secretary of State agrees with the Inspector's conclusion at IR12.32 that the evidence presented in the inquiry demonstrates a local and regional need for more recovery capacity to divert the management of C&I waste up the hierarchy and away from landfill, and that the proposal would make a significant contribution to meeting this need. He further agrees that the proposal would be in accordance with the guidance in the Waste Management Plan for England, which recognises that 'energy from waste is generally the best management option for waste that cannot be reused or recycled in terms of environmental impact and getting value from waste as a resource' (IR12.34), and would also be in accordance with the development plan policies set out in IR12.35. In reaching his conclusions he has taken into account the Consett Committee's concerns at IR12.27 that the appeal scheme may prejudice recycling initiatives as a consequence of a need to maintain sufficient combustible products in the feedstock, but for the reasons given at IR12.27-12.29 he, like the Inspector, is not persuaded that the proposed development would lead to a demonstrable reduction in the recycling of C&I waste. Overall he agrees that the need for the facility, moving waste up the waste hierarchy, and the sustainable waste benefits it offers carries significant weight (IR12.32 and IR13.1).

Character and appearance

14. The Secretary of State has noted the landscape background and baseline set out in IR12.36-12.43. For the reasons set out in IR12.44-12.54, he agrees with the Inspector's conclusions on the significance of the plume (IR12.51) and further agrees that the proposed development would not create unacceptable light pollution and would be in accordance with local and national policy in this respect (IR12.54).
15. The Secretary of State agrees with the Inspector at IR12.55 that views of the proposed development would potentially be more widespread to the south and west, and further agrees at IR12.56 that the 'significance of the impact' of the proposed development on landscape receptors is a function of the 'sensitivity of the receptor' to the particular type of development, and the 'magnitude of change' resulting from the proposed development.
16. For the reasons given at IR12.55-12.60, the Secretary of State agrees with the Inspector that while over time the industrial park may become more developed, the height of the proposal would be significantly greater than any existing buildings (IR12.57), and that in the current context it would retain a degree of prominence in the context of the industrial park (IR12.60).
17. For the reasons given at IR12.61-12.63, he agrees with the Inspector at IR12.61 that the non-designated landscape has a medium sensitivity to change, and at IR12.62 that the magnitude of landscape effect would be medium, and at IR12.63 that there would be a moderate adverse landscape effect. For the reasons given at IR12.64-65, the Secretary of State agrees that the particular characteristics of the AHLV give it a high sensitivity to change (IR12.64). Taking into account the medium nature of the magnitude of landscape effect, he agrees that the residual landscape effect on the AHLV would be in the range of moderate to significant and adverse (IR12.65).

18. For the reasons given at IR12.66-12.76, the Secretary of State agrees that there would be some moderate to major adverse visual impacts, particularly in views closer to the site, but that the effect on longer distance views would be neutral or, at worst, minor adverse (IR12.76). He agrees that the most adverse impact would be from the public footpath to the south of the site, looking across part of the AHLV, where there would be a noticeable deterioration in the existing view, and the visual effect would likely be in the range of moderate to major and adverse (IR12.70).
19. Overall the Secretary of State agrees with the Inspector that the proposed development would have a moderate adverse effect on the surrounding landscape, increasing to moderate to major in respect of the impact on the AHLV (IR12.90), primarily as a consequence of the stack and the impact of the upper parts of the main building in some wider landscape views (IR13.8). For the reasons given at IR12.66-12.76 he further agrees that there would be moderate to major significant visual effects primarily associated with views from the footpaths and residential properties in closer proximity to the site (IR12.90, IR13.8).
20. He therefore agrees at IR12.91 and IR13.8 that the proposed development would cause harm to the character and quality of the landscape and would not conserve the special qualities of the AHLV. Taking into account the sensitivity of the AHLV, the wide area affected, and the magnitude of the landscape and visual effects identified, in the Secretary of State's judgement this matter carries very significant weight against the proposal.
21. The Secretary of State has gone on to consider whether there is accordance with the relevant development plan policies. Taking into account the Inspector's conclusions at IR12.91, he considers that the proposal would be contrary to the provisions of Policy 29 of the CDP, which states that all development proposals will be required to contribute positively to an area's character, identity, heritage significance, townscape and landscape features, helping to create and reinforce locally distinctive and sustainable communities. He further agrees that it would be contrary to the provisions of Policy 61(a) of the CDP, which states that proposals for new waste management facilities will be permitted where they are located outside and do not adversely impact upon the setting or integrity of internationally, nationally and locally designated sites and areas.
22. Policy 39 provides that development affecting AHLV 'will only be permitted where it conserves, and where appropriate enhances, the special qualities of the landscape, unless the benefits of the development in that location clearly outweigh the harm'. The Secretary of State agrees with the Inspector at IR12.91 that the proposed development would not conserve the special qualities of the AHLV. He has gone on to consider whether the test set out in Policy 39 is met. He agrees with the Inspector that the proposed development would be contrary to Policy 39. He has taken into account the benefits of the scheme, as set out in this decision letter and summarised in paragraph 39 below. He has found at paragraph 11 above that the principle of this development on this site is acceptable. However, he finds conflict with Policy 39, and further finds that under the terms of the policy, the development should not be permitted.
23. The Secretary of State has carefully considered the effect of the proposal on the North Pennines AONB. For the reasons given at IR12.77-12.89, IR12.90-12.1 and IR13.6, he agrees with the Inspector at IR12.85 that the proposal would not appear as being overly dominant or overbearing within the setting, although it will be seen; and that it would not comprise a visually intrusive feature or a distraction within the landscape in views from the AONB. He has taken into account that Natural England raised no objection to the

planning application (IR12.86). Like the Inspector he is satisfied that there would not be any adverse effect on the setting on the AONB, and the proposal would not, individually or cumulatively, be harmful to the special qualities or statutory purposes of the AONB (IR12.90). He therefore agrees at IR12.89 and IR13.6 that there would be no conflict with the provisions of paragraphs 174 and 176 of the Framework, or Policies 38, 39 or 61(a) of the CDP in this respect.

Effect on heritage assets

24. For the reasons given at IR12.92-12.106 and IR13.6, the Secretary of State agrees with the Inspector that there would be no harm to or loss of the heritage value of the Grade II listed High Knitsley Farmhouse and Grade II listed Barn (IR12.106). The Secretary of State has further considered the other assets raised by the Consett Committee. For the reasons given at IR12.107-12.119 he agrees that the proposed development would not cause any harm to the contribution made by the setting to the heritage value or significance of any heritage asset (IR12.119 and IR13.6). He further agrees that there is no conflict with advice in Part 16 of the Framework or Policy 44 of the CDP or Appendix B to the NPPW in this respect (IR12.119).

Climate change

25. For the reasons given at IR12.120-12.135 and IR13.5, the Secretary of State agrees with the Inspector that a reasonable assessment of the evidence submitted in the inquiry suggests that the proposed development would likely result in lower GHG emissions compared to landfill over a 25-30 year lifetime, during which period it would also facilitate the availability of localised decarbonised power and heat (IR12.134). He further agrees that there are inherent uncertainties, particularly regarding the biogenic carbon content of the waste and hence the extent of emissions savings, the extent to which the available heat and power would be taken up by existing and new businesses/residential developments and whether CCS may be installed; therefore while there would be some savings on CO₂ emissions over landfill, the extent of this cannot be determined with any degree of precision (IR12.135). Therefore, while he agrees that in this respect the proposal would be consistent with Policy 61 of the CDP and paragraphs 154 and 155 of the Framework, he further agrees that the climate change benefits should only be afforded limited weight in the overall planning balance (IR12.135).

Effect on economic development

26. For the reasons given at IR12.136-12.142, the Secretary of State agrees with the Inspector that in the absence of substantive evidence to the contrary, there would be no material harm to the future economic development of the site, and that the proposed development is more likely to be a catalyst for the attraction of further development (IR2.142).

Alternative sites and technology

27. The Secretary of State has taken into account the Inspector's assessment of matters set out at IR12.143-12.149. He notes the conclusion in the Environmental Statement that the proposed development fulfils an established need and that there are not more suitable locations, technologies or layouts of the proposed buildings and plant. He further notes and agrees with the Inspector's conclusion that in the absence of any substantive evidence to the contrary, the ES has appropriately considered reasonable alternatives which are relevant to the proposed development (IR12.149).

Benefits of proposed development

28. The Secretary of State has considered the Inspector's analysis at IR12.150-12.162 of the benefits of the proposed development and the implications of not proceeding. He agrees with the Inspector for the reasons given at IR12.142, IR12.153 and IR13.2 that the proposal would provide energy benefits associated with the availability of discounted heat and electricity, and that the proposal provides the potential to act as a catalyst to attract new employment development within the industrial park, particularly those businesses with high energy and heat requirements. He further agrees that this carries significant weight (IR13.2). He agrees with the Inspector's assessment of the economic benefits of the proposal as set out at IR12.157-12.158 and IR13.4, and further agrees that these should carry limited weight (IR13.4). He agrees with the Inspector at IR12.156 and IR13.3 that the safeguarding of land for use as an Electric Vehicle Charging Facility carries limited weight, and further agrees for the reasons given at IR12.159-12.161 and IR13.4 that moderate weight should attach to the biodiversity net gain. The Secretary of State further considers, for the reasons given at IR11.19-11.20 and 12.156 (but not IR13.3, as set out in paragraph 36 below), that the benefits of completion of Hownsgill Solar Farm carry moderate weight.

Other matters

29. For the reasons set out in IR12.163-12.167, the Secretary of State agrees with the Inspector at IR12.167 that the highway impact of the proposed development would be acceptable and would not amount to a severe residual cumulative impact. For the reasons set out at IR12.168-12.173 he further agrees at IR12.173 that there is no reason to suggest that the proposed development would have an adverse impact on health. For the reasons set out at IR12.174-12.177, he agrees that limited weight is attributable to the perception of harm to public health and the effect on housing demand. The Secretary of State further agrees with the Inspector's conclusions on the other matters raised at IR12.178-12.180.

Planning conditions

30. The Secretary of State has given consideration to the Inspector's analysis at IR10.1-10.10, the recommended conditions set out at the end of the IR and the reasons for them, and to national policy in paragraph 56 of the Framework and the relevant Guidance. He is satisfied that the conditions recommended by the Inspector comply with the policy test set out at paragraph 56 of the Framework. However, he does not consider that the imposition of these conditions would overcome his reasons for dismissing this appeal and refusing planning permission.

Planning obligations

31. The Secretary of State has had regard to the Inspector's analysis at IR2.9-11, IR11.1-11.25, IR12.153, IR12.155-157, and IR13.2-13.3, the unilateral undertaking (UU) dated 9 September 2022, paragraph 57 of the Framework, the Guidance and the Community Infrastructure Levy Regulations 2010, as amended.

32. For the reasons given at IR11.7, the Secretary of State agrees with the Inspector that the provision of district heating and electricity connections to the Category 1 and 2 Land (land on the Project Genesis site owned by, or capable of being acquired by, the Appellant) under Schedules 3 and 4 of the UU meets the relevant tests.

- 12.117 The River Derwent is a natural feature and although it has heritage assets along its route, the river itself cannot be considered to be a heritage asset within the context of the Framework.
- 12.118 The Derwent Reservoir is a relatively modern feature that was opened in 1967 and located in excess of 7km from the appeal site. Given the intervening distance, the proposed development would not harm any heritage value held by the reservoir.
- 12.119 To conclude on this issue, I am satisfied that the proposed development would not cause any harm to the contribution made by the setting to the heritage value or significance of any heritage asset. Consequently, there would be no conflict with the advice contained within Part 16 of the Framework or Policy 44 of the CDP. There would be no conflict either with Appendix B to the NPPW which identifies protection of the historic environment as one of the criteria for testing the suitability of sites for new waste development.

Climate change

- 12.120 'Energy from Waste: A Guide to the Debate'⁴⁴⁷ (GtD) forms part of the Government's policy regarding the role energy from waste might have in managing waste and is mostly concerned with energy from residual waste. Typically, such wastes contain a significant proportion of materials like food and wood (the 'biogenic' materials) and energy produced from this material is considered to be renewable. However, residual waste also contains wastes, such as plastics, manufactured from 'fossil' fuels. Energy from this fraction of the waste stream is not renewable and, for a mixed waste stream such as that in the appeal proposal, the energy recovered is considered to be only a partially renewable energy source.
- 12.121 Biogenic carbon is also termed short cycle carbon because it was only recently absorbed in growing matter. On the other hand, fossil carbon was absorbed millions of years ago and would be newly released to the atmosphere if combusted. Such waste if landfilled releases carbon at a much slower rate than if it is disposed of by incineration.
- 12.122 The GtD sets out that the Government is aiming to prevent, reuse and recycle more waste, so the amount of residual waste should go down. However, energy from waste will remain important. It advises that when considering the relative environmental benefits of landfill and energy from waste, the most important factor is their potential contribution to climate change. Different amounts of greenhouse gases would be released if the same waste was burned or buried.
- 12.123 The GtD compares EfW with landfill. Managing untreated mixed waste by either combustion in an EfW plant or deposit in a landfill will release gases that contribute to global warming. However, whereas landfill will release both carbon dioxide (CO₂) and methane, an EfW process generally emits only CO₂. Methane is currently assessed as being 25 times more damaging to the atmosphere than CO₂.

⁴⁴⁷ CD 13.26

- 12.124 Whether EfW produces a lower volume of greenhouse gases than landfill is a complex assessment that needs to be undertaken on a case-by-case basis. Nevertheless, there are two general rules identified in the GtD that apply. These are:
- The more efficient the plant is at turning waste into usable energy the better.
 - The proportion of the waste that is considered renewable is key – higher renewable (biodegradable) content makes energy from waste inherently better than landfill.
- 12.125 The GtD confirms that energy from waste is therefore better than landfill, providing the residual waste being used has the right biogenic content and is matched with a plant that is efficient enough at turning the waste to energy. The GtD recognises that over the typical life of an EfW Plant (25-30 years) the biogenic content of the waste will change in that period. It is also possible to treat waste to increase biogenic content e.g. by removing plastics. The contribution, if any, the appeal proposal would make towards cutting greenhouse gas emissions and the weight that should be attributed to this in the planning balance needs to be assessed.
- 12.126 The evidence of Mr Caird, on behalf of the Appellant, includes a Greenhouse Gas (GHG) Assessment⁴⁴⁸. This assesses the impact on climate change associated with emissions of GHGs from the operation of the appeal scheme. The assessment is based on a baseline scenario which considers the disposal of waste that would be treated by the appeal scheme in a landfill site. The assessment follows a methodology consistent with that adopted by Defra in the Government's modelling of GHG emissions from energy from waste as described in Defra's 'Energy recovery for residual waste: A carbon based modelling approach'⁴⁴⁹.
- 12.127 The assessment demonstrates that the appeal scheme would result in lower GHG emissions compared to landfill with lifetime emission savings of over 532,000 tonnes of CO₂. The amount of GHGs saved will depend on a number of variables such as the precise composition of the waste and the level of heat offtake achieved by the proposal. It includes a series of sensitivity analyses and key variables. The sensitivities demonstrate some variability in the net GHG emissions between the facility and the landfill baseline, but in all sensitivities the net GHG emissions show a benefit to the facility compared to landfill.
- 12.128 The assessment also demonstrates that CO₂ savings would increase substantially if CCS becomes available. In this connection, the Government's 'Net Zero Strategy: Build Back Greener (October 2021)'⁴⁵⁰ identifies the delivery of four carbon capture usage and storage (CCUS) clusters, including one in the North East at Teesside, that would be delivered by 2030 using the £1 billion CCS Infrastructure Fund and revenue support mechanisms. Adding the effects of CCS to the 'likely central' case in the assessment suggest lifetime emission savings of over 1,117,000 tonnes of CO₂. The opportunity to connect

⁴⁴⁸ CD 12.9 and CD 12.1

⁴⁴⁹ CD 11.13

⁴⁵⁰ CD11.3 page 21

to a CCS system forms part of the obligations contained within the UU and were considered earlier in this Report. By contrast, CCS is not practical at landfill sites.

- 12.129 The assessment references two recent reports which examine the GHG impacts of energy from waste and landfill. The first is a report produced by Zero Waste Scotland⁴⁵¹ which analysed the carbon intensity of energy from waste versus landfill and included tests for waste pre-treatment options, principally related to a ban on biogenic waste going to landfill that the Scottish Government are implementing in 2025. The report concludes that, on average, energy from waste has 27% lower GHG emissions than landfill, but identifies the importance of the waste composition in the calculation. It also acknowledges that only one operational energy from waste facility in Scotland currently exports heat, which has considerably lower GHG impacts due to a higher level of energy efficiency from the heat export. The second report, produced by Eunomia⁴⁵², also identifies that currently, energy from waste is superior to landfill in terms of GHG emissions.
- 12.130 Climate change matters are not identified by the Council as reasons for the refusal of planning permission. However, the Council's Low Carbon Economy Team⁴⁵³ expressed concerns that, "whilst understandable at this stage, the percentage of plastics and other materials in the feedstock cannot be confirmed and consequently it leaves a significant unknown in terms of the relative benefits or disbenefits of the proposal in terms of emissions". In addition, 'United Kingdom Without Incineration' (UKWIN) raised a number of concerns regarding uncertainties within the GHG assessment and whether there would be carbon benefits associated with the proposed development. They challenged the assumptions that the Appellant made in its original GHG Assessment and concluded that the alleged carbon output benefits of the proposal may have been overstated. However, no alternative GHG Assessment was provided at the Inquiry.
- 12.131 There was considerable technical debate in the Inquiry regard the Appellant's GHG Assessment. UKWIN asserted that the proposal may have a more adverse impact, in terms of greenhouse gas emissions, than sending the same waste to landfill.
- 12.132 Whether the appeal proposal would be inherently better than landfill with regard to greenhouse gas emissions would largely depend on the biogenic composition of the waste. The GHG Assessment uses a base assumption of 61% biogenic carbon, which is the default used by Defra in its modelling. There is uncertainty as to whether the biogenic carbon will be at or below this level. However, with the considerable pressure to reduce plastic use and increase recycling rates compatible with decarbonising the UK economy, the Appellant considers that, as a lifetime average (over 25 years), 61% biogenic carbon represents a more than reasonable assumption. However, other

⁴⁵¹ Zero Waste Scotland (2021) The climate change impacts of burning municipal waste in Scotland

⁴⁵² Eunomia (2020) Greenhouse Gas and Air Quality Impacts of Incineration and Landfill

⁴⁵³ CD 5.1

sensitivities for biogenic carbon (55% in the main GHG Assessment and down to 51.9% in the rebuttal evidence of Mr Caird⁴⁵⁴) were also considered.

- 12.133 The answers to questions during the presentation of evidence in the Inquiry confirmed to me that the GHG Assessment has a degree of inherent subjectivity. However, the carbon offset that would be achieved, the extent to which the appeal proposal can be considered low carbon and the contribution to reducing greenhouse gas emissions would also be influenced by the potential for the heat and power from the proposal to be realised. Although no contracts exist between the Appellant and potential users of any heat and electricity, the UU provides a clear mechanism for making such opportunity available. In particular, one occupier of the Industrial Park (Greencore) has heat requirements equating by itself to 1.9MW for which accessibility to the heat network would be facilitated by the obligations contained within the UU.
- 12.134 Whilst uncertainties exist, and having carefully considered the views of UKWIN, I am of the view that the GHG Assessment, as supplemented by further evidence in Mr Caird's rebuttal proofs, provides a relatively robust analysis of the impact of the proposed development on climate change and is based partly on modelling advocated by Defra. Notwithstanding the uncertainties highlighted above, I consider that a reasonable assessment of the evidence submitted in the Inquiry suggests that the proposed development would likely result in lower GHG emissions compared to landfill over a 25 - 30 year lifetime during which period it would also facilitate the availability of localised decarbonised power and heat.
- 12.135 In this regard, I consider that the proposal would be consistent with Policy 61 of the CDP and paragraphs 154 and 155 of the Framework. However, there are inherent uncertainties particularly regarding the biogenic carbon content of the waste and hence the extent of emissions savings, the extent to which the available heat and power would be taken up by existing and new businesses/residential developments and whether CCS may be installed. Whilst I accept that there would be some savings on CO₂ emissions over landfill, the extent of this cannot be determined with any degree of precision. These uncertainties lead me to conclude that the climate change benefits should only be afforded limited weight in the overall planning balance.

Effect on Economic Development

- 12.136 Concerns were expressed by a number of interested parties that the proposed development would have a detrimental effect on the attraction of new businesses to the Hownsgill Industrial Park. The evidence of Mr Parkes⁴⁵⁵ sets out that the proposal would make poor use of the appeal site due to the low job density and would discourage future development on nearby land as a consequence of the potential proximity to a 'non-conforming' neighbour, particularly for high quality uses such as offices and advance manufacturing. It was also stated that the proposal would be detrimental to the overall image of Consett thereby having a negative effect on the attraction of new economic investment to the town.

⁴⁵⁴ CD 14.4 Table 1

⁴⁵⁵ CD 12.35

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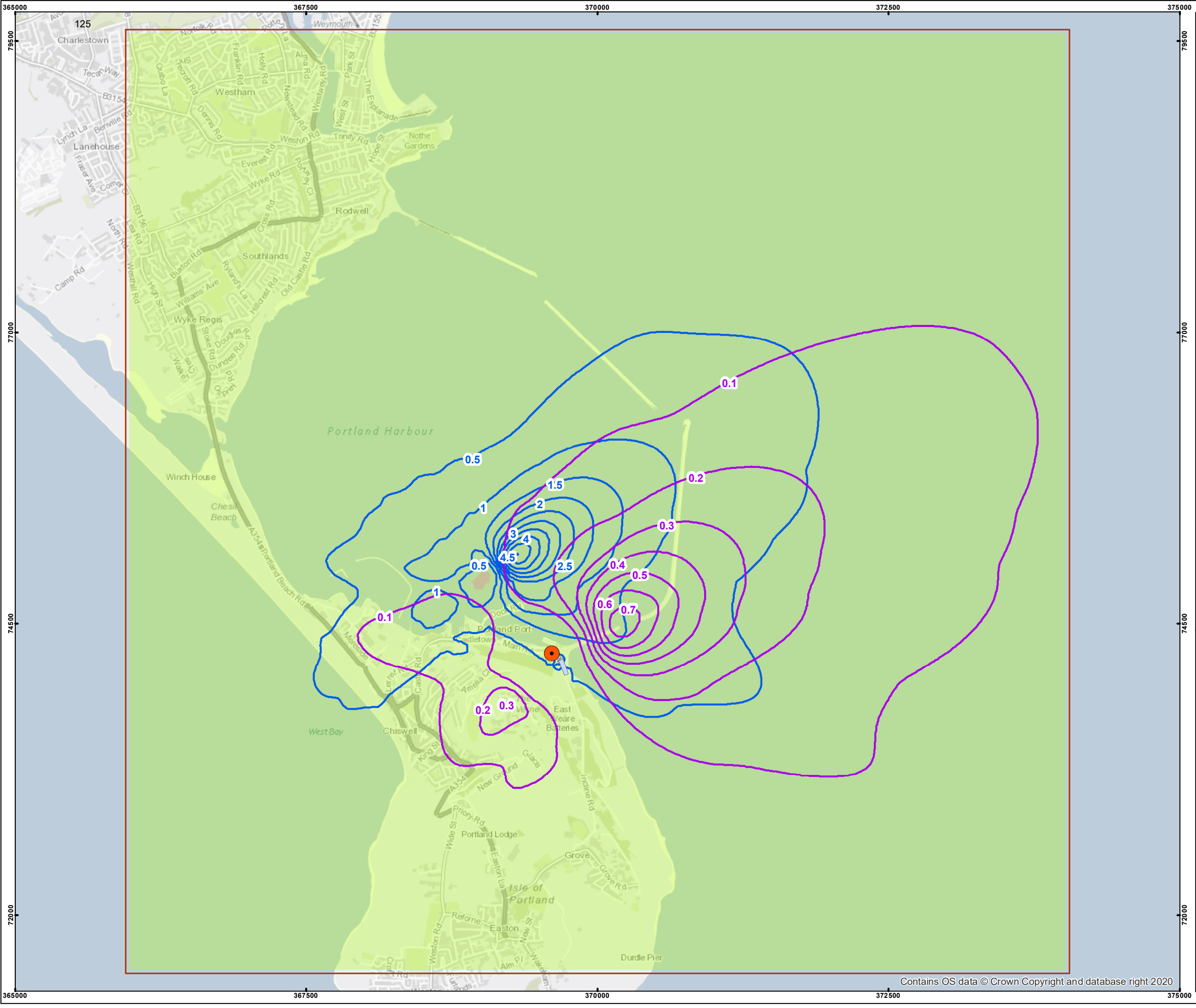


**Powerfuel Portland
ERF**



Climate Change, Air Quality, Health and Permit

**Appendix S05 to Proof of Evidence of
Stephen Othen
Updated Shipping Impacts Assessment**



Legend

- Facility stack
- Facility buildings
- Modelling domain
- Facility
- Ships

Net nitrogen dioxide

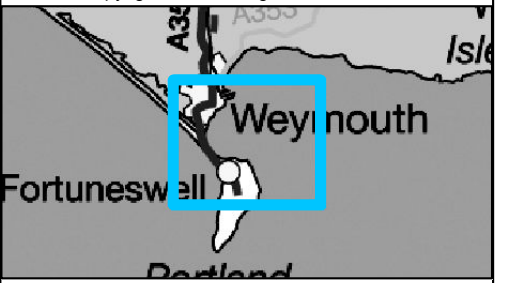
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- Increase

Notes:
 All nitrogen dioxide concentrations are displayed as concentrations (ug/m3)
 Assumes 70% conversion of NOx to NO2

Client:	Powerfuel
Site:	Portland
Project:	2953
Title:	

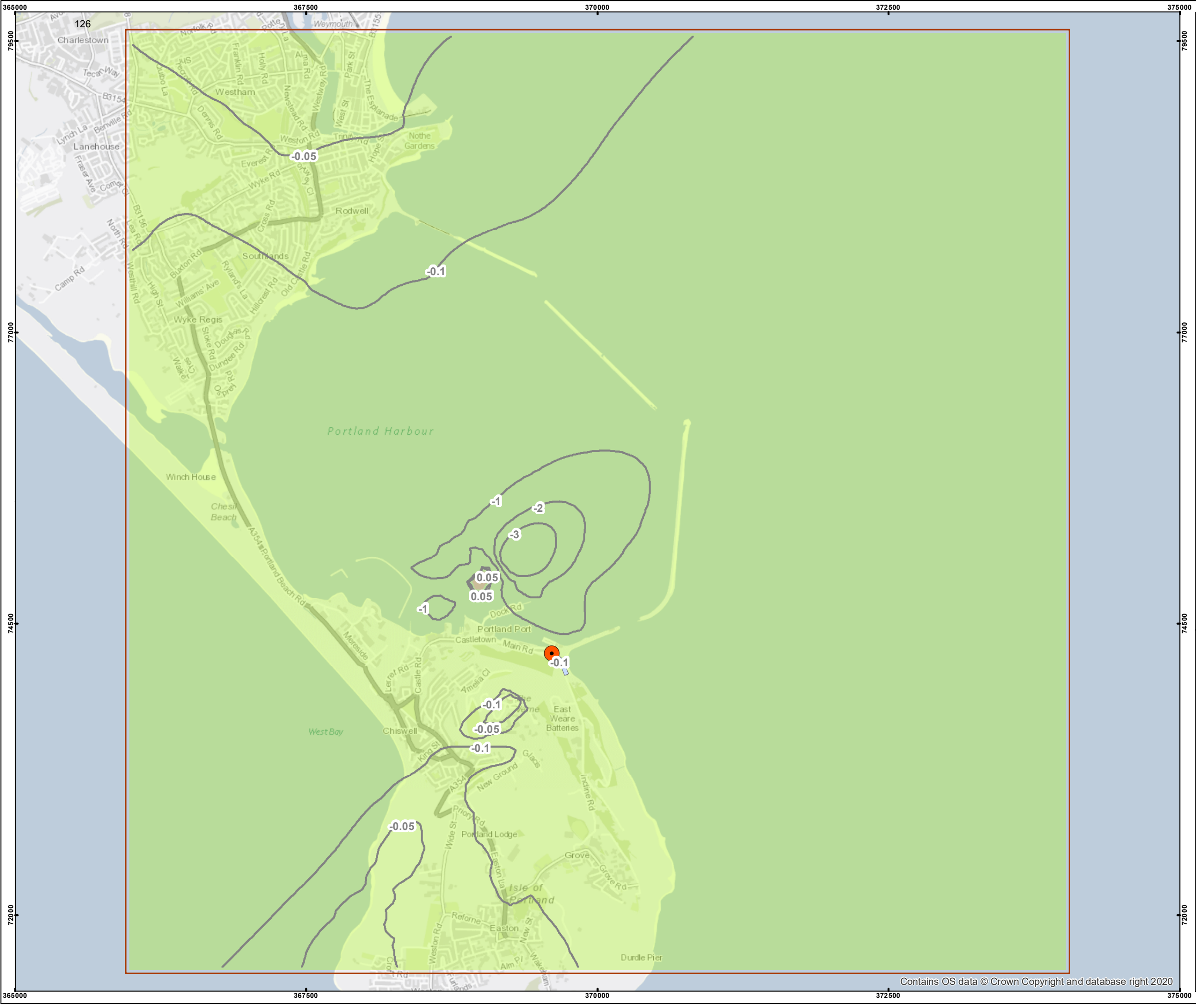
Figure 1 - Annual mean nitrogen dioxide

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Legend

- Facility stack
- Facility buildings
- Modelling domain
- Net change

Net nitrogen dioxide

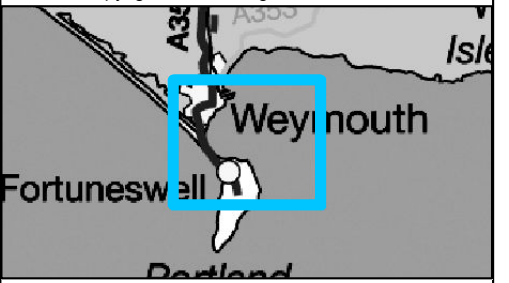
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Site:	Portland
Project:	2953
Title:	

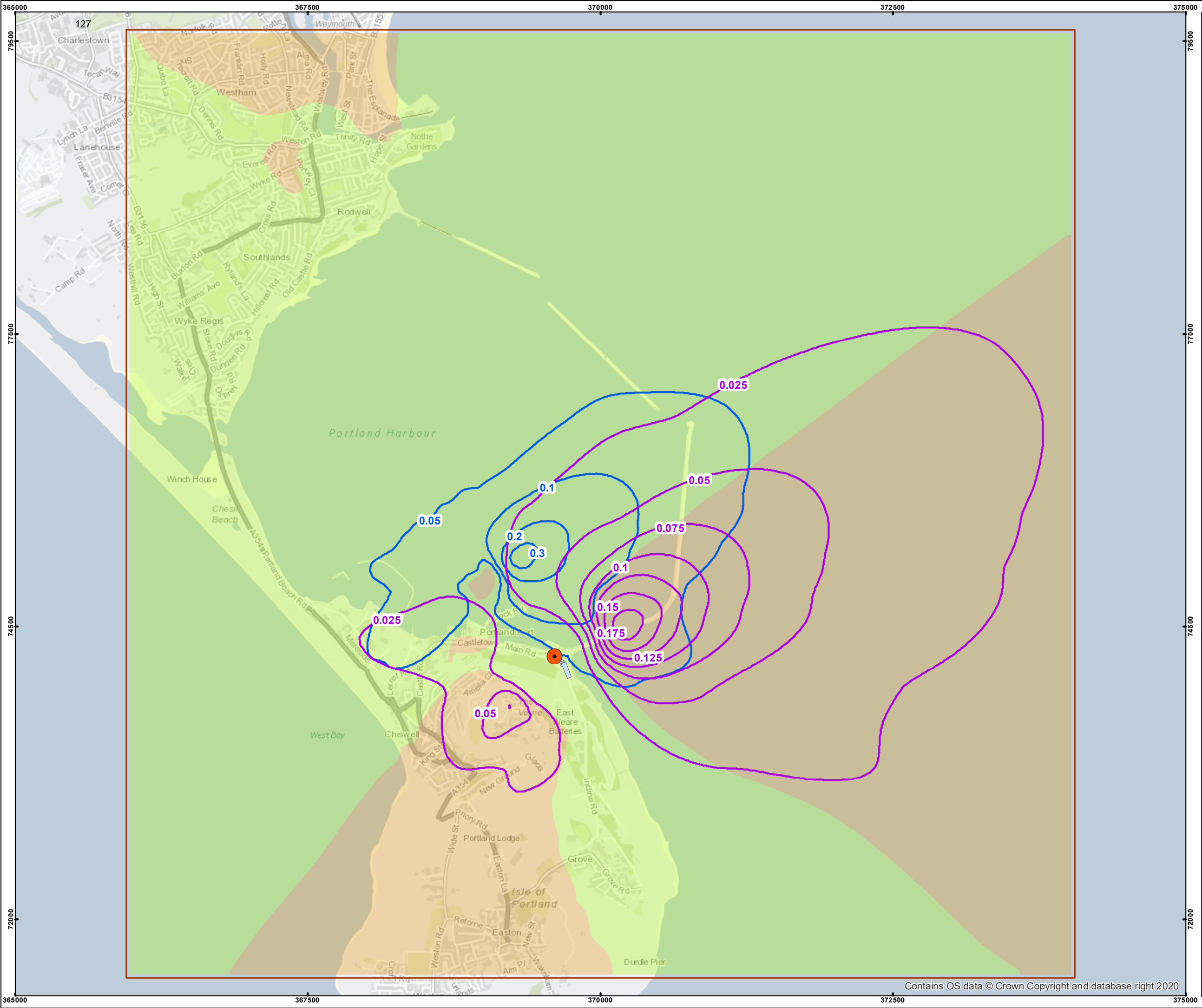
Figure 2 - Annual mean nitrogen dioxide net change

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Legend

- Facility stack
- Facility buildings
- Modelling domain
- Facility
- Ships

Net sulphur dioxide

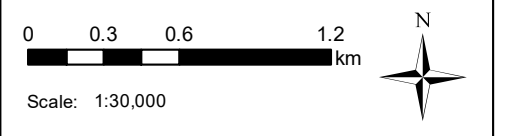
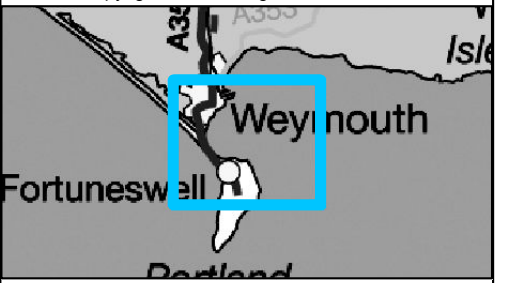
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Notes:
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Client:	Powerfuel
Site:	Portland
Project:	2953
Title:	

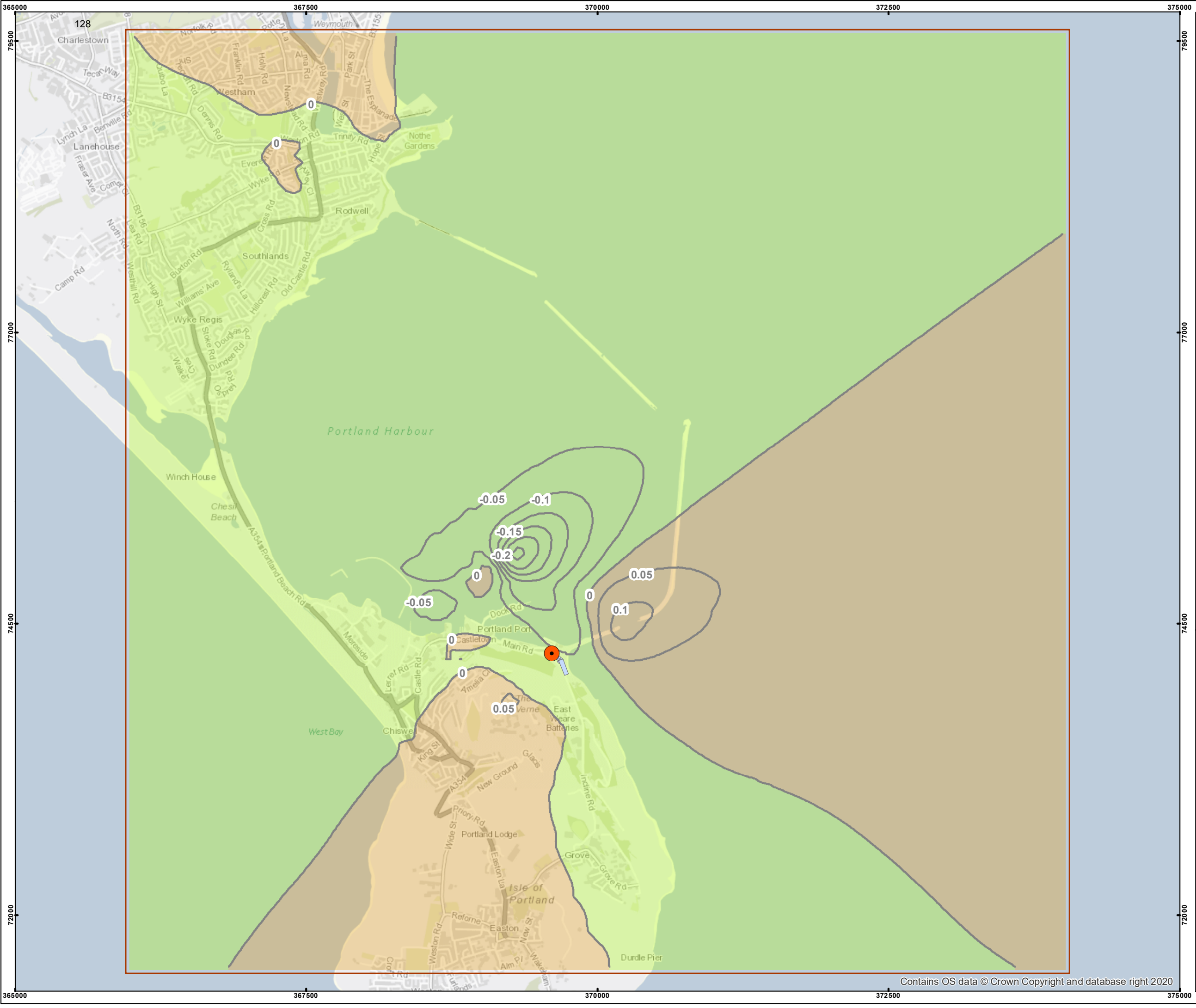
Figure 3 - Annual mean sulphur dioxide

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Legend

- Facility stack
- Facility buildings
- Modelling domain
- Net change

Net sulphur dioxide

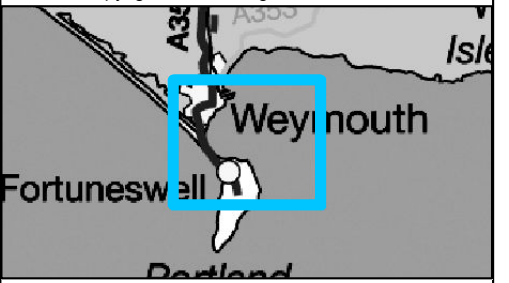
- Decrease
- Increase

Notes:
 All sulphur dioxide concentrations are displayed as concentrations (ug/m3)

Client:	Powerfuel
Site:	Portland
Project:	2953
Title:	

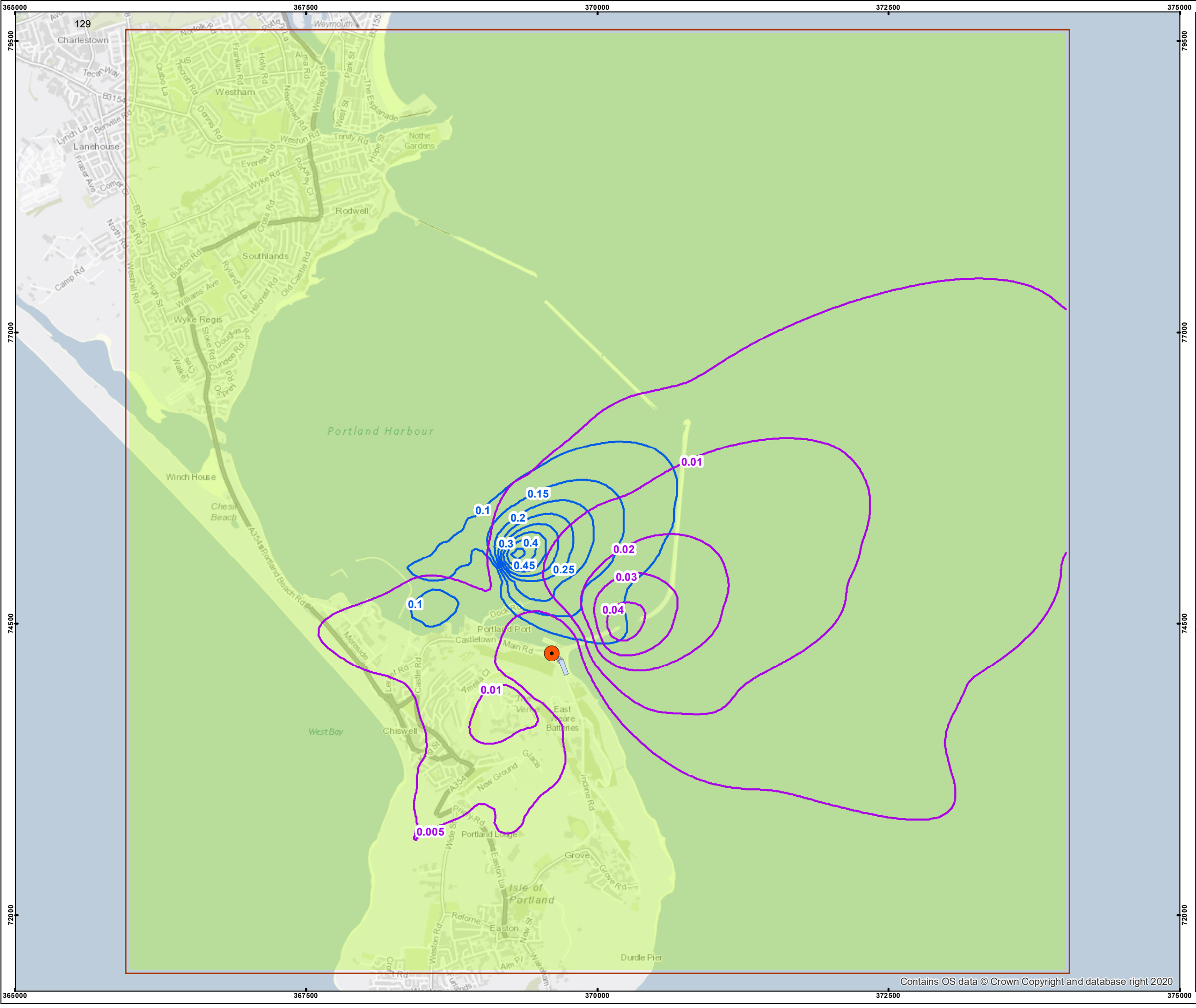
Figure 4 - Annual mean sulphur dioxide net change

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Legend

- Facility stack
- Facility buildings
- Modelling domain
- Facility
- Ships

Net particulate matter

- Decrease
- Increase

Notes:
All particulate matter concentrations are displayed as concentrations (ug/m3)

Client:	Powerfuel
Site:	Portland
Project:	2953
Title:	

Figure 5 - Annual mean particulate matter

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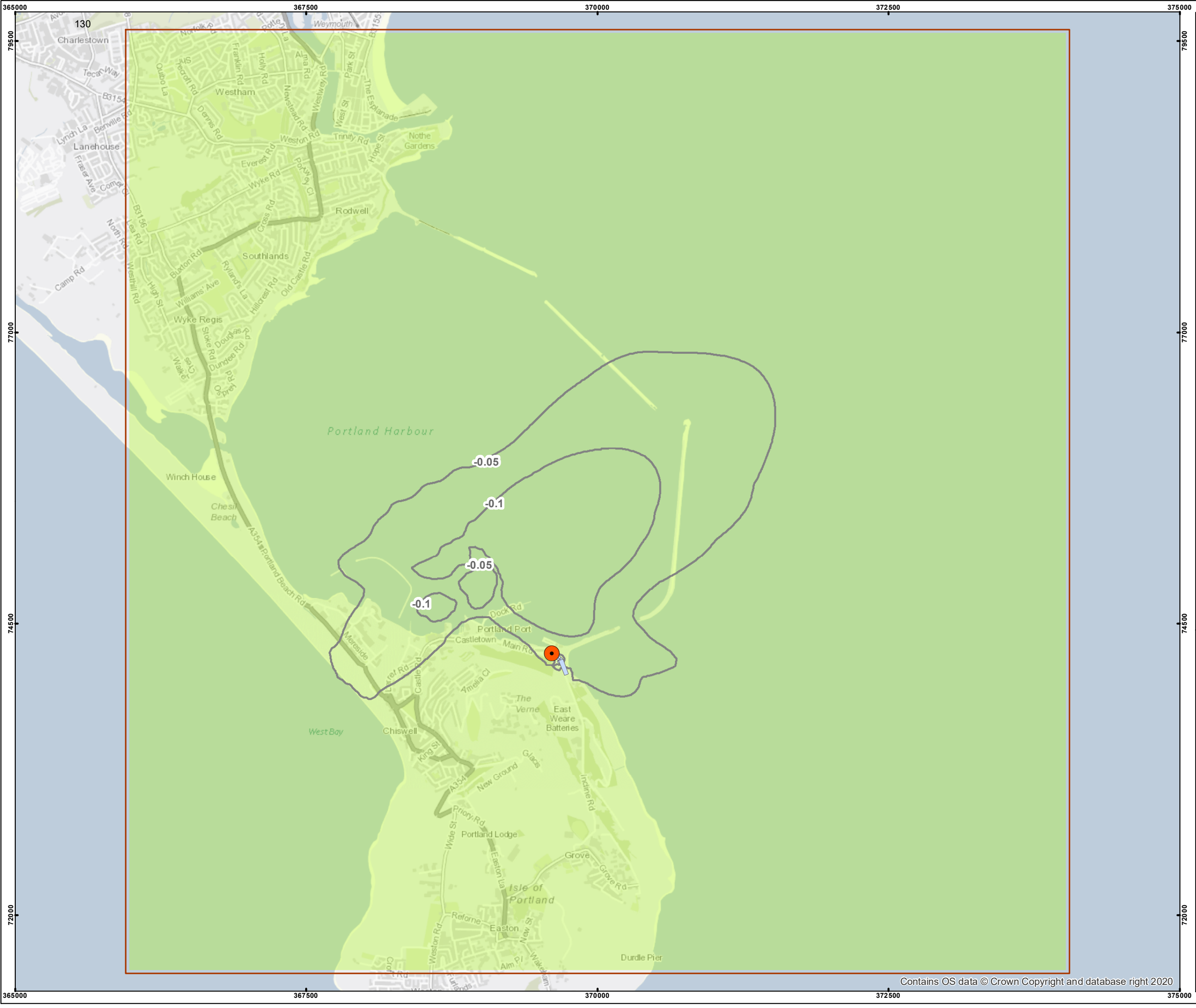
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0 0.3 0.6 1.2 km

Scale: 1:30,000

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Legend

- Facility stack
- Facility buildings
- Modelling domain
- Net change

Net particulate matter

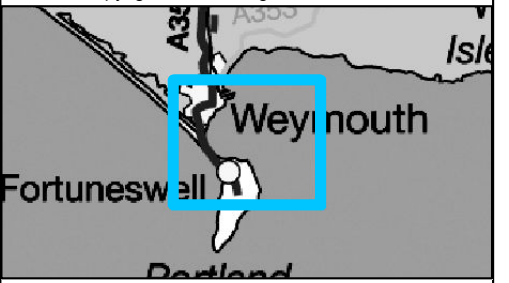
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- Increase

Notes:
 All particulate matter concentrations are displayed as concentrations (ug/m3)

Client:	Powerfuel
Site:	Portland
Project:	2953
Title:	

Figure 6 - Annual mean particulate matter net change

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