# Riverside Energy Park

# Environmental Statement

## Chapter 6: Transport

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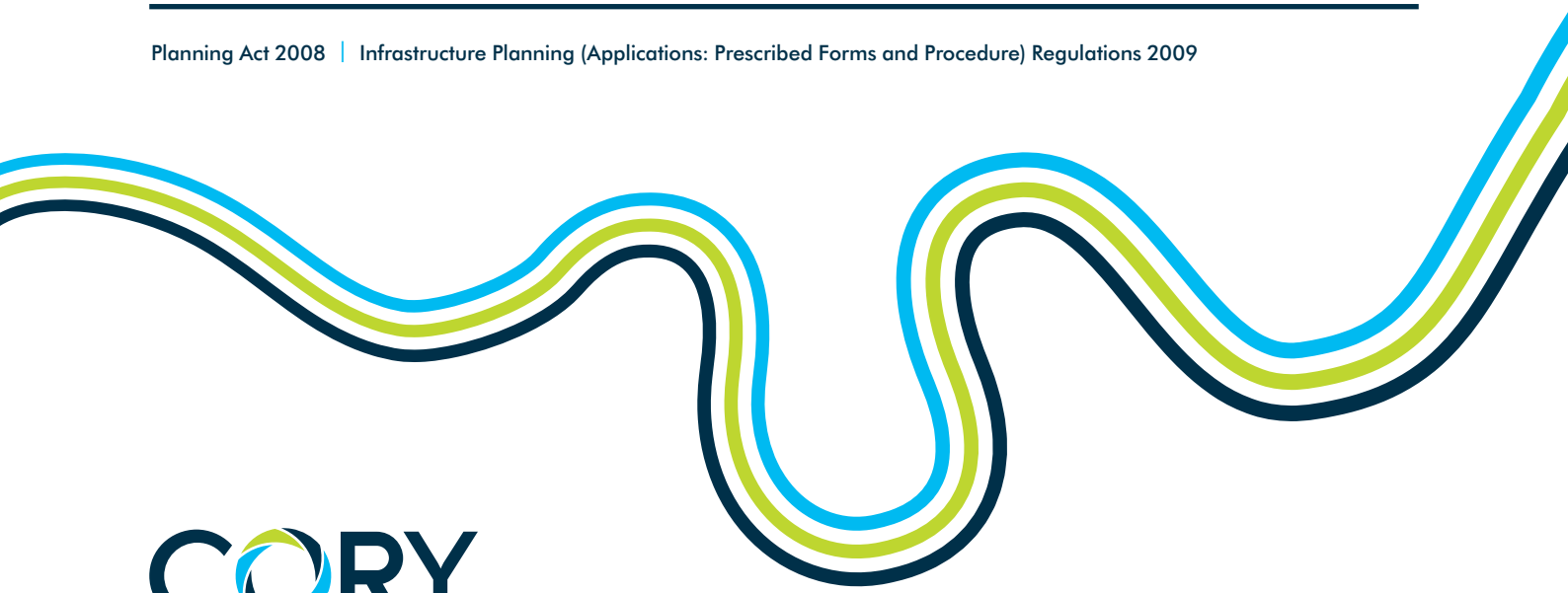

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# 6 Transport

## 6.1 Introduction

6.1.1 This Chapter presents the findings of the assessment of likely significant traffic and transport effects arising from the construction, operation (including maintenance), and decommissioning of Riverside Energy Park (REP or Proposed Development).

6.1.2 A separate Transport Assessment (TA) (**Appendix B.1**) has been prepared by Peter Brett Associates LLP (PBA) for the Proposed Development to a scope agreed with the stakeholders listed at **Section 6.3**. The TA is appended to the Environmental Statement (ES) at **Appendix B.1**. This Chapter has been prepared on the basis of the detailed assessment reported in the TA, and the reader is referred to the TA, supporting appendices and transport documents where further information is presented.

6.1.3 In accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the Infrastructure EIA Regulations 2017), a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix A.2.**

## 6.2 Legislation, Policy, Guidance and Standards

### National Planning Policy and Strategies

### National Policy Statements

6.2.1 As outlined in **Chapter 2**, the relevant National Policy Statements (NPS) provide the primary basis for decisions by the Secretary of State on nationally significant infrastructure projects.

6.2.2 **Table 6.1** below identifies the relevant requirements of NPSs:

Table 6.1: Relevant requirements of NPSs

| Requirement of NPS EN-1, Overarching National Policy Statement for Energy | Response within this ES |
|---|---|
| Section 5.13 of the NPS includes the following:<br><br>*The consideration and mitigation of transport impacts is an essential part of* | This Chapter considers mitigation measures relied upon by the assessment in Section 6.8 and 6.11, with a consideration of impacts from the Proposed Development in Section 6.9 and 6.12. |

| Requirement of NPS EN-1, Overarching National Policy Statement for Energy | Response within this ES |
|---|---|
| *Government's wider policy objectives for sustainable development as set out in Section 2.2 of this NPS.*<br><br>*If a project is likely to have significant transport implications, the applicant's ES (see Section 4.2) should include a Transport assessment, using the NATA/WebTAG methodology stipulated in Department for Transport Guidance, or any successor to such methodology. Applicants should consult the Highways Agency and Highways Authorities as appropriate on the assessment and mitigation.*<br><br>*Where appropriate, the applicant should prepare a travel plan including demand management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts.*<br><br>*A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the IPC should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development.*<br><br>*Water-borne or rail transport is preferred over road transport at all stages of the project, where cost-effective.* | The process for setting the format, focus and coverage of the ES Transport Chapter and the associated TA has been informed by a comprehensive scoping exercise with the Local Highways Authorities, Highways England (HighE) and the Local Planning Authorities – reflecting paragraph 5.13.3 of NPS-EN1 and the WebTAG guidance.<br><br>The scope responds to the guidance on transport appraisal as set out in NPS EN-1 Section 5.13 'Traffic and transport' as well as other national and local guidance. The scope has been confirmed and agreed with and uses established practice in the modelling and assessment of the transport impacts. The TA (**Appendix B.1**) includes an outline Construction Traffic Management Plan (CTMP) which includes demand management initiatives to encourage construction workers' use of public transport, walking and cycling, and an outline Operational Worker Travel Plan which promotes opportunities to use environmentally friendly forms of travel and seeks to mitigate construction traffic impacts – responding to paragraph 5.13.4 of NPS EN-1. This ES Chapter and the associated TA have shown that physical changes and mitigation to the transport network are not required. Infrastructure to mitigate the induced transport and travel movements of the |

| Requirement of NPS EN-1, Overarching National Policy Statement for Energy | Response within this ES |
|---|---|
| | Proposed Development are therefore not required.<br><br>REP would be located such that it could benefit from the existing river freight infrastructure at RRRF, helping to minimise the movement of material by road under normal operations.<br><br>This ES assesses the implications of the Proposed Development operating under a 100% by road scenario and a 100% by river as a reasonable worst case scenario. It is expected REP would notionally operate on a balanced basis with approximately 75% of waste delivered by river, significantly reducing the movement of goods vehicles on London's road associated with the movement of waste to REP. In addition, the removal of Incinerator Bottom Ash (IBA) residues would be by river. This would reduce emissions from the transport of the material, in line with the NPS EN-1 policy at paragraph 5.13.10. Where feasible construction materials may also be transported by river and the ES therefore assesses the reasonable worst case scenario for Construction at the anticipated peak period of Month 13.<br><br>It has been shown in this ES Chapter and through the TA that the construction and operation of REP, with the associated implementation of the demand management measures through the CTMP and Operational Worker Travel Plan, as |

| Requirement of NPS EN-1, Overarching National Policy Statement for Energy | Response within this ES |
|---|---|
| | considered at paragraph 5.13.8 of NPS-EN1, would result in no significant residual adverse impacts.<br><br>The construction worksite and compounds would be configured to ensure construction traffic can access the REP site without disrupting the operation of the strategic road network. Sufficient holding and manoeuvring space would be provided on site – responding to the points raised within NPS EN1 paragraph 5.13.11. This would be further detailed with the CTMP to be secured as a requirement of the DCO. |
| **Requirement of NPS EN-3, Overarching National Policy Statement for Renewable Energy Infrastructure** | **Response within this ES** |
| NPS EN-3 briefly references transport by setting out that, where possible, as many materials (fuel and residues) to/from biomass or Energy from Waste (EFW) plants are to be transferred by river or rail. In addition, any new biomass or waste combustion sites should be located within the vicinity of existing transport routes where possible. | REP is situated adjacent to the River Thames and has the benefit of an existing jetty connection. It is expected that a notional 75% of waste is transported to the REP site via barges along the River Thames. Where appropriate, residual material such as IBA would be removed from REP by river.<br><br>The existing jetty for Riverside Resource Recovery Facility (RRRF) would be used by REP, increasing its function without the need for further infrastructure in the river or additional berths.<br><br>The assessment within the Navigational Risk Assessment (NRA) at **Appendix B.2** considers up to 100% of waste |

| Requirement of NPS EN-1, Overarching National Policy Statement for Energy | Response within this ES |
|---|---|
| | arriving by river to maximise the opportunity for this modal use. Where waste does have to be brought in by road, REP would use the existing major road connections that are a relatively short distance to the M25.<br>Therefore, it is considered that the development of REP is in accordance with NPS EN-3. |

6.2.3 It is considered that this Chapter fully addresses the requirements of the NPSs as outlined above in **Table 6.1**.

6.2.4 Discussion on the below listed National, Regional and Local policy specific to this Chapter is located in **Appendix A.3**.

- Revised National Planning Policy Framework (NPPF) (2018); and
- Planning Practice Guidance (PPG) (online resource).

### Regional Planning Policy and Strategies

- The London Plan (2016);
- Mayor's Transport Strategy (MTS) (2018); and
- London Environment Strategy (2018).

### Emerging Regional Policy and Strategies

- Draft London Plan showing Minor Suggested Changes (2018).

### Local Planning Policy and Strategies

- Bexley Core Strategy (2012);
- Bexley Unitary Development Plan (UDP) (2004) Saved Policies (2012);
- Dartford Core Strategy (2011);
- Dartford Development Policies Plan and Policies Map (2017);
- Kent Local Transport Plan 4: Delivering Growth without Gridlock 2016–2031;

- Bexley Growth Strategy (2017); and
- Kent Minerals and Waste Local Plan 2013-2030 (2016).

### Transport Guidance and Standards

6.2.5 Guidance for preparing an assessment of transport issues within an EIA is provided within the following documents:

- Guidelines for Environmental Impact Assessment (Institute of Environmental Management and Assessment (IEMA), 2004);
- Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (now IEMA), 1993) (the 'IEMA Guidelines');
- Volume 11 of the Design Manual for Roads and Bridges (DMRB) – Environmental Assessment (Highways Agency et al.);
- Transport Analysis Guidance (WebTAG) (Department for Transport) (online);
- Planning Practice Guidance (PPG) - Travel Plans, Transport Assessments and Statements (Department for Communities and Local Government (DCLG), 2014); and
- PPG - Transport evidence bases in plan making and decision taking (DCLG, 2014).

6.2.6 The IEMA Guidelines refer to the Manual of Environmental Appraisal published by the Department for Transport (DfT) in 1983 which has been superseded. Reference has, therefore, been made to the relevant sections of the DMRB, specifically, Volume 11 entitled 'Environmental Assessment'.

6.2.7 DfT provided advice in an advisory letter to the Planning Inspectorate highlighting the importance of Highways England's 'Water preferred policy guidelines for the movement of abnormal indivisible loads' (2016) for NSIPs. This guidance has been considered through the evolution of the project design since the scoping stage. However, as set out in **Chapter 5**, use of the river for the delivery of abnormal loads during the construction period would require temporary works in the river. These were removed from consideration to avoid works in the river and any direct potential impacts on the marine environment. Due to the limited number of abnormal load deliveries required, delivery by road from the nearby Strategic Road Network presented a more practical approach.

## 6.3 Consultation

6.3.1 A list of consultation responses received to date relating to this assessment is presented in **Table 6.2** below.

6.3.2 Meetings were held with Dartford Borough Council (DBC), Kent County Council (KCC) and London Borough of Bexley (LBB) in February 2018 which guided the formation of the TA Scoping Report. The TA Scoping Report sets out the proposed approach to assessment and contents of the TA and reflects the discussions undertaken.

6.3.3 The TA Scoping Report was then issued to DBC, KCC, LBB, Transport for London (TfL), Royal Borough of Greenwich (RBG) and HighE in March 2018 and further comments were received. A meeting was also held with TfL in May 2018.

6.3.4 This consultation continued to guide the formation of the TA, and this assessment, and is summarised in **Table 6.2**

Table 6.2: Summary of Key Consultation Responses in Relation to Transport

| Reference | Comment | Response |
|---|---|---|
| **SoS Scoping Opinion** | | |
| Section 4.1 – ID 1 | The Applicant proposes to exclude the 'Dust and Dirt' criterion (from the IEA guidelines) from the Transport assessment as dust will be covered in the Air Quality Chapter of the ES. The Inspectorate is content with this approach. | Noted. |
| Section 4.1 – ID 2 | The Scoping Report states that impacts from the electrical connection will be considered where appropriate. The Inspectorate considers that the ES should assess the impacts during construction of the electrical connection, particularly if any road closures are required. | Impacts associated with the construction of the Electrical Connection route have been considered within both the TA and ES (Section 6.9).<br><br>It is prudent to note that no complete road closures are expected along the Electrical Connection (subject to final detailed engineering design of the installation). Some restrictions to certain vehicles, as the works pass more constrained points on the road network, |

| Reference | Comment | Response |
|---|---|---|
| | | may be required at points along the route to facilitate safe movement passed the working areas. It is expected that there could be: short term closures to adjoining side street junctions and single lane closures on dual-carriageway roads; and signal controlled working on single-carriageway roads, subject to available widths. |
| Section 4.1 – ID 3 | The Scoping Report has identified the potential for impacts on the level of service and level of safety for vessels on the River Thames during both construction and operation. No information has been provided as to how these impacts will be assessed, although it is noted that a Navigational Risk Assessment will be appended to the ES. The ES should set out the methodology used to undertake this assessment and to identify significant effects. | An NRA has been undertaken and an assessment of the potential for impacts on service and safety for vessels on the River Thames during the operation is presented as part of this Chapter of the ES – with the NRA attached at **Appendix B.2**. Construction was not specifically addressed as its potential for impacts are less than during the operation. As a result of design evolution, temporary works within the marine environment during construction are no longer required. |
| Section 4.1 – ID 4 | Any permanent closures/diversions of PRoWs should be identified within the ES for both the main REP site and the electrical connection. The potential effects of such closures/diversions should be assessed with appropriate cross referencing to other relevant aspect assessments such as those for | There would be no permanent closures or diversions of Public Rights of Way (PRoW) for the main REP site or the Electrical Connection, subject to detailed design.<br><br>Any closures or diversions would be temporary in |

| Reference | Comment | Response |
|---|---|---|
| | noise, air quality and visual impacts. | nature but, at this stage, the final requirement and location of these are not yet known, however, a qualitative review is provided at **Section 6.9**. It is expected that construction of the Electrical Connection may require temporary local diversions of PRoWs for approximately one week in some locations, depending on the final details of the programme of delivery for the Electrical Connection. It is not considered that this would generate a significant impact on users. |
| Section 4.1 – ID 5 | The Applicant's attention is drawn to the comments of Kent County Council regarding the proposed England Coast Path which is scheduled for completion by 2020. Any anticipated impacts to the national walking route should be assessed within the ES. | The exact route of the England Coast Path is to be confirmed by KCC but, as stated in the response to Section 4.1 – ID 4, any impacts on the path would be temporary in nature.<br><br>As above, the detailed requirement for any temporary footpath closures or diversions around the Application Site is not yet known. However, appropriate diversions would be agreed with the local authorities and put in place to ensure impacts on users are not significant. Furthermore, it is expected that these would be in place for approximately a week in most cases.<br><br>An assessment of temporary closures to |

| Reference | Comment | Response |
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| | | PRoW has been provided within this Chapter at **Section 6.9**. |
| Section 4.1 – ID 6 | The Scoping Report explains that both IEA and DMRB guidance will be used to inform the assessment methodology for onshore transportation. It should be clear within the ES precisely how this guidance is utilised for the assessment. | This has been outlined in **Section 6.2** of this Chapter and, where relevant, is referenced throughout. The 'Guidelines for the Environmental Assessment of Road Traffic' published by the Institute of Environmental Assessment (IEA), now IEMA, provides guidance on the extent of the study area as well as the assessment criteria which should be included within an assessment of environmental effects relating to transport, as presented in Section 6.5. The magnitude and scale for each assessment criteria has been informed by IEMA Guidance and DMRB guidance where applicable, as shown in Section 6.5. |
| Section 4.1 – ID 7 | The ES should confirm and justify whether the study areas for the construction and operational phase are the same. The study area for non-motorised users should also be identified and justified. | The study areas for the construction and operational phases are the same. It comprises routes between the REP site and the strategic highway network. It is expected that construction as well as operational movements would largely utilise the same routes between the site and the national and local Strategic Road Network, and for this reason is considered appropriate. |

| Reference | Comment | Response |
|---|---|---|
| | | These study areas incorporate non-motorised users (NMUs) throughout, given that there are a number of PRoWs and other NMU routes across the study area that could be affected by REP. The impacts on pedestrian delay and severance are assessed at **Section 6.9**. |
| Section 4.1 – ID 8 | The ES should set out and justify the assumptions made in calculating trip generation and distribution data for both vehicle and river trips. The Inspectorate notes that although a modal split of at least 75% of waste being delivered by river is the ambition for the Proposed Development, the ES will assess a worst case of 100% of waste being delivered by road in the operational phase. The Inspectorate considers this to be a sensible approach to the assessment. The Inspectorate also expects the ES to adopt a worst case scenario for the assessment of the construction phase. | Consistent with the operational phase, a reasonable worst case assessment has been carried out for the peak construction phase for the PEIR and completed for this ES. This involved an appraisal of the programmed month when construction activity is anticipated to be at its highest and includes a moderate percentage of movement of materials by river. The cumulative peak in movement of materials and personnel, at Month 13 of the indicative programme, is currently estimated to be the highest. |
| Section 4.1 – ID 9 | The Scoping Report states that solid digestate from the anaerobic digestion process would be used as a fuel within the ERF or would be transferred off-site for use in the agricultural sector as fertiliser. The Inspectorate notes that the solution for addressing the digestate could have implications on the transport assessment; a worst case scenario should | The solid digestate would ordinarily be transferred off-site for use in the agricultural sector as fertiliser. This has been outlined as the preferred approach by the Environment Agency and has been accounted for in the EIA as part of the 100% by road 'reasonable |

| Reference | Comment | Response |
|---|---|---|
| | therefore be described, justified and assessed in this regard. | worst case scenario'. The ability to retain the ability for thermal treatment for the digestate has been included and considered, where appropriate, elsewhere in the ES. |
| Section 4.1 – ID 10 | The Scoping Report does not make reference to any mitigation for potential traffic impacts. The Applicant is advised to consider whether construction/operational traffic management plans would be appropriate. If such plans are relied upon to mitigate significant effects, the Inspectorate would expect draft versions of the plans to be provided with the application. | Given the stage of the assessment process, it is not possible to identify mitigation for potential traffic impacts at this time.<br><br>An outline CTMP is submitted as part of this ES, contained within the TA at **Appendix B.1**. There is insufficient detail on the construction programme at this time; therefore, it is anticipated that the CTMP would be finalised as part of a requirement contained within the DCO for agreement prior to commencement of construction. |
| Section 4.1 – ID 11 | The response from Dartford Borough Council identifies ongoing improvements to A282 Junction 1A. These works should be taken into account within the cumulative effects assessment.<br><br>Similarly, Kent County Council state that there is a significant amount of planned development within Dartford Borough Council administrative area. The Inspectorate recommends that the Applicant consults with both authorities to agree a list of projects and/or plans to be considered within the assessment. | As was agreed with DBC and KCC officers during a pre-application meeting and set out in the TA Scoping Report, the expected traffic flows generated by the Proposed Development do not require assessment of the A282 Junction 1A, and this junction has therefore not formed part of the assessment.<br><br>Both local authorities have been consulted as suggested. No other |

| Reference | Comment | Response |
|---|---|---|
| | | highways improvements have been mentioned by the local authorities during consultation.<br><br>DBC has subsequently provided the information on the committed and consented development schemes which have been included in the future baseline assessments for the ES and the TA. Howbury Strategic Rail Freight Interchange was not included in the list. In accordance with the Infrastructure EIA Regulations 2017, only "*existing and/or approved development*" schemes should be considered as part of the cumulative effect assessment. This was raised with DBC and KCC on 3rd October. It was reiterated that Howbury Strategic Rail Freight Interchange does not have consent and will not be assessed as part of consented scheme. On initial precursory review the predicted impact from Howbury Strategic Rail Freight Interchange would not materially alter the impacts on the junctions within the vicinity of REP.<br><br>It is to be noted that, in line with PINS Advice Note 17 and as outlined in **Chapter 4**, the assessment of cumulative Transport effects follows a separate |

| Reference | Comment | Response |
|---|---|---|
| | | methodology to other cumulative assessments within this EIA. |
| **Kent County Council** | | |
| KCC (December 2017) response to EIA Scoping Request | Concern over the possible impacts on the A206 Bob Dunn Way and Junction 1A of the A282, even with a modest increase in traffic (particularly HGVs). | See below for responses to these comments following a pre-application meeting with KCC and DBC, and submission of the TA Scoping Report. |
| | KCC requests that the applicant considers the impacts on the links through Kent's road network to Junction 1A of the M25. | |
| | Concern over the use of TEMPro to determine future traffic growth and accommodate committed/planned development in Dartford. | |
| | Concern as to the impacts of the construction and presence of the Electrical Connection route on Kent's PRoW network. KCC wish for consideration to be given to impacts on the PRoW network at the pre-construction design stage. | As part of a pre-application meeting with KCC and DBC, the form and nature of the Electrical Connection was explained in detail. Subsequently, it was agreed that, although consideration within the ES should be given to impacts on the PRoW, the level of effect was unlikely to warrant automated counts, as requested in KCC's response to the EIA Scoping Request.<br><br>Temporary PRoW diversions would be put in place where necessary and it is not expected that any permanent path extinguishments would be necessary. Any necessary temporary diversions and |

| Reference | Comment | Response |
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| | | path closures would be discussed with KCC and LBB officers as part of the design and mitigation process for the Electrical Connection.<br><br>A qualitative assessment of temporary diversions to PRoWs has been provided within the ES at **Section 6.9**. |
| KCC (March 2018) response to PBA TA Scoping Report | Concern over the impacts from both the construction and operational phases of the development on the A206 Bob Dunn Way and Junction 1A of the A282, primarily during peak periods and when there are delays induced by incidents. | Automated Traffic Count (ATC) data has been collected along A206 Bob Dunn Way and a percentage impact assessment on the traffic flow along this link in the future has been made as part of the TA.<br><br>ATCs have been put in place for two weeks in order to capture the effects of incidents on traffic routeing through the area. A qualitative assessment of how this may be affected by REP has been made in the TA.<br><br>As discussed above, it has been agreed with DBC and KCC officers during a pre-application meeting that the expected traffic flows generated by the Proposed Development would not require assessment of the A282 Junction 1A, and this junction has therefore not formed part of the assessment. The TA indicates the imperceptible impact on the A282/M25 |

| Reference | Comment | Response |
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| | | junction 1a. HighE has stated in their response of 15th August 2018 that they will comment on the TA. |
| | The policy review should refer to Kent Local Transport Plan 4: Delivering Growth without Gridlock (2016 – 2031). | This has been reviewed as part of this Chapter and also the TA. |
| | Further detail on the information used within the impact calculations is requested as part of the TA. | This was also requested by HighE and was presented within PBA Technical Note 3 to consultees on 2nd May 2018. This is summarised in **Sections 6.6 and 6.7** of this Chapter. |
| | TEMPro often underestimates traffic growth rates in Dartford when compared against the high levels of development that have taken place and are anticipated to continue to do so in the future. Therefore, forecast traffic from committed and allocated developments should be considered individually in addition to applying TEMPro growth factors for journeys through Dartford. | DBC has provided the information on the committed and consented development schemes which have been included in the future baseline assessments.<br>PBA has agreed with KCC and accordingly the proposed approach to future traffic growth includes specific individual committed and allocated developments and TEMPro growth factors, without significant double-counting. |
| **Dartford Borough Council** | | |
| DBC (December 2017) response to EIA Scoping Request | Concerned as to whether impacts will extend to Dartford Borough. | This was discussed in a meeting held with DBC and KCC officers on 22nd February 2018.<br><br>The detail was presented in the TA Scoping Report and subsequently this was presented within PBA |

| Reference | Comment | Response |
|---|---|---|
| | | Technical Note 3 to consultees on 2nd May 2018. |
| | Although the proposal indicates that much of the waste comes from London the Council would like to understand the potential traffic impacts of any waste that does not come from west of the site but comes from the east or uses the Dartford Crossing. | Waste that would come to REP from outside of London would potentially arrive via the Port of Tilbury. The split between Tilbury and London that has been assessed is based on a likely scenario. The scenario is based on the Applicant's previous experience, location of existing WTS and the nature of the commercial agreements that are in place currently or which may be in place in the future. It should be noted that the green waste supply streams cannot be determined at this stage as this would depend on the waste market. It is anticipated that waste will arrive by road from local sources, however, there may be potential to also receive waste from outside the local area. |
| | Other transport impacts that should be addressed include the social impact of increased traffic in an already congested area which appear to be considered through the assessment criteria for the TA outlined on pages 29-30 but the Council would request that the study area includes Dartford Borough. | The assessment criteria for this Chapter include, amongst others: severance, pedestrian delay and amenity, fear and intimidation, and accidents and road safety. These cover a number of social impacts associated with increases in road traffic on relevant roads. The study area considered in this Chapter includes |

| Reference | Comment | Response |
|---|---|---|
| | | links in the DBC area, such as the A206 and A2026.<br><br>**Chapter 7** and **Chapter 8** assess effects on the residential properties adjacent to the roads on which REP would generate greater traffic flows.<br><br>A206, which runs through Dartford Borough to the south of REP, has been incorporated into the study area as requested by KCC and DBC. |
| | Concern regarding the impact of the construction of the Electrical Connection route on Dartford's local road network, particularly if the undergrounding of cables involves road closures. This will particularly affect local traffic from the Bridge site, for which there is only one access point off Bob Dunn Way and any re-routing of vehicles through Dartford town centre. | As was explained during the meeting held with DBC and KCC officers on 22nd February 2018, the construction of the Electrical Connection would be undertaken, where possible, in the verge or footway. However, it is highly likely that a single lane closure would be required to facilitate a safe working area or localised footway diversion. The scale of works in the highway, verge or footway would be of a similar scale to works undertaken by telecommunications companies for installation of internet and telephone cabling, which are minor and temporary.<br><br>Temporary single lane closures, over lengths up to approximately 300m, would likely be necessary, depending on the |

| Reference | Comment | Response |
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| | | circumstances and location of the works. This would be determined in co-ordination with the Highway Authorities.<br><br>As agreed with KCC and DBC, impacts from possible re-routeing of vehicles during incidents elsewhere on the network are covered qualitatively in the TA. |
| DBC (April 2018) response to PBA TA Scoping Report | Concur with the comments made by KCC. | Noted. |
| | The policy review should include Dartford Core Strategy 2011 and Dartford Development Policies Plan 2017. | This has been reviewed as part of this Chapter and has been included within the TA. |
| **Highways England** | | |
| HighE (December 2017) response to EIA Scoping Request | Queries relating to possible impacts on the M25 and Junction 1A in particular. | The impacts on M25 and Junction 1A were presented in the TA Scoping Report and subsequently this was presented within PBA Technical Note 3 to consultees on 2nd May 2018. |
| HighE response to PBA TA Scoping Report (March 2018) | Additional information is required on how lorry movements associated with the site have been calculated. | This was presented within PBA Technical Note 3 to consultees on 2nd May 2018. This is summarised in **Section 6.4** of this Chapter.<br><br>HighE has stated that they would comment on the submitted ES and TA. |
| **London Borough of Bexley** | | |

| Reference | Comment | Response |
|---|---|---|
| LBB response to PBA TA Scoping Report (April 2018) | Points were made over the collection of traffic data and ensuring the correct peaks were collected including a potential new junction. | The collected traffic data has been assessed to determine the relevant local network peak periods. Analysis has been undertaken for these periods and presented within the TA. For this Chapter an assessment is made of the impacts on driver delay in the peak period – reported in **Section 6.9**. |
| | The composition of vehicle types used to transport operational materials needs to be justified, including why no part loads have been assumed. | The composition of vehicles for movement of material is reflective of how RRRF currently operates and how REP is expected to operate.<br><br>Additionally, the assessment also reflects a 100% by road scenario with the majority of waste being transported by 7t refuse collection vehicles. Whilst this is typical for local municipal waste, commercial and industrial waste would normally be transported in 20t articulated vehicles. For this reason, the impact assessment is presenting a reasonable worst case.<br><br>Part-loads represent a significantly inefficient means of transportation which the Applicant would not pursue. |

| Reference | Comment | Response |
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| | There are no details of the duration of the construction phase or detailed breakdown of vehicle movements. | Further details on the construction phase have been included in the TA to ensure the full impacts of the construction movements are assessed. This is also covered in the outline CTMP – for further definition within a finalised CTMP, secured through the DCO.<br><br>Details of the construction phase are also outlined in **Section 6.4** of this Chapter. |
| | A review is requested as to whether it would be possible to enable a right-turn entry from Picardy Manorway into Norman Road. | As discussed at the TfL pre-application meeting on 1st May 2018, a right-turn entry from Picardy Manorway into Norman Road is not required for the Proposed Development and is therefore not explored within the TA. |
| | An Operational Delivery and Transport Management Plan will be required. | The TA considers the implications of the 100% by road scenario as a reasonable worst case for the operation of REP. This ES also appraises the impacts of the operation of the reasonable worst case scenario. The TA further includes an outline review of the impact on the network of the operational methods and processes that would be adopted at REP and incorporates both the movement of waste and also standard delivery |

| Reference | Comment | Response |
|---|---|---|
| | | and servicing movements for the Proposed Development. Therefore, the associated impacts that would be considered by a standalone 'Operational Delivery and Transport Management Plan' or Delivery and Servicing Plan are addressed within the TA. |
| **Transport for London** | | |
| TfL response to PBA TA Scoping Report (April 2018) | Two additional junctions were requested for local junction modelling. | These two additional junctions were added to the survey brief and data collected in April 2018. |
| TfL Pre-Application Meeting (May 2018) | A formal response from TfL is awaited following a pre-application meeting on 1st May 2018; however, the comments broadly reflected the earlier comments made via email (discussed above). | A formal response was received from TfL on 18th May 2018. Further details on assessment methodology have been discussed in subsequent email conversations with TfL and these discussions have been incorporated as part of the ES and the TA. |
| **Royal Borough of Greenwich** | | |
| RBG (December 2017) response to EIA Scoping Request | Confirmation of whether the abatement product is weekly, monthly or yearly. | The Air Pollution Control Residue (APCR) equates to an output of 3% relative to all waste input to the Energy Recovery Facility (ERF). The total maximum throughput is 805,920 tpa for the purposes of the 100% by road assessment. 3% of this is c24,500 tpa and would most likely continue to be transported in 20 t tankers by road to Brandon, Suffolk four times per day from REP. |

| Reference | Comment | Response |
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| **Section 42 Consultation Responses** | | |
| **Kent County Council** | | |
| KCC response to PEIR (30 July 2018) | Such incidents [on the M25/A282 mainline approach to the Dartford Crossing] cause traffic to find alternative routes across the Dartford road network, including through the town centre to Junction 1B. Therefore, the routing of HGVs, resulting in any increase in HGV movements associated with the proposal, will need to be carefully considered. | By its nature an "incident" on the strategic network is unplanned and unquantified and so there are an infinite number of resultant impacts.<br><br>Temporary disruption to the network is not a matter that can reasonably be assessed against, given that this affects the entire traffic flow at any random point of disruption, regardless of origin and destination. Without prejudice to this assertion, a qualitative consideration is included in this Chapter and the TA as requested. |
| | There are a number of assumptions which underpin the predicted trip generation rates as referenced within the PEIR (para 6.4.10, p 20). Further detail and explanation is required in order to confirm the predicted increase in vehicle movements, particularly HGV movements. | The volume of Heavy Goods Vehicle (HGV) traffic generated by the construction and operation of REP has been determined by comparison with RRRF. These are set out and reported in this Chapter at **Section 6.4** and in the TA. |
| | During construction, the PEIR assumes that 50% of construction material transported by road is via the M25; however, it is not known how this figure is derived. | This assumption has been made in the absence of more specific information being currently available on vehicle routeing of materials. The assumption reflects the location of REP in relation to London and |

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| | | the south east. The balance of flow would vary depending on the contractor and their suppliers, which cannot be determined at this stage of design. Flows would also vary depending on the tasks and programme – with the concentration being on mass materials during the early works and site preparation, to more specialist materials during the later fit out and commissioning phases. Where practicable the contractors would seek to source material and plant from suppliers closer to REP. |
| | The PEIR refers to the "applicant's previous experience" of an Energy Recovery Facility and "the location of the existing WTS sites" which will affect the vehicle distribution (para 6.4.19, p 23). It also sets out the vehicle distribution of the Anaerobic Digestion facility (para 6.4.25, p 24). KCC requests that further details are provided as to how the assumption of a 70% Bexley - 30% Central London and South East split has been adopted for the green/food waste input transported by road. | This assumption is that green waste is anticipated to be transported from the more local boroughs. The actual origin of the green waste stream cannot be determined at this stage as this would depend on the waste market. Future contracts might have their source in other boroughs. The AD facility could be used to provide for LBBs needs, considering that LBB are interested in having an 'in borough' AD solution for its food and green waste which currently is exported out of borough. |
| | Further details are sought on the reasonable worst case scenario for | These assumptions are established from |

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| | vehicle trips by road, particularly on the 35% Tilbury - 65% Central London split for waste arriving at REP.<br><br>In addition, KCC requests further details as to how the annual throughput of 805,000 tonnes for the Energy Recovery Facility and 40,000 tonnes for the Anaerobic Digestion Facility is derived. | comparison with the operations at RRRF as a base assumption. Further information is provided at **Section 6.4**.<br><br>The throughput for REP has been established by the Applicant and the technology provider on the basis of the maximum scale of development and processing technology that could be accommodated with the space available at REP. |
| | The PEIR refers to PBA Technical Note 3 which it states provides further information on how lorry movements have been calculated. KCC requests a copy of this Technical Note. Reference to the Personal Injury Collision (PIC) review (paragraph 6.6.10, p 36) will need to include the KCC network of A206 University Way/Bob Dunn Way and A282 Junction 1A, for the past three years. | Technical Note 3 was provided to KCC, DBC, LBB and TfL on 02 May 2018. The information and assumptions have since been used to inform this ES and the TA.<br><br>The Personal Injury Collision (PIC) review is included within the TA and summarised in this Chapter. The review includes A206 Bob Dunn Way. The low percentage impact at A282/M25 junction 1A, derived by the operation of REP, would not materially affect the pattern of collisions in that location. The assessment of impact is reported at **Section 6.4** of this Chapter. |
| | The Traffic Management Plan (TMP) needs to be carefully considered and will be used by KCC to understand the trips associated with the proposals on Kent's | The proposed trip distribution is derived on the basis of existing flows to RRRF and on observed |

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| | road network. It would be beneficial if the collection/disposal locations are made available in order to consider the routing of vehicles. Further details on the route plans proposed (para 6.10.6, p 45) should be provided. A strategy of how the site operator can deal with incidents on the network to alter HGV movements would be appropriate to mitigate the impact of the development and would need to be included in the TMP. | traffic data. The balance of distribution for REP could vary depending on the contract at the time. The TA and outline CTMP, indicates the routeing for goods vehicles and complementary measures to guide and control access during construction. Vehicle routeing during the operational phase would reflect the contracts at that time – with movements concentrated on the local and strategic road network.<br><br>Section 6.9 of this ES Chapter considers the implications of incidents on the network. |
| | The County Council's Streetworks Team will need to be involved in the co-ordination of the proposed roadworks within Kent. It is not known how long the construction phase is for the cable route on the A206 Bob Dunn Way and careful management will be necessary to ensure minimal impacts on the sensitive network. Detailed construction details will be required to minimise disruption on Kent's road network. | The Applicant met the KCC Streetworks team on 5th July 2018, in a joint meeting with DBC, to discuss the cable construction process and its relationship to the DCO. It was agreed that the Streetworks team should be consulted via the KCC planning team and that UK Power Network's (UKPN's) contractor would continue to liaise directly with the KCC's Highway Engineering team to inform their consideration of the Electrical Connection options. It was noted by all present that the KCC Streetworks team would have the opportunity to comment on any of the |

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| | | Applicant's proposed amendments to the Streetworks process in their draft DCO following acceptance of the Application.<br><br>Detailed phasing of the deliveries of the Electrical Connection would be confirmed and agreed with the Streetworks team through a CTMP covering those works.<br><br>Further details are provided in the TA and the phasing of the delivery of the Electrical Connection would be agreed through the CTMP (secured through DCO Requirement 12). |
| | With regard to the options for the cable route, Option 2A would reduce the impact on the highway network for the construction and any future maintenance of the associated infrastructure. However, it would result in a greater impact on The Bridge development and it is not known how this would impact Fastrack bus services and other local roads. KCC supports a route for the electrical connection that avoids the constraint of the Cray Mill Bridge, as this would minimise the disruption during construction to the approach of the A206 Bob Dunn Way/Burnham Road roundabout. | The TA includes a qualitative review of each route for appraisal of the transport implication taken in the round with other aspects.<br><br>All current options for the Electrical Connection cross the 'Cray Mill Bridge' on the A206. Suitable temporary traffic management would be agreed with LBB (and KCC – where this is expected to extend into Dartford Borough).<br><br>Assessment of effects to the Fastrack bus service is |

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| | | undertaken in **Section 6.9** of this Chapter.<br><br>Appropriate notifications would be made through the Local Highway Authorities' (LHA) systems or modified process secured through the DCO. |
| | The proposed REP is unlikely to have a significant impact on Kent's PRoW network, as the main site is located in the neighbouring London Borough of Bexley. However, ECR option 1 and option 2B both pass through Kent and are likely to affect PRoWs DB1, DB2, DB3 DB5, DB8, DB50 and DB56. | The construction of the Electrical Connection is anticipated to have negligible impact on the PRoW network. A number of PRoWs abut the route but only two cross it.<br><br>The proposed works compound accessed from A206 would interact with DB5. The route of DB5 would be managed within the layout for the compound and its route under the A206 should be maintained.<br><br>If Electrical Connection route option 1A across Crossness Nature Reserve is implemented, a temporary closure of FP2 is anticipated, with suitable diversion using Norman Road and FP4. Depending on the final alignment FP1 could also be temporarily closed or the terminal point diverted.<br><br>Where the detailed design of the route and the schedule of works show direct impacts on other PRoWs (such as DB1 and |

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| | | DB3) these would be provided for in the temporary traffic management measures – either through protected corridors or suitable short term diversions.<br><br>The protective measures and mitigation would be agreed with the LHA and LPA as part of the CTMP. |
| | The PEIR states that the final ECR would "either cross or be adjacent to a number of PRoW" (para 6.6.21, p 37). Whilst it is anticipated that the connection will be underground and not require regular maintenance (Para 6.8.31, p 44), there is still a possibility that the connection may develop a fault in the future and need repairing. With this in mind, it is requested that the ECR is not positioned along the definitive alignment of a PRoW. This would prevent long term disruption for path users, as the surface of the PRoW would not need to be disturbed in order to access the ECR and complete repair works. | As with the construction phases for the Electrical Connection any interaction with PRoWs would be subject to appropriate traffic management measures associated with a particular fault.<br><br>UKPN, who would implement the Electrical Connection on behalf of the Applicant, has confirmed that the entire route underground would be ducted. This would mean that, in the unlikely event of a fault, the cable could be accessed (and replaced if necessary) from access covers spaced along the route, without the need to disturb the ground above.<br><br>Appropriate temporary routeing or diversions for PRoWs over short distances around access covers would seek to avoid interactions with the PRoW network during |

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| | | maintenance operations where practicable.<br><br>Given the length of the Electrical Connection, its ducted nature, and the likely limited interaction of access covers with PRoW, the likelihood of a fault occurring which would impact a PRoW is considered very unlikely. |
| | Where temporary closures [of PRoW] are necessary, convenient diversion routes should be provided for the public to reduce disruption for path users. It is therefore encouraging to note in the PEIR that alternative diversion routes would be provided for the duration of temporary path closures. | Noted, however, PRoWs are not anticipated to require full closure (as they are generally only expected to require localised diversions where the footpath crosses the working area) during construction of the Electrical Connection. However, Electrical Connection route option 1A could be implemented across the Crossness Nature Reserve. In that instance footpath FP2 could require a longer distance temporary closure with a suitable diversion along Norman Road and FP4. FP1 could be affected – subject to detailed design arrangements. |
| | On completion of the construction work, the surface of the PRoW will need to be restored to its original condition (or better) before the path is reopened to the public. The cost of such restoration is to be met by the applicant. | Noted |

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| | The applicant is also reminded that they will need to apply for a Temporary Traffic Regulation Order (TTRO) before they can close a PRoW. Please note that a TTRO application would take a minimum six weeks to process, as the closure notices must be advertised to the public in advance. KCC's PRoW and Access Service would welcome future engagement with the applicant to discuss this process. | The dDCO provides for temporary closures and diversions of PRoW. The applicant will liaise with KCC regarding the exercise of this power. |
| **Dartford Borough Council** | | |
| DBC response to PEIR (26 July 2018) | The assessment should also include consideration of incidents on the wider network and the resulting congestion e.g. at junction 1a and the impact that additional traffic may have on reassignment of traffic to the local network at the time of incidents. | The quantum of traffic generated by the operation and construction phases of REP would not create a perceptible impact on the network at A282/M25 junction 1a such that traffic is reassigned.<br><br>Section 6.9 of this ES Chapter considers the implications of incidents on the network. |
| | Requests that the traffic flows of the Howbury Strategic Rail Freight Interchange are incorporated into the assessment. | The committed developments as provided by DBC and LBB have been included with the assessment where the level of movements on the assessed network is judged to be significant (i.e. in excess of 50 vehicles during the peak period). This did not include Howbury Strategic Rail Freight Interchange, which is currently in appeal and, therefore, not currently consented. In accordance with the Infrastructure EIA |

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| | | Regulations 2017, only "*existing and/or approved development*" schemes should be considered as part of the cumulative effect assessment.<br><br>On initial review the predicted impact from Howbury Strategic Rail Freight Interchange would not materially alter the impacts on the junctions within the vicinity of REP. |
| | The Council would seek mitigation to reduce construction traffic impact by ensuring that where possible construction materials arrive by river and that there are controls over HGV routing to the site during construction. | The TA indicates that opportunities are to be taken for river transport, where feasible for construction. The assessment within the TA however considers the peak period of the construction programme Month 13 for movement by road by way of a reasonable worst case assessment. This period of construction includes the movement of an additional proportion of materials by river.<br><br>A prescribed routeing is included in the outline CTMP. |
| | The Council will need to understand the detail of the impacts of the impacts of the road closures [resultant from construction of the Electrical Connection] on the traffic in the area and the routing of Fastrack, as well as the physical impacts on archaeology and biodiversity. | The detail of the phased delivery of the Electrical Connection and the temporary implications on bus services would be agreed with DBC and KCC through the development of the sequencing UKPN works. However, a full |

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| | | closure on the Fastrack route is not anticipated.<br><br>Assessment of impacts to Archaeology and Terrestrial Biodiversity are included in **Chapters 10** and **11**. |
| | With regard to the proposed routing along Bob Dunn Way the assessment should assess the impact of the lane closure, not only during normal traffic conditions but also when an incident occurs on the strategic network and the traffic queues that could result and the consequent potential reassignment of cars onto the local road network and through Dartford town centre. | The ES includes a prediction of the qualitative impact of the construction of the Electrical Connection. The works would be mobile and temporary and so a quantitative assessment has not been undertaken.<br><br>The Electrical Connection would be located underneath one lane of traffic at any given location. Where crossing from one lane to the other would be required, lane closures would be managed accordingly. Therefore, construction would, in the westbound or eastbound carriageway along Bob Dunn Way, typically only cause direct disruption to that flow direction. Section 6.9 of this ES Chapter considers the interaction of the construction phases of REP with road incidents.<br><br>By its nature an “incident” on the strategic network is unplanned and unquantified and so there are an infinite number of resultant impacts. |

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| | | Based on professional judgement it is considered that a disruption to the network is not a matter that can reasonably be assessed against, given that this affects the entire traffic flow at any random point of disruption, regardless of origin and destination. Without prejudice to this assertion, a qualitative consideration is included in this Chapter and the TA as requested.<br><br>It is concluded that the likelihood of the Electrical Connection works coinciding with an incident to then cause vehicles to divert to routes through Dartford is low and should not require detailed quantitative analysis. |
| | The Environment Impact Assessment should also consider the socio-economic impact of such queuing on the residents and businesses of the Bridge who have to use Bob Dunn Way for access. | The impact of the delivery of the Electrical Connection would be the same as the delivery of a standard utility run, which due to the nature of such works have the potential to cause interruptions. The specific link has been assessed for impacts of driver delay within this Chapter. Such an assessment is considered to act as a proxy for Socio-economic effects.<br><br>An assessment of socio-economic effects associated with the |

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| | | Proposed Development is provided in **Chapter 14.** |
| | Also concerned as to the impacts of lane closures on Thames Way in the London Borough of Bexley and so will also be seeking to consider the detailed assessment of these impacts and the detailed routing, with particular regard to the impacts on the constraint caused by the Craymill Bridge. | The impact of the delivery of the Electrical Connection would be localised at the working area and traffic management arrangements typical of a utility installation under existing roadworks and permitted development rights of statutory undertakers. An assessment of impacts relating to the Electrical Connection on the network as agreed within the TA scoping is presented in Section 6.9. and within the TA (**Appendix B.1**). |
| | The other route option is along the Fastrack route, which is a dedicated rapid transit bus route through the Bridge development and across the Borough. The Council would request that the impact of any lane closures on Fastrack operation is considered, not only through the Bridge but on its wider route. This should also take into account that the service frequency for Fastrack A is likely to have increased by 2022. | It was discussed through consultation with DBC and KCC that the final CTMP secured in the draft DCO (**Document Reference 3.1**) would address possible temporary lane closures.<br><br>A qualitative review is provided in Section 6.9 of this Chapter, considering the possible interaction and impact on the Fastrack service, including reference to a possible increased service frequency of Fastrack Route A.<br><br>The CTMP, to be agreed with the LHA and LPA, would set out the details |

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| | | and phasing of the delivery of the Electrical Connection, including temporary lane closures. This would identify the period of impact on the Fastrack service. An initial commentary on the likely impact on Fastrack Route A is given at Section 6.9.69 of this Chapter. |
| **Highways England** | | |
| Highways England response to PEIR (30 July 2018) | "Requested that HighE policy documents that describe the approach taken to HighE's engagement in the planning system are set out in the TA including:<br>- DfT Circular 02/2013 The Strategic Road Network and the Delivery of Sustainable Development (Sept 2013)<br>- Planning for the future – A guide to working with Highways England on planning matters (Sept 2015)" | HighE has been engaged in the derivation of the transport evidence. The level of impact from the construction and operation of REP would be imperceptible on the HighE network.<br><br>The TA establishes the documents which have been used to inform the assessment and are referenced at Section 1.5.8 of the TA. |
| | Seeking confirmation that there is no need for assessment of the A282 Junction 1A. Requirement that the TA demonstrates that REP would not materially affect the safety, reliability and/or operation of the SRN. | The level of impact from the construction or operation of REP would be imperceptible on the HighE network at A282/M25 Junction 1a. This is demonstrated within the TA. |
| | Request for 5 years of collision data to be assessed rather than the 3 years stated within the PEIR. | The scope of collision data on the local highways has been confirmed with TfL, LBB, KCC and DBC through the TA scoping process. It is not |

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| | | considered necessary to extend this, reflecting the predicted negligible impact on the HighE network. |
| | Given that a flat profile has been assumed, a robust Freight Management Plan should be produced to demonstrate that arrivals and departures can be accommodated outside of the peak periods thus removing any peak period arrivals and departures. | When assessing the peak period impacts for non-worker movements, a flat profile has been assessed for the operational phase. The TA and this Chapter of the ES consider a reasonable worst case scenario of 100% of waste import by road and assess that scenario during the network peak periods. It is demonstrated that such an operation would not have residual significant impacts and as such operating with goods vehicle movements outside the peak period would further reduce the residual peak period impacts. On this basis, it is not considered necessary to assess the impact of movements outside the peak periods. |
| | The type and frequency of the hazardous materials that could be travelling through the Dartford tunnel will need to be set out in the document to ascertain if the loads are permitted to travel through under escort, or unescorted. You may want to reference the tunnel category for Dartford to be sure that it is appropriate for all materials that might be transported to REP. | The haulier responsible for transporting the APCR has confirmed that there would be no restrictions on the movement of the materials (one or two movements per day) through the Dartford Tunnel to and from REP, as evidenced from the existing APCR movements associated with RRRF. |

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| **London Borough of Bexley** | | |
| LBB response to PEIR (26 July 2018) | It is disappointing that a review to consider the possibility of providing a right turn entry into Norman Road from Picardy Manorway will not be explored as the applicant does not believe this to be warranted. | The principle put forward by LBB for potential cross connection on Picardy Manorway to Norman Road has been discussed during stakeholder meetings with LBB. The scale of the Proposed Development's impact on Picardy Manorway is not sufficient to require the implementation of a new junction at this point. |
| | There are concerns that the number of potential operational vehicle movements that could be generated by these proposals are being underestimated and therefore the impact on the highway network not fully considered. | The operational predictions for 100% waste import by road are based on experience from RRRF and considered to be a reasonable worst case. The derivation of the predictions has been shared with stakeholders through the TA scoping exercise, the PEIR and is now explained within this Chapter and in the TA. It should be recognised that it is likely that the movements are over estimated as they are based on 805,920 tpa (reasonable worst case scenario) rather than the nominal throughput of 655,000 tpa. Additionally, they are assessed on 100% by road basis when in reality this is highly unlikely. |

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| | Table 6.19 indicates that an additional 321 vehicles per day would use Norman Road in the worst case scenario (i.e. 100% of the additional waste being transported by road). However, Plate 6.1 and 6.3 indicates that there could be approximately 331 RCVs per day visiting the site to deliver waste to the ERF and Anaerobic Digestion Facility. There will also be staff vehicles. In addition if the waste were to be delivered by RCVs (waste collection vehicles) these are unlikely to operate 24 hours and for 7 days a week. | Table 6.19 of the PEIR has been revised for this ES. **Table 6.11** of this Chapter provides an updated projection of the daily operational traffic flow for goods vehicles and worker traffic. The assessment uses Refuse Collection Vehicles (RCVs), which have a lower capacity by volume, requiring more movements in comparison to articulated vehicles which would be more likely to be used. Therefore, the assessment includes a particularly conservative 100% by road scenario on vehicle movement associated with the waste import stream – which would occur on a 24hr basis. Other sundry movements would occur only during the daytime and workers would travel to and from REP at shift changes in the morning and evening. |
| **Royal Borough of Greenwich** | | |
| RBG response to PEIR (26 July 2018) | On the basis that the existing RRRF operates with approximately 75% of the waste to be processed arriving by River (with 25% by road) a similar amount is expected by the REP. It is recommended that unless this can be controlled to occur in practice that alternative scenarios are tested i.e. 50% by road and river. While no indication is given of the amount of construction materials to be transported by River opportunities should be taken to | The Applicant has a long history as a river based logistics company and has a commercial imperative to bring in waste by river. However, the operational scenario tested within this Chapter of the ES and TA assumes '100% by road' of waste on a reasonable worst case basis. |

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| | maximise its use. Also given the origins of construction suppliers is unknown while 50% of road traffic is assumed to be from the east and 50% from the west, further scenarios should be tested with 60/40% splits. | Additionally, a '100% by river' scenario is assessed in the NRA attached at **Appendix B.2** to this Chapter.<br><br>Opportunities to move materials by river during construction would be explored. The assessment of construction travel impacts is presented as a reasonable worst case scenario, – with the construction period at the anticipated peak period of Month 13. The assessment of construction traffic has assumed a 50% east / 50% west distribution. During the construction peak (Month 13) it is predicted that there would be in the order of 22 goods vehicle visits per day (44 movements). Alternative distribution scenarios (e.g. 60/40% split) would not materially affect the resultant network impacts. During construction a proportion of materials would potentially be transported by river. The NRA is attached to this Chapter at **Appendix B.2** and is summarised within Section 6.9. |
| **Royal Mail** | | |
| Royal Mail response to | The forthcoming DCO application offers a requirement that Royal Mail is pre-consulted by Cory Riverside Energy on any proposed road closures/ diversions/ | Noted. This is included in the outline CTMP. |

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| PEIR (20 July 2018) | alternative access arrangements, hours of working and the content of the final Construction Traffic Management Plan (CTMP). | |
| | The forthcoming DCO application offers a requirement that the final CTMP includes provision for a mechanism to inform major road users about works affecting the local network (with particular regard to Royal Mail's distribution facilities in the vicinity of the DCO application site). | The Royal Mail would be notified of the works and schedule for the construction of the Electrical Connection. |
| **Gravesham Borough Council** | | |
| GBC response to PEIR (30 July 2018) | There are potential indirect impacts in that the installation of the electrical connection to Littlebrook may cause disruption to traffic along the A206 and in the vicinity of the M25 junction 1A (Dartford Crossing). It is understood that this issue has already been raised by Dartford Borough Council, Kent County Council, and Highways England and that this is being addressed. On this basis, Gravesham would not wish to make further comment in this respect, as any issues arising will be dealt with by those parties | Noted. |
| | Whilst this authority fully supports the use of the River Thames for the transportation of both passengers and materials subject to a consideration of impacts, it would be useful if the EIA that accompanies the actual application could set out what the implications are in terms of use of the river associated with the Riverside Energy Park (i.e. types of vessel/number of trips/impact relative to alternatives etc.) so that this can be fully understood. | This is included in the NRA, attached to this Chapter at **Appendix B.2** and summarised at Section 6.9. |
| | As part of this, it is noted that Cory's incinerator bottom ash (IBA) from its existing incinerator is already being taken to an incinerator bottom ash | This point is addressed in the NRA, attached to this Chapter at **Appendix B.2** |

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| | processing facility at the Port of Tilbury (PoTLL) in Essex, and it is intended that waste arising from the operation of the Cory Riverside Energy Centre will also be transported by river for processing at Tilbury Docks. We assume that the processing of this additional material from the Riverside Energy Centre would not exceed the capacity limit set for that facility at the PoTLL. If this isn't the situation, we assume that this would need to be considered within the EIA for the Riverside Energy Centre project. | and summarised at Section 6.9. |
| | Gravesham would also point out that there is a proposal for a Marine Conservation Zone (MCZ) to be designated at St Clement's Reach, Swanscombe through which barges etc. would need to pass to reach Tilbury Docks. Whilst this is unlikely to raise any issues, it should presumably be included in the EIA so that the baseline is up to date. | Assessment of the proposed Marine Conservation Zone was scoped out of assessments as marine works are no longer proposed – see **Appendix A.1**. |
| **Minor Refinements, Non-Statutory Consultation** | | |
| **London Borough of Bexley** | | |
| LBB response to Supplementary Areas Consultation (13 August 2018) | The submitted supplementary information includes minor changes to the previous indicative application boundary. These specifically relate to the electrical connection route and comprise additional land labelled as 'A' on the drawings. The extent of some of these additional areas fall outside of the adopted highway and the applicant would need to contact the individual land owners and arrange appropriate easements for the apparatus.<br><br>There are also some minor extensions to the previous indicative boundary marked as 'B' areas. These areas all lie within the adopted highway. | Noted. The Applicant would negotiate suitable easements as required. |

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| | The Highway Authority raises no objection to the proposed amended indicative application boundary. | |
| | The use of council bridges and footbridges etc. is allowable but the method to be used would be dealt with on an individual structure by structure basis and a charge would be required for the council and its consultant to provide resources to assess and approve each situation. | On behalf of the applicant, UKPN is liaising with relevant authorities to obtain structural details that will inform ongoing Electrical Connection engineering investigations. The use of any bridges would be subject to the council agreeing the detailed methodology. |
| Highways England response to Supplementary Areas Consultation (30 August 2018) | Thank you for your email of 1 August concerning the minor changes made to the proposals. We have looked at the supplementary information and the changes to the indicative application boundary, all the additional land take involves land outside of the Strategic Road Network and therefore we have no further comment to make on the proposals at this time. | Noted. |
| KCC response to Supplementary Areas Consultation (07 September 2018) | KCC has no further comments to make on the Preliminary Environmental Information report (PEIR) or the Supplementary Information to the PEIR. | Noted. |
| Network Rail response to Supplementary Areas Consultation (07 September 2018) | Network Rail has been reviewing the information to date and at this stage it is not sufficiently detailed to fully assess potential impacts of the scheme on the railway and further information will be required to properly respond on the likely impacts of the proposed scheme.<br><br>Network Rail will be seeking protection from the exercise of compulsory purchase powers over operational land | The Applicant and UKPN would engage with Network Rail on the detailed proposals during the refinement of the programme for construction of the Electrical Connection.<br><br>The Electrical Connection options under review |

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| | either for permanent or temporary purposes. In addition, Network Rail will wish to agree protection for the railway during the course of the construction works and otherwise to protect our undertaking and land interests. Network Rail reserve the right to produce additional and further grounds of concern when further details of the application and its effect on Network Rail's land are available. In addition, any rights for power or other lines under, over or alongside the railway line will require appropriate asset protection measures deemed necessary by Network Rail to protect the operational railway and stations and further the necessary associated easements and Clearances. We have standard protective provisions which will need to be included in the DCO as a minimum. Consideration should be given to ensure that the construction and subsequent maintenance can be carried out without adversely affecting the safety of, or encroaching upon Network Rail's adjacent land. In addition, security of the railway boundary will require to be maintained at all times. | include 5 interfaces with Network Rail's interests:<br><br>■ Queens Road<br>■ Moat Lane-Whitehall Lane<br>■ Northend Road<br>■ Howbury Lane<br>■ Thames Road<br><br>The engagement process with Network Rail would be secured as part of the DCO. Protective Provisions for the benefit of Network Rail are included in the dDCO and have been provided to Network Rail on 31st October 2018. |
| RBG response to PBA TA Scoping Report (March 2018) | Query the likelihood of 24-hour deliveries to the ERF and 30% of input for the Anaerobic Digestion facility. | The existing RRRF currently operates with 24-hour deliveries and it is expected that REP would also operate in the same way. This is also expected to apply to the 30% of green/food waste transported from Central London and via the M25. The commercial waste supply market is set up such that this is possible and potentially could be more time efficient for some customers too. |

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|---|---|---|
| | Suggest that there will be fluctuations in daily flow and analysis should be undertaken of peak hour movements. | As part of the TA, local junction capacity modelling has been undertaken during the morning and evening peak periods, with percentage link impact assessments carried out for both peak and daily flows. |
| | Query the suitability of the jetty in accommodating the expected volumes of material. | The existing jetty is underutilised at present and has spare capacity throughput. It is used for approximately 12 hours a day but has planning consent for 24 hour working. Thus, the jetty can accommodate the expected volumes of materials and is assessed in the NRA at **Appendix B.2**. |

## 6.4 Reasonable Worst Case Parameters and Assessment

6.4.1 The existing RRRF typically operates with a minimum of 75% of waste input delivered by river and it is expected that REP would normally operate with a similar waste input ratio of 75% by river and 25% by road. River waste input to the ERF would be transported in sealed containers on barges from riparian WTSs along the River Thames in Central London. This scenario (75% by river / 25% by road) is referred to as the 'nominal' scenario, but is still conservative, as only Refuse Collection Vehicles (RCVs) are considered within the road element which have a smaller transport volume than the more commonly used articulated vehicles. This approach ensures that the 'nominal' scenario provides a more robust case for assessment.

6.4.2 In addition to the nominal scenario, a 100% by road 'reasonable worst case' assessment for the operational phase has been conducted which incorporates the assumptions set out below. The road-based assessment considers the same origin of material – including waste from the London Boroughs which currently feed into the WTSs along the Thames. It also includes the transfer of residual material between REP and Tilbury.

6.4.3 Food and green waste delivered to the Anaerobic Digestion facility would be via road in both the 'nominal' and 'reasonable worst case' scenarios, as discussed below.

6.4.4 Road-based waste input would be transported in RCVs or articulated lorries from the local area including LBB, RBG and DBC. However, in order to assess a 'reasonable worst case' within the scenarios described above, waste input is considered on the basis that only RCVs are used, as they have a smaller capacity than articulated vehicles (and therefore would result in a higher number of new movements).

## Construction Phase

### REP Construction Trip Generation and Distribution

6.4.5 It is envisaged that the reasonable worst case scenario for construction activity is represented by the peak month of construction in terms of vehicle trip generation. This would be Month 13 during which the workforce movements and movement of materials by road result in the highest combined trip generation. The assessment has been based on a construction working day of 08:00 to 18:00hrs per day, as a robust case scenario since morning movements associated with the REP construction would coincide with the end of the morning highway network peak hour. However, the Applicant's contractor could adopt a construction working day of 07:00 to 19:00, which would reduce construction related trip impacts during the morning highway network peak periods and delay departure until after the evening network peak period.

6.4.6 At the peak of construction (Month 13), for the purposes of this assessment 552 parking spaces are assumed to be provided for a total of 1,097 workers. It has been assumed that one parking space equates to one arrival and one departure trip per day (552 inbound and 552 outbound, resulting in 1,104 movements per day). This parking provision sets the daily peak number of workforce car/van movements. On the assumption that the contractors operate on a single shift during the working day, there would be no turnover of parking spaces. If a different working pattern were used, parking space turnover would occur outside of peak arrival or departure times and are not anticipated to add significantly to the total number of daily workforce movements. Parking space turnover would therefore not impact on the assessment of severity.

6.4.7 The travel pattern of these workers is, however, not yet known and therefore these journeys have been distributed along the highway network based on Census 2011 Origin-Destination data for travel to work for car drivers working in Bexley 003 middle layer super output area (MSOA).

6.4.8 Census 2011 data has been used to determine the car driver distribution for MSOAs generating 10 or more movements to a workplace in Bexley 003 MSOA. The resultant distribution onto the local highway network is indicated in **Table 6.3**, which has been applied to the car driver trip generation associated with the construction workforce.

Table 6.3: Staff Vehicle Trip Distribution

| Link | Distribution (%) |
|---|---|
| Yarnton Way | 10% |
| Picardy Manorway | 37% |
| Bronze Age Way | 47% |
| Eastern Way | 6% |

6.4.9 It is estimated that approximately 14% (157) of workers during Month 13 would be from the EU and other areas outside the UK, while approximately 33% (361) workers would be from within Greater London and 53% (579) from the UK (excluding Greater London). It is expected that many of the construction workers from abroad and much further afield within the UK would stay nearby in hotels where it would be possible to car share or use non-car modes to access to REP site. Workers from within Greater London would be encouraged to travel by non-car modes wherever reasonably possible.

6.4.10 Furthermore, there will be limited capacity for worker car parking which will further encourage access by non-car modes. Illegal parking on the public highway would be monitored by the Applicant and controlled by LBB as required.

6.4.11 In addition to construction workforce movements, during Month 13 a total of 22 construction material arrivals per day (44 movements per day) would be generated. A breakdown of expected construction vehicle movements by each month of the construction programme for REP and Main Temporary Construction Compounds for the movement of materials has been estimated.

6.4.12 Construction materials would potentially be transported by both river and road. As stated within **Section 5.4**, no works are proposed within the River Thames to receive abnormal loads and so the movement of large plant and equipment, would be focussed on movement by road. Abnormal Indivisible Loads (AILs), would be transported along routes as directed by the police, LHAs and structures owners as required – established through the standard notification procedures. Movements would often be overnight, and would be guided by a convoy escort if required. Advanced notice would be given, depending on the load to be moved, to appropriate authorities, such as the police, highway authorities and bridge and structure owners like Network Rail. AILs would be few in number and distributed across a series of tasks through the construction period. AILs would include items such as generators, turbines, boiler infrastructure and large plant.

6.4.13 At this stage no construction contractor has been appointed, the origins and destinations of construction materials are therefore unknown and so an even distribution has been applied of 50% west to Eastern Way and 50% east to Bronze Age Way and onto the M25. A more complete breakdown of the

construction supply chain and associated vehicle trip origins would be provided through the detailed CTMP, the preparation of which is secured by a requirement in the draft DCO' (**Document Reference 3.1**).

6.4.14 **Table 6.4** presents the daily trip generation distributed along the highway network for Month 13 of the outline construction programme. The assessment is based on the above outlined number of construction workforce parking provision (i.e. 552 parking spaces, assumed to generate 1,104 movements per day) and workforce trip distribution assumptions and the material movements anticipated to take place in Month 13 of the outline construction programme (i.e. 22 inbound and 22 outbound movements, resulting in 44 movements per day) and their distribution assumption. The resultant total movements would be 1148 movements per day.

Table 6.4: Distribution of REP Construction Traffic (Month 13) (Workers and Non-worker traffic)

| Link | Total Daily Movements |
|---|---|
| Norman Road (north of Picardy Manorway) | 1148 |
| A2016 Eastern Way (west of Yarnton Way) | 88 |
| Yarnton Way (south of A2016 Eastern Way) | 110 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 1148 |
| A2016 Picardy Manorway (east of Norman Road) | 1148 |
| B253 Picardy Manorway (south of Horse Roundabout) | 408 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 540 |
| A206 Northend Road (north of A2000 Perry Street) | 540 |
| A2000 Perry Street (south of A206 Thames Road) | 0 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 540 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 540 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 0 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 540 |

| Link | Total Daily Movements |
|---|---|
| A206 Bob Dunn Way (east of Marsh Street N) | 540 |

### The Electrical Connection

6.4.15 The Electrical Connection route (ECR) would connect REP to the electrical distribution network at the existing Littlebrook substation in Dartford. This would generate temporary impacts on the highway network during the construction phase. It is anticipated that the cables would generally be laid underground at approximately 1.2 m below the ground surface except where there is potential for directional drill, or localised deeper trench to be required to pass below a specific constraint.

6.4.16 It is anticipated that, regardless of whether the cable is installed in the highway, verge or footway, that a single lane closure would normally be required. A review of the route options is currently being undertaken by the Applicant and UKPN to assess the most appropriate route, including intrusive trial holes Further details on how the Electric Connection may impact the highway network is included in the TA for the options.

6.4.17 It has been assumed that people working on the Electrical Connection and materials movements would access the active works area directly. However, assuming the construction of the connection would move along the preferred route, personnel may travel to the Cable Route Temporary Construction Compounds if convenient relative to the active work area.

6.4.18 At the time of lodging the application for DCO, the likely location of the Electrical Connection works during Month 13 (the busiest month in terms of construction vehicle generation associated with the construction of REP) could not be identified. Cable Route Temporary Construction Compounds would be required to provide small scale localised storage of materials and mobile welfare whilst the Electrical Connection route is being constructed.

6.4.19 These compounds may be more substantial or retained for longer, where trenchless installation occurs, e.g. at the crossing of the River Darent. These would be required where materials cannot be delivered direct to the working area or other working or welfare provision is required.

6.4.20 Due to the potential route options, working arrangements (in terms of ducted lengths, joint pit location and number of operational gangs) and the extent of direct-to-site deliveries, it is not possible at this stage to identify the specific location of the Cable Route Temporary Construction Compounds, however the Application Boundary has been developed with the expectation that the compounds can be encompassed within these limits.

6.4.21 To account for movements associated with the Electric Connection works, the assessment presented in this Chapter assumes that all traffic associated with the Electric Connection construction would access a single location situated along the A206 Bob Dunn Way/University Way and would be split between 50% from the east and 50% from the west. This would ensure the assessment considers the worst case impact to a particular link by applying the full workforce trip generation to a single point on the network, providing a robust assessment. In practice, Electrical Connection staff would be distributed across the network dependent upon where the works are being conducted at that moment in time.

6.4.22 The Electrical Connection works are proposed to be undertaken within a 15-24 month timeframe, depending on the allocation of work gangs and work areas. These work periods result in two scenarios depending on the effect under consideration. A 15-month period, considered to be the worst case scenario, is assessed within this Chapter. That period would require a workforce of 16 per day and is forecast to generate 10 Light Good Vehicle (LGV) and 50 HGV movements per day while a 24-month period would require a workforce of 8 per day and is forecast to generate 5 LGV and 25 HGV movements per day.

6.4.23 Based on the forecast trip generation and distribution assumptions set out above, **Table 6.5** presents the assumed construction trip distribution associated with the Electrical Connection works.

Table 6.5: Electrical Connection Construction Daily Traffic for each Programme

| Link | Total Daily Movements | |
|---|---|---|
| | 15-Month Programme | 24-Month Programme |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 76 | 38 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 0 | 0 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 152 | 76 |
| A206 Bob Dunn Way (east of Marsh Street N) | 76 | 38 |

6.4.24 Regarding the construction movements shown on the A206 in **Table 6.5**, this assessment assumes all traffic related to the construction of the Electric Connection would access a single point along the A206. However, due to the moving nature of the construction works, the movements shown in **Table 6.5** could be at any location along the route of the works depending on the construction programme.

### Operational Phase

6.4.25 Three scenarios are assessed as part of the operational phase. These are summarised in **Table 6.6** and broadly reflect differing modal split assumptions. The nominal scenario is a broad split that represents how REP would likely operate day-to-day. As mentioned above, the nominal scenario is considered to be a reasonable worst case as it has been assumed that RCVs would be used to transport waste instead of articulated vehicles, which are likely to be used in practice.

6.4.26 The 100% road and river scenarios ensure that REP has the necessary commercial flexibility to operate efficiently and effectively, even though the likelihood is that the majority of waste will be transported by river. The scenarios were presented within the TA Scoping Report and have been agreed with key consultees.

Table 6.6: Assessment Scenario Summary

| Scenario | RRRF (baseline) | REP ERF | REP Anaerobic Digestion Facility |
|---|---|---|---|
| Nominal | Based on ATC traffic count data for the links described in **Section 6.5.3** | 75% of waste input transported by river from riparian WTS at Smugglers Way, Cringle Dock, Walbrook Wharf and Northumberland Wharf.<br><br>25% of waste input transported by road in RCVs from local area including LBB, RBG and DBC.<br><br>Consumables transported by road from various locations.<br><br>By-product Incinerator Bottom Ash (IBA) transported by river to Tilbury, Essex.<br><br>By-product APCR transported by road to Brandon, Suffolk. | 70% of green/food waste input transported by road in LBB RCVs from across the borough.<br><br>30% of green/food waste input transported by road in articulated vehicles from Central London and M25.<br><br>By-product compost transported by road to various locations.<br><br>By-product liquid digestate transported by road to various locations. |
| Reasonable Worst Case – road | As per Nominal Scenario | 100% of waste input transported by road with 65% from Central London (Wandsworth, City of London, Tower Hamlets) and 35% from Tilbury.<br><br>By-products transported as per REP ERF 'Nominal' scenario by river (IBA) and road (APCR). | As per REP Anaerobic Digestion facility 'Nominal' scenario. |

| Scenario | RRRF (baseline) | REP ERF | REP Anaerobic Digestion Facility |
|---|---|---|---|
| Reasonable Worst Case - river | As per Nominal Scenario | 100% of waste input transported by river from riparian WTS at Smugglers Way, Cringle Dock, Walbrook Wharf and Northumberland Wharf.<br><br>By-products transported as per REP ERF 'Nominal' Scenario | As per REP Anaerobic Digestion facility 'Nominal' scenario. |

6.4.27 The principal assumptions associated with REP's operational trip generation, are set out below.

- The solar photovoltaic installation and battery storage would not generate any frequent maintenance and inspections movements whilst operational, which would only be occasional, and are therefore not incorporated into the trip generation assessment;
- The ERF would operate year-round, 24 hours a day with inputs and by-products transported 24 hours a day, 7 days a week;
    - LBB RCVs transporting 70% of the total waste input would occur only during working days (assumed 260 days per year excluding weekends and bank holidays).
    - Articulated vehicles transporting 30% of the total waste input would occur 24 hours a day, 7 days a week.
- The Anaerobic Digestion facility would operate year-round, 24 hours a day;
- The routeing of vehicles delivering waste would be based on the likely expected origins of waste, appreciating that this may change depending on a number of circumstances such as contract agreements; and
- Vehicle routeing to/from REP would adhere to the London Lorry Control Scheme.

6.4.28 The operational 100% by road scenario assessment incorporates the following assumptions for the two main trip-generating components of REP; the ERF and Anaerobic Digestion facility.

### ERF Assumptions

- 100% of waste input transported by road;
    - 65% from Central London (Wandsworth, City of London, Tower Hamlets) in 7t loads (worst case small loads) within RCVs; and
    - 35% from Tilbury in 7t loads within RCVs.
- Consumables (fuel oil, PAC, lime, ammonia) transported by road from various locations;
- By-product IBA transported by river to Tilbury, Essex; and
- By-product APCR transported by road to Brandon, Suffolk.

### Anaerobic Digestion Facility Assumptions

- 100% of green/food waste input transported by road;
    - 70% from across LBB via 7t loads in RCVs; and
    - 30% of waste from other locations (assuming 50% Central London and 50% via the M25 at J1a) in 20t loads in containers on articulated vehicles.
- By-product compost transported by road to various locations; and
- By-product liquid digestate transported by road to various locations.

6.4.29 For the purposes of this assessment, the RRRF, which is operated by the Applicant, is assumed to operate within the maximum limits determined by its existing planning consent and planning conditions.

### Operational Materials Trip Generation - Energy Recovery Facility

6.4.30 The process for determining the trip generation for the 100% by road scenario associated with the ERF is identified in **Plate 6.1**. The REP ERF would normally receive commercial and industrial waste which is transported in 20 t containers on barges by river. When traveling by road these would be on articulated container or tipper vehicles. However, the 100% by road scenario assumes that all waste is delivered in RCVs which are used for municipal waste and transport less waste per vehicle when compared to articulated vehicles. This is considered robust since RCVs would require more movements.

6.4.31 The split between Tilbury and Central London adopts a likely arrangement, based on the Applicant's previous experience, the location of existing WTS and taking into account the nature of the commercial agreements that are in place currently or which may be in place in the future.

6.4.32 There is a difference in distribution, and hence a resulting difference in the assignment of movements, between the nominal '25% by road' and reasonable worst case '100% by road' scenarios. The difference occurs as there could be

a requirement to obtain waste from nearer locations in the '100% by road' scenario and hence a change in routeing. As a result of this, the details included within **Plate 6.1** and Error! Reference source not found. indicate a difference in the origins of traffic.

6.4.33 Across all scenarios, the APCR would be transported in articulated vehicles to Brandon, Suffolk. It is expected that there would be a maximum of four vehicles departing per day with APCR as a load.

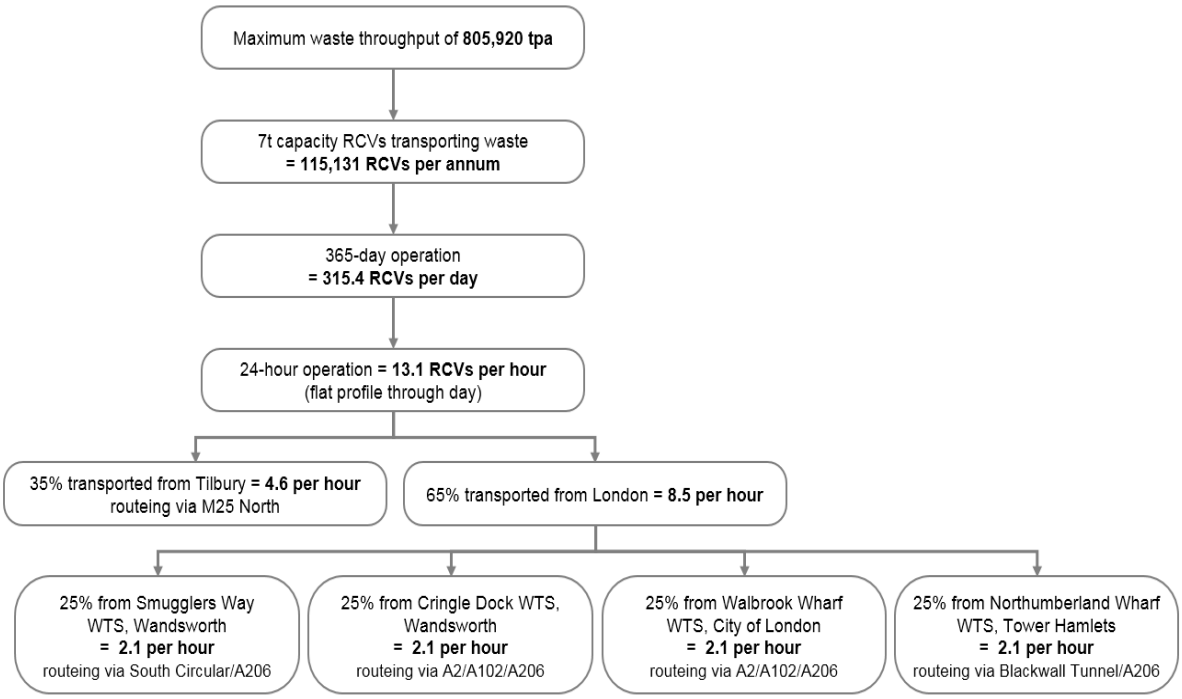
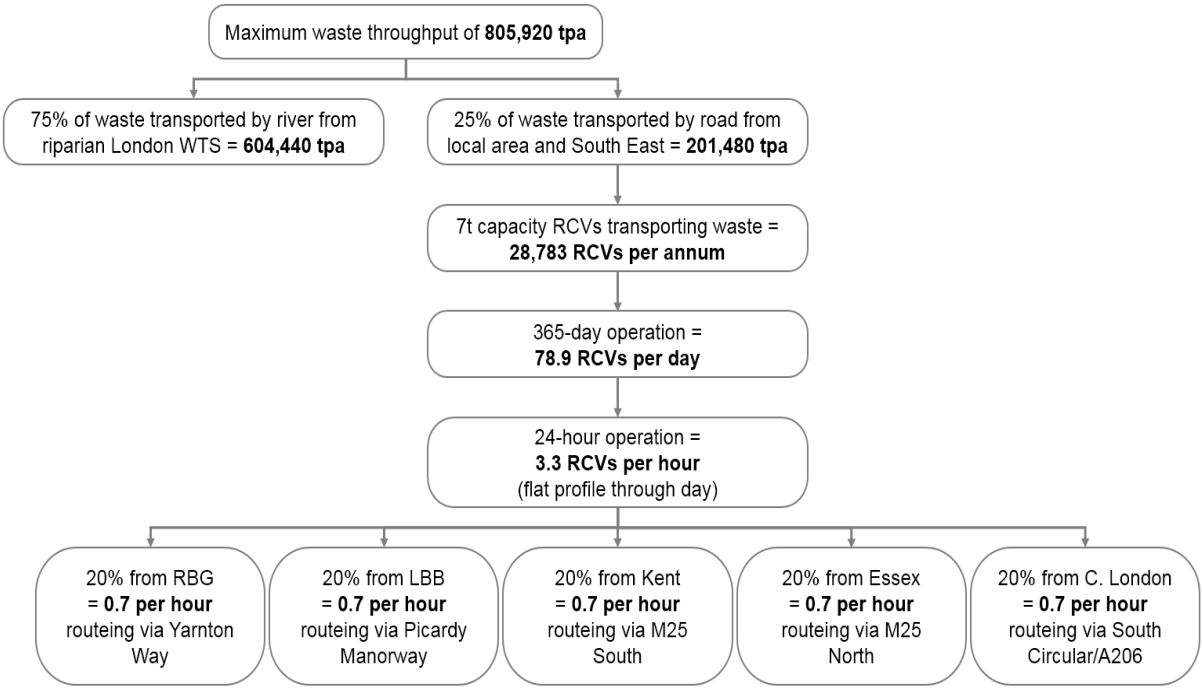



Plate 6.1: ERF 100% Road Scenario Trip Generation Methodology

6.4.34 The process for determining the trip generation for the nominal scenario, which would include 25% of the waste transported by road and 75% by river, is identified in Error! Reference source not found. As with the 100% road scenario, the proportions from the local area and south east are based on a likely arrangement given the nature of the commercial agreements that are in place currently or may be in place in the future.

Plate 6.2: ERF 25% Road Scenario Trip Generation Methodology




6.4.35 As identified in **Table 6.6** above, this ES also considers a scenario whereby 100% of waste is transported to REP by river. This would involve the transport of waste from various WTS along the River Thames to REP, and IBA from REP to Tilbury. The NRA (**Appendix B.2**) provides further information on the details and assumptions upon which this reasonable worse case assessment scenario is based.

6.4.36 In addition to the transportation of materials to the ERF, by-products would need to be transported from REP as described above. In both the Nominal and Reasonable Worst Case Road Scenarios it is expected that up to 8 daily movements would be generated by the transportation of by-products.

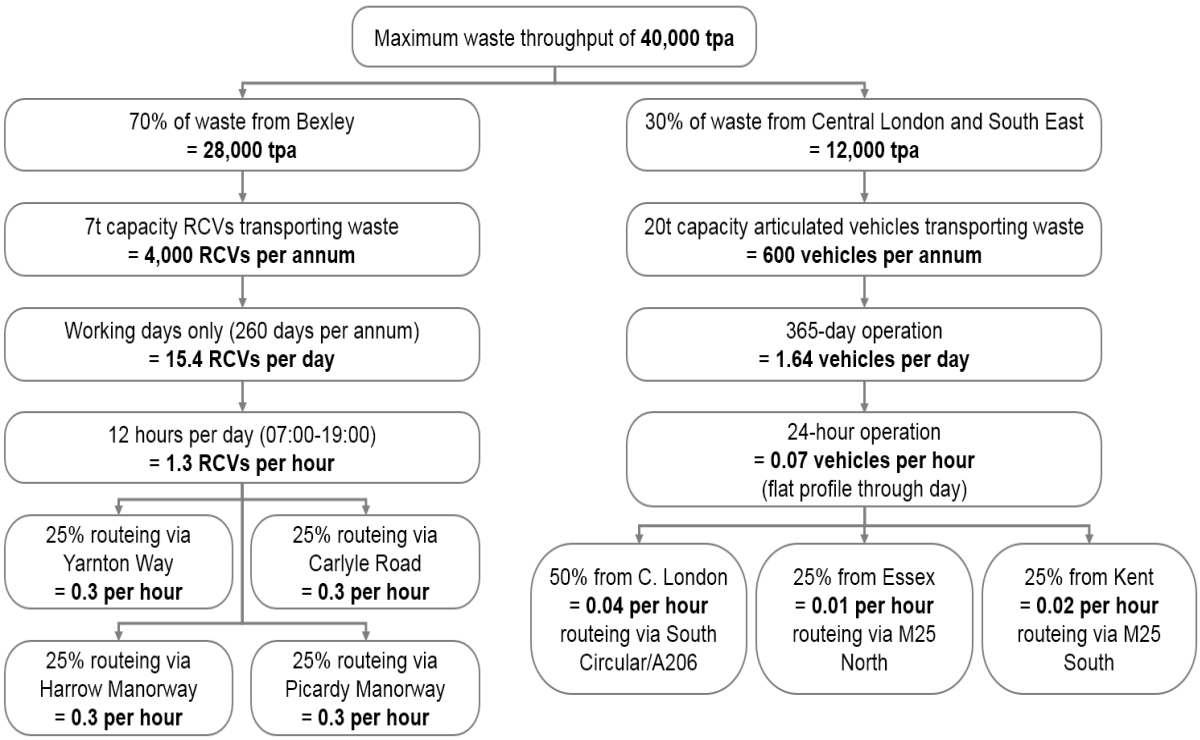
### Operational Materials Trip Generation - Anaerobic Digestion Facility

6.4.37 The trip generation for the Anaerobic Digestion facility is the same in both the 100% by road and nominal scenarios.

6.4.38 For the purpose of this 100% by road assessment, RCVs are assumed to transport the majority (70%) of the waste from within Bexley, whilst articulated vehicles would transport the remaining 30% of waste from elsewhere in London and the south east.

6.4.39 The number of vehicle movements is much lower than those associated with both scenarios for the ERF.

Plate 6.3: Anaerobic Digestion Facility Trip Generation Methodology




6.4.40 In addition to the transportation of materials to the Anaerobic Digestion facility, by-products would need to be transported from REP as described above. In both, the nominal and 100% by road scenarios, it is expected that the transportation of by-products would generate up to 12 movements per day.

### Operational Staff Trip Generation

6.4.41 It is anticipated that c. 83 staff would be based at REP (during a peak day); their mode share is assumed to reflect the 2011 Census data for method of travel to work for workplaces in the Bexley 003 MSOA, presented in **Table 6.7**. The table furthermore presents the multi-model trip generation of staff during the operational phase of the Proposed Development. It is important to note that the Census method of travel to work data captures the mode by furthest distance travelled, rather than the final access mode, which is why the 'Underground' mode is expected to be used by some operational staff for at least part of their journey.

6.4.42 The number of staff and mode share does not change between all assessment scenarios.

Table 6.7: Bexley 003 MSOA Method of Travel to Work (2011 Census) and Operational Staff Movements

| Mode of Transport | Census 2011 Mode Share | Daily Operational Staff Movements | | |
|---|---|---|---|---|
| | | Arrival | Departure | Two-Way |
| Underground, metro, light rail or tram | 1% | 1 | 1 | 2 |
| Train | 5% | 4 | 4 | 8 |
| Bus, minibus or coach | 12% | 10 | 10 | 20 |
| Taxi | 0% | 0 | 0 | 0 |
| Motorcycle, scooter or moped | 2% | 2 | 2 | 4 |
| Driving a car or van | 63% | 52 | 52 | 104 |
| Passenger in a car or van | 5% | 4 | 4 | 8 |
| Bicycle | 2% | 2 | 2 | 4 |
| On foot | 9% | 8 | 8 | 16 |
| Other method of travel to work | 0% | 0 | 0 | 0 |
| ***Total*** | **100%** | **83** | **83** | **166** |

Note*: minor discrepancies due to rounding

### Delivery and Servicing Trip Generation

6.4.43 It is expected that a small number of delivery and servicing movements would occur, including postal deliveries and occasional maintenance associated with the various elements of REP. These movements have already been incorporated into the assessment, as such movements would be a shared service to RRRF and REP and would have been captured as part of the traffic surveys undertaken at the access to RRRF for a two-week period.

6.4.44 It should be noted that movements associated with maintenance activities would be occasional and thus fall within the daily fluctuation of traffic flows along the network and therefore are considered to have no material impact on the operation of the highway network surrounding REP.

### Operational Materials Trip Distribution

6.4.45 Based on the above assumptions and the expectation of operation, the following daily vehicle flows have been determined. This includes all vehicle movements

with the exception of worker traffic (i.e. ERF waste imports, AD green waste import, APCR movements, solid and liquid digestate movements and other consumables).

Table 6.8: Expected 'Nominal Scenario' REP HGV Traffic Generation

| Link | Nominal Scenario |
|---|---|
| | Two-Way Daily HGV Movements |
| Norman Road (north of Picardy Manorway) | 213 |
| A2016 Eastern Way (west of Yarnton Way) | 49 |
| Yarnton Way (south of A2016 Eastern Way) | 39 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 213 |
| A2016 Picardy Manorway (east of Norman Road) | 213 |
| B253 Picardy Manorway (south of Horse Roundabout) | 39 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 86 |
| A206 Northend Road (north of A2000 Perry Street) | 86 |
| A2000 Perry Street (south of A206 Thames Road) | 0 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 86 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 86 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 0 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 86 |
| A206 Bob Dunn Way (east of Marsh Street N) | 86 |

Note*: minor discrepancies due to rounding

Table 6.9: Expected '100% Road Scenario' REP HGV Traffic Generation

| Link | 100% by Road Scenario |
|---|---|
| | Two-Way Daily HGV Movements |
| Norman Road (north of Picardy Manorway) | 686 |
| A2016 Eastern Way (west of Yarnton Way) | 427 |
| Yarnton Way (south of A2016 Eastern Way) | 8 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 686 |
| A2016 Picardy Manorway (east of Norman Road) | 686 |
| B253 Picardy Manorway (south of Horse Roundabout) | 8 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 244 |
| A206 Northend Road (north of A2000 Perry Street) | 244 |
| A2000 Perry Street (south of A206 Thames Road) | 0 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 244 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 244 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 0 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 244 |
| A206 Bob Dunn Way (east of Marsh Street N) | 244 |

Note*: minor discrepancies due to rounding

### Operational Staff Trip Distribution

6.4.46 As with determining the multi-modal trip generation discussed above, 2011 Census data has been used to determine car driver distribution. The distribution

onto the local highway network is indicated in **Table 6.3** above, which has been applied to the car driver trip generation.

6.4.47 **Table 6.10** shows the resultant daily car driver trip distribution of operational staff along the highway network.

Table 6.10: Daily Operational Staff Traffic

| Link | Operational Staff |
|---|---|
| | Two-Way Daily Movements |
| Norman Road (north of Picardy Manorway) | 104 |
| A2016 Eastern Way (west of Yarnton Way) | 27 |
| Yarnton Way (south of A2016 Eastern Way) | 0 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 66 |
| A2016 Picardy Manorway (east of Norman Road) | 66 |
| B253 Picardy Manorway (south of Horse Roundabout) | 30 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 48 |
| A206 Northend Road (north of A2000 Perry Street) | 33 |
| A2000 Perry Street (south of A206 Thames Road) | 7 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 26 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 23 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 4 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 19 |
| A206 Bob Dunn Way (east of Marsh Street N) | 19 |

Note*: minor discrepancies due to rounding

### Operational Trip Generation and Distribution Summary

6.4.48 Based on the trip generation and distribution outlined above, it is forecast that the operational REP site would generate movements (including arrivals and departures) as shown in **Table 6.11**. The 'nominal' scenario movements are largely due to worker travel.

Table 6.11: Daily Operational Traffic and Distribution

| Link | Total Daily Movements | |
|---|---|---|
| | Nominal Scenario* | 100% by Road Scenario |
| Norman Road (north of Picardy Manorway) | 319 | 792 |
| A2016 Eastern Way (west of Yarnton Way) | 76 | 454 |
| Yarnton Way (south of A2016 Eastern Way) | 39 | 8 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 279 | 753 |
| A2016 Picardy Manorway (east of Norman Road) | 279 | 753 |
| B253 Picardy Manorway (south of Horse Roundabout) | 69 | 38 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 134 | 292 |
| A206 Northend Road (north of A2000 Perry Street) | 119 | 277 |
| A2000 Perry Street (south of A206 Thames Road) | 7 | 7 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 112 | 270 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 108 | 266 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 4 | 4 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 105 | 263 |
| A206 Bob Dunn Way (east of Marsh Street N) | 105 | 263 |

Note*: Not all traffic movements would be reduced by 75% during the Nominal Scenario due to the requirement for operational staff movement to be by road.

### Decommissioning Phase

6.4.49 Any decommissioning phase is assumed to be of a similar or shorter duration to construction and therefore effects are considered to be of a similar level to that during the construction phase. It is assumed that ducting for the Electrical Connection would remain in situ but that the cables may be removed.

## 6.5 Assessment Methodology and Significance Criteria

### Study Area

6.5.1 The IEMA Guidelines suggest two broad rules to identify the appropriate extent of the assessment area, as follows:

- links with all vehicle or HDVs (Heavy Duty Vehicles, comprising public service vehicles and heavy goods vehicles) with traffic flow increases in any assessment year of more than 30%; and
- links with medium or high sensitivity receptors with traffic flow increases greater than 10%.

6.5.2 Based on these rules, the highway assessment area includes all links from REP to the surrounding local and strategic road network that would be subject to daily traffic flow changes as a result of the construction or operation of REP.

### Baseline Data Collection

6.5.3 An independent survey company was commissioned to undertake a variety of surveys in order to gain an understanding of the existing transport conditions in the surrounding area of REP. This has been assimilated since the PEIR to inform the current assessments. The PEIR assessments were based on publicly available data sets of traffic flow. The following traffic data has been collected in liaison with the statutory stakeholders: 14-day automatic traffic counters (ATCs) and single weekday manual classified counts (MCCs) undertaken between 06:00-10:00 and 16:00-19:00 were in place as listed below.

Automatic Traffic Counters

1. Norman Road (North of Picardy Manorway) northern end, at RRRF access;
2. Norman Road (North of Picardy Manorway) central, north of Asda Depot access;
3. Norman Road (North of Picardy Manorway) southern end, immediately north of A2016;
4. A2016 Eastern Way;
5. Yarnton Way;

6. A2016 Picardy Manorway (west of Norman Road);
7. A2016 Picardy Manorway (east of Norman Road);
8. B253 Picardy Manorway;
9. A2016 Bronze Age Way;
10. A206 Northend Road;
11. A2000 Perry Street;
12. A206 Thames Road (between Howbury Lane and Crayford Way);
13. A206 Thames Road (between Crayford Way and Burnham Road);
14. A2026 Burnham Road;
15. A206 Bob Dunn Way (between Burnham Road and Central Road); and
16. A206 Bob Dunn Way (between Marsh Street North and M25 J1a).

Manual Classified Counts (MCCs)

1. A2016 Picardy Manorway/ Clydesdale Way/ Yarnton Way/ A2016 Eastern Way;
2. A2016 Picardy Manorway/ Norman Road;
3. A2016 Picardy Manorway/ Anderson Way/ A2016 Bronze Age Way/ B253 Picardy Manorway;
4. A2016 Bronze Age Way/ A206 Queens Road / A206 Bexley Road/ Bexley Road/ Walnut Tree Road;
5. A206 Queens Road/ James Watt Way; and
6. A206 South Road/ Boundary Road/ A206 Northend Road/ Larner Road.

6.5.4 These ATC surveys were carried out for two weeks between 15th and 29th April 2018, with the MCCs carried out on Thursday 19th April 2018.

### Assessment Scenarios

6.5.5 The assessment of environmental effects relating to road transport and access have considered the following scenarios for the 'Base' (i.e. existing observed data); 'Do Minimum' (i.e. Base + growth + committed/consented development); and 'Do Something' (i.e. Do Minimum + Proposed Development):

- 2018 Base;
- Construction (Peak Month 13);

- 2022 Do Minimum;
- 2022 Do Something (15-Month Electrical Connection construction programme); and
- 2022 Do Something (24-Month Electrical Connection construction programme).

- Operation;
  - 2024 Do Minimum;
  - 2024 Do Something (Nominal); and
  - 2024 Do Something (100% Road).
- Operation plus 15 Years;
  - 2039 Do Minimum;
  - 2039 Do Something (Nominal); and
  - 2039 Do Something (100% Road).

6.5.6 All Do Minimum scenarios have been established by applying local traffic growth factors (TEMPro) as well as committed development traffic, as requested by KCC and DBC during consultation discussions and agreed as part of the TA scoping process.

6.5.7 For the construction, Do Something scenarios relate to the shortest and longest likely programme lengths for the Electrical Connection works. The assessed construction period is 2022, on the basis that construction starts in 2021 and that peak construction occurs at Month 13 i.e. during 2022.

6.5.8 With regards to the committed developments, vehicular traffic associated with the following developments have been included in the assessment of environmental transport effects of REP:

- LBB -
  - Planning Ref: 13/01492/OUTM01 - Proposed Ocado Regional Distribution Centre;
  - Planning Ref: 14/02155/OUTM - Erith Quarry;
  - Planning Ref: 14/02120/FULM - Larner Road Estate;
  - Planning Ref: 15/00370/OUTM - former Linpac Site;
  - Planning Ref: 17/00029/OUTM - Burts Wharf; and

- Planning Ref: 11/01932/OUTM - Land adjacent to former Nufarm UK Ltd.

- DBC –
  - Planning Ref: 18/00457/FUL - Land at Littlebrook Power Station;
  - Planning Ref: 11/01207/OUT - The Bridge; and
  - Planning Ref: 16/01601/FUL - Northern Gateway West Abbott Murex.

6.5.9 It should be noted that local TEMPro factors already take account of traffic growth associated with some committed developments included in the assessment. Therefore, it is likely that a degree of double-counting has been built into the Do Minimum scenarios which could artificially raise the base flow on the network, negatively impacting on network operation.

6.5.10 It should be noted that the assessment of cumulative effects from 'other development' in relation to transport is separate to other assessments within this ES, as outlined in **Chapter 4**.

6.5.11 The construction of the Electrical Connection is predicted to generate in the region of 16 workforce movements. As outlined above, for the purpose of the assessment presented in this Chapter, it has been assumed that such movements would access a single construction location on A206 to represent a worst case scenario. The impact on the network of the mobile works areas has not been assessed due to the short-term impact of those works. Where works occur in footways and cycleways, these may have to be temporarily closed. Suitable alternative pedestrian and cycle routes would be provided at the works location to align with traffic management proposals.

6.5.12 The NRA, at **Appendix B.2**, considers three scenarios for river transport: one representative and two indicative.

6.5.13 NRA Representative Scenario 1 would maximise the waste transfer from Smugglers Way up to the consent limit of 732,000 tonnes, more than tripling the annual throughput. The other existing WTS would be increased within their consented limits too. To achieve this, three tugs would be required to service Smugglers Way, including the existing movement, with an additional tug and the extension of the Cringle tug further upstream on a regular basis. An additional tug for the ash would also service Tilbury in this NRA Representative Scenario.

6.5.14 NRA Indicative Scenario 2 would transfer a larger proportion of waste to Tilbury, whilst doubling the transfer from Smugglers Wharf. In this NRA Indicative Scenario, one additional journey would be made to Smugglers Way and one additional journey made to Tilbury.

6.5.15 NRA Indicative Scenario 3 would introduce waste transfer from Barking Creek. This Indicative NRA Scenario would be similar to the existing model, however two additional movements up to Barking Creek and Tilbury would be required.

6.5.16 These scenarios are evaluated within **Appendix B.2**.

### Assessment Criteria

6.5.17 The significance of the effect of REP on the topics listed below has been determined on the basis on the magnitude of the effect and sensitivity of the receptor, as well as whether the impact is temporary or permanent as well as beneficial or adverse.

### Magnitude of Effect

6.5.18 The IEMA Guidelines identify that the main transport effects that could arise from new developments relate to the following:

- Severance;
- Driver delay;
- Pedestrian delay and amenity;
- Pedestrian fear and intimidation;
- Accidents and road safety;
- Dust and dirt; and
- Hazardous loads.

6.5.19 These impacts could arise during the construction, operational and decommissioning phases. Further details of the approach to the assessment are provided below.

6.5.20 The 'dust and dirt' criterion is not considered further within this Chapter as it is covered within **Chapter 7**, as agreed by the Secretary of State in response to the EIA Scoping Report, **Table 6.2** refers to this.

6.5.21 The 'hazardous loads' criterion is also not considered in this assessment, as it is deemed unlikely that the construction, operation or decommissioning of REP would require the transportation of hazardous loads that would have the potential for a significant effect on receptors.

### Severance

6.5.22 The IEMA Guidelines state that "*severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery*." Furthermore, "*changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively*". However, the IEMA Guidelines acknowledge that the measurement and prediction of severance is extremely difficult. The assessment of severance needs to pay full regard to specific local conditions,

in particular the location of pedestrian routes to key local facilities and whether or not crossing facilities are provided.

6.5.23 Volume 11, Section 3, Part 8, Chapter 6 of the Design Manual for Roads and Bridges entitled 'Pedestrians and Others and Community Effects' provides further guidance on the aspect of New Severance within a community in terms of the two-way Annual Average Daily Traffic (AADT) flow on a link. It states that new severance should be described in terms of "Slight", "Moderate" or "Severe" and that these categories "… *should be coupled with an estimate of the numbers of people affected, their location and the community facilities from which they are severed.*"

6.5.24 The potential effects as set out later in this Chapter are based on an assessment, which takes into account IEMA's thresholds and guidance set out in the DMRB. **Table 6.12** summarises these thresholds.

Table 6.12: Severance – Magnitude of Effect

| Magnitude | Definition |
|---|---|
| Large | Over 90% change in AADT flows as a result of the Proposed Development |
| Moderate | Between 60 – 89% change in AADT flows as a result of the Proposed Development |
| Small | Between 30 – 59% change in AADT flows as a result of the Proposed Development |
| Negligible | Less than 30% change in AADT flows as a result of the Proposed Development |

### Driver Delay

6.5.25 Delay to drivers can be estimated through capacity assessments at key points on the local highway network. The addition of new development-generated traffic could result in an increase in the number of vehicles using key routes and junctions. This may lead to additional delays depending on the existing operation, levels of background traffic and development-generated traffic.

6.5.26 Assessment of junction capacity and delay is undertaken through the use of standard practice analytical tools and junction analysis programs, such as LinSig and Junctions 9 (ARCADY and PICADY) software. Driver delay is only likely to be an issue requiring mitigation where junctions are operating beyond capacity.

6.5.27 **Table 6.13** shows the magnitude of impact scale applied to the category of 'driver delay' at junctions. The magnitude of impact scale is based on professional judgement in the absence of IEMA thresholds.

Table 6.13: Driver Delay – Magnitude of Effect

| Magnitude | Definition |
|---|---|
| **Driver Delay at Junctions** | |
| Large | Average vehicle delay changes of more than 3 minutes as a result of the Proposed Development during the peak hours |
| Moderate | Average vehicle delay changes are between 1 minute and 2 minutes and 59 seconds as a result of the Proposed Development during the peak hours |
| Small | Average vehicle delay changes are between 30 seconds and 59 seconds as a result of the Proposed Development during the peak hours |
| Negligible | Average vehicle delay changes are less than 30 seconds as a result of the Proposed Development during the peak hours |

### Pedestrian Delay and Amenity

6.5.28 Pedestrian delay for a particular walking journey can be increased by changes to traffic flows and can affect the ability of pedestrians to cross roads. This, therefore, would affect an individual's desire to make a particular walking journey. Changes in the volume, speed or composition of traffic are most likely to affect pedestrian delay, with the level of severity dependent on the general level of pedestrian activity and the physical condition of crossing points. Guidelines for the calculation of pedestrian delay are identified in DMRB Volume 11, Section 3.

6.5.29 It is important to note that qualitative aspects such as the quality of the pedestrian environment, and the trip generators served by these environments, also influence the propensity for individuals to walk. The sense of personal security and safety, gradient, permeability, legibility and maintenance of these infrastructures aid in encouraging their use and discouraging the use of the private car. These, in addition to the quantitative aspects of assessment such as changing traffic flows, are therefore an important consideration for a number of the criteria.

6.5.30 The determination of what constitutes a material impact on pedestrian delay is generally left to the judgement of the assessor and knowledge of local factors and conditions. However, the IEMA Guidelines suggest "*a lower threshold of 10 seconds' delay and an upper threshold of 40 seconds' delay, for a link with no crossing facilities*". It further advises that the lower threshold equates to a two-way flow of approximately 1,400 vehicles per hour.

6.5.31 **Table 6.14** shows the magnitude of impact categories applied to the assessment of pedestrian delay.

Table 6.14: Pedestrian Delay – Magnitude of Effect

| Magnitude | Definition |
|---|---|
| Large | Link subject to a two-way traffic flow of more than 5,600 vehicles per hour |
| Moderate | Link subject to a two-way flow of 3,500-5,599 vehicles per hour |
| Small | Link subject to a two-way flow of 1,400-3,499 vehicles per hour |
| Negligible | Link subject to a two-way flow of less than 1,400 vehicles per hour |

6.5.32 Pedestrian amenity is broadly defined as the relative pleasantness of a journey, which is affected by traffic flow, traffic composition and footway width/separation from traffic. The IEMA Guidelines suggest a "*tentative threshold for judging the significance of changes in pedestrian amenity of where traffic flow (or its lorry component) is halved or doubled*". The magnitude of impact is a matter of professional opinion.

### Pedestrian Fear and Intimidation

6.5.33 A further effect of traffic flows on pedestrian movements is the element of fear and intimidation individual travellers would experience with respect to vehicular movements. The impact of this factor is dependent on the volume of traffic, the HDV content, the width of footway and its proximity to the carriageway edge. As is the case with pedestrian delay and amenity, there are no commonly agreed thresholds for determining the magnitude of this impact, with appraisal being based on the judgement of the assessor.

6.5.34 Nevertheless, the IEMA Guidelines do suggest some thresholds, based on previous research, which can be used and these are shown in **Table 6.15**.

Table 6.15: Suggested Threshold Guidelines for Pedestrian Fear and Intimidation

| Degree of Hazard | Average Traffic Flow over 18 Hour day (vehicles/hour) | Average 18-Hour HDV Flow (vehicles) | Average Speed over 18 Hours (mph) |
|---|---|---|---|
| Extreme | 1,800+ | 3,000+ | 20+ |
| Moderate | 1,200-1,800 | 2,000-3,000 | 15-20 |
| Slight | 600-1,200 | 1,000-2,000 | 10-15 |

Note: Source: IEMA Guidelines

6.5.35 Notwithstanding the thresholds set out above, the IEMA Guidelines suggest that they should be approached with a certain level of caution as the individual factors could be weighted by local circumstances to decide the overall value of intimidation. For example, a road may show higher speeds but lower flows;

making crossing easier, or high flows but congested and constant traffic, therefore reducing total fear of passing vehicles but increasing crossing difficulties.

6.5.36 As outlined in the above sections on 'severance' and 'pedestrian delay and amenity', the primary pedestrian routes on the local highway surrounding REP provide pedestrian facilities. These include signal controlled pedestrian crossings.

6.5.37 **Table 6.16** shows the magnitude-scale applied to pedestrian fear and intimidation.

Table 6.16: Pedestrian Fear and Intimidation – Magnitude of Effect

| Magnitude | Definition |
|---|---|
| Large | Average traffic flow over 18 hours of 1800 + vehicles/hr;<br>An average 18-hour HGV flow of 3000 +; or<br>Average speed over 18 hours of 20 + mph. |
| Moderate | Average traffic flow over 18 hours of 1200-1799 vehicles /hr;<br>An average 18-hour HGV flow of 2000-2999; or<br>Average speed over 18 hours of 15-19 mph. |
| Small | Average traffic flow over 18 hours of 600-1199 vehicles/hr;<br>An average 18-hour HGV flow of 1000-1999; or<br>Average speed over 18 hours of 10-14mph. |
| Negligible | Average traffic flow over 18 hours of less than 600 vehicles/hr;<br>An average 18-hour HGV flow of less than 1000; or<br>Average speed over 18 hours of less than 10mph. |

### Accidents and Road Safety

6.5.38 The assessment of accident risk and highway safety is based upon existing accident rates and specific local circumstances to identify accident clusters. For example, should a particular link or junction be found to have a high existing accident rate, the addition of substantial traffic volumes generally would be expected to have an adverse effect on highway safety due to further increased opportunities for conflict. Mitigation measures may therefore be required.

6.5.39 A further assessment of highway safety may also include the comparison of accident rates at those locations identified for highway improvements related to capacity issues. An assessment of expected accident rates for a new junction design compared to the existing layout would identify future accident risk related to development-generated traffic.

6.5.40 The IEMA Guidelines state that "*professional judgement will be needed to assess the implications of local circumstances, or factors, which may elevate or lessen risks of accidents, e.g. junction conflicts*".

6.5.41 As noted above, a review of accidents occurring over the most recent three-year period within the area surrounding the site has been undertaken in order to identify existing accident clusters, where 10 or more accidents occurred over the three-year period.

6.5.42 **Table 6.17** shows the magnitude of impact categories applied to accidents and road safety.

Table 6.17: Accidents and Road Safety – Magnitude of Effect

| Magnitude | Definition |
|---|---|
| Large | Expected change in accident risk of 15+% at the location of existing accident cluster |
| Moderate | Expected change in accident risk of 10%-14% at the location of existing accident cluster |
| Small | Expected change in accident risk of 5%-9% at the location of existing accident cluster |
| Negligible | Expected change in accident risk of less than 5% at the location of existing accident cluster |

### Sensitivity of Receptors

6.5.43 The IEMA Guidelines identify groups and special interests which should be considered in the assessment. Categories of receptor sensitivity have been defined from the principles set out in the IEMA Guidelines and these have been used, to outline in broad terms, the sensitivity of receptors to traffic for the categories of effect. However, it is acknowledged that each receptor will have a different sensitivity to each specific effect. Typical sensitive receptors and their sensitivity to traffic are shown in **Table 6.18**.

Table 6.18: Receptor Sensitivity

| High Sensitivity | Medium Sensitivity | Low Sensitivity |
|---|---|---|
| ■ schools, colleges and other educational institutions (nurseries have been assumed to be included in this category)<br>■ retirement / care homes for the elderly or infirm | ■ hospitals, surgeries and clinics<br>■ parks and recreation areas<br>■ shopping areas<br>■ roads used by pedestrians with narrow footways | ■ open space<br>■ tourist / visitor attractions<br>■ historical buildings<br>■ churches<br>■ other roads with active frontages and dwellings |

| High Sensitivity | Medium Sensitivity | Low Sensitivity |
|---|---|---|
| ▪ roads used by pedestrians with no footways<br>▪ road safety black-spots | | |

6.5.44 Based on these criteria, the selected relevant sensitive receptors are specified in **Table 6.29**.

### Effect Nature, Scale and Significance

6.5.45 The scale of traffic and transport effects has been determined based on the magnitude of impact, receptor sensitivity and professional judgement. This is shown in **Table 6.19.**

6.5.46 In terms of the nature of effects, these can either be beneficial or adverse.

Table 6.19: Transport Significance Matrix

| | | Sensitivity of Receptor | | | |
|---|---|---|---|---|---|
| | | **High** | **Medium** | **Low** | **Negligible** |
| **Magnitude** | **Large** | Substantial | Major | Moderate | Negligible |
| | **Moderate** | Major | Moderate | Minor | Negligible |
| | **Small** | Moderate | Minor | Minor | Negligible |
| | **Negligible** | Negligible | Negligible | Negligible | Negligible |

6.5.47 Substantial, major and moderate effects are deemed to be significant in EIA terms, whilst minor and negligible effects are considered to be not significant.

## 6.6 Assumptions and Limitations

6.6.1 A number of assumptions have been made, based on best practice guidance and professional judgement. Where assumptions are made, it is clearly stated within the text. A number of assumptions relating to the trip generation forecast for REP have been outlined above, in order to establish REP's expected traffic flows during the construction, operational and decommissioning phases, including: the capacity and load of vehicles, routeing of vehicles on the highway network, arrival and departure profiles of vehicles, and use of 2011 Census data to determine staff mode choice and route assignment.

## 6.7 Baseline Conditions and Receptors

### Site Location and Description

6.7.1 The REP site is accessed from Norman Road which extends southwards to the A2016 Eastern Way which forms part of the SRN and runs in an east/west orientation.

6.7.2 To the east of the REP site lies RRRF, an ERF with a maximum consented residual waste throughput of 785,000 tpa. RRRF operates 24 hours a day and seven days per week throughout the year.

6.7.3 The REP site includes the existing jetty in the River Thames which is currently used for delivery of waste and despatch of some by-products at RRRF. The jetty would be used for the same purpose for the operation of REP.

### Highway Network

6.7.4 Norman Road is approximately 650 m in length; providing vehicular access to the REP site and is aligned north-south between the REP site and the A2016 Picardy Manorway. It is subject to a 30 mph speed limit and has streetlights on the eastern side. The junction of Norman Road and Picardy Manorway is a left-in left-out signal controlled junction.

6.7.5 Norman Road has a footway on its eastern side which runs between the RRRF in the north and Picardy Manorway to the south. A three-stage toucan crossing of Norman Road and Picardy Manorway provides connection with the southern footway of Picardy Manorway including the eastbound bus stop.

6.7.6 Norman Road has a mixture of advisory cycle lanes and shared use paths providing a cycle route to the cycle path on the north side of Picardy Manorway and the three-stage toucan crossing of Norman Road and Picardy Manorway. There are various elements of cycle infrastructure providing a route to Belvedere Rail Station.

6.7.7 Picardy Manorway is a dual-carriageway aligned east-west with a 50 mph speed limit. It connects with the A2016 Eastern Way/Clydesdale Way/Yarnton Way 100 m to the south-west and with Anderson Way/A2016 Bronze Age Way/Picardy Manorway 330 m to the south-east; both in the form of large priority roundabouts.

6.7.8 The A2016 forms part of the SRN and connects to the A206 South Circular at the Woolwich Ferry and the A102 Blackwall Tunnel to the west. Both of these roads form part of the TfL Road Network (TLRN) and the latter is approximately 11.5 km from REP.

6.7.9 To the east, the A2016 passes through Erith and Dartford connecting to the A282 at the Dartford Crossing approximately 10.5 km to the south-east of REP.

6.7.10 London Lorry Control Scheme restrictions are in place on the A2016 Eastern Way to the west of Picardy Manorway. These require that vehicles over 18 t are only permitted to use the road at the following times:

- Weekdays 07:00-21:00; and
- Saturdays 07:00-13:00.

6.7.11 Therefore, all vehicles over 18t accessing RRRF and REP outside of these times must route from the east via A206 at Slade Green in accordance with these restrictions.

## Personal Injury Collision Review

### Personal Injury Collision Review (London Borough of Bexley Area)

6.7.12 A Personal Injury Collision (PIC) review has been conducted of the three-year period of data from 1st January 2015 to 31st December 2017 within the study area indicated in **Plate 6.4** for the section of network in London Borough of Bexley as agreed with TfL through the TA scoping. The raw data, as issued by TfL, can be found in the TA. That data is graphically represented in **Plate 6.4**.

6.7.13 The collision data on Norman Road and in the vicinity of its junction with Picardy Manorway was obtained from TfL and analysed to determine if any specific road safety issues, trends or patterns are evident. Some of the data provided was provisional data.

6.7.14 The following junctions and roads have been analysed:

- Roundabout – Yarnton Way/Eastern Way/Picardy Manorway;
- Roundabout – Anderson Way/Picardy Manorway/Bronze Age Way;
- Junction – Norman Road/Picardy Manorway; and
- Links - Picardy Manorway and Norman Road.

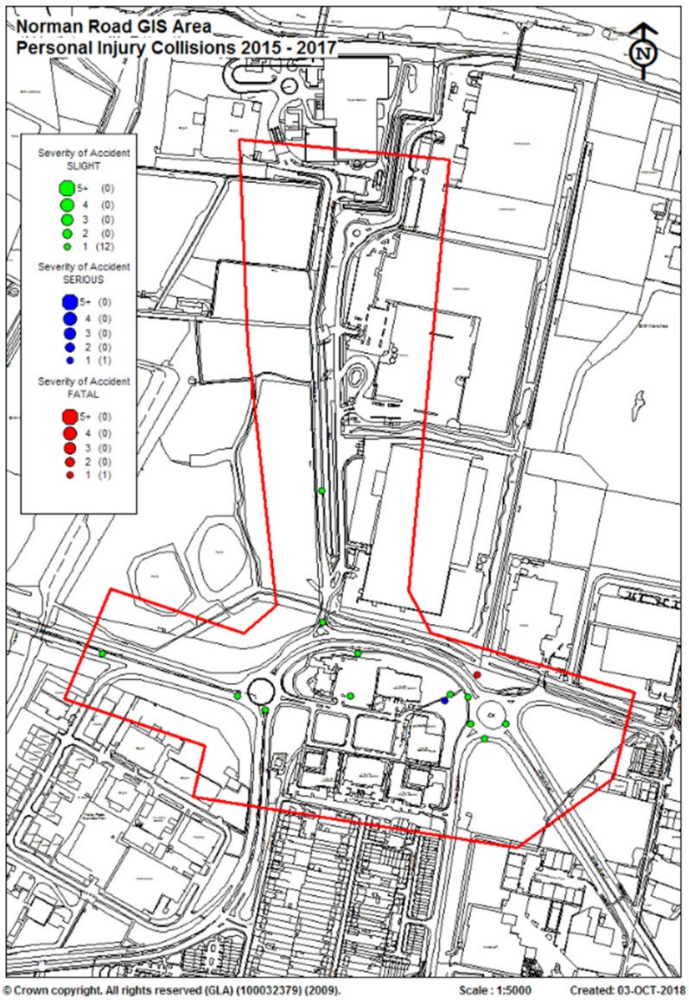
6.7.15 Collision analysis has been grouped into seven location zones:

Table 6.20: Collision Zone Location Reference Key

| Location Ref. | Description |
|---|---|
| LBB1 | Roundabout – Yarnton Way/Eastern Way/Picardy Manorway |
| LBB2 | Roundabout – Anderson Way/Picardy Manorway/Bronze Age Way |
| LBB3 | Junction – Norman Road/Picardy Manorway |

| Location Ref. | Description |
|---|---|
| LBB4 | Link - Picardy Manorway |
| LBB5 | Link - Norman Road |
| LBB6 | Link - Eastern Way |
| LBB7 | Link – Yarnton Way |

Plate 6.4: PIC data plot [LBB Area]




6.7.16 **Table 6.21** indicates the collision severities that have occurred within the study area. **Table 6.22** considers reports those collisions which included vulnerable users.

Table 6.21: Summary of PICs by Severity [LBB area]

| Location Ref. | Slight | Serious | Fatal | Total |
|---|---|---|---|---|
| LBB1 | 2 | 0 | 0 | 2 |
| LBB2 | 6 | 1 | 0 | 7 |
| LBB3 | 0 | 0 | 0 | 0 |
| LBB4 | 0 | 0 | 1 | 1 |
| LBB5 | 2 | 0 | 0 | 2 |
| LBB6 | 1 | 0 | 0 | 1 |
| LBB7 | 1 | 0 | 0 | 1 |
| **Total** | **12** | **1** | **1** | **14** |

Table 6.22: Summary of PICs by Vulnerable User [LBB area]

| Location Ref. | Pedestrian | Cyclist | Motorcycle |
|---|---|---|---|
| LBB1 | 0 | 0 | 0 |
| LBB2 | 0 | 1 | 2 |
| LBB3 | 0 | 0 | 0 |
| LBB4 | 0 | 0 | 1 |
| LBB5 | 1 | 0 | 0 |
| LBB6 | 0 | 0 | 0 |
| LBB7 | 0 | 0 | 0 |
| **Total** | **1** | **1** | **3** |

6.7.17 **Table 6.23** indicates the contributing factors involved with collisions that have occurred within the study area.

Table 6.23: Summary of PIC Contributing Factors [LBB area]

| Location Ref | Dark | Wet | Single vehicle | Drugs/Alcohol | Exceeding Speed | Aggressive Driving | Following to close | Failed to look | Failed to judge path and speed | Loss of control | Careless/Reckless | Disobeyed road sign | Nervous/uncertain | Distraction | Failed to signal/misleading signal | Stolen vehicle | Road layout | Other factor | Illegal turn or direction of travel |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LBB1 | | | | | | | | | ■ | | | | | | | | | | ■ |
| LBB2 | ■ | | | | | | | ■ | | | ■ | ■ | | | | | | | |
| | | | | | | | | ■ | | | | | ■ | ■ | | | | | |
| | ■ | ■ | | | ■ | ■ | | | | ■ | | | | | | | | | |
| | | | | | | | | | ■ | | | | ■ | | ■ | | | | |
| | ■ | ■ | | | | | | | ■ | | | | | | | | | | |
| | | | | | | | | ■ | ■ | | | | | | | | | | |
| | ■ | | | | | | | ■ | | | | | | | | | | | |
| LBB4 | | | ■ | | ■ | | | | | ■ | ■ | | | | | | ■ | | |
| LBB5 | | | | | | | | | | | | | | | | | | ■ | |
| | ■ | | | | ■ | | | | | | ■ | | | | | | | | |
| LBB6 | ■ | | ■ | ■ | | | | | | ■ | | | | | | | | | |
| | | | | | | | ■ | ■ | | | | | | | | | | | |
| LBB7 | ■ | | | ■ | | ■ | | | | | | | | | | ■ | | | |
| **No.** | **7** | **2** | **2** | **2** | **3** | **2** | **1** | **5** | **4** | **3** | **3** | **1** | **2** | **1** | **1** | **1** | **1** | **1** | **1** |

6.7.18 A total of 14 personal injury collisions were recorded in the assessment area over the three years of collision data analysed. The severity of these collisions resulted in: 12 slight; one serious; and one fatality. These predominantly resulted from failure to look properly and drivers failing to judge another person's path or speed of which 6 resulted in vehicle-to-vehicle shunts and 3 involved side swipe incidents.

6.7.19 Motorised vehicles involved in the 14 collisions are cars; Light Goods Vehicles and motor cycles. One collision involved a pedal cyclist and one collision involved a pedestrian. Four of the 12 collisions involved motor cycles, 3 of which were conflicts between motor cycles (2 of the motorcycle incidents involved 2 motorcycles and 1 was a single vehicle incident. One collision involved a foreign registered goods vehicle under 3.5T. No collisions involved Heavy Goods Vehicles (HGVs).

6.7.20 The single fatality occurred on Picardy Manorway at approximately 19:30hrs. The reported contributory factor was excess speed. No other vehicles were shown to be involved.

6.7.21 Half of the collisions, 7 out of the 14 recorded, occurred during periods of darkness. There is no apparent pattern to the collisions in the dark – with them occurring between 19:00 to 02:00hrs and at different times of the year.

6.7.22 When reviewing the three year PIC trend in the study area it would appear to be increasing, as illustrated at **Table 6.24**. This is not attributed to any defined factors as the PIC location and contributing factors are not consistent. The publicly available PIC statistics [source: CrashMap.co.uk] indicate that the annual figures vary year to year between 1 PIC in 2013 to 9 PICs in 2009, set out in **Table 6.25**.

Table 6.24: PICs By Year [LBB area]

| Year | No of accidents |
|---|---|
| 2015 | 2 |
| 2016 | 5 |
| 2017 | 7 |

Note: Source TfL data

Table 6.25: Trend PICs By Year [LBB area]

| Year | No of accidents |
|---|---|
| 2007 | 2 |
| 2008 | 3 |
| 2009 | 9 |
| 2010 | 6 |
| 2011 | 7 |
| 2012 | 4 |
| 2013 | 1 |
| 2014 | 3 |
| 2015 | 2 |
| 2016 | 5 |
| 2017 | 7 |

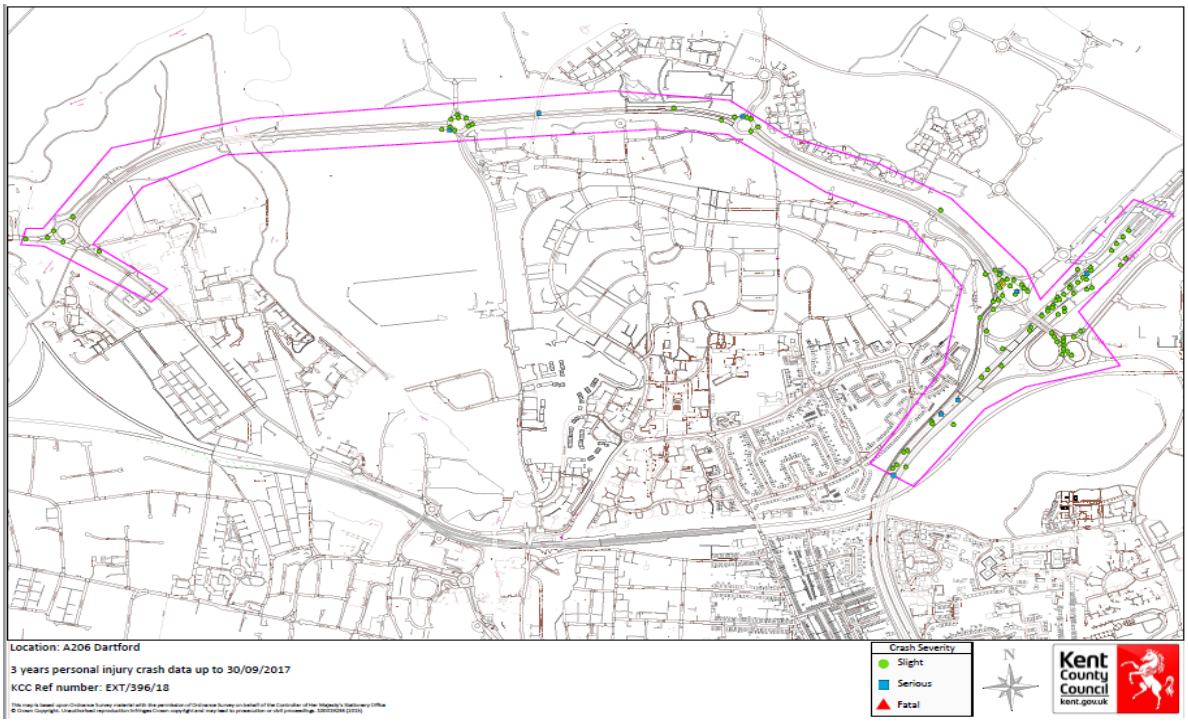
Note: Source CrashMap.co.uk database

### Personal Injury Collision Review (Dartford Area)

6.7.23 Personal Injury Collision (PIC) data on the A206 Bob Dunn Way corridor between its junction with A206 Thames Road/A2026 Burnham Road and its junction with the A282 Dartford Crossing Approach was obtained from KCC and analysed to determine if any specific road safety issues, trends or patterns are evident.

6.7.24 The data obtained covers the three-year period from 01 October 2014 to 30 September 2017. This is graphically represented in Error! Reference source not found..

Plate 6.5: PIC data plot [Dartford Area]

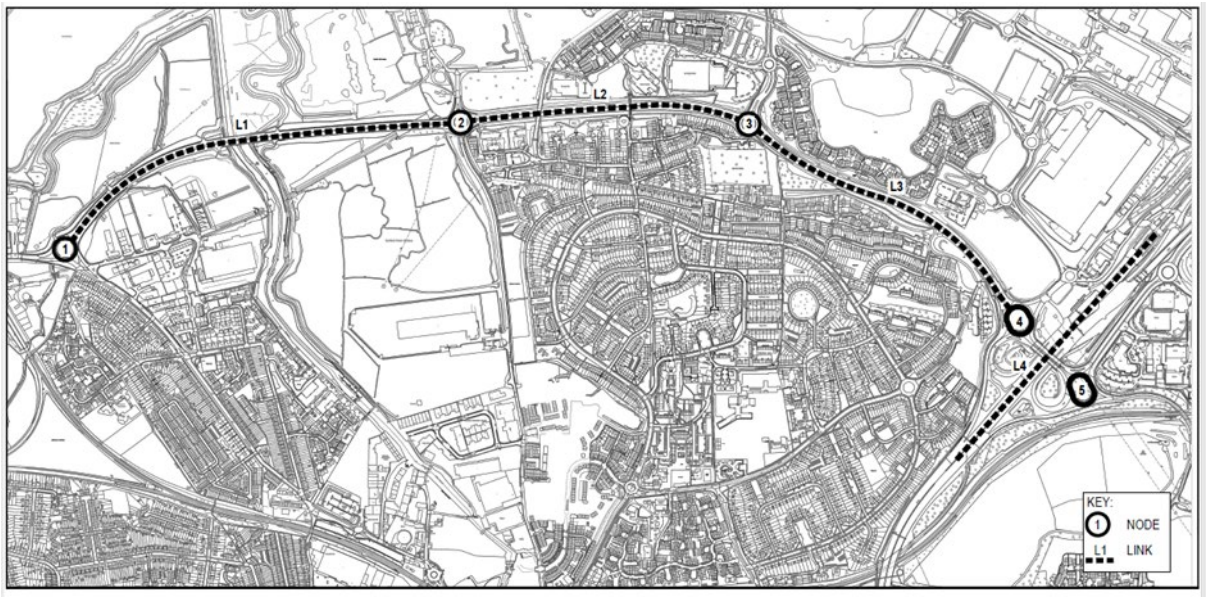



6.7.25 The following junctions and roads, located as indicated in Error! Reference source not found., have been analysed:

- Node 1 (Roundabout) – Thames Road/Bob Dunn Way/Burnham Road;
- Node 2 (Roundabout) – Bob Dunn Way/Joyce Green Lane/ Central Road;
- Node 3 (Roundabout) - Bob Dunn Way/Marsh Street North;
- Node 4 (Roundabout) - Bob Dunn Way/Littlebrook Interchange/Rennie Drive;
- Node 5 (Roundabout) -Littlebrook Interchange/Cotton Lane;
- Link 1 - Bob Dunn Way (Node 1 to Node 2);

- Link 2 - Bob Dunn Way (Node 2 to Node 3);
- Link 3 - Bob Dunn Way (Node 3 to Node 4); and
- Link 4 – A282 Dartford crossing approach.

Plate 6.6: Key to Analysed Links and Nodes [Dartford Area]




6.7.26 A total of 107 PICs were recorded in the assessment area during the three-year period. The severity of these PICs resulted in: 99 slight injury PICs; 8 serious; and no fatalities.

6.7.27 The predominant collisions are shunt and side impact incidents which accounted for 83 of the 107 PICs. These collisions are mainly concentrated on the A282 Dartford Crossing approach and involved merging and main line traffic. The severity is primarily recorded as slight which reflects that these are low speed impacts, which were recorded on many of the collision descriptions.

6.7.28 Bob Dunn Way/Joyce Green Lane, has 10 recorded PICs of which: 7 are single vehicle incidents, 3 involved motor cycles and 4 involved cars. There were no recorded PICs involving pedestrians or cycles.

6.7.29 The PICs in the study area for vulnerable road users consisted of: 1 pedestrian injury collision; 2 pedal cyclists; and 15 motorcyclists. The pedestrian collision involved the person walking across the signal controlled junction of the Littlebrook interchange. This junction has limited footways and no formal crossing facilities. The cycle related collisions occurred at the Littlebrook interchange and the Marsh Street North roundabouts. The collisions involving motorcycles where spread across a number of junctions and on the Dartford crossing approach.

Table 6.26: Summary of PICs by Severity [Dartford Area]

| Location | | Slight | Serious | Fatal | Total |
|---|---|---|---|---|---|
| Node 1 – Thames Road/Bob Dunn Way/Burnham Road | | 6 | 0 | 0 | 6 |
| Node 2 – Bob Dunn Way/Joyce Green Lane/ Central Road | | 9 | 1 | 0 | 10 |
| Node 3 - Bob Dunn Way/Marsh Street North | | 5 | 1 | 0 | 6 |
| Node 4 - Bob Dunn Way/Littlebrook Interchange/Rennie Drive | | 21 | 1 | 0 | 22 |
| Node 5 - Littlebrook Interchange/Cotton Lane | | 13 | 0 | 0 | 13 |
| Link 1 - Bob Dunn Way (Node 1 to Node 2) | | 0 | 0 | 0 | 0 |
| Link 2 - Bob Dunn Way (Node 2 to Node 3) | | 1 | 1 | 0 | 2 |
| Link 3 - Bob Dunn Way (Node 3 to Node 4) | | 1 | 0 | 0 | 1 |
| Link 4 – A282 Dartford crossing approach | | 43 | 4 | 0 | 47 |
| | Total | 99 | 8 | 0 | |

Table 6.27: Summary of PICs by Vulnerable User [Dartford area]

| Location | Pedestrian | Cyclist | M/C | Good vehicles |
|---|---|---|---|---|
| Node 1 – Thames Road/Bob Dunn Way/Burnham Road | 0 | 0 | 0 | 1 |
| Node 2 – Bob Dunn Way/Joyce Green Lane/ Central Road | 0 | 0 | 4 | 2 |
| Node 3 - Bob Dunn Way/Marsh Street North | 0 | 1 | 1 | 1 |
| Node 4 - Bob Dunn Way/Littlebrook Interchange/Rennie Drive | 1 | 1 | 2 | 7 |
| Node 5 -Littlebrook Interchange/Cotton Lane | 0 | 0 | 3 | 8 |
| Link 1 - Bob Dunn Way (Node 1 to Node 2) | 0 | 0 | 0 | 0 |
| Link 2 - Bob Dunn Way (Node 2 to Node 3) | 0 | 0 | 0 | 2 |

| Location | | Pedestrian | Cyclist | M/C | Good vehicles |
|---|---|---|---|---|---|
| Link 3 - Bob Dunn Way (Node 3 to Node 4) | | 0 | 0 | 0 | 1 |
| Link 4 – A282 Dartford crossing approach | | 0 | 0 | 5 | 25 |
| | Total | 1 | 2 | 15 | 47 |

Table 6.28: Summary of PICs by Vulnerable User [Dartford Area]

| Location | | Total Recorded | Wet Road | Dark | Single vehicle | Los of control | Shunt | Sie swipe /Merge |
|---|---|---|---|---|---|---|---|---|
| Node 1 – Thames Road/Bob Dunn Way/Burnham Road | | 6 | 3 | 3 | 0 | 1 | 2 | 1 |
| Node 2 – Bob Dunn Way/Joyce Green Lane/ Central Road | | 10 | 2 | 4 | 7 | 0 | 0 | 1 |
| Node 3 - Bob Dunn Way/Marsh Street North | | 6 | 3 | 3 | 0 | 1 | 3 | 2 |
| Node 4 - Bob Dunn Way/Littlebrook Interchange/Rennie Drive | | 22 | 6 | 3 | 1 | 1 | 7 | 10 |
| Node 5 - Littlebrook Interchange/Cotton Lane | | 13 | 5 | 3 | 1 | 0 | 2 | 10 |
| Link 1 - Bob Dunn Way (Node 1 to Node 2) | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Link 2 - Bob Dunn Way (Node 2 to Node 3) | | 2 | 2 | 0 | 0 | 0 | 1 | 1 |
| Link 3 - Bob Dunn Way (Node 3 to Node 4) | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Link 4 – A282 Dartford crossing approach | | 47 | 15 | 12 | 1 | 1 | 24 | 18 |
| | Total | 107 | 37 | 28 | 10 | 4 | 39 | 44 |

### River Thames Network

6.7.30 The potential effects to Air Quality and Noise from vessel movements are addressed within **Chapters 7** and **8**. A Navigational Risk Assessment (NRA) is appended to this Chapter at **Appendix B.2**.

6.7.31 The Proposed Development would seek to maximise the use of the Applicant's existing river infrastructure including its operational jetty, tugs and barges.

6.7.32 In line with the Port of London Authority's (PLA) Thames Vision and the Draft London Plan 2018, the Proposed Development would generate an increase in freight movements on the River Thames. The NRA, at **Appendix B.2**, considers the impacts of the Proposed Development on the safety of navigation. The initial scoping report for the Proposed Development included potential works in the river. This is no longer the case and the Proposed Development would only utilise existing marine infrastructure without requiring it to be modified.

6.7.33 Analysis of the PLAs incident data identified few incidents involving tug and tows related to the Applicant. 17 incidents were identified over eight years of data, which were mostly near misses and wash complaints. A single serious collision was recorded between a third party passenger boat and a 'tug and tow' operated by the Applicant. The third party was found to be at fault.

### Public Transport Network

6.7.34 According to TfL's online WebCAT toolkit, the REP site has a Public Transport Accessibility Level (PTAL) of 0, which equates to 'very poor' provision. However, this is a result of the bus stops on Picardy Manorway being situated approximately 100 m beyond the 640 m maximum walking distance threshold. In reality, there is some level of public transport provision for the REP site which is not captured in the PTAL assessment.

6.7.35 There are two bus services (180 and 401) which operate on Picardy Manorway from which Norman Road, the primary access into the REP site, routes north. Both routes offer frequent services to local residential areas and are a viable alternative mode of transport to the private car for employees at RRRF and REP. The eastbound bus stop is on the northern side of Picardy Manorway approximately 130 m east of Norman Road and the westbound bus stop is on the southern side of Picardy Manorway.

6.7.36 Belvedere Rail Station is located approximately 1.3 km to the south of the REP site, a 17-minute walk, serving London Cannon Street, London Charing Cross, London Bridge, Dartford, Gravesend and Gillingham. The 401 bus has a 3-minute journey time to Belvedere station. The station has several peak hour services to/from London Charing Cross and a number of off-peak services.

6.7.37 Abbey Wood Rail Station is approximately 11 minutes on the 180 bus service or one stop west on the same line as Belvedere station. Elizabeth line services will commence from Abbey Wood in 2019 and the station also benefits from

2tph to London Charing Cross via Lewisham, 2 tph in each direction between the Medway Towns and Luton via central London on Thameslink.

### Public Rights of Way (PRoW)

6.7.38 A network of PRoWs surrounds the REP site and the Main Temporary Construction Compound, linking Norman Road with the Thames Path to the north. The FP2 PRoW originates at the junction of Norman Road and the A2016, which extends west then northwest through the Crossness Nature Reserve to its border with the Thames Water Crossness STW. From here this PRoW extends north to the Thames Path, and south to the A2016.

6.7.39 The England Coast Path, a new National Trail around England's coast, in the vicinity of REP, is to be confirmed but is expected to follow the route of the Thames Path and is scheduled for completion by 2020.

6.7.40 The Thames Path, which forms part of Route 1 of the National Cycle Network, provides a good traffic-free route between the REP site, Thamesmead to the west and Erith to the east.

### Electrical Connection Route

6.7.41 The Electrical Connection is expected to be adjacent to the start / end of a number of PRoWs with two crossing the route. If the route crosses the Crossness Nature Reserve, it is expected that footpath FP2 could be closed for a number of weeks (subject to detailed programme). A diversion route could be promoted using Norman Road and FP4. FP4 would lie outside works to reconfigure the entrance and would not therefore be affected. The impact on FP1, BY104 and BY105 would be determined through the detailed design for the Electrical Route. This could require a closure or temporary diversion. Access from FP243, FP249 and FP29 to the public highway within the Order Limits would be maintained. There are no other plans to close PRoWs during the construction works or for the operation of REP. FP20 passes underneath the Electrical Connection in a subway and would be unaffected.

6.7.42 The route is expected to cross the alignment of footpaths DB1 and DB5 in DBC/KCC. In the case of DB5, the PRoW has routes under the A206 as well as crossing the road at grade. Access would be maintained along the river and under the road bridge for the route along the embankment. Access would also be incorporated around the temporary works compound and the works area for the Electrical Connection. Where possible this would maintain the current route of the PRoW. Diversions would be kept to a minimum, whilst maintaining safe and efficient operation of the works areas.

6.7.43 Footpath DB1 currently crosses the A206 dual carriageway at grade via a break in the central reservation and dropped kerbs from the footways running along that road. The route of the PRoW would be allowed for within the temporary traffic management for the works areas around the Electrical Connection.

6.7.44 The Fastrack dedicated busway crosses the line of DB3. A local temporary diversion would be provided around the works areas whilst the Electrical Connection cabling is laid within that area. DB50 crosses using an overbridge and would be unaffected.

6.7.45 The affected PRoWs would be confirmed once the route is finalised. The route options are currently being assessed by UKPN on behalf of the Applicant. These cover options from REP to the Littlebrook substation. Further detail on the connection route options is provided in the TA, attached at **Appendix B.2**. Management of potential impacts on PRoWs during construction would be set out in the CTMP secured as a DCO requirement, in liaison with the relevant local authority.

6.7.46 As the Electrical Connection is predominantly underground, any potential impacts on PRoW would only be associated with the temporary construction phase. There would be no operational impacts to PRoW from the Electrical Connection, with the exception of infrequent maintenance requirements, in the unlikely event that the affected access chamber coincides with a PRoW.

### Receptors

6.7.47 Based on the sensitive receptors to traffic, defined by the IEMA Guidelines, **Table 6.29** outlines the identified sensitive receptors for this assessment together with their sensitivity rating and description.

6.7.48 It should be recognised that most of the criteria apply to 'link' receptors, with the exception of driver delay and accidents and road safety, which are only relevant for 'junction' receptors. Therefore, 'link' receptors are assessed in terms of severance, pedestrian delay and amenity, and pedestrian fear and intimidation; whilst 'junction' receptors are assessed against driver delay and accidents and road safety criteria.

6.7.49 Given that the routeing of vehicles from REP would be primarily on a dual-carriageway part of the SRN with limited active frontage, there are relatively few sensitive receptors which would be affected by REP.

6.7.50 Potential impacts on the Fastrack corridor are considered separately in this Chapter.

Table 6.29: Transport Sensitive Receptors

| Sensitivity | Receptor | Definition |
|---|---|---|
| **Severance / Pedestrian Delay and Amenity / Pedestrian Fear and Intimidation** | | |
| High | Yarnton Way (south of A2016 Eastern Way) | access to education |

| Sensitivity | Receptor | Definition |
|---|---|---|
| High | A206 Northend Road (north of A2000 Perry Street) | access to education, sports centres, day centres, train station |
| Medium | A2016 Eastern Way (west of Yarnton Way) | FP1/2 at grade crossing point |
| Medium | A2000 Perry Street (south of A206 Thames Road) | access route to recreation |
| Medium | A206 Thames Road (south of Howbury Lane Roundabout) | access route to park,<br>FP29 access |
| Low | Norman Road (north of Picardy Manor Way) | access to FP4 and FP2 |
| Low | A2016 Picardy Manorway (east of Norman Road) | access to bus stops |
| Low | B253 Picardy Manorway (south of Horse Roundabout) | potential access route to education |
| Low | A206 Thames Road (west of A2026 Burnham Road Roundabout) | access route to open space,<br>access to FP249, BY103, BY 105, BY104 |
| Low | A2026 Burnham Road (south of A206 Thames Road Roundabout) | potential access route to education |
| Low | A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | access to DB5, DB1 |
| Negligible | A2016 Picardy Manorway (between Norman Road and Eastern Way) | No sensitive receptor directly impacted |
| Negligible | A2016 Bronze Age Way (south of Horse Roundabout) | no sensitive receptor directly impacted |
| Negligible | A206 Bob Dunn Way (east of Marsh Street N) | no sensitive receptor directly impacted |

| Sensitivity | Receptor | Definition |
|---|---|---|
| **Driver Delay** | | |
| Medium | A2016 Picardy Manorway/ Clydesdale Way/ Yarnton Way/ A2016 Eastern Way roundabout | Key junctions on the SRN providing access to the national motorway network and Central London. |
| | A2016 Picardy Manorway/ Norman Road junction | |
| | A2016 Picardy Manorway/ Anderson Way/ A2016 Bronze Age Way/ B253 Picardy Manorway roundabout | |
| | A206/A2016/Bexley Road roundabout | |
| | A206/James Watt Way junction | |
| | A206/Boundary Street/Dell View Road roundabout | |
| **Accidents and Road Safety** | | |
| Medium | Roundabout (Node 1) – Thames Road/Bob Dunn Way/Burnham Road | Key junction on the SRN providing access to the national motorway network and Central London with a cluster at least 10 collisions recorded. |
| | Roundabout (Node 2)– Bob Dunn Way/Joyce Green Lane/ Central Road | |
| | Roundabout (Node 3) - Bob Dunn Way/Marsh Street North | |
| | Roundabout (Node 4) - Bob Dunn Way/Littlebrook Interchange/Rennie Drive | |
| | Roundabout (Node 5) - Littlebrook Interchange/Cotton Lane | |

| Sensitivity | Receptor | Definition |
|---|---|---|
| | Link - Bob Dunn Way (Node 1 to Node 2) | |
| | Link - Bob Dunn Way (Node 2 to Node 3) | |
| | Link - Bob Dunn Way (Node 3 to Node 4) | |
| | Link – A282 Dartford crossing approach | |

### Baseline Evolution

6.7.51 In order to determine how the identified baseline for transport could change in the assessment years considered in this Chapter, traffic growth has been factored into future year assessments.

6.7.52 This is the standard approach when using TEMPro, in the absence of a strategic transport model, and ensures that population, employment and household growth are factored into the assessment for the relevant years. Growth factors have been determined for the study area at the level of a borough level.

6.7.53 As a result of a request from KCC and DBC, committed developments in Dartford are accounted for in addition to local growth factors. There is outline planning permission for a Data Centre on Norman Road (LBB planning ref.: 15/02926/OUTM); however, 2018 traffic data has been used as a baseline within the impact assessment as this represents a robust approach given that the percentage impact of REP's construction and operational phases is higher when using 2018 traffic flows.

6.7.54 Whilst background growth would be anticipated on the network, as Norman Road acts as an access road only, limited background growth would be anticipated on this link, with the exception of the committed development of the Data Centre.

6.7.55 The TA sets out, at Section 6, the method of applying committed development and background traffic growth to the highway network.

6.7.56 With regards to movement on the River Thames, the NRA identifies that the Thames Vision (2015) set out ambitious targets to increase the volume of commercial, passenger and recreational traffic on the river. By 2025, when the Proposed Development would be operating, the targets would derive a:

- 42% increase in commercial tonnage;
- 50% increase in passenger numbers; and

- 50% increase in intra-port trade.

6.7.57 These increases relate to the relationship between tonnages and people carried and not vessel numbers, with the relationship unclear, as there is existing capacity on current vessels and at off-peak periods. In addition, the PLA have sought to increase vessel traffic whilst maintaining current levels of risk.

## 6.8 Embedded Mitigation

6.8.1 The proposals include a number of elements of embedded mitigation, as follows:

- Presence and use of the existing jetty to maximise the transportation of waste inputs, consumables and by-products by river;
- Car and cycle parking provided to levels prescribed within the Draft London Plan which have been formulated to manage London's road network, taking into account the REP site's level of public transport accessibility and land use, as well as to encourage access by non-car modes; and
- As part of any temporary closures of PRoWs associated with the construction of the Electrical Connection, there would be appropriate diversions put in place to be agreed with the relevant highway authorities prior to the commencement of construction.

## 6.9 Assessment of Likely Effects

6.9.1 The assessment of likely effects assesses each component of the Proposed Development individually. The components assessed comprise the REP site and Main Temporary Construction Compounds, along with the Electrical Connection and Cable Route Temporary Construction Compounds. Details of the assessment of these components are presented below and reflect the process which has been set out within the TA Scoping Report.

### The REP Site and the Main Temporary Construction Compounds

### Construction/Decommissioning

Severance

6.9.2 **Table 6.30** shows the percentage change in average daily traffic flows on links in proximity to REP. It compares traffic flows of the 2022 Do Something (15-Month) as well as 2022 Do Something (24-Month) scenarios with the 2022 Do Minimum scenario.

Table 6.30: Construction Assessment - Severance

| Link | Change in Daily Traffic Flows in 2022 as a result of Traffic associated with the Construction of REP | |
|---|---|---|
| | Do Something (15-Month) Scenario | Do Something (24-Month) Scenario |
| Norman Road (North of Picardy Manorway) immediately north of A2016 | 38.9% | 38.9% |
| A2016 Eastern Way (west of Yarnton Way) | 0.3% | 0.3% |
| Yarnton Way (south of A2016 Eastern Way) | 0.7% | 0.7% |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 2.6% | 2.6% |
| A2016 Picardy Manorway (east of Norman Road) | 2.8% | 2.8% |
| B253 Picardy Manorway (south of Horse Roundabout) | 2.8% | 2.8% |
| A2016 Bronze Age Way (south of Horse Roundabout) | 1.5% | 1.5% |
| A206 Northend Road (north of A2000 Perry Street) | 1.1% | 1.1% |
| A2000 Perry Street (south of A206 Thames Road) | 0.0% | 0.0% |
| A206 Thames Road (south of Howbury Lane Roundabout) | 1.1% | 1.1% |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 1.2% | 1.1% |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 0.0% | 0.0% |

| Link | Change in Daily Traffic Flows in 2022 as a result of Traffic associated with the Construction of REP | |
|---|---|---|
| | Do Something (15-Month) Scenario | Do Something (24-Month) Scenario |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 1.6% | 1.5% |
| A206 Bob Dunn Way (east of Marsh Street N) | 1.8% | 1.7% |

6.9.3 As shown, with the exception of Norman Road, the maximum increase in traffic flows in both 2022 Do Something scenarios is 2.8% on the B253 Picardy Manorway (south of Horse Roundabout), which falls well below the IEMA threshold of 30%, as outlined in **Table 6.12**. that would produce a slight change in severance.

6.9.4 The largest increase in daily traffic flows as a result of the construction of the Proposed Development would occur along Norman Road (north of Picardy Manorway). It is forecast that daily traffic flows would increase by c. 38.9%, between Picardy Manorway and the access to Isis Reach (Asda depot access), which equates to an additional 574 daily vehicle movements in both 2022 Do Something scenarios, compared to the Do Minimum scenario. It should be noted that baseline traffic flows on Norman Road (North of Picardy Manorway), are very low and thus even a small increase in vehicle movements on this stretch of Norman Road presents a large percentage change.

6.9.5 In both Do Something scenarios, daily average traffic flows on Norman Road are forecast to be in the region of 1350 movements. This is considered to be a comparably low volume of traffic, especially when compared to all other assessed links where daily traffic flows are in the region of 10,000 to 35,000 vehicle movements in the 2018 baseline scenario. Thus, it is considered that the traffic flows on Norman Road (north of Picardy Manorway) in both Do Something scenarios would cause a **Negligible** effect on severance during the construction phase of the Proposed Development, which is **Not Significant**. This conclusion is further strengthened due to the absence of frontage development and low number of cross movements.

6.9.6 Norman Road (north of Picardy Manorway) provides access to FP4 and FP2. It is considered unlikely that the increase in daily traffic flows would adversely affect FP4, due to the reasoning above. Regarding FP2 accessed from Norman Road, given the presence of a signal controlled crossing facility, it is considered that the increase in daily traffic flows as a result of the construction of the

Proposed Development, whilst exceeding the 90% threshold as set out in **Table 6.12**, the actual level of severance would cause a **Negligible** effect on FP2 users, which is **Not Significant**.

6.9.7 With regards to PRoWs on other assessed links, the following links that provide access to and/or are intersected by PRoWs, are forecast to be subject to insignificant increases in daily traffic flows (less than 2%) in the 2022 Do Something scenarios compared to the 2022 Do Minimum scenario – below the threshold of 30% for Negligible impact:

- A2016 Eastern Way (west of Yarnton Way);
- A206 Thames Road (south of Howbury Lane Roundabout);
- A206 Thames Road (west of A2026 Burnham Road Roundabout); and
- A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout).

6.9.8 Thus, it is considered that the construction of the Proposed Development would have a **Negligible** effect on severance of the PRoWs accessed or intersected by these links, which is **Not Significant**.

Driver Delay

6.9.9 Driver delay is reported in the TA as part of the junction capacity analysis across the agreed junction study area. Relevant to this Chapter are the capacity assessments, which have been undertaken for six junctions. The junctions are as follows:

- A2016 Picardy Manorway/ Clydesdale Way/ Yarnton Way/ A2016 Eastern Way roundabout;
- A2016 Picardy Manorway/ Norman Road junction;
- A2016 Picardy Manorway/ Anderson Way/ A2016 Bronze Age Way/ B253 Picardy Manorway roundabout;
- A206/A2016/Bexley Road roundabout;
- A206/James Watt Way junction; and
- A206/Boundary Street/Dell View Road roundabout.

6.9.10 All roundabouts have been modelled using Junctions 9 software, while all signal controlled junctions have been modelled using LinSig software.

6.9.11 **Table 6.31** presents the difference in driver delay times between the 2022 Do Minimum and Do Something scenarios for the morning peak hour only, as this is the period when the combined effect of existing traffic and additional traffic generated by the construction phase of the Proposed Development has the greatest impacts.

Table 6.31: Construction Assessment – Driver Delay (AM Peak Hour)

| Junction ID | Junction | Junction Delay (Seconds) in 2022 | |
|---|---|---|---|
| | | Change in Delay between Do Something (15-Month) and Do Minimum | Change in Delay between Do Something (24-Month) and Do Minimum |
| 1 | A2016 Picardy Manorway/ Clydesdale Way/ Yarnton Way/ A2016 Eastern Way roundabout | 1.17 | 1.16 |
| 2 | A2016 Picardy Manorway/ Norman Road junction | -0.11* | -0.11* |
| 3 | A2016 Picardy Manorway/ Anderson Way/ A2016 Bronze Age Way/ B253 Picardy Manorway roundabout | 1.40 | 1.38 |
| 4 | A206/A2016/Bexley Road roundabout | 84.94 | 84.27 |
| 5 | A206/James Watt Way junction | 26.35 | 23.61 |
| 6 | A206/Boundary Street/Dell View Road roundabout | 2.47 | 1.74 |

Note*: Negative values for the change in delay are derived as a consequence of the modelling process due to a non-linear relationship between change in flow and change in delay when reported for the total junction delays rather than delay per vehicle.

6.9.12 As shown, Junction 1, 2, 3, 5 and 6 would be subject to minimal change in driver delay times in both Do Something scenarios compared to the Do Minimum scenario. Therefore, these junctions would be subject to a **Negligible** effect in relation to driver delay, due to the delays being below 30 seconds, as specified in **Table 6.13**, which is **Not Significant**.

6.9.13 At Junction 4, it is forecast that driver delay would increase by over 80 seconds in both Do Something scenarios compared to the Do Minimum scenario. Thus, this junction would be subject to a temporary, direct effect of **Moderate adverse** significance on driver delay in both 2022 Do Something scenarios, due to the

delays being between 1 and 3 minutes, which is **Significant**. This assessment is based on the conservative case of work force arriving during the morning peak period.

6.9.14 Any decommissioning phase is assumed to be of a similar or shorter duration to construction and therefore effects are considered to be of a similar level to that during the construction phase.

6.9.15 Based on these assumptions, it is considered likely that the decommissioning of REP could cause temporary effects of **Minor adverse** significance, which is **Not Significant**.

Pedestrian Delay and Amenity

6.9.16 As outlined within the methodology section of this Chapter, the assessment of pedestrian delay considers the increase in hourly two-way traffic flows as primary cause for increased walking journey times. The IEMA Guidance thresholds, as set out in **Table 6.14**, have been used for the assessment of pedestrian delay between the 2022 Do Minimum and 2022 Do Something (15-Month and 24-Month) scenarios, which is presented in **Table 6.32**.

Table 6.32: Construction Assessment – Pedestrian Delay

| Link | Average Hourly Movements | | |
|---|---|---|---|
| | Do Minimum | Do Something (15-Month) | Do Something (24-Month) |
| Norman Road (North of Picardy Manorway) immediately north of A2016 | 97 | 134 | 134 |
| A2016 Eastern Way (west of Yarnton Way) | 1028 | 1031 | 1031 |
| Yarnton Way (south of A2016 Eastern Way) | 491 | 495 | 495 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road and) | 1446 | 1483 | 1483 |
| A2016 Picardy Manorway (east of Norman Road) | 1330 | 1367 | 1367 |
| B253 Picardy Manorway (south of Horse Roundabout) | 475 | 489 | 489 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 1151 | 1168 | 1168 |

| Link | Average Hourly Movements | | |
|---|---|---|---|
| | Do Minimum | Do Something (15-Month) | Do Something (24-Month) |
| A206 Northend Road (north of A2000 Perry Street) | 1589 | 1607 | 1607 |
| A2000 Perry Street (south of A206 Thames Road) | 686 | 686 | 686 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 1578 | 1596 | 1596 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 1656 | 1676 | 1674 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 882 | 882 | 882 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 1383 | 1406 | 1403 |
| A206 Bob Dunn Way (east of Marsh Street N) | 1122 | 1142 | 1141 |

6.9.17 In the links assessed for pedestrian delay in both Do Something scenarios, it has been identified that all but one are not forecast to increase to above the 1,400 vehicles per hour, being the **Negligible** threshold.

6.9.18 One link, the A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout), is forecast to increase such that it operates above the 1,400 vehicles per hour **Small** magnitude threshold, in both the Do Something scenarios. The design of this stretch of the A206 as a strategic road is such that there is little requirement or demand for pedestrians to cross this corridor except at the designated crossings of PRoWs DB5 and DB1, which runs along the River Darent. An existing underpass is provided for DB5, which provides pedestrians with an alternative to crossing the road at grade. The crossing for DB1 would be provided for within the Electrical Connection works area.

6.9.19 Therefore, it is considered that the construction of REP would cause a temporary, direct **Minor adverse** effect on pedestrian delays in the both 2022 Do Something scenarios, which is **Not Significant**.

6.9.20 Pedestrian amenity, as outlined at Section 6.5, is affected by factors including traffic flow, traffic composition and footway or footpath width / separation from traffic. A tentative threshold for judging the significance of changes in pedestrian

amenity is described by the IEMA guidance as instances "*where traffic flow (or its lorry component) is halved or doubled*".

6.9.21 The additional traffic generated by the construction of REP would not result in a doubling of traffic flows along any link assumed to be part of the construction routes, with the exception of Norman Road (north of Picardy Manorway), which would predominantly only affect pedestrians accessing REP or FP4. Taking this appraisal into account, it is considered that the construction of REP would result in a **Negligible** effect on pedestrian amenity, which is **Not Significant**.

Pedestrian Fear and Intimidation

6.9.22 As outlined above, an increase in hourly two-way traffic flows or in the proportion of HGV movements can cause adverse effects on pedestrian fear and intimidation. The suggested IEMA threshold guidance for pedestrian fear and intimidation, as shown in **Table 6.15**, suggests a **Slight adverse** effect if average traffic flows over 18 hours is in the region of 600 to 1200 vehicles per hour or if average 18-hour HGV movements are in the region of 1,000 to 2,000.

6.9.23 **Table 6.33** shows average movements (including arrivals and departures) over 18 hours in vehicles per hour as well as 18-hour two-way HGV flows for the 2022 Do Minimum and Do Something scenarios.

Table 6.33: Construction Assessment – Pedestrian Fear and Intimidation

| Link | Average Movements over 18 Hours (Vehicles/Hour) | | | Average 18-hour HGV Movements | | |
|---|---|---|---|---|---|---|
| | Do Minimum | Do Something (15- Month) | Do Something (24- Month) | Do Minimum | Do Something (15- Month) | Do Something (24- Month) |
| Norman Road (North of Picardy Manorway) immediately north of A2016 | 142 | 206 | 206 | 844 | 888 | 888 |
| A2016 Eastern Way (west of Yarnton Way) | 1440 | 1445 | 1445 | 4584 | 4606 | 4606 |
| Yarnton Way (south of A2016 Eastern Way) | 688 | 694 | 694 | 2208 | 2208 | 2208 |
| A2016 Picardy Manorway (between | 2052 | 2116 | 2116 | 6722 | 6766 | 6766 |

| Link | Average Movements over 18 Hours (Vehicles/Hour) | | | Average 18-hour HGV Movements | | |
|---|---|---|---|---|---|---|
| | Do Minimum | Do Something (15- Month) | Do Something (24- Month) | Do Minimum | Do Something (15- Month) | Do Something (24- Month) |
| Eastern Way and Norman Road) | | | | | | |
| A2016 Picardy Manorway (east of Norman Road) | 1892 | 1956 | 1956 | 6180 | 6224 | 6224 |
| B253 Picardy Manorway (south of Horse Roundabout) | 663 | 685 | 685 | 1298 | 1298 | 1298 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 1615 | 1645 | 1645 | 6157 | 6179 | 6179 |
| A206 Northend Road (north of A2000 Perry Street) | 2232 | 2262 | 2262 | 9075 | 9097 | 9097 |
| A2000 Perry Street (south of A206 Thames Road) | 969 | 969 | 969 | 2631 | 2631 | 2631 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 2207 | 2237 | 2237 | 7591 | 7613 | 7613 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 2304 | 2338 | 2336 | 5774 | 5846 | 5821 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 1229 | 1229 | 1229 | 2551 | 2551 | 2551 |
| A206 Bob Dunn Way (north of A2026 | 1948 | 1986 | 1982 | 4648 | 4770 | 4720 |

| Link | Average Movements over 18 Hours (Vehicles/Hour) | | | Average 18-hour HGV Movements | | |
|---|---|---|---|---|---|---|
| | Do Minimum | Do Something (15- Month) | Do Something (24- Month) | Do Minimum | Do Something (15- Month) | Do Something (24- Month) |
| Burnham Road Roundabout) | | | | | | |
| A206 Bob Dunn Way (east of Marsh Street N) | 1578 | 1613 | 1610 | - | - | - |

6.9.24 As can be seen, links assessed against the criteria set out in **Table 6.16** would not be subject to a change in the level of pedestrian fear and intimidation in both 2022 Do Something scenarios compared with the level of fear and intimidation in the Do Minimum scenario. The impact of the Proposed Development would therefore not change the perception of fear or intimidation. For example, where the flow on the A2000 is within the Slight Hazard category, to which **Table 6.15** refers in the Do-minimum scenario, it remains in the same category in the Do Something scenarios. A206 Thames Road is deemed to have a flow level above the Extreme Hazard threshold within the Do Minimum scenario, and it remains in the same category in the Do Something scenarios.

6.9.25 In addition to traffic flow and HGV flow changes, fear and intimidation can also be caused by an increase in traffic speeds. It is not envisaged that the construction of REP would lead to any changes in traffic speeds.

6.9.26 Accordingly, effects in relation to Pedestrian Fear and Intimidation are **Negligible** and **Not Significant**.

Accidents and Road Safety

6.9.27 **Sections 6.7.12 to 6.7.29** provide reviews of the recorded PICs within the defined areas of LBB and Dartford. The review identifies that there are two points within those areas with PIC clusters of more than 10 incidents.

6.9.28 The Joyce Green Lane roundabout junction with A206 (Bob Dunn Way / University Way) has a cluster of 10 PICs (including one classified as Serious). The Electrical Connection would pass through this junction. Suitably designed temporary traffic management would be installed and maintained during the period of works in that location. The data recorded that 7 of the 10 PICs were single vehicle incidents. This suggests loss of control is a significant cause.

6.9.29 At peak construction of REP and during construction of the Electrical Connection it is predicted that there would be in the order of 544 movements per day in 2022 through this junction. The 2022 base data shows that there are 33,194 movements per day through the junction. The induced traffic represents less than a 2% increase in traffic and is therefore not considered sufficient to derive a significant change in the number or pattern of collisions at the Joyce Green Lane roundabout. The Proposed Development would not change the level of risk of accidents at this junction. The effect is therefore **Negligible** which is **Not Significant**.

6.9.30 The junctions of Rennie Drive and Cotton Lane form part of the network at A282 junction 1A. There were in excess of 10 PICs at each location. Many are recorded as side impacts, typical of busy roundabout circulations.

6.9.31 The peak construction period traffic at junction 1A would be similar to that at the Joyce Green Lane roundabout (544 movements per day in 2022). The base flows are in excess of those at Joyce Green Lane and so the level of impact of PICs would be **Negligible** which is **Not Significant.**

### Operation/Maintenance

Severance

6.9.32 **Table 6.34** shows the percentage change in average daily traffic flows on links in proximity of REP during its operation. It compares traffic flows of the 2024 Do Something (Nominal and 100% Road) with the 2024 Do Minimum scenario as well as 2039 Do Something (Nominal and 100% Road) scenarios with the 2039 Do Minimum scenario.

Table 6.34: Operational Assessment - Severance

| Link | Change in Daily Traffic Flows as a result of Movements associated with the Construction of REP | | | |
|---|---|---|---|---|
| | 2024 Do Something | | 2039 Do Something | |
| | Nominal | 100% Road | Nominal | 100% Road |
| Norman Road (North of Picardy Manorway) immediately north of A2016 | 13.5% | 33.5% | 12.6% | 31.2% |
| A2016 Eastern Way (west of Yarnton Way) | 0.3% | 1.8% | 0.3% | 1.7% |

| Link | Change in Daily Traffic Flows as a result of Movements associated with the Construction of REP | | | |
|---|---|---|---|---|
| | 2024 Do Something | | 2039 Do Something | |
| | Nominal | 100% Road | Nominal | 100% Road |
| Yarnton Way (south of A2016 Eastern Way) | 0.3% | 0.1% | 0.3% | 0.1% |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 0.8% | 2.1% | 0.7% | 2.0% |
| A2016 Picardy Manorway (east of Norman Road) | 0.9% | 2.3% | 0.8% | 2.2% |
| B253 Picardy Manorway (south of Horse Roundabout) | 0.6% | 0.3% | 0.6% | 0.3% |
| A2016 Bronze Age Way (south of Horse Roundabout) | 0.5% | 1.0% | 0.4% | 1.0% |
| A206 Northend Road (north of A2000 Perry Street) | 0.3% | 0.7% | 0.3% | 0.7% |
| A2000 Perry Street (south of A206 Thames Road) | 0.0% | 0.0% | 0.0% | 0.0% |
| A206 Thames Road (south of Howbury Lane Roundabout) | 0.3% | 0.7% | 0.3% | 0.7% |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 0.3% | 0.7% | 0.3% | 0.6% |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 0.0% | 0.0% | 0.0% | 0.0% |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 0.3% | 0.8% | 0.3% | 0.7% |
| A206 Bob Dunn Way (east of Marsh Street N) | 0.4% | 0.9% | 0.3% | 0.8% |

6.9.33 As shown, with the exception of Norman Road, the maximum increase in traffic flows is forecast to occur in the 2024 Do Something (100% Road) scenario. It is

forecast that daily traffic flows on the A2016 Picardy Manorway (east of Norman Road) would increase by 2.3%. An increase of this magnitude falls well below the IEMA threshold of 30%, as outlined in **Table 6.12**. It is therefore considered that the operation of REP would cause a **Negligible** effect on severance on the assessed links, which is **Not Significant**.

6.9.34 The largest increase in daily traffic flows as a result of the operation of REP would occur along Norman Road (north of Picardy Manorway). It is forecast that daily traffic flows would increase by approximately 33.5%, which equates to an additional 792 daily vehicle movements in the 2024 Do Something (100% Road) scenario compared to the 2024 Do Minimum scenario. It should be noted that baseline traffic flows on Norman Road (north of Picardy Manorway) are very low and thus even a small increase in vehicle movements on this stretch of Norman Road presents a large percentage change.

6.9.35 In both Do Something (100% Road) scenarios, daily average traffic flows on Norman Road (north of Picardy Manorway) are forecast to be in the region of 1100 movements. This is considered to be a low volume of traffic, especially when compared to all other assessed links where daily traffic flows are in the region of 10,000 to 35,000 vehicle movements in the 2018 baseline scenario. Thus, it is considered that the traffic flows on Norman Road (north of Picardy Manorway) in both reasonable worst case Do Something (100% Road) scenarios would cause a **Negligible** effect on severance during the operational phase of REP, which is **Not Significant**.

6.9.36 As outlined above, Norman Road (north of Picardy Manorway) provides access to FP4 and FP2. It is considered unlikely that the increase in daily traffic flows would adversely affect FP4, due to the above reasoning. Regarding FP2 accessed from Norman Road, given the presence of an existing signal controlled crossing facility, it is therefore considered that the increase in daily traffic flows as a result of the operation of REP would cause a **Negligible** effect on FP2 users, which is **Not Significant**.

6.9.37 With regards to PRoWs on other assessed links, the following links that provide access to and/or are intersected by PRoWs are forecast to be subject to insignificant increases in daily traffic flows (less than 2%) in the 2024 and 2039 Do Something scenarios compared to the 2024 and 2039 Do Minimum scenarios:

- A2016 Eastern Way (west of Yarnton Way);
- A206 Thames Road (south of Howbury Lane Roundabout);
- A206 Thames Road (west of A2026 Burnham Road Roundabout); and
- A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout).

6.9.38 Thus, it is considered that the operation of REP would have a **Negligible** effect on PRoWs accessed or intersected by these links, which is **Not Significant**.

Driver Delay

6.9.39 As with the driver delay assessment for the construction phase, junction capacity assessments have been undertaken for the six junctions.

6.9.40 **Table 6.35** presents the difference in driver delay times between the 2024 and 2039 Do Minimum and Do Something (Nominal and 100% Road) scenarios for the morning peak hour only, as this is the period when the combined effect of existing traffic and additional traffic generated by the construction phase of the Proposed Development has the greatest impacts.

Table 6.35: Operational Assessment – Driver Delay (AM Peak Hour)

| Junction ID | Junction | Junction Delay (Seconds) | | | |
|---|---|---|---|---|---|
| | | 2024 | | 2039 | |
| | | Change in Delay between Do Something (Nominal) and Do Minimum | Change in Delay between Do Something (100% Road) and Do Minimum | Change in Delay between Do Something (Nominal) and Do Minimum | Change in Delay between Do Something (100% Road) and Do Minimum |
| 1 | A2016 Picardy Manorway/ Clydesdale Way/ Yarnton Way/ A2016 Eastern Way roundabout | 0.04 | 0.10 | 0.05 | 0.14 |
| 2 | A2016 Picardy Manorway/ Norman Road junction | 0.08 | 0.23 | 0.09 | 0.23 |
| 3 | A2016 Picardy Manorway/ Anderson Way/ A2016 | 0.07 | 0.17 | 0.09 | 0.23 |

| Junction ID | Junction | Junction Delay (Seconds) | | | |
|---|---|---|---|---|---|
| | | 2024 | | 2039 | |
| | | Change in Delay between Do Something (Nominal) and Do Minimum | Change in Delay between Do Something (100% Road) and Do Minimum | Change in Delay between Do Something (Nominal) and Do Minimum | Change in Delay between Do Something (100% Road) and Do Minimum |
| | Bronze Age Way/ B253 Picardy Manorway roundabout | | | | |
| 4 | A206/A2016/ Bexley Road roundabout | 2.35 | 4.31 | 1.99 | 4.42 |
| 5 | A206/James Watt Way junction | 4.10 | 1.21 | 1.64 | 4.32 |
| 6 | A206/Boundary Street/Dell View Road roundabout | 0.45 | 1.21 | 0.61 | 1.63 |

6.9.41 As can be seen, the highest increase in delay times as a result of the operation of REP is forecast to occur at the A206/James Watt Way junction. It is forecast that driver delay would increase by 4.32 seconds in the 2039 Do Something (100% Road) scenario, which falls below the **Small** magnitude, 30 second to 1 minute change, threshold for driver delay, as set out in **Table 6.13**.

6.9.42 Based on the above, it is considered that the operation of REP would result in a **Negligible** effect on driver delay, which is **Not Significant**.

Pedestrian Delay and Amenity

6.9.43 As outlined within the methodology section of this Chapter, the assessment of pedestrian delay considers the increase in hourly two-way traffic flows as

primary cause for increased walking journey times. The IEMA Guidance thresholds, as set out in **Table 6.14**, have been used for the assessment of pedestrian delay between the 2024 Do Minimum and 2024 Do Something (Nominal and 100% Road) scenarios as well as 2039 Do Minimum and 2039 Do Something (Nominal and 100% Road) scenarios, which is presented in **Table 6.36**.

Table 6.36: Operational Assessment – Pedestrian Delay

| Link | Two-Way Average Hourly Traffic Flows | | | | | |
|---|---|---|---|---|---|---|
| | 2024 Scenarios | | | 2039 Scenarios | | |
| | Do Minimum | Nominal | 100% Road | Do Minimum | Nominal | 100% Road |
| Norman Road (North of Picardy Manorway) immediately north of A2016 | 98 | 112 | 131 | 106 | 119 | 139 |
| A2016 Eastern Way (west of Yarnton Way) | 1048 | 1051 | 1066 | 1116 | 1120 | 1135 |
| Yarnton Way (south of A2016 Eastern Way) | 501 | 502 | 501 | 535 | 536 | 535 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 1473 | 1485 | 1504 | 1571 | 1582 | 1602 |
| A2016 Picardy Manorway (east of Norman Road) | 1354 | 1366 | 1386 | 1443 | 1455 | 1475 |
| B253 Picardy Manorway (south of Horse Roundabout) | 485 | 488 | 486 | 518 | 521 | 519 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 1172 | 1178 | 1184 | 1249 | 1255 | 1261 |
| A206 Northend Road (north of A2000 Perry Street) | 1618 | 1623 | 1629 | 1720 | 1725 | 1731 |
| A2000 Perry Street (south of A206 Thames Road) | 699 | 699 | 699 | 744 | 744 | 744 |

| Link | Two-Way Average Hourly Traffic Flows | | | | | |
|---|---|---|---|---|---|---|
| | 2024 Scenarios | | | 2039 Scenarios | | |
| | Do Minimum | Nominal | 100% Road | Do Minimum | Nominal | 100% Road |
| A206 Thames Road (south of Howbury Lane Roundabout) | 1607 | 1612 | 1619 | 1711 | 1716 | 1722 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 1686 | 1690 | 1697 | 1795 | 1799 | 1806 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 908 | 908 | 908 | 1044 | 1044 | 1044 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 1423 | 1428 | 1434 | 1636 | 1640 | 1647 |
| A206 Bob Dunn Way (east of Marsh Street N) | 1154 | 1158 | 1165 | 1322 | 1326 | 1333 |

6.9.44 As shown, in both Do Something (Nominal and 100% Road) scenarios in both assessment years (2024 and 2039), no change in the level of pedestrian delay is forecast to occur as a result of the operation of REP. Therefore, it is considered that the operation of REP would cause a **Negligible** effect on pedestrian delay on all assessed links, which is **Not Significant**.

6.9.45 With regard to pedestrian amenity, as outlined above, pedestrian amenity is affected by factors including traffic flow, traffic composition and footway or footpath width / separation from traffic. A tentative threshold for judging the significance of changes in pedestrian amenity is described by the IEMA guidance as instances "*where traffic flow (or its lorry component) is halved or doubled*".

6.9.46 The additional traffic forecast to be generated by the operation of REP is predicted to more than double traffic flows and HGV proportion of flow along Norman Road (north and central) in the Do Something scenarios in both assessment years. However, as outlined above, baseline traffic flows on this stretch of Norman Road are very low and the operation of REP is forecast to increase daily traffic flows by less than 800 vehicles per day. It should be recognised that the Pedestrian Environmental Review System (PERS) audit, appended to the TA at **Appendix B.1**, has shown no shortcomings in provision

for pedestrians along this link. Nonetheless, given the nature of the surrounding area of the REP site, personal safety of pedestrians due to a lack of natural surveillance has been identified as a negative feature.

6.9.47 Given the above, on balance it is considered that the additional traffic generated by the operation of REP would cause a **Negligible** effect on pedestrian amenity, which is **Not Significant**.

Pedestrian Fear and Intimidation

6.9.48 As outlined above, an increase in hourly two-way traffic flows or in the proportion of HGV movements can cause adverse effects on pedestrian fear and intimidation. The suggested IEMA threshold guidance for pedestrian fear and intimidation, as shown in **Table 6.15**, suggests a small adverse effect if average traffic flows over 18 hours is in the region of 600 to 1200 vehicles per hour or if average 18-hour HGV flows are in the region of 1,000 to 2,000.

6.9.49 **Table 6.37** shows average traffic flows over 18 hours in vehicles per hour for the 2024 and 2039 Do Minimum and Do Something (Nominal and 100% Road) scenarios. **Table 6.38** shows the 18-hour two-way HGV flows for the 2024 and 2039 Do Minimum and Do Something (Nominal and 100% Road) scenarios.

Table 6.37: Operational Assessment – Pedestrian Fear and Intimidation (Average Traffic Flows)

| Link | Average Traffic Flow over 18 Hours (Vehicles/Hour) | | | | | |
|---|---|---|---|---|---|---|
| | 2024 Scenarios | | | 2039 Scenarios | | |
| | Do Minimu | Nominal | 100% Road | Do Minimal | Nominal | 100% Road |
| Norman Road (North of Picardy Manorway) immediately north of A2016 | 145 | 160 | 180 | 156 | 171 | 190 |
| A2016 Eastern Way (west of Yarnton Way) | 1467 | 1471 | 1487 | 1564 | 1568 | 1584 |
| Yarnton Way (south of A2016 Eastern Way) | 702 | 703 | 702 | 750 | 751 | 750 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 2091 | 2103 | 2123 | 2228 | 2241 | 2260 |
| A2016 Picardy Manorway (east of Norman Road) | 1927 | 1939 | 1959 | 2052 | 2065 | 2085 |

| Link | Average Traffic Flow over 18 Hours (Vehicles/Hour) | | | | | |
|---|---|---|---|---|---|---|
| | 2024 Scenarios | | | 2039 Scenarios | | |
| | Do Minimu | Nominal | 100% Road | Do Minimal | Nominal | 100% Road |
| B253 Picardy Manorway (south of Horse Roundabout) | 676 | 679 | 678 | 722 | 725 | 724 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 1645 | 1651 | 1658 | 1753 | 1760 | 1766 |
| A206 Northend Road (north of A2000 Perry Street) | 2272 | 2278 | 2284 | 2417 | 2422 | 2429 |
| A2000 Perry Street (south of A206 Thames Road) | 986 | 987 | 987 | 1050 | 1050 | 1050 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 2248 | 2253 | 2259 | 2394 | 2399 | 2405 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 2346 | 2351 | 2358 | 2498 | 2503 | 2510 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 1264 | 1265 | 1265 | 1453 | 1454 | 1454 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 2004 | 2009 | 2016 | 2304 | 2309 | 2315 |
| A206 Bob Dunn Way (east of Marsh Street N) | 1623 | 1628 | 1634 | 1859 | 1864 | 1870 |

6.9.50 As can be seen, the assessed links would not be subject to a change in the level of pedestrian fear and intimidation in both 2024 and 2039 Do Something (Nominal and 100% Road) scenarios compared with the level of fear and intimidation in the 2024 and 2039 Do Minimum scenarios. The change in impact is therefore **Negligible**, which is **Not Significant.**

Table 6.38: Operational Assessment – Pedestrian Fear and Intimidation (HGV Traffic Flows)

| Link | Average 18-hour HGV Flow | | | | | |
|---|---|---|---|---|---|---|
| | 2024 Scenarios | | | 2039 Scenarios | | |
| | Do Minimum | Nominal | 100% Road | Do Minimal | Nominal | 100% Road |
| Norman Road (North of Picardy manorway) immediately north of A2016 | 861 | 1021 | 1376 | 923 | 1083 | 1438 |
| A2016 Eastern Way (west of Yarnton Way) | 4670 | 4706 | 4990 | 4978 | 5015 | 5299 |
| Yarnton Way (south of A2016 Eastern Way) | 2251 | 2280 | 2257 | 2405 | 2434 | 2411 |
| A2016 Picardy Manorway (between Eastern Way and Norman Road) | 6847 | 7006 | 7361 | 7296 | 7455 | 7810 |
| A2016 Picardy Manorway (east of Norman Road) | 6294 | 6454 | 6809 | 6704 | 6864 | 7219 |
| B253 Picardy Manorway (south of Horse Roundabout) | 1323 | 1353 | 1329 | 1414 | 1443 | 1420 |
| A2016 Bronze Age Way (south of Horse Roundabout) | 6272 | 6336 | 6455 | 6686 | 6750 | 6869 |
| A206 Northend Road (north of A2000 Perry Street) | 9239 | 9303 | 9422 | 9827 | 9891 | 10010 |
| A2000 Perry Street (south of A206 Thames Road) | 2678 | 2678 | 2678 | 2851 | 2851 | 2851 |
| A206 Thames Road (south of Howbury Lane Roundabout) | 7731 | 7795 | 7913 | 8232 | 8296 | 8414 |
| A206 Thames Road (west of A2026 Burnham Road Roundabout) | 5880 | 5945 | 6063 | 6261 | 6326 | 6444 |
| A2026 Burnham Road (south of A206 Thames Road Roundabout) | 2625 | 2625 | 2625 | 3017 | 3017 | 3017 |
| A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout) | 4784 | 4848 | 4966 | 5499 | 5563 | 5682 |

6.9.51 As shown, with the exception of Norman Road, assessed links would not be subject to a change in the level of pedestrian fear and intimidation in both 2024 and 2039 Do Something (Nominal and 100% Road) scenarios compared the level of fear and intimidation in the 2024 and 2039 Do Minimum scenarios.

6.9.52 Pedestrian fear and intimidation along Norman Road is forecast to change from a negligible effect in the 2024 and 2039 Do Minimum scenarios to a permanent, direct effect of **Minor adverse** significance, which is **Not Significant**.

Accidents and Road Safety

6.9.53 As shown by the review and assessment at Section 6.9.27 to 6.9.31, the change in risk of collisions would be **Negligible**, under all scenarios, which is **Not Significant**.

### River Transport

6.9.54 The Scoping Opinion (**Appendix A.1**) describes the "*scope, and level of detail, of the level of information to be provided in the environmental statement*". This requested that an NRA is appended to this ES supporting the DCO application. The resultant NRA is attached at **Appendix B.2**.

6.9.55 The Secretary of State requested that the NRA considers "*the potential for impacts on the level of service and level of safety for vessels on the River Thames during both construction and operation.*"

6.9.56 The quantitative NRA which has been undertaken measures the change in risk as a result of the operation of REP. The NRA identifies that there would be minimal impact upon navigational safety as a result of the additional REP vessel traffic. Given the resultant risk scores from the NRA, no additional risk controls would be proposed beyond those which are currently in effect on the River Thames.

6.9.57 Through the use of existing infrastructure and no additional works in the river, the Proposed Development is not considered to create any physical obstruction to vessels. The NRA indicates that, in all river scenarios, REP would increase the number of tug and tow movements on the river and would result in one additional movement to Tilbury, and could result in one additional movement through Central London to Smugglers Wharf, or one additional movement to Barking Creek per day.

6.9.58 Analysis of existing vessel traffic identified a significant difference in background movements across the study area which were inputted into the risk assessment. Tug and tows related to the Applicant typically transit between 3 and 8 knots depending on their laden/unladen state, tidal state and location.

6.9.59 A review of traffic projections up until 2030 suggested that an increase in vessel traffic was 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.

6.9.60 The NRA identifies that the additional movements that would be associated with REP would have a **Negligible** impact upon navigational safety on the River Thames with all hazards remaining at as Low as Reasonably Practicable or Low Risk levels with existing risk controls in place. The impact would therefore be **Not Significant.**

### The Electrical Connection and the Cable Route Temporary Construction Compounds

#### Construction/Decommissioning

Severance

6.9.61 The Electrical Connection would be constructed by way of sections of temporary works. The impact of those works would be transient and depend on many variables, such as: the method of construction; the form of traffic management, the programme and sequence of works; the length of time within a location; and the location of the active works.

6.9.62 Final details of the above are not currently known. The contractor would, however, employ appropriate worksite controls and agree the programme of works with the Local Authorities through the CTMP, to be secured by the DCO, to limit the impact of the works.

6.9.63 The construction of the cable route in the highway (or in some locations in the footway or verge) would require crossings of side roads and the main corridors themselves, in addition to a lane closure on the cable route highway itself. The construction at those points would be managed to mitigate the length of time for road and lane closures.

6.9.64 The impacts on receptors cannot be assessed in detail, but any resultant severance effects would be temporary and mitigated where possible.

6.9.65 Traffic re-routeing effects due to lane closures associated with the Electrical Connection construction have not been quantitatively assessed in this ES or the accompanying TA because of the short-term nature of the works in any particular location. The construction of the Electrical Connection would be mobile with impacts at points along the route, based on a typical rate of open trenching progress, lasting up to 7 days, before the works move on. Where side roads are directly affected, lane closure or access closures would be managed to reduce the length of time for those works. Where trenchless installation techniques are required, the typical working period for a given length of road would increase. Details of the phasing and programme for the delivery of the Electrical Connection would be submitted to the local authorities closer to the

time of the works and coordinated through a Streetworks process set out in the DCO.

6.9.66 The Electrical Connection as proposed is described in **Chapter 3** and includes a main route (largely along the A2016 and A206 corridors) and Electrical Connection route options. The preferred route follows dual carriageway roads typically without bus services. The Electrical Connection route options in LBB are on roads used by the bus services 229, 469 and school services 602 and 669.

6.9.67 The severance effect to these bus services would vary from **Minor adverse**, where short lane closures and alternate way traffic signals are used, to potentially **Major adverse** if temporary road closures are required where no suitable alternative routeing is available for the affected bus services. The details of these impacts are not known currently and would be detailed as part of the CTMP, secured through the DCO.

6.9.68 The construction of the Electrical Connection would similarly be managed to retain access to adjoining development – such as minimising the impact on servicing for retail, business and residential properties; facilitating regular deliveries and collections (e.g. Royal Mail and refuse collections); and ensuring emergency access is maintained (e.g. emergency services and Statutory Utilities companies).

6.9.69 Within Dartford Borough, the preferred route would follow the alignment of the Fastrack bus service Route A, along Dunlop Close and across Marsh Street connecting with Rennie Drive. Dunlop Close and the Fastrack route are bus-only corridors with six stops along that section of the route. Service frequency is timetabled as one bus in each direction every 10 minutes. It is understood that service frequency is planned to be increased during the weekday peak hours to one bus every 9 minutes. The service is promoted as a high quality modern service and as such bus headway is retained with good spacing.

6.9.70 Suitable traffic management exemptions would be applied along the bus corridor to allow safe access for construction vehicles within the bus-only section of the route, and to allow access for future maintenance. The sections of work and associated temporary traffic management would be programmed taking account of the bus timetables and captured in the CTMP with DBC and KCC. Where the works interface with passenger boarding or alighting, suitable alternative bus stops and waiting areas would be provided, and notified to the operator.

6.9.71 The level of delay and severance impact to the Fastrack services would be affected by a combination of: the length of the section of temporary traffic management on the busway; the method of traffic control; the arrival pattern of buses at those road works; and the coincidence of the buses along that section.

6.9.72 An estimation of reasonable worst case could be that one bus arrives (for this example assumed to be westbound) at a system of alternate way working traffic signals over a length of 300 m just as the traffic lights turn ‘red’. That bus would

then be delayed from the start of 'red' westbound; through the intergreen period until the 'green' time for eastbound and through the subsequent intergreen period until the start of the westbound 'green' time – when the bus can then restart its journey. Based on a cruise speed of 30km/hr; the intergreen period should be in the order of 30 seconds. With a nominal green time of 30 seconds; the delay to the bus would be approximately 90 seconds. The length of the section of road works could be decreased to reduce the intergreen period and the 'green' time could be reduced, if desired.

6.9.73 These changes would reduce the level of delay to buses. The headway of bus services and the volume of vehicles along the corridor would be such that vehicle delays and severance would be **Negligible**, which is **Not Significant**.

6.9.74 **Section 6.4.22** outlines that the works associated with the Electrical Connections would generate an additional 152 movements per day (76 arrivals by staff and materials) in the Do Something (15-Month) scenario, or an additional 76 movements per day (38 arrivals by staff and materials) in the Do Something (24-Month) scenario. It should be recognised that the inclusion of local traffic growth factors in addition to committed development traffic is likely to overestimate traffic flows. Therefore, the low numbers of additional contractor vehicle movements from the construction of the Electrical Connection, not accounted for in this assessment, are considered unlikely to cause a significant effect on pedestrian delay.

6.9.75 The impacts of construction traffic associated with the Electrical Connection have been included in the assessment of severance for the construction of REP, at **Section 6.9.2**. That assessment has shown that the impact of the construction of the Electrical Connection would be **Negligible**, which is **Not Significant**.

6.9.76 With regard to the decommissioning of the Electrical Connection, it is currently anticipated that the ducting for the Electrical Connection would be left in situ at the end of its operational life. The cabling could be removed from existing access chambers. The impact of the decommissioning would be **Negligible**, which is **Not Significant.**

Driver Delay

6.9.77 The road works associated with the construction of the Electrical Connection would induce a level of driver delay resulting from temporary traffic management put in place at the active worksite. These would be managed and programmed with the appropriate LHA, as part of the CTMP. The distance over which lane closures would occur would be up to 300m, unless agreed otherwise with the appropriate LHA. This would ensure drivers do not experience delays greater than would be typically expected at road works of this type.

6.9.78 The impact on driver delay would therefore be judged to be **Minor adverse**, which is **Not Significant**.

Pedestrian Delay and Amenity

6.9.79 The road works associated with the construction of the Electrical Connection would be configured to allow pedestrians safely to pass or direct them to an alternative route. This could cause short periods of pedestrian delay at the temporary traffic management at the working areas. These would be managed and programmed with the appropriate LHA, as part of the relevant CTMP. The distance over which the temporary traffic management would occur would be up to 300 m (including flares either side), unless agreed otherwise with the appropriate LHA. This would ensure pedestrians do not experience delays greater than would be typically expected at road works of this type.

6.9.80 The impact on pedestrian delay would therefore be judged to be **Negligible**, which is **Not Significant.**

Pedestrian Fear and Intimidation

6.9.81 The road works associated with the construction of the Electrical Connection would be configured to allow pedestrians to safely pass or direct them to an alternative route. This would minimise the level of pedestrian fear and intimidation. A segregated walking route will typically be provided along a safe corridor around the works – as close to the existing route as acceptable. Road crossings will be avoided.

6.9.82 The impact on pedestrian delay would therefore be judged to be **Negligible**, which is **Not Significant.**

Accidents and Road Safety

6.9.83 The construction of the Electrical Connection would be carried out under temporary traffic management layouts which would comply with the Traffic Signs Manual Chapter 8 – Road Works and Temporary Situations. The temporary layouts would be managed by suitably trained contractors.

6.9.84 Where complex interfaces are required with junctions and crossings, the design and layout of the temporary traffic management would facilitate safe movement for vehicles, cyclists and pedestrians. If lower speed restrictions are deemed advantageous through the temporary traffic management, these would be agreed with the LHA and implemented accordingly.

6.9.85 The construction process would have a **Negligible** impact on road safety, which is **Not Significant**.

Incidents

6.9.86 The most likely strategic incident which could divert traffic to the A206/A2016 corridor (including Bob Dunn Way, Thames Road and Northend Road) during construction would be a closure of the Dartford Crossing northbound approach. Vehicles could seek to leave, or be directed to leave, the A282/M25 at Junction 1a.

6.9.87 The operation of the network, on which the Electrical Connection could be constructed, would be locally affected at the point of the cabling works. The temporary traffic management at the cabling works would typically be a lane drop within a dual carriageway – not requiring alternate way working (traffic lights). Depending on the location and duration of the incident, the localised effect of the temporary road works is judged not to influence network reassignment.

6.9.88 UKPN seeks to minimise the impact of the works on the network by maximising the installation of the cabling in verges, or alongside the carriageway.

6.9.89 It is concluded that the likelihood of the Electrical Connection works coinciding with an incident to then cause vehicles to divert from the strategic network to routes through Dartford, or other non-strategic networks, is low and should not require detailed quantitative analysis. For this reason, the effects of incidents on the network is not considered further.

### Operation/Maintenance

6.9.90 The operation of the Electrical Connection would have no direct impact on severance; driver delay; pedestrian delay and amenity; fear and intimidation; or accidents and road safety.

6.9.91 Service access points will have approved standard street level covers, which would be appropriate for their use – i.e. within pedestrian and cycle environments; in roadways; or in verges/landscaping. These would ensure suitable protection to prevent slips and trips. A maintenance regime would be put in place in accordance with the rest of the power network, within the public environment.

6.9.92 There will be instances where maintenance access is required. In almost all circumstances this would be by way of existing access (manhole cover) points along the Electrical Connection with suitable temporary traffic management put in place in accordance with Traffic Signs Manual Chapter 8 and the New Roads and Street Works Act 1991. The permanent access points would be designed into locations that make access to the cabling safe for operatives and can be managed such that members of the public can pass the temporary works safely. Delays would be minimised and relatively short-term.

6.9.93 In the very unlikely event that a cable fault, or failure of ducting, requires road excavation, this would be programmed with the LHA as set out in the DCO or through existing road works notifications and permitting systems. Depending on the urgency of the works, the repairs could be dealt with as an emergency repair or a programmed repair. In both instances the temporary traffic management would be set up to minimise delays and disruption whilst maintaining a safe environment for the works.

6.9.94 Bus service interactions would be managed through standard Statutory Utilities' works notifications and co-ordination.

6.9.95 The operation and maintenance processes would have a **Negligible** impact on: severance; driver delays, pedestrian delays and amenity; fear and intimidation; and accidents and road safety, which are deemed **Not Significant**.

Incidents

6.9.96 Incidents occurring on the network could impact on the routes on the approaches to REP. By their nature temporary incident are unplanned and would have variable implications on the operation of the network. At the time of an incident the network would be managed by the Police and Highway Authority. Vehicles associated with REP would be directed to alternative routes along with other traffic – be that goods vehicles or workers commuting. The numbers of vehicles associated with the operation of REP have been shown not to be sufficient to affect the reassignment of traffic during incidents on the network. For this reason, the effects of incidents on the network is not considered further.

## 6.10 Cumulative Assessment

6.10.1 The assessment of cumulative effects within this Chapter has a separate methodology to **Chapters 7 – 14**. For other Chapters, the cumulative assessment methodology in described in **Chapter 4**.

6.10.2 The traffic effects of approved developments in the area have been included as part of the Do Minimum scenarios for 2022, 2024 and 2039, against which the potential effects of the construction and operational phase of REP have been assessed. As such the assessment of cumulative effects is inherent to the assessment set out above.

6.10.3 Section 6.2 of **Appendix B.1** provides further detail on how committed developments have been included within this assessment.

## 6.11 Further Mitigation and Enhancement

### Construction/Decommissioning

6.11.1 No physical mitigation measures would be required to address traffic generated by the Proposed Development during the construction of REP in relation to: severance; pedestrian delay and amenity; fear and intimidation; and accidents and road safety, as the above assessment of effect relating to the construction phase has shown that the construction would result in negligible effects. However, the following measures would be implemented for the construction phase in order to avoid adverse effects arising and to address adverse temporary effects identified in relation to driver delay:

### Construction Traffic Management Plan (CTMP)

6.11.2 An outline CTMP has been produced as part of a suite of documents to support the DCO application. The preparation of a detailed CTMP is secured by a requirement in the draft DCO (**Document Reference 3.1**)

6.11.3 The final CTMP (or CTMPs if required to cover different areas of the works) would set out how the delivery of materials and the routeing of these vehicles to the Application Site or associated works area would be managed and controlled. This could include movements by both road and river, where practicable and where this does not cause adverse effects to the RRRF operation.

6.11.4 The outline CTMP incorporates the principles of logistics planning, including proposals to schedule non-worker construction movements to off-peak times on the adjoining network. A vehicle booking system would manage deliveries and departures, ensuring no congestion on site or in the vicinity of the works. The approved CTMP(s) would add detail to the proposals in the outline CTMP, to reflect the finalised construction programme and tasks scheduling.

6.11.5 Opportunities would be explored to minimise and consolidate loads if feasible, guided by the geographic locations of suppliers, operators and hauliers.

6.11.6 The outline CTMP comprises complementary elements of logistics planning but also incorporates the available information relating to how workforce traffic would be managed at each stage of construction, helping to minimise the impact of the construction period.

6.11.7 The finalised and approved CTMPs would further review the implications of temporary lane closures and diversions of routes associated with the delivery of the Electrical Connection and include mitigation measures for the interaction with PRoWs.

6.11.8 The logistics planning would define further measures to improve the logistics environment associated with the construction of REP and the Electrical Connection – including: vehicle standards and compliance; driver training; and monitoring the logistics management during construction.

6.11.9 Workforce travel planning has also been incorporated into the outline CTMP, which would aim to encourage the use of non-car modes of travel including public transport, walking and cycling. This section of the approved CTMP would encourage car/van sharing for those needing to travel by private vehicle. This, coupled with limited parking provided for construction staff, would aim to help the reduction of any impacts from construction workers travelling to the site. Monitoring on a regular basis would also help to ensure that progress is continuous over time.

6.11.10 A crossing point on Norman Road, to the north of the access to Isis Reach (Asda depot access), is proposed to facilitate workforce movements between the Main Temporary Construction Compounds and the REP site.

6.11.11 As outlined in **Section 6.5.11**, for the construction of the Electrical Connection where footways and cycleways have to be temporarily closed, suitable alternative temporary pedestrian and cycle facilities would be provided to maintain a safe environment for pedestrians and cyclists.

### Operation/Maintenance

6.11.12 The mitigation measures proposed to avoid or minimise adverse effects would be by way of an Operational Worker Travel Plan for workers.

6.11.13 A outline Operational Worker Travel Plan has been produced for workers at REP as part of the DCO. It would be a requirement attached to the DCO that the outline Operational Worker Travel Plan would be finalised prior to the operational phase of REP.

6.11.14 Within the Travel Plan there would be measures to encourage the use of sustainable travel, while car and cycle parking provision to London Plan standards would aim to help to discourage the use of private cars and encourage cycling.

6.11.15 The mitigation measures are anticipated to be implemented and monitored by the Applicant as the operator of REP to ensure that measures put forward to reduce adverse effects are carried out.

## 6.12 Residual Effects and Monitoring

### Construction/Decommissioning

6.12.1 The implementation of measures set out in the outline CTMP would reduce adverse effects on driver delay at:

- A206/A2016/Bexley Road roundabout.

6.12.2 The mitigation measures are anticipated to reduce the residual impacts to **Minor adverse** or **Negligible**.

6.12.3 The ATC data collected on A2016 indicates that the northbound traffic flow in the hour between 06:00hrs and 07:00hrs, which precedes the network morning peak (07:45-08:45hrs) is between 100-200 fewer vehicles. The southbound traffic flow in the hour between 19:00hrs and 20:00hrs is also about 100-200 vehicles lower than the evening network peak. This 100-200 vehicle difference is in the order of the projected construction induced traffic during that period.

6.12.4 Operating a construction working day between 07:00-19:00hrs would move workforce travel to periods outside the morning and evening network peak periods, mitigating the effect of workforce travel on the operation of the above junctions.

6.12.5 It is not possible to determine effects to the bus routes along the Electrical Connection until the final design is confirmed. Any measures proposed to mitigate effects to bus services would be secured through the final CTMP to be delivered as a DCO requirement.

6.12.6 No effects of adverse significance are currently anticipated during the decommissioning phase that would require the implementation of additional mitigation measures.

### Operational Phase

6.12.7 No effects of adverse significance have been identified that would require the implementation of additional mitigation measures.

### Summary of Residual Effects

Table 6.39: Summary of Residual Effects

| Phase | Receptor name and description | Mitigation | Assessment of Residual Effects |
|---|---|---|---|
| Construction / Decommissioning | Highway Junctions | CTMP (including Logistics Planning) | Temporary **Minor adverse** effects on driver delay at the A206/ A2016/ Bexley Road roundabout |
| | PRoW | CTMP (including Logistics Planning) | Temporary **Minor adverse** effects on pedestrian delay and amenity at PRoW DB5 (A206 Bob Dunn Way (north of A2026 Burnham Road Roundabout)) |
| Operational | Norman Road (north of Picardy Manorway) | Operational Worker Travel Plan | **Minor adverse** effects on pedestrian fear and intimidation along Norman Road (north of Picardy Manorway). |

## 6.13 Summary and Conclusion

6.13.1 The Transport ES Chapter has considered the environmental effects associated with the change in traffic levels as a result of the construction, operation (including maintenance) and decommissioning of REP and the Electrical Connection.

6.13.2 The assessment is based on existing traffic flow data derived from traffic surveys undertaken in April 2018. The assessment considers the effects of additional traffic flows based on IEMA guidelines.

6.13.3 The assessment of the construction effects has shown that one junction could be subject to adverse driver delay effects as a result of the Proposed Development. Without mitigation, the A206/ A2016/ Bexley Road roundabout would be subject to temporary moderate adverse effects. Mitigation measures to reduce the severity of these effects are outlined within the outline CTMP, and would reduce effects to **Minor adverse** or **Negligible** which is **Not Significant**.

6.13.4 The findings of the assessment scenario for the operational phase and for the decommissioning phase indicate that the effects generated by REP are **Negligible** across both the nominal scenario and 100% by road scenario, which is **Not Significant**.

6.13.5 The mitigation which would be implemented during the operation of REP comprises the Operational Worker Travel Plan, which would contribute further to controlling the number of vehicles on-site at any point and reducing the reliance on private vehicles for workers and REP staff. The change in impact on pedestrian fear and intimidation would be marginal and the change in environment is exacerbated by the current low level of vehicle activity along the route.