ANNEX 8

wood.

Technical note:

Technical impacts of the proposed Riverside Energy Park on the existing Riverside Resource Recovery Facility

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1. Purpose of this report

This document sets out a rapid review and high level analysis of the potential technical impacts arising from the proposed development of Riverside Energy Park (REP).

1.1 Context

1.1.1 The Western Riverside Waste Authority (the Authority) is seeking advice on the technical risks and considerations arising from the proposed development of Riverside Energy Park (REP), which could impact upon the adjacent energy from waste facility at Belvedere. The current facility is operated by Riverside Resource Recovery Ltd, and is the primary means of waste disposal for the Authority.

1.1.2 Proposals for the new energy from waste facility have been put forward by Riverside Energy Park Ltd, and a Development Consent Order application has been submitted to The Planning Inspectorate (PINS) for a generating station.

1.1.3 The following terms are used in this report;

- Riverside Resource Recovery Limited (RRRL) – operates current facility
- Riverside Energy Park Limited (REPL) – proposing the new facility

1.2 Assumptions

1.2.1 The following assumptions/restrictions apply;

- Sources are restricted to published DCO documentation for the REPL Facility, the previous planning permission for RRRL (and associated submissions to the planning inquiry), and two consultancy reports provided by RRRL to the Authority;
    - Peter Brett, Technical Note 19/03/2019 - Review of Cumulative Road-based Operations of Riverside Resource Recovery Facility and Riverside Energy Park
    - Royal Haskoning DHV, Memo 23/10/17 – Middleton Jetty Operational Review Workshop
- No site visit has been undertaken, and desk-based information is assumed to be correct.
- It is assumed that the reader is conversant with the broad proposals for the REPL Facility, and the operating principles of the RRRL Facility.

- A technical appraisal of the design parameters for the REPL Facility and the DCO documents has not be undertaken, and it is assumed that the stated technical designs will remain similar following any detailed design by the developer.
- The assessment does not include contractual, financial or leasehold issues, albeit some of the identified risks may impact on these areas.

2. Risk Assessment

2.1.1 The technical risks have been identified and considered by experienced consultants from Wood. They are divided between the construction and operational phases of the REPL Facility, and each assigned a unique identification number. The assessment comprises three aspects – the risk event that could occur, the direct effects on the RRRL Facility this could lead to, and the consequences for the RRRL Facility. Each risk is followed by some supporting contextual information to further explain the rationale for the risk and relevant source information (sources are sometimes sub-numbered within each risk to aid readability).

2.1.2 Scoring of risks has not been undertaken as this stage, as it would necessitate a more detailed understanding of the two facilities and underlying contractual arrangements, nor have mitigation measures been proposed as these are for the REP developer to consider.

2.1.3 Table 1.1 sets out the outline risk assessment.

Table 2. 1 Technical risk assessment

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
REP construction phase risks				
CONST-1	Construction works on utilities supplies	REPL Facility construction works disrupt utility supplies to the RRRL facility.	Utility connections for the REPL Facility require outages for gas/water/data that affect operation of the RRRL Facility Significant excavations may be required; also impacting on traffic movements.	Outage required to RRRL Facility, with significant contractual and financial implications Limited or no ability to process waste beyond storing it in designated storage areas for the permitted amount of time
		Supporting text The new REPL Facility will require utility connections for a variety of purposes including space heating, staff amenities, boiler / furnace support fuel, anaerobic digestion heating and mechanical plant power supply. Bringing or extending these utilities to the REPL Facility may require periods where supplies to the surrounding area are disrupted. Utility searches conducted on the local area (reference 2) highlight the intermediate pressure gas main route running east of the existing RRRL facility. There remains a risk that if the mains has to be "tapped into " or split to provide supply to the REPL Facility then this could limit the ability at the RRRL Facility to provides support heat to the furnace or have the ability to start up in the event of an outage.		

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		The DCO does not appear to contain information on utility requirements for the REPL Facility, except for the Electricity Grid Connection Statement. This information will require assessment in detail upon receipt. No account of accidents (such as damage to existing utilities) leading to unplanned outages at the RRRL Facility is included. We have not assessed ability of current RRRL Facility to operate in island mode in response to such incidents, nor the lost income. We have not assessed the impact on the gas mains if any gas-to-grid proposals come forward in the future. Sources: • #1. EN010093-000192-3.1 Draft Development Consent Order • #2. Utilities searches conducted by Wood, via Premier Energy (15th May 2019) – SGN plan grid reference 549574 180626		
CONST-2	Construction Works on Electrical Connection	Electrical installation works up to the substation in Littleford and onward to Dartford cause disruption at the RRRL facility.	Periods where the RRRL facility cannot operate at full capacity or at all	Limited or no ability to process waste beyond storing it in designated storage areas for the permitted amount of time
		Supporting text With regard to the main electrical connection, this is discussed in the RRRL Facility Environmental Statement and the Electricity Grid Connection Statement (references 2 and 3 respectively). The REPL Facility will require construction of 132 kv cables for connection to the existing infrastructure at the existing substation at Littleford. Direct connection to the substation at Barking, which, currently connects the RRRL facility to the National Grid, has been considered and rejected as an alternative option (2.2.10 of reference 3). The REPL Facility has plans for new switchgear included in the plans, however the final routing of the electrical cables has not been finalised, noting the need for "trial pits to further inform the understanding of potential engineering difficulties along the routes" (section 3.2.1 of reference 3) and which contractually has yet to be signed off. Until this design is finalised and there remains uncertainty over the knock on effect of any electrical works. With regard to searches conducted as part of this exercise (reference 1) the UKPN plan shows the existing 132kv extra high voltage cable route broadly travelling east to west across the existing RRRL facility and planned REPL facility. The installed 132kv cable runs through an area marked for compulsory purchase for the use or construction of the REPL facility (reference 5). There is a risk that the assumed construction activity in this area will require supply to be curtailed in order to safely mechanically excavate in this area. Similarly, the searches show the HV cable route running down Norman Road which may be subject to the same construction and electrical works risk. These issues will need the final design of the electrical connection rom UKPN to fully appreciate the nature of the risk. The time frame of the REP works has been estimated as 24 month (3.5.24 of reference 4) and the risk to disruption may be present intermittently during this period. Sources: • #1. Utilities searches conducted by Wood, via Premier Energy (15th May 2019) – SGN plan grid reference 549574 180626 • #2. RRRL Facility Environmental Statement Volume 2 June 2003 (para. 2.101) • #3. EN010093-000212-5.3 5.3 Electricity Grid Connection Statement • #4. EN010093-000218-6.1 ES Chapter 3 Project and Site Description • #5 EN010093-000185-2.1 Land Plans		
CONST-3	Surface water / foul drainage	Capacity of receiving foul/surface water drainage	Excavations required on RRRL Facility site to reconstruct drainage	Disruption to throughput of RRRL Facility, or loss of critical utility supplies.

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		needs to be increased for new development		
		Supporting text Surface water attenuation tanks will be required. The outline drainage strategy (Appendix G to 5.3 FRA) indicates that this is located beneath the air cooled condensers. It is not clear how this tank will be maintained – it would be anticipated that silt will build up in the invert. Discharge from the attenuation tank will be via duty/standby pumps – also located beneath the footprint of the air cooled condensers. It is not clear how the pumping station will be maintained. This will be a critical asset as flooding of the site may occur if the pumps are not maintained and/or in the event of a power outage. The surface water outfall may be periodically tide locked – it is not clear whether the capacity of the receiving watercourse has been assessed under these conditions. Foul drainage is to be reutilised as process water and ultimately treated in a packaged wastewater treatment plant on the new site. This appears to be located beneath a vehicle ramp – it is not clear how this will be maintained. The nature of the surface water catchment will change during construction of the REPL facility, which may also effects rates and quality of run-off. Source: EN010093-000211-5.2 Flood Risk Assessment, Appendix G – Drainage Design Strategy		
CONST-4	Dewatering during construction	Disposal of groundwater causes flooding	Impacts on RRRL Facility site including disposal of surface water	Impacts to operation of RRRL Facility
		Supporting text It is likely that significant quantities of groundwater will need to be disposed of whilst excavations for the new facility take place. It is not clear what means of disposal are being proposed, particularly if there are land quality and contamination issues. Disposal of groundwater to sewer is unlikely to be permitted. There is a risk that disposal to existing land drainage could exacerbate any flood risks.		
CONST-5	Ground gas migration	Displacement of ground gas causes migration into RRRL Facility	Ground gas entering building	Explosive atmospheres and risk to human health
		Supporting text The full proposals for ground gas mitigation have not been provided– the developer needs to ensure that relief of ground gas to atmosphere does not affect any existing RRRL Facility operations and that new pathways for ground gas to enter the building are not created. Any changes to existing capping may change gas migration pathways. Source: • EN010093-000271-6.3 ES Technical Appendices I.2 Phase 2 Ground Conditions Assessment (2018a)		
CONST-6	Impact of construction works on flood wall	REP construction works damage flood wall	Breach of wall resulting in flooding of site	Evacuation of site and impact to operation of RRRL Facility
		Supporting text A condition survey of the flood wall has been undertaken (5.2, Appendix E), which generally rates the condition as 'Fair'.		

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		Sections of the flood wall are tied back into an anchor sheet piled structure set 13m back from the front face. If any excavations are to take place in vicinity of the anchor pile, it is important to ensure that the rotational stability (and passive resistance) available to these piles is not compromised. The condition of the foreshore embankment needs to be maintained to ensure general stability of the wall and to prevent corrosion of sheet piling. The risk of vibration (through piling works) impacting upon the structural integrity of the flood wall needs to be assessed. Dewatering works may also impact on the stability of the surrounding area. Source: • EN010093-000211-5.2 Flood Risk Assessment, Appendix E Flood Defence Condition Survey	
CONST-7	Limited space for lifting and laydown areas	Insufficient space on new site for cranage and laydown areas for process plant and construction materials	Encroachment onto RRRL Facility land	Disruption to vehicle movements to/from RRRL Facility and/or parking
		Supporting text No construction phase lifting plan have been located in the DCO documents, so we are unable to determine whether this has been assessed as it can impact upon surrounding land uses.		
CONST-8	Unexploded ordnance (UXO)	UXO encountered during construction of new facility	Evacuation of site	Outage caused to RRRL Facility, with significant contractual and financial implications
		Supporting text No UXO report has been located in DCO documentation, so we are unable to assess whether this has been surveyed and/or risk assessed.		
CONST-9	Structural integrity of jetty under increased loading	Jetty has not been designed for increased frequency of vehicle movements associated with this proposal	Structural modifications or repairs required to jetty	Disruption to barge movements to/from RRRL, disputing waste supplies
		Supporting text A supporting study assumes 8 No. tractor/trailer units will be required to service the larger throughput at the Jetty. However a detailed logistics study has not been located to ascertain whether the jetty can accommodate these vehicle movements. Use for construction deliveries could also impact on Jetty integrity. See risk CONSR-12. Source: • Royal Haskoning DHV, Memo 23/10/17 – Middleton Jetty Operational Review Workshop		
CONST-10	River access during construction	REP construction works impact on RRRL operations	Delays in waste deliveries to RRRL, and impact on operations	Reduced throughput of RRRL
		Replacement of Cranes	Delays to throughput on the Jetty and turnaround times	Reduced throughput of RRRL

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		Supporting text The TMP (Para 9.3.2) states that waterborne or rail transport would be investigated by the supplier of ready mixed concrete. The feasibility of transporting materials or equipment by water would be addressed by the Main Works Contractor and presented in the Detailed TMP. There is no detail of how this would be managed in tandem with existing RRRL deliveries from the river. Chapter 6 Transport identified an increase in river vessel traffic up to 2030 and see an increase of up to 20% as a result of REP (Para 6.9.59). The paragraph summarises that there would be no net change and risk would be minimal but there is no evidence of methodology to justify this statement, or whether based purely on professional judgement Source: • Outline Construction Traffic Management Plan: Appendix L (DCO Appendix B.1 Transport Assessment) • DCO 6.1 Environmental Statement Chapter 6: Transport		
CONST-11	Level of construction traffic	Peak periods of REP construction traffic may interfere with RRRL operational traffic	Delays in waste deliveries to RRRL, and impact on operations (staff, deliveries of consumables, offtake of APCR ash).	RRRL incurs turnaround time performance deductions due to impact on Borough waste collection fleet, RRRL staff late for shifts, resulting in impeding technical operations.
		Supporting text Works traffic will share the Normal Road access which is used for RRRL (e.g., incoming waste, staff and consumables, and outgoing APCR –a residue from waste treatment). The laydown area is also located at the northern end of Normal Road, whereas the ideal is for adjacent areas to avoid excessive disruption to operational traffic. There is no evidence of how combined construction movements and RRRL operational movement will be managed within the Construction Traffic Management Plan (CTMP – see reference 1), and details are to be provided later in a Detailed TMP. The outline CTMP identifies 13th month as the peak period of construction of REP – 22 HGVs per day and 550 light vehicles per day (Para 10.2.1). The Peter Brett Technical Note identifies 138 peak vehicle movements (includes staff) at the current RRRL in a jetty outage scenario (Table 1.1). This indicates a cumulative worse case peak impact of approx. 708 movements per day on Norman Road, and levels during construction requires assessment to avoid impacting upon RRRL movements (and the adjoining Asda and Iron Mountain depots which use a junction off Norman Road). There is the possibility of road delays to RRRL due to delivery of REP Abnormal Load vehicles however the Transport Assessment states that they could be undertaken outside of peak hours (para 4.3.8). This is not guaranteed. The outline CTMP identifies there would be a potential for conflict between construction traffic and cyclists for both the movement along Norman Road and when crossing the road to connect with the shared footway/ cycle track (Para 2.4.16, pdf page 344 of Appendix B.1), which could impact upon RRRL operational staff. Construction traffic would have to pass bus stops on its in/outbound journeys. This might pose some minor effects on buses arriving / departing the stops and the Fastrack Corridor within Dartford. Source:		

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		• #1 - EN010093-000244-6.3 ES Technical Appendices B.1 Transport Assessment - Appendix L: Outline Construction Traffic Management Plan • #2- Peter Brett Technical Note 19/03/2019 - Review of Cumulative Road-based Operations of Riverside Resource Recovery Facility (RRRF) and Riverside Energy Park (REP)		
CONST-12	Construction works on access road	REP construction works impact on RRRL operations	Delays in waste deliveries to RRRL, and impact on operations (staff, deliveries of consumables, offtake of APCR ash).	RRRL incurs turnaround time performance deductions due to impact on Borough waste collection fleet RRRL staff late for shifts, resulting in impeding technical operations.
		Temporary road closures, traffic lane closures or restrictions – requirement for temporary traffic signals interfere with RRRL	Impacts on staff and waste deliveries	Increased costs for fixing vehicles and reduced throughput.
		REP construction works degrade Norman Road at quicker rate.	Damaged vehicles and delays.	
		Supporting text There is no reference to highway condition survey of Norman Road pre and post construction phase within the outline CTMP. Construction traffic could exacerbate the degradation of the condition of Norman Road, with impacts to RRRL vehicles upon entry /exit. Temporary traffic signals are required for cable works and could result in delay in RRRL operational traffic and staff travelling to/from site. Source: • Outline Construction Traffic Management Plan: Appendix L (DCO Appendix B.1 Transport Assessment)		
REP operational phase risks				
OPS-1	Flood Risk	New development exacerbates flood risk on RRRL facility	Unable to access site during flood and/or flood damage	Outage required to RRRL Facility, with significant contractual and financial implications
		Supporting text A finished Floor Level of 2.97m is proposed for new facility, based on 1:200 year flood and flood defence breach. The FRA notes that flood water in NW area of site may exceed this level (para 9.1.4). A check of the existing floor levels in the existing RRRL Facility should be carried out against these predicted levels; as well as an assessment of any vulnerable equipment. The flood risk assessment recommends that a flood incident plan will be put in place that nominates a safe refuge for personnel if the surrounding area is flooded. This also needs to consider the existing facility. The FRA recommends that periodic inspection of land drainage is undertaken to mitigate blockages exacerbating flood risk (para10.1.3). Assignment of responsibility and frequency for these inspections is required. Knock on impacts on ecology and sediment transfer may also require consideration.		

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		Source • EN010093-000211-5.2 Flood Risk Assessment (FRA)		
OPS-2	Sufficiency of jetty for vehicle movements	REP operational traffic to/from jetty could cause congestion.	Vehicle congestion if jetty cannot satisfy increased demand, and delays in waste deliveries to RRRL. Barge movements to/from RRRL are disrupted if unloading is delayed.	Throughput reduced at RRRL Facility. Operational costs increase to RRRL.
		Supporting text The Royal Haskoning Memo states that for the purpose of the high-level review it had been assumed that it is viable to operate up to 8 tractor trailers units simultaneously without the operations being limited by congestion. On page 6.2 is states that "Alternately, the impacts of increased tractor trailer movements could be investigated by simulation modelling". Evidence of this has not been located. Section 5.2.1,Bullet 12 (Page 6) states that a range of 4-8 tractor trailer units have been investigated in their model however, the congestion resulting from the increase in tractor trailer movements on the jetty head has not be considered as part of the high-level memo. Bullet 14 states that delays to tractor trailers caused by landside factors has not been accounted for. We are unable to confirm whether swept path analysis has been undertaken to assess the entrance to the jetty ramp (opposite the entrance to the RRRL Facility facility) – but this appears to be a pinch point for vehicles travelling in opposite directions. Increased usage will also lead to further wear and tear on the structure and road surface which will need mitigation and could cause disruption to RRRL deliveries. Source: • Royal Haskoning DHV, Memo 23/10/17 – Middleton Jetty Operational Review Workshop		
OPS-3	Sufficiency of jetty cranage	Jetty cranes do not remain operational under increased load	Outages required to repair cranes	Reduced throughput of RRRL Facility
		Supporting text The Royal Haskoning Memo assumes cranes are sufficient for long term use and higher demand. The cranes are 10 years old. There appears to be no assessment or consideration of delays to existing operation during the replacement/major maintenance of cranes beyond that currently envisaged for the RRRL Facility. Source: Royal Haskoning DHV, Memo 23/10/17 – Middleton Jetty Operational Review Workshop		
OPS-4	Staff Recruitment	The REPL Facility staffing requirements may place a high demand on the skilled labour force currently employed at the RRRL Facility	Increased labour costs and difficulty in retaining staff due to the proximity of a competitor for available specialist labour	Operational costs (OPEX) for the operation of the RRRL facility will rise.
		Supporting text		

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		Para 41.9.12 of Chapter 14 states that "approximately 75 full time equivalent (FTE) workers are likely to be required on-site to operate the Proposed Development" Table 14.16 Operational Employment Additionality Assumptions states; "With regards to the energy generation sector, a small proportion of highly skilled senior staff (e.g. process engineers) may be displaced from similar employment elsewhere..... the Applicant has a strong preference to recruit locally where possible and a similar approach will be followed for the Proposed Development. This means that potential displacement may be higher in percentage terms in the Local area than across the Wider region." (our emphasis). Further analysis would be required to consider sustainable transport proposals for the extra workforce. Source: • EN010093-000229-6.1 ES Chapter 14 Socio-economics		
OPS-5	Ash and container storage	REP construction works impact on RRRL operations with the removal of the current ash storage and container area	Reduced ash storage capacity for both facilities	The RRRL Facility will be required to find alternative local container storage options at a cost, either through construction of new storage or use of third party facilities. Alternatively, extra container movements at the Jetty will need to be considered with subsequent wear and tear increases on the equipment.
		Supporting text The site plan for the REPL Facility includes construction over an area currently being used for ash storage by RRRL prior to removal (see RRRL permission – area also evident on google earth). With this area unavailable the RRRL Facility need assurance on the plans for management of the existing container area in an alternative way. If there is no container area then it is unclear what happens in contingency event when IBA transport needs to switch to road. It would have to use a just-in-time transport system and always have a lorry available to pick up containers (or switch to bulkers and a shovel loader if viable, which has amenity/drainage impacts). A word search of some of the DCO docs (chapter 3, 7.4, K.4) but found no references to container handling arrangements for the REPL and RRRL Facilities. Source: • EN010093-000188-2.4 Illustrative Site Layout Plan • Riverside Resource Recovery Facility: Consolidated Environmental Statement (section 17.3)		
OPS-6	Surface water release	Increased discharge to sewer as a result of the operation of the REPL Facility could result in overloading of the oil/water separators	Enforcement action form the Environment agency	A share of the culpability to the RRRL Facility for any unauthorised discharge
		Supporting text The info provided for the REPL Facility does not show the design at a sufficient level to indicate the surface water release point. In the event that this release point is shared or that the discharge between the two facilities cannot be distinguished to each respective facility then this may have a regulatory impact on the RRRL Facility. We have not assessed the nature and volume of discharges from the REPL Facility, nor capacity of the network to accommodate the increases.		

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
		Sources • Cory Riverside Energy Riverside Resource Recovery Facility Annual Performance Report: 2016 – section 4.3 Emissions to Water		
OPS-7	Fire hazard	The AD facility will have flammable biogas, and other hazardous chemicals stored onsite	The presence of the management and storage of biogas and other dangerous substances bring an increased risk of fire and / or explosion	Increased severity of accident hazard in an emergency event. Potential increased insurance costs
		Supporting text The location of the AD facility is shown in the Site Layout Plan, and what appear to be a circular bio-gas store. There is a general reference to fire/explosion risk in Appendices K.6 Risk of Major Accidents and Disasters (page 4). This refers to shut-down protocols, but not to the presence of stored bio-gas from the AD facility. It is also noted that the battery storage facility could present a fire risk. Sources • EN010093-000188-2.4 Illustrative Site Layout Plan • EN010093-000277-6.3 ES Technical Appendices K.6 Risk of Major Accidents and Disasters		
OPS-8	Road access during REP operations	Increased used of Norman Road by REP Increased risks of road accidents	Delays in waste deliveries to RRRL, and impact on operations	Reduced throughput of RRRL
		Supporting text The Peter Brett Technical Note (Table 1.1) identifies 138 RRRL peak movements and 88 REP peak movements (226 total) in a jetty outage scenario. Their assessment demonstrates spare capacity at all junctions in 2028 when the cumulative impact is assessed. The Picardy Manorway/Bronze Age Way operates over capacity at 78%. However, this was assessed based on the REP and RRRL operations, with a capped maximum traffic flow for RRRL under Jetty Outage scenario. The restriction applies to HGVs "carrying waste" (Condition 28 of the RRRF T&CPA permission), and we are unclear if outgoing bottom ash would contribute to this, as the technical note assumes they are outside the cap so can be added on top. Chapter 6 Transport states that during the review of the three year accident data there is a trend in the study area. It would appear to be increasing however this could not be attributed to any defined factors as they were not consistent (Para 6.7.22). There has been no assessment using the COBA Manual to underpin presumption that the increase traffic on the network and Norman Road will not result in significant effect or increase in accident risk. Source: • EN010093-000221-6.1 ES Chapter 6 Transport • Source: Peter Brett Technical Note - Review of Cumulative Road-based Operations of Riverside Resource Recovery Facility (RRRL Facility) and Riverside Energy Park (REP)		
OPS-9	River access during operations	REP tugs pulling barges in to place Increased chances of accidents/near miss	Delays in waste deliveries to RRRL, and impact on operations Environmental risk	Reduced throughput of RRRL

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
				Fine associated with environmental clean-up operations
		Supporting text The DCO Navigational Risk assessment indicates that Cory vessels were involved in 17 accidents in the 7 year period to 2017. Near misses or wash complaints, one serious accident in 2014. (Para 4.11) Para 5.6 Cumulative assessment states that the construction of the Silvertown Tunnel at North Greenwich would necessitate temporary disruption to all river traffic during construction of including river closures which would impact on Cory operations and in turn on the RRRL Facility. We have not checked alignment of the increased river usage with any existing strategic river plans (e.g., for other usage such as commuters). Within the DCO Transport Assessment a review of traffic projections up until 2030 indicates that an increase in vessel traffic is likely over the course of the Proposed Development. Whilst this was assessed to be up to 20%, the PLA are committed to maintaining existing incident rates and therefore there should be no net change in risk and the NRA determines there is minimal risk. There is no evidence of methodology to justify this statement, or whether it is purely based on professional judgement. The Royal Haskoning Memo states "It has been assumed that during typical operations, there would be sufficient tugs available to replace the barges on berth. It is also assumed that the river team is able to replenish the barges on the layby moorings to meet the target throughputs for REP. In practice, the river, jetty and landside operations are all interlinked. It may be considered useful to investigate the integration of the river, jetty and landside operations by carrying out full logistic chain simulation" (page 12, our emphasis). It needs clarifying whether this assessment has been undertaken and would also account for existing RRRL movements. Source: • DCO ES Appendix B.2 – Navigational Risk • Source: DCO 6.1 Environmental Statement Chapter 6: Transport • Royal Haskoning DHV, Memo 23/10/17 – Middleton Jetty Operational Review Workshop		
OPS-10	Combined Heat and Power (CHP) potential	The local CHP opportunities do not support both the REPL and RRRL facilities	REPL Facility will either not secure CHP outlets, or utilise those which RRRL Facility may otherwise have delivered.	The overall sustainability of the two facilities reduces when viewed in totality.
		Supporting text The CHP Assessment notes that the current RRRL facility forms a key part of the current Bexley Energy Masterplan (para 3.4.7), and is configured as CHP ready (see para 10.4.3). A detailed analysis of the CHP Assessment has not been undertaken, but the Executive Summary is unclear on whether the cumulative heat generation potential of both plants could be accommodated in the surrounding area. The local heat demand profile is stated as a peak of 30.9 MT (para 10.4.1) which appear to equate to the RRRL capacity of 28.6 MWt (see para 3.4.8, although stated as 30 MWt in para 6.9.8 and elsewhere), and also to the REPL Facility thermal capacity of 30 MWt (para 6.6.6). The likelihood of maximising the CHP potential of both plants may therefore be quite low. Source: • EN010093-000213-5.4 Combined Heat and Power Assessment		

Risk ID	Risk heading	Risk event *There is a risk that...*	Risk Effect *Which results in...*	Risk consequence *With a consequence that...*
OPS-11	Feedstock competition – supply	The REPL Facility would be in direct competition with the RRRL Facility for securing waste supplies	The RRRL facility receiving lower waste stream quantities or quality	There are direct and negative effects on the operation and maintenance of the RRRL Facility
		Supporting text The REPL Facility and RRRL Facility, while under the same group structure, are operated by separate entities as evidenced in the DCO Funding Statement (Appendix A). Some commentary on the overall need for the REPL is provided in **Section 3** of this technical note. The two entities could compete for feedstock if the REPL Facility leads to over-capacity in the region, and there is insufficient residual waste to operate both plants at their optimum design throughput. This could lead to either lower throughput at the RRRL, lower income (in order to attract customers), or create a risk that lower quality material is received at the RRRL Facility (if the REPL can offer better terms). Alternatively, if there were co-operation and strategic management between the facilities within the group structure, there is a risk that lower calorific value (CV) or out of specification waste feedstock is directed to the RRRL Facility in order to manage throughput and preferentially protect the REPL Facility technology and business case. We do not have sight of the financial and contractual arrangements of the two facilities and their respective business plans to investigate this further. A lower feedstock CV or poorer quality (e.g. more bulky waste) could have the effect of requiring the RRRL Facility to increase the throughput to maintain the optimum design (or "normal") operation. This would be evident in the RRRL Facility firing diagram, if available. A sustained increase could put strain on downstream processes such as flue gas treatment, and if pushed beyond the throughput design envelope, the RRRL Facility would potentially incur long-term damage to key process equipment. Source: • EN010093-000195-4.2 Funding Statement		
OPS-12	Disposal of Incinerator Bottom Ash (IBA)	The REPL Facility will generate quantities of increased IBA	Increased demand for local and competitively priced IBA processing capacity	Increased cost for existing IBA disposal for the RRRL Facility
		Supporting text IBA residues are estimated as 25% of total throughput circa max 201,500 tonnes per annum (Appendix K.4 Table 4.1). We have not assessed the capacity and sustainability of the Tilbury IBA facility to deal with additional ash from the REPL Facility. Source: • EN010093-000275-6.3 ES Technical Appendices K.4 Operational Waste Statement		
OPS-13	Disposal of Air Pollution Control Residues (APCR)	The REPL Facility will generate increased quantities of ACPR	Increased demand for local and competitively priced disposal and / or recycling processing capacity	Increased cost for existing APCR disposal routes for the RRRL Facility
		Supporting text APCR residues are estimated as 3% of total throughput circa max 25,000 tonnes per annum (Appendix K.4 Table 4.1). We have not assessed the capacity and sustainability of the APCR outlet to deal with additional ash from the REPL Facility. Source: • EN010093-000275-6.3 ES Technical Appendices K.4 Operational Waste Statement		

3. Need for the REPL Facility

3.1.1 It is not possible to provide a detailed critique of the supporting need case for the REPL Facility, but a number of observations on the headline assertions in the DCO submission are provided below. The need case is set out in the project benefits report (Source EN010093-000281-7.2 The Project and its Benefits Report).

3.1.2 As an introductory point, the proposed capacity of the REPL is somewhat difficult to ascertain. A figure of 655,000 tonnes is used in 7.2 Annex A - London Waste Strategy Assessment (note that the ES uses the term 'ERF' for the REPL Facility). However the ES Non Technical Summary states;

"It is anticipated that the Energy Recovery Facility would treat approximately 655,000 tonnes of residual (non recyclable) waste per annum. However, for the environmental assessments a 'reasonable worst case' maximum throughput of approximately 805,920 tonnes per annum has been assessed." (NTS, Document 6.4, para 3.1.3)

3.1.3 The basis for this very wide range in potential capacity that has been assessed is unclear. Surprisingly the throughput does not appear to be stated in other summary documents, such as the ES Introduction (chapter 1), Project and Site Description (chapter 3), 7.1 Planning Statement, 4.1 Statement of Reasons (section 3 project description), nor the project web-site. The focus appears to be on the facility's status and need as an energy generating development.

3.1.4 However the expected waste throughput is a key consideration as it will directly impact upon the adjacent RRRL energy from waste facility, and regional waste treatment capacity. The wide range in possible annual waste throughput of 655,000 to 805,920 tonnes will have a material effect on the need case for the REPL facility.

3.1.5 We would note that it is common for the 'design' capacity of an energy from waste plant to be stated on more cautious grounds (e.g. expected rates of downtime and energy efficiency). In practice plants may operate consistently above this rate. Also it is also not immediately clear what are the characteristics of the waste required for optimum operation of the REPL Facility. If the stated throughput assumes a certain CV material, but in reality it ends up taking a lower CV material, then this could result in a much higher annual tonnage. The scope for this type of facility to take more waste than was anticipated during the planning stage is exemplified by the following examples;

- RRRL Facility –585ktpa average capacity widely stated in the 1999 planning application, consented with a maximum design capacity of 670ktpa (section 36 consent GDBC/003/00001C-06), and subsequently varied to 785kpta in 2017 (Bexley planning reference 16/02167/FUL)[1].
- Lakeside EfW- permitted with stated design capacity of around 400ktpa (PPC permit BT7116), but with actual average throughputs of ~440ktpa over the last 5 years (based on EA waste returns)
- Runcorn EfW - permitted for a 250ktpa increase in throughput in 2018[2], partly attributed to a change in CV[3]

3.1.6 If the REPL Facility throughput is similarly being stated at the lower end of efficiency expectations, or at a higher CV, then it could in practise have a higher actual throughput than 655kpta, which would affect the outcomes of the need assessment. If the throughput results in over-capacity of

[1] https://www.letsrecycle.com/news/latest-news/cory-expansion-points-to-london-efw-growth/ [accessed 14-5-19]
[2] https://www.letsrecycle.com/news/latest-news/uks-largest-efw-plant-extends-capacity/ [accessed 14-5-19]
[3] https://www.letsrecycle.com/news/latest-news/viridor-increase-runcorn-efw-capacity/ [accessed 14-5-19]

waste treatment in the area then this could affect the viability, performance and long term security of the established RRRL Facility.

3.1.7 The results of the waste assessment are summarised in Table 4.2 (page 37 of report) and Figure 1 (page 3 of the executive summary). We note that Scenario 1 in the waste assessment shows that, based on the arisings and recycling rates set out in the recent Draft London Plan, the requirement for residual waste capacity in London is 272ktpa under the 'London +' assessment for the year 2035. This is only 42% of the stated ERF capacity (stated at 655ktpa rather than worst case maximum above), and under this scenario the REPL Facility would be more than double the required capacity. The use of 'London +' capacity takes account of existing contracts between London Boroughs and facilities outside of London. We consider this to be the most reasonable approach to assessing need, as assuming self-sufficiency (as per the "In London" scenario) would ignore long term arrangements (such as the West London Waste Authority contract to transport waste by rail to Bristol) which will affect the practical availability of waste for the REPL Facility.

3.1.8 A series of scenarios are presented in table 4.2 to manipulate the London Plan projections with alternate assumptions. Scenario 4 assumes a loss of some existing capacity at Lakeside which is itself subject to outcome on the Heathrow Expansion DCO. However this uncertainty is not reflected in the commentary in paragraph 4.2.42 which implies the loss of all capacity at Lakeside and states "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."

3.1.9 We consider that the reliance of the assessment on changes to published or draft plan projections on need via a set of scenarios does not demonstrate a clear policy basis for the REPL Facility for the long term. At any rate, even within the modelled scenarios there is a large range in the stated % of the ERF capacity for which there is a demonstrable need in the year 2036 for the 'London+' assessment;

- Scenario 1: 33-42% of ERF capacity utilised
- Scenario 2: 69-78% of ERF capacity utilised
- Scenario 3: 72-76% of ERF capacity utilised
- Scenario 4: 85-90% of ERF capacity utilised

3.1.10 In all these scenarios the need for the REPL Facility at its requested scale is therefore not clearly demonstrated. This is at odds with the introduction to the table in paragraph 4.2.22 which states "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" and paragraph 4.1.5 which states "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" (our emphasis).

3.1.11 There are also references in the report to the uncertainty inherent in undertaking future assessment of need for waste treatment capacity, for example paragraph 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." (our emphasis).

3.1.12 We note that the percentages summarised above for the 'London +' assessment do not show residual waste exceeding the requirements to serve London's Waste. To assess the viability of the facility serving a wider catchment such as the South-East would require a logistics study, also

considering the ability to use the preferred means of river transport from areas outside of London, noting that the London Plan states that "priority should be given to facilities for movement by river or rail" (Policy SI8). Given the likely burden on road transport and potential lack of access to the waste transfer station network, REP's ability to target arisings from Surrey and Sussex is questionable. Application of the proximity principle would need to be demonstrated, depending on the mode of delivery.

3.1.13 The existing long-term contractual arrangements for the treatment of local authority wastes also needs to be considered, and is not explicitly referred to when stating the regional need (e.g. paragraph 5.3.4 of Annex A states that "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."). Much of the household fraction of this waste may already be under long-term contracts and not available to the REPL Facility.

3.1.14 The lower end of the Tolvik report projections for capacity is stated at 0.6 million tonnes (para 4.2.32). We note this is slightly lower than the proposed development, and will itself be subject to modelling uncertainty (in particular on future population growth and recycling rates). This indicates there are circumstances in which the REPL Facility could result in over-capacity, bringing a risk of reduced throughput to the RRRL Facility with socio-economic and energy efficiency implications. This would be amplified if the actual REPL Facility throughput transpires to be above the modelled capacity of 655ktpa.

3.1.15 Finally, paragraph 4.2.36 correctly states that "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." (our emphasis). Given the wide range in modelling outcomes presented, and range in possible waste throughputs at the facility, we consider that it has not been demonstrated that the proposal has considered flexibility in terms of potential negative effects on current waste treatment capacity in the area. Flexibility to ensure compliance with the aspiration of the new waste strategy for England (DEFRA, 2018) to move to a circular economy and accommodate increased rates of recycling also needs consideration.

4. Conclusions

4.1.1 This outline risk analysis has identified a number of issues which require further consideration in order to avoid the potential for adverse impacts on the existing RRRL energy from waste facility. In contrast, the Socio-economic assessment within the DCO application (EN010093-000229-6.1 ES Chapter 14 Socio-economics) does not appear to consider any of these potential impacts.

4.1.2 There are a range of potential risks that may arise during the construction phase and operational phase of the REP Facility which require further detailed assessment or clarification, as they could affect the viability, performance and long term security of the established RRRL Facility. Of particular concern is that the economic health of the existing business which serves the waste needs of a number of statutory waste management authorities could be adversely impacted.

4.1.3 The DCO documentation in general lack sufficient assurance that the two facilities would operate satisfactory side by side, without prejudice to one another's operations. This particularly applies to times when they may be operating under contingency conditions, for example when road or river access is restricted. The REP does not propose any expansion in the physical infrastructure for waste reception, instead relying on increased utilisation of existing assets which were originally designed solely for the RRRL facility.

4.1.4 The local CHP opportunities for heat offtake do not appear to support both the REPL and RRRL facilities. The likelihood of maximising the CHP potential of both plants may therefore be quite low.

4.1.5 Finally, although it is acknowledged that the effects of increased competition are not necessary a planning consideration, in this case there are legitimate concerns on the need for waste treatment capacity at the scale proposed for the REPL Facility, and in the same location as an existing facility. The supporting London Waste Strategy Assessment does not in our opinion demonstrate a clear requirement for some 655,000 tonnes (or more) of new waste capacity in the long term, and therefore the development could have potential negative effects on other waste treatment facilities in the area, in particular the adjacent RRRL Facility.

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