Riverside Energy Park

Supplementary Note to the Temporary Jetty Outage Review (Simultaneous Operations of Riverside Resource Recovery Facility and Riverside Energy Park)

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RIVERSIDE ENERGY

TECHNICAL NOTE

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Subject: **Supplementary Note to the Temporary Jetty Outage Review (Simultaneous Operations of Riverside Resource Recovery Facility and Riverside Energy Park)**

1. Summary and Overall Conclusions

1.1. This Technical Note is a supplementary note to the **Temporary Jetty Outage Review (Simultaneous Operations of Riverside Resource Recovery Facility and Riverside Energy Park) (8.02.31, REP3-036)** ("**the Original Review**") submitted at **Deadline 3** and should be read in conjunction with that Review. The conclusion of this Technical Note is that the effect on capacity of the highway network of a 'jetty outage' at both RRRF and REP (including waste and IBA/ancillary HCV movements) would be **Negligible** and would be judged as Not Significant.

1.2. A 'jetty outage' would be an exceptional event and would be expected to run for a temporary period. It is worth noting that a 'jetty outage' event has not occurred at Riverside Resource Recovery Facility (RRRF) since operations began in 2011.

1.3. 'Jetty outage' is defined in the **draft Development Consent Order (dDCO)** (**3.1, Rev 4**, to be submitted at Deadline 8a) as *"circumstances caused by factors beyond the undertaker's control in which waste has not or could not be received at the jetty or ash containers have not or could not be despatched from the jetty for a period in excess of 4 consecutive days"*.

1.4. In a 'jetty outage' event, **Requirement 14** of the **dDCO** (**3.1, Rev 4**, to be submitted as Deadline 8a) would allow up to 300 Heavy Commercial Vehicle (HCV) waste delivery movements to REP per day and the same is allowed under Condition 27 of the RRRF planning permission (16/02167/FUL). 300 HCV movements in and 300 HCV movements out, delivering waste for each facility equates to a cumulative 1,200 HCV total waste delivery movements per day. Throughout this note the term 'movements' is a reference to an HCV either entering or leaving one of the REP or RRRF facilities.

1.5. The number of HCV movements delivering waste during a jetty outage are restricted to 30 movements in/30 movements out during the peak periods of 0730 - 0900 and 1630 -1800, each period being 1.5hrs in length[1]. This equates to peak movements per hour of 20 in/20 out for each facility, totalling 80 movements per peak hour associated with the delivery of waste (40 in / 40 out for both). This peak hour movement rate forms the basis of the assessment in this note and, if applied consistently to a whole day, would equate to 1,920 movements associated with waste deliveries. By assessing the equivalent of 1,920 daily waste related movements at the theoretical worst case peak scenario, the Applicant has shown that both the peak restriction, and the lower daily restriction of 1,200 movements associated with waste deliveries, would be Not Significant.

1.6. In accordance with **Requirement 14** of the **dDCO 3.1, Rev 4**, to be submitted as Deadline 8a, the Applicant notes that bottom ash would only be removed by road following four consecutive days of a 'jetty outage' event. Operational storage contingency would be provided on site through the main ERF building's dedicated Incinerator Bottom Ash (IBA) bunker at a level in excess of the 4 day consecutive jetty outage trigger period.

[1] This restriction applies to RRRF under Condition 27 of the RRRF planning permission (16/02167/FUL) and also to REP, under Requirement 14 of the draft Development Consent Order (3.1, Rev 4, to be submitted as Deadline 8a).

1.7. To account for IBA and ancillary movements, the assessment increases the peak flow analysis from 80 to 90 movements per hour for both REP and RRRF (45 in/45 out for both) and the cumulative daily flow from 1,920 to 2,160 movements (for both REP and RRRF combined). This is on the basis that 10 additional movements are introduced each hour cumulatively across REP and RRRF through IBA export and ancillary movements (as shown in **Table 1**). This is on the basis that IBA is created in the proportion of 25% by weight of waste deliveries and is transported in 20 tonne loads. Together with the ancillary movements for consumables and other by-products the expected movements, which are rounded up, accounts for 144 movements per day for REP and 96 movements per day for RRRF for the assessment, as set out in **Table 1**.

1.8. The highway network, in the vicinity of Norman Road, is typically at its busiest, and therefore has its lowest reserve capacity, during both the morning peak and evening peak periods (07:45-08:45 and 16:30-17:30 respectively).

1.9. The Applicant considered peak period capacity at the 3 junctions closest to the site, namely:

- A2016/ Clydesdale Way/ Yarnton Way roundabout;
- A2016/ Norman Road traffic signal junction; and
- A2016/ Anderson Way/ B253 roundabout.

1.10. For the analysis of traffic signal junction operation, the 'Degree of Saturation' (DoS) is the amount, presented as a percentage, of the theoretical capacity of a junction that has been used up by traffic. It is an accepted professional basis that a DoS of 85-90% is an optimum maximum capacity. For roundabouts the measure is one of the 'Ratio of Flow to Capacity' (RFC), presented as a decimal figure where 1.0 RFC would be equivalent to 100% DoS.

1.11. This assessment is conservative as it includes existing HCV movements travelling to and from the operations at RRRF (under normal operating conditions) captured in the baseline highway data used to predict flows in 2028. There is therefore a degree of double counting of RRRF movements when applying the jetty outage scenario.

1.12. The analysis set out at **Tables 2 to 4** in this note shows that, when considering the cumulative 90 movements of waste, IBA and ancillary deliveries in the most constrained peak hour (equivalent to 2,160 movements per day), all junctions operate below their maximum optimum capacity. The highest DoS found at any of the junctions for 90 movements per hour is at the junction of Bronze Age Way with Picardy Manorway, being 80% on Picardy Manorway in the evening peak. All other junctions have a DoS/RFC of less than 80%.

1.13. All junctions considered in this note have been found to have DoS/RFC below the accepted optimum maximum of 85-90% and therefore have sufficient capacity to accommodate a 'jetty outage' event. Outside of the morning and evening peaks, the DoS/RFC is lower due to less traffic generally being on the road network and therefore more junction capacity is inherently available.

1.14. In all cases the effect of a 'jetty outage' is **Negligible** since the optimum maximum capacity (DoS/RFC) of the junctions is not exceeded. Although the DoS/RFC in the worst case reaches 80%, the DoS/RFC without a jetty outage is 77% at that location, showing that the general traffic using the junction is the primary user of capacity, and the increase from RRRF and REP is limited.

1.15. In conclusion, should a 'jetty outage' event occur at both RRRF and REP in combination, this Technical Note demonstrates that:

- The three closest highway junctions on the A2016 would all continue to operate during the morning and evening periods at least 5% below the accepted optimum maximum of 85-90% on a worst case basis including waste HCV movements and IBA/ancillary HCV movements;
- Across the remainder of the day, the three closest highway junctions on the A2016 would all operate with more than 5% below the accepted optimum maximum of 85-90% on a worst case basis including waste HCV movements and IBA/ancillary HCV movements; and

- There is substantial spare capacity on the highway network and junctions, such that no additional constraint for a 'jetty outage' event is necessary for the proportional number of IBA and ancillary movements.

1.16. The overall conclusion of the Technical Note is that the effect on capacity of the highway network of a 'jetty outage' at both RRRF and REP (including waste and IBA/ancillary HCV movements) would be **Negligible** and would be judged as Not Significant.

2. Purpose of this Technical Note

2.1. This Technical Note is a supplementary note to the **Temporary Jetty Outage Review (Simultaneous Operations of Riverside Resource Recovery Facility and Riverside Energy Park) (8.02.31, REP3-036)** ("**the Original Review**") submitted at Deadline 3 and should be read in conjunction with that Review.

2.2. This note further responds to the following question raised by the Examining Authority (ExA) at the Issue Specific Hearing on the draft Development Consent Order (dDCO) (ISH2) held on 06 June 2019:

> *"The ExA questioned whether the Applicant had assessed a jetty outage at both RRRF and REP - i.e. there would be 600 movements between the two facilities. Mr Griffiths stated that the Applicant would provide a technical note that confirmed the ES assumptions on transport in the context of a jetty outage."*

and to comments received at Deadline 7 by London Borough of Bexley (LBB) (**REP7-023)** and Greater London Authority (GLA) **(REP7-021).**

3. Introduction

3.1. The Applicant reiterates that an operational jetty outage event would be rare. Indeed, there has not been a jetty outage occurrence at the RRRF since operations commenced in 2011 and would be an event caused by factors beyond the Applicant's control.

3.2. Should such an event occur, this note provides a summary of the HCV movements and the potential transport effects arising from RRRF and REP operating simultaneously at maximum capacity under a temporary jetty outage scenario as defined by Condition 27 of the RRRF planning permission (16/02167/FUL) and **Requirement 14** of the **dDCO** (**3.1, Rev 4**, to be submitted as Deadline 8a). Throughout this note the term 'movements' is a reference to an HCV either entering or leaving one of the REP or RRRF facilities.

3.3. This note explicitly considers, in respect of a jetty outage:

- the maximum capped figure of HCV waste movements permitted by road for RRRF under Condition 27 of the RRRF planning permission (16/02167/FUL);
- the maximum capped figure of HCV waste movements permitted by road for REP under **Requirement 14** of the **dDCO** (**3.1, Rev 4**, to be submitted at Deadline 8a); and
- movements for both RRRF and REP in respect of Incinerator Bottom Ash (IBA) and other ancillary movements.

3.4. The potential effects are reported in this note with reference to the morning and evening peak periods on the surrounding road network (07:45-08:45hrs and 16:30-17:30hrs respectively). Road network capacity is typically at its lowest during the peak morning and evening periods. Therefore, it is standard practice to consider the potential effect of additional traffic on the network during these periods. Traffic movements outside of the peaks are lower, meaning that assessment outcomes are based on the most constrained period of the day. This note builds upon the assessment work presented in **Chapter 6 Transport** of the **Environmental Statement (ES)** (**6.1, Rev 1, REP2-017**) and the **Transport Assessment** (**TA**), **Appendix B.1** to the **ES** (**6.3, APP-066**) and on supplementary assessment provided at **Appendix B** to the **Original Review (8.02.31, REP3-036).**

4. Terminology and assessment criteria

4.1. The following terms and assessment criteria are used in this note:

- Heavy Commercial Vehicle (HCV): a vehicle with a gross operating weight (i.e. vehicle + payload) in excess of 7.5 tonnes (t), as defined within section 138 of the Road Traffic Regulation Act 1984.
- A vehicle 'movement' – a vehicle observed travelling in one direction (e.g. a movement in or movement out). In this note all movements quoted are by HCVs.
- '2028 Do Minimum' scenario – Traffic flows calculated 10 years post-application. Includes uplifted baseline movements based on background traffic growth and committed developments.

RRRF jetty outage criteria

- Daily movements of HCVs delivering waste capped during a jetty outage under Condition 27 of the RRRF planning permission (16/02167/FUL)**:**
  - 300 HCVs per day (300 movements in and 300 movements out = 600 total).
  - 30 HCVs per peak period (07:30-09:00hrs and 16:30-18:00hrs). This equates to peak movements per hour of 20 in/20 out and would total 960 movements if continued for a whole day.

- Capped HCV movements under Condition 27 exclude the transportation of Incinerator Bottom Ash (IBA), Air Pollution Control Residue (APCR), lime, Powder Activated Carbon (PAC), Fuel Oil and other consumables or ancillary movements.
- HCV movements due to transportation of IBA and other ancillary movements is assumed at 64 per day, based on the RRRF's operations. For the purposes of this assessment, it has been assumed that there would be 4 HCVs for IBA and other ancillary movements during the peak hour (2 in/2 out) which would equate to a rounded up figure of 96 movements per day (48 in/48 out).
- It is therefore assumed that the peak hour movements per hour for RRRF = 44 (22 in/ 22 out), representing waste movements to Work Numbers 1A and 1B, IBA and other ancillary movements.

REP jetty outage criteria

- Daily movements of HCVs delivering waste to the ERF and Anaerobic Digestion facility during a jetty outage restriction, as capped under **Requirement 14** of the **dDCO** (**3.1, Rev 4, to be** submitted at Deadline 8a):
  - 300 HCVs per day (300 movements in and 300 movements out = 600 total); and
  - 30 HCVs per peak period (07:30-09:00hrs and 16:30-18:00hrs). This equates to peak movements per hour of 20 in/20 out and would total 960 movements if continued for a whole day.

- Capped HCV movements under **Requirement 14** of the **dDCO** (**3.1, Rev 4, to be** submitted at Deadline 8a) exclude the transportation of Incinerator Bottom Ash (IBA), Air Pollution Control Residue (APCR), lime, Powder Activated Carbon (PAC), Fuel Oil and other consumables or ancillary movements.
- HCV movements due to transportation of IBA (in 20 tonne loads) and other ancillary movements is assumed at 78 HCV's per day for the maximum throughput (39 in/39 out). For the purposes of this assessment, it has been assumed that there would be 6 HCVs for IBA and other ancillary movements during the peak hour (3 in/ 3 out) which would equate to a rounded up figure of 144 movements per day (72 in/72 out).
- It is therefore assumed that the peak hour movements per hour for REP = 46 (23 in/ 23 out), representing waste movements to Work Numbers 1A and 1B, IBA and other ancillary movements.

4.2. The assessment presented in the **TA (Appendix B.1** to the **ES (6.3, APP-066)** was carried out against a baseline of traffic movements established using observed traffic data, collected during April 2018. The baseline data included HCV movements travelling to and from the operations at RRRF (under normal operating conditions) which cannot be reliably disaggregated from other vehicle movements within the assessment, as the origins and destinations of these movements is not known. **Section 6.3** of the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**)) sets out how the baseline traffic was factored up to predict a ten year post-application future base year (i.e. the '2028 Do Minimum' scenario). This therefore means that this assessment effectively includes an element of double counting of RRRF movements.

5. Comparison of HCV Movements for Different Scenarios

5.1. **Table 1**, below, sets out the predicted HCV movements for REP under a capped jetty outage scenario, reflecting the proposed peak hour **Requirement 14** limits of the **dDCO (3.1, Rev 4**, to be submitted at Deadline 8a). The table also sets out the movement of HCVs for RRRF under a jetty outage scenario (as set by Condition 27 of the planning consent for RRRF (16/02167/FUL)). An allowance is also made for HCV movements for the associated by-products (IBA and APCR) and other associated ancillary HCV movements to/from REP and RRRF, as set out earlier in this note.

5.2. **Table 3.2** of the **Original Review (8.02.31, REP3-036)** provides the total number of HCV movements recorded across the cordon line towards RRRF during the Automated Traffic Counts in April 2018, which was for the purposes of preparing the ES. By their nature, these counts included HCV's not associated with the operation of RRRF. The data show that the daily number of HCV movements to RRRF, for all operations, varied between 64 to 95 inbound HCV movements and 46 to 99 outbound HCV movements on weekdays (not allowing for a deduction for those vehicles not associated with the carrying of waste for the operation of RRRF or accessing other businesses along Norman Road, such as Wernick Plant Hire or the SAS site). The period of the survey represented a normal operational period, where the number of HCV movements delivering waste to RRRF is capped, by Condition 27, at 90 inbound and 90 outbound HCV movements per day.

6. Network Analysis and Implications of 1,200 waste delivery movements (600 in/ 600 out) jetty outage Scenario at RRRF and REP

6.1. This assessment is based on the operation of the following three junctions on A2016 Picardy Manorway, within close proximity to the site:

- A2016/ Clydesdale Way/ Yarnton Way roundabout;
- A2016/ Norman Road; and
- A2016/ Anderson Way/ B253.

Table 1: Heavy Commercial Vehicle movements: Waste deliveries, IBA and ancillary consumables and products for REP and RRRF jetty outage scenario

	REP Deliveries/Exports by Road (Movements)			RRRF Deliveries/Exports by Road (Movements)			Combined REP+RRRF Deliveries/Exports by Road (Movements)	
Materials Component	Peak hour assessment (HCV/hour)	24hr equivalent[2] (HCV/day)	DCO HCV Constraint	Peak hour assessment (HCV/hour)	24hr equivalent[2] (HCV/day)	RRRF Condition 27 HCV Constraint	Peak hour assessment (HCV/hour)	24 hr equivalent[2] (HCV/day)
ERF / AD Input	40 (20 in, 20 out)	960 (480 in, 480 out)	40/hour (20 in, 20 out) & 600/day (300 in, 300 out)	40 (20 in, 20 out)	960 (480 in, 480 out)	40/hour (20 in, 20 out) & 600/day (300 in, 300 out)	80 (40 in, 40 out)	1,920 (960 in, 960 out)
ERF Consumables and By-Products[3]	<2	48	N/A	<2	48	N/A	<4	96
AD By-Products	<2	48	N/A	N/A	N/A	N/A	<2	48
IBA Export[4]	>2	48	N/A	>2	48	N/A	>4	96
Total	**46**	**1,104**	**-**	**44**	**1,056**	**-**	**90**	**2,160**

[2] The assessment is undertaken on the basis of a peak hour assessment, when the road network has the least reserve capacity. In taking this approach the assessment proves that the same capacity change could be achieved in all hours outside of the peak, such that a theoretical overall 24hr consistent increase in movements is also proven. In all cases the REP DCO or RRRF Condition 27 constraint is significantly below the reserve capacity at the junctions, irrespective of time of day, assessed in this note.

[3] Assumptions: ERF consumables and by-products are as assessed within the ES and TA = 12 deliveries per day or <1 movement per hour (for each of REP and RRRF); Anaerobic digestion by-products = 12 removals per day or <1 movement per hour (REP only)

[4] IBA is generated at a proportion of 25% (or marginally lower) for each tonne of combusted waste. Therefore, a single tonne of waste is assumed to generate 0.25 tonnes of IBA. IBA is assumed to be carried in 20 tonne net loads. IBA export = 54 exports per day (REP) and 52 exports per day (RRRF) or marginally >2 movements per hour for each facility. Each of the ERF, Anaerobic Digestion and IBA peak hour movements is rounded to 2 movements per hour for the assessment for simplicity. Note that the rounding up of ERF consumables and Anaerobic Digestion by-products more than accounts for the slight rounding down with respect to IBA. This assessment equates to a cumulative 240 movements (120 in and 120 out) equivalent per day for the assessment whereas only 142 movements (71 in and 71 out) would be expected. The peak hour assessment therefore allows for a significant peaking in movements that are not related to waste delivery.

6.2. The junctions chosen are the most relevant to assess because they would be most affected by the operation of a jetty outage scenario, where waste material would transfer from movement by river from the riparian waste transfer stations to movement by road from the riparian waste transfer stations.

6.3. The assessment allows for:

- the distribution of traffic across the network in accordance with a theoretical exceptional jetty outage scenario at both RRRF and REP;
- the left-in/left-out nature of the junction of Norman Road with Picardy Manorway; and
- predicted growth on the network to 2028 from background increases and known land developments (the '2028 Do Something Scenario').

6.4. For this note, the Applicant has carried out a further assessment of the operation of the junctions on Picardy Manorway, which specifically applies the jetty outage capped peak period of HCV movements to and from RRRF and REP (as per **Table 1** above) to the 2028 Do Minimum predicted network. **Tables 2 to 4** provide summaries of the outputs from the capacity modelling of the operation of the above junctions during the network peak periods. The 2028 Do Minimum modelled results are the same as those presented with **Appendix B.1**, of the **TA** to the **ES** (**6.3, APP-066**) **Tables 6.7 to 6.9**.

6.5. The vehicle movements used for the jetty outage scenario are 20 HCVs in and 20 HCVs out in the peak hour delivering waste to each of REP and RRRF, giving a total of 80 in and 80 out (for RRRF and REP combined). These peak flows are increased to 90 in and 90 out to include IBA and ancillary movements.

6.6. The modelled jetty outage scenario is considered to be conservative as it over-estimates the quantum of movements associated with RRRF under a capped jetty outage scenario. This is because it is not possible to remove the HCV movements which were observed accessing and leaving Norman Road during the baseline traffic count undertaken on 19 April 2018. There is therefore some double counting of RRRF movements in the assessment.

Table 2: 'LinSig Results for A2016 Picardy Manorway/ Norman Road' + Jetty Outage Scenario[5]

Arm	Morning Peak			Evening Peak		
	MMQ[6] (pcu's[7])	Delay (seconds/pcu)	DOS	MMQ (pcu's)	Delay (seconds/pcu)	DOS
2028 Do Minimum						
Norman Road	0.9	27.1	17.6%	1.7	28.8	30.5%
Picardy Manorway (WB)	9.3	8.7	65.2%	5.5	6.6	48.6%
Picardy Manorway (EB)	4.9	6.4	45.7%	8.1	7.9	60.4%
2028 Do Something: RRRF + REP Capped Jetty Outage						
Norman Road	2.0	29.6	35.8%	3.0	32.4	49.3%
Picardy Manorway (WB)	9.9	9.1	67.5%	5.8	6.8	50.8%
Picardy Manorway (EB)	4.9	6.4	48.2%	8.1	8.0	62.7%

[5] Comparable 2018 Baseline figures for Tables 2 to 4 are available in Appendix A of the Original Review
[6] Mean Maximum Queue - approximate average of the maximum queues likely to be encountered at junction in a modelled network (ref. trafficsurveys.co.uk/glossary)
[7] pcu = passenger car unit. A method of representing different types of vehicle within a traffic dataset into a standardised unit for modelling purposes (1 car = 1pcu, 1 large lorry = 2 pcu)

Table 3: 'ARCADY Results for A2016 Picardy Manorway/ Clydesdale Way/ Yarnton Way/ A2016 Eastern Way' + Jetty Outage Scenario

Arm	Morning Peak			Evening Peak		
	Queue (pcu's)	Delay (seconds/pcu)	RFC	Queue (pcus)	Delay (seconds/pcu)	RFC
2028 Do Minimum						
A2016 Picardy Manorway	2.4	4.32	0.69	1.2	2.83	0.52
Clydesdale Way	0.3	12.55	0.19	0.1	6.68	0.11
Yarnton Way	0.5	2.85	0.31	0.6	2.54	0.34
A2016 Eastern Way	0.9	3.58	0.46	2.3	6.31	0.68
2028 Do Something: RRRF + REP Capped Jetty Outage						
A2016 Picardy Manorway	2.7	4.67	0.71	1.3	2.98	0.54
Clydesdale Way	0.3	14.15	0.21	0.1	7.09	0.12
Yarnton Way	0.5	2.98	0.32	0.6	2.64	0.35
A2016 Eastern Way	1.1	3.81	0.49	2.7	7.01	0.71

Table 4: 'ARCADY Results for A2016 Picardy Manorway/ Anderson Way/ A2016 Bronze Age Way/ B253 Picardy Manorway' + Jetty Outage Scenario

Arm	Morning Peak			Evening Peak		
	Queue (pcus)	Delay (seconds/pcu)	RFC	Queue (pcus)	Delay (seconds/pcu)	RFC
2028 Do Minimum						
A2016 Picardy Manorway	1.60	4.13	0.60	3.70	6.71	0.77
Anderson Way	0.30	2.48	0.21	1.40	6.05	0.57
A2016 Bronze Age Way	3.00	6.27	0.73	1.70	5.19	0.61
B253 Picardy Manorway	1.50	7.77	0.59	0.40	3.47	0.27
2028 Do Something - RRRF + REP Capped Jetty Outage						
A2016 Picardy Manorway	1.80	4.44	0.63	4.30	7.63	0.80
Anderson Way	0.30	2.56	0.21	1.60	6.61	0.59
A2016 Bronze Age Way	3.30	6.87	0.75	1.80	5.60	0.63
B253 Picardy Manorway	1.70	8.60	0.61	0.40	3.62	0.28

6.7. The summary data from the junction modelling set out in **Tables 2-4** show that all junctions continue to operate with spare capacity in the '2028 Do-Something' scenario in both peaks with RRRF and REP added into the network. It should be noted that 85%-90% DoS (being the same as 0.85-0.90 RFC)) of modelled theoretical capacity is taken to be an optimum operation for a junction. The highest modelled result is 0.80 RFC at the Picardy Manorway/Bronze Age Way junction (A2016 Picardy Manorway arm) in the evening peak (**Table 4**). Most other parts of the modelled network remain below 70% DoS or 0.70 RFC.

6.8. The assessment shows that all junctions work within theoretical capacity, within the threshold being stated at Paragraph 6.7 above. The junction of Norman Road with Picardy Manorway (**Table 2**) has a peak DoS of 67.5% on Picardy Manorway (westbound) in the morning peak and 62.7% (eastbound) in the evening peak. The maximum observed RFC for the junction of Eastern Way with Picardy Manorway (**Table 3**) is 0.71 on Picardy Manorway in the morning peak and 0.71 on Eastern Way in the evening peak. For the junction of Bronze Age Way with Picardy Manorway (**Table 4**) the maximum observed RFC is 0.75 on Bronze Age Way in the morning peak and 0.80 on Picardy Manorway in the evening peak.

6.9. The Applicant also undertook more generic sensitivity analysis on the operation of the local road network in the **Original Review (8.02.31, REP3-036)** and includes a commentary on this below.

6.10. As part of the engagement process with TfL, in exploring road network sensitivity during the construction phase in relation to the ES findings, supplementary analysis was carried out for the peak construction period. This evidence, provided in the **Original Review (8.02.31, REP3-036)**, considers when peak hour movements are maximised against the predicted network background growth in 2022, to explore the point at which the junctions would become congested (i.e. exceed an RFC of 0.85 or a DoS of 85%). This evidence demonstrates potential impacts for short periods during the construction programme but can equally provide an approximation for the maximisation of traffic through those junctions at any point in time, significantly in excess of the jetty outage HCV movements addressed earlier in this note.

6.11. The analysis shows that the three junctions on Picardy Manorway would only reach their theoretical capacity (i.e. at which time congestion would be expected to start to occur) with an additional level of traffic in excess of 150% of the existing movements on the network. This is estimated to be in excess of an additional 700 vehicles per hour above the observed baseline traffic, which is significantly in excess of the possible cumulative hourly operation of REP and RRRF under a jetty outage scenario (assumed, as per **Table 1**, to be in the order of 90 HCVs per hour (45 HCV inbound and 45 HCV outbound, including both waste and ancillary vehicles). The substantial spare capacity available before the junctions approach saturation is evidenced by the small change in DoS or RFC, seen between the '2028 Do Minimum' and '2028 Do Something' (including REP and RRRF jetty outage movements). This shows that the Applicant's movements, even in a jetty outage scenario, present a low change to the operation of the Strategic Road Network at those junctions.

6.12. Therefore, when considering the combined jetty outage scenario of RRRF and REP, that level of increase in HCV movements would be substantially lower than the theoretical number of traffic movements that could be accommodated before those junctions are saturated.

7. Conclusion

7.1. The operation of REP and the prediction of growth in traffic on the local road network has been assessed using a number of robust assumptions. The supplementary assessment work in this Technical Note provides sufficient evidence to demonstrate that Norman Road and the adjacent junctions on Picardy Manorway would operate with sufficient reserve capacity should both REP and RRRF need to operate under a temporary, and exceptional, jetty outage scenario (being a total of 1,200 movements for waste delivery per day). The assessment considers a worst case peak of 90 movements per hour. For waste delivery, IBA export and other ancillary movements, this results in a total equivalent of 2,160 movements per day, of which 1,920 would be for waste delivery.

7.2. The assessment found that the highest DoC/RFC was 80%/0.8, being 5%/0.5RFC below the maximum optimum DoS/RFC of 85-90%. This means that all assessed junctions were found to be at least 5%/0.5RFC below the threshold where delays might occur in the peak hour. Outside of the peak hours there would be more than 5%/0.5RFC spare capacity before queuing might occur. Therefore, the increased vehicle movements generated by the simultaneous operation of REP and RRRF during a temporary jetty outage have been shown to result in a negligible effect to network capacity and thus would be judged as **Not Significant**.

7.3. The peak hour assessment of 80 HCV movements associated with waste deliveries for both RRRF and REP reflects the peak hours constraint set out in **Requirement 14** of the **dDCO** (**3.1, Rev 4**) (being 40 movements for REP and 40 for RRRF). The 40 movements for REP comprises 20 HCV movements in and 20 HCV movements out per hour, which when applied over a 1.5hr peak period, as per the Requirement, equates to 30 HCV movements in and 30 HCV movements out.

7.4. The Applicant's sensitivity analysis also showed that there is substantial spare capacity before the junctions approach saturation, such that no constraint is necessary for the limited number of ancillary movements which are adequately considered through the Requirement in respect of a Delivery and Servicing Plan. IBA movements are controlled since there is a direct proportional relationship between combusted waste and IBA generated, which has been factored into the assessment.