Riverside Energy Park

The Project and its Benefits Report

VOLUME NUMBER:

07

PLANNING INSPECTORATE REFERENCE NUMBER:

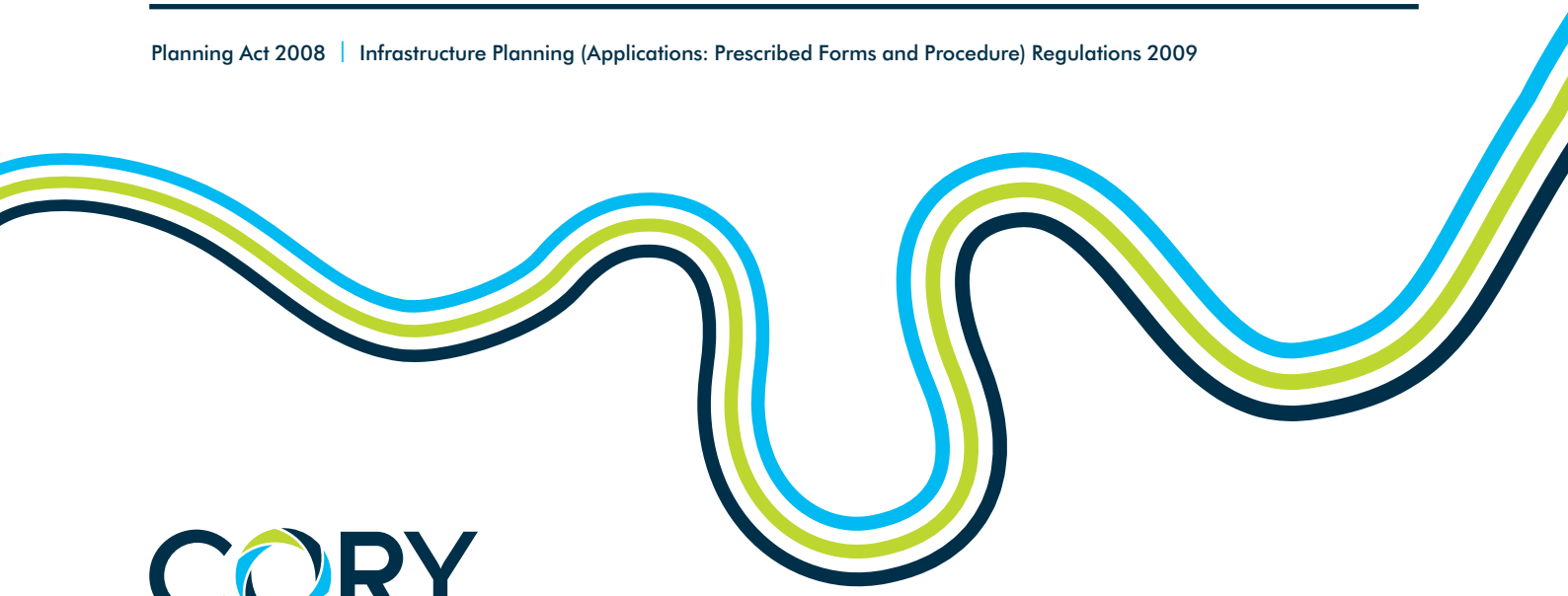
EN010093

DOCUMENT REFERENCE:

7.2

November 2018 | Revision 0 | APFP Regulation 5(2)(q)

Planning Act 2008 | Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



CORY
RIVERSIDE ENERGY

Executive Summary

Contents

Figures

Tables

1 The Project and its Benefits Report Executive Summary

1.1 Introduction

1.1.1 Cory Environmental Holdings Limited (trading as Cory Riverside Energy) ('the Applicant' or 'Cory')) is applying to the Secretary of State under the Planning Act 2008 for powers to construct, operate and maintain an integrated Energy Park, to be known as Riverside Energy Park (REP). The principal elements of REP comprise complementary energy generating development (with energy from waste being the largest component) and an associated Electrical Connection (together referred to as the 'Proposed Development').

1.1.2 REP is proposed on land immediately adjacent to Cory's existing Riverside Resource Recovery Facility (RRRF) located at Belvedere within the London Borough of Bexley and would complement the operation of the existing facility as well as making greater use of existing river-based infrastructure in London. It would comprise an integrated range of technologies including: energy from waste (or waste energy recovery), an anaerobic digestion facility for food and green waste, solar panels and battery storage. Additionally, REP would include on site infrastructure to provide the potential for heat to be supplied to local housing and businesses.

Key REP Policy Themes

Key policy themes at the core of REP and the DCO submission are:

Riverside Energy Park: Key REP Policy Themes	
✓	Generating reliable low carbon/renewable energy for London and UK
✓	Bridging the infrastructure gap in London and the South East
✓	Replacing landfill - not recycling – and moving waste up the Waste Hierarchy
✓	Dealing with London's residual waste problem - in London – and achieving greater net self-sufficiency for London
✓	Maximising movement of freight by river in London and minimising traffic congestion
✓	Tackling air quality and delivering carbon positive outcomes
✓	Bringing forward private investment – and avoiding the need for public subsidy

Cory Environmental Holdings Limited

1.1.3 Cory has a long history and deep connection with London stretching back to 1896.

1.1.4 Cory has invested heavily in London's recycling, energy generation and river logistics infrastructure. In addition to its commercial customers, Cory is a trusted partner for a number of local authorities in London (serving a combined population of c.1.5 million people) and operates essential infrastructure which London relies heavily upon on a day to day basis.

1.1.5 Cory's shareholders also have a proven track record of investing in and delivering London's essential 'big ticket' infrastructural needs (for example, the Thames Tideway Tunnel project) (see the **Funding Statement - Document Reference 4.2**).

1.1.6 Accordingly, if the DCO is granted, the Secretary of State can be confident that the Proposed Development would likely be constructed and successfully delivered for London.

1.1.7 REP would create approximately 85 new jobs in addition to the 365 people already employed by Cory in London.

1.1.8 Cory is proud of its work in the community in London including with local schools, community groups and career apprenticeship schemes.

1.2 Overview

1.2.1 As demonstrated in **Figure 1**, REP is an efficient major energy project, taking non-recyclable waste as its feedstock to recover renewable/low carbon energy and secondary materials. The London Waste Strategy Assessment, the Applicant's policy based assessment of REP against the adopted and draft London Plans, and independent market based research prepared by Tolvik Consulting Ltd, demonstrate the extent of need for new residual waste treatment facilities such as REP.

1.2.2 Battery storage and district heating opportunities provide additional benefits, supplementing the diversity, resilience, and security of London's energy supply sources.

1.2.3 Major energy generating stations, such as REP, utilising proven treatment technology, are well established as a key component of sustainable communities. Beyond diverting waste from landfill and meeting climate change challenges, such facilities deliver essential energy infrastructure and societal, as well as economic and environmental benefits.

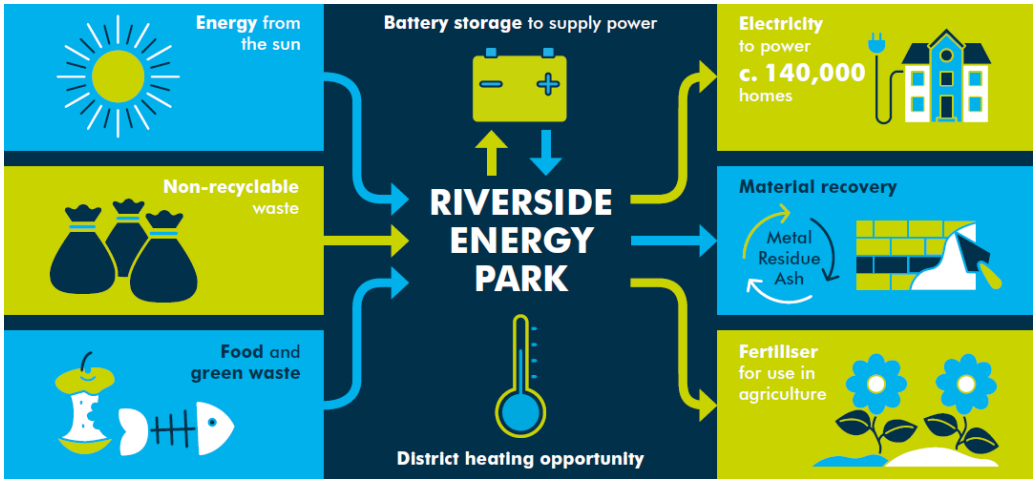


Figure 1: The Project and its Benefits

1.2.4 The National Policy Statements EN-1 and EN-3 are clear in their objectives to achieve climate change driven priorities of:

- positive carbon outcomes and renewable/low carbon energy;
- sustainable waste management; and
- optimised design.

1.2.5 REP responds directly to the outcomes sought through the National Policy Statements EN-1 and EN-3 and the London Plan (both the adopted Plan and draft Plan). It is a market led, industry funded project, requiring no form of government subsidy, which will make a significant contribution to delivering the urgent and substantial need for new energy, and waste disposal, infrastructure both in London and the UK.

1.3 The Policy Driven Need for Major Energy Infrastructure

1.3.1 The National Policy Statements EN-1 and EN-3 establish an urgent and substantial need for new energy generation infrastructure, making clear the expectation that the industry will provide this capacity through private led investment such as REP. Alongside the drive for new energy generation is the desire for it to be renewable or low carbon, in order to meet climate change targets.

1.3.2 REP meets these policy objectives, delivering new energy capacity through a renewable/low carbon supply, with no public funding support or subsidy.

1.3.3 Locally, policy of the London Plan is consistent with the National Policy Statements in seeking to: reduce London's carbon emissions; gain decentralised energy supply; and divert waste away from landfill, through new treatment capacity that will enable London to be self-sufficient (by 2026).

1.3.4 Responding directly to the National Policy Statements and London Plan, REP:

- is an energy recovery facility that achieves a positive carbon outcome, not least through the recovery of renewable/low carbon electricity from otherwise useless residual waste and has good potential to also contribute to heat demand;
- is at the right level of the waste hierarchy and constitutes sustainable waste management capacity, taking waste away from landfill, moving it up the waste hierarchy and providing for the reuse of metals and ash as construction aggregates (reducing reliance on the quarrying of primary aggregates); and
- delivers good design, not least through incorporating a range of energy recovery and storage technologies, being CHP Enabled, and incorporating river freight as part of the multi-modal transport network thereby significantly reducing the number of trucks on London streets.

1.3.5 The National Policy Statements establish the relevant tests against which to demonstrate the need case, for both energy supply and waste management. REP delivers the priority environmental, economic and societal benefits sought by the National Policy Statements - at no cost to the tax payer.

1.3.6 Therefore, pursuant to section 104 of the Planning Act 2008, the Proposed Development should be consented.

1.4 Positive Carbon Outcomes

Recovering Renewable/Low Carbon Energy from waste disposal

1.4.1 Above all, REP is a major energy infrastructure project recovering energy from waste and providing a reliable heat source for a future distribution network.

1.4.2 The energy recovered through the Energy Recovery Facility (ERF) is confirmed as renewable/low carbon, with that recovered through the Anaerobic Digestion Facility and Solar Photovoltaic Panels confirmed as wholly renewable. The REP development will create reliable low/carbon renewable electricity to power the equivalent of c.140,000 homes per annum across London.

1.4.3 The feedstock, or fuel, intended for REP will be non-recyclable, or residual, waste. Central Government recognises that at least 50% of residual waste contain biogenic content, such that the energy recovered by REP is properly described as renewable/low carbon. As is made clear in DEFRA's EfW: A Guide to the Debate (page 3):

'Energy from waste is not just about waste management.

The energy it produces is a valuable domestic energy source contributing to energy security.

As a partially renewable energy source it can also contribute to our renewable energy targets which are aimed at decarbonising energy generation.

It has the added advantage that it is non-intermittent, so it can complement other renewable energy sources such as wind or solar.'

1.4.4 REP will be an embedded generator, meaning it is connected direct to the distribution system; the purpose is to supply electricity to the distribution system local to the source of generation. Not only does REP have a viable grid connection, but it also presents the strong likelihood that electricity will be provided to the London area, enabling energy self-sufficiency and added resilience within the capital.

Reducing Carbon Emissions

1.4.5 Through using non-recyclable wastes as feedstock, REP diverts waste away from landfill, avoiding the consequent production of greenhouse gases, principally methane. Reducing the amount of biodegradable waste sent to landfill is a key element of climate change policy because the resultant methane is such a potent greenhouse gas.

1.4.6 For example, every tonne of waste processed at RRRF saves 200kg of CO2e compared with the same volume of waste going to landfill (Reference: A Carbon Case for Energy endorsed by The Carbon Trust). REP would deliver comparable positive carbon outcomes.

1.4.7 As an integrated development, REP will be highly self-sufficient in its own energy demand so reducing its carbon emissions. The use of the river to transport both waste and incinerator bottom ash will minimise road vehicle use, providing a significant benefit to London's overall air quality, reducing congestion on London's roads and decreasing carbon emissions from the Proposed Development. Cory currently saves an estimated 100,000 lorry movements off London's roads utilising its established river-based infrastructure to serve RRRF (Reference: A Carbon Case for Energy endorsed by The Carbon Trust). REP would displace a comparable number of vehicles (c. 80,000 lorry movements) from London's congested road network.

1.4.8 Policy of the London Plan goes further than any national requirement, stating that '*facilities generating energy from waste will need to meet, or demonstrate the steps that are in place to meet, a minimum performance of 400g of CO2 equivalent per kilowatt hour of electricity produced*.' CHP Assessment (**Document Reference 5.4**) demonstrates that REP meets this stringent policy target.

1.4.9 REP will deliver a positive carbon outcome through both energy recovery and waste management, exceeding national and local policy expectations. As technology improvements are integrated into energy from waste facilities, the modern plants are able to operate more effectively and efficiently, continuously minimising emissions. Reference to the Committee on Climate Change (CCC) 2018 Report[1] demonstrates just how low carbon such plants are. Greenhouse gas emissions from waste incineration have decreased over time, and yet capacity has increased substantially.

Delivering CHP

1.4.10 The Proposed Development is located within a Heat Network Priority Area of the draft London Plan, the facility would be CHP Enabled and include on-site infrastructure necessary to connect to a heat distribution network. A substantial demand is identified within the Thamesmead development led by Peabody, a social housing organisation. The Applicant continues to engage actively with the relevant stakeholders to deliver this network including the London Borough of Bexley, Royal Borough of Greenwich, and the Greater London Authority's Heat Team which is providing funding support for detailed studies. These studies follow on from the initial work and opportunities outlined in the Bexley Energy Master Plan.

1.4.11 The societal benefit of delivering a cost-effective, reliable, supply of heat, particularly to Peabody, cannot be overestimated. The Proposed Development represents a very real opportunity to deliver a district heating network into an area of London where the social benefits would be most keenly felt.

1.4.12 The Bexley Energy Master Plan identifies RRRF to be a potential source of heat for a district heating network. Deploying both REP and RRRF would effectively double the amount of heat available to supply local networks and thereby increase the heat opportunity further. In addition, having the two facilities provides the necessary redundancy cover during events when one plant is not available (e.g. temporary periods of planned and unplanned maintenance) thereby ensuring continuity of heat provision to those end users (including households) benefitting from heat supply.

[1] Committee on Climate Change. Reducing UK emissions – 2018 Progress Report to Parliament. June 2018 https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/

1.5 Sustainable Waste Management

REP Delivering the Waste Hierarchy

1.5.1 The waste hierarchy is a well-established policy principle, delivering objectives of both the Waste Framework Directive 2008 and Landfill Directive 1999 seeking to prevent or reduce the negative effects on the environment and people from waste management. The focus is rightly placed on higher levels of the waste hierarchy, reducing the amount of waste produced and looking to re-use or recycle this resource.

1.5.2 However, not all waste can be managed in this way and consequently the Government supports the efficient recovery of residual waste. Defra's EfW: A Guide to the Debate confirms this approach, recognising that (page 2):

'In future we are aiming to prevent, reuse and recycle more of our waste, so the amount of residual waste should go down. However, energy from waste will remain important.

To maintain the energy output from less residual waste resource we will need to divert more of the residual waste that does still exist away from landfill and capture the renewable energy continue the drive towards better, higher-efficiency energy from waste solutions.'

1.5.3 Recovering energy from residual waste is a core element of the waste hierarchy, supported by European, national and local policy. There remains a need for further residual waste treatment, gaining the associated benefits and diverting non-recyclable waste from landfill. The ERF is an important element to facilitate delivery of the waste hierarchy in London and the South East.

1.5.4 The London Waste Strategy Assessment (**Annex A** of the Project and its Benefits Report (PBR), **Document Reference 7.2** 'the Assessment') delivers the requirements of National Policy Statement EN-3 to examine the conformity of REP with the waste hierarchy and the effect of REP on the relevant waste plan. To provide a conservative and robust assessment, and to couch REP in the context of London Plan policy, the Assessment considers waste arising within London only, using London Plan data, and does not consider waste arisings across the South East of England in detail. However, not least due to its riverside location and the fact that REP is a *nationally* significant infrastructure project, REP will be able also to provide for the sustainable treatment of residual wastes arising across the South East of England.

1.5.5 The Assessment demonstrates that REP is required to deliver sustainable waste management and net self-sufficiency within London. Indeed, the Assessment concludes that there is a need for REP greater than the nominal throughput proposed for the ERF within REP.

1.5.6 The Anaerobic Digestion facility would provide an 'in borough' solution for the LB of Bexley and produce a renewable energy supply. Accordingly, the Anaerobic Digestion facility contributes to the circular economy through the digestate. This secondary material is intended to be used as a soil conditioner, and is widely recognised to bring several benefits, not least through adding nutrients and increasing water retention.

1.5.7 Both the ERF and the Anaerobic Digestion facility recover renewable/low carbon energy and secondary materials; they make a positive and significant contribution to the circular economy within London. This is achieved without any detriment to the recycling targets set out in adopted and emerging policy.

1.5.8 REP is demonstrated in the Assessment to be at the right place in the waste hierarchy and not to prejudice credible recycling within London. Cory is committed to recycling and has invested significant sums in London's recycling infrastructure as demonstrated by its modern Materials Recovery Facility (MRF) operating at Smugglers Way in Wandsworth.

1.5.9 Commercial analysis undertaken by the Applicant demonstrates a need for between 0.6 to 1.4 million tonnes of residual waste management capacity within London, to manage London's non-recyclable waste. This range aligns with the results shown in the Assessment, which indicates that, realistically, London will require new residual waste management capacity in the order of 1 million tonnes. Substantial new infrastructure is required in London in order to divert its waste from landfill, achieve self-sufficiency and gain the benefit of reduced carbon demands and increase renewable/low carbon energy supply.

Residual Waste in London and the South East

1.5.10 The Assessment only considers, in any detail, London's waste, responding to the policy demand for London to be net self-sufficient. Whilst the ERF within REP is promoted to take waste from within London, there is no justification for it to be limited to the capital, especially given its location and being a *nationally* significant infrastructure project. Within their respective development plan documents there is identified a need for c.2 million tonnes of residual waste management capacity required across the waste planning authorities adjacent to London.

1.5.11 In the event that *all* of London's ambitious policy aspirations are met, *in full* (such that the capital does not need all of REP's throughput) London can benefit from the economic, environmental and societal benefits of recovering renewable/low carbon energy from the residual wastes arising across the South East of England.

1.5.12 A recent (October 2018) residual waste assessment titled 'Residual Waste in London and the South East: Where is it going to go?'[2] ('the Tolvik Report')

[2] Prepared by Tolvik Consulting, an independent waste and bioenergy consultancy

contains the most recent, wide ranging and accurate information regarding residual waste management in London and the South East. The Tolvik Report advises that London and the South East produced just under 10 million tonnes ('Mt') of residual waste in 2017.

1.5.13 The Tolvik Report states that treatment of the 9.88 Mt residual waste generated in London and the South East can be divided into:

- 4.19 Mt to UK ERFs;
- 1.72 Mt of Refuse Derived Fuel (RDF) exported for use in ERF facilities overseas;
- 0.4 Mt MBT & Co-incineration; and
- 3.58 Mt to landfill.

1.5.14 The large amounts both of residual waste sent to landfill and exported RDF sent overseas highlights the significant deficiency (or gap) in London's, and the South East's waste management infrastructure. Both methods (landfill and RDF export) pose risks to long term sustainable waste management through uncertain future available capacity and environmental risk. REP provides the opportunity to provide that sustainable waste management solution; at no cost to the taxpayer.

Poor Environmental Solution: Disposal to Landfill

1.5.15 Waste disposal to landfill results in the emission of potent methane gases. This contribution of harmful gases to the atmosphere does not accord with national and EU climate change objectives and is inconsistent with National Policy Statements EN-1 and EN-3 which seek to achieve positive carbon outcomes. Figure 7.1 of the CCC 2018 Report (reproduced in **Figure 2** shows clearly that methane emissions from landfill overwhelmingly dominate the greenhouse gas emissions from the waste sector.

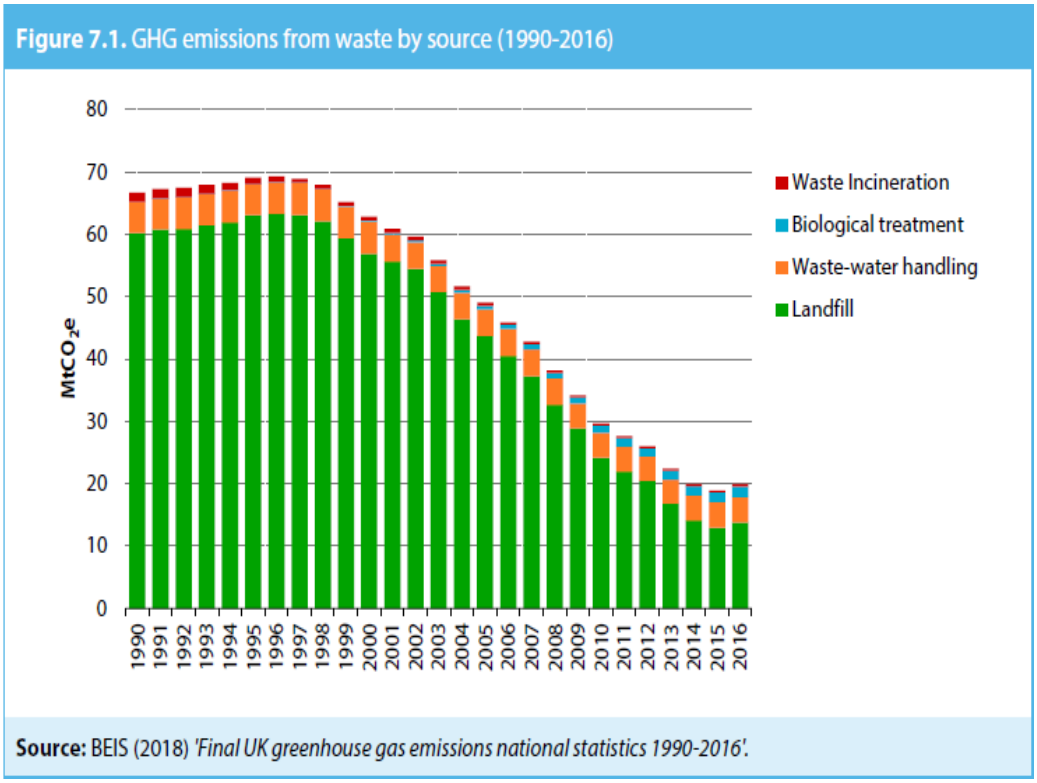


Figure 2: Figure 7.1 from CCC 2018 Report

1.5.16 In addition, to the environmental considerations and policy drivers for moving waste up the waste hierarchy, thereby reducing the disposal of waste to landfill, the future availability of landfill sites themselves remain highly uncertain. As is recognised in the London Environment Strategy (LES), with rapidly depleting available landfill capacity, only two of the eight landfill sites commonly used to dispose of London's waste are expected to remain open beyond 2025 (see **Figure 3**).

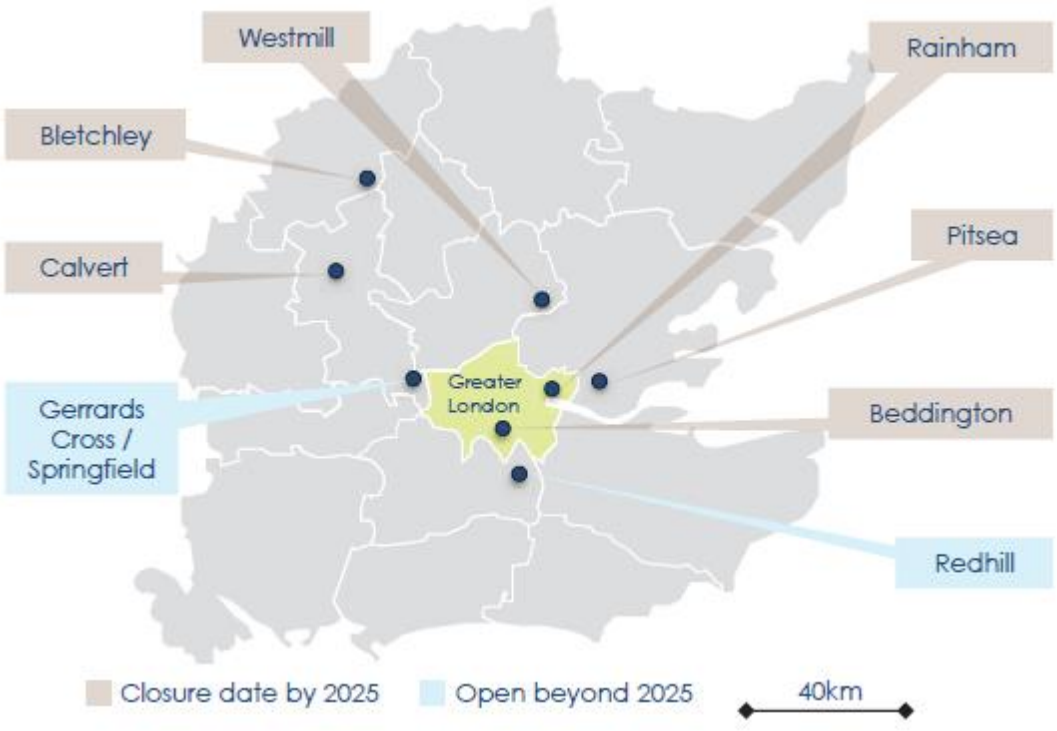


Figure 3: Landfill facilities commonly used to dispose of London's waste

Short Term Solution: RDF Export

1.5.17 The estimated 1.72 Mt of RDF that was exported overseas from London and the South East in 2017 equates to 54% of the 3.34 Mt in total of RDF exported from England[3]. The large amount of RDF exported overseas, predominantly to mainland Europe, has developed as a short term solution to the UK's waste treatment infrastructure deficit or gap and prevents the economic, environmental and social benefits to be gained from energy recovery in the UK (i.e. a lost opportunity).

1.5.18 Uncertainty associated with potential disruption to overseas export resulting from Brexit may also result in a future decline in the exportation of RDF waste from the UK.

Self-Sufficiency

1.5.19 Issues associated with the exportation of waste to landfill and RDF overseas support the need for waste management self-sufficiency. To manage waste sustainably, draft London Plan policy SI8 states:

"the equivalent of 100 per cent of London's waste should be managed within London (i.e. net self-sufficiency) by 2026"

[3] Residual Waste in London and the South East. Where is it going to go …? Tolvik Consulting Ltd, October 2018http://www.tolvik.com/reports/

1.5.20 To promote increased recycling, draft London Plan policy SI7 opens with reference to the circular economy and a desire to '*keep products and materials at their highest use for as long as possible*'. Policy SI7A/3 seeks to ensure '*that there is zero biodegradable or recyclable waste sent to landfill by 2026'*, whilst policy SI7A/4 sets the recycling targets to be achieved, identifying 65% for municipal waste by 2030.

1.5.21 In comparison to other major European cities, London performs well with regards to recycling rates (see **Figure 4**). A further increase in recycling rates to achieve the 65% target presents numerous difficulties, especially considering the inherent recycling challenges specific to London, including housing density and types of homes (e.g. flats), dependence on householder segregation of waste and local authority priorities and availability of scarce public resources. The LES acknowledges the very real challenges in achieving the targets, not least the absence of any direct means of delivery and a lack of funding.

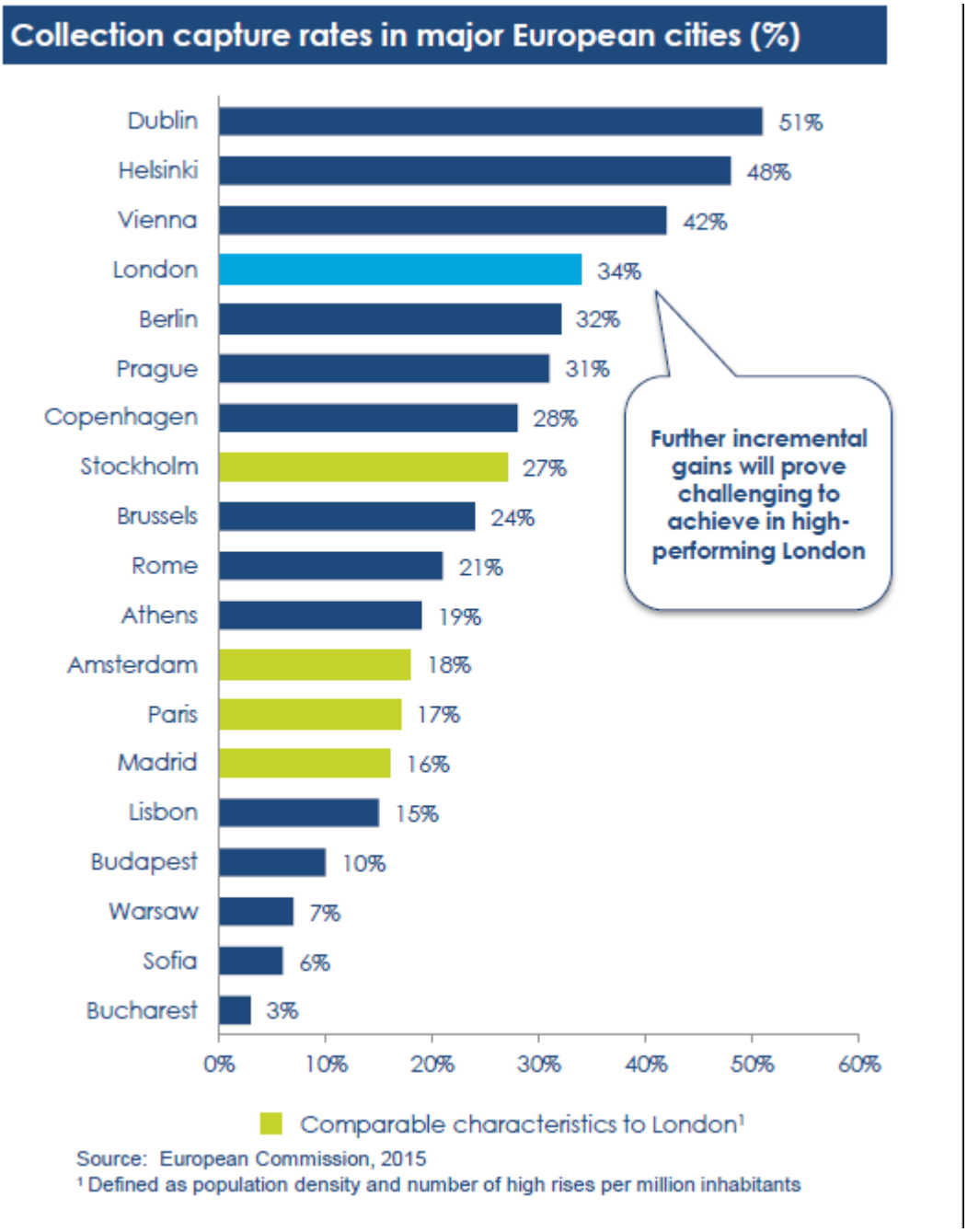


Figure 4: Collective capture rates in major European Cities

Infrastructure Gap: EfW Capacity

1.5.22 Waste that is non-recyclable, not disposed of to landfill, nor exported overseas is currently treated through EfW facilities within the UK. At page 2, the Tolvik Report states:

"In 2017, 4.19Mt of Residual Waste arising in London and the South East was sent to UK EfWs, 13 of which are located in the [South east] region.

When combined with 0.93Mt of capacity at EfWs currently in construction, the projected EfW capacity "available" to Residual Waste in London and the South East is projected to be 5.21Mt."

1.5.23 Three sensitivity forecasts (High, Central and Low) have been developed by Tolvik with respect to assessing the 'additional' EfW capacity likely to be needed.

1.5.24 In the Central sensitivity forecast, it is estimated that 1.41 Mt of 'additional EfW' capacity could be operational by 2025 (plus the inclusion of those EfW facilities in construction). In the Low sensitivity forecast, the figure is projected to be 1.09 Mt whilst in the High sensitivity forecast this figure is 2.06 Mt. It should be noted that the delivery of REP is assumed in all three sensitivity forecasts.

1.5.25 Taking the Central sensitivity forecast, including the assumption that REP is operational, the Tolvik Report predicts that by 2025 there could be a cumulative shortfall of 4.66 Mt in non-hazardous disposal capacity across London and the South East.

1.5.26 There is therefore a very clear infrastructure treatment deficit or gap and an identified need for further EfW capacity, in addition to REP. Further, working alongside recycling, energy recovery facilities offer a practical and deliverable approach to achieving the waste hierarchy, reducing carbon emissions and generating low carbon/renewable energy, none of which is achieved through landfill.

1.6 Optimised Site and Design

1.6.1 The Proposed Development makes optimal use of a site already in waste management, providing complementary technologies to recover renewable/low carbon energy from non-recyclable waste. It incorporates the emissions control technology to ensure that both European and London requirements for air quality are met and exceeded. It would utilise existing river transport infrastructure and operational experience.

1.6.2 REP will also be well located to provide heat to a substantial local demand, including social housing. Waste management demands within London and adjacent authorities are demonstrated to be prevalent for the foreseeable future (see Annex A and the Tolvik Report). The energy demands are actively growing and are unlikely to be relocated in the foreseeable future.

1.6.3 Uniquely, the Application Site enables increased river transport for delivering both waste to be treated and the subsequently recovered secondary materials. These are very particular advantages in locating REP at the Application Site, and bringing waste to it.

1.6.4 Societal gain is delivered by REP through: architectural and sustainable design; the sustainable treatment of waste; recovery and storage of renewable/low carbon energy; the creation of economic value through jobs

and inward investment; the reduction of traffic and queuing on London streets; and the potential for district heating network deployment.

1.7 Conclusion

1.7.1 REP is urgently needed to provide resilience to London and the South East's infrastructure, replace closing landfill sites, and move waste up the waste hierarchy. It is wholly policy compliant, delivering: increased renewable/low carbon energy supply; reduced greenhouse gas emissions; CHP; sustainable waste management; river freight; and optimised design. This is demonstrated across all relevant sustainable infrastructure policy of the draft London Plan, as summarised in **Table 1**.

1.7.2 In reality, there is considerable uncertainty on the outcome of future waste arisings within London and the South East including how it will be managed. However, information provided in the Assessment (Annex A) and the Tolvik Report indicates that London and the South East, under various scenarios, would produce sufficient residual waste to exceed REP's operational requirements. This analysis takes into consideration additional capacity provided by ERF currently in construction and includes REP. Indeed, it is also demonstrated that there a policy need for REP greater than the nominal throughput proposed for the ERF within REP.

1.7.3 Both the ERF and the Anaerobic Digestion Facility recover both renewable/low carbon energy and secondary materials; they make a positive and significant contribution to the circular economy. This is achieved without any detriment to the recycling targets set out in adopted and emerging policy.

1.7.4 REP, as a nationally significant infrastructure project, and one with strategic importance beyond London, provides the resilience and flexibility required to ensure that the capital can become the sustainable city it wants to be, at no cost to the taxpayer.

Table 1: Policies of Chapter 9, draft London Plan, Sustainable Infrastructure

Policy		Met	How met by REP	Demonstrated in
SI1	Improving air quality	✓	Performance exceeds requirements of policy and permit [Delivers Air Quality Positive approach] Incorporates use of river transport	• CHP Assessment (**Document Reference 5.4**) • **Chapter 7** of the Environmental Statement (**Document Reference 6.1**)
SI2	Minimising greenhouse gas emissions	✓	[Achieves net zero-carbon] [On-site reduction of 15% through energy efficiency] Sustainable waste management provision (EfW and AD) Provision of renewable/low carbon energy and potential for waste heat into homes	• CHP Assessment (**Document Reference 5.4**) • **Chapter 7** of the Environmental Statement (**Document Reference 6.1**)
SI3	Energy Infrastructure	✓	Engaged with Bexley Energy Master Plan Utilises energy from waste Located within Heat Network Priority Area, incorporates infrastructure on-site necessary to connect to local distribution network (Peabody, at Thamesmead) enabling use of waste heat	• CHP Assessment (**Document Reference 5.4**)
SI4	Managing heat risk	✓	[Good design, minimising internal heat gain and …]	• Design and Access Statement (**Document Reference 7.3**)
SI5	Water infrastructure	✓	[Good design, minimising use of mains water and …]	• Design and Access Statement (**Document Reference 7.3**)
SI6	Digital connectivity infrastructure			Not applicable

Policy		Met	How met by REP	Demonstrated in
SI7	Reducing waste and supporting the circular economy	✓	Keeping products at their highest value for as long as possible; recovering renewable/low carbon energy and secondary materials: incinerator bottom ash (aggregate); glass; metals; digestate. Ensuring there is zero biodegradable waste disposed of to landfill Working alongside recycling	• **Section 4** of the PBR (this report) • **Chapter 15** of the ES (**Document Reference 6.1**) • **Appendix K.4** of the ES (**Document Reference 6.3**).
SI8	Waste capacity and net waste self-sufficiency	✓	Enabling 100% of London's waste to be managed in London Optimising the use of an existing waste management site, incorporating good design to avoid adverse effects off site Delivering environmental, social and economic benefits from waste and secondary materials Delivering a range of complementary technologies Contribution to renewable/low carbon energy generation Providing CHP for connection into a local heat distribution network Achieving a positive carbon outcome Using river transport	• CHP Assessment (**Document Reference 5.4**) • **Section 4** and **6** of the PBR (this report) • **Chapter 6** of the ES (**Document Reference 6.1**)
SI9	Safeguarded waste sites	✓	Existing waste management site retained, and optimised, in use	• **Section 5** of the PBR (this report) • Design and Access Statement

Policy		Met	How met by REP	Demonstrated in
				(**Document Reference 7.3**)
SI10	Aggregates	✓	Reducing the environmental impact of aggregates by recovering secondary materials (incinerator bottom ash and glass) that will reduce the need for virgin materials Using river transport	• **Section 4** and **6** of the PBR (this report) • **Chapter 6** of the ES **(Document Reference 6.1)**
SI11	Hydraulic fracturing			Not applicable
SI12	Flood risk management	✓	[Current and expected flood risk managed in a sustainable and cost-effective way]	• **Chapter 12** of the ES **(Document Reference 6.1)**
SI13	Sustainable drainage	✓	[Managed in a sustainable and cost-effective way]	• **Chapter 12** of the ES **(Document Reference 6.1)**
SI14	Waterways – strategic role	✓	Use of river freight incorporated into the proposal	• **Section 5** of the PBR (this report) • **Chapter 6** of the ES **(Document Reference 6.1)**
SI15	Water transport	✓	Facilitates an increase in the amount of freight transported by river Protects and increases the use of existing wharves for waterborne freight transport Good design ensures river wharves and waste uses are compatible and effective without conflicts of use and that the freight-handling capacity is optimised	• **Section 5** of the PBR (this report) • **Chapter 6** of the ES **(Document Reference 6.1)**
SI16	Waterways – use and enjoyment			Not applicable

Policy		Met	How met by REP	Demonstrated in
SI17	Protecting London's waterways	✓	History and character of the River Thames respected through optimised use of river freight	• **Chapter 6** of the ES **(Document Reference 6.1)**

Project and its Benefits Report

Annex A

Tables

Figures

1 Introduction

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 ('the Proposed Development').

1.1.2 The Proposed Development comprises:

- REP, to be located on land immediately adjacent to Cory's existing Riverside Resource Recovery Facility (RRRF) situated at Norman Road in Belvedere, in the London Borough of Bexley ('LBB');
- Electrical Connection, running underground between REP and the Electrical Connection Point at Littlebrook substation, Dartford;
- Main Temporary Construction Compounds; and
- Other Cable Route Temporary Construction Compounds.

1.1.3 The primary components of REP, with a nominal rated electrical output of up to 96 megawatts (MW_e) comprise:

- Energy Recovery Facility ('ERF');
- Anaerobic Digestion facility;
- Solar Photovoltaic Installation;
- Battery Storage; and
- Infrastructure to provide an opportunity for local district heating for nearby residents and businesses.

1.1.4 The Applicant is a leading recycling, energy recovery and resource management company, with an extensive river logistics business based in London. As part of its waste management activities, Cory operates RRRF situated adjacent to the proposed REP on Norman Road, Belvedere. RRRF is a key element of London's energy and resource management infrastructure and has been operating highly successfully since 2011.

1.1.5 REP will optimise the use of Cory's existing energy and river infrastructure in London, including its operational jetty, tugs and barges. REP will help meet London's pressing need for further waste management, resource recovery and energy generation infrastructure.

1.1.6 Peter Brett Associates LLP has been commissioned by the Applicant to prepare this report identifying the key elements of the Proposed Development and their associated environmental, economic and social benefits. The commission has been undertaken by Kirsten Berry, to provide an independent overview.

1.1.7 Kirsten, Director of hendeca ltd, has been a professional planner for over 20 years, working throughout the life cycle of projects enabling development and investment. She has experience of a wide range of sectors, but retained a focus on the waste, power, infrastructure and minerals sectors advising on planning, policy, permitting and strategy matters for clients large and small, public and private, and UK based and beyond.

1.1.8 Kirsten has been involved with numerous DCO applications, including acting as planning adviser for the first DCO consented, the Rookery Resource Recovery Facility in Bedfordshire, and appearing as a planning witness taking the Rookery Resource Recovery Facility successfully through Special Parliamentary Procedure.

1.2 Purpose and Structure of the Project and its Benefits Report

1.2.1 This document, the Project and its Benefits Report ('this Report' or 'the PBR') is not prepared to replace or duplicate the Planning Statement (**Document Reference 7.1**), it is performing a different role. This Report focusses on how REP delivers the demonstrated need for major energy generating infrastructure, at the right level of the waste hierarchy, making clear the numerous and inter-connected benefits, and how these are achieved through the Proposed Development.

1.2.2 This Report also clearly outlines the societal benefits of REP that include: renewable/low carbon energy supply, capturing both waste and solar power; providing the necessary waste management assets for London; delivering realistic connection prospects for heat distribution, not least through Thamesmead, a Peabody development; creating construction and operation employment opportunities; taking waste lorries off the road through using river transport; providing environmental mitigation and enhancements; and enabling the delivery and growth of battery storage.

1.2.3 The PBR is prepared to address each of these points in turn and is set out in the following order:

- **Section 2:** presents the policy driven need for major energy infrastructure and the key outcomes that are sought; these objectives provide the framework for the rest of this Report;
- **Section 3:** demonstrates how REP delivers a positive carbon outcome, responding directly to national and local policy priorities;

- **Section 4:** demonstrates how REP delivers sustainable waste management infrastructure, designed at the right level of the waste hierarchy and in an appropriate location;

- **Section 5:** demonstrates the optimised design and environmental features of the Proposed Development; and

- **Section 6:** reflects on all of the above to draw overarching conclusions on the project and its benefits.

2 The Policy Driven Need for Major Energy Infrastructure

2.1 Introduction

2.1.1 REP is an energy generating facility that will supply renewable/low carbon energy. It will deliver positive carbon outcomes, sustainable waste management and optimised design, whilst achieving sustainable economic, environmental and societal gains.

2.1.2 Positive carbon outcomes are achieved by REP through integrated energy recovery and waste management facilities, delivering London's sustainable development priorities at a preferred, and proven, location In addition, it will comprise anaerobic digestion for food and green waste, solar panels and battery storage, thereby improving both the efficiency of the electrical supply and London's resilience. REP will also be CHP Enabled, bringing real potential to further contribute to climate change priorities and deliver societal benefit.

2.1.3 As a major energy infrastructure project, there are five planning policy documents of principal relevance to the Proposed Development in their focus on energy supply and waste management. The policy documents focussed upon within this Report are:

- Overarching National Policy Statement for Energy EN-1, July 2011 ('NPS EN-1');
- National Policy Statement for Renewable Energy Infrastructure EN-3, July 2011 ('NPS EN-3');
- The London Plan, The spatial development strategy for London consolidated with alterations since 2011, March 2016 (the 'adopted London Plan', or 'aLP');
- Draft New London Plan showing Minor Suggested Changes, August 2018 (the 'draft London Plan' or 'dLP'); and
- Bexley Core Strategy, adopted February 2012.

2.1.4 These five policy documents are considered in two tranches.

- The National Policy Statements provide the overarching principles relevant to major energy infrastructure, the nationally significant gains to be made, and the tests against which nationally significant infrastructure projects, such as REP, should be determined; and
- The adopted and draft London Plans (together referred to as 'the London Plans') and the Bexley Core Strategy, provide the development plan

policy, establishing the local policy framework and waste management strategy for the Proposed Development.

2.1.5 In setting out the policy driven need for major energy infrastructure, this section of the PBR focusses on these five documents, cross referencing others as appropriate.

2.1.6 There is a recognised wealth of European Directives, national and local strategies that are also relevant to renewable energy supply and waste management; these are considered in full in the Planning Statement **(Document Reference 7.1)** and within the following sections, as appropriate, enabling each section to be focussed on the matter in hand.

2.2 National Policy Statements

Introduction

2.2.1 The Planning Act 2008 introduced the process for consenting nationally significant infrastructure projects ('NSIPs'). Following amendments introduced by the Localism Act 2011, the Secretary of State now determines any application submitted under the Planning Act 2008 in England, although all functions in handling and examining such applications are delegated to the Planning Inspectorate.

2.2.2 Consequently, all references to the 'Infrastructure Planning Commission' or 'IPC' that appear in the quotes set out in this Report, should be taken to read 'Secretary of State'.

2.2.3 As the Planning Statement (**Document Reference 7.1**) makes clear, the National Policy Statements take primacy in terms of policy. Not least as confirmed by NPS EN-1 (paragraph 4.1.5), any conflict between the National Policy Statements and local policy is resolved by the principle that policy of the National Policy Statements 'prevails'.

2.2.4 REP is located in London, and therefore at the local level the development plan (relating to the REP application area) comprises the London Plan and the LBB Local Plan. However, the location of REP, on the banks of the River Thames and bordering the jurisdiction of authorities outside of London, provides broader geographic linkages. REP is therefore appropriately considered at a strategic level. This complements its status as a NSIP, and justifies the National Policy Statements taking precedence over local development plan policies. Indeed, as is explained later in this Report, within their respective development plan documents a need for c.2 million tonnes of residual waste management capacity is identified across waste planning authorities close to London.

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

2.2.5 Setting the context for NPS EN-1, there is a package of energy and climate change legislation that provides the legislative framework for EU-wide targets seeking greenhouse gas emission savings. The 2009 Renewables Energy Directive[1] and subsequent Decision (No 406/2009/EC[2]), establish annual, linear and binding greenhouse gas emission targets for EU member states for the period 2013 to 2020. Under this decision, the UK must achieve a 15% reduction in greenhouse gas emissions by 2020, compared to 2005 emission levels.

2.2.6 NPS EN-1 makes clear (paragraph 2.1.2) that '*energy is vital to economic prosperity and social well-being and so it is important to ensure that the UK has secure and affordable energy'.*

2.2.7 Paragraph 2.2.20 presents the identified responses to managing the risks of achieving security of supply:

'It is critical that the UK continues to have secure and reliable supplies of electricity as we make the transition to a low carbon economy. To manage the risks to achieving securing of supply we need:

- *sufficient electricity capacity (including a greater proportion of low carbon generation) to meet demand at all times. Electricity cannot be stored so demand for it must be simultaneously and continuously met by its supply...;*
- *reliable associated supply chains (for example fuel for power stations) to meet demand as it arises;*
- *a diverse mix of technologies and fuels …'*

2.2.8 The policy is clear that nationally significant infrastructure is required to deliver energy, from a diverse range of sources, and with a focus on renewable/low carbon supply.

2.2.9 Paragraph 2.2.27 confirms the delivery of energy infrastructure is a key element of well-functioning places:

'The Government's wider objectives for energy infrastructure include contributing to sustainable development and ensuring that our energy infrastructure is safe. Sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the well-being of society and the economy. For example, the availability of appropriate infrastructure supports the efficient working of the market so as to ensure competitive prices for consumers. The regulatory

[1] https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive

[2] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv;OJ.L_.2009.140.01.0136.01.ENG

framework also encourages the energy industry to protect the more vulnerable.'

2.2.10 This integrated approach is repeated in National Planning Policy for Waste[3] ('NPPW'). The opening paragraph confirms that waste management makes a positive contribution to sustainable communities, sustainable development and resource efficiency.

2.2.11 In Part 3, NPS EN-1 sets out the significant level of need for new energy infrastructure both to:

- Accommodate the growing demand for electricity and forecast power station closures; and
- Decarbonise the energy sector.

2.2.12 Paragraphs 3.3.14-3.3.15 recognise that even with major improvements in overall energy efficiency, demand for electricity will increase. Paragraph 3.3.15 states that: '*In order to secure energy supplies that enable us to meet our obligations for 2050, there is an urgent need for new (and particularly low carbon) energy NSIPs to be brought forward as soon as possible, and certainly in the next 10 to 15 years, given the crucial role of electricity as the UK decarbonises its energy sector*.'

2.2.13 Paragraph 3.3.22 identifies a need for new build generating capacity of at least 59 GW, around 33 GW of which would need to come from renewable sources to meet renewable energy commitments. It is for the industry to determine the mix of the remaining 26GW of required new electricity capacity, '*acting within the strategic framework set by the Government*'. The National Policy Statements, the primary policy on energy generation, make clear the preference for low carbon generation.

2.2.14 At 2016, total electricity generation capacity was 10,386 MW less than in 2011[4,5]. This demonstrates the extent of the challenge set in NPS EN-1 to build new generating capacity of at least 59 GW.

2.2.15 That an additional 59 GW is a minimum level of need is made clear at paragraph 3.3.24, confirming that Government has no intention to set targets or limits on any new generating infrastructure to be consented in accordance with the National Policy Statements: it "*is not the Government's intention in presenting the above figures to set targets or limits on any new generating infrastructure to be consented in accordance with the energy NPSs. It is not*

[3] National Planning Policy for Waste, Department for Communities and Local Government, October 2014. https://www.gov.uk/government/publications/national-planning-policy-for-waste

[4] http://webarchive.nationalarchives.gov.uk/20130628105527/https://www.gov.uk/governmnet/publications/electricity-chapter-five-digest-of-uk-energy-statistics-dukes

[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/633779/Chapter_5.pdf

the IPC's role to deliver specific amounts of generating capacity for each technology type."

2.2.16 At paragraph 3.4.1, NPS EN-1 confirms the UK commitment to sourcing 15% of total energy from renewable sources by 2020, stating that '*new projects need to come forward urgently to ensure that we meet this target*.' Chapter 6[6] of the 2017 Digest of UK Energy Statistics (DUKES) reporting confirms that in 2016 '*8.9 per cent of total energy consumption came from renewable sources, up from 8.2 per cent in 2015. Renewable electricity represented 24.6 per cent of total generation; renewable heat 6.2 per cent of overall heat; and renewables in transport, 4.5 per cent*.' (Key points, page 1).

2.2.17 This is some level of success, but there remains a substantial amount of new electricity generating capacity required. In its messages to the Government, the Committee on Climate Change (CCC) 2018 Report[7] opens with the stark message that:

'The UK is not on course to meet the legally binding fourth and fifth carbon budgets. It will not be on course unless risks to the delivery of existing policies are reduced significantly and until Government brings forward new fully funded policies, beyond the achievements to date on electricity generation and waste.'

2.2.18 The CCC 2018 Report recognises the significant and sustained progress made to decarbonise both in the UK's power and waste management sectors. However, it is also clear that the easy wins have been made, not least recognising that carbon reductions in the power sector were lower in 2017 than seen in previous years, '*reflecting diminished potential from phasing out coal generation.'* Further, that '*estimated emissions from the waste sector rose by 5% in 2016, the latest year for which figures are available, due to a reduction in the amount of methane flared at landfill'* (page 30).

2.2.19 In Chapter 2: Power, the CCC 2018 Report identifies a need for '*at least'* 130 to 145 TWh of low carbon generation to be provided through the 2020s, to be '*in addition'* to the 120 TWh of low carbon generation expected to be online in 2020. This expectation assumes that the renewable capacity due to retire in the 2020s will be re-powered. '*If this is not the case, additional low-carbon generation would need to be contracted in the 2020s to replace the retiring plants'* (page 59).

2.2.20 The CCC 2018 Report continues to identify a need for the UK's electricity system '*to become more flexible in order to mitigate any risks to system security or increased costs that an increase in variable and inflexible*

[6] https://www.gov.uk/governmnet/uploads/system/uploads/attachment_data/file/633782/Chapter_6.pdf

[7] Reducing UK emissions, 2018 Progress Report to Parliament, Committee on Climate Change, June 2018. https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/

generation, alongside changing demand patterns that will arise as new technology is installed in homes and businesses.'

2.2.21 In relation to buildings, one of the CCC 2018 Report's key messages is for the deployment of low carbon heat to be prioritised, including '*low-regret opportunities …* [for] … *low-carbon heat networks in heat-dense areas (e.g. cities) and for increased volumes of biomethane injection into the gas grid (up to around 5 % of gas demand)'* (pages 85 and 86).

2.2.22 We are still very much within the critical 10 to 15 year period from publication of NPS EN-1 and the level of need is still urgent. It is clear that the policy priorities of NPS EN-1 remain highly relevant and urgent to deliver.

NPS EN-3

2.2.23 NPS EN-3 builds upon the generic principles established in NPS EN-1, to focus on renewable energy infrastructure. Paragraph 2.1.3 makes clear that '*it is for energy companies to decide what applications to bring forward and the Government does not seek to direct applicants to particular sites for renewable energy infrastructur*e', other than in relation to offshore wind.

2.2.24 Part 2.5 addresses biomass and waste combustion facilities and consequently is the Part applicable to REP. In the opening paragraphs, NPS EN-3 recognises the '*increasingly important role*' that such plant will have in meeting the UK's energy needs, including renewable energy commitments. Paragraph 2.5.3 confirms that NPS EN-3 applies to combustion generating stations that use waste as a fuel whether or not that fuel is renewable, a matter addressed at **Section 3.2** of this Report**.**

2.2.25 Paragraph 2.5.8 recognises the role of anaerobic digestion plant as a renewable fuel source. In addition to the ERF and Anaerobic Digestion facility, REP includes solar photovoltaic panels and battery storage. It is an integrated energy park using a range of energy generating and storage technologies; NPS EN-3 paragraph 2.5.11 applies and the decision maker should not be concerned about the type of technology proposed.

2.2.26 Further, paragraph 2.5.13 makes clear that '*throughput volumes are not, in themselves, a factor in the IPC decision-making … this is a matter for the applicant.'* Similarly, paragraphs 2.5.17 to 2.5.19 recognise that the commercial aspects of the proposed development are not likely to be an important matter for the decision-maker.

2.2.27 **Section 4.4** of this Report demonstrates how REP, not least operating as a well-designed '*waste combustion generating station, is in accordance with the waste hierarchy and of an appropriate type and scale so as not to prejudice the achievement of local or national waste management targets in England …'.* (NPS EN-3, paragraph 2.5.70).

2.2.28 In short, REP is an independently financed project designed to meet both private and public waste management needs across London and beyond.

This approach enables REP to deliver the waste hierarchy, but it also enables the Proposed Development to be flexible in terms of meeting market demand and to be resilient in terms of change in future feedstock[8] so remaining a useful and relevant supply of renewable/low carbon energy. Consequently, and as recognised at NPS EN-3 paragraph 2.5.30, some flexibility is likely to be required in any consent granted.

Summary of points from the National Policy Statements

2.2.29 Government remains committed to meeting Climate Change Act[9] commitments, recognising that moving to a secure, low carbon, energy system is challenging, but achievable. Critically, not least recognising severe constraints on public expenditure, the focus is on the market to provide (NPS EN-1, paragraphs 2.2.1 and 2.2.2).

2.2.30 Even with substantial change across the power sector, increased efficiencies in energy supply, and a dramatic decrease in greenhouse gas emissions associated with the UK's former reliance on coal, there remains an urgent and significant demand for more renewable/low carbon electricity supply, and preferably plant that can also deliver heat.

2.2.31 '*To minimise risks to energy security and resilience, the Government therefore believes it is prudent to plan for a minimum of 59 GW of new electricity capacity by 2025'* (NPS EN-1, paragraph 3.3.23). Yet, electricity generating capacity has barely changed over the period from 2011 to 2016, meaning that the level of demand sought in NPS EN-1 remains ever more urgent.

2.2.32 REP is a demonstrated solution to delivery constraints. It is a decentralised electricity generating station funded by private investment. It will accept a range of residual waste materials (a reliable supply of fuel) from which to recover both renewable/low carbon energy and secondary materials. It also incorporates battery storage, enabling energy resilience and flexibility.

2.2.33 The National Policy Statements establish the nationally important, and urgent, need for new infrastructure. They also make clear the level of expectation placed on such plant – the benefits of national significance that would be realised through REP.

2.2.34 Fundamentally, REP fully meets the policy objectives of the National Policy Statements: delivering new energy capacity, of a renewable/low carbon supply; delivering the waste hierarchy; and delivering societal benefit.

[8] The ERF will be designed to handle waste with net calorific value (NCV) ranging from 7 MJ/kg to 13 MJ/kg.

[9] http://www.legislation.gov.uk/ukpga/2008/27/contents

2.3 London Planning Policy

Adopted London Plan

2.3.1 At Chapter 5, the aLP presents the strategic policy for London's response to climate change. A primary objective is that London should be:

'A city that becomes a world leader in improving the environment locally and globally, taking the lead in tackling climate change, reducing pollution, developing a low carbon economy and consuming fewer resources and using them more effectively' (paragraph 5.1).

2.3.2 Paragraph 5.9 identifies that delivering this outcome will require a move to more sustainable energy sources, to be achieved through supporting '*the development of decentralised energy systems, including the use of low carbon and renewable energy and the greater utilisation of energy generated from waste*'. Reflecting policy objectives of the National Policy Statements, this approach is intended to bring resilience and security to London's energy supply.

2.3.3 Policy 5.2 consequently focusses on minimising carbon dioxide emissions, requiring development proposals to '*make the fullest contribution*' to this aim, including through the efficient supply of energy.

2.3.4 Policy 5.5 focusses on energy supply, stating an expectation that 25% of the heat and power used in London will be generated through the use of localised, decentralised energy systems by 2025. Policies 5.6 and 5.7A seek a supply of decentralised, renewable/low carbon energy recovered from residual wastes, confirmed in paragraph 5.38 of the aLP. In addition, Policy 5.7 expects major development proposals to result in a reduction in carbon emissions (see **Section 3** of this Report) and require potential impacts to be minimised (see **Section 5** of this Report).

2.3.5 In achieving Policy 5.7, paragraph 5.39 recognises that '*energy generated from waste provides a particularly significant opportunity for London to exploit in the future.'* The need for new energy generation capacity in London is made clear, as is the significant role that energy from waste should play in delivering renewable/low carbon energy supply.

2.3.6 The London Environment Strategy[10] ('LES') also makes clear both the advantages for London in becoming a zero carbon city and the challenges to London in achieving this objective, not least that '*more energy infrastructure will be needed to support London's growing population and this must be low carbon*' (page 203). The second of three underpinning priority objectives to decarbonise London is to '*develop clean and smart, integrated energy systems using local and renewable energy resources*'.

[10] London Environment Strategy, Mayor of London, May 2018. https://www.london.gov.uk/what-we-do/environment/london-environment-strategy

2.3.7 The aLP addresses waste as a land use from paragraph 5.65. Here, it is recognised as a valuable resource that can play a major role in tackling climate change; something that '*should be exploited for London's benefit'* (paragraph 5.66). Consequently, the aLP seeks to manage as much of London's waste within its boundaries as practicable, '*enabling London and Londoners to receive environmental and economic benefits from its management'* (paragraph 5.67).

2.3.8 The potential for communities within London to benefit from sustainable management of London's waste is further recognised within Policy 5.16A/a seeking to work '*towards managing the equivalent of 100% of London's waste within London by 2026'.* This policy can only be achieved by the industry responding to the demand for additional waste management capacity, as REP is doing.

2.3.9 Policy 5.16B presents recycling/composting targets desired to be achieved within London, intended to direct the type of capacity to be provided. Policy 5/17A makes clear the Mayor's support generally for increased waste processing capacity in London. This is also reflected in the Mayor's Climate Change Mitigation and Energy Strategy[11], one of a set of strategies outlining the Mayor's intentions to: reduce carbon dioxide emissions to mitigate climate change; secure a low carbon energy supply for London; and make London a thriving low carbon capital.

2.3.10 Policy 5.17A makes clear its support for the need to increase waste processing capacity within London. Whilst policies 5.17B/H, J and K also make clear their support for developments that include a range of complementary waste facilities on a single site, contributing renewable energy generation, particularly when from organic/biomass waste or producing a renewable gas.

2.3.11 Policy 5.17C seeks opportunities to deliver combined heat and power and/or combined cooling heat and power. Whilst the Mayor's Climate Change Mitigation and Energy Strategy highlights the following:

'London is currently heavily reliant upon the national grid for electricity, and its supply is inextricably linked to national energy infrastructure and national energy policy. This presents a particular challenge as without significant investment in infrastructure and demand reduction, the UK faces an energy gap in the near future' (page 74).

'The Mayor, through LWaRB funding, is providing financial support for the development of new waste management infrastructure in London, including energy-from-waste technologies that generate renewable heat and power' (page 101).

2.3.12 Adopted London Plan paragraph 5.76 makes the policy position very clear:

[11] https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/Energy-future-oct11.pdf

'Increasing London's waste processing capacity is a major mayoral priority'.

2.3.13 Policies 5.17F, G and H seek to ensure that there is enough land provided for waste management proposals, to be achieved through protecting and facilitating the maximum use of existing sites and safeguarding wharves with an existing or potential future use for waste management.

2.3.14 REP responds directly to the identified challenges and adopted policy, providing a local source of renewable/low carbon energy recovered from London's residual waste. It does so whilst fully meeting the criteria for new waste management development set out within Policy 5.17.

Draft London Plan

2.3.15 Chapter 9 of the dLP presents the strategic policy for sustainable infrastructure.

2.3.16 The Mayor's commitment to London becoming a zero carbon city is made clear, not least at paragraph 9.2.1. Paragraph 9.2.10 encourages the use of energy strategies, identifying the potential to reduce carbon dioxide emissions through the use of zero or low-emission decentralised energy supply, such as REP.

2.3.17 Policy SI3 seeks energy masterplans to be developed for large-scale development locations, which should identify, *inter alia*, possible opportunities to utilise energy from waste (Policy SI3B/3) and land for energy centres and/or energy storage (Policy SI3B/7).

2.3.18 The dLP addresses waste as a land use from Policy SI7, opening with reference to the circular economy and a desire to '*keep products and materials at their highest use for as long as possible'*. Policy SI7A/3 seeks to ensure '*that there is zero biodegradable or recyclable waste to landfill by 2026*', whilst Policy SI7A/4 sets the recycling targets to be achieved, identifying 65% for municipal waste by 2030. REP is demonstrated to be an important element of achieving these policies (see **Section 4** of this Report).

2.3.19 The dLP seeks similar outcomes to aLP Policy 5.17, with existing sites safeguarded for future development through policies SI8A/2 and SI9A. Policy SI8A/3 requires that the waste management capacity of sites should be optimised.

2.3.20 The need to deliver more waste infrastructure in London is stated at Policy SI8A/1 and further explained at paragraph 9.8.9; to meet the Mayor's commitment to self-sufficiency '*there needs to be a reduction in exports over the decade to 2026*'.

2.3.21 The dLP states that in 2015 London exported 11.4 million tonnes of waste (paragraph 9.8.1) and that over 5 million tonnes of waste went to landfill (paragraph 9.8.2). '*Some 32 per cent of London's waste that was biodegradable or recyclable was sent to landfill*' (paragraph 9.8.2).

2.3.22 As shown in **Figure 2.1,** of the eight landfill sites commonly used to dispose of London's waste today, only two are likely to remain open beyond 2025.

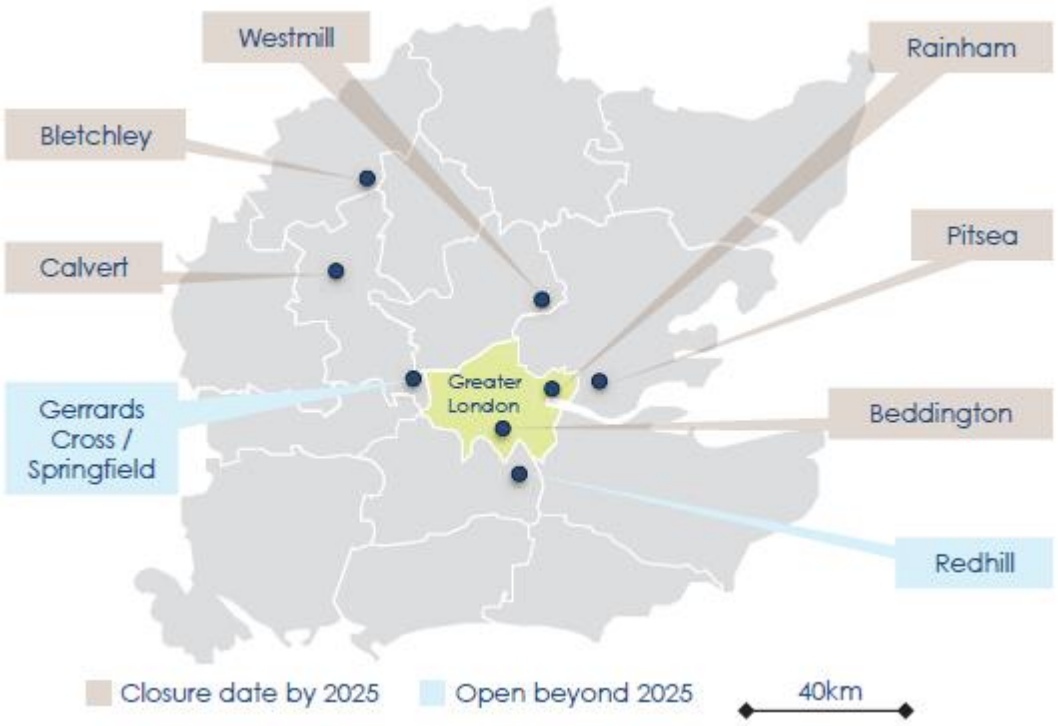


Figure 2.1 Landfill facilities commonly used to dispose of London's waste

2.3.23 dLP Policy SI8C/4 encourages delivery of combined heat and power and combined cooling heat and power. Within the LES, the Mayor commits to working to increase delivery of decentralised energy in London, including large scale decentralised and low carbon energy projects; potentially having '*a more direct role in the delivery of heat networks, significantly increasing the rate of their development in London*' (Policy 6.2.1 and page 263).

2.3.24 REP is a significant opportunity to achieve dLP Policy SI8 and the LES objectives; delivering district heating, whilst also comprising anaerobic digestion, solar power and battery storage. Further, REP is proposed at a location preferred in policy, a site already in waste management use, with associated river transport, both of which, as sought by dLP policy priorities, should be maximised.

Policy of the London Borough of Bexley

2.3.25 Chapter 4 of the Bexley Core Strategy presents the policies adopted in 2012 to manage the built and natural environment.

2.3.26 Policy CS8 commits to encompass the requirements of the London Plan with regard to, *inter alia*, reducing carbon dioxide emissions, delivering

decentralised energy, heat networks supported by CHP, and adopting on-site renewable energy technology.

2.3.27 Paragraph 4.2.6 confirms that an energy strategy '*will be produced to ensure that the council minimises its energy use and carbon emission to achieve the greatest financial and environmental benefits'.* LBB's, Energy Master Plan (LBB Energy Master Plan) was adopted in April 2016, concluding that there was clear potential to achieve a heat network with connection to the RRRF, located adjacent to the Application Site. This would be achieved through joint working with Peabody[12] but also LBB, Royal Borough of Greenwich and the GLA**.** Cory has been in discussions with the relevant parties seeking to deliver heat offtake from RRF, and as set out at **Section 3.9** of this Report, both RRF and REP are required to achieve the Mayor's energy aspirations set out in the London Plans.

2.3.28 Policy CS20 presents the approach to enabling sustainable waste management, which includes a commitment to '*supporting regionally significant waste management infrastructure…'*.

2.3.29 The Bexley Growth Strategy[13] and LBB Energy Master Plan foresee growth in heat distribution:

- The Bexley Growth Strategy identifies the opportunity to '*utilise existing heat sources within the area, such as the [RRRF] in Belvedere, to supply market competitive, low carbon energy to new developments and existing properties*' (paragraph 5.3.16). It also references utility projects, including '*a decentralised heat network, which could help to provide low-cost heat to resident and businesses*' (paragraph 5.3.17); and

- The LBB Energy Master Plan sets out a framework for future energy supply options, including district heating. It reports the results of a study focussing on opportunities in the north of the Borough, identifying the opportunity to connect to the RRRF. The LBB Energy Master Plan promotes the potential to connect to housing owned by Peabody.

2.3.30 As the primary host planning authority of REP, planning policy adopted by LBB is likely to be considered by the Secretary of State as "important and relevant". In this Report, LBB's policy is considered to provide similar, rather than additional direction, to that provided within the National Policy Statements and London Plans.

2.3.31 In short, the Bexley Core Strategy identifies a need for climate change initiatives including the provision of decentralised energy sources and

[12] The Peabody Trust was founded in 1862 as the 'Peabody Donation Fund' and now brands itself simply as Peabody. It is one of London's oldest and largest housing associations with around 55,000 properties across London and the South East.

[13] Bexley Growth Strategy, adopted December 2017. https://www.bexley.gov.uk/sites/default/files/2018-02/Bexley-Growth-Strategy.pdf

sustainable waste treatment for its residual wastes. These needs will be met by REP.

Summary of key points from the London Plans

2.3.32 Policy is slightly different across the two London Plans; however, key principles remain consistent within them:

- The need to reduce London's carbon emissions;
- The need for decentralised energy supply; and
- The need to divert waste from landfill, including through new recovery capacity that will enable London to be self-sufficient and benefit from renewable/low carbon energy supply.

2.3.33 REP will make a significant contribution to enabling London to be self-sufficient, taking its waste out of landfill and into energy recovery, keeping those wastes at their highest value for as long as possible. The ERF will both provide London with a decentralised energy source and reduce the city's carbon emissions.

2.3.34 The Proposed Development, a privately funded project reliant on no public subsidy, would provide the infrastructure necessary within London to deliver sustainable growth and communities. REP inherently delivers key policy priorities of the London Plans.

2.4 Policy Summary

2.4.1 There is clearly a policy driven need for new energy infrastructure and particularly for this to be renewable/low carbon. This national need is substantial in terms of the level of generating capacity desired; there has been little change in overall capacity provision since 2011 and the CCC 2018 Report identifies continued risks to energy supply. The national need is also substantial in terms of the proportion to come from renewable/low carbon supply.

2.4.2 At a local level, decentralised, robust, renewable/low carbon energy sourced within London is essential to improve the resilience of energy supply and reduce security risks within the capital.

2.4.3 There is also a policy driven need for new waste management infrastructure. Again this is substantial, nationally to reduce carbon emissions and locally to enable London to be self-sufficient. Energy recovery facilities have a key role to play in London avoiding non-recyclable waste being disposed of to landfill and in contributing to the electricity, and heat, demands from the capital.

2.4.4 The underlying need for both of these outcomes is a policy driven urgency to deliver substantial reductions in greenhouse gas emissions and to make

a real contribution to meeting climate change targets. Policy seeks these outcomes to also deliver material societal benefit alongside economic investment and environmental enhancement.

2.4.5 The National Policy Statements EN-1 and EN-3 and the London Plans are clear in their objectives to achieve climate change driven priorities of:

- Positive carbon outcomes, including provision of renewable/low carbon energy;
- Sustainable waste management; and
- Optimised design.

2.4.6 As demonstrated in **Section 3** of this Report, REP is a waste combustion generating facility that achieves a positive carbon outcome, not least through the recovery of renewable/low carbon electricity and has good potential to also contribute to heat demand.

2.4.7 As demonstrated in **Section 4** of this Report, REP is at the right level of waste hierarchy and constitutes sustainable waste management capacity, taking waste out of landfill.

2.4.8 As demonstrated in **Section 5** of this Report , REP delivers good design, not least through having access to both a viable electricity connection and strong demand for heat, through incorporating a range of energy generation and storage technologies and incorporating river freight as part of the multi-modal transport network. This is achieved whilst delivering societal benefits, such as employment and supply chain opportunities, and with acceptable impact on the environment, with benefits optimised where possible.

2.4.9 REP fulfils all of these policy objectives, delivering against the urgent and substantial need for new energy infrastructure that uses non-recyclable waste as its fuel. Its integration within surrounding communities means that REP also delivers the societal and economic benefits sought in policy.

3 Delivering a Positive Carbon Outcome and Renewable/Low Carbon Energy

3.1 Introduction

3.1.1 There is a demonstrated, policy driven need for new energy supply – that need is urgent and substantial. Further, there is a preference for that need to be met through renewable/low carbon supply and decentralised facilities.

3.1.2 REP is an energy generating station that meets national policy priorities and will deliver a cost-effective and low-risk contribution to meeting the fourth and fifth carbon budgets. For London, it can deliver a clean, smart, integrated energy system, fuelled by local and renewable/low carbon energy resources.

3.1.3 Responding directly to the priorities and expectations of both national and local policy, this section of the PBR demonstrates how REP achieves a positive carbon outcome through:

- Recovering renewable/low carbon energy;
- Reducing carbon emissions; and
- Delivering the potential for CHP.

3.2 Recovering renewable/low carbon energy

3.2.1 REP is properly described as a source of renewable/low carbon energy. NPS EN-3, the technology specific policy for renewable energy infrastructure, expressly includes energy from waste; REP is recognised in national policy as a renewable energy generating station, and consequently as achieving a positive carbon outcome.

3.2.2 REP will generate renewable/low carbon electricity for the equivalent of c.140,000 homes. In 2017 there was estimated to be almost 100,000 households in LBB, these are predicted to rise to over 125,000 households by 2040. REP will generate the equivalent of Bexley's households' electricity demands now and into the future.

3.2.3 At paragraph 2.5.10, NPS EN-3 states that a proportion of biodegradable waste may be classified as renewable for the purposes of Renewable Obligation Certificates (ROCs)[14]. Whilst the decision maker is advised that

[14] The Renewables Obligation (RO) was introduced by the Government in England, Wales and Scotland in 2002, to encourage the deployment of large-scale renewable electricity in the UK. The RO requires licensed UK electricity suppliers to source a specified proportion of the electricity they provide to customers from eligible renewable sources. ROCs are essentially the green certificates issued to electricity generators and bought by suppliers to show that they have fulfilled the RO. Government has recently undertaken a transition from ROCs to Contract for Difference (CfD) with the RO closing to new capacity on 31 March 2017.

this is not an issue of relevance to them, it is worth clarifying the position in terms of explicitly understanding the benefits of REP, as a renewable/low carbon energy supply.

3.2.4 The EfW Debate Guide[15] advises (at pages 1 and 2):

'Only the energy generated from the recently grown materials in the mixture is considered renewable. Energy from residual waste is therefore a partially renewable energy source, sometime referred to as a low carbon energy'.

3.2.5 At paragraph 39, the EfW Debate Guide indicates a level of specificity as to the proportion '*of the waste in our typical black bag, currently somewhere between one half and two thirds will contain biogenic carbon'.* The Renewable Energy Action Plan[16] estimates that municipal waste is 62.5% biodegradable content (see footnote on page 140). Waste composition analysis undertaken for RRRF shows a biogenic fraction of around 50%. The energy recovered through the ERF is properly described as renewable/low carbon, albeit influenced by the composition of the fuel.

3.2.6 Reference to the CCC 2018 Report demonstrates that modern waste combustion facilities are highly successful in recovering low carbon energy. The last bullet point on page 212 identifies that incineration *without* energy recovery accounts for less than 2% of waste emissions, mainly in the form of carbon dioxide. Facilities that combust waste *with* energy recovery are not even reported.

3.2.7 Greenhouse gas emissions from waste incineration (without energy recovery) have decreased over time, and yet capacity (with energy recovery) has increased substantially. Considering a ten year period from 2006 to 2016, waste incineration capacity increased from just over 4 million tonnes, to just over 11.3 million tonnes.

3.2.8 Modern plant are required to meet targets for recovery established through the Waste Framework Directive 2008[17]; they are designed to recover electricity efficiently with several also connecting to a district heat network. As technology improvements are integrated into energy recovery facilities, the modern plants are able to operate more effectively and efficiently, continuously minimising emissions. There is consequently a benefit to be gained from operating more modern energy recovery facilities.

3.2.9 As is made clear in the EfW Debate Guide (page 3):

[15] Energy from waste, A guide to the debate. Defra, February 2014 (revised edition). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284612/pb14130-energy-waste-201402.pdf

[16] National Renewable Energy Action Plan for the UK, DECC, July 2010. https://www.gov.uk/government/publications/national-renewable-energy-action-plan

[17] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. https://ec.europa.eu/environment/waste/framework

'Energy from waste is not just about waste management:

- *The energy it produces is a valuable domestic energy source contributing to energy security.*
- *As a partially renewable energy source it can also contribute to our renewable energy targets which are aimed at decarbonising energy generation.*
- *It has the added advantage that it is non-intermittent, so it can complement other renewable energy sources such as wind or solar.'*

3.2.10 By contrast, Figure 7.1 of the CCC 2018 report (reproduced in **Figure 3.1** below) shows clearly that methane emissions from landfill overwhelmingly dominate the greenhouse gas emissions from the waste sector.

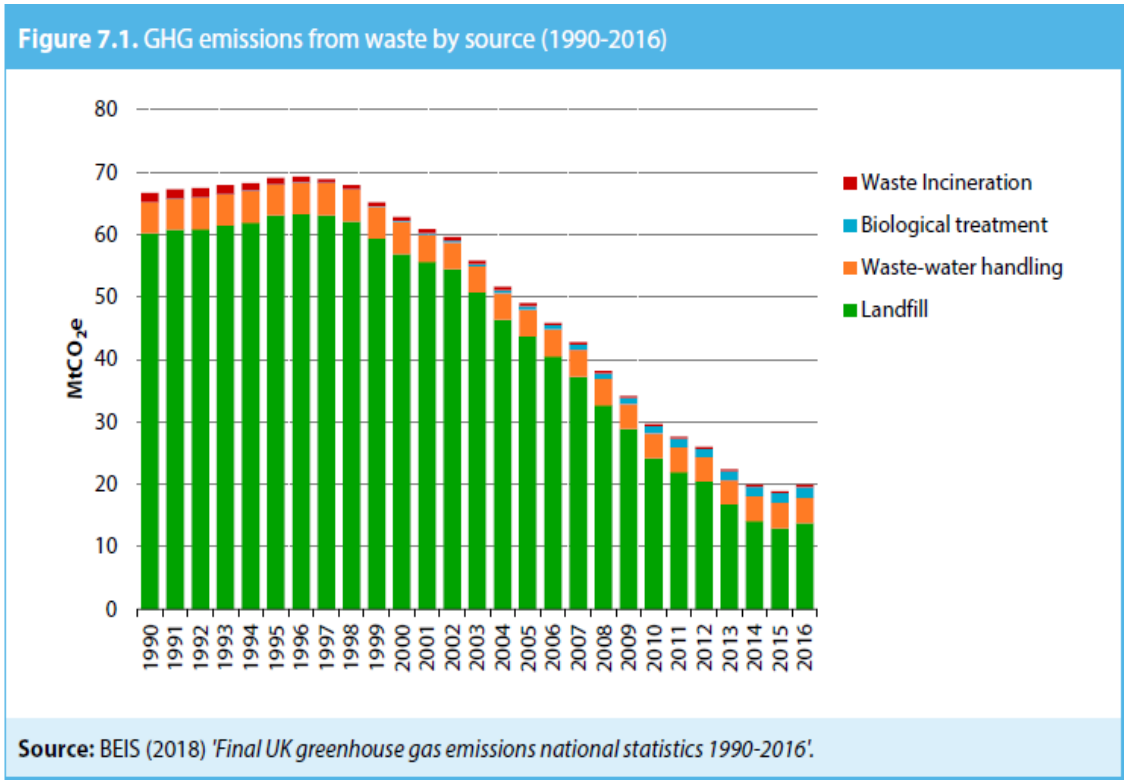


Figure 3.1: Figure 7.1 from CCC 2018 Report

3.2.11 Further to the ERF, REP incorporates both Solar Photovoltaic Panels and an Anaerobic Digestion facility to treat food/garden waste. Solar power is a wholly renewable energy.

3.2.12 The Anaerobic Digestion facility provides LBB with an in-borough solution to its food and green wastes, delivering LES objectives. NPS EN-3 recognises the resultant methane gas gained from this technology as a renewable fuel source and it is a waste management method promoted in the CCC 2018 Report. Further, this element delivers the objectives of aLP Policy 5.17B/j

and B/k and dLP Policy SI8C/3 in producing a renewable gas from organic/biomass waste.

Grid Connection

3.2.13 The renewable/low carbon electricity recovered at REP will be dispatched through the local distribution network. NPS EN-1 (paragraph 4.9.1) recognises that connection to the electricity network is an important consideration, but also that '*it is for the applicant to ensure that there will be necessary infrastructure and capacity within an existing or planned transmission or distribution network to accommodate the electricity generated. … This is a commercial risk the applicant may wish to take for a variety of reasons, although the IPC will want to be satisfied that there is no obvious reason why a grid connection would not be possible*.'

3.2.14 NPS EN-3 also identifies grid connection as a commercial risk, but that applications should '*include information on how the generating station is to be connected and whether there are any particular environmental issues likely to arise from that connection*'.

3.2.15 This is provided in the Electricity Grid Connection Statement (**Document Reference 5.3**) which explains that REP will be an embedded generator; a generator connected direct to the distribution system. The purpose of an embedded generator is to supply electricity to the distribution system local to the source of generation. The concept was developed to minimise the electrical losses that occur on the transmission system over long transmission lines. Embedded generation may not be fully utilised in a region where the demand for electricity is lower than that generated. However, this is unlikely to be the case at Littlebrook substation, located in an area which has very high electrical load requirements.

3.2.16 If the electrical demand fed from Littlebrook substation is more than the electricity generated at REP (which is highly likely) electricity will flow from REP to Littlebrook substation and then flow into the local distribution system fed from Littlebrook substation.

3.2.17 This means that, not only does REP have a viable grid connection, but it also presents the strong likelihood that that electricity will be provided to London. REP would be a policy desired decentralised, electricity supply, enabling energy self-sufficiency within the capital.

Battery Storage

3.2.18 When the National Policy Statements were published there was no ability to store electricity, except through hydro pump storage[18]. However, storage is seen as an increasingly important element of our energy infrastructure.

[18] Not least as confirmed in NPS EN-1, page 12, footnote 13

Draft London Plan Policy SI3B/7 expressly seeks the identification of land for energy centres and/or energy storage.

3.2.19 REP delivers energy storage as part of the Proposed Development; REP will enable energy to be stored, making the energy produced on site more effective (dLP, paragraph 9.3.11) and delivering smart, flexible power able to respond to peaks and troughs in demand.

3.2.20 This exceeds the expectations set out in the National Policy Statements.

3.3 Reducing carbon emissions

3.3.1 Through the recovery of renewable/low carbon energy, REP is inherently making a positive contribution to reducing carbon emissions. The policy priorities of the National Policy Statements are met.

3.3.2 Adopted London Plan Policy 5.17B/e and dLP Policy SI8D/3 go further, requiring a '*positive carbon outcome'* that results in significant greenhouse gas savings.

'*Facilities generating energy from waste will need to meet, or demonstrate the steps that are in place to meet, a minimum performance of 400g of CO2 equivalent per kilowatt hour of electricity produced.*'

3.3.3 The analysis undertaken in the CHP Assessment (**Document Reference 5.4**) demonstrates that the waste management technologies within REP will achieve this target, and even exceed the very low-level set within policy.

3.3.4 Table 1 within the CHP report presents the results of the assessment undertaken to demonstrate that REP delivers a very high level of efficiency in fully condensing (electricity only) mode. The inclusion of heat export further increases this efficiency, also increasing the primary energy savings achieved by REP. Consequently, as confirmed at **Section 8.2** of the CHP Assessment (**Document Reference 5.4**) the Proposed Development will qualify as a high efficiency cogeneration operation when operating in CHP mode, exceeding the Primary Energy Savings threshold. REP is confirmed to qualify as 'Good Quality' CHP.

3.3.5 Adopted London Plan Policy 5.7B expects major proposals to '*provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation where feasible.'*

3.3.6 The Proposed Development is integrated with power from one element supporting another, for example heat from the ERF is used to operate the Anaerobic Digestion facility. The export of energy from REP enables the projects using that energy also to reduce their carbon emissions.

3.3.7 The fuel to be used in REP is non-recyclable waste; diverting this waste from landfill moves waste up the hierarchy and avoids the consequent production of greenhouse gases, principally methane. Reducing the amount of

biodegradable waste sent to landfill is a key element of climate change policy because the resultant methane is such a potent greenhouse gas.

3.3.8 In the waste management sector, the over-riding proportion of greenhouse gases are generated from landfill, graphically demonstrated at **Figure 3.1.** Table 1.2 of the CCC 2018 Report identifies that landfill greenhouse gas emissions were due to fall by 11.5% in 2017; in reality, they increased by 6.6%. Page 213 states that in 2016 the amount of biodegradable waste landfilled increased by 2% and was largely due to a 9% increase in municipal solid waste deposits and a smaller decline in commercial and industrial wastes. Overall, '*the estimated amount of methane emitted from landfill increased by 7% in 2016, reversing the declining long-term trend'.*

3.3.9 As demonstrated in Table 7.2 of CCC 2018 Report (reproduced in **Figure 3.2** below) all the key indicators for waste are currently off-track for 2030.

Table 7.2. Key outcomes (indicators) to be on track for 2030 (and latest outturn)

Key outcome	2016 indicator (Change from 2007)	2016 outturn (Change from 2007)
Reduce landfill GHG emissions by 92% by 2030 from 2007 levels	-71%	-63%
Reduce biodegradable waste sent to landfill by 93% by 2030 from 2007 levels	-61%	-53%
Increase the proportion of methane captured at landfill to 65% in 2030 from 2007 levels	+65%	+62%

Source: BEIS (2018) *Final UK greenhouse gas emissions national statistics 1990-2016;* CCC analysis.
Note: The CCC indicator for the proportion of methane at landfill reaches 65% by 2016.

Figure 3.2: Table 7.2 of the CCC 2018 Report

3.3.10 The CCC 2018 Report consequently advises (page 217) that '*there is significant potential to divert biodegradable waste away from landfill and towards recycling, composting, anaerobic digestion (AD), mechanical biological treatment (MBT) and incineration with energy recovery*'.

3.3.11 The CCC 2018 Report continues a theme observed consistently across a range of Government policy documents. The Renewable Energy Roadmap[19] makes clear that the Government's support is focussed on '*more resource efficient uses of biomass. These include technologies that generate heat, especially combined heat and power (CHP), or make use of residual wastes*'.

[19] UK Renewable Energy Roadmap Update 2013, DECC, November 2013.
https://www.gov.uk/government/publications/uk-renewable-energy-roadmap-second-update

3.3.12 This statement is reinforced by a 'spotlight on energy from waste' that recognises the Government's continued support for energy from waste, through both combustion and anaerobic digestion, as a '*sustainable option for waste that would otherwise go to landfill and create landfill methane emissions*' (page 39).

3.3.13 Locally, this approach is reflected in both London Plans (aLP and dLP), which identify the opportunities to use energy from waste in delivering effective energy supply options:

'Increasing the amount of new renewable energy sources in London developments is supported. This includes the use of energy from waste schemes that are connected to a heat network, as well as solar photovoltaics and solar thermal, both on buildings and at a larger scale on appropriate sites' (dLP, paragraph 9.3.7).

3.3.14 These are important objectives for London to achieve; as a globally important city it has a key role to play in enabling waste to be used as a resource, to the benefit of London's people and places. The Government's Chief Scientific Adviser reported on the potential for taking waste to resource productivity in 2017, concluding:

'For the UK, the city is an extremely important lens through which to view waste. Cities themselves must grasp the opportunity to shift from waste to resource productivity. This will require city-scale partnerships between city authorities, their civic universities and their business and creative industries. Together, they should map their cities and ensure that waste is considered as a key part of the interconnecting infrastructures that underpin the lives of the city's inhabitants …'[20].

3.3.15 REP will deliver a positive carbon outcome through both energy recovery and waste management, exceeding national and local policy expectations. The use of the river to transport both waste and incinerator bottom ash will reduce road vehicle use and also minimise carbon emissions from the Proposed Development.

3.4 The potential for CHP

3.4.1 NPS EN-1 (part 4.6) makes clear the preference for plant that provide CHP (combined heat and power). Paragraph 4.6.8 establishes the test to be met by nationally significant infrastructure projects such as REP:

'Utilisation of useful heat that displaces conventional heat generation from fossil fuel sources is to be encouraged where, as will often be the case, it is more efficient than the alternative electricity/heat generation mix. To encourage proper consideration of CHP, substantial additional positive

[20] From waste to resource productivity. Report of the Government Chief Scientific Adviser, Government Office for Science, 2017. https://www.gov.uk/government/publications/from-waste-to-resource-productivity

weight should therefore be given by the IPC to applications incorporating CHP'.

3.4.2 NPS EN-3 confirms that the decision-maker should be satisfied that appropriate evidence has been submitted to demonstrate that CHP is included, or that the opportunities have been fully explored (paragraph 2.5.27).

3.4.3 The CHP Assessment (**Document Reference 5.4**) has considered the opportunities for heat connection specifically for the Proposed Development, confirming the potential to export substantial heat to off-site consumers in addition to the heat intended to operate the Anaerobic Digestion facility.

3.4.4 The London Plans (aLP and dLP), the Bexley documents and the LES demonstrate both the desire to achieve a district heat network within London, and specifically Bexley, and that connection between the Application Site and key development within LBB is feasible. Indeed, Figure 9.3 of the dLP (represented in **Figure 3.3**) confirms that the Application Site is located within a Heat Network Priority Area.

3.4.5 **Section 6.4** of the CHP Assessment (**Document Reference 5.4**) identifies a substantial regeneration project at Thamesmead, comprising up to 20,000 dwellings together with commercial properties, as having a high level of heat demand suitable for district heating network deployment. Further, the CHP Assessment (**Document Reference 5.4**) confirms that there is a feasible pipe route. These critical factors demonstrate the strength of the Proposed Development in being capable of delivering national and local policy in regard to CHP.

3.4.6 Further, the Applicant has consistently engaged with relevant parties to seek to deliver a district heating network. Cory has been discussing heat off-take from RRRF to deliver a district heat network with both LBB and the GLA since 2006. The Applicant co-funded the 2016 Bexley Energy Master Plan and is a key member of the Bexley District Heating Partnership Board (which had its inaugural meeting on 4 June 2018). At this meeting, Cory made clear the potential for heat from both RRRF and REP. Peabody is also a member of the Bexley District Heating Partnership Board following CEO level discussions between it and the Applicant.

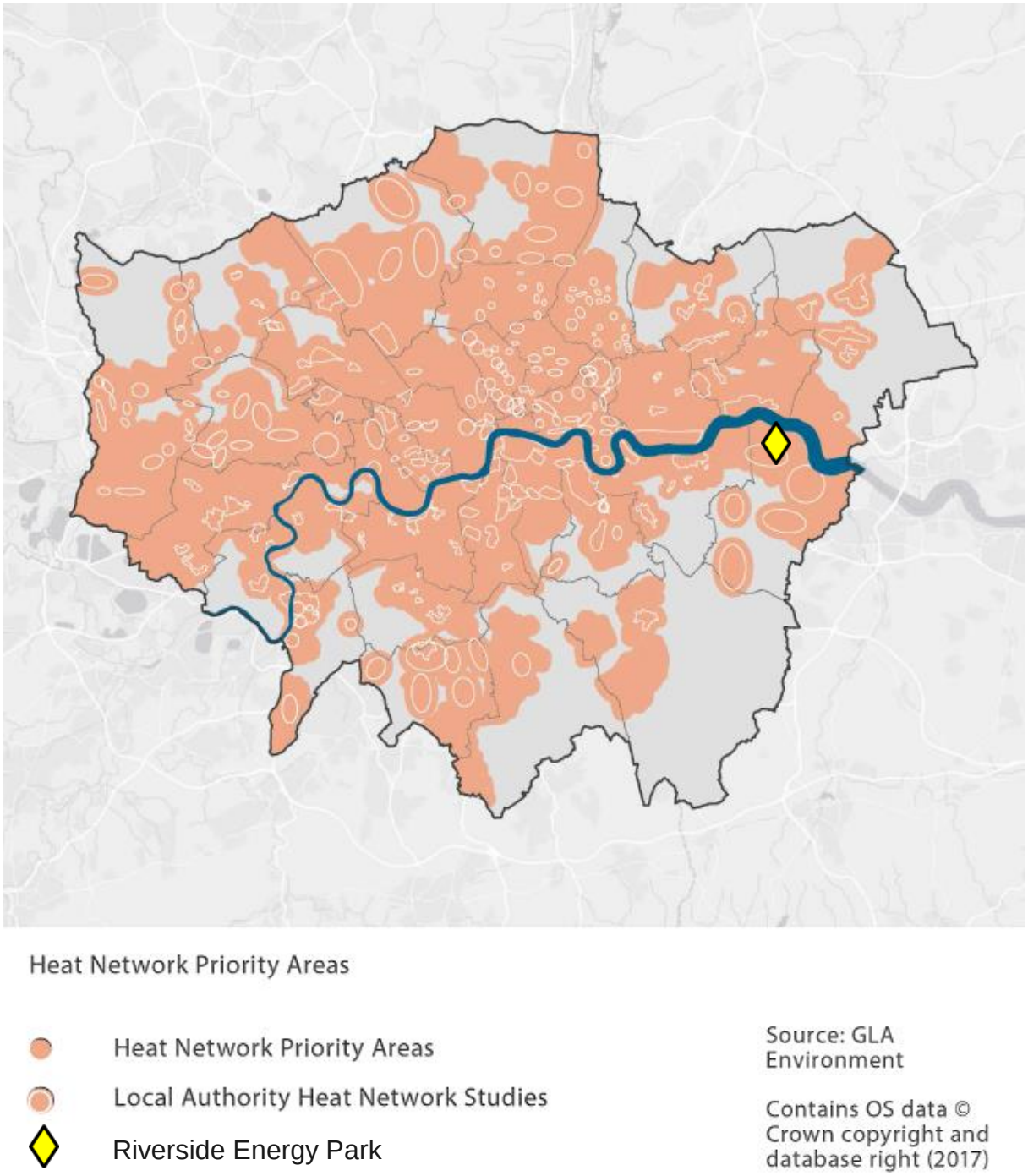


Figure 3.3: Figure 9.3 of dLP, Heat Network Priority Areas - Minor Suggest Changes

3.4.7 Deploying both REP and RRRF would effectively double the amount of heat available to supply local networks. In addition, having the two facilities provides the necessary redundancy cover during events when one plant is not available (e.g. under maintenance) thereby ensuring continuity of supply to those users (including households) benefitting from heat supply.

3.4.8 Further, the LES recognises both that '*demand on the electricity grid will likely increase due to the growing population and electrification of heat and*

transport', and that '*by 2050 the vast majority of London's building stock will need to have been retrofitted with measures to deliver high levels of energy efficiency*' (generally gained through renewable CHP).

3.4.9 Clearly, it is not a question of whether the RRRF *or* REP should operate with CHP, but rather recognition of the need for *both* energy generating facilities operating with CHP.

3.4.10 Meeting urgent demands for new energy generating stations that can provide decentralised, secure and affordable heat to consumers also brings the societal benefit sought from major energy infrastructure in NPS EN-1. REP should benefit from the significant weight to be granted to such strong CHP opportunities.

3.5 Conclusions

3.5.1 The Foreword of the CCC 2018 Report is revealing;

'… UK emissions continue to fall and we've seen progress wherever policymakers have been bold enough to make strategic commitments. Since 2008, successive Governments have focused on reducing emissions from electricity generation, just as this Committee recommended they should. Strong UK policies have closed coal plants and supported remarkable increases in renewable generation, accompanied by dramatic reduction in costs, far beyond the level the naysayers said was possible. Emissions from waste are also down 47% since 2008 – an unsung story, the outcome of EU regulation and the UK landfill tax.

We should celebrate this progress, but it masks a worrying trend in other sectors. In this report, we refer to the 'uneven' balance of emissions reduction, a polite way of drawing attention to Government inaction in a host of other areas. Our stalwarts, the power sector, have again propped up the 3% fall in overall emissions this year.

This can't go on. In the last five years, emissions outside of power and waste have plateaued. My Committee has chosen this moment to give a strong message to Government: Act now, climate change will not pause while we consider our options. And act in the consumer interest: pursue the low-cost, low-risk options, like onshore wind, and enforce the standards that will reduce emissions from vehicles and buildings, where consumers have been cheated by misleading industry claims.

It is my hope that this report will give ammunition to those battling to give climate change the priority it deserves within government. Cutting emissions from industry, transport and housing requires integrated policy development across Whitehall and throughout the UK'.

3.5.2 The Proposed Development is industry funded, cost-efficient, low-risk and demonstrated to result in a positive carbon outcome. It will provide for climate change priorities across the energy, waste, transport and housing

sectors; it is exactly the sort of cross sector development that the Committee on Climate Change is seeking.

3.5.3 REP is both recognised in policy, and demonstrated in design, to be a major energy plant providing renewable/low carbon energy. As a development incorporating a suite of complementary technologies to recover, store and export renewable/low carbon energy, REP contributes to meeting both the UK's energy demands and policy priorities.

3.5.4 Methane is the predominant greenhouse gas emitted from landfill because it is highly potent. There are real advantages to avoiding its generation, particularly through the disposal of biodegradable wastes. Consequently, the combustion of waste and anaerobic digestion, both recovering a supply of renewable energy, are demonstrated to result in significant and substantial benefits in terms of carbon emission reductions, and are rightly waste management options preferred in the waste hierarchy.

3.5.5 There is a demonstrated credible grid connection for electricity export and good potential for delivering heat to viable consumer demand.

3.5.6 REP meets, and exceeds, both national and local standards for positive carbon outcomes. It provides a decentralised, secure, flexible energy source for London, primarily using the city's residual waste as the fuel.

3.5.7 A nationally significant infrastructure project, REP provides local benefit in enabling London to become a zero carbon city.

4 Sustainable Waste Management

4.1 Introduction

4.1.1 There is a demonstrated policy driven need for new waste management capacity, principally to divert waste from landfill. If London is going to meet its own aspirational targets for self-sufficiency and carbon reductions, that need is also both urgent and substantial. REP is an energy generating station using residual waste as its fuel source. It will make a significant contribution to meeting these priorities as a private investment, with no reliance on public funding or subsidy.

4.1.2 NPPW presents the Government's ambitions for a more sustainable and efficient approach to waste management. Critically, NPPW recognises the positive role that planning has to play in the '*delivery of sustainable development and resource efficiency, including provision of modern infrastructure, local employment opportunities and wider climate change benefits, by driving waste management up the waste hierarchy'.* Not least, these benefits are to be achieved through ensuring that waste management is considered alongside other spatial planning concerns and recognising the positive contribution that waste management can make to the development of sustainable communities (paragraph 1).

4.1.3 In 2015, London exported 11.4 million tonnes of waste, representing 60% of its total waste arisings; the Mayor has an aspirational target for London to be 100% self-sufficient by 2026, i.e. in 8 years. REP directly responds to that objective, providing major energy infrastructure that will enable London's waste to be managed in London and providing benefit to Londoners. Further, due to its levels of efficiency and use of multi-modal transport, REP will be the nearest appropriate installation for wastes generated beyond London. Approximately two million tonnes of residual waste management capacity is required across counties close to London; REP will enable London to benefit from the economic, environmental and societal benefits of recovering renewable/low carbon energy from these wastes.

4.1.4 REP occupies a site already in waste management use, a location preferred in policy. The Application Site is optimised in its use, incorporating a range of complementary technologies (across waste management and energy generation and storage) and making a positive contribution to the development of sustainable communities.

4.1.5 REP is demonstrably of an appropriate scale and type of infrastructure, incorporating residual waste combustion and food/green waste biological treatment to divert a nominal 655,000 tonnes of waste from landfill. This section of the PBR demonstrates how REP, as new waste management infrastructure, meets the three waste management policy priorities of:

- Delivering the waste hierarchy;

- Enabling self-sufficiency; and
- Achieving site optimisation and increasing use of river transport.

4.2 Delivering the waste hierarchy

Overview

4.2.1 NPS EN-3 (paragraph 2.5.64) makes clear that waste combustion generating stations '*need not disadvantage reuse or recycling initiatives where the proposed development accords with the waste hierarchy'.* The subsequent paragraphs within NPS EN-3 set out what is expected in the applicant's assessment for such energy infrastructure. Ultimately, the appropriate test for REP is set out at NPS EN-3, paragraph 2.5.70:

'The IPC should be satisfied, with reference to the relevant waste strategies and plans, that the proposed waste combustion generating station is in accordance with the waste hierarchy and of an appropriate type and scale so as not to prejudice the achievement of local or national waste management targets in England…'.

4.2.2 Within this section REP is considered against the waste hierarchy at two levels: *in principle*, considering national policy expectations; and *within London*, assessing the Proposed Development's role in achieving the local waste management strategy.

In Principle

4.2.3 *'Energy recovery is an excellent use of many wastes that cannot be recycled and could otherwise go to landfill. It can contribute secure, renewable energy to the UK demand for transport, heat, biomethane and electricity and is generally the best source of feedstocks for UK bio-energy needs. Our horizon scanning work up to 2020, and beyond to 2030 and 2050 indicates that even with the expected improvements in prevention, re-use and recycling, sufficient residual waste feedstock will be available through diversion from landfill to support significant growth in this area, without conflicting with the drive to move waste further up the hierarchy. Maximising the potential for growth in continuous generation available from energy from waste will require both better use of the available residual waste and development of high efficiency flexible infrastructure'* (Waste Policy Review[21], paragraph 214).

4.2.4 The waste hierarchy is a well-established principle, delivering objectives of both the Waste Framework Directive 2008 and Landfill Directive[22] seeking to prevent or reduce the negative effects on the environment and people

[21] Government Review of Waste Policy in England 2011, Defra, 2011. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69401/pb13540-waste-policy-review110614.pdf

[22] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste. http://ec.europa.eu/environment/waste/landfill_index.htm

from waste management. The focus is rightly placed on higher levels of the waste hierarchy, reducing the amount of waste produced and looking to re-use or recycle this resource.

4.2.5 However, not all waste can be managed in this way and consequently the Government supports '*efficient recovery of residual waste – of materials which cannot be reused or recycled – to deliver environmental benefits, reduce carbon impact and provide economic opportunities. Our aim is to get the most energy out of waste, not to get the most waste into energy recovery'* (Waste Management Plan for England[23], page 13).

4.2.6 The EfW Debate Guide[24] reinforces this approach, recognising that (page 2):

'In future we are aiming to prevent, reuse and recycle more of our waste, so the amount of residual waste should go down. However, energy from waste will remain important.

To maintain the energy output from less residual waste resource we will need to:

- *divert more of the residual waste that does still exist away from landfill and capture the renewable energy*
- *continue the drive towards better, higher-efficiency energy from waste solutions'*.

4.2.7 There can be some debate about what constitutes 'residual' waste. The EfW Debate Guide is a useful and relevant reference:

'Residual waste is mixed waste that cannot be usefully reused or recycled. It may contain materials that could theoretically be recycled, if they were perfectly separated and clean, but these materials are currently too contaminated for recycling to be economically or practically feasible. It may also be that there is currently no market for the material or it is uneconomic to take to market. ***An alternative way of describing residual waste is 'mixed waste which at that point in time would otherwise go to landfill'****. Generally energy recovery should be from residual waste'* (page 14, paragraph 18) (our emphasis).

4.2.8 The waste hierarchy is delivered both through good intentions and market forces. Data gathered by WRAP and published in its Gate Fee Report 2017[25] clearly shows that gate fees at material recycling facilities and

[23] Waste Management Plan for England, Defra, December 2013. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265810/pb14100-waste-management-plan-20131213.pdf

[24] Energy from waste, A guide to the debate, Defra, February 2014. https://www.gov.uk/government/publications/energy-from-waste-a-guide-to-the-debate

[25] Gate Fees Report 2017: comparing the costs of waste treatment options, WRAP, June 2017 http://www.wrap.org.uk/gatefees2017

organic waste treatment facilities (e.g. anaerobic digestion facilities) which are preferred in the waste hierarchy, are significantly lower than gate fees at energy from waste plant and landfill facilities. This price differential across the waste management method has been seen repeatedly in WRAP's annual reporting.

4.2.9 It is clear that it makes sound commercial sense for waste producers to seek the most cost-effective waste management solution, favouring reuse and recycling.

4.2.10 The ERF will recover more than just energy, but also secondary aggregate (from the incinerator bottom ash), glass and metal. This means that materials recovery will happen efficiently alongside energy recovery, contributing both to overall recycling targets and delivery of the circular economy.

4.2.11 Further, REP incorporates anaerobic digestion, recognised to be the preferred treatment within the waste hierarchy for biodegradable wastes.

4.2.12 REP inherently satisfies the waste hierarchy, taking residual waste out of landfill and delivering benefits to London of sustainable new infrastructure, reduced carbon emissions and renewable/low carbon energy. On page 9, the EfW Debate Guide makes the Government's position very clear: that there is '*a long term role for energy from waste both as a waste management tool and as a source of energy*'.

4.2.13 The waste management industry regularly reports upon waste arisings and future capacity demand; it is fundamental to its business. The Environmental Services Association (ESA) representing the UK's waste and secondary resources industry published its report 'Energy for the Circular Economy: an Overview of Energy from Waste in the UK'[26] in July 2018. The ESA considered a number of different forecasts for waste infrastructure demand, concluding that the capacity gap for residual waste treatment infrastructure will be in the range of 3.5 to 6 million tonnes per year by 2030.

4.2.14 It is clear that new major energy infrastructure, using waste as the feedstock, will be required for the foreseeable future. The ESA's report provides an indication of that level of need from the industry's perspective and this aligns with that of the Government:

'Our horizon scanning work up to 2020, and beyond to 2030 and 2050, indicates that even with the expected improvements in prevention, re-use and recycling, sufficient residual waste feedstock will be available through diversion from landfill to support significant growth in this area, without

26 http://www.esauk.org/application/files/7715/3589/6450/20180606_Energy_for_the_circular_economy_an_overview_of_EfW_in_the_UK.pdf

conflicting with the drive to move waste further up the hierarchy' (Waste Policy Review, paragraph 214).

4.2.15 In short, Government sees a long term role for energy from waste, from both combustion and biological processes, as sustainable infrastructure, delivering both effective waste management and renewable/low carbon energy. REP is readily demonstrated to deliver the national waste strategy and the waste hierarchy in principle.

Within London

4.2.16 The London Plans (aLP and dLP), and the LES, endorse energy recovery facilities as a key element of the sustainable communities the Mayor wants to see developed in London. Delivering national policy locally, the London Plans recognise the recovery of energy from waste as a preferred level of the waste hierarchy, lying below reuse and recycling but above disposal to landfill.

4.2.17 Cory, both as the Applicant and a leading waste management service provider operating within London, is fully supportive of reuse and recycling initiatives. One of its key operating assets is the materials recovery facility at Smugglers Way, in Wandsworth. Another is RRRF, generating enough electricity for the equivalent of 160,000 homes.

4.2.18 The London Waste Strategy Assessment (**Annex A** to the PBR, 'the Assessment')) delivers the requirements of NPS EN-3 to examine the conformity of REP with the waste hierarchy and the effect of REP on the relevant waste plan. The Assessment is largely reliant upon the data presented within the London Plans (LPs) and the London Environment Strategy (LES) and is structured around testing four relevant elements.

4.2.19 Each scenario is assessed for both the adopted London Plan and draft London Plan; in **Table 4.1** below only the draft London Plan scenario are named, but the reasoning for each applies across both London Plans.

Table 4.1 Summary of the Scenarios Assessed

Scenario		Why
Just the dLP		
1	dLP Arisings, with dLP Recycling	To test the ERF against the (adopted and) draft planning policy
Review of Waste Arisings		

Scenario		Why
2a	2016/17 LACW[27] and dLP C&I[28] Arisings, with dLP Recycling	The LPs report only household waste. This tests the ERF against the adopted and draft planning policy, which is updated with actual LACW arisings
2b	2016/17 LACW and Reduced C&I Arisings, with dLP Recycling	The LPs assume that non-household waste is recorded within the C&I waste stream. This addresses any criticism that scenario 2a results in double counting
Review of Waste Recycling		
3a	2016/17 LACW, with LES Recycling and Reduced C&I Arisings, with dLP Recycling	The LES recognises the extreme challenges that exist to meet LPs recycling targets and proposes lower targets for LACW
3b	2016/17 LACW and Reduced C&I Arisings, with LES Recycling	This scenario also considers the higher recycling that the LES places on the C&I waste stream in order to meet 65% overall
Review of Available Capacity		
4	2016/17 LACW and Reduced C&I Arisings, with LES Recycling, and lost capacity	This tests the level of need if the Lakeside ERF is lost to Heathrow by 2026

4.2.20 Consequently, the London Waste Strategy Assessment considers a range of scenarios based on the different waste forecasts and recycling and recovery polices within the aLP, and the dLP and incorporates consideration of the LES. It is a comprehensive assessment of the waste strategy within London.

4.2.21 Another key assumption used in the London Waste Strategy Assessment relates to the amount of existing capacity that is assumed to be available. For the purposes of this Assessment an existing capacity of 2,248,000 tpa has been assumed for the 'inLondon' capacity, i.e. those facilities that are

[27] Local Authority Collected Waste. All waste collected by the local authority, including both household, municipal and non-municipal, also including construction and demolition wastes. LACW is the definition that is used by Defra in statistical publications.

[28] Commercial and Industrial waste. Commercial waste is waste generated from premises used wholly or mainly for the purposes of a trade or business, whilst industrial waste is essentially that produced by industrial processes or activity. These wastes are generally collected and managed by the private sector, but can be processed as LACW.

located within the capital and delivering the self-sufficiency policy. This capacity assumption aligns with the London Environment Strategy. Consideration has also been given to the capacity located outside of London but provided, under contract, to manage London Boroughs' local authority collected waste ('LACW'). For the purposes of the London Waste Strategy Assessment, an existing capacity of 2,638,000 tpa has been assumed for the 'London +' capacity (i.e. capacity within the capital and capacity outside the capital currently utilised by London Boroughs). Currently, London's residual waste is managed using facilities both located within and beyond London.

4.2.22 A summary of the results from the London Waste Strategy Assessment is presented in **Table 4.2** which demonstrates that, in all scenarios, there is always a need for the ERF within REP, and generally for energy recovery capacity greater than the nominal throughput proposed for the ERF.

4.2.23 The London Waste Strategy Assessment also considers the "real-world" context of waste management in London and the south east, not least as presented in the report titled Residual Waste in London and the South East, Where is it going to go…?[29] ('the Tolvik Report') which confirms the urgent and substantial need for new residual waste treatment capacity.

4.2.24 The analysis in the Tolvik Report has been undertaken using data from the Environment Agency, discussions with waste management companies, and Tolvik's own knowledge, which includes its review of third party residual waste assessment reports undertaken on behalf of the Environmental Services Association; it is informed by a number of different representatives of the waste management industry.

4.2.25 On page 24, the Tolvik Report concludes

'Consider, for example, if there was a "zero landfill" policy across London and the South East in which no Residual Waste is to be landfilled by 2025 (similar to the current Greater London Authority's policy of working towards not sending any biodegradable waste to landfill by 2026). In the Central scenario 4.7Mt of EfW capacity over and above that currently operational in London and the South East would need to be available. Whilst some of this capacity could potentially continue to be met by RDF export to Europe, any shortfall would need to be through the construction of new [energy recovery facilities] *in London and the South East. The modelling in the Low Tonnage scenario assumes a maximum of 2.06Mt of "Additional" EfW capacity by 2025 – less than half that required for a "zero landfill" scenario – putting into context deliverability of such a solution.'*

4.2.26 Through the analysis of data relevant to actual waste management practice in London and the South East, the independent Tolvik Report presents a

[29] Residual Waste in London and the South East. Where is it going to go …? Tolvik Consulting Ltd, October 2018http://www.tolvik.com/reports/

clear picture of the substantial amount of new residual waste treatment capacity required.

Table 4.2: Summary of the London Waste Strategy Assessment

	Scenario 1 LP Arisings, with LP Recycling				Scenario 2a 2016/17 LACW and LP C&I Waste, with LP Recycling				Scenario 3b 2016/17 LACW and Reduced C&I Waste, with LES Recycling				Scenario 4 2016/17 LACW and Reduced C&I Waste, with LES Recycling and lost capacity				
	Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		
Year	**2026**	**2036**	**2026**	**2036**	**2026**	**2036**	**2026**	**2036**	**2026**	**2036**	**2026**	**2036**	**2026**	**2036**	**2026**	**2036**	
Residual waste to be diverted from landfill (thousand tonnes)																	
Total	**2,918**	**2,855**	**3,114**	**2,910**	**3,180**	**3,088**	**3,405**	**3,147**	**3,184**	**3,107**	**3,427**	**3,284**	**3,184**	**3,107**	**3,427**	**3,284**	***m***
Demand for REP ERF assuming 'London +' existing capacity (thousand tonnes)																	
Existing Capacity	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,548	2,548	2,548	2,548	*n*
Residual Waste	**280**	**218**	**476**	**272**	**542**	**451**	**767**	**510**	**546**	**469**	**612**	**498**	**636**	**559**	**702**	**588**	***o***
ERF	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	*p*
% of ERF	**43%**	**33%**	**73%**	**42%**	**83%**	**69%**	**117 %**	**78%**	**83%**	**72%**	**93%**	**76%**	**97%**	**85%**	**107%**	**90%**	***q***
Demand for REP ERF assuming 'inLondon' existing capacity (thousand tonnes)																	
Existing Capacity	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	*r*
Residual Waste	**670**	**608**	**866**	**662**	**932**	**841**	**1,157**	**900**	**936**	**859**	**1,002**	**888**	**936**	**859**	**1,002**	**888**	***s***
ERF	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	*t*
% of ERF	**102%**	**93%**	**132%**	**101%**	**142%**	**128%**	**177%**	**137%**	**143%**	**131%**	**153%**	**136%**	**143%**	**131%**	**153%**	**136%**	*v*

4.2.27 The London Waste Strategy Assessment demonstrates that, even with the most conservative assessments (relying upon London Plan waste forecasts, applying London Plan policy, and assuming that all existing capacity within and beyond London will continue to operate (i.e. "london+")) there remains a need to divert at least 218,000 tonnes of waste from landfill at 2036. In this scenario (Scenario 1) London requires at least one third of the ERF's nominal capacity in order to deliver the Mayor's aspirational local waste management targets.

4.2.28 If Scenario 1 is re-run, to remove the current reliance on the existing energy recovery capacity operating outside of London (i.e. "inLondon"), then this level of demand increases to 662,000 tonnes at 2036. London requires all of the ERF's nominal capacity in order to deliver the Mayor's aspirational local waste management targets, including net self-sufficiency.

4.2.29 Scenario 1 is an aspirational outcome for London, not least requiring in the region of 1.4 million tonnes of new recycling capacity by 2026. Not only are these ambitious outcomes foreseen to occur alongside economic growth, household growth and population growth, they are sought without recourse to funding (post 2020) and without a clear strategy or delivery plan.

4.2.30 Through simply amending waste forecasts to account for actual arisings in year 2016/17, applying LES recycling targets and making the reasonable assumption that some of the existing capacity will cease to operate within the foreseeable future presents a very different case, in which there remains, at least, between 1 to 1.5 million tonnes of waste to be diverted from landfill.

4.2.31 Scenario 4 demonstrates that, very easily, the level of need for new treatment capacity for non-recyclable wastes in London exceeds that of the REP ERF.

4.2.32 Commercial analysis undertaken by the Applicant (the Tolvik REP Market Assessment referred to within **Annex A**) demonstrates a need for between 0.6 to 1.4 million tonnes of residual waste management capacity within London, to manage London's non-recyclable waste. This range aligns with the results shown in the London Waste Strategy Assessment, which indicates that, realistically, London will require new residual waste management capacity in the order of 1 million tonnes. Substantial new infrastructure is required in London in order to divert its waste from landfill, achieve self-sufficiency and gain the benefit of reduced carbon demands and increase renewable/low carbon energy supply.

4.2.33 The London Waste Strategy Assessment has been undertaken to address the test set out in NPS EN-3. However, Scenario 1 demonstrates that the ERF does not prejudice the waste hierarchy; the Assessment could have stopped there.

4.2.34 The scenarios were developed further to test the range of need for the ERF within REP, examining the various waste forecasts that are within the public domain.

4.2.35 By considering some of the variables and uncertainties explored within the London Waste Strategy Assessment, it is clear that a conservative approach to residual waste treatment capacity runs a high risk of London failing to deliver the infrastructure sought in policy: decentralised, secure, renewable/low carbon energy supply, including heat networks.

4.2.36 By its very nature, waste forecasting is not a precise science. Good planning, the delivery of integrated sustainable communities, spurns a reliance on spurious precision. It seeks to consider a range of possibilities, properly understands the outcomes of each, and seeks to build in flexibility to enable an optimal development.

4.2.37 Under estimating future waste arisings is often driven by a fear of over-supply in residual waste management provision. Not only does this fear risk failing to deliver the infrastructure required, and recognised as a key component of sustainable communities, it is unsubstantiated. Ultimately, this approach leads London to continuing its reliance on the sub-optimal waste management practices that it uses today, but that policy seeks to avoid.

4.2.38 Dogmatically expecting aspirational recycling targets to be achieved, in full, is liable to the same risks.

4.2.39 London is already performing well in comparison to comparable major European capital cities, including Stockholm, Amsterdam, Paris, and Madrid. London's recycling is likely always to be constrained by its very nature: high density housing with 50% as flats/apartments, means there is limited scope for residents to source segregate waste; higher levels of deprivation, which generally leads to lower levels of recycling achievement; and transient and diverse populations, requiring both consistent, repeated communications in a number of different languages and the need to effect cultural change.

4.2.40 As with all local authorities, London Boroughs are also affected by the severe austerity measures, constraining the amount they spend on discretionary items such as investment in recycling. The Mayor cannot require the Boroughs to incur excessive additional costs, such that his influence is unlikely to be able to mandate that recycling targets are substantially increased. Any further significant improvement in recycling rates is likely to be driven by national legislative or policy intervention, such as mandatory waste food collection service. However, this will require substantial investment both in terms of finance and resources (people, infrastructure, communications etc).

4.2.41 There is no clear strategy within the London Plans as to where that investment will come from. Not least, there is no clear pathway to achieving either of the Mayor's waste minimisation or high recycling desires. Recent historical evidence indicates that the desired 5% reduction in waste over the plan period would be an achievement not seen previously, and comprehensive kerbside recycling services are already widely provided across London. Aligned with no identified funding, it is difficult to see how the necessary and substantial, cultural change would occur in order to achieve these aspirations.

4.2.42 Existing facilities that currently offer substantial residual waste management capacity to London may be reasonably assumed to cease operating in the next 10 years, removing a substantial element of London's current ability to divert waste from landfill. London exports nearly two-thirds of its waste currently, including to landfill facilities nearly all of which will close by 2025.

4.2.43 The ERF within REP does not result in over-capacity, it provides the infrastructure necessary for London to achieve its strategic policy and to develop sustainable communities. It will enable Londoners to have certainty that their waste is being kept at its maximum value for as long as possible, diverted from landfill, and combusted to gain elements of benefit, such as renewable/low carbon energy.

4.2.44 Not least, the ERF within REP is not reliant on any one local authority contract. It is a merchant facility, meaning that it would offer its services within the market. REP is available to receive those wastes that are not recycled from a range of customers, rather than operating as a fixed element within a single waste management contract. The residual C&I waste market has historically been underserved and REP represents private investment to bridge that gap.

4.2.45 With some contractual obligations, if there is a commitment to provide a fixed tonnage of waste or proportion of overall wastes, an energy recovery facility as part of a single contract has been construed by some to prejudice recycling. However, within the open market, costs for recycling are demonstrably and consistently less than energy from waste. WRAP's gate fee reports advise that the price per tonne of waste sent to an energy recovery facility is more than for recycling options. Operating on the open market, and in competition with recycling facilities, means that the ERF will be just one element of the waste treatment infrastructure required within London, complementing recycling.

4.2.46 In any event, REP incorporates an Anaerobic Digestion facility. Even whilst Government seeks to remain technology neutral, it recognises that anaerobic digestion is the best technology to deal with food and green waste. The Anaerobic Digestion facility has been designed to respond to local demand, primarily from LBB, providing that authority and other customers a cost-effective and efficient in-borough waste management resource.

4.2.47 Further, the secondary materials recovered from the ERF contribute to achieving the circular economy within London.

4.2.48 In addition, the London Waste Strategy Assessment only considers London's waste, responding to the policy demand for London to be net self-sufficient. Whilst the ERF within REP is promoted to take waste from within London, there is no justification for it to be limited to the capital, especially given its location. Within their respective development plan documents there is identified a need for c.2 million tonnes of residual waste management capacity required across the waste planning authorities close to London (Essex, Hertfordshire, Kent, Norfolk, Surrey & Suffolk). In the event that *all* of London's policy aspirations are met, *in full*, London can benefit from the economic, environmental and societal benefits of recovering renewable/low carbon energy from these wastes.

4.2.49 Nobody knows for certain what the future demands of waste management in London will be. REP delivers all the key policy objectives of the National Policy Statements, the London Plans (aLP and dLP) and even the LES. London can deliver higher recycling alongside REP and it will gain from all the benefits and opportunities of REP: reduced carbon emissions; increased, decentralised, renewable energy supply; a project to address fuel poverty; flexibility and self-sufficiency in waste management.

4.2.50 REP is fully policy compliant, providing London with the resilience and flexibility it requires to meet *all* of its policy aspirations.

Conclusion

4.2.51 *In principle*, the case is clear; energy recovery facilities have a long-term future working alongside recycling and diverting waste from landfill. In July 2018, Defra responded to criticisms made of energy from waste technologies by responding that it '*supports the waste hierarchy whereby prevention, re-use and recycling should always be prioritised. However, not everything can be recycled and recovering energy from waste is environmentally preferable to landfill*'[30].

4.2.52 The same response advises that household recycling rates continue to increase and that more waste was being recycled than incinerated. '*Although the amount of waste that is incinerated has gone up, this is waste which would have previously gone to landfill, not waste that would have been recycled, meaning a far greater proportion of our waste is now managed either through recycling or energy-from-waste incineration*.'

4.2.53 In all scenarios considered in the London Waste Strategy Assessment, it is demonstrates that there is a persistent need for new residual waste treatment capacity in London; infrastructure that delivers the circular

[30] https://www.letsrecycle.com/news/latest-news/defra-defends-recycling-in-face-of-efw-criticism/

economy, diverts non-recyclable waste from landfill and recovers both renewable/low carbon energy and secondary materials.

4.2.54 The overriding conclusion 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 at no cost to the public purse. Indeed, it is likely that REP alone will not be sufficient to meet the requirements of London, and the South East.

4.3 Self-sufficiency

4.3.1 Both the aLP (Policy 5.16A/a) and the dLP (Policy SI8A/1) are clear on the policy intent to manage the equivalent of 100% of London's waste within London by 2026, i.e. within the next eight years.

4.3.2 This is a substantial ambition; in 2015, London made net exports of 7.8 million tonnes of waste (dLP, paragraph 9.8.1). This is predominantly to the East and South East regions of England (where the destinations are primarily landfill facilities) but also to energy recovery facilities in the South West of England and mainland Europe.

4.3.3 The principles of self-sufficiency and proximity are often bound together, not least at Article 16 of the Waste Framework Directive 2008[31] (the WFD). The WFD seeks to deliver a network of waste management facilities to ensure that the European Community, as a whole, is self-sufficient in waste disposal and the recovery of mixed municipal wastes. This is an important principle and avoids wastes being disposed of outside of the European Union where appropriate facilities may not operate sufficiently to ensure waste management occurs without endangering human health or harming the environment.

4.3.4 To this end, WFD Article 16(3) requires that:

'The network shall enable waste to be disposed of or waste referred to in paragraph 1 to be ***recovered in one of the nearest appropriate installations****, by means of the most appropriate methods and technologies, in order to ensure a high level of protection for the environment and public health' (our emphasis).*

4.3.5 The wording '*recovered in one of the nearest appropriate installations*' is important. The concept involves elements other than just distance: the installation chosen for any tonne of waste may be *one of* several; and it cannot be any installation, it needs to be an *appropriate* installation.

[31] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. http://ec.europa.eu/environment/waste/framework/

4.3.6 Energy recovery facilities, such as the ERF within REP, are not required to be *the, only, closest* installation to the waste; they are required to be '*one of the nearest appropriate installations*'.

4.3.7 The ERF within REP is already demonstrated to be an *appropriate* installation: it will exceed the thresholds set out in the definition for recovery and the London Plan CIF target; operate at the right level of the waste hierarchy; divert waste from landfill; and present London with a supply of renewable/low carbon energy. Located in London it is also *one of the nearest* such installations, both for waste arisings within London and beyond.

4.3.8 The policy aspiration for London to be self-sufficient is eminently sensible. Having its own network of waste management facilities means London can benefit from economic investment as well as environmental gain and societal benefits. However, this does not mean that REP should be constrained to taking only waste arising within London; not least, those same benefits will be gained wherever the source of waste lies.

4.3.9 Article 16(4) of the WFD confirms that the principles of self-sufficiency and proximity do not mean that every Member State has to possess the full range of final recovery facilities within that Member State. The Waste (England and Wales) Regulations 2011[32] (as amended[33]) (the Waste Regulations) also confirm (at Schedule 1, Part 1, paragraph 4) that the network sought is to enable the European Union as a whole to be self-sufficient. Further, that the full range of final recovery facilities does not need to be located in England or Wales, either separately or jointly.

4.3.10 All waste arisings, of any type or composition, require management. Generally, it is impracticable, and potentially harmful, for that management to occur at the point of arising. Therefore, waste will need to travel to re-use, recycling, composting, recovery, or disposal facilities with both appropriate consent and available capacity.

4.3.11 The destination to which waste travels for management is principally affected by two factors:

- Haulage costs, largely determined by the road network and distance from the source of waste to the facility and the travel time over this distance); and
- The cost of using any facility (the gate fee, and at disposal facilities, Landfill Tax).

4.3.12 Consequently, for the operator of the waste management facility, gaining that waste (whether for treatment or disposal) is a commercial matter

[32] http://www.legislation.gov.uk/ukdsi/2011/9780111506462/contents

[33] http://www.legislation.gov.uk/uksi/2012/1889/contents/made

between the producer and the service provider, and one that is affected by market demands.

4.3.13 The EfW Debate Guide recognises the importance of optimising residual waste as a fuel, and ensuring that energy from waste plants are able to respond to change over time. Concerns about the need to 'feed' the plant are readily addressed through building in flexibility and enabling facilities to seek out waste from a range of sources, which may be beyond the boundary of the administrative authority in which they are located.

4.3.14 REP is proposed in response to a clear demand from London. Not only does the London Waste Strategy Assessment demonstrate an ongoing need within London for non-recyclable waste treatment, it also identifies a policy driven need across nearby counties for a further 2 million tonnes of residual waste to be diverted from landfill.

4.3.15 As demonstrated in the CHP Assessment (**Document Reference 5.4**), REP will exceed both Waste Framework Directive 2008 standards of efficiency and both London Plans policy regarding carbon; it is properly to be regarded as an energy generating station. It has been designed to work efficiently on the receipt of a range of waste tonnages and calorific values. It is an efficient and appropriate installation of the type sought by Government.

4.3.16 As demonstrated in **Chapter 6** of the Environmental Statement (ES) (**Document Reference 6.1**), there is no unacceptable adverse impact caused by transporting waste to REP from further afield, not least because the transport modes available within the Proposed Development include river freight. Consequently, there is no reasonable objection to the import of waste to the ERF within REP from outside of London.

4.3.17 This approach is wholly in line with the advice of the EfW Debate Guide:

'There is nothing in the legislation or the proximity principle that says accepting waste from another council, city or region is a bad thing and indeed in many cases it may be the best economic and environmental solution and/or be the outcome most consistent with the proximity principle' (page 6).

4.3.18 The Proposed Development makes optimal use of a site already in use for waste management, providing complementary technologies to recover renewable/low carbon energy. As demonstrated in the CHP Assessment (**Document Reference 5.4**), there is viable and substantial local heat demand, including from social housing. The waste management and heat demands, and the ability to use river transport are not likely to relocate in the foreseeable future; there are clear and particular advantages in locating the ERF within REP, and in bringing waste to it.

4.3.19 In addition, the Anaerobic Digestion facility within REP provides LBB with an in-Borough solution for its green and garden wastes, so meeting the Mayor's challenge to increase municipal waste recycling.

4.3.20 Recovering value from waste generated in London means REP delivers energy, jobs and societal benefits to London; but it should not be constrained to receiving only London's waste. Such a constraint would be contrary to European and national policy and would unreasonably restrict future flexibility and the optimal operation of the ERF.

4.4 Site Optimisation

Introduction

4.4.1 The Proposed Development makes optimum use of the Application Site, responding directly to dLP Policies SI8C/1,2,3 and 4 that particularly encourage development proposals that:

- Deliver a range of complementary waste management and secondary material processing facilities on a single site;
- Produce secondary materials;
- Contribute to renewable energy generation, especially renewable gas technologies from organic/biomass waste; and
- Provide CHP and/or combined cooling heat and power.

4.4.2 The Application Site is in existing waste management use and the Proposed Development incorporates a range of complementary waste management and energy generation technologies, delivering renewable/low carbon energy, gas and secondary materials.

4.4.3 The ERF within REP will recover renewable/low carbon energy and will be CHP Enabled. Some heat may be used to operate the Anaerobic Digestion facility with a much greater proportion intended for a future district heat network, providing affordable and reliable energy for the substantial regeneration programme being led by Peabody.

4.4.4 The Solar Photovoltaic Panels and Battery Storage are complementary technologies to the waste management facilities that together optimise the use of the site.

Secondary Materials

4.4.5 The ability of the ERF within REP to recover renewable/low carbon energy and to connect to a heat distribution network has previously been demonstrated. In addition, REP will recover a number of secondary materials.

4.4.6 The incinerator bottom ash ('IBA') produced from a typical municipal waste incinerator represents about 20-30% of the input waste. Recycling the IBA avoids its disposal to landfill and recovers glass, metals and secondary aggregates. In 2016, 190,000 tonnes of metal was recycled from IBA in the

UK and 2 million tonnes of virgin construction aggregate was replaced by recycled IBA[34].

4.4.7 Glass and metals are recycled into products recognisable in all our homes. The secondary aggregate is generally used as a road sub base, a bulk filler for construction and in cement bound materials. Its processing is regulated by the Environment Agency and the final products must conform to relevant civil engineering standards. The recovery of secondary aggregates is extremely important to reduce the reliance on primary aggregates extracted from quarries.

4.4.8 As one example, in 2014, the United Nations Environment Programme published a report titled 'Sand, Rarer Than One Thinks' which concluded that the mining of sand and gravel '*greatly exceeds natural renewal rates*' and that '*the amount being mined is increasing exponentially, mainly as a result of rapid economic growth in Asia*'[35].

4.4.9 The Anaerobic Digestion facility within REP will accept local green and food wastes, providing for their optimum treatment, recovering both a renewable gas and a secondary material, the digestate. The benefits of adding well-prepared digestate to soil is well-established. Soil is essential for achieving a range of important ecosystem services and functions, including: food production; carbon storage and climate regulation; water filtration; flood management; and support for biodiversity and wildlife. Well-managed soils have the potential to capture more carbon in future.

4.4.10 These secondary materials will be sold on the open market and reduce the need for virgin materials. The IBA can be removed from site by barge along the River Thames, so minimising road transport.

Battery Storage

4.4.11 Battery storage means that energy recovered on site can be stored on site. Today's electricity grid has virtually no storage. The storage facilities that do exist use pumped hydropower, which works well but can only be located in very limited areas of the country. REP enables the recovered energy to be stored and released as needed, providing a continuous flow of renewable/low carbon energy supply during periods of high demand, or when wind or solar is unavailable.

4.4.12 Energy storage technologies have several benefits:

- A more efficient grid that is resilient to disruptions;

[34] Energy for the Circular Economy: an overview of Energy from Waste in the UK, Environmental Services Association, July 2018. http://www.esauk.org/application/files/7715/3589/6450/20180606_Energy_for_the_circular_economy_an_overview_of_EfW_in_the_UK.pdf

[35] https://na.unep.net/geas/archive/pdfs/GEAS_Mar2014_Sand_Mining.pdf

- Decreased carbon emissions from a consequent greater use of cleaner energy;
- An increase in the economic value of wind and solar power and strengthened UK competitiveness in the race for renewable/low carbon energy; and
- More job opportunities in supporting sectors such as manufacturing, engineering, construction, transportation and finance.

4.4.13 In short, battery storage increases operational performance and reliability, providing an enhanced balance between supply and demand for electricity. This benefits the entire power supply network from generation, transmission and distribution to all users.

4.4.14 The ability to store large quantities of electricity in battery storage is a new technology and a growth sector. REP actively supports this sector enabling further improvements to be made.

Conclusions

4.4.15 A range of complementary waste management and energy generation and storage technologies are all incorporated within the Proposed Development.

4.4.16 This delivers an inherent, and beneficial, interconnectedness across the Application Site:

- A high percentage of waste would be brought to the ERF by river;
- The ERF will recover renewable/low carbon energy, some of which will be used on-site for the Anaerobic Digestion facility;
- The Anaerobic Digestion facility will take local green and food wastes to recover energy and digestate (a secondary material);
- Electricity, and hopefully, heat, recovered from the ERF will be put to beneficial use off-site, but within London;
- Secondary materials will also be recovered from the ERF, with incinerator bottom ash transported off-site by river;
- The Main ERF Building will accommodate Solar Photovoltaic Panels, to provide a renewable energy source on site; and
- The Battery Storage will enable greater efficiency in electricity supply.

4.4.17 REP presents a range of complementary technologies, designed: to operate efficiently, delivering policy priorities of reduced carbon emissions and increased renewable/energy supply; and to operate together, with heat from the ERF going to the Anaerobic Digestion facility, with the Solar Photovoltaic

Panels providing back up power to the ERF; with the Battery Storage providing resilience both on and off site.

5 Optimised Design and Development Effects

5.1 Introduction

5.1.1 At section 4.5 of NPS EN-1, it sets out the criteria for good design for energy infrastructure.

'The visual appearance of a building is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object – be it a building or other type of infrastructure – including fitness for purpose and sustainability, is equally important. Applying "good design" to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area' (paragraph 4.5.1).

5.1.2 REP delivers good design. This is demonstrated from the start, through the site choice: using a location promoted in policy; optimising the existing waste management use; delivering CHP potential for a substantial local demand; and using river transport. It is a highly functional site, in terms of its location, how it operates, and how it integrates with the surrounding communities.

5.1.3 The optimised design of REP enables the Proposed Development to deliver priorities of the National Policy Statements and London Plans (aLP and dLP), particularly through:

- Good design;
- Societal gain;
- Sustainable transport; and
- Optimised development effects.

5.2 Good Design

5.2.1 *'The creation of high quality buildings and places is fundamental to what the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work and helps to make development acceptable to communities' (National Planning Policy Framework[36], paragraph 124).*

[36] National Planning Policy Framework, Ministry of Housing, Communities & Local Government, July 2018. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf

5.2.2 As demonstrated in **Section 4.4** of this Report, good design is inherent to the Proposed Development, starting with site location and layout. The Application Site is a location that is preferred in policy, it is in existing waste management use, appropriately distant from sensitive receptors, has viable access to both electricity and heat distribution networks and is in the vicinity of a range of transport modes.

5.2.3 REP is multi-functional and sustainable. The fit-for purpose technologies are proven to work efficiently and effectively; their integration reduces the need for off-site power to a minimal demand and enables resilience in delivering energy on demand; the use of river transport and access to rail, bus and cycle routes reduces transport related impacts. REP is efficient in both the recovery and use of natural resources.

5.2.4 The Proposed Development is also adaptable and able to respond positively to potential future change. The ERF is designed to accept a range of waste types and tonnages, building in flexibility such that it can continue to recover renewable/low carbon energy from residual wastes; taking those wastes out of landfill, and complementing recycling. **Chapter 15** of the ES (**Document Reference 6.1**) considers the potential additional influences of climate change. The Application Site is located in an area that benefits from flood defences designed to protect from a flood event with a probability of occurring once every 1,000 years, whilst the embedded mitigation has been designed to accommodate the predicted impacts of climate change. The Proposed Development has been designed to provide for biodiversity net gain and resilience in ecological networks.

5.2.5 REP is demonstrated (**Section 4.3** of this Report) to comprise appropriate activities at the right scale and level of the waste hierarchy. Taking residual wastes from a range of sources enables REP to provide London the waste management infrastructure that it requires to be able to meet self-sufficiency, decentralised energy supply and zero carbon policy priorities. The Proposed Development's alignment with new development at Thamesmead means that the societal benefits of affordable, decentralised energy supply have a real opportunity to be delivered within London.

5.2.6 Beyond site optimisation, the aesthetic design of the Proposed Development is optimised. Whilst detailed design elements are yet to be finalised, they will fall within the parameters of the Design Principles (**Document Reference 7.4**) which has been prepared to guide the design development of the above ground works.

5.2.7 The Main REP Building is architecturally designed, which has been directed both by the function of that building and its relationship with RRRF. The Design Principles (**Document Reference 7.4**) presents the approach to developing a family of forms across the two developments, to create a cohesive whole with a positive dynamic within the site and its wider context.

5.2.8 For example, the orientation of the Main REP Building has been optimised to suit spatial constraints, maximise openness of view to/from the Thames, maximise solar generation and to respond to process requirements. The relationship with the river would be reinforced with the layout of REP having a contrasting effect to RRRF and creating a dynamic interplay of buildings along the River Thames.

5.3 Societal Gain

5.3.1 The value of good design to society is widely recognised, not least by the National Policy Statements and National Planning Policy Framework which advises:

'In determining applications, great weight should be given to outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.' (paragraph 131).

5.3.2 As set out in the Design Principles (**Document Reference 7.4**), REP will achieve a high level of sustainability in its construction, not least through the preferred use of locally sourced, recycled and low carbon content building materials.

5.3.3 Societal gain is delivered by REP in its operation through: a high quality of aesthetic design; the sustainable management of waste; recovery and storage of renewable/low carbon energy; the creation of economic value through jobs and inward investment; and the potential for district heating network deployment.

5.3.4 Many of these benefits have already been considered in detail within the PBR, such that this section focuses on the creation of economic value and the potential for district heating.

Economic Value

5.3.5 **Section 14.9** of the ES (**Document Reference 6.1**) advises that a minimum number of 75 full time equivalent workers would be required to operate the Proposed Development (see **paragraphs 14.9.12-14.9.13** of the ES, **Document Reference 6.1**), contributing £7.2 million GVA to the wider economy (see **paragraph 14.9.18** of the ES, **Document Reference 6.1**).

5.3.6 In addition, construction activity at the REP site is expected to support approximately 837 temporary construction jobs, contributing £93.3 million GVA to the economy (see **paragraph 14.9.3** of the ES, **Document Reference 6.1**).

5.3.7 Socio-economic assessments are not readily able to assess the contribution made to society beyond simple fiscal tools. Being assessed as 'slight beneficial' effects overall underplays the societal benefits, beyond the level

of economic investment, of providing a range of jobs, which require different skill sets and that are accessible via a range of transport modes.

5.3.8 In addition, the assessment cannot readily measure the value of the type of investment being made. The waste management and solar power industries are well-established, core elements of infrastructure; they are important and investment in them is arguably more valuable to society than other investments, for example a shopping centre. River freight is also an established industry, and REP will optimise the use of existing river transport infrastructure, creating new jobs within this sector and supporting the industry's further growth.

5.3.9 Battery storage is a new technology, widely recognised as a key element of a future, smarter, electricity supply. Its growth and development is supported by Government through initiatives such as the Faraday Challenge[37]. Whilst public support is important, so too is private investment. The integration of battery storage within the Proposed Development not only builds in resilience and operational efficiency, it is also a demonstration of the Applicant's support for this burgeoning industry.

5.3.10 The contribution made by energy recovery facility construction projects to the local economy was reported upon in June 2018, in relation to Viridor's new facility at Avonmouth (Bristol). Let's Recycle reported that Viridor had spent £5.3 million to date with local businesses within 30 miles of the project site[38]. This is a clear example of how strategically important projects deliver locally important benefits, including job opportunities.

5.3.11 Fit for Work recognises that people in work tend to enjoy happier and healthier lives than those who are not, contributing to our happiness, building our self-confidence and self-esteem and rewarding us financially. The Government funded support network identifies four key benefits of being in work[39]:

- *'Keeps us busy, challenges us and gives us the means to develop ourselves;*
- *Gives us a sense of pride, identity and personal achievement;*
- *Enables us to socialise, build contacts and find support; and*
- *Provides us with money to support ourselves and explore our interests.'*

5.3.12 **Chapter 6** of the ES (**Document Reference 6.1**) outlines the public transport network serving the Application Site, including frequent bus

[37] https://www.gov.uk/government/news/business-secretary-to-establish-uk-as-world-leader-in-battery-technology-as-part-of-modern-industrial-strategy

[38] Viridor's Avonmouth EfW project boosts local businesses, Let's Recycle, 28 June 2018. https://www.letsrecycle.com/news/latest-news/viridors-avonmouth-efw-local-businesses/

[39] https://fitforwork.org/blog/benefits-of-working/

services to local residential areas and Belvedere rail station, which is within 20 minutes walking distance. In addition, the network of public rights of way, including the Thames Path, provides numerous opportunities for workers to walk or cycle to REP.

5.3.13 The Healthy Streets approach is a core tenet of the Mayor's Transport Strategy[40]. Figure 3 (page 37) presents the 10 Healthy Streets indicators, which include:

- *'Walking and cycling are the healthiest and most sustainable ways to travel, either for whole trips or as part of longer journeys on public transport. …*
- *A wider range of people will chose to walk or cycle if our streets are not dominated by motorised traffic …*
- *Reducing the noise impacts of motor traffic will directly benefit health, improve the ambience of street environments and encourage active travel and human interaction.'*

5.3.14 River transport is an inherent element of the Proposed Development. It is also a mode of transport promoted by Policy 17 of the Mayor's Transport Strategy, which seeks '*the transfer of freight from road to river in the interests of reducing traffic levels and the creation of Healthy Streets'*.

5.3.15 Taking vehicles off the road is a policy priority in terms of reducing adverse environmental effects, but also improving the quality of places. REP is well located for a range of non-car based travel such that the Proposed Development delivers societal benefit to both future employees and those enjoying the streets surrounding the site.

District Heating Network

5.3.16 The carbon benefits of a district heat network are widely recognised, especially when the source point is an efficient plant using a renewable/low carbon fuel. The policy imperative for combined heat and power is such that NPS EN-1 requires developers to '*consider the opportunities for CHP from the very earliest point and it should be adopted as a criterion when considering locations for a project*' (paragraph 4.6.7). The CHP Assessment (**Document Reference 5.4**) demonstrates that REP is well-located to high levels of demand, such that a district heating network is viable.

5.3.17 Under Objective 6.2, the LES recognises that: '*In addition to reducing the energy use of buildings in London, there is a need to transform the energy system so that power and heat for buildings and transport is generated from*

[40] Mayor's Transport Strategy, Mayor of London, March 2018. https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf

clean, local and renewable sources, such as solar and waste heat' (page 261).

5.3.18 In addition to the environmental benefits, NPS EN-1 (amongst other policy documents) also recognises that '*access to energy is clearly beneficial to society and to our health as a whole*' (paragraph 4.13.1).

5.3.19 The Future of Heating[41] is another such document that makes this connection, particularly recognising the increased benefits for low-income and fuel poor households:

'The changes needed to our heating systems as a result of the threat of climate change are likely to touch the lives of every person in the UK. We all need to heat our homes and buildings. The impact of a radical shift in the way we heat our homes may be felt most acutely amongst low-income and fuel poor households – for whom heating costs will make up a higher proportion of their total income. For these households, the decarbonising of heating offers both opportunities and risks. It is important that everyone can understand the impacts that government's proposals will have on the fuel poor households and how these impacts vary across different future scenarios. Alongside the work to develop the policy framework, DECC will continue to work to understand more fully the impact of proposals on consumers and to understand the potential for synergies between the areas of low carbon heating and fuel poverty' (Introduction, paragraph 14).

'In 2015 there were 335,201 households living in fuel poverty in London, which equates to 10.1 percent of the all households. … There is increasing evidence that living in a cold home is associated with poor health outcomes and an increased risk of morbidity and the mortality for all age groups. The physical impacts of living in a cold home are causing acute suffering for many Londoners. Children living in cold, damp and mouldy homes are almost three times more likely to suffer from respiratory illnesses' (LES, page 228).

5.3.20 Peabody[42] is one of the oldest and largest housing associations in London, with over 150 years of history, experience and expertise. Following a merger with Family Mosaic in July 2017, the Peabody Group now owns and manages more than 55,000 homes across London and the South East, housing over 111,000 residents. The Peabody '*purpose is inspired by two great social movements:*

- *George Peabody's vision of providing safe and affordable housing for the working poor of Victorian London, and*

[41] The Future of Heating: Meeting the Challenge, Department of Energy and Climate Change, March 2013. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/190149/16_04-DECC-The_Future_of_Heating_Accessible-10.pdf

[42] https://www.peabody.org.uk/about-us

- *Grassroots community action in response to the 'Cathy Come Home era' of poor quality housing in post-war Britain led by organisations like Family Mosaic.'*

5.3.21 A core area held within the Peabody estate is Thamesmead, which in 2018 is celebrating 50 years of the first residents moving in. Over the next 30 years, Peabody plans to spend over £1 billion on significant improvements to housing, green spaces, waterways and economic vitality. New development includes 20,000 new homes, '*making Thamesmead not only the biggest regeneration project in London but one of the biggest in the UK*'[43].

5.3.22 The Mayor's ongoing commitment to delivering local, decentralised heat within London is made clear within the LES, as Policy 6.2.1 Delivering more decentralised energy in London. An element of delivering this policy is the Mayor having a more direct role, so as to significantly increase the rate of development of district heating networks. '*The Mayor will therefore consider the establishment of a District Heating Network Delivery Body for London that secures funding, and in partnership with London Boroughs, develops and builds district heating networks*' (page 263).

5.3.23 A district heat network from REP to Thamesmead would be an ideal project for the District Heating Network Delivery Body to commence: there is a demonstrated renewable/low carbon supply of heat; there is a demonstrated substantial demand for the heat; all it requires is strategic support to deliver the heat to housing.

5.3.24 The presence and situation of both the proposed development at Thamesmead and an existing industrial user demonstrate that REP located appropriately to substantial heat demands. **Section 10.3** of the CHP Assessment (**Document Reference 5.4**) identifies that development a district heating network '*to initially serve new-build consumers within Thamesmead would present the most favourable configuration. With the exception of one scheme which is currently under construction, the prospective developments are due to complete mid-2020s and therefore align with the construction programme for REP, which is anticipated to commence operations in 2024*.'

5.3.25 REP will be constructed to a level of readiness where the plant is fully capacity of exporting heat, and is synonymous with being 'CHP from the outset', which the Applicant has referred to as 'CHP-Enabled'. The Proposed Development includes all the necessary infrastructure within REP and export/return pipes will be installed to the Application Site boundary so that the site is ready to be connected at the appropriate time.

5.3.26 Consequently, there is a very real prospect of delivering a district heat network from the Proposed Development and the Applicant is actively

[43] https://www.thamesmeadnow.org.uk/the-plan/

engaging with Peabody and the relevant local planning authorities on this matter (not least as set out at **paragraph 3.4.6** of this Report).

5.3.27 The societal benefit of delivering a cost-effective, reliable, supply of heat, particularly to Peabody Housing, cannot be overestimated. The Proposed Development represents a very real opportunity to deliver a district heating network into an area where the social benefits would be most keenly felt.

5.4 Sustainable Transport

5.4.1 Sustainable transport is an inherent element of the Proposed Development, from the receipt of waste and the removal of incinerator bottom to the daily movements of employees. REP is demonstrated to deliver societal benefits of investment to the river transport industry, reduced carbon emissions, improved health opportunities and making the surrounding streets a better place to be for everyone.

Maximising Use of River Transport

5.4.2 Policy safeguards existing wharves for future use. REP will actively use them, ensuring their future and optimising their use. There is a well-established river transport network already in place such that no river works are proposed or necessary.

5.4.3 **Section 6.4** of the ES (**Document Reference 6.1**) advises that RRRF typically operates with a minimum 75% of waste input delivered by river. The Proposed Development would use the jetty that serves RRRF, with waste input to REP also transported in containers on barges from riparian waste transfer stations located along the River Thames in central London. It is consequently anticipated that the ERF within REP would also normally operate with a high percentage of waste transported by river. In addition, the Applicant would seek to make use of the jetty during construction, providing another opportunity to minimise the impacts associated with road transport.

5.4.4 Whilst beneficial, this is a highly unusual transport scenario. There are a few operational energy recovery facilities using rail transport, but most are wholly reliant upon road based transport. Uniquely, only RRRF uses river transport within the UK today; an exemplar that London should be proud of, and should want to see expanded.

5.4.5 Operating at full throughput (circa 805,920tpa), should all such waste be transported via river to the ERF and incinerator bottom ash transported away from site via river, removes in the order of 86,000 refuse collection vehicles from roads within London (see **Plates 6.1** and **6.2** in **Chapter 6** of the ES, **Document Reference 6.1**). As already identified in **Section 5.3** of this Report, reducing road transport is a key element of the Healthy Streets approach of the Mayor's Transport Strategy and delivers Policy 17 of that Strategy.

5.4.6 **Section 14.9** of the ES (**Document Reference 6.1**) identifies that approximately 75 full time equivalent workers are likely to be required to operate the Proposed Development; 49 of which will be required for jetty and site operations, representing 65% of the workforce required. This demonstrates not only how important the river transport network is to REP, but also how REP will contribute to the growth of river freight in London. Providing new job opportunities within this sector ensures that it receives investment in necessary resources (i.e. people) and skills (not least through training) required for efficient operations. The Proposed Development will provide a direct stimulus for investment into the river freight industry, but this economic boost should be felt beyond simply REP, as the project will give the industry confidence to expand services elsewhere.

Other Non-Car Based Transport

5.4.7 REP is well located to provide numerous options for non-car based transport for employees. **Table 6.7** of the ES (**Document Reference 6.1**) presents the assumed operational staff methods of travelling to work, indicating that over 30% of employees would travel to work by non-car based transport (underground, train, bus, motorcycle, bicycle, and on foot).

5.4.8 These alternatives mean that fewer cars and vans are on the road, reducing consequent carbon emissions but also making the surrounding streets more pleasant environments for non-car users. Particularly the options of cycling and walking also bring health benefits (both mental and physical) directly to those workers travelling by these modes.

5.5 Optimised Development Effects

5.5.1 **Table 16.1** of the ES (**Document Reference 6.1**) presents a summary of the preliminary residual effects from the Proposed Development. Generally, across the topics, the conclusion is that impacts from REP would be 'Not Significant'.

5.5.2 The potential for adverse effects are limited, a positive outcome achieved through both good site choice and implementation of the good design principles discussed in **Section 5.2** of this Report.

5.5.3 REP is a nationally significant infrastructure project, delivering on many aspects of national and local policy. Through its careful design, the Proposed Development will also provide material, local societal benefits through the optimised development.

Townscape and Visual Impact

5.5.4 **Chapter 9** of the ES (**Document Reference 6.1**) identifies that the operational phase of REP could give rise to localised townscape effects with a Moderate level of significance on: Crossness Conservation Area; the Character, and Appearance of the REP Site; and on the landscape of Crossness Nature reserve marshland adjacent to the REP site, and

scrubland habitats on the REP site. These effects would continue to be sought to be minimised through detailed design work in accordance with the Design Principles (**Document Reference 7.4**) including the choice of colours and materials in context to the surroundings and in line with Context Colour Palettes.

Air Quality

5.5.5 The Application Site is not located within an Air Quality Focus Area, however the Applicant has still demonstrated a local commitment to ensuring local air quality expectations are met and exceeded.

5.5.6 The environmental permitting regime is a long established regime to effectively regulate the emissions from industrial and waste plant, such as the ERF, to levels that are considered to be safe for health.

5.5.7 **Chapter 7** of the ES (**Document Reference 6.1**) demonstrates that the potential impacts on air quality from the Proposed Development are not significant. This is not surprising with the best practice measures incorporated to reduce the potential for adverse air quality; for example, using river transport takes vehicles off the roads, contributing to the delivery of Healthy Streets.

5.5.8 Further, the Proposed Development will take waste out of landfill to produce a renewable/low carbon energy supply. Both these actions reduce greenhouse gas emissions, improving air quality for all.

5.5.9 The Proposed Development has been designed to allow for effective air flow both within the buildings and without, to minimise internal heat gain and provide effective air management on site.

Water Resources

5.5.10 A closed loop system is proposed to minimise the use of mains water and ensure that water use is efficient throughout the Proposed Development.

5.5.11 The Proposed Development's location adjacent to the River Thames enables river transport to be utilised; additionally, it is situated in an area that benefits from flood defences, whilst the embedded mitigation has been designed to accommodate the predicted impacts of climate change.

5.5.12 Part of that mitigation includes sustainable drainage measures, enabling water use efficiency and river water quality.

Terrestrial Biodiversity

5.5.13 **Chapter 11** of the ES (**Document Reference 6.1**) demonstrates that effects to Terrestrial Biodiversity are predominantly predicted to be 'Not Significant', except for some limited local scale impacts (equivalent to a Minor effect) (**Section 11.13** of the ES, **Document Reference 6.1**). Notwithstanding this

conclusion, further mitigation and enhancement would be provided through a financial contribution towards enhancement of habitats outside the Application Boundary. This will be informed using a biodiversity metric to quantify the potential habitat losses and gains as a result of REP, in order to determine the extent of off-site compensatory measures required to achieve the aim of net biodiversity gain, in accordance with local and national policy (**Section 11.11** of the ES, **Document Reference 6.1**).

6 The Project and its Benefits

6.1 Project benefits recognised in policy

6.1.1 *'Unabated climate change presents a major environmental and health hazard, and decarbonising our energy supply is important'* (LES, page 255).

6.1.2 In order to meet both future energy demands and climate change priorities, Government has identified a substantial need for new energy infrastructure, with a focus on achieving a more diverse, secure, decentralised and renewable/low carbon energy supply. Sustainable waste management priorities seek to drive wastes out of landfill, retaining the maximum value of materials for as long as possible.

6.1.3 Energy recovery facilities, such as the core component of REP, contribute fully to these objectives, not least as recognised by the EfW Debate Guide:

'By its nature energy from waste bridges two sectors both of which are evolving. It has its roots firmly in waste management but is becoming of increasing importance to energy generation/waste management is changing to be much less about how we get rid of things we no longer want and more about managing discarded resources back into the economy. Likewise energy generation is evolving to make best us of renewables, novel fuels and different energy outputs always with an eye to energy security.

The Government sees a long term role for energy from waste both as a waste management tool and as a source of energy. Energy from waste is in a unique position to fulfil a range of objectives across a number of Government departments. For Defra it helps divert waste out of landfill, for DECC it is a potential source of low carbon energy, for DCLG it can be a contributor to waste planning objectives and for DfT it is a potential source for a variety of transport fuels. It can also contribute to growth in the waste and energy sectors as well as the construction sector through infrastructure development' (paragraph 213 and 214).

Essential Infrastructure

6.1.4 REP responds directly to the outcomes sought through the National Policy Statements EN-1 and EN-3. It is a market led, industry funded project that will make a significant contribution to delivering the urgent and substantial need for new energy infrastructure.

6.1.5 In the drive to de-carbonise, electricity demand is increasing yet to meet this rising demand, new generation must be renewable/low carbon and cost effective. . Through diverting waste away from landfill (the greatest source of carbon emissions for the waste sector) REP will efficiently recover renewable/low carbon energy.

6.1.6 In addition to electricity supply, REP will be built so as to be ready to connect to a future district heating network, with viable connection potential to Thamesmead, a housing and regeneration development led by Peabody. Not only does CHP deliver greater carbon benefits, this district heat network connection would bring real societal benefit to local housing.

6.1.7 London planning policy introduces a heating hierarchy to promote cleaner heating solutions, such as those based on secondary heat. This is not surprising, as is recognised in the LES, '*Heat networks are still considered to be an effective and low carbon means of supplying heat to in London and offer opportunities to transition to zero carbon heat sources faster than individual buildings'* (page 256).

6.1.8 The Proposed Development would take non-recyclable waste from London and elsewhere diverting it from landfill (so avoiding the creation of potent greenhouse gases) and recover renewable/low carbon energy (so contributing to delivery of a more diverse, secure, decentralised and renewable/low carbon supply).

6.1.9 '*The vast majority of London's energy demand (approximately 94 per cent) is currently sourced from outside of the city*' (page 209, LES). As a nationally significant infrastructure project, REP delivers London's priorities; to develop a flexible, decentralised, renewable/low carbon, secure and reliable energy source. REP will also help move London toward self-sufficiency in energy supply.

Delivering Self-Sufficiency within London at the Right Level of the Waste Hierarchy

6.1.10 In 2015, London exported 11.4 million tonnes of waste, representing 60% of its total waste arisings. Over 5 million tonnes of London's waste was exported for disposal; '*some 32 per cent of London's waste that was biodegradable or recyclable was sent to landfill*'[44]. The Mayor has aspirational targets for London to be 100% self-sufficient and for zero biodegradable or recyclable waste to landfill by 2026[45].

6.1.11 REP is demonstrated to be at the right level of the waste hierarchy, taking waste out of landfill, and complementing re-use and recycling. Increased recycling is an important policy drive and the market responds positively to this, not least it is a cheaper waste management method than either energy recovery or disposal. REP avoids non-recyclable wastes being disposed of to landfill; recovers renewable/low carbon energy; and recovers secondary materials including aggregates, glass, metal and digestate. REP accords with the waste hierarchy and will not prejudice it.

[44] Paragraphs 9.8.1 and 9.8.2, The Draft London Plan, December 2017.

[45] Policies SI7 and SI8, The Draft London Plan, December 2017.

6.1.12 REP is promoted to take waste from within London, but it should not be limited to the capital. By treating wastes from outside of London will help the Mayor meet waste self-sufficiency policy aspirations, redressing the balance of London's waste that will continue to leave the capital. London directly gains from the economic, environmental and social benefits of the Proposed Development.

6.1.13 These are important, national policy priorities, against which a nationally significant infrastructure project might be expected to comply. REP also makes important contributions across sustainability policies to meet local climate change targets and to deliver the Mayor's aspirations for London to be a zero carbon city.

Optimised Development

6.1.14 REP is proposed at a preferred location that optimises existing infrastructure assets. The Proposed Development is a multi-technology energy generating facility, incorporating an Anaerobic Digestion facility, Solar Photovoltaic Panels and Battery Storage. All these additional elements optimise use of the Application Site. They are examples of private investment both delivering tried and tested infrastructure and supporting growth in developing sectors. This architecturally designed scheme delivers development that is sensitive to its place and surroundings.

6.1.15 River freight infrastructure already in place will be used further, supporting this sector's growth, minimising road congestion and emissions and meeting the Mayor's aspirations for greater commercial use of the River Thames.

6.1.16 As a truly sustainable development, this multi-faceted approach delivers environmental, economic and societal benefits.

Industry Placed to Deliver Societal Benefit and Help Make London a Zero Carbon City

6.1.17 NPS-EN1 makes clear the reliance on the market to bring forward new facilities, this reliance on industry to deliver means that a situation of over-supply is unlikely to occur. Further REP is designed to accept a wide range of wastes (both type and tonnage) and still operate efficiently. It is future-proofed to take waste out of landfill and away from export, not to detract from credible recycling initiatives. The Proposed Development will be an important element of the circular economy as it is rolled out across London.

6.1.18 In addition to the legislative framework there is a strong financial incentive to manage wastes higher up the hierarchy.

6.1.19 The overriding conclusion 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 at no cost to the public

purse. Indeed, it is likely that REP alone will not be sufficient to meet the requirements of London, and the South East.

6.1.20 Chapter 5 of the aLP presents the strategic policy for London's response to climate change. A primary objective, forming the opening words, is that London should be:

'A city that becomes a world leader in improving the environment locally and globally, taking the lead in tackling climate change, reducing pollution, developing a low carbon economy and consuming fewer resources and using them more effectively' (paragraph 5.1).

6.1.21 Exploiting non-recyclable waste for London's benefit, REP delivers this objective.

Riverside Energy Park

The Project and its Benefits Report

ANNEX:

A

PLANNING INSPECTORATE REFERENCE NUMBER:

EN010093

DOCUMENT REFERENCE:

LONDON WASTE STRATEGY ASSESSMENT

November 2018 | Revision 0 | APFP Regulation 5(2)(q)

Planning Act 2008 | Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

CORY
RIVERSIDE ENERGY

Executive Summary

Contents

Tables

Figures

1 Executive Summary

1.1 Introduction

1.1.1 NPS EN-3 paragraph 2.5.64 makes clear that waste combustion generating stations '*need not disadvantage reuse or recycling initiatives where the proposed development accords with the waste hierarchy*.'

1.1.2 The purpose of this Assessment is to consider how the Proposed Development contributes to meeting the waste management strategy set out in the London Plans (the adopted London Plan and the draft London Plan).

1.2 Principal Assumptions within the Assessment

1.2.1 This Assessment has considered a range of scenarios based on the different waste forecasts and recycling and recovery polices within the London Plans, and applied updated assumptions from the London Environment Strategy (LES).

1.2.2 Whilst the forecasts within the London Plans for household waste and local authority collected waste (LACW) are considered not to be unreasonable in principle, care is always needed when considering commercial and industrial (C&I) waste forecasts particularly those which are based on surveys which are over 10 years old. Great care is needed in interpreting such data and any modelling associated with it given the high level of uncertainty and general assumptions involved. For example, waste market assessments undertaken by the waste management industry, notably through the Environmental Services Association, by Tolvik Consulting Ltd and separately by the Applicant, highlight that the policy based conclusions may be a considerable underestimation when considering the reality of waste management within London and the South East of England.

1.2.3 The assumed recycling rates used within the Assessment, while consistent with the adopted London Plan and draft London Plan, are considered highly optimistic based on current performance and reduced local authority spending. Furthermore, the assumptions are notably higher than the detailed analysis undertaken by WRAP (Waste and Resources Action Programme) for the London Environment Strategy.

1.2.4 The other key assumption relates to the amount of existing capacity that is assumed to be available. For the purposes of this Assessment an existing capacity of 2,248,000 tonnes per annum (tpa) has been assumed for the 'in London' capacity, i.e. those facilities that are located within the capital and delivering the self-sufficiency policy. This capacity assumption aligns with the LES. Consideration has also been given to the capacity located outside of London but provided, under contract, to manage London Boroughs' LACW. For the purposes of this Assessment, an existing capacity of 2,638,000 tpa has been assumed for the 'London +' capacity (i.e. the combined capacity of

facilities within the capital and outside the capital currently utilised by London Boroughs).

1.2.5 The baseline tonnage assumed for existing capacity, in both 'in London' and 'London+' options, is that stated within their respective Environment Permits. It is potentially optimistic as it does not take account of standard operational practice or the future availability of the facilities:

- Energy recovery facilities necessarily have to operate at between 83% and 96% of their permitted capacity, not least for planning and unplanned maintenance and shutdown periods; and

- It is reasonable to assume that some capacity will cease to operate over the period being considered. Lakeside Energy Recovery Facility (ERF) is due to be lost due to the Heathrow Northwest Runway scheme.

1.3 The Assessment Scenarios

1.3.1 The Assessment is largely reliant upon the data presented within the London Plans (LP) and the LES and is structured around testing four relevant elements.

1.3.2 Each scenario is assessed for both the adopted London Plan and draft London Plan; in **Table 1** below only the draft London Plan (dLP) scenario are named, but the reasoning for each applies across both London Plans.

Table 1: Summary of the Scenarios Assessed

Scenario		Why
Just the dLP		
1	dLP Arisings, with dLP Recycling	To test the ERF against the (adopted and) draft planning policy
Review of Waste Arisings		
2a	2016/17 LACW and dLP C&I Arisings, with dLP Recycling	The LP report only household waste. This tests the ERF against the adopted and draft planning policy, which is updated with actual LACW arisings
2b	2016/17 LACW and Reduced C&I Arisings, with dLP Recycling	The LP assume that non household waste is recorded within the C&I waste stream. This addresses any criticism that scenario 2a results in double counting
Review of Waste Recycling		
3a	2016/17 LACW, with LES Recycling and Reduced C&I Arisings, with dLP Recycling	The LES recognises the extreme challenges that exist to meet LP recycling targets and proposes lower targets for LACW
3b	2016/17 LACW and Reduced C&I Arisings, with LES Recycling	This scenario also considers the higher recycling that the LES places on the C&I waste stream in order to meet 65% overall
Review of Available Capacity		
4	2016/17 LACW and Reduced C&I Arisings, with LES Recycling, and lost capacity	This tests the level of need if the Lakeside ERF is lost to Heathrow by 2026

1.4 Conclusions

1.4.1 The four scenarios consider the various elements that can affect our understanding of future waste management demands.

1.4.2 The Assessment demonstrates that REP is required to deliver sustainable waste management and net self-sufficiency within London.

1.4.3 **Table 1** presents a summary of the scenarios assessed. The key conclusion to be drawn from **Table 1** is that the ERF is a necessary element of London achieving sustainable waste management objectives. The minimal level of demand for the ERF is rapidly increased when the different assumptions are tested:

- In the most conservative Scenario 1, relying only on the existing capacity operating 'in London' between 93% and 132% of the ERF's nominal throughput would be required. This scenario is reliant upon the adopted London Plan and draft London Plan *household* waste arisings and aspirational recycling targets being achieved, *in full*;

- If the current London Boroughs' contracted tonnage located outside of London is included in assessing Scenario 1 (i.e. London+ so London is not self-sufficient), between 33% and 73% of the ERF's nominal throughput would still be required. However, this does not deliver policy within the London Plans;

- In a more realistic, though still extremely challenging, assessment, Scenario 3b updates adopted London Plan and draft London Plan household waste tonnages to reflect total LACW at 2016/17, with the non-household fraction of LACW subtracted from the C&I waste forecasts; these wastes are then subject to the LES recycling targets according to the waste stream. In this scenario, between 72% and 93% of the ERF's nominal capacity would be required if London+ capacity is considered, which increases to 131% to 153% if the self-sufficiency policy is to be met; and

- Scenario 4 considers the outcome if a facility, recognised in a national policy statement as likely to close in the foreseeable future, does actually cease to operate. In this scenario, more than the nominal throughput of the ERF is required.

1.4.4 These outcomes are shown in **Figure 1** and highlights that if total LACW is updated to reflect actual arisings, as a minimum more than two-thirds of the Proposed Development's capacity would be needed to achieve the policy of the London Plans.

1.4.5 The London Waste Strategy Assessment demonstrates that, in all scenarios, there is always a need for REP, and generally for energy recovery capacity greater than the nominal throughput proposed for the ERF.

1.4.6 These scenarios are predicated on the assumption that the outcomes of the London Plans and LES will be achieved, in full. This is recognised by the LES to be an extremely challenging outcome.

1.4.7 Looking beyond the policy based scenarios to market research based on waste data collected by the Environment Agency and treatment options from a number of representatives of the waste management industry confirms that there is a substantial need for new residual waste treatment capacity within London and across the South East. The independent Tolvik Report[1] concludes that in its Central scenario (with growth at an average of less than 1% and recycling rates of 49% for household waste and 62% for municipal-like C&I waste) there would remain just under 10 million tonnes ('Mt') of residual waste requiring management at 2025:

'*Consider, for example if there was a "zero landfill" policy across London and the South East in which no Residual Waste is to be landfilled by 2025 (similar to the current Greater London Authority's policy of working towards not sending any biodegradable waste to landfill by 2026). In the Central scenario 4.7Mt of* [energy recovery] *capacity over and above that currently operational in London and the South East would need to be available*….' (Page 24)

1.4.8 It is clear, that whether REP is considered solely against policy or within the context of real world experience, there is a demonstrated, substantial, and urgent need for the Proposed Development.

[1] Residual Waste in London and the South East. Where is it going to go …? Tolvik Consulting Ltd, October 2018. http://www.tolvik.com/reports/

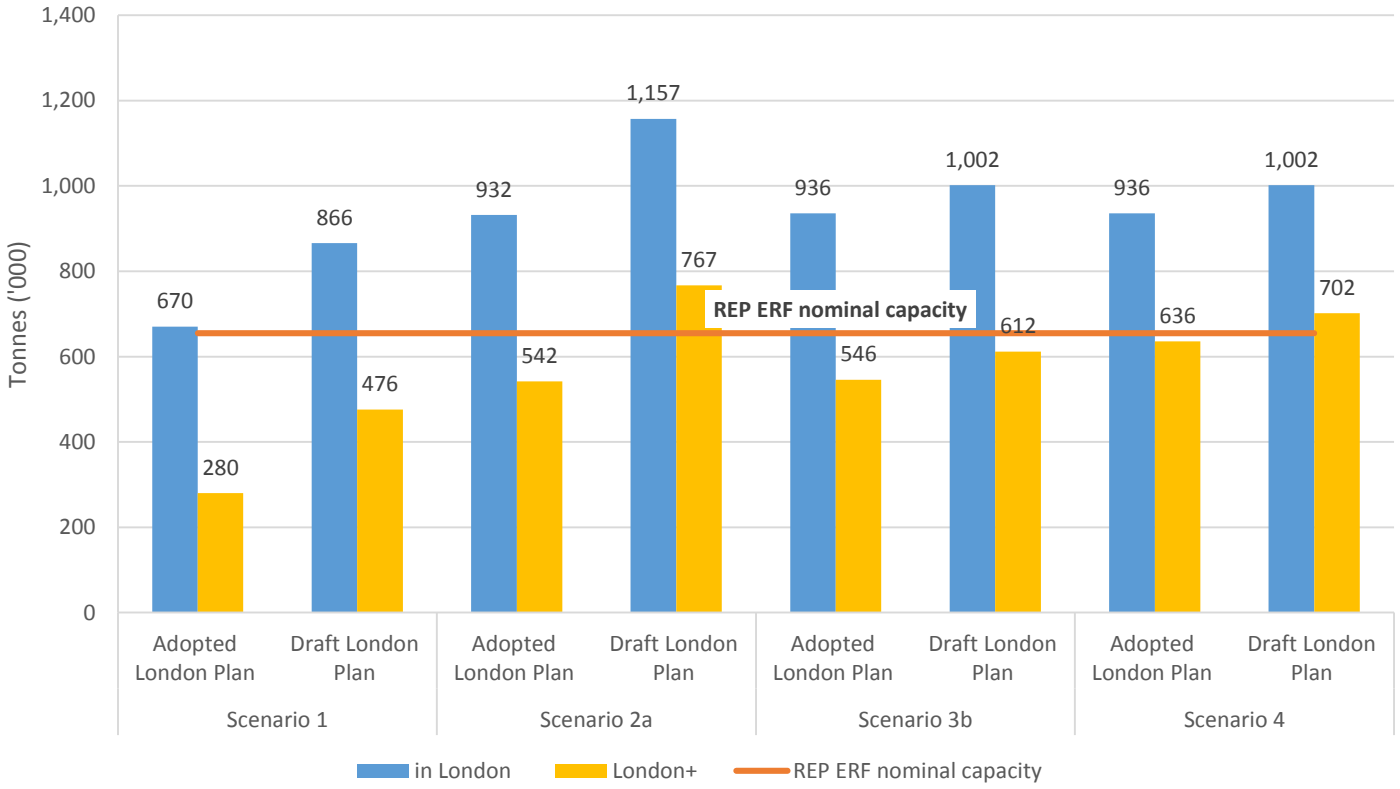


Figure 1: Summary of Assessment, Scenarios 1, 2a, 3b, and 4 at 2026

1.4.9 These calculations focus solely on the ERF and ignore the 'in borough' treatment capacity provided through the Anaerobic Digestion Facility for local food and green waste.

1.4.10 Both the ERF and the Anaerobic Digestion Facility recover both renewable/low carbon energy and secondary materials; they make a positive and significant contribution to the circular economy within London. This is achieved without any detriment to the recycling targets set out in adopted and emerging policy.

1.4.11 REP is demonstrated to be at the right place in the waste hierarchy and not to prejudice credible recycling within London.

Annex A – London Waste Strategy Assessment

Contents

Tables

Figures

1. Introduction

1.1 Purpose of the London Waste Strategy Assessment

1.1.1 NPS EN-3 paragraph 2.5.64 makes clear that waste combustion generating stations '*need not disadvantage reuse or recycling initiatives where the proposed development accords with the waste hierarchy*.'

1.1.2 Having established that principle, NPS EN-3 sets out what is expected in an applicant's assessment:

> *'An assessment of the proposed waste combustion generating station should be undertaken that examines the conformity of the scheme with the waste hierarchy and the effect of the scheme on the relevant waste plan or plans where a proposal is likely to involve more than one local authority.*
>
> *The application should set out the extent to which the generating station and capacity proposed contributes to the recovery targets set out in relevant strategies and plans, taking into account existing capacity.'* (Paragraphs 2.5.66 and 2.5.67)

1.1.3 This document, the London Waste Strategy Assessment ('this Assessment'), has been prepared to consider and present the effect of the Proposed Development on the relevant waste strategy for London, setting out the extent to which Riverside Energy Park ('REP') contributes to meeting the recovery targets set out in the London Plans (the adopted London Plan and the draft London Plan), and taking into account existing capacity.

1.1.4 It sets out the calculations undertaken to explore the extent of demand for new residual waste management capacity within London and provides the relevant context to the assumptions used within those calculations.

1.1.5 As the principle element of REP, this Assessment focusses on the Energy Recovery Facility ('ERF'). However, it is pertinent to note that the Anaerobic Digestion Facility within REP will also contribute to both London's aspirational recycling and recovery targets.

1.2 Existing Capacity

1.2.1 There are, essentially, four steps to understanding future demand for residual waste management infrastructure:

i. Understand the baseline, how much waste is currently being generated;

ii. Consider growth rates, to review how the baseline might change in the future;

iii. Consider management routes, how much recycling/recovery/landfill might be achieved; and

iv. Subtract existing capacity to identify the remaining level of demand.

1.2.2 **Sections 3 and 4** of this Assessment will consider the first three steps, to undertake separate assessments for each of the adopted London Plan and draft London Plan. Whilst the last step in the calculations, existing capacity, is introduced first, in the following text, as it is generally held constant throughout the Assessment.

1.2.3 Existing capacity should be considered as only that which is already operational, or in the very least, for which there is a more than reasonable prospect that it will become operational. NPS EN-1 makes clear (at footnote 36 on page 22) that energy projects that have gained consent but have not as yet started to be built cannot be relied upon; '*Government considers that it would not be prudent to consider these numbers for the purposes of determining the planning policy in this NPS.*'

1.2.4 Consequently, the same approach is used in this Assessment; only those recovery facilities that are operating or for which construction has started, are considered to be 'existing capacity', with one exception for the North London Heat and Power Project ('NLHPP').

1.2.5 At August 2018, there are three energy recovery facilities operating within London providing a total permitted capacity of 1,948,000 tonnes per annum (tpa):

- Edmonton EcoPark: 675,000 tpa;
- South East London Combined Heat & Power Energy Recovery Facility (SELCHP): 488,000 tpa; and
- Riverside Resource Recovery Facility (RRRF): 785,000 tpa.

1.2.6 In addition, the Beddington Energy Recovery Facility (ERF) is due to complete construction and commissioning, to be fully operational by the end of 2018. The Beddington ERF has a permitted capacity of 275,000 tpa.

1.2.7 This gives a total of 2,223,000 tpa of permitted capacity at the start of 2019.

1.2.8 The NLHPP Development Consent Order came into force on 18 March 2017. The NLHPP is intended to manage the residual wastes of the North London Waste Authority and would replace the Edmonton EcoPark. Whilst construction of the NLHPP has not yet started, this Assessment makes a positive assumption that it will become operational, replacing the contribution made by the Edmonton EcoPark. The NLHPP DCO permits the facility to accept up to 700,000 tpa.

1.2.9 Consequently, existing capacity 'in London' assumed within this Assessment is 2,248,000 tpa.

1.2.10 In addition, there are three energy recovery facilities operating outside of London that are contracted to provide capacity for London's local authority collected waste. Recognising that these facilities are not necessarily wholly committed to managing London's residual waste, their contribution to meeting London's needs has been researched from documents in the public domain:

- Lakeside Energy Recovery Facility (ERF): permitted capacity of 400,000 tpa, London contract (West London Waste Authority) for 90,000 tpa[1];
- Severnside Energy Recovery Centre (ERC): permitted capacity of 400,000 tpa, London contract (West London Waste Authority) for up to 300,000 tpa[2]; and
- Greatmoor Energy from Waste (EfW) Facility: permitted capacity of 300,000 tpa, London contract (North London Waste Authority) for 80,000 tpa[3].

1.2.11 This Assessment also assumes that the 80,000 tpa of North London Waste Authority waste currently sent to the Greatmoor EfW Facility will instead be managed within the NLHPP. However, the recovery capacity provided by Lakeside ERF and Severnside ERC is included.

1.2.12 Consequently, existing capacity 'London+' assumed within this Assessment is 2,638,000 tpa.

1.2.13 These are considered to be reasonable assumptions, not least because they are consistent with the energy from waste capacity presented in the evidence base to the London Environment Strategy.

'London has three large Energy From Waste (EFW) facilities, with a fourth being built in Sutton. Collectively, these can treat around two million tonnes of waste per year, with the potential to generate enough electricity to power 500,000 homes' (London Environment Strategy, Appendix A, page 100).

1.2.14 Further, generally less than the capacity stated in an Environmental Permit[4] (the 'permitted capacity') for an energy recovery facility is actually used. The actual waste throughput is often different than the design throughput, principally due to both planning and unplanned maintenance and shut down periods, but also in response to the calorific value of the waste received; in

[1] West London Waste Authority Business Plan 2016- 2019, October 2016. http://westlondonwaste.gov.uk/wp-content/uploads/WLWA-Business-Plan-2016-19.pdf

[2] West London Waste website news, December 2013. http://westlondonwaste.gov.uk/wlwa-signs-long-term-contract-sita-consortium-end-landfilling-waste/

[3] Paragraph 3.20.2, Proof of Evidence of Gillian E Sinclair, June 2017. http://www.hwa.uk.com/site/wp-content/uploads/2017/04/2017_06_15-Gillian-Sinclair.pdf

[4] An Environmental Permit is gained from the Environment Agency for many activities that use, recycle, treat, store or dispose of waste. The Environment Permit can be for activities at one site or for mobile plant that can be used at many sites.

simple terms, the higher the calorific value, then generally the lower the tonnage to be combusted.

1.2.15 The permitted capacity of each of the energy recovery facilities featuring in this Assessment is presented in **Table 1.1**. **Table 1.1** also shows the actual input tonnage of each facility over the past five years where it is available. Both sets of information have been gained from the Environment Agency's waste datasets[5]. **Table 1.1** also identifies the contribution made to meeting London's needs by those facilities located outside the capital.

1.2.16 **Table 1.1** shows that in 2017, whilst operational permitted capacity was 3,048,000 tonnes[6], input waste was only 2,791,421 tonnes; a difference of 260,000 tonnes (in round numbers). Permitted capacity was significantly more than input tonnage, even accounting for Lakeside ERF that consistently accepts more than the design capacity.

1.2.17 The Environment Agency's waste datasets also indicates that the North London Waste Authority contract with Greatmoor EfW Facility may be winding down. In 2017, the Greatmoor EfW Facility accepted just under 48,000 tonnes of waste from London and just under 26,000 in 2016; this is significantly less waste than the 80,000 tpa suggested in the reference document.

[5] https://www.gov.uk/government/publications/waste-management-for-england-2016

[6] This total is gained across the operational facilities of: Edmonton EcoPark; SELCHP; RRRF; Lakeside ERF; Severnside ERC; and Greatmoor EfW Facility. Neither NLHPP, nor Beddingon ERF, are included as they are not operational ('n/o').

Table 1.1: Identifying the amount of existing capacity operating 'inLondon' and beyond, 'London+'

Facility	Permitted Capacity (tonnes)	Actual Input (tonnes)					'Existing Capacity' (tonnes)
		2013	**2014**	**2015**	**2016**	**2017**	
Edmonton EcoPark	675,000	516,581	558,205	542,429	547,721	511,266	**0**
Capacity usage		77%	83%	80%	81%	76%	Replaced by NLHPP
SELCHP	488,000	444,186	438,578	457,119	448,235	446,363	**488,000**
Capacity usage		91%	90%	94%	92%	91%	Total capacity
RRRF	785,000	699,614	669,861	700,138	752,839	746,326	**785,000**
Capacity usage		89%	85%	89%	96%	95%	Total capacity
Beddington ERF	275,000	n/o	n/o	n/o	n/o	n/o	**275,000**
Capacity usage							Total capacity
NLHPP	700,000	n/o	n/o	n/o	n/o	n/o	**700,000**
Capacity usage							Total capacity
Lakeside ERF	400,000	433,209	453,552	432,138	435,844	455,692	**90,000**
Capacity usage		108%	113%	108%	109%	114%	Contracted for London

Facility	Permitted Capacity (tonnes)	Actual Input (tonnes)					'Existing Capacity' (tonnes)
		2013	**2014**	**2015**	**2016**	**2017**	
Severnside ERC	400,000	n/o	n/o	n/o	132,500	340,422	**300,000**
Capacity usage					33%	85%	Contracted for London
Greatmoor EfW	300,000	n/o	n/o	272,733	267,479	291,352	**0**
Capacity usage				91%	89%	97%	Replaced by NLHPP
Total	3,048,000			2,404,557	2,584,618	2,791,421	
Existing capacity assumed within the Assessment, 'inLondon'							**2,248,000**
Existing capacity assumed within the Assessment, 'London+'							**2,638,000**

1.3 Key Features of this Assessment

Structure

1.3.1 This document has sought to address the tests set through NPS EN-3 in a comprehensive manner, addressing both planning policy requirements and exploring the context to future waste management demands.

1.3.2 The London Waste Strategy Assessment is structured as follows:

- **Section 1** – Introduction, which explains the purpose of the Assessment and establishes the existing capacity assumptions used within the Assessment;
- **Section 2** – London's Waste Strategy, which establishes the plans and policies that comprise the strategy against which the Proposed Development should be assessed;
- **Section 3** – Adopted London Plan, which considers the ERF against the expectations of the adopted London Plan;
- **Section 4** – Draft London Plan, which considers the ERF against the expectations of the draft London Plan;
- **Section 5** – Context for Waste Management in London, which considers the factors that affect the waste management demands and infrastructure available for London; and
- **Section 6** – Conclusions.

Glossary of key terms

1.3.3 There are four key terms that are relevant to this Assessment. It is important that their meaning, and the abbreviations used for them, are understood from the start.

- **Municipal waste** - Previously the term 'municipal waste' as used in the UK was used in waste policies and nationally reported data to refer to waste collected by local authorities. In fact the definition of municipal waste as described in the Landfill Directive includes both household waste and that from other sources (principally the C&I waste stream) which is similar in nature and composition; this includes a significant proportion of waste generated by businesses and not collected by local authorities.
- **Local authority collected waste (LACW**) – All waste collected by the local authority, including both municipal and non-municipal, including construction and demolition wastes. LACW is the definition that is used by Defra in statistical publications.

- **Commercial and industrial waste (C&I waste)** – Commercial waste is waste generated from premises used wholly or mainly for the purposes of a trade or business, whilst industrial waste is essentially that produced by industrial processes or activity. These wastes are generally collected and managed by the private sector, but can be processed as LACW.

- **Household waste (HH) and non-household waste (nHH)** – Schedule 1 of the Controlled Waste (England and Wales) Regulations 2012 defines wastes arising from household, industrial and commercial sources. In relation to this Assessment, it is important in relation to the way that waste forecasts are reported in the London Plans, which rely upon household (HH) waste rather than LACW. This is explained further at the relevant point of the Assessment.

2. London's Waste Strategy

2.1 Introduction

2.1.1 In addressing the test set out in NPS EN-3, it is first appropriate to consider what constitutes the relevant strategies and plans to be considered within the Applicant's assessment; to identify what constitutes the 'London Waste Strategy'.

2.1.2 NPS EN-3 refers to the '*waste combustion generating station*', which is the ERF within REP. Whilst the Application Boundary extends beyond Greater London at its fullest extent, the ERF is located within the London Borough of Bexley, within London.

2.1.3 In this location, there are five documents appropriate to consider in establishing the local waste management targets that should be assessed:

- London's Wasted Resource, the Mayor's Municipal Waste Management Strategy, 2011[7];
- London Environment Strategy, May 2018 ('LES');
- Adopted London Plan, January 2017 ('aLP');
- Draft New London Plan showing Minor Suggested Changes, August 2018 ('dLP'); and
- Bexley Core Strategy, February 2012.

London's Wasted Resource

'Waste lends itself well to decentralised energy systems, due to the flexibility of the fuel that can be produced from it. Waste-derived gases from technologies such as anaerobic digestion and gasification, once cleaned, can be piped to local energy centres or to the national gas grid, or can be used directly in gas engines or reformed and used in hydrogen fuel cells, producing electricity and heat where it is required.

London's dense urban and built up environment provides good opportunities for generating energy locally from its non-recycled waste and making use of CHP and heat networks. Its mixed building types and uses and high building densities provide the high and diverse energy demands that allow CHP systems to be run efficiently, as well as the high heat demand densities that make heat network deployment more cost-effective' (London's Wasted Resource, pages 118 and 119).

[7] This title relies upon the historic use of the term municipal waste; the Strategy applies to LACW across London.

2.1.4 London's Wasted Resource sets policies for the management of London's municipal waste up to 2031, not least recognising that London's non-recycled municipal waste, used as a low carbon fuel, will play an important role in delivering the Mayor's decentralised energy targets.

'The Mayor expects London's incinerators to continue playing an important role in managing London's non-recycled waste, and is keen to work with incinerator operators to explore opportunities for making these facilities more efficient. Generating efficient, low carbon energy from London's non-recycled waste will play an important role [sic] in helping to achieve the Mayor's CO_2 reduction targets …' (page 34).

2.1.5 This is not surprising as research commissioned by the Greater London Authority showed that '*incinerators generating energy from untreated waste, and operating in CHP mode, are carbon neutral in that they create only as much carbon dioxide through the combustion process as they avoid through energy generation*' (page 120).

2.1.6 The Mayor's key targets for the management of London's municipal waste include:

- To achieve zero municipal waste direct to landfill by 2025;
- To recycle/compost: 45% by 2015; 50% by 2020; and 60% by 2031 (Policy 4.1);
- To cut London's greenhouse gas emissions through the management of London's municipal waste; and
- To generate as much energy as practicable from London's organic and non-recycled waste in a way that is no more polluting in carbon terms than the energy source it is replacing.

2.1.7 Whilst London's Wasted Resource does not foresee the need for additional energy recovery capacity for municipal waste/LACW, it recognises the positive role that such facilities play in delivering the integrated infrastructure necessary for London to meet all its objectives.

London Environment Strategy ('LES')

2.1.8 The LES was published in May 2018, addressing matters of air quality, green infrastructure, climate change mitigation and energy, and adapting to climate change alongside waste and the transition to a low carbon circular economy.

2.1.9 The overarching aim for waste is that:

'London will be a zero waste city. By 2026 no biodegradable or recyclable waste will be sent to landfill, and by 2036 65 percent of London's municipal waste will be recycled' (page276).

2.1.10 On page 277, LES recognises that a number of benefits can be gained from recovering value from waste, including '*the creation of jobs and apprenticeships, the development of secondary materials and the provision of affordable low carbon energy*.' As part of the new approach set out in the Strategy, policy seeks to maximise both the recycling of materials and the '*value of truly non-recyclable waste by generating low carbon energy from it to limit the environmental impact, and leave very little waste going to landfill*' (page 278).

2.1.11 The LES advises that in year 2016/17, London recycled 41% of its municipal waste, which is recognised as significantly lower than the previously estimates and less than the average across England. The Strategy identifies numerous challenges to London achieving a greater level of recycling, including: different waste and recycling collection services; a high proportion of the population living in flats; a highly transient and diverse population; and unprecedented cuts to local authority budgets.

2.1.12 Proposal 7.2.1a states that the Mayor expects waste authorities collectively to increase household waste (not all local authority collected waste) recycling rates across London to:

- 45% by 2025; and
- 50% by 2030.

2.1.13 This would be achieved by all properties with kerbside recycling also receiving a separate weekly food waste collection and for all properties to receive a minimum collection of six dry recyclables.

2.1.14 Objective 7.4 seeks to ensure London has sufficient infrastructure to manage all the waste it produces. To achieve both the reduction/recycling and self-sufficiency targets, London will require significant new recycling capacity, in the order of 1.4 million tonnes (Mt).

2.1.15 Also in 2016/17, the LES advises (page 284) that approximately 2 Mt of London's local authority collected waste was incinerated. However, on page 322, the LES advises that 'Modelling shows that if London achieves a 65 per cent recycling target by 2030, no additional EFW facilities (other than those already granted planning permission) will be required in London to manage municipal waste' (page 322).

2.1.16 This conclusion of the LES is based on the assumptions that:

- RRRF and SELCHP will keep operating;
- NLHPP will replace the Edmonton EcoPark and provide 780,000 tpa, the DCO consent allows up to 700,000 tpa; and
- Beddington ERF will provide 280,000 tonnes, it is permitted for 275,000.

2.1.17 The LES also recognises the extent of the challenges that London must counter in order to meet the 65% recycling target for municipal waste. These include: severe austerity measures affecting all the London Boroughs; a lack of any other funding after 2020; and limited powers attributed to the Mayor. In addition, the 65% recycling target for municipal waste relies upon achieving 50% across LACW. This is going to be both difficult and costly to achieve, not least modelling undertaken for the LES concludes that 'the highest performing combination scenario … achieving a 42 per cent household recycling rate, would bring a cumulative cost of £129m in addition to business as usual costs' (page 112, LES Evidence Base, Waste).

Adopted London Plan

2.1.18 The aLP was adopted in its current form in March 2016, subsequent to London's Wasted Resource. It continues many of the themes of London's Wasted Resource, including key objectives to: reduce greenhouse gas emissions; divert waste from landfill; increase supply of decentralised, renewable/low carbon energy; and increase recycling/composting.

2.1.19 The policies of the aLP that are directly relevant to this Assessment (principally those that establish waste management recycling targets) are:

- 5.16A/c, work towards zero biodegradable or recyclable waste to landfill by 2026;
- 5.16B/c, exceeding recycling/composting levels in local authority collected waste of 45% by 2015, 50% by 2020, and aspiring to achieve 60% by 2031;
- 5.16B/d, exceeding recycling/composting levels in commercial and industrial waste of 70% by 2020; and
- 5.17B/c and B/d, that planning decisions will be evaluated against the nature of activity proposed and its scale, and minimising waste and achieving high reuse and recycling performance.

2.1.20 The adopted London Plan is a development plan document.

Draft London Plan

2.1.21 The dLP is a new, broad plan to shape the way London develops over the next 20-25 years. It is yet to be adopted, but is at an advanced stage of preparation and subject to Examination in Public over Winter 2018/2019. It provides an indication of future expectations for waste management, with policies that further extend the principles established in the aLP. Upon its adoption, it will form part of the local development plan.

2.1.22 The policies of the dLP that are directly relevant to this Assessment (principally those that establish waste management recycling targets) are:

- SI7A/1, promoting a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;

- SI7A/3, ensuring that there is zero biodegradable or recyclable waste to landfill by 2026; and

- SI7A/4, meeting or exceeding the recycling targets for each of the following waste streams and generating low-carbon energy in London from suitable remaining waste:

  a) municipal waste[8] – 65% by 2030.

Bexley Core Strategy, Waste Management Strategy and Environmental Sustainability Strategy

2.1.23 The Bexley Core Strategy was adopted in 2012, providing the spatial planning framework for the borough until 2025. Paragraph 4.11.1 states:

2.1.24 '*Bexley's residents have achieved one of the highest levels of recycling in the country, the highest in London, and the Council has also achieved beacon status for waste management*.'

2.1.25 Whilst policy CS20 makes a commitment to meeting its waste apportionments and other requirements, including meeting the Mayor's recycling/composting targets, the policy sets no new policy requirements. Policy CS20 also refers to the Waste Management Strategy, which is an old document and no longer relevant. To replace it, the London Borough of Bexley has prepared a series of policies and targets seeking to slow down, stabilise and reverse the rate of waste growth in the Borough, incorporating measures such as increasing information to residents on reducing waste, and providing information to schools and local businesses on waste reduction and reuse techniques.[9]

2.1.26 Waste minimisation and management is included, as Theme 7, in the Environmental Sustainability Strategy. Paragraph 8.4 of the Environmental Sustainability Strategy identifies a key challenge as the need '*to find a solution to treat residual waste: the Council aims to recover energy from as much residual waste as possible. The Strategy is therefore designed to minimise the amount of waste sent to landfill and impact of Landfill Tax*.'

2.2 Defining the 'London Waste Strategy' for the Assessment

2.2.1 It would be unwieldly and repetitive to assess the effect of the ERF on each of the above documents. The principal aims and policies of London's

[8] Footnote 127 of the draft London Plan confirms that the term 'municipal waste' is '*based on the EU definition of municipal waste being household waste and other waste similar in composition to household waste. This includes local authority collected waste and waste collected by the private sector*.'

[p] Perscomm. Rebecca Goodwin, Waste Minimisation and Recycling Officer, London Borough of Bexley, 01 November 2018.

Wasted Resource are carried through into the aLP, which is also an extant development plan document relevant to the Proposed Development. The dLP is not adopted, but is an emerging development plan document that provides an indication of future waste management expectations within London. The Bexley Core Strategy is also an adopted development plan document, but along with the Borough's waste management policies and Environmental Sustainability Strategy, does not provide any additional detail or policy requirement. Whilst the LES is a recent Mayoral document, it is not an element of the local development plan.

2.2.2 Consequently, for this Assessment, the London Waste Strategy is considered to be most appropriately represented by the development plan policies contained within the aLP and dLP policies. However, reference is also made to the LES, as a strategy published by the Mayor which seeks to direct waste management within London.

2.2.3 Using policies of the aLP and dLP, and referring to the evidence base for them and the LES as required, this Assessment will set out the extent to which REP contributes to achieving London's policy priorities for waste management, taking into account existing capacity.

2.2.4 This approach enables the effect of the Proposed Development to be understood and demonstrates that it is of an appropriate type and scale so as not to prejudice the achievement of local waste management targets.

2.2.5 Of course, it must also not be forgotten that whilst REP is located in London, and therefore at the local level the development plan comprises (for the ERF) the London Plan and the LBB Local Plan, it must be remembered that the location of REP, on the banks of the River Thames and on the border with authorities outside of London, means that REP must be viewed at the strategic level. This complements its status as a NSIP, and justifies National Policy Statements taking precedence over local development plan policies.

3. Adopted London Plan

3.1 Just the aLP

Introduction

3.1.1 Table 5.2 of the aLP presents the projected household and commercial/industrial waste arisings, at five-year intervals, from 2016 to 2036. Policies 5.16B/c and B/d state the recycling targets for both local authority collected waste (LACW) and commercial and industrial (C&I) waste. Policy 5.16A/c commits to zero biodegradable or recyclable waste to landfill by 2026.

Scenario 1, aLP: aLP Arisings, with aLP Recycling

3.1.2 **Table 3.1** presents all of this information, such that the amount of waste to be diverted away from landfill, passing through a residual waste treatment facility, such as the ERF, can be calculated.

3.1.3 In Scenario 1, aLP, which is an absolute application of aLP data and policy, just over 2.9Mt of recovery capacity is required by 2026 (see row m). This need is largely maintained over the following 10 years, decreasing slightly to 2.85Mt by 2036.

3.1.4 Whilst these tonnages are substantial, London+ existing capacity can potentially manage a significant proportion of it, although there remains 280,000 tonnes to be diverted from landfill at 2026 and nearly 218,000 by 2036 (see row o). At least a third of the nominal throughput proposed for the ERF is required to divert London's waste away from landfill (see row q).

3.1.5 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, as per the Mayor's policy, then that demand increases, at least to nearly 608,000 tonnes at 2036 (see row s). In this scenario, all of the nominal throughput offered by the ERF is required for London to achieve its waste management aspirations (see row u).

Table 3.1: Scenario 1, aLP: aLP Arisings, with aLP Recycling (60%^{HH} and 70%$^{C\&I}$)

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Table 5.2, aLP						
Household	3,115,000	3,226,000	3,387,000	3,492,000	3,589,000	*a*
C&I	4,654,000	4,637,000	4,647,000	4,681,000	4,734,000	*b*
Total	7,769,000	7,863,000	8,034,000	8,173,000	8,323,000	*c*
Recycling (per cent)						
LACW[10]	45%	50%	55%	60%	60%	*d*
C&I[11]	0%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
Household	1,401,750	1,613,000	1,862,850	2,095,200	2,153,400	*f*
C&I	-	3,245,900	3,252,900	3,276,700	3,313,800	*g*
Total	1,401,750	4,858,900	5,115,750	5,371,900	5,467,200	*h*
Recovery (per cent) Calculated from recycling per cent & policy 5.16A/c aLP						
LACW	55%	50%	45%	40%	40%	*i*
C&I	100%	30%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
Household	1,713,250	1,613,000	1,524,150	1,396,800	1,435,600	*k*

[10] Policy 5.16B/c, adopted London Plan

[11] Policy 5.16B/d, adopted London Plan

Year	**2016**	**2021**	**2026**	**2031**	**2036**	
C&I	4,654,000	1,391,100	1,394,100	1,404,300	1,420,200	*l*
Total	6,367,250	3,004,100	2,918,250	2,801,100	2,855,800	m
Demand for REP ERF			**2026**	**2031**	**2036**	
Existing capacity, **'London+'**			2,638,000	2,638,000	2,638,000	*n*
Remaining waste to be diverted from landfill			**280,250**	**163,100**	**217,800**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**43%**	**25%**	**33%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**670,250**	**553,100**	**607,800**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**102%**	**84%**	**93%**	*u*

3.2 Review of Waste Arisings

Introduction

3.2.1 Whilst policy 5.16B/c applies to local authority collected waste ('LACW'), **Table 5.2** of the aLP accounts only for household waste, not all wastes collected by local authorities. In 2016/17 (the latest complete data available at the time of preparing this Assessment) London generated 3,697,000 tonnes of LACW. There is a difference of 582,000 tonnes between the forecast household waste arisings set out in Table 5.2 of the aLP and the actual LACW arisings for 2016/17.

Scenario 2a, aLP: 2016/17 LACW and aLP C&I Arisings, with aLP Recycling

3.2.2 **Table 3.2** simply updates **Table 3.1** with the actual tonnage of LACW collected in 2016/17. Each household waste forecast is increased by 582,000 tonnes, with no other growth assumed; rows a, f, and k are renamed LACW. No other changes are made, the C&I waste arisings remain as stated in the aLP, as do the recycling targets.

3.2.3 Updating the LACW arisings leads to a need for just over 3Mt of recovery capacity at 2026. This need is largely maintained over the following 10 years, decreasing slightly by 2036.

3.2.4 When London+ existing capacity is subtracted, there remains a need for new recovery capacity to divert wastes from landfill: 542,000 tonnes at 2026; and nearly 451,000 tonnes by 2036. Nearly 70% of the nominal throughput proposed for the ERF is required to divert London's waste from landfill by 2036.

3.2.5 This level of need increases to nearly 130% by 2036 if facilities located outside of London are not used.

Table 3.2: Scenario 2a,aLP: 2016/17 LACW and aLP C&I Arisings, with aLP Recycling

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Table 5.2, aLP, with actual 2016/17 LACW						
LACW	3,697,000	3,808,000	3,969,000	4,074,000	4,171,000	*a*
C&I	4,654,000	4,637,000	4,647,000	4,681,000	4,734,000	*b*
Total	8,351,000	8,445,000	8,616,000	8,755,000	8,905,000	*c*
Recycling (per cent)						
LACW[12]	45%	50%	55%	60%	60%	*d*
C&I[13]	0%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
LACW	1,663,650	1,904,000	2,182,950	2,444,400	2,502,600	*f*
C&I	-	3,245,900	3,252,900	3,276,700	3,313,800	*g*
Total	1,663,650	5,149,900	5,435,850	5,721,100	5,816,400	*h*
Recovery (per cent) Calculated from recycling per cent & policy 5.16A/c aLP						
LACW	55%	50%	45%	40%	40%	*i*
C&I	100%	30%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
LACW	2,033,350	1,904,000	1,786,050	1,629,600	1,668,400	*k*

[12] Policy 5.16B/c, adopted London Plan

[13] Policy 5.16B/d, adopted London Plan

Year	**2016**	**2021**	**2026**	**2031**	**2036**	
C&I	4,654,000	1,391,100	1,394,100	1,404,300	1,420,200	*l*
Total	6,687,350	3,295,100	3,180,150	3,033,900	3,088,600	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	
Existing capacity, **'London+'**			2,638,000	2,638,000	2,638,000	*n*
Remaining waste to be diverted from landfill			**542,150**	**395,900**	**450,600**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**83%**	**60%**	**69%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**932,150**	**785,900**	**840,600**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**142%**	**120%**	**128%**	*u*

Scenario 2b: 2016/17 LACW and Reduced C&I Arisings, with aLP Recycling

3.2.6 Household waste comprised 3,049,000 tonnes of total LACW, with an additional 648,000 tonnes of non-household waste. It may be considered that simply updating the household waste arisings with total LACW will result in double counting, because the non-household LACW should be assumed to be accounted for within the C&I waste tonnages. A reasonable response to this challenge would be that the C&I wastes forecast within the aLP are based on a survey that is now ten years old and which has been subjected to manipulation through modelling. The risk of a double counting error being significant is negligible.

3.2.7 However, **Table 3.3** has been prepared, to update **Table 3.1** and address these considerations. In **Table 3.3** the household waste row is again updated to reflect total LACW. In addition, the non-household waste arisings recorded in 2016/17 are subtracted from the C&I waste arisings (row b, which is also renamed). Recycling rates remain unchanged.

3.2.8 In Scenario 2b, just over 2.9 Mt of recovery capacity is required by 2026 (see row m). Again, this need is largely maintained over the following 10 years, decreasing slightly to 2.85Mt by 2036.

3.2.9 Whilst these tonnages are substantial, 'London+' existing capacity can potentially manage a significant proportion of it, although there remains 345,000 tonnes to be diverted from landfill at 2026 and nearly 260,000 by 2036 (see row o). At least 40% of the nominal throughput proposed for the ERF is required to divert London's waste away from landfill (see row q).

3.2.10 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, as per the Mayor's policy, then that demand increases, at least to nearly 645,000 tonnes at 2036 (see row s). Again, in this scenario, all of the nominal throughput offered by the ERF is required for London to achieve its waste management aspirations (see row u).

Table 3.3: Scenario 2b, aLP: 2016/17 LACW and Reduced C&I Arisings, with aLP recycling

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Table 5.2, aLP, with actual 2016/17 LACW and consequently reduced C&I						
LACW	3,697,000	3,808,000	3,969,000	4,074,000	4,171,000	*a*
C&I -nHH	4,006,000	3,989,000	3,999,000	4,033,000	4,086,000	*b*
Total	7,703,000	7,797,000	7,968,000	8,107,000	8,257,000	*c*
Recycling (per cent)						
LACW[14]	45%	50%	55%	60%	60%	*d*
C&I[15]	0%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
LACW	1,663,650	1,904,000	2,182,950	2,444,400	2,502,600	*f*
C&I	-	2,792,300	2,799,300	2,823,100	2,860,200	*g*
Total	1,663,650	4,696,300	4,982,250	5,267,500	5,362,800	*h*
Recovery (per cent) Calculated from recycling per cent & policy 5.16A/c aLP						
LACW	55%	50%	45%	40%	40%	*i*
C&I	100%	30%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
LACW	2,033,350	1,904,000	1,786,050	1,629,600	1,668,400	*k*

[14] Policy 5.16B/c, adopted London Plan

[15] Policy 5.16B/d, adopted London Plan

Year	**2016**	**2021**	**2026**	**2031**	**2036**	
C&I	4,006,000	1,196,700	1,199,700	1,209,900	1,225,800	*l*
Total	6,039,350	3,100,700	2,985,750	2,839,500	2,894,200	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	
Existing capacity, **'London+'**			2,638,000	2,638,000	2,263,000	*n*
Remaining waste to be diverted from landfill			**374,750**	**201,500**	**256,200**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**53%**	**31%**	**39%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**737,750**	**591,500**	**646,200**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**113%**	**90%**	**99%**	*u*

3.2.11 It should be noted that this is a conservative approach. The London Plan C&I figures are based on a survey that is over 10 years old and figures that have been subject to manipulation through modelling.

3.2.12 To inform its own understanding of the commercial viability of the Proposed Development, the Applicant commissioned Tolvik Consulting Ltd (Tolvik) to undertake an assessment of the residual waste market. . Tolvik is an independent provider of commercial due diligence and market analysis services to the European waste and bioenergy sectors, this is the first of three reports that have been prepared by Tolvik that are referenced in this Assessment, and is hereafter referred to as the 'Tolvik REP Market Assessment'. The Tolvik REP Market Assessment forecasts an additional 1.2 to 2.4Mt of C&I waste arising between the years 2026 and 2036, when compared with the aLP data, without including those similar wastes collected by local authorities.

3.3 Review of Recycling Targets

3.3.1 Whilst planning policy should be aspirational, it also needs to be realistic, fully justified and deliverable, taking into account relevant market signals.[16] Reference to the evidence base of the LES suggests that the recycling levels presented in the aLP are unlikely to be achieved.

3.3.2 The evidence base to the LES concludes (on page 112) that the highest performing combination scenario of recycling options considered within London would achieve a 42% household recycling rate, with the second best performing combination achieving a 40% recycling rate. This conclusion is based on a detailed analysis undertaken by WRAP.

3.3.3 Formerly a central government advisory service, the Waste and Resources Action Programme (which operates as WRAP) is now a registered UK charity. Its mission is to accelerate the move to a sustainable, resource-efficient economy by:

- Re-inventing how we design, produce and sell products;
- Re-thinking how we use and consume products; and
- Re-defining what is possible through re-use and recycling.

3.3.4 WRAP is a self-declared world leader in helping organisations achieve greater resource efficiency and has a demonstrated record of success. 'Between 2010 and 2015 in England alone, WRAP initiatives reduced greenhouse gas emissions by nearly 50 Mt, which is equivalent to the annual carbon dioxide emissions of Portugal.'17

[16] National Planning Policy Framework, Ministry of Housing, Communities & Local Government, July 2018, paragraph 30

[17] Statement from WRAP website. http://www.wrap.org.uk/about-us/about

3.3.5 Consequently, LES Policy 7.2.1.a states an intention to 'achieve a 50 per cent LACW recycling target by 2025 and aspire to achieve: a 45 per cent household waste recycling rate by 2025; and a 50 per cent household waste recycling rate by 2030' (page 313). Current household recycling rates across London are ~33% and have changed little over the past five years. The reduced recycling rates within the LES still represent a significant step change in performance which is considered extremely challenging given the context of increased pressure on local authority services and funding.

3.3.6 Indeed, Figure 69 of the LES Evidence Base presents the actions to be undertaken to meet that target, and includes recognition of a 7.8% gap. Figure 69 of the LES Evidence Base is reproduced below, in **Figure 3.1**.

Figure 69: How London can meet a 50 per cent LACW recycling target by 2025[95]

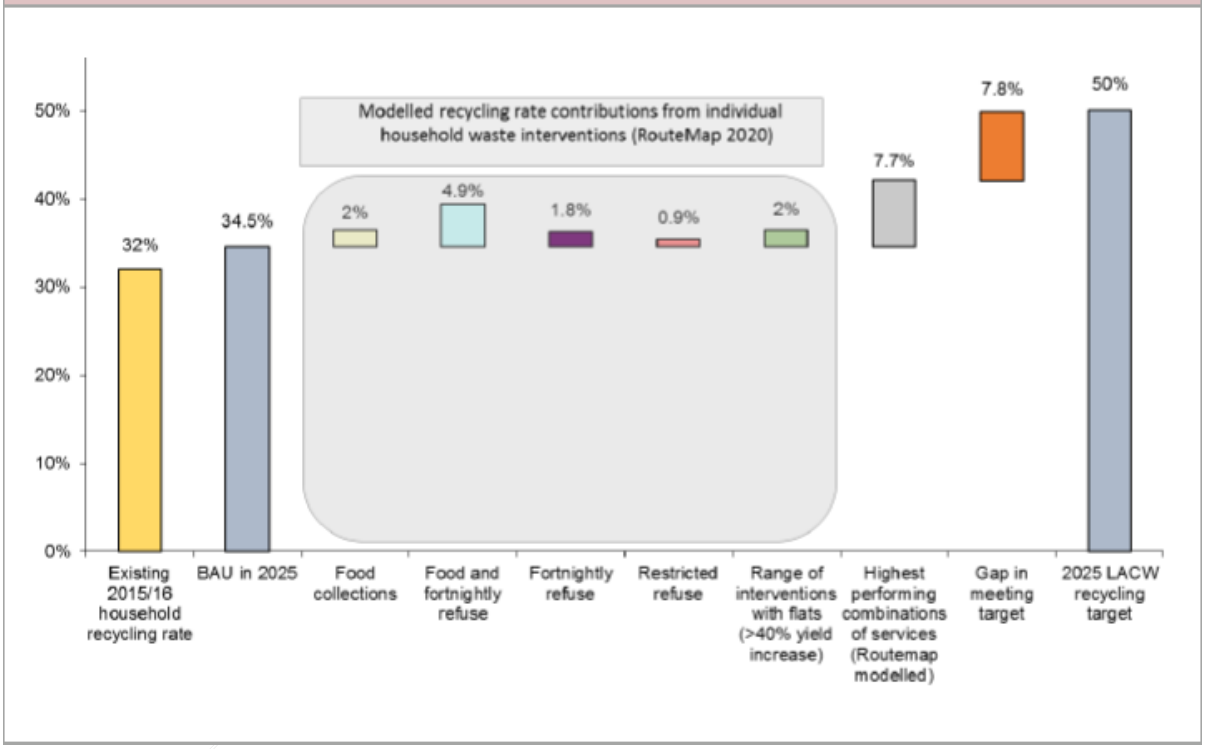


Figure 3.1: Reproduction of Figure 69 from London Environment Strategy: Evidence Base, Waste

Scenario 3a, aLP: 2016/17 LACW Arisings, with LES Recycling and Reduced C&I with aLP Recycling

3.3.7 **Table 3.4** updates **Table 3.3** applying the LES 50% recycling target to total LACW and retaining aLP recycling targets for the C&I waste stream. This leads to a need for just over 3.1 Mt of recovery capacity at 2026, which increases to just over 3.3 Mt by 2036.

3.3.8 When 'London+' existing capacity is subtracted, there is demonstrated to remain a need for new recovery capacity to divert wastes from landfill: nearly 550,000 tonnes at 2026; and 673,000 tonnes by 2036. All of the nominal throughput proposed for the ERF is demonstrated to be necessary to divert London's waste from landfill from 2031.

3.3.9 This level of need increases to over 160% by 2036 if facilities located outside of London are not used.

Table 3.4: Scenario 3a, aLP: 2016/17 LACW Arisings, with LES Recycling and reduced C&I with aLP recycling

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Table 5.2, aLP, with actual 2016/17 LACW and consequently reduced C&I						
LACW	3,697,000	3,808,000	3,969,000	4,074,000	4,171,000	*a*
C&I -nHH	4,006,000	3,989,000	3,999,000	4,033,000	4,086,000	*b*
Total	7,703,000	7,797,000	7,968,000	8,107,000	8,257,000	*c*
Recycling (per cent)						
LACW[18]	45%	50%	50%	50%	50%	*d*
C&I[19]	0%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
LACW	1,663,650	1,713,600	1,984,500	2,037,000	2,085,500	*f*
C&I	-	2,792,300	2,799,300	2,823,100	2,860,200	*g*
Total	1,663,650	4,505,900	4,783,800	4,860,100	4,945,700	*h*
Recovery (per cent) Calculated from recycling per cent						
LACW	47%	48%	50%	50%	50%	*i*
C&I	100%	30%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
LACW	1,737,590	1,827,840	1,984,500	2,037,000	2,085,500	*k*

[18] Policy 7.2.1.a, London Environment Strategy

[19] Policy 5.16B/d, adopted London Plan

Year	**2016**	**2021**	**2026**	**2031**	**2036**	
C&I	4,006,000	1,196,700	1,199,700	1,209,900	1,225,800	*l*
Total	5,743,590	3,024,5040	3,184,200	3,246,900	3,311,300	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	
Existing capacity, **'London+'**			2,638,000	2,638,000	2,263,000	*n*
Remaining waste to be diverted from landfill			**546,200**	**608,900**	**673,300**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**83%**	**93%**	**103%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**936,200**	**998,900**	**1,063,300**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**143%**	**153%**	**162%**	*u*

Scenario 3b, aLP: 2016/17 LACW Arisings and Reduced C&I, with LES Recycling

3.3.10 In Objective 7.2 and Table 2, the LES places an expectation that the C&I waste stream will achieve a minimum of 75% recycling, in order to achieve 65% across municipal waste as a whole. This target is not justified, and no mechanisms have been implemented to instigate such a change, it is simply an expectation placed on businesses in order to balance the reduced recycling expectations of local authorities; nor is it actually stated under LES Policy 7.2.2.

3.3.11 However, an outcome of 75% recycling in the C&I waste stream is considered in **Table 3.5**, along with an assumption that 80% recycling is achieved by 2036, which would be the actual level required to meet 65% overall.

3.3.12 In Scenario 3b, nearly 3.2 Mt of recovery capacity is required by 2026 (see row m). Again, this need is largely maintained over the following 10 years, decreasing slightly to just over 3.1 Mt by 2036.

3.3.13 Whilst these tonnages are substantial, 'London+' existing capacity can potentially manage a significant proportion of it, although there remains over 546,000 tonnes to be diverted from landfill at 2026 and nearly 275,000 by 2036, even if 80% recycling is achieved in the C&I waste stream (see row o). At least 40% of the nominal throughput proposed for the ERF is required to divert London's waste away from landfill (see row q).

3.3.14 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, then that demand increases by 2036, requiring 100% of the ERF nominal capacity even if 80% recycling of the C&I waste stream is achieved (see row u).

Table 3.5: Scenario 3b, aLP: 2016/17 LACW and Reduced C&I, with LES Recycling (50%^{LACW} and 75% and 80%$^{C\&I}$)

Year	2016	2021	2026	2031	2036	2036	
Arisings (tonnes) Table 5.2, aLP, with actual 2016/17 LACW and consequently reduced C&I							
LACW	3,697,000	3,808,000	3,969,000	4,074,000	4,171,000	4,171,000	*a*
C&I -nHH	4,006,000	3,989,000	3,999,000	4,033,000	4,086,000	4,086,000	*b*
Total	7,703,000	7,797,000	7,968,000	8,107,000	8,257,000	8,257,000	*c*
Recycling (per cent)							
LACW[20]	45%	45%	50%	50%	50%	50%	*d*
C&I[21]	0%	70%	70%	75%	75%	80%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings							
LACW	1,663,650	1,713,600	1,984,500	2,037,000	2,085,500	2,085,500	*f*
C&I	-	2,792,300	2,799,300	3,024,750	3,064,500	3,268,800	*g*
Total	1,663,650	4,505,900	4,783,800	5,061,750	5,150,000	5,354,300	*h*
Recovery (per cent) Calculated from recycling per cent & LES							
LACW	47%	48%	50%	50%	50%	50%	*i*
C&I	100%	30%	30%	25%	25%	20%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings							
LACW	1,737,590	1,827,840	1,984,500	2,037,000	2,085,500	2,085,500	*k*

[20] Policy 7.2.1.a, London Environment Strategy

[21] Objective 7.2, London Environment Strategy

Year	2016	2021	2026	2031	2036	2036	
C&I	4,006,000	1,196,700	1,199,700	1,008,250	1,021,500	817,200	*l*
Total	5,743,590	3,024,540	3,184,200	3,045,250	3,107,000	2,902,700	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	**2036**	
Existing capacity, **'London+'**			2,638,000	2,638,000	2,263,000	2,638,000	*n*
Remaining waste to be diverted from landfill			**546,200**	**407,250**	**469,000**	**264,700**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**83%**	**62%**	**72%**	**40%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**936,200**	**797,250**	**859,000**	**654,700**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**143%**	**122%**	**131%**	**100%**	*u*

3.4 Review of Available Capacity

3.4.1 So far, this Assessment has been undertaken relying upon an assumed maximum input tonnage of 2,638,000 for 'London+' existing capacity, and 2,248,000 for 'inLondon' existing capacity. However, within the foreseeable future, these assumptions may be an overestimation, not least because energy recovery facilities generally operate below the permitted capacity and those considered are not exclusively used for waste from London. In addition, the identified facilities may simply cease to operate within the foreseeable future.

3.4.2 In June 2018, the Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England, was published.[22] Paragraph 3.46 reports that the Heathrow Northwest Runway '*is capable of being delivered by 2026*'; whilst paragraph 5.139 recognises that the Heathrow Northwest Runway scheme would involve the removal of the Lakeside ERF. Paragraph 5.144 states:

> *'The Government recognises the role of the Lakeside Energy from Waste plant in local waste management plans. The applicant should make reasonable endeavours to ensure that sufficient provision is made to address the reduction in waste treatment capacity caused by the loss of the Lakeside Energy from Waste plant.'*

3.4.3 The loss of the Lakeside ERF would reduce the recovery capacity currently used by London, under a LACW contract, by 90,000 tonnes; but the loss to London generally is substantial higher. The Environment Agency waste datasets advise that in 2016 the Lakeside ERF accepted a total of 162,628 tonnes from London, increasing to 183,894 tonnes in 2017. The additional tonnage will be made up from C&I wastes arising in London that will need to be treated elsewhere if they are to avoid disposal to landfill.

3.4.4 It is not unreasonable, though it would be unfortunate, to expect the Lakeside ERF to cease operating, and Scenario 4 assumes that this will happen as stated in the Airports National Policy Statement, by 2026. This outcome would not affect the 'in London' existing capacity, but reduces the 'London+' existing capacity to 2,548,000 tonnes.

3.4.5 This is just one example of the level of uncertainty that should be accommodated in delivering sustainable infrastructure. It does not start to consider the impact that Brexit might have on the UK practice of sending wastes to Europe for treatment, a practice that reached c.3 Mt in 2017, with almost half of that exported from the south-east of England.

[22] Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England. Presented to Parliament pursuant to Section 9(8) of the Planning Act 2008. Moving Britain Ahead, Department for Transport, June 2018. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/714106/airports-nps-new-runway-capacity-and-infrastructure-at-airports-in-the-south-east-of-england-web-version.pdf

Scenario 4, aLP: 2016/17 LACW and Reduced C&I, with LES Recycling and Lost Capacity

3.4.6 Scenario 4, presented in **Table 3.6** updates **Table 3.5** to incorporate the reduced available capacity should Lakeside ERF cease to operate.

3.4.7 In Scenario 4, the demand for recovery capacity is around 3.1Mt over the years 2026 to 2036 (see row m).

3.4.8 The tonnages are substantial and even whilst the 'London+' existing capacity can potentially manage some of it, there remains nearly 640,000 tonnes to be diverted from landfill at 2026 and over 350,000 by 2036, even if 80% recycling is achieved in the C&I waste stream (see row o). Even with the assumed very high levels of recycling, most of the nominal throughput proposed for the ERF is required to divert London's waste away from landfill from 2026.

3.4.9 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, then that demand increases again. Even if 80% recycling is achieved for C&I waste, all of the ERF's nominal capacity is required; and nearly one and half facilities offering the nominal capacity of the ERF will be required from 2026 if the other assumed very high recycling rates are achieved.

Table 3.6: Scenario 4, aLP: 2016/17 LACW and Reduced C&I Arisings, with LES Recycling, and Lakeside ERF ceasing to operate by 2026

Year	2016	2021	2026	2031	2036	2036	
Arisings (tonnes) Table 5.2, aLP, with actual 2016/17 LACW and consequently reduced C&I							
LACW	3,697,000	3,808,000	3,969,000	4,074,000	4,171,000	4,171,000	*a*
C&I -nHH	4,006,000	3,989,000	3,999,000	4,033,000	4,086,000	4,086,000	*b*
Total	7,703,000	7,797,000	7,968,000	8,107,000	8,257,000	8,257,000	*c*
Recycling (per cent)							
LACW[23]	45%	45%	50%	50%	50%	50%	*d*
C&I[24]	0%	70%	70%	75%	75%	80%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings							
LACW	1,663,650	1,713,600	1,984,500	2,037,000	2,085,500	2,085,500	*f*
C&I	-	2,792,300	2,799,300	3,024,750	3,064,500	3,268,800	*g*
Total	1,663,650	4,505,900	4,783,800	5,061,750	5,150,000	5,354,300	*h*
Recovery (per cent) Calculated from recycling per cent & LES							
LACW	47%	48%	50%	50%	50%	50%	*i*
C&I	100%	30%	30%	25%	25%	20%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings							
LACW	1,737,590	1,827,840	1,984,500	2,037,000	2,085,500	2,085,500	*k*

[23] Policy 7.2.1.a, London Environment Strategy

[24] Objective 7.2, London Environment Strategy

Year	2016	2021	2026	2031	2036	2036	
C&I	4,006,000	1,196,700	1,199,700	1,008,250	1,021,500	817,200	*l*
Total	5,743,590	3,024,540	3,184,200	3,045,250	3,107,000	2,902,700	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	**2036**	
Existing capacity, **'London+'** (Lakeside ERF ceased operating)			2,548,000	2,548,000	2,548,000	2,548,000	*n*
Remaining waste to be diverted from landfill			**636,200**	**497,250**	**559,000**	**354,700**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**97%**	**76%**	**85%**	**54%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**936,200**	**797,250**	**859,000**	**654,700**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**143%**	**122%**	**131%**	**100%**	*u*

3.5 Summary of the adopted London Plan Assessment

3.5.1 A strict application of aLP policy, one that relies upon the conservative future estimates of waste arisings and aspirational recycling targets, demonstrates that, even if these outcomes are achieved, there remains a need for residual waste management capacity.

3.5.2 In order for London to achieve its waste management and renewable energy aspirations, as set out in development plan policy, at least a third of the nominal throughput for the ERF will be required, far into the foreseeable future.

3.5.3 That conclusion is based on London continuing to use all of the current contracted capacity, including that which lies outside of the capital. In the event that London achieves its net self-sufficiency aspirations, as per the Mayor's policy, then the need for additional recovery capacity increases to require, at least, all of the nominal throughput offered by the REP ERF.

3.5.4 By simply reviewing either or both those forecast waste arisings and recycling aspirations set out in policy, with up to date and proportionate data, demonstrates that the need for recovery capacity within London is likely to be very much greater.

3.5.5 There is widely recognised a substantial level of progress necessary to achieve the aspirational outcomes of aLP policy. Not least, reference to the aLP identifies that '*around 30% of waste goes into landfill sites that are located largely outside London.*' (paragraph 5.69). This position is little changed in the dLP, which states that '*some 32 per cent of London's waste that was biodegradable or recyclable was sent to landfill.*' (paragraph 9.8.2)

3.5.6 The LES identifies a need for 1.4 Mt of recycling capacity in order to meet aspirational waste management targets. REP incorporates both recycling and recovery capacity, effectively diverting wastes from landfill and recovering renewable/low carbon supplies of energy.

3.5.7 REP also provides the resilience that London needs to deliver its policy aspirations in an uncertain and ever changing future. This Assessment considers the reasonable prospect of Lakeside ERF ceasing to operate within the foreseeable future. In this future, there remains more than a clear need for the ERF, even in the event that extraordinary recycling levels of the LACW (50%) and C&I (80%) waste streams are assumed to be achieved.

3.5.8 REP is demonstrated to be compliant with development plan policy set out in the aLP, providing the additional capacity required to enable London to be self-sufficient, avoid sending wastes to landfill and to benefit from the recovery of renewable/low carbon energy. Even with aspirational recycling targets, the ERF is demonstrated not to prejudice the London Waste Strategy; instead REP provides the flexibility that London needs to underpin the development of its sustainable communities and to reach its objective of being a zero carbon city.

4. Draft London Plan

4.1 Just the dLP

Introduction

4.1.1 The dLP does not state household or commercial/industrial waste arisings; consequently reference needs to be made to the Plan's evidence base, specifically Appendix A to the document reporting Task 3 – Strategic Waste Data[25] (the Task 3 Report). This document also presents the levels of recycling expected to be achieved across both household and C&I wastes, providing more detail than policies SI7A/3 and 4.

Scenario 1, dLP: dLP Arisings, with dLP Recycling

4.1.2 **Table 4.1** presents all of this information, such that the amount of waste to be diverted from landfill, passing through a residual waste management treatment facility, such as REP can be calculated.

4.1.3 In Scenario 1, dLP, which is an absolute application of dLP data and policy, just over 3Mt of recovery capacity is required by 2026. This need is largely maintained over the following 10 years, decreasing slightly to just over 2.9 Mt by 2036.

4.1.4 Whilst these tonnages are substantial, 'London+' existing capacity can potentially manage a significant proportion of it, although there remains over 475,000 tonnes to be diverted from landfill at 2026 and over 270,000 by 2036 (see row o). At least 40% of the nominal throughput proposed for the ERF is required to divert London's waste away from landfill (see row q).

4.1.5 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, as per the Mayor's policy, then that demand increases, at least to nearly 662,000 tonnes at 2036 (see row s). In this scenario, all of the nominal throughput offered by the ERF is required for London to achieve its waste management aspirations (see row u).

[25] London Plan Waste Forecasts and Apportionment, Task 3 – Strategic Waste Data, SLR, May 2017. https://www.london.gov.uk/sites/default/files/task_3_-_strategic_waste_data.pdf

Table 4.1: Scenario 1, dLP: dLP Arisings, with dLP Recycling (60%^{HH} and 70%$^{C\&I}$)

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Appendix A, Task 3 – Strategic Waste Data						
HH	3,103,000	3,207,000	3,287,000	3,348,000	3,345,000	*a*
C&I	5,015,000	5,009,000	5,012,000	5,021,000	5,097,000	*b*
Total	8,118,000	8,216,000	8,299,000	8,369,000	8,550,000	*c*
Recycling (per cent) Appendix A, Task 3 – Strategic Waste Data						
HH	34%	43%	51%	60%	60%	*d*
C&I	63%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
HH	1,055,020	1,379,010	1,676,370	2,008,800	2,071,800	*f*
C&I	3,159,450	3,506,300	3,508,400	3,514,700	3,567,900	*g*
Total	4,214,470	4,885,310	5,184,770	5,523,500	5,639,700	*h*
Recovery (per cent) Calculated from recycling per cent						
HH	47%	48%	49%	40%	40%	*i*
C&I	19%	21%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
HH	1,458,410	1,539,360	1,610,630	1,339,200	1,381,200	*k*
C&I	952,850	1,051,890	1,503,600	1,506,300	1,529,100	*l*
Total	2,411,260	2,591,250	3,114,230	2,845,500	2,910,300	*m*

Demand for REP ERF	2026	2031	2036	
Existing capacity, **'London+'**	2,638,000	2,638,000	2,638,000	*n*
Remaining waste to be diverted from landfill	**476,230**	**207,500**	**272,300**	*o*
REP ERF nominal capacity	665,000	665,000	665,000	*p*
Proportion of REP ERF used by London	**73%**	**32%**	**42%**	*q*
Existing capacity, **'inLondon'**	2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill	**866,230**	**597,500**	**662,300**	*s*
REP ERF nominal capacity	665,000	665,000	665,000	*t*
Proportion of REP ERF used by London	**132%**	**91%**	**101%**	*u*

4.2 Review of Waste Arisings

4.2.1 Appendix A of the Task 3 Report also only accounts for household waste, not all wastes collected by local authorities; yet policy SI7A/4a applies to all municipal waste.

4.2.2 In 2016/17 London generated 3,697,000 tonnes of LACW. There is a difference of 594,000 tonnes between the forecast household arisings set out in Appendix A of the Task 3 Report and the actual LACW arisings for 2016/17.

Scenario 2a, dLP: 2016/17 LACW and dLP C&I Arisings, with dLP Recycling

4.2.3 **Table 4.2** simply updates **Table 4.1** with the actual tonnage of LACW collected in 2016/17. Each household waste forecast is increased by 594,000 tonnes, with no other growth assumed; rows a, f, and k in the table below, are renamed LACW. No other changes are made, the C&I waste arisings remain the same, as do the recycling targets.

4.2.4 Updating the LACW arisings leads to a need for 3.4Mt of recovery capacity at 2026. This need is largely maintained over the following 10 years, decreasing to just over 3Mt by 2036.

4.2.5 When 'London+' existing capacity is subtracted, there remains a need for new recovery capacity to divert wastes from landfill: over 767,000 tonnes at 2026; and nearly 510,000 tonnes by 2036. Nearly 80% of the nominal throughput proposed for the ERF is required to divert London's waste from landfill by 2036.

4.2.6 This level of need increases to nearly 140% by 2036 if facilities located outside of London are not used.

Table 4.2: Scenario 2a, dLP: 2016/17 LACW and dLP C&I Arisings, with dLP Recycling

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Appendix A, Task 3 – Strategic Waste Data, with actual 2016/17 LACW						
LACW	3,697,000	3,801 ,000	3,881,000	3,942,000	4,047,000	*a*
C&I	5,015,000	5,009,000	5,012,000	5,021,000	5,097,000	*b*
Total	8,712,000	8,810,000	8,893,000	8,963,000	9,144,000	*c*
Recycling (per cent) Appendix A, Task 3 – Strategic Waste Data						
HH	34%	43%	51%	60%	60%	*d*
C&I	63%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
LACW	1,256,980	1,634,430	1,979,310	2,365,200	2,428,200	*f*
C&I	3,159,450	3,506,300	3,508,400	3,514,700	3,567,900	*g*
Total	4,416,430	5,140,730	5,487,710	5,879,900	5,996,100	*h*
Recovery (per cent) Calculated from recycling per cent						
HH	47%	48%	49%	40%	40%	*i*
C&I	19%	21%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
LACW	1,737,590	1,824,480	1,901,690	1,576,800	1,618,800	*k*
C&I	952,850	1,051,890	1,503,600	1,506,300	1,529,100	*l*
Total	2,690,440	2,876,370	3,405,290	3,083,100	3,147,900	*m*

Demand for REP ERF	2026	2031	2036	
Existing capacity, **'London+'**	2,638,000	2,638,000	2,638,000	*n*
Remaining waste to be diverted from landfill	**767,290**	**445,100**	**509,900**	*o*
REP ERF nominal capacity	665,000	665,000	665,000	*p*
Proportion of REP ERF used by London	**117%**	**68%**	**78%**	*q*
Existing capacity, **'inLondon'**	2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill	**1,157,290**	**835,100**	**899,900**	*s*
REP ERF nominal capacity	665,000	665,000	665,000	*t*
Proportion of REP ERF used by London	**177%**	**127%**	**137%**	*u*

Scenario 2b, dLP: 2016/17 LACW and Reduced C&I Arisings, with dLP Recycling

4.2.8 As reported previously, 2016/17 LACW arisings for London was 3,697,000 tonnes, comprising: 3,049,000 tonnes of household waste; and 648,000 tonnes of non-household waste.

4.2.9 Reference to another evidence base document of the dLP, Task 1 – GLA Waste Arisings Model Critical Friend Review[26] (the Task 1 Report) advises that this is believed, but not confirmed, to be accounted for in the C&I waste stream data. The first entry in Table 2-1 of the Task 1 Report, under SLR comment, states:

> *'We believe the borough tonnages currently included for 2015/16 may be local authority collected waste, rather than household waste. Tonnages therefore currently include non-household waste collected by local authorities (largely local authority trade waste collections), overestimating the household waste tonnage.*
>
> *We understand that Defra's commercial and industrial waste survey includes all C&I waste, including local authority trade waste. To avoid double counting, it may therefore be appropriate to consider only borough household waste tonnages (London total 3.1Mt in 2015/16) as opposed to local authority collected waste in totality (London total 3.7Mtpa in 2015/16).'*

4.2.10 To address these considerations **Table 4.3** updates **Table 4.1** to avoid the potential for double-counting. In **Table 4.3** the household waste row is again updated to reflect total LACW. In addition, the non-household waste arisings recorded in 2016/17 are subtracted from the C&I waste arisings (row b, which is also renamed). Recycling rates remain unchanged.

4.2.11 In Scenario 2b, just over 3 Mt of recovery capacity is required by 2026 (see row m). Again, this need is largely maintained over the following 10 years, decreasing slightly to 2.95 Mt by 2036.

4.2.12 Whilst these tonnages are substantial, 'London+' existing capacity can potentially manage a significant proportion of it, although there remains nearly 573,000 tonnes to be diverted from landfill at 2026 and 315,500 by 2036 (see row o). At least nearly 50% of the nominal throughput proposed for the ERF is required to divert London's waste away from landfill (see row q).

4.2.13 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, as per the Mayor's policy, then that demand increases, at least to nearly 705,500 tonnes at 2036 (see row s). Again, in this scenario, all of the nominal throughput

[26] London Plan Waste Forecast and Apportionments, Task 1 – GLA Waste Arisings Model Critical Friend Review, SLR, March 2017. https://www.london.gov.uk/sites/default/files/forecasts_for_household_and_commercial_industrial_waste_report_1_-_gla_waste_arisings_model.pdf

offered by the ERF is required for London to achieve its waste management aspirations (see *row u*).

Table 4.3: Scenario 2b,dLP: 2016/17 LACW and Reduced C&I Arisings, with dLP Recycling

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Appendix A, Task 3 – Strategic Waste Data, with actual 2016/17 LACW						
LACW	3,697,000	3,801 ,000	3,881,000	3,942,000	4,047,000	*a*
C&I -nHH	4,367,000	4,361,000	4,364,000	4,373,000	4,449,000	*b*
Total	8,064,000	8,162,000	8,245,000	8,315,000	8,496,000	*c*
Recycling (per cent) Appendix A, Task 3 – Strategic Waste Data						
HH	34%	43%	51%	60%	60%	*d*
C&I	63%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
LACW	1,256,980	1,634,430	1,979,310	2,365,200	2,428,200	*f*
C&I	2,751,210	3,052,700	3,054,800	3,061,100	3,114,300	*g*
Total	4,008,190	4,687,130	5,034,110	5,426,300	5,542,500	*h*
Recovery (per cent) Calculated from recycling per cent						
HH	47%	48%	49%	40%	40%	*i*
C&I	19%	21%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
LACW	1,737,590	1,824,480	1,901,690	1,576,800	1,618,800	*k*
C&I	829,730	915,810	1,309,200	1,311,900	1,334,700	*l*
Total	2,567,320	2,740,290	3,210,890	2,888,700	2,953,500	*m*

Demand for REP ERF	2026	2031	2036	
Existing capacity, **'London+'**	2,638,000	2,638,000	2,638,000	*n*
Remaining waste to be diverted from landfill	**572,890**	**250,700**	**315,500**	*o*
REP ERF nominal capacity	665,000	665,000	665,000	*p*
Proportion of REP ERF used by London	**87%**	**38%**	**48%**	*q*
Existing capacity, **'inLondon'**	2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill	**962,890**	**640,700**	**705,500**	*s*
REP ERF nominal capacity	665,000	665,000	665,000	*t*
Proportion of REP ERF used by London	**147%**	**98%**	**108%**	*u*

4.2.14 Again, this is believed to be a conservative approach. The Tolvik REP Market Assessment forecasts an additional 1.0 to 2.0 Mt of C&I waste arising between the years 2026 and 2036, when compared with the dLP data, without including those similar wastes collected by local authorities.

4.3 Review of Recycling Targets

4.3.1 At the time of undertaking this Assessment, the dLP had yet to undergo the independent examination. It is observed that, whilst being a plan currently being prepared, the household waste recycling targets assumed within the modelling for the dLP appear to be unachievable when reference is made to the evidence base to the LES.

Scenario 3a, dLP: 2016/17 LACW, with LES Recycling and Reduced C&I with dLP Recycling

4.3.2 **Table 4.4** updates **Table 4.3** applying the LES 50% recycling target to total LACW (renaming rows d and i) and retaining dLP recycling targets for the C&I waste stream. This leads to a need for just over 3.2 Mt of recovery capacity at 2026, which increases to just over 3.3 Mt by 2036.

4.3.3 When 'London+' existing capacity is subtracted, there is demonstrated to remain a need for new recovery capacity to divert wastes from landfill: nearly 612,000 tonnes at 2026; and 720,000 tonnes by 2036. All of the nominal throughput proposed for the ERF is demonstrated to be necessary to divert London's waste from landfill from 2031.

4.3.4 This level of need increases to nearly 170% by 2036 if facilities located outside of London are not used.

Table 4.4: Scenario 3a, dLP: 2016/17 LACW, with LES Recycling and Reduced C&I, with dLP Recycling

Year	2016	2021	2026	2031	2036	
Arisings (tonnes) Appendix A, Task 3 – Strategic Waste Data, with actual 2016/17 LACW						
LACW	3,697,000	3,801 ,000	3,881,000	3,942,000	4,047,000	*a*
C&I -nHH	4,367,000	4,361,000	4,364,000	4,373,000	4,449,000	*b*
Total	8,064,000	8,162,000	8,245,000	8,315,000	8,496,000	*c*
Recycling (per cent)						
LACW[27]	34%	43%	50%	50%	50%	*d*
C&I[28]	63%	70%	70%	70%	70%	*e*
Recycling (tonnes) Calculated by applying recycling per cent to waste arisings						
LACW	1,256,980	1,634,430	1,940,500	1,971,000	2,023,500	*f*
C&I	2,751,210	3,052,700	3,054,800	3,061,100	3,114,300	*g*
Total	4,008,190	4,687,130	4,995,300	5,032,100	5,137,800	*h*
Recovery (per cent) Calculated from recycling per cent						
LACW	47%	48%	50%	50%	50%	*i*
C&I	19%	21%	30%	30%	30%	*j*
Recovery (tonnes) Calculated by applying recovery per cent to waste arisings						
LACW	1,737,590	1,824,480	1,940,500	1,971,000	2,023,500	*k*

[27] Policy 7.2.1.a, London Environment Strategy

[28] Appendix A, Task 3 – Strategic Waste Data

Year	2016	2021	2026	2031	2036	
C&I	829,730	915,810	1,309,200	1,311,900	1,334,700	*l*
Total	2,567,320	2,740,290	3,249,700	3,282,900	3,358,200	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	
Existing capacity, **'London+'**			2,638,000	2,638,000	2,638,000	*n*
Remaining waste to be diverted from landfill			**611,700**	**644,900**	**720,000**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**93%**	**98%**	**110%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**1,001,700**	**1,034,900**	**1,110,200**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**153%**	**158%**	**169%**	*u*

Scenario 3b, dLP: 2016/17 LACW and Reduced C&I Arisings, with LES Recycling

4.3.5 The dLP policy SI7A/4/a actually seeks to achieve a level of 65% recycling across the municipal waste stream. This objective is repeated in the LES, which expects it to be delivered through achieving a minimum of 75% recycling in the C&I waste stream (Objective 7.2).

4.3.6 This outcome is considered in **Table 4.5**, along with an assumption that 80% recycling is achieved within the C&I waste stream by 2036, as required to meet 65% overall.

4.3.7 In Scenario 3b, over 3.2 Mt of recovery capacity is required by 2026 (see row m). Again, this need is largely maintained over the following 10 years, decreasing slightly to just over 3.1 Mt by 2036.

4.3.8 Whilst these tonnages are substantial, 'London+' existing capacity can potentially manage a significant proportion of it, although there remains nearly 612,000 tonnes to be diverted from landfill at 2026 and over 275,000 by 2036, even if 80% recycling is achieved in the C&I waste stream (see row o). At least 40% of the nominal throughput proposed for the ERF is required to divert London's waste away from landfill (see row q).

4.3.9 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, as per the Mayor's policy, then that demand increases by 2036, requiring 100% of the ERF nominal capacity even if 80% recycling of the C&I waste stream is achieved (see row u).

Table 4.5: Scenario 3b, dLP: 2016/17 LACW and Reduced C&I, with LES Recycling (50%^{LACW} and 75% and 80%$^{C\&I}$)

Year	2016	2021	2026	2031	2036	2036	
Arisings (tonnes) Appendix A, Task 3 – Strategic Waste Data, with actual 2016/17 LACW							
LACW	3,697,000	3,801,000	3,881,000	3,942,000	4,047,000	4,047,000	*a*
C&I -nHH	4,367,000	4,361,000	4,364,000	4,373,000	4,449,000	4,449,000	*b*
Total	8,064,000	8,162,000	8,245,000	8,315,000	8,496,000	8,496,000	*c*
Recycling (per cent)							
LACW[29]	34%	43%	50%	50%	50%	50%	*d*
C&I[30]	63%	70%	70%	75%	75%	80%	*e*
Recycling (tonnes) Calculated by applying recycling percent to waste arisings							
LACW	1,256,980	1,634,430	1,940,500	1,971,000	2,023,500	2,023,500	*f*
C&I	2,751,210	3,052,700	3,054,800	3,279,750	3,336,750	3,559,200	*g*
Total	4,008,190	4,687,130	4,995,300	5,250,750	5,360,250	5,582,700	*h*
Recovery (per cent) Calculated from recycling percent & LES							
LACW	47%	48%	50%	50%	50%	50%	*i*
C&I	19%	30%	30%	25%	25%	20%	*j*
Recovery (tonnes) Calculated by applying recovery percent to waste arisings							
LACW	1,737,590	1,824,480	1,940,500	1,971,000	2,023,500	2,023,500	*k*

[29] Policy 7.2.1.a, London Environment Strategy

[30] Objective 7.2, London Environment Strategy

Year	**2016**	**2021**	**2026**	**2031**	**2036**	**2036**	
C&I	4,367,000	915,810	1,309,200	1,093,200	1,112,250	889,800	*l*
Total	6,104,590	2,740,290	3,249,700	3,064,250	3,135,750	2,913,300	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	**2036**	
Existing capacity, **'London+'**			2,638,000	2,638,000	2,638,000	2,638,000	*n*
Remaining waste to be diverted from landfill			**611,700**	**426,250**	**497,750**	**275,300**	*o*
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**93%**	**65%**	**76%**	**42%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**1,001,700**	**816,250**	**887,750**	**665,300**	*s*
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**153%**	**125%**	**136%**	**102%**	*u*

4.4 Review of Available Capacity

4.4.1 As when considering the aLP, this section of the Assessment considers the impact of lost capacity on the waste treatment infrastructure available to manage London's residual waste in line with the waste hierarchy.

4.4.2 The same assumption is applied, that the Lakeside ERF will cease to operate in 2025, reducing the 'London+' existing capacity figure to 2,548,000.

Scenario 4, dLP: 2016/17 LACW and Reduced C&I, with LES Recycling and Lost Capacity

4.4.3 Scenario 4, presented in **Table 4.6** updates **Table 4.5** to incorporate the reduced available capacity should Lakeside ERF cease to operate. The NLHPP remains to be assumed to be delivered.

4.4.4 In Scenario 4, the demand for recovery capacity is over 3.2 Mt at 2026, reducing to just under 3 Mt by 2036, if 80% recycling of the C&I waste stream is achieved (see row m).

4.4.5 The tonnages are substantial and even whilst the 'London+' existing capacity can potentially manage some of it, there remains over 700,000 tonnes to be diverted from landfill at 2026 and over 360,000 tonnes by 2036, even if 80% recycling is achieved in the C&I waste stream (see row o).

4.4.6 If London were to achieve net self-sufficiency, and consequently cease to require energy recovery facilities located outside of the capital, as per the Mayor's policy, then that demand increases again. Over 1Mt of residual wastes remain to be diverted from landfill by 2026, requiring at least one and half facilities offering the nominal capacity of the ERF.

4.4.7 Even if 80% C&I recycling is achieved, all of the nominal capacity offered by REP ERF is required (see row u).

Table 4.6: Scenario 4, dLP: 2016/17 LACW and Reduced C&I, with LES Recycling and Lost Capacity

Year	2016	2021	2026	2031	2036	2036	
Arisings (tonnes) Appendix A, Task 3 – Strategic Waste Data, with actual 2016/17 LACW							
LACW	3,697,000	3,801,000	3,881,000	3,942,000	4,047,000	4,047,000	*a*
C&I -nHH	4,367,000	4,361,000	4,364,000	4,373,000	4,449,000	4,449,000	*b*
Total	8,064,000	8,162,000	8,245,000	8,315,000	8,496,000	8,496,000	*c*
Recycling (per cent)							
LACW[31]	34%	43%	50%	50%	50%	50%	*d*
C&I[32]	63%	70%	70%	75%	75%	80%	*e*
Recycling (tonnes) Calculated by applying recycling percent to waste arisings							
LACW	1,256,980	1,634,430	1,940,500	1,971,000	2,023,500	2,023,500	*f*
C&I	2,751,210	3,052,700	3,054,800	3,279,750	3,336,750	3,559,200	*g*
Total	4,008,190	4,687,130	4,995,300	5,250,750	5,360,250	5,582,700	*h*
Recovery (per cent) Calculated from recycling percent & LES							
LACW	47%	48%	50%	50%	50%	50%	*i*
C&I	19%	30%	30%	25%	25%	20%	*j*
Recovery (tonnes) Calculated by applying recovery percent to waste arisings							
LACW	1,737,590	1,824,480	1,940,500	1,971,000	2,023,500	2,023,500	*k*

[31] Policy 7.2.1.a, London Environment Strategy

[32] Objective 7.2, London Environment Strategy

Year	**2016**	**2021**	**2026**	**2031**	**2036**	**2036**	
C&I	4,367,000	915,810	1,309,200	1,093,250	1,112,250	889,800	*l*
Total	6,104,590	2,740,290	3,249,700	3,064,250	3,135,750	2,913,300	*m*
Demand for REP ERF			**2026**	**2031**	**2036**	**2036**	
Existing capacity, **'London+'** (Lakeside ERF ceased operating)			2,548,000	2,548,000	2,548,000	2,548,000	*n*
Remaining waste to be diverted from landfill			**701,700**	**516,250**	**587,750**	**365,300**	***o***
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*p*
Proportion of REP ERF used by London			**107%**	**79%**	**90%**	**56%**	*q*
Existing capacity, **'inLondon'**			2,248,000	2,248,000	2,248,000	2,248,000	*r*
Remaining waste to be diverted from landfill			**1,001,700**	**816,250**	**887,750**	**665,300**	***s***
REP ERF nominal capacity			665,000	665,000	665,000	665,000	*t*
Proportion of REP ERF used by London			**153%**	**125%**	**136%**	**102%**	*u*

4.5 Summary of draft London Plan Assessment

4.5.1 Again, there is demonstrated to be a consistent demand for capacity to divert residual waste from landfill.

4.5.2 A strict application of dLP policy, one that relies upon the conservative future estimates of waste arisings and aspirational recycling targets, demonstrates that even if these outcomes are achieved there remains a need for residual waste management capacity. In order for London to achieve its diversion from landfill, self-sufficiency and renewable energy aspirations, at least 40% of the nominal throughput for the ERF will be required, far into the foreseeable future.

4.5.3 That conclusion is based on London continuing to use all of the current contracted capacity, including that which lies outside the capital. In the event that London achieves its net self-sufficiency aspirations, as per the Mayor's policy, then the need for additional recovery capacity increases to require, at least, all of the nominal throughput offered by the REP ERF.

4.5.4 By simply reviewing either or both the forecast waste arisings and recycling aspirations set out in policy, with an up to date and proportionate data set, demonstrates that the need for recovery capacity to divert London's wastes from landfill is likely to be very much greater.

4.5.5 REP also provides the resilience that London needs to deliver its future policy aspirations in an uncertain and ever changing world.

4.5.6 This Assessment also considers the reasonable prospect of Lakeside ERF SELCHP ceasing to operate in the foreseeable future. In this future, there remains more than the clear need for the ERF, even in the event that extraordinary recycling levels of the LACW (50%) and C&I (80%) waste streams are assumed to be achieved.

4.5.7 REP is demonstrated to be compliant with emerging dLP policy, providing the additional capacity required to enable London to be self-sufficient, avoid sending wastes to landfill and to benefit from the recovery of renewable/low carbon energy.

4.5.8 The ERF is demonstrated not to prejudice the London Waste Strategy; instead REP provides the flexibility that London needs to underpin the development of its sustainable communities and to reach its objective of being a zero carbon city.

5. The Waste Management Context

5.1 Modelling Assumptions

5.1.1 There is a myriad of different assumptions and methods that may be used to forecast demand, whatever future event is being considered. However, key to waste planning (not least as noted in NPPW, at page 3) is using a proportionate evidence base and avoiding spurious precision. A range of outcomes should be explored so that their outcomes are properly understood and an optimal solution, which builds in deliverability and flexibility, is achieved. This is the approach used in this Assessment.

5.1.2 It is also the approach used by the Environmental Services Association (ESA) in undertaking its own review of future residual waste treatment demand. The ESA recognised that during 2016/17 a number of reports were published by third parties which forecast different levels of need for residual waste treatment capacity in the UK. Consequently, the ESA commissioned Tolvik to undertake an independent review of these forecasts, reported in document titled 'UK Residual Waste: 2030 Market Review'.[33]

5.1.3 One of the key conclusions relevant to this Assessment is that the amount of residual waste predicted at 2030 varied greatly across the six reports reviewed. All the reports were prepared by organisations active within the waste industry, which demonstrates the level of uncertainty in relation to forecasting waste arisings.

> '*Whilst the 2016 baseline Residual Waste tonnages vary relatively modestly, the effect of the differing assumptions underpinning the scenarios in the reports is significant. By 2030 the projected tonnage of Residual Waste ranges from a low of 15.9 Mt to a high of 31.7 Mt*.
>
> *It is worth noting that not all of the scenarios within the reports are necessarily regarded by report authors as a likely outcome; some scenarios have been developed specifically to illustrate the effects of changing assumptions and/or for the purpose of sensitivity testing'* (UK Residual Waste: 2030 Market Review, Section 4.1, Page 17).

5.1.4 Another is that, despite assuming high levels of recycling, and substantially greater than are currently achieved in London, there generally remains a future forecast need for substantial new residual waste treatment capacity. A potential future surplus of capacity is only achieved when: very high recycling rates are assumed; all potential future capacity is included, even when it is not yet operational; and it is assumed that the UK will still be exporting 2.5 Mt to mainland Europe for treatment.

[33] UK Residual Waste: 2030 Market Review, Tolvik Consulting, November 2017. http://www.esauk.org/application/files/6015/3589/6453/UK_Residual_Waste_Capacity_Gap_Analysis.pdf

5.2 Current Waste Management in London

Recycling and Recovery within London

5.2.1 This Assessment has already addressed much of the policy and context relevant to London's recycling and recovery, both as current practice and future aspirations. One element that has not been considered is the level of success that has already been achieved.

5.2.2 The LES estimates (page 281) that in 2017/18 a municipal waste recycling rate of 41% was achieved in London. Whilst improvements to this level of recycling are sought in both the London Plans and the LES, it is also recognised that London performs well when compared against other major cities.

5.2.3 The LES: Evidence Base, Waste advises that London sits '6th behind Seoul (67%); Adelaide (54 percent); Los Angeles (50 per cent); San Francisco (48 percent) and Melbourne (48 percent)' (Page 96).

5.2.4 **Figure 5.1** demonstrates that, even just looking at the LACW recycling rate, London still performs well against many major European cities.

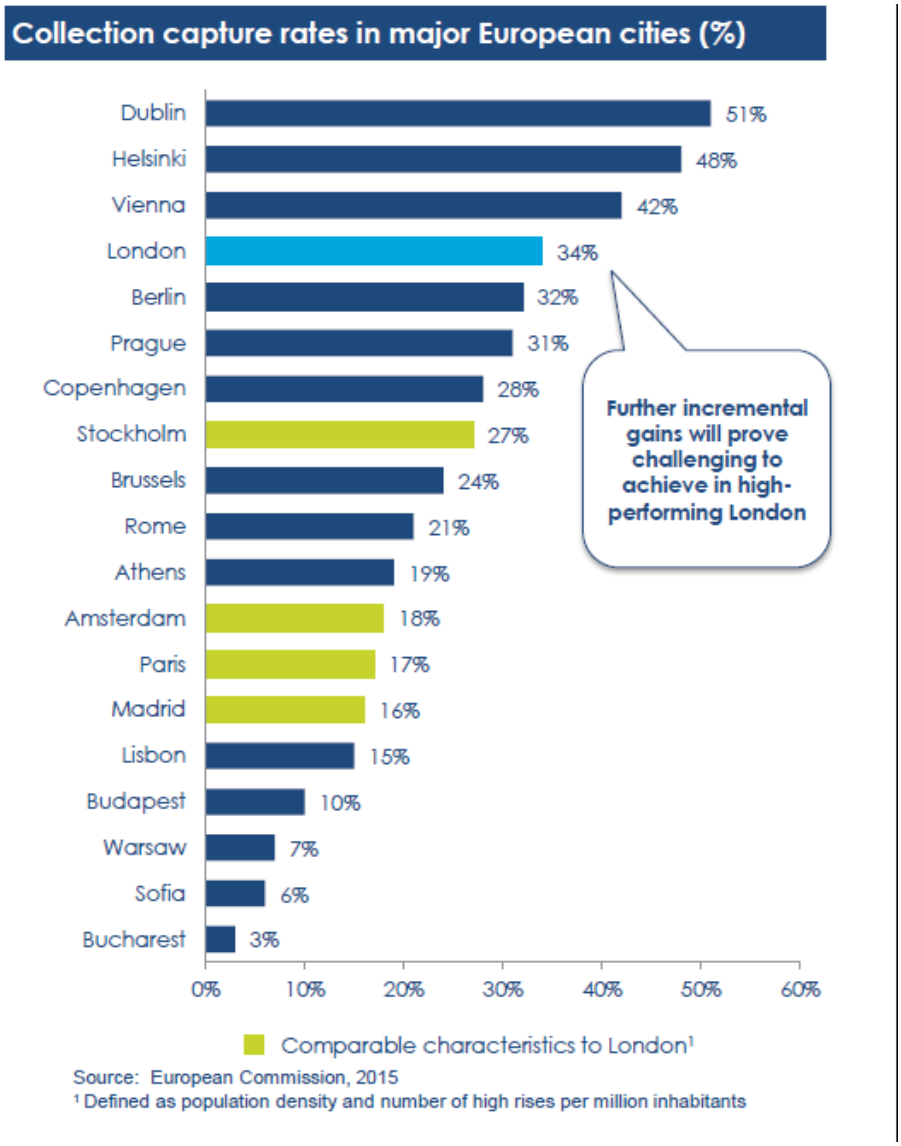


Figure 5.1: Collection capture rates in major European cities

5.2.5 It is widely understood that making material progress on a good level of performance is very much more difficult to achieve than gaining improvements from a low starting point. Further, the LES recognises the very real challenges within London of meeting such targets, not least the absence of any direct means of delivery and a lack of funding.

5.2.6 The Applicant currently provides recycling services, and will enable further increase in recycling capacity through the Anaerobic Digestion Facility. The ERF is another important part of the sustainable waste treatment infrastructure required within London.

Export to Landfill

5.2.7 At paragraphs 9.8.1 and 9.8.2, the dLP advises:

> '*In 2015, London managed 7.5mt of its own waste and exported 11.4mt of waste. London also imported 3.6mt of waste. This gives London a current waste net self-sufficiency figure of approximately 60 per cent. Around 5mt (49 per cent) of waste exported from London went to the East of England and 4.2mt (42 per cent) to the South East. The bulk of this waste is CD&E waste. Approximately 1.3mt of waste was exported overseas. The term net self-sufficiency is meant to apply to all waste streams, with the exception of excavation waste. …*
>
> *In 2015, 2.9mt of the waste sent to the East of England went to landfill and 2.2mt went to landfill in the South East. Some 32 percent of London's waste that was biodegradable or recyclable was sent to landfill. The Mayor is committed to sending zero biodegradable or recyclable waste to landfill by 2026 (see Table 9.3).'*

5.2.8 On page 325, the LES states:

> *'In 2015 London managed around half the waste it produced within London. Most exported waste goes to landfill mainly in the south east, and, along with it goes the economic value of recovered materials for reuse, recycling or energy generation. Although waste to landfill has declined by 70 per cent since 2005, London still landfills around 1 million tonnes of waste each year, costing around £100 million. Landfills accepting London's wastes are expected to close by 2026 and no new capacity is planned. To deal with this London needs to firstly reduce waste produced and secondly to ensure it has access to sufficient capacity to recover value from more of its waste and remove any reliance on landfill.'*

5.2.9 The difference in the tonnages is believed to be because the LES is focussing on municipal waste, whilst the dLP addresses all waste streams. Using either reference, it is clear, that London currently exports a substantial proportion of its waste and a substantial proportion of that is disposed of to landfill.

5.2.10 Both the dLP and the LES are right to identify that disposal to landfill is unattractive, it is also correct to identify that this landfill capacity is becoming increasingly unavailable. **Figure 5.2** shows the eight commonly used landfills currently used to dispose of London's waste and that six of them are due to close by 2025, in just seven years.

5.2.11 REP is demonstrated as the appropriate and sustainable management option for London's residual waste, recovering energy from non-recyclable wastes and avoid their disposal to landfill.

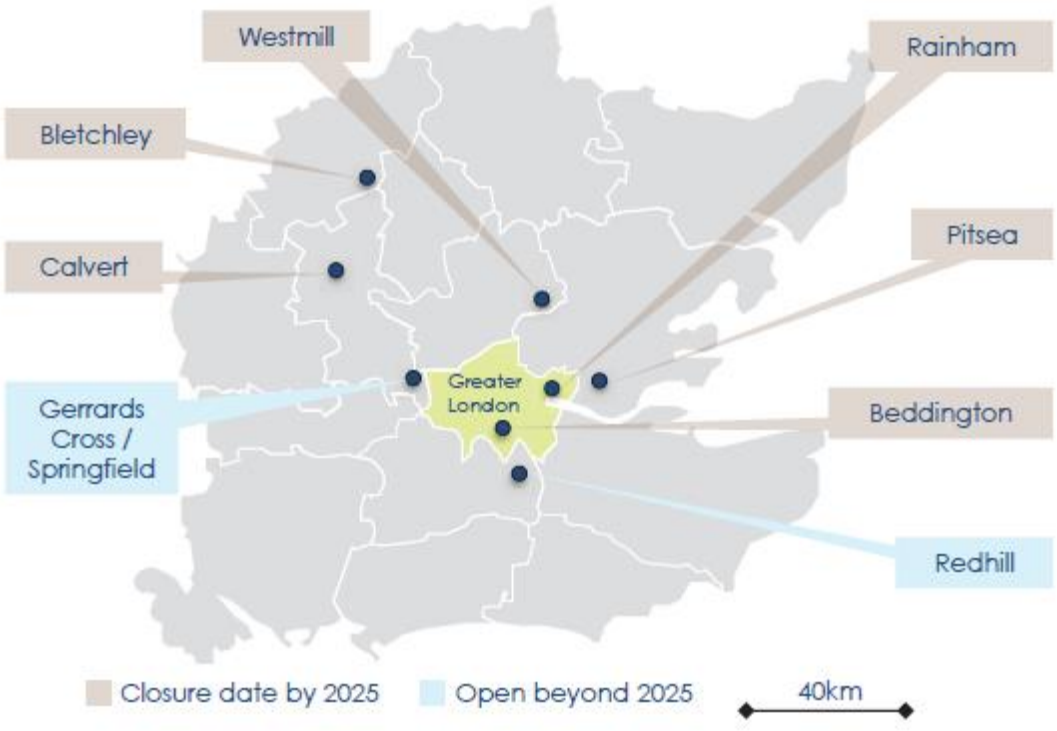


Figure 5.2: Landfill facilities commonly used to dispose of London's waste

Export to Europe

5.2.12 In addition to exporting waste to landfill, residual wastes are exported to energy recovery facilities on mainland Europe. In 2017, just over 3 Mt of residual waste was exported to Europe from England for recovery/incineration[34]. Around 50% of all UK export of RDF and solid recovered fuel originated in the south east[35].

5.2.13 Technically, this movement complies with European policy and is currently a cost-effective, short-term solution; but it fails to give either the UK, or London, resilience in either waste management or energy supply infrastructure and means our communities miss out on the demonstrated benefits; principally renewable/low carbon energy but also inward investment and jobs. There are also risks of greater regulatory constraints and increased costs associated with this management route as the UK leaves the European Union.

5.2.14 This is sub-optimal solution for London's residual waste. Instead, REP delivers the development plan policy aspirations to treat London's waste within London, recovering both materials and a supply of renewable/low carbon energy.

[34] https://data.gov.uk/dataset/international-waste-shipments-exported-to-england https://ea.sharefile.com/share/view/sc1791badb1e4024a

[35] Mind the gap 2017 – 2030, UK residual waste infrastructure capacity requirements, Suez, 2017. http://www.sita.co.uk/wp-content/uploads/2017/09/MindTheGap20172030-1709-web.pdf

5.3 Residual Waste Beyond London

5.3.1 Whilst the Mayor has consistently expressed an objective to be net self-sufficient by 2026, waste is not constrained by administrative boundaries and it will continue to move in and out of London. In order to achieve net self-sufficiency, London will need to ensure it has sufficient capacity to manage all of its waste arisings.

5.3.2 What is also clear, is that there are substantial amounts of residual waste arising in counties across the south and east of England that policy also seeks to divert from landfill. REP is a multi-technology development, proposed to receive wastes predominantly by river freight. The movement of wastes into London from outside would have no unacceptable adverse impacts and would provide flexibility to the Proposed Development, ensuring it is able to adapt over time to only accepting non-recyclable wastes.

5.3.3 The geographical location of REP presents the opportunity to accept wastes from local authorities, particularly within the south and east of England. A review of the policy documents prepared by the county councils (the waste planning authorities) of: Essex; Hertfordshire; Kent, Norfolk; Suffolk; and Surrey has been undertaken and is presented in **Appendix A**.

5.3.4 There is over 2 Mt of residual wastes arising in those authorities close to London that should be diverted from landfill. The ERF would be one of the nearest appropriate installations for that waste to be treated within.

5.3.5 REP's location is strategically important and its operations must therefore be viewed strategically. Its location on the edge of London and adjacent to the River, means that it can, and should, play an important role in serving both London and the surrounding administrative areas in achieving the waste hierarchy.

5.4 Real World Market Research

5.4.1 This Assessment has focussed on the relevant waste strategy within London; it is underpinned by the adopted and emerging policy of the London Plans, with reference also to the LES.

5.4.2 The Assessment demonstrates that even if all the policies are achieved in full, there remains a need for REP. However, the enormity of the challenge for London to meet all of its policy targets is widely recognised and should not be underestimated.

5.4.3 Policy is the appropriate tool to direct change to happen over time; however it is also appropriate to consider the real world context, to understand what is actually happening.

5.4.4 The third Tolvik report referenced in this Assessment was published in October 2018, titled ‘Residual Waste in London and the South East. Where is it going

to go …?'[36] (the Tolvik Report). The Tolvik Report was prepared by that company to consider the future management options for residual wastes arising in London and the south east of England.

5.4.5 The Tolvik Report takes a focussed approach to defining 'residual waste' limiting it to '*non-hazardous, solid and combustible mixed waste which remains after recycling activities and is capable of being processed alongside Residual Household Waste*' (page 2). The analysis has been undertaken using data from the Environment Agency, discussions with waste management companies, and Tolvik's own knowledge, which includes its review of third party residual waste assessment reports undertaken on behalf of the ESA (and referenced in Section 5.1 above). The Tolvik Report is informed by a number of different representatives of the waste management industry.

5.4.6 Three different scenarios are used within the Tolvik Report to estimate future residual waste tonnages: Limited Intervention; Central; and CE Target (using recycling targets of the Circular Economy package agreed within European Union). In the Central scenario, the assumed growth in waste arisings is largely offset by the assumed level of recycling, such that the projected tonnage of residual waste remains broadly unchanged at 2025, from the baseline year of 2017. '*Meanwhile, a modest rise in Residual Waste is projected in the Limited Intervention scenario and an 8% decline in the CE Target scenario*' (page 5). Under the Central scenario, the one considered most likely, the Tolvik Report estimates 9.9 Mt of residual waste in 2025.

5.4.7 Having forecast future waste tonnages, the Tolvik Report considers waste management options, starting with energy recovery. The Tolvik Report looks at how much waste, generated in London and the South East, is currently sent for energy recovery (4.19 Mt in 2017), how much operating capacity is available to treat these wastes (5.21 Mt) and how much additional capacity might be available in the future (1.09 Mt to 2.06 Mt). These figures include REP at 650,000 tonnes.

5.4.8 Other treatment options considered in the Tolvik Report are:

- **Export of refuse derived fuel (RDF) to Europe** – In 2017, approximately 1.7 Mt of RDF was exported from London and the South East, around 54% of the 3.35 Mt exported from England. Primarily because of Brexit, the future for this practice to continue is uncertain, but it is expected to become more difficult and more expensive;

- **Mechanical biological treatment (MBT)** – 'In 2017 total inputs to MBT facilities in London and the South East are estimated to have been around 1.33 Mt and outputs were 1.07Mt; the corresponding "effect" of MBT on the Residual Waste market in 2017 is therefore estimated to

[36] Residual Waste in London and the South East. Where is it going to go …? Tolvik Consulting Ltd, October 2018http://www.tolvik.com/reports/

have been c 0.26 Mt.' (page 9). The use of MBT is not expected to increase;

- **Co-incineration** – *'In 2017 it is estimated that 0.13Mt of Residual Waste was sent to cement kilns in London and the South East*' (page 10). Whilst there is potential for this practice to increase, in recent years the use of alternative fuels in cement kilns has decreased. The use of co-incineration is also not expected to increase.

5.4.9 Finally, the Tolvik Report considers the future for disposal to landfill. '*In 2017 3.58 Mt of Residual Waste generated in London and the South East was sent to landfill of which 3.38 Mt was landfilled locally and just 0.20 Mt transported to landfills outside London and the South East*' (page 13).

5.4.10 As at December 2016, the consented capacity for non-hazardous landfill void was 71.9 million cubic metres (Mm3). The available space (void) at a landfill facility is finite, with every tonne of waste deposited there is a reduction in the amount of space that remains; consequently, landfill facilities have a declining ability to accept waste over time.

5.4.11 Landfill void in London and the South East is being reduced through: the disposal of a wide range of residual wastes; the disposal of inert wastes; and site specifics, particularly early closure due to commercial pressures or planning requirements. The Tolvik Report considers each in some detail, concluding that there is a potential capacity gap in landfill availability before 2025.

5.4.12 In addition, the Tolvik Report identifies that landfill facilities are distributed unevenly across the study area, leaving those authorities located toward the south particularly vulnerable to a deficit of availability. There does not appear to be a clear strategy to change this outcome. Tolvik reviewed the planning policy documents for the relevant authorities to find that they generally do not make provision for significant future landfill development.

5.4.13 The Tolvik Report concludes that in the Central scenario, '*it is projected that by 2025 there could be a cumulative shortfall of 4.66 Mt in Non-Hazardous Landfill capacity across London and the South East*' (page 23). The options identified to address this shortfall are (pages 23 and 24):

- **Increase recycling** – 'A 2025 Household Waste recycling rate 5% higher than that modelled in the Central scenario would reduce the cumulative shortfall in landfill capacity by 1.87Mt (or 40% of the projected shortfall)';

- **Increase exports of RDF to Europe** – However, this practice is subject to a number of uncertainties that make it difficult to understand its role in either the short or long term;

- **Transport the waste to somewhere else in the UK** – Road transport could create significant additional movements on an already busy road network and add a cost of £10 - £20 per tonne;

- **Carefully manage existing landfill capacity** – This might include measures such as accepting less inert waste. However, this waste also needs to be appropriately managed;

- **Deliver additional landfill capacity** – The planning policy landscape suggests there is limited potential for such development; most waste planning authorities seek to encourage waste management higher up the hierarchy;

- **Develop additional energy recovery capacity** – '*Consider, for example, if there was a "zero landfill" policy across London and the South East in which no Residual Waste is to be landfilled by 2025 (similar to the current Greater London Authority's policy of working towards not sending any biodegradable waste to landfill by 2026). In the Central scenario 4.7 Mt of EfW capacity over and above that currently operational in London and the South East would need to be available. Whilst some of this capacity could potentially continue to be met by RDF export to Europe, any shortfall would need to be through the construction of new EfWs in London and the South East. The modelling in the Low Tonnage scenario assumes a maximum of 2.06 Mt of "Additional" EfW capacity by 2025 – less than half that required for a "zero landfill" scenario – putting into context deliverability of such a solution*.'

5.4.14 Through the analysis of data relevant to actual waste management practice in London and the South East, the Tolvik Report presents quite a stark picture. Understanding the real-world context to waste management confirms the urgent and substantial level of need for new residual waste treatment capacity.

6. Conclusions

6.1.1 In a pre-application meeting held on 5 June 2018, the GLA supported REP, recognising that the Proposed Development supported the Mayor's ambition to reduce the export of waste and to divert waste from landfill. Unfortunately, by 30 July 2018, the GLA stated in its response to the section 42 consultation, that its position had changed, stating that the Proposed Development '*cannot be supported*' because, inter alia, it was felt that '*there is no need for further energy from waste facilities as it will not contribute to the circular economy and will likely supress recycling rates in the capital*'.

6.1.2 **Table 6.1** presents a summary of the scenarios considered within this Assessment, using those that are most closely aligned to policy, relying upon the C&I waste forecasts of the London Plans (aLP and dLP), although these may be a significant underestimation.

6.1.3 Even in the most conservative assessment, using the lowest waste arisings and the aspirational policy expectations regarding waste management, at least one third of the nominal throughput of the ERF is required to sustainably manage London's waste.

6.1.4 A more realistic need, calculated through applying recycling objectives of the LES, is for all, if not more, of that nominal throughput. Incorporating a reasonable expectation that some existing capacity will be lost over the period to 2031, results in a need of over 1.1 Mt of recovery capacity to ensure London's waste can be managed within the capital and achieving sustainability priorities.

6.1.5 A definitive understanding of how much waste will be produced in the future and how it will be managed is not possible to be achieved. Instead, a reasonable range of likely outcomes should be considered such that a flexible and robust network of infrastructure can be put in place.

6.1.6 **Figure 6.1** highlights that if total LACW is updated to reflect actual arisings, as a minimum more than two-thirds of the ERF' nominal capacity would be needed to achieve policy of the London Plans (aLP and dLP).

6.1.7 The LES recognises the extent of the challenges that need to be overcome in order to achieve the aspirational recycling targets set within policy. Even if the Mayor's recycling aspirations are fully achieved, and this is considered highly unlikely, there remains a need for the ERF. The Proposed Development incorporates use of the river to transport both wastes into the site and incinerator bottom ash out. It is ideally located to assist in diverting the 2 million plus tonnes of residual wastes arising in nearby counties.

6.1.8 If the Applicant's commercial understanding of residual C&I wastes generated within London is correct, then this need increases again, by up to 500,000 tonnes.

6.1.9 Reference to the real-world context of waste management in London and the south east (not least as presented in the independent Tolvik Report) confirms the urgent and substantial need for new residual waste treatment capacity.

6.1.10 NPS EN-3 paragraph 2.5.64 makes clear that waste combustion generating stations '*need not disadvantage reuse or recycling initiatives where the proposed development accords with the waste hierarchy and asks the application to set out how the capacity 'contributes to the recovery targets set out in relevant strategies and plans, taking into account existing capacity*.'

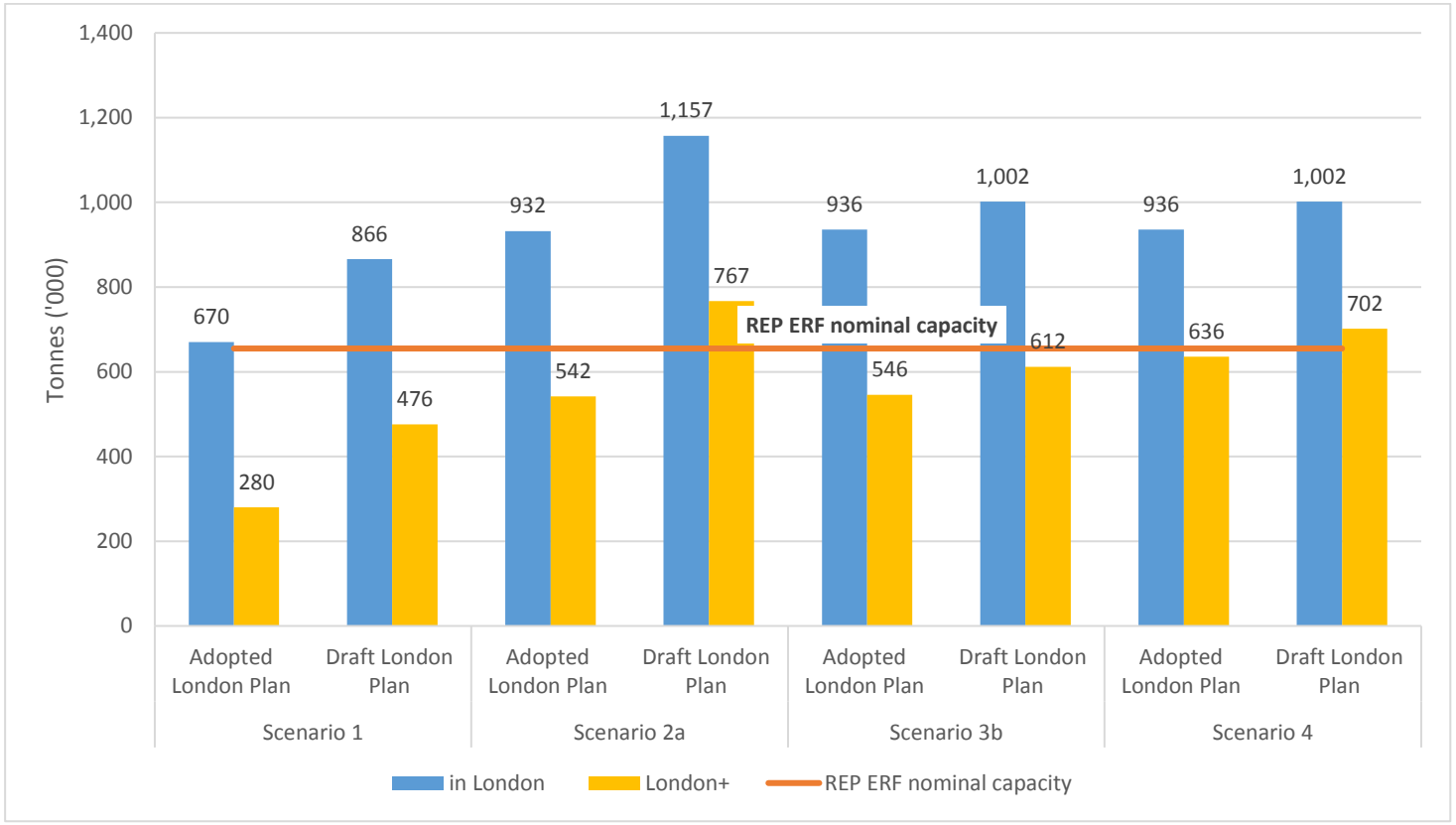
6.1.11 This Assessment demonstrates that the ERF will not disadvantage recycling rates in the capital and that it is a very necessary part of the infrastructure needed to achieve both the waste management and energy recovery targets set out in the relevant strategies and plans.

Table 6.1: Summary of Assessments Undertaken

	Scenario 1 LP Arisings, with LP Recycling				Scenario 2a Updated LACW and LP C&I Waste, with LP Recycling				Scenario 3b Updated LACW and Reduced C&I Waste, with LES Recycling				Scenario 4 Updated LACW and Reduced C&I Waste, with LES Recycling and lost capacity				
	Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		
	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	
Arisings (thousand tonnes)																	
HH/LACW	3,387	3,589	3,287	3,453	3,969	4,171	3,881	4,047	3,969	4,171	3,881	4,047	3,969	4,171	3,881	4,047	*a*
C&I	4,647	4,734	5,012	5,097	4,647	4,734	5,012	5,097	3,999	4,086	4,958	5,043	3,999	4,086	4,958	5,043	*b*
Total	8,034	8,323	8,299	8,550	8,616	8,905	8,893	9,144	7,968	8,257	8,839	9,090	7,968	8,257	8,839	9,090	*c*
Recycling (per cent)																	
HH/LACW	55	60	51	60	55	60	51	60	50	50	50	50	50	50	50	50	*d*
C&I	70	70	70	70	70	70	70	70	70	75	70	75	70	75	70	75	*e*
Recycling (thousand tonnes)																	
HH/LACW	1,862	2,153	1,676	2,071	2,182	2,502	1,979	2,428	1,984	2,085	1,940	2,023	1,984	2,085	1,940	2,023	*f*
C&I	3,252	3,313	3,508	3,567	3,252	3,313	3,508	3,567	2,799	3,064	3,470	3,782	2,799	3,064	3,470	3,782	*g*
Total	5,115	5,467	5,184	5,639	5,435	5,816	5,487	5,996	4,738	5,150	5,411	5,805	4,738	5,150	5,411	5,805	*h*
Recovery (per cent)																	
HH/LACW	45	40	49	40	45	40	49	40	50	50	50	50	50	50	50	50	*i*
C&I	30	30	30	30	30	30	30	30	30	25	30	25	30	25	30	25	*j*

	Scenario 1 LP Arisings, with LP Recycling				Scenario 2a Updated LACW and LP C&I Waste, with LP Recycling				Scenario 3b Updated LACW and Reduced C&I Waste, with LES Recycling				Scenario 4 Updated LACW and Reduced C&I Waste, with LES Recycling and lost capacity				
	Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		Adopted London Plan		Draft London Plan		
	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	2026	2036	
Residual Waste to be diverted from landfill (thousand tonnes)																	
HH/LACW	1,524	1,435	1,610	1,381	1,786	1,668	1,901	1,618	1,984	2,085	1,940	2,023	1,984	2,085	1,940	2,023	*k*
C&I	1,394	1,420	1,503	1,529	1,394	1,420	1,503	1,529	1,199	1,021	1,487	1,260	1,199	1,021	1,487	1,260	*l*
Total	**2,918**	**2,855**	**3,114**	**2,910**	**3,180**	**3,088**	**3,405**	**3,147**	**3,184**	**3,107**	**3,427**	**3,284**	**3,184**	**3,107**	**3,427**	**3,284**	***m***
Demand for REP ERF assuming 'London+' existing capacity (thousand tonnes)																	
Existing Capacity	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,548	2,548	2,548	2,548	*n*
Residual Waste	**280**	**218**	**476**	**272**	**542**	**451**	**767**	**510**	**546**	**469**	**612**	**498**	**636**	**559**	**702**	**588**	*o*
ERF	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	*p*
% of ERF	**43%**	**33%**	**73%**	**42%**	**83%**	**69%**	**117%**	**78%**	**83%**	**72%**	**93%**	**76%**	**97%**	**85%**	**107%**	**90%**	*q*
Demand for REP ERF assuming 'inLondon' existing capacity (thousand tonnes)																	
Existing Capacity	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	2,248	*r*
Residual Waste	**670**	**608**	**866**	**662**	**932**	**841**	**1,157**	**900**	**936**	**859**	**1,002**	**888**	**936**	**859**	**1,002**	**888**	*s*
ERF	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	*t*
% of ERF	**102%**	**93%**	**132%**	**101%**	**142%**	**128%**	**177%**	**137%**	**143%**	**131%**	**153%**	**136%**	**143%**	**131%**	**153%**	**136%**	*v*

Figure 6.1: Scenarios 1, 2a, 3b and 4 of the London Waste Strategy Assessment, at 2026



Riverside Energy Park

The Project and its Benefits Report

APPENDIX:

A

PLANNING INSPECTORATE REFERENCE NUMBER:

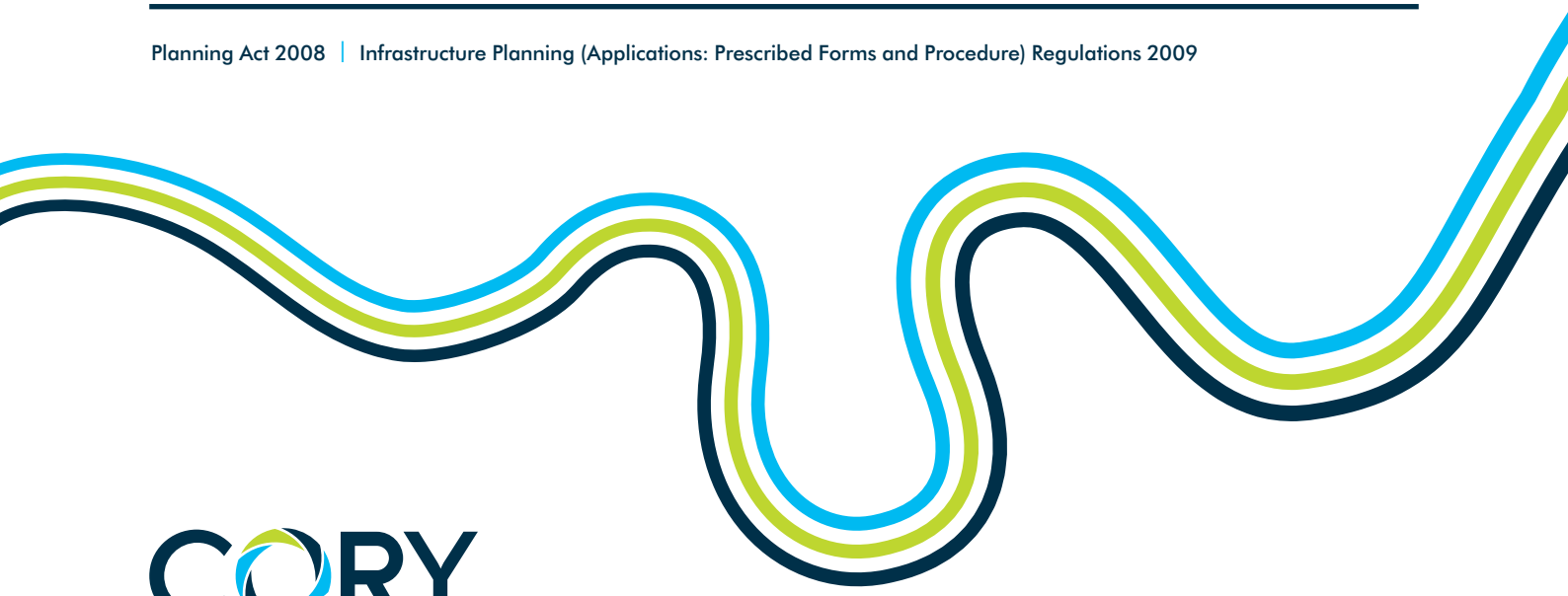
EN010093

DOCUMENT REFERENCE:

SOUTH EAST WASTE PLANNING AUTHORITIES: RESIDUAL WASTE CAPACITY REQUIREMENTS

November 2018 | Revision 0 | APFP Regulation 5(2)(q)

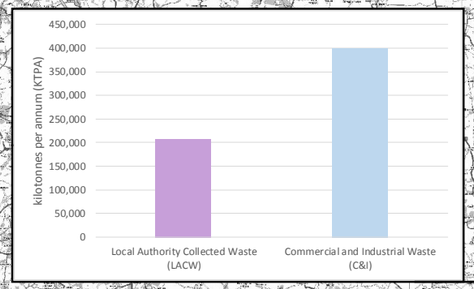
Planning Act 2008 | Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



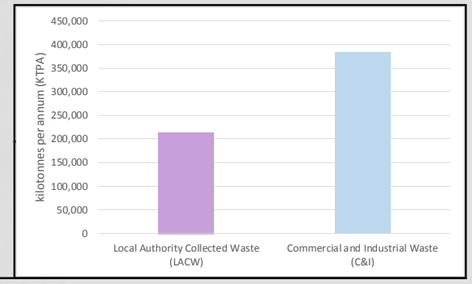
CORY
RIVERSIDE ENERGY

Application Boundary
County Boundary

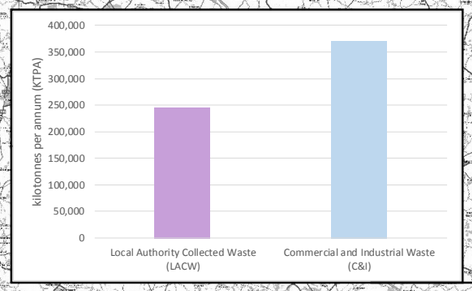
Norfolk



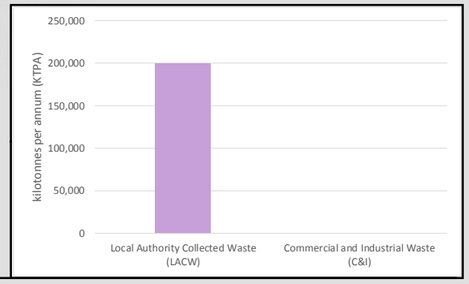
Suffolk



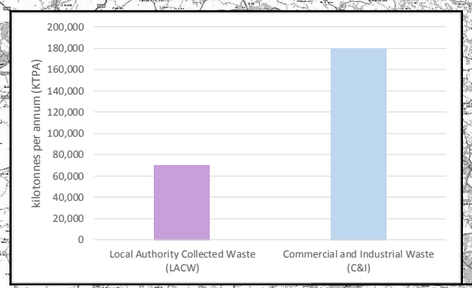
Hertfordshire



Essex



Surrey



N

RIVERSIDE ENERGY PARK

0 25 50 km

pba peterbrett

Client: CORY RIVERSIDE ENERGY

1:900,000 @ A3

18/10/18

Drawn: HG

Checked: EE

South East Waste Planning Authorities: Residual Waste Capacity Requirements.

Figure 1 | Rev A

Document Path: Z:\Projects\42166\02_mxd\42166_Waste.mxd