Wheelabrator TECHNOLOGIES

Deadline 3: Applicant's Response to the Examining Authority's Further Written Questions (ExQ1A)

Appendix 1.34 – Riverside Energy Park – Supplementary Report to the Project and its Benefits Report

Wheelabrator Kemsley (K3 Generating Station) and Wheelabrator Kemsley North (WKN) Waste to Energy Facility Development Consent Order

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Riverside Energy Park

Supplementary Report to the Project and its Benefits Report

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CORY
RIVERSIDE ENERGY

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1.1 Introduction

1.1.1 Cory Environmental Holdings Limited (trading as Cory Riverside Energy, ('Cory' or 'the Applicant') is applying to the Secretary of State under the Planning Act 2008 for a Development Consent Order ('DCO') in order to construct, operate and maintain an integrated energy park, to be known as Riverside Energy Park ('REP'), and an Electrical Connection (together 'the Proposed Development').

1.1.2 REP, as a Nationally Significant Infrastructure Project, will be determined in accordance with the National Policy Statements (NPS) EN-1, EN-3 and EN-5. The key policy requirements of the NPSs are to deliver:

- Climate Change Act commitments;
- Security and resilience in energy supply and transmission/distribution;
- Renewable/low carbon energy supply through electricity and heat;
- The waste hierarchy; and,
- Societal benefits.

1.1.3 As is most clearly set out in the **Planning Statement** (**7.1, APP-102**) and **The Project and Its Benefits Report** ('**PBR**') (**7.2, APP-103**) REP fully delivers the key policy requirements of the NPSs.

1.1.4 Further, these documents demonstrate how REP also delivers the policy priorities of the development plan (contained within both the London Plan and Local Plan policy of the London Borough of Bexley 'LBB') and other documents that are both important and relevant to the Secretary of State's decision, including the adopted and draft London Plan.

1.2 Purpose and Structure of this Supplementary Report

1.2.1 This document, the Supplementary Report to the PBR (the 'Report' or the 'Supplementary Report'), is supplementary to the PBR, updating the **PBR** (**7.2, APP-103**) on a number of matters that have occurred since submission of the DCO Application. The **PBR** (**7.2, APP-103**) and this Supplementary Report should be read together.

1.2.2 Principally, central government published the Waste Strategy for England 'Our Waste, our Resources: A Strategy for England', in December 2018 (the 'Resources and Waste Strategy' or 'RWS'). As the most recent national policy document addressing waste and resource management for England, the RWS is considered to be an important and relevant matter for the Secretary of State to consider.

1.2.3 Further, Cory has submitted both an application for an Environmental Permit (the 'EP Application') for REP (addressing both the Anaerobic Digestion facility and the Energy Recovery Facility 'ERF') and an application to confirm R1 (recovery) status.

1.2.4 The **Environmental Permit and Air Quality Note** (**8.02.06**) confirms that the EP Application has been Duly Made (December 2018, see **Paragraph 2.3.2**).

1.2.5 Within the EP Application, the Applicant has proposed emission limits for all point source emissions to air. These are in accordance with the requirements of the latest emissions limits (which are currently out to consultation) with one exception. Due to the Applicant's additional investment in modern advanced abatement technology, the proposed limit for oxides of nitrogen (NOx) are proposed to be significantly lower than required. This is discussed in more detail at **Section 3.6** of this Report.

1.2.6 The **Environmental Permit and Air Quality Note** (**8.02.06**) also confirms that the application for 'Preliminary' R1 status (all that can be achieved at this stage of the project) has been granted by the Environment Agency (on 9 April 2019, see **Paragraph 4.2.1**). This is discussed in more detail at **Section 3.6** of this Report.

1.2.7 Thirdly, responding to representations made in relation to the carbon assessment originally submitted, a new carbon assessment has been undertaken, the **'Carbon Assessment'** (**8.02.08**). This is discussed in more detail at **Section 3.2** of this Report.

1.2.8 Finally, Cory's continued involvement in achieving a district heating network (DHN) locally has informed a review of the **Combined Heat and Power ('CHP') Assessment** (**5.4, APP-035**), which has been updated. The **Combined Heat and Power ('CHP') Supplementary Report** (**5.4.1**) is submitted to the Examination at the same time as this Report and is referenced in this Supplementary Report. This is discussed in more detail at **Section 3.6** of this Report.

1.2.9 This Supplementary Report sets out how REP fulfils and supports the delivery of the RWS and the demonstrable steps set out in policy 5.17B/e of the adopted London Plan (proposed policy SI8/D/3 of the draft London Plan). It demonstrates that REP is a modern and efficient energy recovery facility that will take residual waste up the hierarchy (diverted away from landfill) and into homes and businesses as a source of renewable energy (that should include heat distribution).

1.2.10 The Supplementary Report is set out in the following order:

- **Section 2**: Decisions in cases where the National Policy Statement have effect
- **Section 3**: How REP supports the Key Themes of the Resources and Waste Strategy

- **Section 4**: Conclusions.

2 Decisions in cases where the National Policy Statement have effect

2.1 Introduction

2.1.1 The RWS is a wholly new national strategy, published in December 2018. It is not a planning policy document but is relevant to REP as it addresses both waste and resource management in England.

2.1.2 This chapter considers the role of the RWS in the Secretary of State's decision making.

2.1.3 Section 104(3) of the Planning Act 2008 makes clear that the Secretary of State must decide a DCO application in accordance with any relevant NPS unless an exception applies. The Planning Statement confirms (at paragraph 1.3.1 and section 6.4) that none of the exceptions set out in Section 104 apply.

2.1.4 Accordingly, the NPSs take primacy in terms of the Secretary of State's decision making.

2.1.5 The PBR focusses on NPS EN-1 and NPS EN-3, demonstrating that REP wholly accords with the policy priorities set out in both Statements.

2.1.6 As explained in the **Explanatory Memorandum** to the draft Development Consent Order (**3.2, APP-015**), the Nationally Significant Infrastructure Project ("NSIP") element of the Proposed Development comprises Work Numbers 1 and 2 in Schedule 1 to the **draft Development Consent Order (dDCO) (3.1, Rev 1**). Work Numbers 1 and 2 are the generating elements of REP, all of which are intrinsically linked to each other, are located within the same building, are controlled by the same control centre and will send electricity generated to the same electrical connection (the Electrical Connection in Work Numbers 9 and 10 of Schedule 1 to the **dDCO** (**3.1, Rev 1**)). See also the Applicant's response to First Written Question (1WQ) 1.0.3.

2.1.7 The NSIP therefore comprises 4 types of technologies:

- An Energy Recovery Facility ("ERF");
- Solar Photovoltaic Panels;
- Anaerobic Digestion facility; and
- Battery Storage.

2.1.8 The Planning Act 2008 created a new regime for the consenting of major infrastructure projects. If a project meets certain criteria that are defined under the Act, the project will be classified as an NSIP. This development consent regime and application process requires developers of NSIP projects to obtain a DCO to consent the construction, operation and maintenance of their projects.

2.1.9 Under the Planning Act 2008, the Proposed Development constitutes an NSIP because:

- it consists of “the construction or extension of a generating station” (Section 14 (1)(a) of the Planning Act 2008); and
- "its capacity is more than 50 megawatts” (Section 15 (2) of the Planning Act 2008).

2.1.10 NPSs set out the policy basis for NSIP developments. These are technology specific. The ERF generating element is a type of technology expressly referred to in NPSs EN-1 and EN-3. Accordingly, section 104 of the Planning Act 2008 applies to the ERF element of the REP NSIP.

2.1.11 However, there is currently no NPS for solar development, anaerobic digestion or battery storage. Section 105 of the Planning Act 2008 states the Secretary of State must have regard, as the decision maker to an application for an order granting development consent where a NPS does not exist for the type of development applied for, to any Local Impact Report and to any other matters which the Secretary of State considers are both important and relevant to the decision. This may include a variety of national planning and local planning documents, including NPSs.

2.1.12 NPSs set out the national case and establish the need for certain types of infrastructure, as well as identifying potential key issues that should be considered by the decision maker. Although there is no NPS which provides specific policy in relation to solar development, anaerobic digestion or battery storage, in previous applications where no NPS applies, the Secretary of State has applied relevant related NPSs as if the NPS governed the development in question. Therefore, the Applicant submits that both NPS EN-1 and EN-3 are important and relevant to his decision in respect of the whole of the REP.

2.1.13 See further the Applicant's response to 1WQ 1.0.4, which is submitted at Deadline 2.

2.2 National Policy Statement EN-1 (NPS EN-1)

2.2.1 In particular, with regard to NPS EN-1, and as set out at **Section 2.2** of the **PBR (7.2; APP-103)**:

- Applications for an energy type covered by the NPS should be determined on the basis that the Government has demonstrated need for that type;
- EN-1 covers energy from waste (paragraph 3.4.3) and identifies energy from waste as renewable energy generation given the principal purpose of the combustion of waste is to reduce the amount of waste going to landfill in accordance with the waste hierarchy and to recover energy from that waste as electricity or heat. In addition, paragraph 3.4.4 states that energy from waste can be used to generate "dispatchable" power, providing peak load and base load electricity on demand. NPS EN-1 states that "*As more*

intermittent renewable electricity comes onto the UK grid, the ability of...EfW to deliver predictable, controllable electricity is increasingly important in ensuring the security of UK supplies."

- The need identified by Government for new renewable electricity generation projects is urgent (paragraph 3.4.5 of NPS EN-1); and
- Substantial weight should be given to the contribution that projects would make towards satisfying the need identified by NPS EN-1 (paragraph 3.1.4).

2.2.2 NPS EN-1 is clear that nationally significant infrastructure is urgently required to deliver energy, from a diverse range of sources (including using waste as the fuel) and with a focus on renewable/low carbon supply.

2.2.3 The ERF element of REP is consequently an energy type covered by the NPS.

2.2.4 From **Paragraph 2.2.11**, the **PBR (7.2, APP-103)** presents the significant extent of that urgent demand, as set out in the NPS. New build generating capacity of at least 59GW is forecast as required, with around 33 GW of that required to come from renewable sources in order to meet renewable energy commitments. Since publication of NPS EN-1, total electricity capacity has fallen by over 10,000 MW, demonstrating the extent of the challenge remaining to be met in order to delivery policy. It is because of this that the Government does not consider it appropriate for planning policy to set targets for, or limits on, different technologies (NPS EN-1, paragraph 3.1.2). This is in part because it is not possible to make accurate predictions about the size and shape of energy demand in the future (NPS EN-1, paragraph 3.3.18).

2.2.5 From paragraph 2.2.16, the **PBR (7.2; APP-103)** recognises that some level of success has been made in terms of delivering renewable energy. New data shows that in 2017, 10.2 % of total energy consumption came from renewable sources; up from 9.2 per cent in 2016 (revised). Renewable electricity represented 27.9 per cent of total generation; renewable heat 7.7 per cent of overall heat; and renewables in transport, 4.6 per cent.[1]

2.2.6 However, this success is tempered by the stark warning by the Committee on Climate Change in its 2018 Report to the Government (the 'CCC 2018 Report'), that the '*UK is not on course to meet the legally binding fourth and fifth carbon budgets*' and will not be so '*until Government brings forward new fully funded policies, beyond the achievements to date on electricity generation and waste*.' The CCC 2018 Report identifies a need for at least 130 to 145 Twh of low carbon generation to be provided through the 2020s, in addition to that generation expected to be online by 2020.

2.2.7 Since publication of the CCC 2018 Report, Hitachi confirmed it was suspending work on its new nuclear power project at Wylfa Newydd. Wylfa Newydd was proposed to be one of a fleet of new nuclear reactors, designed to provide a

[1]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/736153/Ch6.pdf

minimum generating capacity of 2900 MW. This means that Wylfa Newydd now joins NuGen's Moorside and Oldbury as new nuclear power projects that have been abandoned completely or delayed with no known delivery date. This leaves Sizewell C in Suffolk, and Bradwell B in Essex as the only current potential nuclear new build projects but both are at an early stage, although Sizewell C is more advanced towards a DCO application. So far, the only new nuclear project to be granted a DCO is EDF Energy's Hinkley Point C, a 3.2GW plant in Somerset, which will power about 6m homes when complete.

2.2.8 Britain's old nuclear power stations supply about a fifth of the UK's electricity. However, five of the current eight nuclear sites will have shut by the end of the 2020s as they reach the end of their lifetime, with only Torness, Heysham and Sizewell B in Suffolk continuing to operate to 2030 and 2035 respectively. The government has also committed to shutting the country's last seven coal plants by 2025 at the latest[2].

2.2.9 As concluded at **Paragraph 2.2.22** of the **PBR (7.2, APP-103)**, the level of need identified in NPS EN-1 for new, diverse, secure, renewable/low carbon supply of energy remains significant and urgent. Significant weight should be given to this policy position and the contribution that all generating elements of REP will make in helping meet that need.

2.3 National Policy Statement EN-3 (NPS EN-3)

2.3.1 As set out in the **PBR (7.2, APP-103)** (from **Paragraph 2.2.23**), NPS EN-3 builds upon the generic principles established within NPS EN-1 which has a focus on renewable energy infrastructure, including biomass and waste combustion facilities.

2.3.2 At paragraph 2.5.2, NPS EN-3 makes clear that:

- The recovery of energy from the combustion of waste, where in accordance with the waste hierarchy, will play an increasingly important role in meeting the UK's energy needs;
- Where the waste burned is deemed renewable, this can also contribute to meeting the UK's renewable energy targets; and
- The recovery of energy from the combustion of waste forms an important element of waste management strategies in both England and Wales.

2.3.3 The **PBR (7.2, APP-103)** demonstrates that REP delivers against all three matters:

- REP diverts waste away from landfill to a facility that recovers energy from the combustion of that waste. The draft London Plan (dLP) states that in 2015 over 5 million tonnes of London's waste was disposed of to landfill

2 http://www.world-nuclear.org/information-library/country-profiles/countries-t-z/united-kingdom.aspx

(paragraph 9.8.2). The **PBR (7.2, APP-103)** demonstrates[3] that significant tonnages of London's residual waste remains to be diverted from landfill, even assuming the aspirational reduction and recycling targets set out in the dLP are achieved. The waste proposed to be treated at the ERF within REP is reasonably deemed to be not recyclable nor readily reusable and its diversion from landfill delivers both the waste hierarchy and an important contribution to meeting the UK's energy needs.

- As demonstrated at **Section 3.2** of the **PBR (7.2, APP-103)**, REP is properly described as a source of renewable/low carbon energy. It will generate renewable/low carbon electricity for the equivalent of c.140,000 homes; significantly in excess of the number of households within the London Borough of Bexley. In addition, REP incorporates the Anaerobic Digestion facility, which will treat (recycle) up to 40,000 tonnes of food and green wastes and provide a wholly renewable supply of energy.

- Finally, the **PBR (7.2, APP-103)** demonstrates that REP is an important element of the waste management infrastructure required in London. In addition to diverting non-recyclable waste from landfill to renewable/low carbon energy recovery, REP will also enable the recovery of secondary materials: glass, metals and aggregates. These outcomes deliver both the waste hierarchy and the circular economy, avoiding the use of virgin resources and enabling growth in the remanufacturing sector.

2.3.4 **Section 4.2** of the **PBR (7.2, APP-103)** demonstrates how REP delivers the waste hierarchy, both in principle (by reference to European legislation and national policy/strategy) and in accordance with the local waste management strategy. The **London Waste Strategy Assessment** ('**LWSA**') (**Annex A** of the **PBR, 7.2, APP-103**) incorporates a range of scenarios based on the different waste forecasts and recycling assumptions set out in both the adopted and draft London Plans. It is a comprehensive assessment of the waste strategy within London. In all the scenarios, there remains a need for additional residual waste treatment capacity, particularly if London is to achieve its policy priorities of net self-sufficiency and reduced reliance on landfill.

2.3.5 These are key priorities to achieve. In 2015 London exported 11.4 million tonnes of waste, with 5.1 million tonnes of that exported to landfill[4], predominantly to the East of England and South East of England, but also utilising facilities on mainland Europe.

2.3.6 The overriding conclusion of the **LWSA (7.2, APP-103)** is that, even based on the most conservative estimates, London requires new infrastructure in order to deliver the Mayor's policies for sustainable and secure waste management, and energy supply. REP forms an important part of the overall solution, with no requirement for public funding support.

[3] Including through the London Waste Strategy Assessment, presented at Annex A of the PBR.

[4] Draft London Plan, paragraphs 9.8.1 and 9.8.2.

2.3.7 Indeed, as is also demonstrated in the **LWSA (7.2, APP-103)**, it is evident that REP alone will not be sufficient to meet the needs of London and nearby administrative areas. Within their respective development plan documents there is identified a need for c.2 million tonnes of residual waste treatment capacity required across the county councils of Essex, Hertfordshire, Kent, Norfolk, Surrey and Suffolk.

2.3.8 The continued need for energy recovery facilities and their important roles in delivering both the waste hierarchy and a source of renewable/low carbon energy is discussed further at **Sections 3.2** and **3.3** of this Report.

2.3.9 Cory operates the Riverside Resource Recovery Facility, an energy recovery facility that has already achieved R1 status, a test established by the Waste Framework Directive 2008 to designate waste combustion facilities as 'recovery' rather than 'disposal'. As confirmed in the **Environmental Permit and Air Quality Note** (**8.02.06**), REP has already achieved 'Preliminary' R1 status. This matter is addressed further at **Section 3.6** of this Report.

2.3.10 **Section 3.4** of the **PBR (7.2; APP-103)** outlines how REP represents real potential for CHP. Drawing upon the **CHP Supplementary Report** (**5.4.1**), **Section 3.6** of this Report, presents Cory's continued and demonstrable efforts to achieve this potential and make a local district heat network a reality.

2.3.11 REP combines renewable/low carbon energy supply and taking waste out of landfill; making an effective and material contribution to London reducing its carbon emissions and achieving the policy priority of being a Zero Carbon City by 2050. This is outlined at **Section 3.3** of the **PBR (7.2, APP-103)** and discussed further at **Section 3.2** of this Report.

2.3.12 NPS EN-3 recognises (at paragraph 2.5.2) the combined benefits of recovering energy from waste combustion, contributing both to renewable energy targets and making an important element of waste management in England and Wales. REP is well located to take wastes from both across London and further afield, making optimum use of a site already in use for waste management, providing complementary technologies to divert waste from landfill and recover renewable/low carbon energy.

2.3.13 The role of REP, principally through the ERF, but with all of its elements making important contributions, delivers the NPS policy objectives, not least as concluded at **Section 4.4** of the **PBR (7.2, APP-103)**.

2.4 The Resources and Waste Strategy (RWS)

2.4.1 Section 104(2) requires that the Secretary of State 'must have regard to' any other matters that are considered both important and relevant.

2.4.2 As the most recent national policy document addressing waste and resource management for England, the RWS is considered to be an important and relevant matter for the Secretary of State to have regard to in his decision

making. Consequently, this Report sets out how REP supports delivery of the policy goals and aspirations of RWS 2018.

2.4.3 These are discussed further in the next section of this Report.

3 How REP supports the Key Themes of the Resources and Waste Strategy

3.1 Introduction

3.1.1 *'Natural capital is one of our most valuable assets. The air we breathe, the water we drink, the land we live on, and the stock of material resources we use in our daily lives are at the heart of our economy, our society and our way of life. We must not take these for granted.*

Our Strategy sets out how we will preserve our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy.' (RWS, page 7)

3.1.2 The RWS opens with a candid recognition of the interconnectedness between natural and material resources, and consequently the connectivity that is held between resource and waste management and the benefits to be achieved through addressing both.

3.1.3 The two overarching objectives of the RWS (page 17) are:

1 - to maximise the value of resource use; and

2 - to minimise waste and its impact on the environment.

3.1.4 On page 18, the RWS explains that a new monitoring framework is to be established, with an initial focus on greenhouse gas emissions and natural capital. Policies within the RWS are expected 'to contribute to a wide range of economic and social goals.'

3.1.5 As demonstrated in the **PBR (7.2, APP-103)** (summarised at **Section 6** of the **PBR (7.2, APP-103)**) maximising the value of resource use and minimising the impacts of waste are achieved through REP. As confirmed in the following sections, which respond directly to the RWS, REP will result in greenhouse gas emissions reductions and contribute to natural capital, not least through avoided use of virgin materials. The Proposed Development is demonstrated to be an important element of the infrastructure required to meet the RWS objectives.

3.1.6 Through both energy recovery and reducing waste disposal to landfill, the ERF within REP will maximise the value of residual waste and minimise its impact on the environment. This is in line with the RWS; '*Growth in energy from waste and alternative residual waste treatment infrastructure will divert further waste from landfill'* (RWS, page 20).

3.1.7 The Anaerobic Digestion facility within REP will contribute to '*eliminating biodegradable waste to landfill*' *(*RWS, page 20) and support the delivery of the food waste priorities set out in the RWS.

3.1.8 The post-combustion recovery of secondary materials (glass, metals and aggregates) enables REP further to contribute to the circular economy, avoiding the use of virgin resources and its consequent impact on natural capital.

3.1.9 Through the incorporation of the Solar Photovoltaic Panels and Battery Storage, REP delivers an interconnected renewable/low carbon project that optimises the use and provision of both natural and material resources.

3.1.10 This section considers each element of the RWS relevant to REP, demonstrating how REP supports the policy priorities of:

- Achieving the circular economy, including through the supply of renewable/low carbon energy;
- Recovery of food waste;
- Eliminating greenhouse gases from landfill; and
- Delivering new energy infrastructure.

3.2 Achieving the Circular Economy, including through the supply of renewable/low carbon energy

Overview

3.2.1 The RWS states '*The environment will benefit as we reduce landfill and carbon emissions, and use fewer finite natural resources.* …' (page 25). Alongside environmental benefits, the RWS identifies economic benefits, including turning waste into wealth, improved resilience to raw materials and less vulnerability to price volatility; and societal benefits (see RWS, page 25).

3.2.2 Valuing resources to gain these benefits is achieved through a lifecycle approach and delivery of the circular economy. The RWS confirms (at page 26) that reusing and recycling materials helps to reduce the need for virgin materials and prevent the impacts arising from its extraction and processing.

''But it's not just in material reuse that the circular economy delivers benefits. It's also relevant to energy generation and savings. Incineration non-recyclable or contaminated waste (such as food packaging) can generate energy. Bio-waste can also be used to make bio-gas, a renewable energy source' (RWS, page 26).

3.2.3 Not least at **Section 4.4**, the **PBR (7.2, APP-103)** demonstrates how REP delivers optimised design that enables recovery of both materials and renewable/low carbon energy achieving the environmental, economic and societal benefits outlined in the RWS.

Recovering renewable/low carbon energy

3.2.4 Drawing upon Government guidance documents,[5] the NPS, and the CCC 2018 Report,[6] **Section 3.2** of the **PBR (7.2, APP-103)** demonstrate REP's position as a supply of renewable/low carbon energy.

3.2.5 This is achieved through: the fuel used within the ERF, which is recognised as both partially renewable and low carbon; the operational efficiency of the ERF; incorporating anaerobic digestion and solar photovoltaic technologies; having a viable grid connection; and incorporating battery storage so enabling the energy produced on site to be more effective and flexible.

3.2.6 The **Carbon Assessment** (**8.02.08**) confirms that the carbon benefit of REP '*is about 137,000 tonnes of CO_2-equivalent per year, or about 229 kg CO_2e per tonne of waste processed, compared to sending the same waste for disposal in a landfill site*' (see **Paragraph 1.1.4**). Further, that if heat is exported, '*the benefit increases to 157,000 tonnes of CO_2-e, or 263 kg CO_2e per tonne of waste processed.'* (see **Paragraph 1.1.5**)

3.2.7 The **Carbon Assessment** (**8.02.08**) confirms that sensitivities to changes in waste composition, landfill gas recovery rates, and the source of displaced electricity have all been considered. '*In all cases, the REP ERF continues to have a benefit over landfill.*' (see **Paragraph 1.1.6**)

3.2.8 Further, the **Carbon Assessment** (**8.02.08**) demonstrates that the ERF is most likely to displace generation from CCGT[7], gas engines and diesel engines. Other renewable/low carbon energy sources including nuclear, wind or solar can be expected to run all the time, as the marginal operating costs are low and likely to be supported by public subsidies that are generally not available to REP. Consequently, REP is unlikely to affect their operation and the grid would continue to receive renewable/low carbon energy from these sources, alongside that generated by REP. More detail is provided at **Section 3.1** of the **Carbon Assessment** (**8.02.08**).

3.2.9 Consequently, REP is correctly described as a supply of renewable/low carbon energy.

Recovering secondary materials

3.2.10 Following combustion, the resultant incinerator bottom ash (IBA) will be transported off site to be treated to recover glass, metals and a secondary aggregate. '*Constructing, maintaining and repairing our built environment … represents a major material resources flow in the economy*.' (RWS, page 45).

[5] Notably the EfW Debate Guide and the Renewable Energy Action Plan

[6] Reducing UK emissions – 2018 Progress Report to Parliament, CCC, June 2018. https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/

[7] combined cycle gas turbines

The materials recovered from the ERF will enable the construction industry to further reduce its reliance on raw materials and increase its resource efficiency.

3.2.11 In addition, the APCR (air pollution control residue, the fine powder that remains following the cleaning of the gases from energy recovery facilities) is likely to be be recycled, through the same or a similar process to that which has been developed by Carbon8.[8] Specifically using APCR from energy recovery facilities, such as the REP ERF, Carbon8 Aggregates produces carbon-negative materials for construction. The company's first commercial plant is located at Lignacite in Brandon and can currently process up to 30,000 tonnes of APCR per year '*or over 65,000 tonnes of aggregate product; the majority of which is used by Lignacite in both their dense and medium dense aggregate blocks*'.[9] A second Carbon8 Aggregates plant was commissioned in February 2016 (in Avonmouth) with another three facilities due to be open by the end of 2020.

3.2.12 Having recovered a significant level of renewable/low carbon energy (primarily through the ERF) the Battery Storage will enable that power to be held on site, increasing its value not least through increased resilience in energy supply. The Anaerobic Digestion facility recovers both '*low carbon renewable energy and digestate, which can be used as fertiliser, compost or soil improver'* (RWS, page 71).

3.3 Recovery of Food Waste

3.3.1 RWS recognises that anaerobic digestion represents '*the best environmental outcome for food waste that cannot be prevented*' (RWS, page 71).

3.3.2 The RWS also states an intention to ensure that every householder and appropriate business has a weekly separate food collection. Already ahead of this, potentially legislative, requirement, the London Borough of Bexley provides a weekly separate food collection service to a large proportion of its residents.

3.3.3 As explained throughout the **PBR (7.2, APP-103)** (introduced at **Paragraph 4.2.46**) REP incorporates an Anaerobic Digestion facility, designed to respond to local demand, which would include providing an 'in borough' local treatment option for the London Borough of Bexley.

3.4 Eliminating Greenhouse Gases from Landfill

3.4.1 *'No matter what we do, we will generate waste … Even those materials that can be given a new lease of life by reuse or reprocessing will eventually reach a point of such little value that they need to be disposed of..'* (RWS, page 67). The fuel for the ERF is just this type of waste, the residual wastes that remain following practicable reuse or recycling. RWS explicitly recognises (not least at

[8] http://c8s.co.uk (accessed 16.05.19)

[9] http://c8s.co.uk/carbon8-aggregates (accessed 16.05.19)

page 20) the role to be played by growth in energy from waste and alternative residual waste treatment infrastructure to divert further waste from landfill.

3.4.2 **Section 3.3** of the **PBR (7.2, APP-103)** directly addresses how REP contributes to carbon emissions reduction, not least through the diversion of residual waste from landfill. RWS advises (pages 19 & 20) that methane is '*25 times more potent than CO2, and … accounted for 11% of the UK National Inventory of greenhouse gases in 2016.'*

3.4.3 The **Carbon Assessment** (**8.02.08**) (at **Table 8**) provides a comparison of the greenhouse gas emissions arising from landfill and the ERF, assuming the ERF is producing electricity only. This is summarised in **Table 3.1** below.

Table 3.1: Summary of Table 8 from ERF Carbon Assessment: GHG emissions comparison, electricity-only

Parameter	Unit	RRRF Waste	Design Waste	Reduced Food	Future Waste
Total landfill emissions	t CO_2e	223,792	260,132	206,691	258,864
Total ERF emissions	t CO_2e	86,389	50,227	99,044	45,969
Net Benefit of ERF	t CO_2e	137,403	209,905	107,647	212,895
	t CO_2e/t waste	0.230	0.320	0.197	0.345

3.4.4 Assuming the ERF operates as CHP, the net benefits gained are even greater, ranging from 127,762 to 233,011 t CO2e or 0.234 to 0.378 t CO2e/t waste (see **Table 9** of the **Carbon Assessment** (**8.02.08**)).

3.4.5 Methane is a highly potent greenhouse gas and is the predominant greenhouse gas emitted from landfill. As summarised at **Paragraph 3.5.4** of the **PBR (7.2, APP-103)**, there are real advantages to avoiding its generation.

3.4.6 Recognising (on page 76) that '*landfill is the least preferred option given its environmental impact*', RWS welcomes '*further market investment in residual waste treatment infrastructure'* (page 79).

3.4.7 Not least as confirmed at **Paragraph 6.1.4** of the **PBR (7.2, APP-103)**, REP is an industry-led, privately funded project, reliant upon no public subsidy. The ERF within REP will divert residual waste, which would otherwise be disposed

of at landfill, to energy recovery and so deliver the Resource and Waste Strategy's ambitions to remove waste from the least preferred option, landfill.

3.5 New Energy Infrastructure

3.5.1 '*We cannot increase resource efficiency without the right waste infrastructure*.' (RWS, page 78)

3.5.2 Through footnote 112, the RWS directs the reader to the evidence annex ('RWS Evidence Annex'), where its own internal analysis and that undertaken by Tolvik Consulting Ltd, 'UK Residual Waste: 2030 Market Review', are presented.

RWS Evidence Annex, Internal Analysis

3.5.3 At page 78, the RWS annex advises that the internal analysis indicates that significant additional residual waste energy recovery capacity '*would not necessarily be needed*' and that the report prepared by Tolvik '*concluded that there would not be a gap in incineration capacity by 2030*'.

3.5.4 This reference has been used to suggest that there is consequently no need for REP and no desire by Government to see new energy recovery capacity. However, such suggestions are misplaced, as is addressed in detail in the **Assessment of Defra Waste Strategy** prepared by Tolvik Consulting ('Tolvik') (provided at **Appendix A** of this Report). Tolvik has authored many reports that forecast future waste arisings and management options, but most notably the company authored 'UK Residual Waste:2030 Market Review' (published in July 2018), the document referred to in the RWS annex.

3.5.5 **Paragraph 3.5** of the **Assessment of Defra Waste Strategy** (**Appendix A** of this Report) is clear:

3.5.6 It is very important to note that:

'*The statement in paragraph 3.3 above from the* [RWS] *Evidence Annex that "additional residual waste energy capacity would not necessarily be needed" is conditional on three assumptions; and*

The [RWS] Evidence Annex also, correctly in Tolvik's opinion, states that *"the risk of a gap in capacity is, however, still relevant, as projections on future capacity, exports and arisings are subject to uncertainty."* [page 78]

It is therefore necessary to consider the analysis in Figure 1 in more detail.'

3.5.7 The **Assessment of Defra Waste Strategy** (**Appendix A** of this Report) presents that further analysis to conclude (at **Paragraph 3.16**) that '*the development* [of] *at least 5.0Mt and potentially up to 8.2Mt of additional EfW capacity would more realistically reflect future requirements and therefore would be consistent with the strategy.*'

RWS Evidence Annex, UK Residual Waste: 2030 Market Review

3.5.8 The **Assessment of Defra Waste Strategy** (**Appendix A** of this Report) also considers UK Residual Waste: 2030 Market Review, which is referenced in the RWS Evidence Annex but was commissioned by the Environment Services Association as an independent review of six third party reports and analysis relating to the Residual Waste market in the UK.

3.5.9 Again, it is noted that that the conclusions of the UK Residual Waste: 2030 Market Review are based on a number of assumptions, the consequence of which is that it is not directly comparable to the internal analysis presented in the RWS Evidence Annex.

3.5.10 The **Assessment of Defra Waste Strategy** (**Appendix A** of this Report) summarises the scenarios considered in UK Residual Waste: 2030 Market Review to conclude (at **Paragraphs 4.11** and **4.12**):

'*Rather than, as the WRS 2018 asserts, no new EfW being needed if the Government's recycling target of 65% by 2035 is met, the* ***CE Target scenario in Tolvik Study effectively asserts that with such a recycling rate that at least 3.0Mt*** *(2.5Mt of additional EfW capacity plus 0.5Mt adjustment for 2035 target date)* ***and, allowing for exports, potentially up to 5.5Mt of additional EfW capacity could be needed in the UK***.

Furthermore, if, as expected, the 65% municipal waste recycling rate in the CE Target scenario in the Tolvik Study is not achieved and instead the municipal waste recycling rate in 2035 is 60% as set out in the 55% Household scenario, then the Tolvik Study suggests an additional 3.5Mt of EfW capacity could be needed over and above that in the CE Target scenario – i.e. 6.5Mt potentially up to 9.0Mt.'

3.5.11 In these quotes: 'WRS 2018' is the RWS; the 'Tolvik Study' is UK Residual Waste: 2030 Market Review; 'CE' stands for Circular Economy; and the emboldened text is as it appears in the original report.

3.5.12 **Section 5** of the **Assessment of Defra Waste Strategy** (**Appendix A** of this Report) considers the appropriateness of the **PBR (7.2, APP-103)** referencing another Tolvik report, 'Residual Waste in London and the South East: Where is it going to go?' This has been done within the **PBR (7.2; APP-103)** (from **Paragraph 4.2.23**) to consider the "real world" context of waste management in London and the South East. The **PBR (7.2, APP-103)** quotes from the Tolvik report, focussing on the 'Central scenario', which concludes that if a zero waste to landfill policy is to be achieved by 2025, 4.7 million tonnes of new ERF capacity would be required in London and the South East beyond that which is already operational.

3.5.13 **Paragraph 5.5** of the **Assessment of Defra Waste Strategy** (**Appendix A** of this Report) concludes that it is reasonable, '*in understanding the need for REP in the context of the local market in London and the South East for the* [PBR] *to*

focus upon the analysis in the Central scenario of [Residual Waste in London and the South East: Where is it going to go?]'.

Overview

3.5.14 The NPS, both EN-1 and EN-3, identify energy from waste as a type of infrastructure that is needed. So too does RWS, which is wholly supportive of new residual waste treatment capacity, particularly encouraging '*developments that increase plant efficiency, minimise environmental impacts whilst upholding our existing high standards of emissions control …'* (page 79).

3.5.15 REP is a wholly modern, integrated and efficient plant that will deliver all of these aims.

3.5.16 In short, there remains a substantial level of need for new waste treatment infrastructure for residual wastes, and REP makes an appropriate contribution to meeting this need.

3.5.17 Further, not least as set out at paragraphs 2.2.4, 3.3.21 and 4.1.9, NPS EN-1 is clear that it is not the role of the planning system to deliver specific amounts of generating capacity for each technology type in the NPS or to arbitrarily limit capacity. Instead, the '*role of the planning system is to provide a framework which permits the construction of whatever Government – and players in the market responding to rules, incentives or signals from Government – have identified as the type of infrastructure we need in the places where it is acceptable in planning terms.'* (paragraph 2.2.4, NPS EN-1)

3.6 Increased Plant Efficiency

R1 status

3.6.1 At page 77, RWS states its intention '*to secure a substantial increase in the number of EfW plants that are formally recognised as achieving recovery status, and will ensure that all future EfW plants achieve recovery status*.'

3.6.2 It is notable that Cory's existing plant, Riverside Resource Recovery Facility ('RRRF'), has already achieved R1 status, demonstrating the Applicant's commitment to, and ability to meet, this standard.

3.6.3 The **Environmental Permit and Air Quality Note** (**8.02.06**) provides the complete R1 Application that was submitted to the Environment Agency in February 2019. '*As demonstrated in the R1 Application, the design of the ERF will achieve an R1 value of 0.87, which demonstrates a significant margin above the relevant threshold*' (see **Paragraph 4.2.2**).

3.6.4 Consequently, 'Preliminary' R1 status (all that can be achieved at this stage of the project) was granted by the Environment Agency on 9 April 2019 (see **Paragraph 4.2.1** of the **Environmental Permit and Air Quality Note** (**8.02.06**)).

3.6.5 As confirmed in **Paragraph 4.3.1** of the **Environmental Permit and Air Quality Note** (**8.02.06**)**, '***the Applicant intends on maintaining R1 status throughout the operational life of the ERF*.'

3.6.6 This confirms that the ERF is properly to be understood as a 'recovery' facility, and not a 'disposal' facility, and that it is at the right level of the waste hierarchy making an appropriate contribution to energy security and the circular economy.

CHP delivery

3.6.7 RWS also identifies (at page 77) using '*EfW plants as a source of heat for district heat networks*' as another element of making plant more efficient, pledging to remove the barriers that currently constrain this practice. One method to achieve success is '*to ensure, where appropriate, future plants are situated near potential heat customers*.'

3.6.8 **Section 3.4** of the **PBR (7.2; APP-103)** sets out the work undertaken by Cory to deliver CHP prior to submission of the DCO Application. It confirms that REP is situated within a Heat Network Priority Area and is well located to connect to heat demand, including the substantial regeneration project across Thamesmead, comprising up to 20,000 homes together with commercial development.

3.6.9 **CHP Supplementary Report** (**5.4.1**) has updated the previous assessment and reports on the continued efforts of the Applicant make a district heating network a reality. In short, **CHP Supplementary Report** (**5.4.1**) concludes that:

- REP responds directly to the outcomes sought in NPSs EN-1 and EN-3, being designed at the outset as CHP Enabled and therefore fully capable of exporting heat from the commencement of operations, with all the required on-site infrastructure in place (see **Section 1.2** of the **CHP Supplementary Report** (**5.4.1**));
- The Applicant has implemented, and will continue to implement, demonstrable steps, as required by London policy (see **Section 2** of the **CHP Supplementary Report** (**5.4.1**));
- There is sufficient heat demand within the locality to accommodate the heat produced from REP and RRRF[10] (see **Section 3** of the **CHP Supplementary Report** (**5.4.1**)); and
- REP achieves the required value for the CIF[11] when operating in electricity-only mode, confirming that REP complies with relevant London policies ((see **Section 4** of the **CHP Supplementary Report** (**5.4.1**)).

[10] Riverside Resource Recovery Facility

[11] Policy 5.17 'Waste capacity' of the London Plan stipulates that technologies generating energy from London's non-recyclable waste must achieve a minimum greenhouse gas performance level, known as the Carbon Intensity Floor (CIF). The CIF is set at 400 grams of carbon dioxide equivalent generated per kilowatt hour (kWh) of electricity generated.

3.6.10 The continued efforts of the Applicant to progress a district heating scheme are recognised in Peabody's letter of 17 April 2019 (provided at **Appendix A** to the **CHP Supplementary Report** (**5.4.1**) which concludes with support for '*Cory's ongoing support and commitment to the collective goal of developing a heat network in Thamesmead and Belvedere to serve the local area which will utilise heat from RRRF and REP*.'

3.6.11 REP is CHP Enabled and the Applicant continues to contribute positively to enabling the achievement of a district heat network that would utilise the heat from the Proposed Development. This is wholly aligned to the policy and objectives of both RWS and the NPS and should consequently benefit from '*substantial additional positive weight'* (NPS EN-1, paragraph 4.6.8).

Minimised environmental impacts

3.6.12 Through its optimised design (described at **Section 5** of the **PBR (7.2, APP-103)**) REP will minimise environmental impacts and optimise the potential benefits.

3.6.13 The potential for adverse effects from REP are limited, a positive outcome achieved through both good site choice and implementation of the good design principles discussed at **Section 5.2** of the **PBR (7.2, APP-103)**. **Section 5.3** of the **PBR (7.2, APP-103)** demonstrates how societal gain is achieved both through the economic value to be realised through investment in the area and job opportunities and through the potential for a district heating network.

3.6.14 REP incorporates river transport. This element of the Proposed Development will reduce transport emissions, deliver a key element of the Healthy Streets approach set out in the Mayor's Transport Strategy, and provide new job opportunities. This unique opportunity delivers benefits across the environment, the economy and society.

3.6.15 Optimisation of the development effects are summarised at **Section 5.5** of the **PBR (7.2, APP-103)**, including the use of a biodiversity metric to determine the off-site measures best placed to deliver biodiversity net gain.

Upholding the highest standards of emissions control

3.6.16 REP will deliver the highest standards of emissions control.

3.6.17 This is clearly demonstrated in the **Environmental Permit and Air Quality Note** (**8.02.06**), which advises (at **Section 3.2**) that the latest Waste Incineration BREF[12] are currently being consulted upon by the European Commission; nonetheless, these, most stringent emissions limits, have been applied in designing the ERF.

3.6.18 The EP Application for REP (for both the ERF and the Anaerobic Digestion facility) has been submitted to the Environment Agency and confirmed as

[12] Waste Incineration BAT Reference Document. 'BAT' stands for 'Best Available Technology'.

having been 'Duly Made' (see **Paragraph 2.3.2** of the **Environmental Permit and Air Quality Note** (**8.02.06**)). Consultation on the EP Application was undertaken over the period 13 February 2019 to 13 March 2019 with statutory consultees and the general public. '*It is understood by the Applicant that 'no significant concerns' have been raised by the Statutory Consultees on the information presented in the EP application.*' Further, the Applicant understands that no responses have been received from the general public (see **Paragraphs 2.5.3** and **2.5.4** of the **Environmental Permit and Air Quality Note** (**8.02.06**)).

3.6.19 **Paragraph 3.2.5** of the **Environmental Permit and Air Quality Note** (**8.02.06**) confirms that the emissions limits proposed within the EP Application are in accordance with the forthcoming Waste Incineration BREF. In addition, the EP Application proposes that the emissions limits for NOx are significantly lower than required.

3.6.20 **Section 3.3** of the **Environmental Permit and Air Quality Note** (**8.02.06**) discusses the technology available to ERF for NOx emissions abatement, which comprise Selective Non-Catalytic Reduction ('SNCR'); and Selective Catalytic Reduction ('SCR').

3.6.21 **Paragraph 3.3.4** of the **Environmental Permit and Air Quality Note** (**8.02.06**) confirms that SNCR is widely deployed across waste, biomass and coal power plants in the UK and Europe, including at RRRF. '*NOx emissions of 120 mg/Nm^3 can be achieved in waste fired facilities with SNCR abatement*.'

3.6.22 **Paragraph 3.3.5** of the **Environmental Permit and Air Quality Note** (**8.02.06**) describes SCR, '*as a means of converting NOx, with the aid of a catalyst, into nitrogen, water and carbon dioxide. SCR is the leading technology in the abatement of NOx from combustion systems across Europe*.' Paragraph 3.3.10 advises that NOx emissions of 75 mg/Nm^3 have been demonstrated at ERF using SCR; clearly this is demonstrably lower than that achieved by SNCR.

3.6.23 SCR systems are recognised in the **Environmental Permit and Air Quality Note** (**8.02.06**) to be considerably more complicated and capital intensive than SCNR systems. However, the Applicant considers SCR to be a 'cutting-edge' modern technology and has chosen to install it at the ERF.

> … *the Applicant has proposed what is understood to be the 'lowest' NOx emission limit within the EP application for any large-scale conventional ERF within London or indeed the UK, being 75 mg/Nm^3. This is a lower emissions limit than that assumed in the ES for the DCO application, being. As reported in the DCO application (6.1, APP-044), emissions of NOx, with an emission limit of 120 mg/Nm^3, will have a 'negligible' impact at sensitive receptors. Therefore, in applying for an emission limit of 75 mg/Nm^3 within the EP application, the impact will be less than predicted in the DCO application*.' (see **Paragraph 3.3.14** of the **Environmental Permit and Air Quality Note** (**8.02.06**)).

4 Conclusions

4.1.1 Whilst the Secretary of State must determine the DCO Application for REP in accordance with the relevant National Policy Statements, the RWS is correctly recognised as an important and relevant matter in the Secretary of State's decision making.

4.1.2 This Report both: confirms REP's compliance with and delivery of the NPS policy priorities; and demonstrates that REP will make a positive contribution to achieving the objectives of the RWS.

4.1.3 The PBR and this Supplementary Report set out the wide range of benefits to be achieved through REP, which can be summarised as:

- The provision of new electricity generating capacity - a recognised need in NPS EN-1 and that is demonstrated to remain;
- The supply of renewable/low carbon electricity – a recognised urgent need in NPS EN-1 and to which substantial weight must be attached. The NPS and RWS, consistent with other government policy, wholly supports the role of energy from waste in contributing to a more sustainable electricity supply;
- Enabling resilience in London's energy supply, contributing to the diversity of energy sources located within the capital;
- Enabling London to be self-sufficient in its waste management capacity, even when applying the most conservative assumptions – as supported by the RWS;
- Delivery of the waste hierarchy, by taking waste out of landfill, the option of last resort – as supported by NPS EN-1, NPS EN-3 and the RWS;
- Private investment in new energy recovery plant, with high levels of efficiency and the highest standards of emissions control – as supported by the RWS; and
- Working to deliver the potential for combined heat and power, connecting to a district heat network leading to substantial regeneration including social housing – as supported by NPS EN-1, EN-3 and the RWS.

4.1.4 Climate change remains a most pressing priority to which REP responds twofold: taking waste out of landfill, avoiding the production of methane, a most potent greenhouse gas; and efficiently recovering (and storing) renewable/low carbon energy (as both electricity and heat).

4.1.5 REP responds directly to the outcomes sought in both the NPS and RWS. It is a market led, industry funded project that will make a significant contribution to delivering the urgent and substantial need for new, renewable/low carbon energy infrastructure.

Appendix A Assessment of Defra Waste Strategy

TOLVIK CONSULTING

The Waste and Bioenergy Experts

Client: **Cory Riverside Energy**

Riverside Energy Park – Assessment of DEFRA Waste Strategy

16 May 2019

Final 3.0

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Author	AJ	AJ	AJ	
Reviewer	CJ			

1. BACKGROUND

1.1. Tolvik Consulting Ltd. ("Tolvik") is a specialist provider of independent market analysis and commercial advisory services to the waste and bioenergy sectors.

1.2. Tolvik were authors of the "*UK Residual Waste: 2030 Market Review*" referred to in Section 4.3 of the Evidence Annex to "*Our Waste, Our Resources: A Strategy for England*" ("WRS 2018") issued by DEFRA in December 2018.

1.3. Tolvik were also authors, in October 2018, of the report "*Residual Waste in London and the South East: Where is it going to go?"* referred to in the document entitled "The Project and Its Benefits" (7.2, APP-103) prepared by Cory Environmental Holdings Limited ("Cory") for its application for a Development Consent Order in respect of the Riverside Energy Park ("REP").

1.4. On 12 February 2019 the Greater London Authority ("GLA") submitted a relevant representation into the Examination of REP (RR-075), which suggests that the development of the Energy from Waste ("EfW") element of REP is inconsistent with WRS 2018:

"Furthermore, the Resources and Waste Strategy (RWS) and Budget 2018 sets out "the Government's long-term ambition to maximise the amount of waste sent to recycling instead of incineration and landfill", including consideration of a tax on incineration. ***The RWS states that "significant additional residual waste energy recovery capacity...would not necessarily be needed" and that an industry study showed that "no new EFW capacity would be needed", if the Government's 65% recycling target was met by 2035****."*

Tolvik has added the bold font to the text for emphasis.

1.5. Cory has requested Tolvik to prepare a paper which:

- Independently assesses the evidential support underpinning the GLA's relevant representation set out in paragraph 1.4 above, particularly given that the industry study referred to in the GLA representation is understood to be Tolvik's "*UK Residual Waste: 2030 Market Review"* referenced in paragraph 1.2 above; and
- Considers the extent to which the subsequent issue of WRS 2018 impacts on the findings in "*Residual Waste in London and the South East: Where is it going to go?"*

2. GREATER LONDON AUTHORITY RELEVANT REPRESENTATION: WRS 2018

2.1. The first reference to EfW in WRS 2018 can be found on page 20. Tolvik has highlighted the reference in bold for emphasis. This extract shows that WRS 2018 clearly recognises the need for growth in EfW (i.e. additional EfW capacity) to help eliminate biodegradable waste from landfill.

"Eliminating biodegradable waste to landfill

Despite significant progress, England continues to rely on landfill. Twelve million tonnes of municipal waste were landfilled in 2016, half of which was biodegradable. The Committee on Climate Change (CCC) highlight this as a concern and we want tackle it. That's why, over and above our commitment to work towards eliminating food waste to landfill by 2030, we will explore policies *to work towards eliminating all biodegradable waste to landfill by the same date.* ***Growth in energy from waste (EfW) and alternative residual waste treatment infrastructure will divert further waste from landfill****".*

2.2. On page 77 of the document, the WRS 2018 makes clear the combined effects of recycling and EfW:

"Thanks to improvements in recycling and sending more waste to EfW, we are less reliant on landfill – with a 72% reduction by weight of local authority collected waste sent to landfill since 2010/11."

Further on the same page is a section entitled "*Driving greater efficiency of EfW plants by encouraging use of the heat the plants produce*." This section builds upon the need for EfW identified on page 20, but makes it clear that the objective is to increase the efficiency of EfW's – which Tolvik understands is consistent with the proposals for the EfW within REP.

2.3. On page 103, the WRS 2018 re-enforces the position of EfW above landfill in the waste hierarchy:

"*Ideally, surplus food should be redistributed for people to eat. The next best outcome is that it is used in the production of animal feed or for bio-material processing. In both these managed scenarios, the food surplus is not food waste. If neither scenario is possible, food waste should be treated through recycling by anaerobic digestion, or through composting when it is mixed with other bio-waste (such as garden waste).* ***If anaerobic digestion or composting are not possible, it should be treated via energy from waste in preference to landfill****."*

2.4. On page 128, WRS 2018 states that *"we are also investigating possible fiscal incentives for the development of advanced conversion technologies which deliver better environmental outcomes than conventional energy-from-waste"*. This reference once again relates to the efficiency of EfW.

2.5. On page 137 there is a further reference to energy recovery which once again is a restatement of the waste hierarchy:

"*Residual waste is the mixed material that is typically incinerated for energy recovery or landfilled. Much of the products and materials contained in this waste could have been prevented, reused or recycled. This is inefficient not only because materials that hold value are being lost, but also incineration and landfill are the most expensive ways to treat waste"*

2.6. **Tolvik has therefore been unable to identify any references in the main text of the WRS 2018 which supports the GLA's assertion that, as a result of the development of EfW capacity, REP would be inconsistent with the WRS 2018.**

3. GREATER LONDON AUTHORITY REPRESENTATION: EVIDENCE ANNEX TO THE WRS 2018

3.1. Further references to EfW, incineration and energy recovery are found in the Evidence Annex to the WRS 2018 in Section 4.3 on page 76 titled *"The Environmental Costs of Residual Waste."*

3.2. Figure 8 of the Evidence Annex shows DEFRA's two scenarios for Residual Waste in England – the first being the projected tonnages of Residual Waste in the absence of new waste policy (shown to be 30.1Mt in 2035) and the second, DEFRA's assessment based on the proposals in the WRS 2018, of the potential Residual Waste tonnages in England as a consequence of consistent municipal waste collections. This is estimated, based on a footnote reference, to be 20 - 21Mt in 2035.

3.3. The Evidence Annex contains the paragraph referred to in the GLA representation (on page 78 of the Evidence Annex). Below is a fuller extract, with additional context (in bold):

"According to our internal analysis…significant additional residual waste energy recovery capacity such as incineration or advanced conversion technologies – above that already operating or planned to by 2020 – would not necessarily be needed ***to meet an ambition of no more than 10% Municipal Solid Waste (MSW) to landfill by 2035****, if a 65% MSW recycling*

rate is achieved by that same year. ***The analysis assumes refuse derived fuel (RDF) exports remain at current levels.****"*

3.4. The GLA representation is based on Figure 9 in the Evidence Annex. The data underlying Figure 9 can be reproduced by drawing on the text and footnotes on pages 77 to 79 of the Evidence Annex. This has analysis is shown in Figure 1 below which suggests an "overcapacity" of 1.9Mt.

		Mt	*Source*
Residual MSW with 65% recycling		**20.5**	*Annex Footnote 264 – midpoint of 20-21Mt*
Capacity	Current EfW	11.4	*Annex text p77*
	EfW in Construction	2.3	*Annex text p77 "over 2Mt"*
	RDF Exports	3.2	*Digest of Waste and Resources Table 6.2*
	MSW to landfill	5.5	*Annex Footnote 263 – midpoint of 5-6Mt*
	Total	**22.4**	
Gap		*(1.9)*	*Annex Figure 9*

Figure 1: Projected 2035 Capacity Gap Source: Tolvik analysis of Evidence Annex

3.5. It is very important to note that

- The statement in paragraph 3.3 above from the Evidence Annex that *"additional residual waste energy capacity would not necessarily be needed"* is conditional on three assumptions; and
- The Evidence Annex also, correctly in Tolvik's opinion, states that *"the risk of a gap in capacity is, however, still relevant, as projections on future capacity, exports and arisings are subject to uncertainty*."

It is therefore necessary to consider the analysis in Figure 1 in more detail.

Future Residual Waste Arisings

3.6. No detail is provided in the Evidence Annex with respect to the assumptions underpinning the two scenarios in Figure 8 of the Evidence Annex.

3.7. However, with respect to the scenario relating to the impact of consistent municipal waste collections, the Evidence Annex makes reference to WRAP's 2016 study *"The Case for Greater Consistency in Household Waste Recycling: Supporting Evidence and Analysis".* This report suggests that for Household Waste, the introduction of consistent waste collections would result in an increase in recycling rate of approximately 7%. With a 2016 recycling rate in England for waste from households (Source - DEFRA: UK Statistics in Waste) of 44.9% a 7% rise would result in a recycling rate of 51.9%.

3.8. Modelling (Option 3M) in DEFRA's impact assessment for consistent municipal recycling collections suggests that for an overall 64% recycling rate to be achieved:

- The recycling rate for waste from Households would need to increase by 11.6% to 55.5% not the 7.0% estimated by WRAP and;
- The recycling rate for non-household municipal waste would have to more than double from 35% to 74%. This is a very significant increase in the context of the expected improvements in recycling which could be achieved.

3.9. Based on this, it is evident that achieving a 65% recycling rate will be very challenging, and in the context of a doubling of non-household municipal waste recycling it is not considered credible.

3.10. Given that such analysis is not provided in the Evidence Annex, in Tolvik's opinion the Evidence Annex fails to demonstrate that the actions set out in the WRS 2018 would deliver the "goal" of 65% recycling and hence the corresponding projection of 20-21Mt of Residual Waste by 2035.

Future Exports

3.11. However, as Figure 1 above shows, even if a 65% recycling target is achieved in 2035, the modelling in the Evidence Annex assumes that 3.2Mt is exported as RDF.

3.12. There is no certainty with respect to the future level of RDF exports. In this context it is therefore noted that, based on provisional Environment Agency data, the tonnage of RDF exported from England in 2018 was 9% lower than in 2017.

3.13. With the WRS 2018 pointing to a target of a maximum of 10% of MSW to landfill, **any reduction in the future tonnage of RDF exports would automatically lead to a need for additional EfW capacity in England.**

3.14. Figure 1 also assumes that 5-6Mt of Residual Waste would be sent to landfill. However, as the repeated reference to the waste hierarchy in the main body of the WRS 2018 points out, Residual Waste *"should be treated via energy from waste in preference to landfill".* **On the contrary to the GLA's assertion, developing up to 6Mt of additional EfW capacity would be consistent with the WRS 2018 by reducing reliance on landfill.**

3.15. This is a point which is implicitly picked up in the Evidence Annex which also states that *"if energy recovery continues to provide a better environmental alternative to landfill, **more investment to reduce tonnages of MSW to landfill further would deliver environmental benefits.**"* The assumption that EfW is a better environmental alternative to landfill is implicit in the waste hierarchy.

3.16. Given the waste hierarchy remains unaltered, on the basis of the information in the Evidence Annex, even if it is assumed a 65% recycling rate is met, **the development at least 5.0Mt and potentially up to 8.2Mt of additional EfW capacity would more realistically reflect future requirements and therefore would be consistent with the strategy**.

4. GREATER LONDON AUTHORITY REPRESENTATION: INDUSTRY STUDY

4.1. The Evidence Annex points to work by Tolvik:

"Tolvik Consulting Ltd. carried out a similar assessment, bringing together existing reports around Energy from Waste, and concluded that there would not be a gap in incineration capacity in 2030, provided the 65% MSW recycling rate ambition was met…..The risk of a gap in capacity is, however, still relevant, as projections on future capacity, exports and arisings are subject to uncertainty" (page 78 of the Evidence Annex)

4.2. This refers to Tolvik's "*UK Residual Waste: 2030 Market Review*" ("Tolvik Study") which was commissioned by the Environment Services Association as an independent review of six third party reports and analysis relating to the Residual Waste market in the UK.

4.3. The Tolvik Study considered the potential "gap" in the UK in 2030 between the projected tonnages of Residual Waste and the capacity to treat it.

4.4. The Tolvik Study identified 5 scenarios based on differing assumptions with respect to recycling rates with respect to future tonnages of Residual Waste, reflecting the "uncertainty" described in the Evidence Annex to WRS 2018 (Paragraph 3.5). It should be noted that the scope of the work did not require Tolvik to draw conclusions with respect to the probability of each scenario.

4.5. As the Evidence Annex suggests, Figure 32 on page 28 of the Tolvik Study suggests a nil capacity gap in the Circular Economy ("CE") Target scenario in 2030 which assumed a municipal waste recycling rate of 65% in 2030.

4.6. However, as set out in Paragraph 3.9, the recycling assumptions underpinning the CE Target scenario is not considered credible. By comparison, the 55% Household (recycling rate) scenario in the Tolvik Study, which delivers a municipal recycling rate of 60%, suggests a capacity gap of 3.5Mt.

4.7. However, in much the same way as DEFRA's analysis in the Evidence Annex, both figures are based on a number of assumptions which means that the Tolvik Study and calculations in the Evidence Annex are not directly comparable.

4.8. Firstly, the Tolvik Study was written before the EU pushed back the target dates for the Circular Economy package by 5 years and so is based on a 65% recycling target in 2030. Using an identical approach to that used in the Tolvik Study, if the date is pushed back to 2035 the tonnage of Residual Waste in the CE Target scenario is projected as 21.5Mt – i.e. 0.5Mt higher than that in the Tolvik Study.

4.9. Secondly the nil figure in CE Target scenario the Tolvik Study assumes 2.5Mt of additional EfW is capacity is developed. In the Tolvik Study, the additional capacity relates to capacity which is yet to commence construction – i.e. new capacity such as REP. For clarity, this is different from the DEFRA estimate of "over 2Mt" in Figure 1 above which relates to EfW capacity already in construction but not yet operational – which is included in the assessment of capacity under the classification of "certain" EfW in the Tolvik Study.

4.10. Thirdly, as in the Evidence Annex, the nil "gap" figure in the CE Target scenario includes RDF exports – in the case of the Tolvik Study these are assumed to be 2.5Mt compared with 3.2Mt in the RWS (see Figure 1 above).

4.11. Rather than, as the WRS 2018 asserts, no new EfW being needed if the Government's recycling target of 65% by 2035 is met, **the CE Target scenario in Tolvik Study effectively asserts that with such a recycling rate that at least 3.0Mt** (2.5Mt of additional EfW capacity plus 0.5Mt adjustment for 2035 target date) **and, allowing for exports, potentially up to 5.5Mt of additional EfW capacity could be needed in the UK.**

4.12. Furthermore, if, as expected, the 65% municipal waste recycling rate in the CE Target scenario in the Tolvik Study is not achieved and instead the municipal waste recycling rate in 2035 is 60% as set out in the 55% Household scenario, then the Tolvik Study suggests an additional 3.5Mt of EfW capacity could be needed over and above that in the CE Target scenario – i.e. 6.5Mt potentially up to 9.0Mt.

5. RESIDUAL WASTE IN LONDON AND THE SOUTH EAST: WHERE IS IT GOING TO GO?

5.1. The Tolvik Report "*Residual Waste in London and the South East: Where is it going to go?"* is referred to in the document entitled "The Project and Its Benefits" (7.2, APP-103). This report was issued prior to the release of the WRS 2018.

5.2. The Tolvik Report considered three scenarios, in which the CE Target scenario is consistent with the recycling "goals" set out in the WRS 2018. **The WRS 2018 therefore does not change the analysis within the Tolvik Report.**

5.3. However, it is to be noted that other scenarios in the Tolvik Report reflect potential outcomes in the event that improvements in recycling rates are more modest than those assumed in the WRS 2018.

5.4. Critically the Central scenario in the Tolvik Report assumes a 55% Household Waste recycling rate and a 65% recycling rate for non-household municipal waste (identical to the 55% Household scenario in the Tolvik Study).

5.5. In the context of the observations in paragraph 3.9 above, the CE Target scenario could prove challenging to achieve. In Tolvik's opinion it is therefore reasonable, in understanding the need for REP in the context of the local market in London and the South East for "The Project and Its Benefits" (7.2, APP-103) to focus upon the analysis in the Central scenario of the Tolvik Report.