

SILVERTOWN TUNNEL – DEVELOPMENT CONSENT ORDER APPLICATION

ISSUE SPECIFIC HEARING ON TRAFFIC/TRANSPORT MODELLING, FORECASTING AND USER CHARGING AND ECONOMIC ISSUES

17 JANUARY 2017

SUMMARY OF APPLICANT'S SUBMISSIONS

INTRODUCTION

1. This note summarises the oral submissions made by Transport for London ('TfL') at the Issue Specific Hearing on traffic/transport modelling, forecasting, user charging and economic issues held on 17 January 2017 in relation to TfL's application for development consent for the Silvertown Tunnel.
2. The Examining Authority's list of action points arising from the hearing, published on 20 January 2017, is reproduced at the foot of this document together with an explanation of how each point has been addressed at Deadline 3.
3. The following people made submissions on behalf of the Applicant at the hearing and are referred to in the note below:

Michael Humphries QC	Counsel
David Rowe	Project Sponsor, Transport for London
Simon Nielsen	Head of Strategic Modelling and Analysis, TfL
Elena Golovenko	Technical Director, Jacobs
Aliasgar Inayathusein	Policy Appraisal and Sub-Regional Modelling Manager, TfL
Atholl Noon	Director, Markides Associates
Tom King	Transport Planning Manager, TfL
Billy Parr	Principal Transport Planner, TfL

Stephen Pyatt	Associate Technical Director (Air Quality), Arcadis
Rupert Thornley Taylor	Director, Rupert Taylor Limited
Martin Tedder	Transport Economist, TfL
Professor Duncan Laxen	Director, Air Quality Consultants

SUMMARY OF APPLICANT'S SUBMISSIONS

Agenda Item	Proposed Response	Relevant document references
2. Summary of case for the scheme		
<ul style="list-style-type: none"> ○ Invitation to the Applicant to provide a brief summary of the case for the Silvertown Tunnel consistent with Her Majesty's Treasury's (HMT) 'Five Case Model' as referred to in the Outline Business case [APP-100-104] 	<p>Atholl Noon made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ The case for the tunnel is fully described in the Outline Business Case (APP-100) and the Case for the Scheme (APP-093). The main features of the case described in terms of the 'Five Case Model' are as follows: ○ Firstly, the Strategic Case. The evidence presented shows that the provision of a new road crossing at Silvertown has national, London-wide and general local policy support. In particular it is a project identified in the London Plan and the Mayor's Transport Strategy (MTS), and has been designated a Nationally Significant Infrastructure Project (NSIP) by the Secretary of State for Transport under section 35 of the Planning Act 2008. The National Policy Statement for National Networks describes the significant part that national road networks play in supporting economic growth, as well as existing economic activity and productivity and in facilitating passenger, business and leisure travel. Well-connected and high-performing networks with sufficient capacity are vital to meet the country's long-term needs and support a prosperous economy. ○ The reason for the policy recognition by the Secretary for State, the Mayor and local planning authorities is the importance of the Blackwall Tunnel as the key strategic river crossing in East London, an area of high deprivation and significant regeneration and growth plans, and the severe 	<ul style="list-style-type: none"> ○ Outline Business Case (APP-100) ○ Case for the Scheme (APP-093).

	<p>existing problems at the tunnel.</p> <ul style="list-style-type: none"> ○ While much has already been done to improve public transport connections across the river in east London, there are few road-based crossings in the east: the Rotherhithe Tunnel and the Blackwall Tunnel along with the Woolwich Ferry (the Dartford Crossing, 25km to the east, is outside London). All of the vehicle river crossings in east London are capacity-constrained, outdated in design and ageing. ○ Because of its position, and the lack of alternatives, the Blackwall Tunnel has become the strategic crossing in east London, and carries the most traffic of any road crossing in all of London. But the Blackwall Tunnel has three significant problems: congestion, closures and incidents, and a lack of resilience. ○ These problems are long-standing, a source of major concern to TfL and local councils, the public and businesses, and are predicted to increase as East London develops. ○ These issues lead to adverse effects on the local road network, the economy and local environment. They also act as a constraint on the provision of public transport services across the river by bus and coach. Given the importance of the Blackwall Tunnel as a road crossing in east London, the effects of these problems are highly significant. ○ In the context of continued significant population and employment growth, these problems will only get worse. Failing to address these problems could constrain the sustainable and optimal growth of London and hence the UK, as recognised in the section 35 direction from the Secretary of State. ○ There is thus a very clear 'case for change', supported by policy, in relation to the road network associated with the Blackwall Tunnel ○ Extensive consultation and option analysis has been carried out over a number of years by TfL, and is reported in detail in the Case for the Scheme (APP-093). ○ A wide variety of options have been carefully considered and consulted on, ranging from the introduction of a charge at the Blackwall Tunnel to public transport schemes and various permutations of bridges and tunnels. This analysis showed clearly that the Silvertown Tunnel was the option best able to successfully deal with the three main existing transport problems of severe 	
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	<p>congestion, frequent closures and a lack of resilience to incidents. and the associated project objectives relating to these.</p> <ul style="list-style-type: none"> ○ In summary the Strategic Case has shown why the Scheme is required, how it fits with national, regional and local policies and how clear project objectives have been developed. ○ As required by the NNNPS, the Economic Case includes a comprehensive economic analysis using WebTAG principles. The conclusion from this that the Scheme has a positive Net Present Value (NPV) of £967m (without reliability benefits) and £1,225m (with reliability benefits), with user charges covering the costs. Overall the scheme clearly delivers a very positive economic outcome and very high value for money. ○ The ability of the scheme to meet the project objectives is dependant on the user charge, which helps to manage demand and finance the scheme. There are clear economic benefits to all user classes (business, commuters and other users), and high benefits in particular to public transport users. Sensitivity testing shows that in a range of circumstances the scheme will still remain high value for money. ○ The economic case also considers regeneration issues, in the context of East London, an economically and socially deprived area with considerable potential to accommodate the housing and commercial development needed to support London's economy. ○ The Scheme would clearly provide the additional road network capacity and connectivity to reduce business costs, increase the size of the labour market, increase the potential customer base, and improve the attractiveness of the region. The Scheme will also improve cross-river public transport connections. ○ These improvements are also likely to make the area more attractive to inward investment, and ultimately raise land values thereby facilitating the faster delivery of development. ○ Wider Economic Impacts have also been estimated, and a total of some £90m additional benefits are expected to arise from agglomeration, output change in imperfectly competitive markets and tax revenues arising from labour market impacts. ○ The Social Analysis found that the Scheme would have large beneficial impacts on travellers' journey quality and on low income public transport users, and other beneficial impacts on 	
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	<p>accessibility, option/non-use values, traffic accidents and severance, There would be slight adverse impacts for low income car users and neutral impacts on physical activity.</p> <ul style="list-style-type: none"> ○ The Distributional Analysis found beneficial impacts for most user groups under most assessment criteria. There were some negative impacts relating to noise, and low income users were assessed as slight adverse for car users and large beneficial for public transport users. ○ The Financial Case sets out the project costs, describes the private funding mechanism available to deliver the scheme and the proposed financing arrangements, and confirms that the scheme is financially affordable, with revenue collected over time covering the Scheme cost. ○ The Commercial Case explains that TfL is proposing to deliver Silvertown Tunnel by entering into a long term private finance contract. At the end of the contract the asset would be handed back to TfL. TfL would control the day to day operation (e.g. traffic management) of Silvertown Tunnel and Blackwall Tunnel would continue to fall under existing TfL operational and maintenance arrangements. The risk mitigation approach is described and it is noted that strong competition between bidders is expected based on the procurement route chosen and market engagement. All indications are that the scheme is commercially viable. ○ The Management Case shows that the scheme is deliverable. It shows evidence of good project planning, and summarises the governance structure, risk management, communications and stakeholder management, benefits realisation and assurance. TfL has extensive experience in delivering major infrastructure projects and a mature project management process. <p><u>Conclusion</u></p> <ul style="list-style-type: none"> ○ In conclusion there is a robust case for change that fits with wider public policy objectives, and a detailed consideration of many alternative options was undertaken before the preferred option was chosen. This preferred option will deliver the scheme objectives. ○ The Scheme demonstrates very good value for money, is commercially viable, financially affordable and is achievable through the chosen procurement route. Sensitivity tests indicate that that the economic benefits of the scheme will remain high under a variety of different scenarios. 	
<p>Impacts of the Scheme on low income groups and</p>	<p>Martin Tedder made the following points on behalf of the applicant in response to comments from the ExA and Interested Parties regarding impacts of the Scheme on low income groups and public</p>	<ul style="list-style-type: none"> ○ Chapter 3 of Distributional

<p>public transport</p>	<p>transport:</p> <ul style="list-style-type: none"> • The Scheme needs to be considered in its entirety (including buses), not just the highway impacts. • Buses open up a whole new cross-river public transport network that connects fast growing residential areas in the south with employment areas north of the river. • As low income residents rely much more on buses than high income residents, the Scheme results in more low income people crossing the river. • 71% of benefits go to low income users when buses are included – they benefit significantly more than higher income users. <p>Mr Tedder confirmed that the Applicant will submit a note at Deadline 3 which demonstrates the impacts on low income groups considered at a borough level.</p>	<p>Impact Appraisal (APP-104)</p> <ul style="list-style-type: none"> ○ Summary Table 3 of Economic Assessment Report (APP-101) ○ Impact of the Scheme on Low Income Residents (submitted at Deadline 3)
<p>Securing bus services</p>	<p>In response to comments raised by the ExA and Interested Parties regarding how bus services through the tunnel will be secured, David Rowe made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ One of the principal reasons for TfL delivering the scheme is the opportunity it provides to deliver a step change in cross-river bus services. ○ The Greater London Authority Act 1999 requires TfL to provide safe, integrated and efficient bus services, and to keep those services under review. TfL’s new business plan commits TfL to supporting new buses through the tunnel that will deliver a fundamental change in cross-river services and in offering concessions to local residents encourage take up of those services. ○ A Bus Strategy for the Scheme was submitted with the Applicant’s response to FWQ PN.6. This explains why the level of bus service assumed in the assessment is considered appropriate. The Applicant has been considering how to revise that document to be more explicit about the principles for bus services and how they will be delivered and planned with the boroughs. A revised version of that document will be submitted at Deadline 4. The implementation of this strategy will be secured by a new requirement in the dDCO. 	<ul style="list-style-type: none"> ○ Bus Strategy, Appendix A to REP1-178 ○ Applicant’s Update note submitted at DL3
<p>DLR extension at Gallions Reach</p>	<p>In response to a question from the ExA as to how the proposed DLR crossing between Gallions Reach and Thamesmead would be funded, David Rowe made the following points on behalf of the</p>	<ul style="list-style-type: none"> ○ TfL Business Plan for 2017/18 to 2021/22

	<p>Applicant:</p> <ul style="list-style-type: none"> ○ DLR extensions are typically funded either through direct funding through TfL's Business Plan, or by a PPP model. It has not yet been confirmed how the proposed crossing at Gallions Reach would be funded, but TfL is confident that a package of river crossings is possible and this is reflected in the Business Plan for 2017/18 to 2021/22 published by TfL in December 2016. ○ A copy of the Business Plan (2016) has been submitted to the ExA at Deadline 3. 	
<p>Distribution of benefits by social class</p>	<p>In response to comments from the Royal Borough of Greenwich, Martin Tedder made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ Predicted mode shift occurring as a result of the Scheme is not broken down by socio-economic class. The distribution of benefits by socio-economic class is assessed by mapping the benefits spatially and then overlaying that with areas of deprivation. The results are presented in the Distribution of Benefits note (REP2-042). 	<ul style="list-style-type: none"> ○ Distribution of Benefits note (REP2-042).
<p>3. Matters arising from Issue Specific Hearing (ISH) on Traffic and Transport Modelling, Wednesday 7 December 2016 and Confirmed Action List</p> <p>Documents that may be referred to will include the Applicant's responses to first written questions on Traffic & Transport - Document 8.16 [REP1-074], on Air Quality - Document 8.4 [REP1-151], Growth Assumptions - Document 8.48 [REP2-48] and Commentary on the Interface between Strategic and local modelling - Document 8.42 [REP2-050].</p> <p>The following topics appear to warrant further examination in the light of the comments made on 7 December and in post-hearing submissions:</p> <ul style="list-style-type: none"> • Modelling framework and strategic model structures; • Local Modelling; • Interface between strategic modelling and local modelling 		

- How the model addresses behavioural responses and mode choice;
- Behavioural responsiveness of the model to policy interventions including user charges;
- Uncertainties in forecasting: Model framework and model structures – Traffic and Transport Models, Air Quality Models/Tools and noise modelling;
- Interfaces between and compatibility of Traffic and Transport Models and Air Quality Models/Tools
- Interfaces between and compatibility of Traffic and Transport Models and Noise modelling

Among the matters that the ExA will wish to explore in relation to the Links Between Traffic and Transport Modelling and Air Quality and Noise Assessments in the Environmental Statement (ES) are the following questions:

3.1 Please can the Applicant provide up to date details on the current usage of the Blackwall tunnel, as follows:-

<ul style="list-style-type: none"> • The current week-day daily average vehicle movements through the Blackwall tunnel; 	<p>Billy Parr presented the relevant figures on behalf of the Applicant. The tables that were presented at the hearing are reproduced below:</p> <ul style="list-style-type: none"> ○ Observed average weekday vehicle movements through the Blackwall Tunnel over the past four calendar years was as follows: <table border="1" data-bbox="660 730 1646 895"> <thead> <tr> <th>Year</th> <th>Northbound</th> <th>Southbound</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>49,165</td> <td>52,550</td> <td>101,715</td> </tr> <tr> <td>2015</td> <td>49,257</td> <td>52,546</td> <td>101,803</td> </tr> <tr> <td>2014</td> <td>48,949</td> <td>52,494</td> <td>101,443</td> </tr> <tr> <td>2013</td> <td>48,922</td> <td>51,445</td> <td>100,367</td> </tr> </tbody> </table>	Year	Northbound	Southbound	Total	2016	49,165	52,550	101,715	2015	49,257	52,546	101,803	2014	48,949	52,494	101,443	2013	48,922	51,445	100,367	
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<ul style="list-style-type: none"> • The current week-end daily average vehicle movements through the Blackwall tunnel; 	<ul style="list-style-type: none"> ○ Observed average weekend vehicle movements through the Blackwall Tunnel over the past four calendar years was as follows: <table border="1" data-bbox="660 986 1646 1150"> <thead> <tr> <th>Year</th> <th>Northbound</th> <th>Southbound</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>48,919</td> <td>52,277</td> <td>101,196</td> </tr> <tr> <td>2015</td> <td>48,988</td> <td>51,134</td> <td>100,122</td> </tr> <tr> <td>2014</td> <td>47,137</td> <td>49,566</td> <td>96,703</td> </tr> <tr> <td>2013</td> <td>46,438</td> <td>47,721</td> <td>94,159</td> </tr> </tbody> </table>	Year	Northbound	Southbound	Total	2016	48,919	52,277	101,196	2015	48,988	51,134	100,122	2014	47,137	49,566	96,703	2013	46,438	47,721	94,159	
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<ul style="list-style-type: none"> • How these are split north-bound/south-bound; 	<ul style="list-style-type: none"> ○ The vehicle movements provided above are split into northbound and southbound movements. Southbound traffic typically accounts for around 51% of total movements. 																					
<ul style="list-style-type: none"> • How many of the south-bound vehicles, on average (for both 	<ul style="list-style-type: none"> ○ It is estimated that the around 660 vehicles over 4.0m in height use the Blackwall Tunnel southbound on an average weekday 	<ul style="list-style-type: none"> ○ Draft HGV Management Strategy 																				

<p>week-days and weekend days) are over 4m in height; and</p>	<ul style="list-style-type: none"> ○ It is estimated that around 210 vehicles over 4.0m in height use the Blackwall Tunnel southbound on an average weekend day ○ This gives a total of 520 AADT. The Approach taken by the Applicant to estimating the number of vehicles over 4.0m in height that could want to use the Silvertown Tunnel in the northbound direction (as a result of the 4.0m height restriction on the Blackwall Tunnel northbound) is set out in the Draft HGV Management Strategy. 	<p>(Appendix K of response to AQ FWQs) [REP1-152]</p>
<ul style="list-style-type: none"> • What data was used to obtain these averages? 	<ul style="list-style-type: none"> ○ Data on current vehicle movements through the Blackwall Tunnel is based on Automatic Traffic Count (ATC) data. ATCs are located on both approaches to the Blackwall Tunnel and count both northbound and southbound traffic. ○ Data on vehicle heights is based on an observational video survey that the Applicant commissioned at the Blackwall Tunnel. The three-week survey ran from 25 January to 14 February 2016, and was designed to record the number of southbound vehicles over 4.0m in height. Two cameras and markers were positioned at a height of 4m on either side of the carriageway. The results were checked against observed HGV flows north and southbound through the tunnel. Differentials largely matched. TfL also spoke to the freight industry about use of OHVs. 	
<p>3.2</p>		
<ul style="list-style-type: none"> ○ Figure 2.6 and paragraph 2.2.16 of the Applicant's Case for the Scheme [APP-093], identify an overall trend of increased traffic flows through the Blackwall tunnel, despite a "vast increase in rail provision in East London", and show that the average daily vehicle movement 	<p>Tom King made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ The Transport Assessment (TA) explains at paragraph 7.2.15 that with the Scheme in place the Blackwall Tunnel would still be expected to accommodate the majority of traffic. ○ The Blackwall Tunnel would remain the strategic cross-river highway link with the Scheme in operation, and would therefore continue to accommodate the majority of traffic through the corridor due to its good connections to strategic routes including the A12, A13 and A2. The Silvertown Tunnel would provide optimum access to the Royal Docks area and Canary Wharf (via the Lower Lea Crossing) on the north side of the River Thames. Journey time analysis indicates that traffic wishing to access the A13 would continue to route via Blackwall Tunnel. ○ In the opening year just under a quarter of all traffic through the Blackwall/Silvertown corridor would be expected to use the Silvertown Tunnel. The number of person trips across all modes 	<ul style="list-style-type: none"> ○ Transport Assessment [APP-086] ○ Case for the Scheme [APP-093]

<p>through the Blackwall tunnel in 2014 was circa 100,000 per day. Please can the Applicant therefore explain why the air quality and noise chapters of the ES assume that only circa 10,000-11,000 vehicles in each direction would use the Silvertown Tunnel in the opening year, if the Order was granted (that is less than 25% of all existing Blackwall tunnel vehicle movements)?</p>	<p>through the tunnels would be more evenly split, as the majority of bus services (which carry a higher number of passengers per vehicle) would be routed via the Silvertown Tunnel. The proportion of traffic using each tunnel is derived from the modelling and takes into account forecast origins and destinations, journey times and network conditions amongst other things.</p> <ul style="list-style-type: none"> ○ The Applicant is confident with the forecast 'split' of traffic through the tunnels. Should traffic flows through the tunnels be higher or lower than expected, the Applicant has a range of options available to it for addressing this (including for instance implementation of local mitigation and adjustments to the user charging). ○ Figure 2.6 of the Case for the Scheme [APP-093] summarises observed vehicle flows through the Blackwall Tunnel, and is based on 24 hour weekday traffic. Reference to 10,000 – 11,000 vehicles in the Environmental Statement is based on AADT and AAWT, meaning that the numbers in the Case for the Scheme are higher (all other things being equal). 	
3.3		
<ul style="list-style-type: none"> ○ Further to paragraph 8.14 of the Applicant's response to Action Points 8 and 9 arising from the Traffic and Transport ISH on 7 December 2016 [REP2-063], please can the Applicant explain why the modelled hourly flows used in the noise assessment are 18hr Annual Average 	<p>Michael Humphries QC noted that there is an error in this agenda item and clarified that AAWT refers to average annual "Weekday" traffic, not "Weekly" traffic.</p> <p>Rupert Thornley-Taylor made the following points on behalf of the Applicant:</p> <p style="padding-left: 40px;">AAWT</p> <ul style="list-style-type: none"> ○ Since the making of the Noise Insulation Regulations 1973 (amended in 1975 and 1988) the index established in the UK for the prediction of road traffic noise is the L10 18hour index. The regulations provide that noise levels shall be predicted using the Department of Transport publication "Calculation of Road Traffic Noise" (CRTN) last revised in 1988. ○ Paragraph 9 of CRTN states "The traffic flow to be used in the calculation shall be the maximum 	<p>Department of Transport publication "Calculation of Road Traffic Noise" (CRTN) (last revised in 1988)</p>

<p>Weekly Traffic (AAWT) but 24hr Annual Average Daily Traffic (AADT) in the air quality assessments?</p>	<p>expected between 06.00 hours and 24.00 hours on a normal working day within a period 15 years after opening to traffic. The estimate will normally be based upon the Annual Average Weekday Traffic (AAWT)".</p> <ul style="list-style-type: none"> ○ While the purpose of an ES goes further than the matters covered by the Noise Insulation Regulations, it is established UK-wide practice to base all road traffic noise predictions on the CRTN method. <p>Duncan Laxen made the following submissions on behalf of the Applicant:</p> <p>AADT</p> <ul style="list-style-type: none"> ○ The focus of the air quality assessment is on annual mean concentrations (as pointed out at the 1st ISH on traffic modelling), and it is therefore necessary to take account of all the emissions from traffic throughout the year, hence the focus of air quality assessments on the AADT flows which will provide the total emissions. ○ In practice, the air quality modelling took account of the varying flows and speeds (and hence emissions) by time of day, relying on four periods. 	
<p>3.4</p>		
<ul style="list-style-type: none"> ○ Further to Table 1 and Table 2 of the same document, please could the Applicant explain how the numbers in the two tables for peak period factors and off-peak period factors were derived and what are they used for? 	<p>Atholl Noon made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ This information is explained in the ES and the Applicant's responses at DL1 and DL2: <ul style="list-style-type: none"> ● Appendix 6.D Environmental Traffic Data [APP-052]. ● Response to FWQ TT.22 [REP1-174] ● Appendix H -Traffic Data used for Noise and Air Quality Assessments ● Action Points 8 and 9 arising from the Traffic and Transport ISH on 7 December 2016 [REP2-063] ○ The peak period and the off-peak period factors are called the 'expansion factors' as they are used to expand the modelled hourly traffic flows into 24hr AADT and 18hr AAWT. 	<p>Action Points 8 and 9 arising from the Traffic and Transport ISH on 7 December 2016 [REP2-063]</p> <p>Appendix 6.D Environmental Traffic Data [APP-052].</p> <p>Figure 4.1 & 4.2 map traffic count sites.</p> <p>Response to FWQ TT.22 (REP1-174)</p>

	<ul style="list-style-type: none"> ○ They are required as the traffic model only produces traffic data for the morning peak hour (0800-0900), evening peak hour (1700-1800) and an average inter peak hour (1000-1600). ○ Factors have been calculated using the observed traffic count data as follows: <ul style="list-style-type: none"> • Hourly Manual Classified Counts (MCCs) undertaken for 19th to 23rd November 2012 for 118 sites for the period (06:00-22:00hrs). • Annual (2012) 24 Hour Automatic Traffic Counts (ATCs) for 9 sites. ○ The average weekday count for the November 2012 MCC data has been used to calculate the factors and the ATC 24hr count has been used to convert the November expanded data to Annual Average Daily Traffic (AADT) and Annual Average Weekday Traffic (AAWT). <p><u>Steps for calculating the expansion factors:</u></p> <ol style="list-style-type: none"> 1. The expansion factors for morning and evening periods are created using the observed count data by finding the proportion of peak hour flow to the peak period flow. The expansion factor for the inter-peak period (10:00-16:00) is 6 as the model for the inter-peak period has been run for an average inter-peak hour. 2. The expansion factors for the charge off peak and non-charge off peak periods are created by finding the proportion of the off peak period to the inter-peak period as there is no off peak model. Since the off peak period flows are less than the inter peak period flows, this approach estimates slightly higher flow values for the off peak period, which would show a worse case than the actual. <p><u>18hr AAWT for Noise Assessment and 24hr AADT for AQ Assessment:</u></p> <ul style="list-style-type: none"> ○ Flows for each time period are calculated using the expansion factors created for each time period. ○ Convert the 18hr expanded flow to AAWT by using November 2012 weekday to Annual Average Weekday Traffic (AAWT) expansion factor ○ Convert the 24hr expanded flow to AADT by using November weekday (24hrs) to Annual Average Daily Traffic (AADT) expansion factor. 	<p>Appendix H -Traffic Data used for Noise and Air Quality Assessments</p>
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<ul style="list-style-type: none"> ○ Expansion factors 	<p>In response to questions from the ExA regarding the expansion factors Stephen Pyatt made the following points for the Applicant:</p> <ul style="list-style-type: none"> ○ The AQ assessment uses the traffic data provided by the traffic modelling team. ○ The traffic data is used to generate the emissions for input into the air quality model, in accordance with the speed banding interim advice note IAN 185/15. The speed banded emissions are derived from Defra's emissions factor toolkit (EFT). ○ The EFT contains assumptions/projections about the vehicle fleet. This includes the breakdown of heavy and light vehicle flows. The assumptions about the fleet make up in the model reflect regional variations and are based on work undertaken by Defra, DfT and TfL. ○ The London Borough of Newham and Royal Borough of Greenwich asked for clarification as to which zone within London was used for this purpose, as both of the Boroughs fall across more than one zone. ○ Post hearing clarification: <i>The Applicant can confirm that the elements of the Scheme that fall within the London Borough of Newham have been included as 'London Inner', whilst the tunnel and the elements of the Scheme on the Greenwich peninsula are included as 'London Outer'.</i> ○ The emissions are input into model – known as ADMS Roads – which is a dispersion model UK which has been extensively used and validated in the UK. Approved by Defra in relation to local AQ management. 	
3.5		
<ul style="list-style-type: none"> ○ Further to paragraph 9.1.1 of the same document, the data that was used in the noise assessments based upon AAWT data for the opening year is less than the assumed 	<p>Michael Humphries QC presented the following information. The tables presented at the hearing are reproduced below:</p> <ul style="list-style-type: none"> ○ The difference between the input data used for noise assessments and those used for air quality assessments is due to the difference between the 18hr AAWT used for noise assessments and 24hr AADT used for air quality assessments, not any other factors. <p>Flows in 2021 Assessed Case</p>	<p>Action Points 8 and 9 arising from the Traffic and Transport ISH on 7 December 2016 [REP2-063]</p>

<p><i>traffic levels used in the air quality chapter of the ES [APP-031] (paragraph 6.6.32 states that “The Tunnel itself is predicted to carry approximately 10,000-11,000 vehicles per day in each direction”). Please can the Applicant clarify whether the difference between the input data used for noise assessments and those used for air quality assessments is due to the difference between the 18hr AAWT used for noise assessments and 24hr AADT used for air quality assessments, or whether any other factors relate to the differences in input numbers of traffic?</i></p>	<table border="1"> <thead> <tr> <th>Silvertown Tunnel</th> <th>24hr AADT</th> <th>18hr AAWT (06:00 -midnight)</th> </tr> </thead> <tbody> <tr> <td>Northbound</td> <td>11,430</td> <td>10,790</td> </tr> <tr> <td>Southbound</td> <td>11,097</td> <td>10,654</td> </tr> </tbody> </table>	Silvertown Tunnel	24hr AADT	18hr AAWT (06:00 -midnight)	Northbound	11,430	10,790	Southbound	11,097	10,654			
	Silvertown Tunnel	24hr AADT	18hr AAWT (06:00 -midnight)										
	Northbound	11,430	10,790										
	Southbound	11,097	10,654										
	<p>Flows in 2036 Assessed Case</p> <table border="1"> <thead> <tr> <th>Silvertown Tunnel</th> <th>24hr AADT</th> <th>18hr AAWT (06:00 -midnight)</th> </tr> </thead> <tbody> <tr> <td>Northbound</td> <td>14,753</td> <td>14,064</td> </tr> <tr> <td>Southbound</td> <td>14,333</td> <td>13,905</td> </tr> </tbody> </table>			Silvertown Tunnel	24hr AADT	18hr AAWT (06:00 -midnight)	Northbound	14,753	14,064	Southbound	14,333	13,905	
Silvertown Tunnel	24hr AADT	18hr AAWT (06:00 -midnight)											
Northbound	14,753	14,064											
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<ul style="list-style-type: none"> ○ The Annual Average Daily Traffic (AADT) is the average vehicle flow per day for 7 days and 24hr period. It is the total volume of traffic for a year averaged over 365 days. ○ Annual Average Weekday Traffic (AAWT) is similar to AADT but only includes weekdays (Monday to Friday) and covers 18hr period (06:00 to midnight). Due to the difference in AADT and AAWT, the traffic volumes are different for both. ○ Usually AADT is smaller than AAWT, but for London, weekend traffic is not much less, hence AADT is higher than AAWT. ○ The Applicant explained that there is an error at paragraph 9.1.1 of the Document Action Points 8 and 9 arising from the Traffic and Transport ISH on 7 December 2016 [REP2-063]. This data is for the Silvertown Tunnel only. <p>In response to questions from the ExA, Atholl Noon explained how the factors used to create AADT and AAWT are validated and why the Applicant has a high degree of confidence in the outputs.</p> <ul style="list-style-type: none"> ○ The Applicant has used as much data as possible for the conversion process, more than any other scheme Mr Noon has previously been involved in. As a result, the Applicant has a high level of confidence in the outputs. ○ 													
<p>3.6</p> <ul style="list-style-type: none"> ○ Further to the 				<p>Atholl Noon made the following points on behalf of the Applicant:</p>									

<p>Applicant's response to Action Point 8 and 9 from the TT ISH in December [REP2-063], paragraph 9.1.1 provides AAWT data used in the noise assessments for both the opening year (2021) and the design year (2034), with the design year traffic figures being some 30% higher than the opening year. Are similar traffic growth assumptions used in the air quality modelling input data for the design year.</p>	<ul style="list-style-type: none"> ○ The design year is 2036 not 2034 (+15 years from opening). ○ The data used for AADT is presented in the above Tables. ○ The assumptions are broadly similar for AADT used in the Air Quality assessment, as can be seen from the results above. ○ 2036 AADT is only considered in the 'regional' AQ assessment. <p>The data used for the air quality particularly the regional assessment, used the future design year of data and used the same data as the noise.</p> <p>The initial opening year air quality assessment was based on the opening year but there was an assessment on the regional air quality assessment using the future year. Both analyses were based on the same sets of data.</p>	
<p>3.7 In the Applicant's Case for the Scheme [APP-093], it explains in paragraph 2.7.6 that if a long term closure of the Blackwall tunnel is required in the future, "which is always a possibility", drivers would have to plan their journeys to use other crossings or not make the journey at all. It further states that in this scenario, the impact on the wider road network and by extension the economic and environmental impacts would be significant. Also, the Applicant's response to the ExA's FWQ PN3 [REP1-178] states that, "Paragraph 2.6.7 of the Case for the Scheme [APP-093] aims to make the point that, at some point in the future, a long term closure of the Blackwall Tunnel could be required, either as a result of a major incident or for the undertaking of maintenance." It goes on to explain that whilst a protracted closure of Blackwall tunnel is not currently envisaged, nevertheless the possibility of a significant closure being required at some point 1-178] in the future, clearly cannot be ruled out, on the basis that the older the tunnel gets the more likelihood there is that major maintenance or refurbishment works will be required, and there is a relatively low but ever-present risk of a major incident. Given that one of the main reasons given in the Applicant's case for the scheme is to increase resilience to traffic disruptions and delays caused by problems in the Blackwall tunnel, please can the Applicant provide the following information:-</p>		
<p><i>Applicant's introductory comments</i></p>	<p>Tom King on behalf of the Applicant made the following introductory comments:</p> <ul style="list-style-type: none"> ○ The Scheme would improve resilience. One of the objectives of the Scheme is to improve the resilience of river crossings in east London. The relative scarcity of river crossings in east London 	<p>Transport Assessment Appendix D (reliability and</p>

	<p>means that large volumes of traffic are concentrated on a handful of crossings and when a crossing becomes unavailable the impacts can often be widespread.</p> <ul style="list-style-type: none"> ○ Short-term closures are considered as part of our assessment. The Scheme would have a positive impact on resilience in the event of short-term incidents and closures at the Blackwall Tunnel by providing an alternative route for tunnel users within close proximity. The Applicant has made a clear case in the Transport Assessment that there are currently severe existing reliability and resilience issues at the Blackwall Tunnel, and that the Silvertown Tunnel will result in significant improvements to both reliability and resilience. This is described in some detail in Appendix D of the TA. ○ Better than reference case in all scenarios. In the event of an extended closure of the Blackwall Tunnel, the Scheme would also ensure a much improved overall outcome than compared to a scenario without the Scheme (i.e. the Reference Case). Whilst the local area around the Silvertown Tunnel could experience a temporary worsening in conditions as a result of increased traffic demand, these negative effects would be far outweighed by the widespread negative effects at many locations should the Silvertown Tunnel not be available as an alternative route. ○ Very low likelihood. As set out in the Applicant's response to FWQ PN3 [REP 1-178] there are no plans for an extended closure of the Blackwall Tunnel. The likelihood of an unplanned extended closure is considered to be very low (the likelihood of a major fire at the tunnel, for instance, is estimated at approximately 1 in every 270 years) and the Applicant would endeavour to ensure that any extended closure was implemented for the shortest possible time and effects would be temporary. By way of example, the unplanned closure at the Limehouse Link tunnel in October 2015 as a result of a major bus fire was limited to 17 days. ○ Last major refurbishment works had limited impacts. The last major refurbishment works at the northbound tunnel bore were completed in 2011. These works comprised extensive works to tunnel safety systems and refurbishment of four ventilation shafts. The works were scheduled over a period of six weekend closures in order to minimise impacts on tunnel users. 	<p>resilience) [APP-087]</p> <p>Applicant's response to FWQ PN3 [REP 1-178]</p>
<ul style="list-style-type: none"> • <i>In the case of a major extended closure of the Blackwall tunnel, due to maintenance/refurbish</i> 	<p>Billy Parr made the following comments on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ If an extended closure of the Blackwall Tunnel was to occur it is very probable that this would only affect one bore, on the basis that the two tunnel bores are separate structures. 	

<p><i>ment works or a major incident, how much of the daily traffic flow currently using the Blackwall tunnel would be expected to use the Silvertown tunnel?</i></p>	<ul style="list-style-type: none"> ○ In the absence of the Silvertown Tunnel, circa 50,000 AADT would need to not travel, use different destinations or reroute, and there would be very significant negative environmental and economic effects on strategic and local networks. ○ With the Silvertown Tunnel, an alternative route is available, and this will have major benefits. The extent of diversion to it will depend on the management of the situation by TfL and affected local authorities. There are a number of options available for managing flows, including the use behavioural demand management techniques, dynamic use of the available road space including contra flows, speed and traffic light controls to manage any impacts on the Silvertown Tunnel and adjacent networks. In the event if a longer closure adjustment to the user charge would also be an option. What is clear is that at a strategic level, the Silvertown Tunnel will deliver significant benefits in this type of emergency situation and as per TfL's Network Management Duty the Applicant would seek to achieve the best overall outcome. ○ Notwithstanding the above, the proportion of traffic that would be expected to divert to Silvertown Tunnel would vary by time of day and is dependent on the tunnel bore affected. Over the course of the day the majority of traffic could potentially divert to Silvertown Tunnel, subject to the management strategy in place, with lower proportions at peak times and higher proportions outside of the peaks. 	
<ul style="list-style-type: none"> • <i>If it is not 100%, which other routes would the Blackwall tunnel traffic divert towards?</i> 	<ul style="list-style-type: none"> ○ The capacity of the Silvertown Tunnel relative to the total forecast demand through the Blackwall/Silvertown corridor means that not all traffic would be expected to divert to the Silvertown Tunnel. As is currently the case when there are closures, traffic would also be expected to divert to the following crossings (broadly in order of demand, from highest to lowest): Dartford Crossing, Rotherhithe Tunnel, Woolwich Ferry and Tower Bridge. ○ In all cases the level of diversion to other crossings would be significantly lower than without the Silvertown Tunnel in place. 	
<ul style="list-style-type: none"> • <i>In this scenario, what would be the impact of the much increased number of vehicle movements at the nearest receptors to the Silvertown Tunnel portals and on the Air</i> 	<ul style="list-style-type: none"> ○ As explained above, the impacts of an extended closure would largely depend on the strategy put in place to manage the closure. The Applicant would consider a range of impacts when determining the strategy to be used. The Applicant would endeavour to ensure an extended closure was implemented for the shortest possible time, and the effects would be temporary. ○ This is not considered in the ES, as it is not considered to be a 'likely' scenario. The nature and extent of any potential closure is so uncertain as to make it impracticable to carry out any 	

<p>quality management Areas (AQMA)s? Where is this documented in the ES?</p> <ul style="list-style-type: none"> If it is not considered in the ES, why isn't it, given the Applicant's wording "at some point in the future, a long term closure of the Blackwall Tunnel could be required, either as a result of a major incident or for the undertaking of maintenance"? 	<p>meaningful assessment of likely impacts.</p> <ul style="list-style-type: none"> No extended closures are planned and it does not form part of the Reference Case. A substantial refurbishment of the northbound bore of the Blackwall Tunnel was undertaken in 2011. This work was all carried by weekend and nighttime working, without the need for a full closure. TfL does not expect work of this scale to be required for another 25 years. 	
<p>3.8</p>		
<ul style="list-style-type: none"> Further to the issues tracker chart submitted by LB Newham at Deadline (DL) 2 [REP2-011, at page 57], which states that "it remains possible that elasticities (willingness to pay) has the potential to be higher or lower than assumed in the Assessed Case..", could the Applicant provide an assessment regarding how much confidence it has in the accuracy of the traffic data that was used for the noise 	<p>Following the discussion under agenda item 3.4 the ExA requested the Applicant to provide at Deadline 3 a comprehensive note on the uncertainty and associated level of confidence that can be afforded to the traffic forecasts that feed into the environmental assessments, whether numerically or in qualitative terms (Action Point 7).</p> <p>The information requested has been submitted separately at Deadline 3.</p>	

<p>and air quality assessments in the ES and explain what factors (other than willingness to pay) affect the accuracy of these environmental assessments?</p>		
<ul style="list-style-type: none"> ○ Traffic impacts on local routes ○ Response to Action Point 4 	<p>A number of Interested Parties made submissions at the hearing regarding traffic impacts on local roads. In response, the ExA issued the following Action Point:</p> <p>ACTION POINT 4: <i>The Applicant to provide further details of assignments to the routes of concern to the Westcombe Society, the East Greenwich Society and Royal Borough of Greenwich (RBG) and London Borough (LB) of Southwark in relation to the Reference and Assessed cases for D3.</i></p> <p>RESPONSE</p> <p>Applicant’s considerations of traffic effects of the scheme on the routes of concern to East Greenwich Residents Association</p> <ul style="list-style-type: none"> ○ As outlined in the Chapter 7 of the Transport Assessment, in particular Figures 7.21-7.28, the scheme is not expected to result in significant additional traffic assignment onto the wider road network. This includes all key roads in the East Greenwich area (Trafalgar Road, Blackwall Lane, Tunnel Avenue) which are assumed to be the routes of principal concern to this IP. Furthermore, the Applicant is committed to monitoring the effects of the Scheme and bring forward any mitigation required – either ahead of opening, if refreshed assessment indicates this is necessary, or following opening in light of monitoring data. (This commitment will be set out clearly in a single document combining and replacing the Monitoring Strategy and Traffic Impacts Mitigation Strategy to be submitted for Deadline 4.) ○ More generally, the Applicant notes that at the Issue Specific hearing on January 17th EGRA stated a concern that no additional traffic is forecast despite the significant amount of development expected in the local area – particularly on the Greenwich Peninsula. 	<ul style="list-style-type: none"> • Transport Assessment

	<ul style="list-style-type: none"> ○ The Applicant wishes to clarify that the development that is expected on the Greenwich Peninsula <u>has</u> been included in the model, and this is expected to result in some additional traffic. As stated in the Growth Assumptions note (REP2-056) submitted by the Applicant at Deadline 2, the representation of this growth was looked at in detail as part of Steer Davies Gleave’s independent model audit and was signed off as “fit for purpose”. Whilst the inclusion of these developments does result in a small increase in traffic levels in the 2021 <u>reference case</u> compared to the base year model, this increase in traffic is expected to occur regardless of whether the Silvertown Tunnel scheme is implemented. Overall the Scheme itself is not expected to result in any <u>additional</u> traffic that would otherwise not occur in 2021 and beyond. ○ It should also be noted that, as stated in the Applicant’s responses to FWQs TT1 and TT4 at Deadline 1, the modelling suite is considered to be robust and has been signed off as “fit for purpose” by independent auditors Steer Davies Gleave. <p>Applicant’s considerations of traffic effects of the scheme on the routes of concern to the Westcombe Society</p> <ul style="list-style-type: none"> ○ As outlined in the Chapter 7 of the Transport Assessment, in particular Figures 7.21-7.28, the scheme is not expected to result in significant additional traffic assignment onto the wider road network, this includes all key roads in the Westcombe Park area (Westcombe Hill, Westcombe Park Road, Vanbrugh Hill, Charlton Way) which are assumed to be the routes of principal concern to this IP. This is because the Scheme is complemented by the user charge which will act as an effective tool in managing demand across the network (and can be adjusted if necessary to mitigate any traffic impacts that could otherwise occur) as well as the proposed enhancements to the bus network. Furthermore, the Applicant is committed to monitor the effects of the Scheme and bring forward any mitigation required – either ahead of opening, if refreshed assessment indicates this is necessary, or following opening in light of monitoring data. (This commitment will be set out clearly in a single document combining and replacing the Monitoring Strategy and Traffic Impacts Mitigation Strategy to be submitted for Deadline 4.) ○ More generally, the Applicant notes that at the Issue Specific hearing on January 17th the Westcombe society stated a concern regarding a potential lack of demand for new cross river bus services. The Applicant wishes to clarify that, as outlined in Chapter 7 of the Transport Assessment, the number of cross-river bus trips is expected to increase substantially from 3,000 trips to 19,000 trips between 07:00 – 19:00 as a result of the introduction of the new bus services. 	<ul style="list-style-type: none"> • Growth Assumptions note (REP2-056) • Applicant’s responses to FWQs TT1 and TT4
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	<ul style="list-style-type: none"> ○ The Applicant also notes that at the Issue Specific hearing, the Westcombe Society also stated a concern regarding the absence of a trip frequency component in the Applicant’s modelling. The Applicant wishes to clarify that, as outlined in the Applicant’s response to FWQ TT5 at deadline 1, the Silvertown Tunnel scheme is not expected to have a material impact on trip frequency and so this potential response has not been included in the modelling, in accordance with WebTAG guidance. ○ It should also be noted that, as stated in the Applicant’s responses to FWQs TT1 and TT4 at Deadline 1, the modelling suite is considered to be robust and has been signed off as “fit for purpose” by independent auditors Steer Davies Gleave. <p>Applicant’s considerations of traffic effects of the scheme on the routes of concern to LB Southwark</p> <ul style="list-style-type: none"> ○ As outlined in the Chapter 7 of the Transport Assessment, in particular Figures 7.21-7.28, the scheme is not expected to result in significant additional traffic assignment onto the wider road network that could result in a material delay impact at any junction, this includes all key routes in LB Southwark – most notably the A200/A206 corridor serving the Rotherhithe Tunnel and Tower Bridge, as well as the A2 Old Kent Road - which are assumed to be the routes of principal concern to this IP. This is because the Scheme is complemented by the user charge which will act as an effective tool in managing demand across the network (and can be adjusted if necessary to mitigate any traffic impacts that could otherwise occur) as well as the proposed enhancements to the bus network. Furthermore, the Applicant is committed to monitor the effects of the Scheme and bring forward any mitigation required – either ahead of opening, if refreshed assessment indicates this is necessary, or following opening in light of monitoring data. (This commitment will be set out clearly in a single document combining and replacing the Monitoring Strategy and Traffic Impacts Mitigation Strategy to be submitted for Deadline 4.) ○ It should also be noted that, as stated in the Applicant’s responses to FWQs TT1 and TT4 at Deadline 1, the modelling suite is considered to be robust and has been signed off as “fit for purpose” by independent auditors Steer Davies Gleave. <p>Applicant’s considerations of traffic effects of the scheme on the routes of concern to RB Greenwich</p>	
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	<ul style="list-style-type: none"> ○ As outlined in the Chapter 7 of the Transport Assessment, in particular Figures 7.21-7.28, the scheme is not expected to result in significant additional traffic assignment onto the wider road network that could result in a material delay impact at any junction, this includes all key routes in RB Greenwich – most notably the A206 Trafalgar Road which serves the Greenwich World Heritage site, as well as the A206 Woolwich Road which serves the Woolwich Ferry. This is because the Scheme is complemented by the user charge which will act as an effective tool in managing demand across the network (and can be adjusted if necessary to mitigate any traffic impacts that could otherwise occur) as well as the proposed enhancements to the bus network. Furthermore, the Applicant is committed to monitor the effects of the Scheme and bring forward any mitigation required – either ahead of opening, if refreshed assessment indicates this is necessary, or following opening in light of monitoring data. (This commitment will be set out clearly in a single document combining and replacing the Monitoring Strategy and Traffic Impacts Mitigation Strategy to be submitted for Deadline 4.) ○ The Applicant also notes that a detailed analysis of the traffic impacts of the Scheme in RB Greenwich was provided in the Borough Information Note that was sent to the borough in October 2016 and submitted to the examination at Deadline 2 as an appendix to the Commentary on strategic and local modelling note [REP2-050]. ○ It should also be noted that, as stated in the Applicant’s responses to FWQs TT1 and TT4 at Deadline 1, the modelling suite is considered to be robust and has been signed off as “fit for purpose” by independent auditors Steer Davies Gleave. 	<ul style="list-style-type: none"> • Appendix to the Commentary on strategic and local modelling note [REP2-050]
<ul style="list-style-type: none"> ○ Treatment of motorcycles 	<p>In response to comments from the Motorcycle Action Group Simon Nielsen and Tom King made the following comments on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ Motorcycles are included in the model but combined with other user classes because of lack of available data. The treatment of motorcycles in the model is not an error in the modelling. It was a deliberate decision taken in the strategic modelling because motorcycles make up very small proportion of overall traffic. This means congestion is slightly overestimated so the models provide a worst case scenario in terms of this aspect. <p>Charging of motorcycles: Motorcycles are proposed to be subject to lowest of all the user charges. £1 peak, £2 off peak. It would not be feasible to charge less than £1 because of the administrative costs associated with collection. Furthermore, motorcycles also stand to gain from reliability and</p>	

	<p>resilience and time savings so it is therefore appropriate for them to be charged.</p> <ul style="list-style-type: none"> ○ TfL acknowledges motorcycles have reduced external impacts compared to cars, and this is effectively reflected by the proposed lower charges – but their impacts are not zero. Their environmental performance is better than cars, but once you factor in occupancy rates in comparison to cars, the difference is not so high. Furthermore, motorcycles have higher external costs in relation to accidents - they made up 18% of all road casualties in London in 2015 and are disproportionately responsible for injuries to other vulnerable road users. ○ No decision has yet been made on the use of the bus lane in the tunnel by motorcycles. ○ Post hearing note: In its submissions at the hearing, the Motorcycle Action Group suggested that motorcycles are more likely to be used by those on low incomes. The Applicant notes that data in the London Travel Demand Survey shows that the likelihood of motorcycle ownership increases with income. The proportion of households with income under £50,000 that have access to a motorcycle is 2%, compared to 5% for household with income of £50,000 or over. The figure is particularly low (1% or less) for the lowest income households. [Source: Analysis of London Travel Demand Survey (LTDS 2012/13 – 2014/15)] 	
<p>4. Key behavioural issues arising from Traffic and Transport Models and potential implications for policy and assessment/appraisal of interventions with particular reference to user charging, its impacts and effectiveness.</p> <p>Documents from the Applicant that that may be referred to will include Model responsiveness – Document 8.43 [REP2-049], River Crossings Behavioural Survey Report – Document 8.47 [REP2-055], Value of time discussion note – Document 8.44 [REP2-052] and Charging Policies and Procedures - Document 7.11 Revised [REP1-123/4].</p> <p>IP’s will be invited to present any relevant observations they might have and the applicant will be given opportunity to respond (if required). The Panel may also seek additional information or evidence in support of claims/arguments raised by the Applicant or IP’s.</p>		
<ul style="list-style-type: none"> ○ Key Behavioural Issues 	<p>Elena Golovenko made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ The model is hierarchical, so the demand model and the assignment model work together, and the system iterates in order to reach an equilibrium solution. ○ The responses which are included in the demand model are trip generation, mode choice, distribution and routing is undertaken at the assignment level. 	

	<ul style="list-style-type: none">○ The charge is implemented directly in the assignment as a link penalty. This is to allow for trade-off between the saving users are getting from the introduction of the tunnel and the charge. In order to allow this the charges are converted to time units using the values of time.○ The charge is then fed into all stages of the demand model. The routeing is the most sensitive response then followed by the destination and route choice. This is based on the parameters estimated from the local data and is also in line with other models developed for this area and in line with the WEBTAG recommended structure This overall approach is fully compliant with WEBTAG guidance and is the best approach in very congested situations. <p>Ali Inayathusein made the following comments on behalf of the Applicant:</p> <ul style="list-style-type: none">○ The model responsiveness note sets out our position, which is essentially that we have followed all the correct guidance from WEBTAG in coming up with the structure of our model.○ We have a long established set of models which have been used London-wide for almost every major scheme.○ The behavioural surveys were used to benchmark values of time.○ The WEBTAG test is whether there is strong evidence to change the WebTAG parameters.○ We concluded that the evidence showed that there was not a strong case to change those values.○ The applicability of national WebTAG VOTs is unsurprising given incomes in East London. <p>Simon Nielsen made the following points of behalf of the Applicant:</p> <ul style="list-style-type: none">○ I would like to clarify how the behavioural surveys were used.○ Paragraph 4.6 of the national policy statement for national networks indicates that the modelling should normally include national level factors around the key drivers travel	
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	<p>demand including travel cost.</p> <ul style="list-style-type: none">○ WEBTAG advises that the national value of time should not be varied without very strong evidence and what we have therefore done has been to look at the behavioural surveys to see if they provide strong enough evidence to vary the value of time.○ Our conclusion was very clear that the behavioural surveys did not provide sufficiently strong evidence that we depart from those values of time. That is how we used those behavioural surveys and it is important to understand that. <p>Phil Bates made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none">○ We find quite often with SP Surveys that there is the potential for biases of respondents in the sense that they want to influence the outcome through their response.○ Variations within this are not uncommon and indeed from an international perspective when we have seen problems with forecasts on similar schemes it is when stated preference results have been used directly rather than using national guidance or a value based approach. I am not surprised there are variations. What the evidence suggests is that it is better to stick with the national guidance unless there is a very very strong reason not to. <p>In response to comments by the London Borough of Southwark that its previous submissions regarding how the modelling had taken account of the Canada Water and Old Kent Road Area Action Plans, Simon Nielsen made the following points:</p> <ul style="list-style-type: none">○ Canada Water was dealt with in the growth report submitted by TfL at deadline 2.○ Old Kent Road was not raised until Deadline 2 by the interested party and we did not deal with it in our growth report.○ However we believe that Old Kent Road is more aspirational and is likely to take place over a twenty or so year period. It will be covered to some extent in the reference case but it would certainly be covered in the high growth scenario, which includes a very large growth increase at Old Kent Road.	
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	<p>Following the discussion the ExA requested that the Applicant provides for deadline 3:</p> <ol style="list-style-type: none"> 1. a comprehensive note on the uncertainty* and associated level of confidence that can be afforded to the traffic forecasts that feed into the environmental assessments, whether numerically or in qualitative terms (Action Point 7); and 2. a clear line of evidence/audit trail showing how the level of uncertainty in the traffic/transport modelling has fed through into the application of this data in Air Quality (AQ) and Noise modelling and, with regard to use of the Defra Air Quality Toolkit, a demonstration that the adjustments applied in the COPERT modelling have been at the upper end of the range of adjustments for inferior performance of diesel vehicles so as to be consistent with the Client Earth Judgement (No2) in relation to achievement of Air Quality Limit Values at the earliest possible date for D3. If it cannot be demonstrated that the Environmental Statement (ES) is consistent with the judgement to provide revised ES AQ chapter that would be consistent with the judgment. (Action Point 8) <p>These notes have been submitted separately by the Applicant at DL3.</p>	
<p>5. Whether the Mitigation provided in the updated Traffic Impacts Mitigation Strategy [TIMS] is fit for purpose</p> <p>IPs will be invited to provide observations on the proposed mitigation in TIMS v1 [REP2-032] especially Table A1 – Initial Mitigation Triggers, in relation to transparency, accountability and how this fits with the traffic levels assessed in the ES.</p>		
<p>Traffic Impacts Mitigation Strategy</p>	<p>Michael Humphries QC made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ The Applicant has had benefit of comments from the Boroughs and other Interested parties, and recognises the concerns about mitigation of impacts on local roads. The Applicant acknowledges that work is needed to strengthen and clarify some of the language and commitments in TIMS. ○ The Applicant is therefore proposing to refine TIMS to include the following commitments: <ol style="list-style-type: none"> 1. Undertaking a refreshed assessment of Scheme impacts prior to Scheme opening. This will be used both to inform the decision on opening user charges and identify the need for and type of mitigation required. Any mitigation identified as part of this refreshed assessment would be implemented prior to Scheme opening. 2. Monitor the actual impacts of the Scheme’s operation after opening and implement any 	<ul style="list-style-type: none"> ○ TIMS rev 1 [REP2-032] ○ Monitoring Strategy rev 1 [REP1-121]

	<p>mitigation required to address unexpected adverse impacts identified by the monitoring data. The Applicant will be clearer about how the monitoring data will be reported to STIG each year, and the role that STIG will play in understanding that data and making recommendations for further mitigation after opening.</p> <ol style="list-style-type: none"> 3. A review of impacts to be carried out after a specified period (e.g. 12 months) after the opening of the tunnel. If the tunnel is not performing as expected, TfL will be required to amend the user charge to address the impacts. 4. The mitigation triggers will form part of the annual monitoring reports. The Applicant is giving further consideration to these triggers to reflect recent feedback from host boroughs and other stakeholders, and will provide an updated set of triggers in due course include an explanation of how the triggers have been developed. <p>Billy Parr made the following points regarding the triggers included in Table A1 of the TIMS:</p> <ul style="list-style-type: none"> ○ The initial mitigation triggers represent one aspect of the Applicant's overall approach to monitoring and mitigation. The triggers will form part of, and are intended as a helpful addition to, the monitoring reports on scheme impacts that will be considered by STIG. Given that any mitigation identified as being required following the refreshed assessment will be implemented prior to Scheme opening, the triggers provide additional surety over and above what would typically be provided that any adverse impacts caused by the Scheme will be addressed. ○ The initial triggers are based on observed conditions (i.e. data collected as part of the Monitoring Strategy) and will provide further insight into the traffic-related Scheme effects. ○ The trigger thresholds that have been developed include allowance for forecast growth and general variability experienced across the network. The initial triggers set out in Table A-1 seek to take into account: <ol style="list-style-type: none"> 1. Growth in population and jobs, and therefore the number of trips made across the network 2. General variability observed across the network 3. Induced traffic, which for this scheme is assumed to be zero 4. The effects of the scheme at specified locations ○ Following recent discussions with the host boroughs, it is planned that the initial trigger thresholds will be revised to ensure they better reflect the Assessed Case outputs and views on the acceptable 	
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	<p>level of ‘false positive’ alerts.</p> <p>In response to comments from the Examining Authority and other interested parties Billy Parr and Tom King made the following comments:</p> <ul style="list-style-type: none"> ○ Consideration will be given to setting separate triggers for the Blackwall and Silvertown Tunnels. ○ Growth will be taken into account in the triggers – if background growth is higher or lower than forecast the triggers can be updated to reflect this and ensure they remain fit for purpose. ○ The triggers take account of the forecast impacts of the Scheme set out in the Assessed Case, and will be updated so that they are more closely based on the changes that we are forecasting. The Applicant will make clearer the link between the Assessed Case and the triggers in the next update. ○ Further engagement is planned with host and neighbouring boroughs to consider the triggers in more detail and a full update will be provided for DL4. 	
<p>Traffic monitoring and construction traffic</p>	<p>ACTION POINT 19: <i>The ExA asked the Applicant to provide a note on how baseline traffic monitoring can exclude construction related traffic if undertaken during construction.</i></p> <p>RESPONSE: TfL is proposing the baseline monitoring of traffic conditions will commence around three years prior to the opening of the Scheme, whilst construction of the Scheme will be underway. As set out in Section 3 of the Code of Construction Practice [REP2-027], the appointed contractor will be required to produce a Construction Traffic Management Plan for the construction phase of the Scheme and this will include detailed information about the planned number and routeing of construction vehicles. In addition, the contractor will be required to provide data on HGV movements throughout the Scheme’s construction. This information can then be reported as part of the monitoring reports, and discounted from the baseline monitoring of traffic conditions at affected locations for the purpose of monitoring the impacts of the Scheme on the network post-opening. Overall and as set out in Chapter 6 of the Transport Assessment [APP-086], TfL considers that the volume of construction traffic will not have a material adverse impact on the performance of the road network but acknowledges that construction traffic should be taken into account in the baseline monitoring that is planned.</p>	<ul style="list-style-type: none"> • Code of Construction Practice [REP2-027] • Transport Assessment [APP-086]
<p>6. Economic Issues</p>		
<p>Transport Appraisal is a key element of the investment decision making process. This item will therefore consider the Transport Appraisal and the Transport Business Case for the Silvertown Scheme having regard to the HMT guidance referred to under item 1 and guidance on transport</p>		

<p>appraisal as set out in Transport Appraisal Guidance (WebTAG) including:</p> <ul style="list-style-type: none"> • Context: The Strategic Case, the Commercial Case, the Financial Case. The Management Case including strategic consideration of congestion, closures, incidents and network resilience, effects on transport and the wider economy, and environmental effects • The Economic Case including: <ul style="list-style-type: none"> ○ User charging and the economic case ○ Transport economic efficiency ○ Public accounts ○ Distributional and Social Impacts ○ Wider Economic Impacts. <p>Documents that may be referred to will include the Outline Business case and supporting documentation – Document 7.8 [APP-100-104], the Transport Assessment – Document 6.5 [APP-086] and Distribution of user benefits – Document 8.34 [REP2-042].</p>		
<ul style="list-style-type: none"> • Summary of Scheme's economic benefits 	<p>Atholl Noon made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ Information on the economic benefits of the Scheme is given in the Economic Assessment Report and the Outline Business Case. ○ The headline benefits in the economic sense are those in the Summary Table 1 of the Economic Assessment report, which is replicated in the Outline Business Case, which is that the net present value of the scheme (initial assessment without reliability) is approximately £967 million over 60 years, that is close to £1 billion. If reliability benefits are also included in the assessment the net present value is just over £1.2 billion. ○ The report also shows that the user charge revenue from the scheme slightly exceeds the estimated investment and operating cost of the scheme. The headline view is that the scheme delivers high economic net benefits and is a very high value for money scheme. ○ In the Economic Assessment report there are various tables describing the economic impacts of the scheme, including Table 5.11 (the Transport Economic Efficiency Table), which sets out the benefits attributable to different users. ○ The highest benefits are received by the non-business 'other' user category, closely followed by the benefit to businesses and then commuting. A very significant proportion of benefits are attributable to coach and bus passengers, as the scheme will enable a significant increase in cross river bus services, and will also benefit existing bus and coach passengers, who suffer from journey time delays and reliability issues. 	<ul style="list-style-type: none"> ○ Outline Business case and supporting documentation – [APP-100-104], ○ Distribution of user benefits – [REP2-042].

	<ul style="list-style-type: none"> ○ It should also be noted that, contrary to statements made by others at the inquiry regarding the scheme encouraging commuting by car, the overall benefit to car commuters is small in relation to total benefits – car commuters are forecast to obtain benefits of some £150m of benefit out of a total of some £2.1 billion user time benefits, and their net user benefits are only some £12m. The charge is used to manage increases in commuting to car and there is some transfer to public transport. ○ In addition to the initial benefits we estimate that the reliability benefits are an additional approximately £250 million, and the wider economic benefits are an additional £90 million. ○ Table 5.15 in the Economic Assessment report presents the analysis of the monetised cost and benefits. It shows the net present value of £967 million (£1.2m including reliability), and shows the different types of benefits attributable to the different aspects. ○ There is a relatively small negative impact on noise of about £6 million and a small impact on air quality of negative £3 million, while the greenhouse gas assessment indicates a positive impact of £12 million. Safety benefits are positive but relatively small at £12 million. Net user benefits to commuting is shown as £260 million, for the ‘other’ user class £477 million and finally for business users and providers £350 million. There is a negative impact on indirect tax of £143 million which means that the overall impact is a positive £958 million. Table 5.16 it shows the same figures with the additional reliability impact. ○ The valuations of environmental impacts uses the DMRB WebTAG methodologies for taking the model network before and after and calculating the noise, air quality and greenhouse gas impact. 	
<ul style="list-style-type: none"> • BCR and Net present value and buses 	<p>The ExA noted that a BCR figure has not been provided for this scheme. Instead, there is just an NPV without any cost taken into account.</p> <ul style="list-style-type: none"> ○ In response Atholl Noon explained on behalf of the Applicant that the ‘negative cost’ of the scheme (the user charges revenue exceeds total operating and investment costs) would result in a negative BCR, which is not helpful. ○ He noted that the high value for money of the scheme can be seen by looking at the effect of the very low growth scenario presented in Table 5.21 in the Economic Assessment Report. In this scenario (and assuming the assessed case charges) there would be less revenue and a capital 	<ul style="list-style-type: none"> ○

	<p>contribution to the scheme (£100m) would be needed, rather than it being paid entirely by charges. The costs of the scheme remain the same, and there would be lower NPV, but a BCR ratio can be calculated and this is some 7:1, i.e. very high value for money. This reinforces the view of the scheme as being very high value for money, even in low growth circumstances</p> <p>ACTION POINTS 12 and 13: <i>The ExA asked the Applicant to provide:</i></p> <ol style="list-style-type: none"> 1. <i>a detailed analysis of projected Net Present Value (NPV) without implementation of bus strategy for D3; and</i> 2. <i>a BCR for the scheme without the implementation of bus strategy and scheme funded publicly (not PPP) for D3.</i> <p>The information requested has been submitted separately at Deadline 3.</p>	
<ul style="list-style-type: none"> • Optimism bias 	<p>The ExA noted that TfL did not apply an optimism bias to this project.</p> <p>In response Atholl Noon made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ There has been a detailed risk assessment carried out on the cost estimates and the commercial team are very comfortable with the level of risk mitigation in that estimate and decided that a further optimism bias is not required at this stage. ○ It is important to realise that although optimism bias isn't included there is risk allowance in the design for change that is believed to be adequate for that purpose. The design is not totally fixed and it is possible that changes will occur within the design, but risk allowance has taken this into account.. <p>David Rowe made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ When developing the costs and the estimation of risk acquired allowances we have followed HM Treasury's Green Book guidance. We have used a quantitative risk assessment and for the stage of maturity that the project is at we have adopted a P80 risk allowance. P80 means that there is an 80% chance of all of the risks that we have identified materialising because it is a relatively immature design. The P80 risk allowance has been included in the costs that are reported in table 	

	<p>13 of the Outline Business Plan.</p> <p>ACTION POINT 15: <i>The ExA requested that the Applicant provides at D3 an explanatory note on the relationship of the risk allowance included in the costings as compared to inclusion of an optimism bias figure with a note of how the approach is derived from government guidance.</i></p> <p>RESPONSE: TfL has made allowances for any bias and risk associated with the Silvertown Tunnel scheme which may arise as a result of appraisal, budgeting, implementation, realisation of benefits and other matters through the application of a Quantified Risk Assessment (QRA) rather than an allowance for Optimism Bias. This approach accords with the Treasury Green Book, section 5.64, which states “..optimism bias is designed to complement and encourage, rather than replace, existing good practice, in terms of calculating project specific risk adjustments... Accordingly, adjustments for optimism may be reduced as more reliable estimates of relevant costs are built up, and project specific risk work is undertaken.”</p> <p>The QRA is based on a structured assessment of the relevant aspects of the project utilising data and experience from comparable schemes in the UK and abroad. This enables the determination of a measure of confidence in the project based on probability. In line with the Treasury guidance, TfL has adopted the P80 (or 80% probability of the risk materialising) estimate reflecting the stage of maturity of the project. The costs of the project, inclusive of the risk allowance, are as reported in Table 13 of the Outline Business Plan (APP-100).</p>	
<ul style="list-style-type: none"> • Modelling of exemptions/discounts 	<p>ACTION POINT 17: <i>The Applicant to provide a note to explain the modelling undertaken of categories proposed for exemption from charge for D3.</i></p> <p>RESPONSE:</p> <p>The table below sets out the exemptions assumed to apply in the Assessed Case and how they are dealt with in the modelling for the Scheme. The implications of this for traffic flow estimates is considered within the note on forecasting uncertainty provided alongside this submission for Deadline 3.</p>	

	100% discount/exemption	Potential % of directly daily traffic modelled?	Is discount modelled?	Comment / Source
	Buses, coaches, minibuses	2.0%	Yes	From timetables (scheduled services only)
	Taxi (Black Cabs)	2.0%	Yes	ANPR data from Blackwall Tunnel + DVLA categories
	Private Hire Vehicles	1.0%	No	Proportion assumed based on Taxi proportion
	Blue Badge holders, Vehicles in the disabled tax class, NHS Patient Reimbursement	4% - 6%	No	Behavioural survey data, Congestion Charging scheme data
	Low emission vehicles	1.5%	No	ANPR data from Blackwall Tunnel + DVLA categories
	Selected Partner vehicles	0.1%	No	Operational assumption
	Emergency services vehicles, NHS vehicles exempt from vehicle tax, Military vehicles	0.2%	No	ANPR data from Blackwall Tunnel + DVLA categories; Congestion Charging scheme data
	Recovery and accredited breakdown vehicles	0.1%	No	ANPR data from Blackwall Tunnel + DVLA
<ul style="list-style-type: none"> Among economic issues that the ExA will wish to explore are those on river users. Further to the Applicant's response to ExA's FWQ DN3 [REP1-169], which identifies Thames Wharf as the only safeguarded wharf which would be adversely impacted by the construction of the scheme, and the Port of London Authority (PLA)'s submission for DL2 	<p>Michael Humphries QC made the following points:</p> <ul style="list-style-type: none"> The Applicant has assessed the impacts of the Scheme on the neighbouring protected wharves during the construction of the Scheme. The potential impacts and mitigations during the construction are presented in the Transport Assessment, the CoCP and in the Navigational Issues and Preliminary Risk Assessment. The NIPRA concludes that through careful design of the temporary structures including the jetty, through consideration of mooring, berthing and manoeuvring arrangements and through the implementation of a series of measures (creation of a berthing coordinator role and 24/7 Construction River Response team), the navigational risks to other river users and to local safeguarded wharves arising from the creation of a temporary jetty and berthing facility at Thames Wharf can be reduced to As Low As Reasonably Practicable. No anticipated long term residual risks are envisaged to navigational interests on the River Thames. Thames Wharf: The most significant impacts of the Scheme are at Thames Wharf. These have been documented in the Applicant's repose to FWQ DN3. The Safeguarded Wharves Review 2013 	<ul style="list-style-type: none"> Transport Assessment CoCP Navigational Issues and Preliminary Risk Assessment 		

<p><i>[REP2-104], which describes potential impacts at other safeguarded wharves along the relevant stretch of the river Thames which are at risk of disruption to some degree and raises concerns that the Applicant's response to DN3 did not consider potential impact upon access to the other safeguarded wharves (Northumberland, Orchard, Peruvian, Manhattan, Sunshine, Angerstein, Murphy's, Victoria Deep Water Terminal, Brewery and Northumberland Wharves), please could the Applicant and PLA provide an update on this matter? PLA considers that disruption to some of these wharves could be significant and</i></p>	<p>(Appendix A), identifies Thames Wharf as having future opportunities for waterborne logistics and river freight handling, which is consistent with the proposed usage for the Scheme. There are a number of tenants in occupation at Thames Wharf whose leases expire prior to the commencement of the construction and who will not therefore be in occupation at the commencement of the Scheme. The exception is ASD who occupy the north end of Thames Wharf but who do not use the river. The Applicant will maintain access for ASD throughout the construction. On completion of the works, the existing access to the safeguarded Thames Wharf will be reinstated on its current alignment save for a new connection onto the realigned Dock Road</p> <ul style="list-style-type: none"> ○ Peruvian Wharf: Peruvian Wharf is currently accessed from the west by road via Dock Rd or from the east via Silvertown Way / North Woolwich Road. Given the closure of Dock Road for a substantial period, the only road access to Peruvian Wharf will be via the A1020 North Woolwich Road / Silvertown Way junction. This will remain unaffected. The Peruvian wharf planning application (ref. 14/00395/FUL) sets out new access arrangements and swept path analysis for HGVs in and out of the site. This confirms that HGVs will manage to turn in and out of the site and travel east and west during the period that Dock Road is closed. Impact of the Silvertown Tunnel works on road access to this Wharf is considered to be very low. ○ Victoria Deep Water Wharf: Victoria Deep Wharf is located on the Greenwich bank outside of but adjacent to the DCO limits. Victoria Deep Water Terminal is accessed from A102 Blackwall Tunnel Southern Approach via the Blackwall Lane junction and Millennium Way. Millennium Way will be temporarily diverted during the construction works to allow construction of the Silvertown tunnel. Access along Millennium Way would be maintained at all times. The impact of the Silvertown Tunnel works on road access to this Wharf will be affected and is considered to be very low. 	
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<p>adverse.</p>		
<ul style="list-style-type: none"> • The ExA will also wish to have an update from the Applicant on the reference to 'Further benefits for local residents who use the tunnel' as referred to in paragraph 2.17 of the Update Report of October 2016 [AS-021]. 	<p>David Rowe made the following points on behalf of the Applicant:</p> <ul style="list-style-type: none"> ○ The Mayoral announcement, which was highlighted to the Examining Authority in the Update Report in October 2016, included a number of these benefits, such as concessions to local residents to encourage the take up of the new bus services that the new tunnel enables. ○ TfL is also looking at other opportunities to offer benefits to local residents that do not undermine the traffic, environmental or socio-economic benefits of the scheme. For example, the Central London Congestion Charging Scheme includes a registration fee for people who wish to sign-up to be account holders. It is envisaged a similar arrangement will apply for the user charging regime at the Blackwall and Silvertown tunnels. However, offering a reduced registration fee for an initial period would encourage local residents to sign-up to be account holders ensuring they pay the lowest charges without undermining the scheme benefits. ○ Any such further benefits would be determined nearer to the time of the scheme opening and will be shared with STIG for consideration. <p>ACTION POINT 16: <i>The ExA asked the Applicant to provide a comprehensive note explaining the intended local benefits/enhancements to offset the dis-benefits to some low income groups within the host or nearby boroughs for D3. This should include detailed figures by socio-economic group by borough and also displayed in map form.</i></p> <p>RESPONSE: The Applicant has submitted at Deadline 3 a comprehensive note entitled '<i>Impact of the Scheme on Low Income Residents</i>'.</p> <p>In addition, and as set out in section 2 of the Update Report (AS-021) submitted by the Applicant at DL1, a number of enhancements for local residents have been committed under the recent Mayoral Review. These include, for example, urban realm improvements for pedestrians and cyclists and a bus concession for local residents. It also stated that TfL will investigate a cycle shuttle service and TfL plans to discuss its further work on this with the host boroughs shortly.</p> <p>As noted by David Rowe at the ISH on 17 January, TfL is also considering other potential benefits such</p>	<ul style="list-style-type: none"> ○ Update Report Oct 2016 [AS-021] ○ Response to FWQ Socio Economic Question SE.2 ○ Comments on Borough Local Impact Reports (section 3.11)

	<p>as the waiving of the account registration fee for residents. This could be especially helpful for low-income residents because it would not only remove the initial cost but also give ongoing access to the lower user charges available to account-holders.</p> <p>The importance of the bus services which would be enabled by the Scheme is underscored in TfL's response to Action Points 12 and 13.</p>	
7. Any other matters		
In case needed to address the points identified in the broad introduction to section 3 above, this section provides a recap and update of the topics prepared for the previous (Dec 7th) ISH		

ACTION POINTS

	Action	How provided
1	The Applicant to provide a comprehensive note giving full borough distributions of car trips that are not suppressed but re-assigned for Deadline 3 (D3). This should include detailed estimates of the projected behaviour impacts.	Note submitted at Deadline 3.
2	The Applicant to provide a comprehensive note showing the journey time and generalised cost impacts for those forecast to switch from car to bus for D3 (to include disaggregated data for population sub groups and also displayed in the form of maps).	Note submitted at Deadline 3.
3	The Applicant to provide a copy of the TfL Business Plan published/approved in December 2016 for D3.	Submitted at Deadline 3.
4	The Applicant to provide further details of assignments to the routes of concern to the Westcombe Society, the East Greenwich Society and Royal Borough of Greenwich (RBG) and London Borough (LB) of Southwark in relation to the Reference and Assessed cases for D3.	Response provided above in section 3 of the summary of the hearing.
5	The Applicant formally to submit the tables introduced in response to ExA questions 3.1 to 3.8 for D3.	The tables are included in the summary of the hearing above in

		relation to the relevant agenda items.
6	The Applicant to provide a comprehensive note on the make-up of the data used to convert peak flows to AAWT and AADT, the mechanisms (specifications and values) used in the conversion and details to be provided of the extent to which there has been external validation of this process for D3.	Note submitted at Deadline 3.
7	The Applicant to provide a comprehensive note on the uncertainty* and associated level of confidence that can be afforded to the traffic forecasts that feed into the environmental assessments, whether numerically or in qualitative terms for D3. * <i>Uncertainty should be interpreted as encompassing but not limited to;</i> <i>1 uncertainty in model inputs at each stage of the model system, including measurement error and background demographic and economic growth scenarios;</i> <i>2 specification error;</i> <i>3 error in model parameters; and</i> <i>4 scope and scale of propagation of uncertainty between model stages and links to environmental tools (noise and air quality).</i>	Note submitted at Deadline 3.
8	The Applicant to provide a clear line of evidence/audit trail showing how the level of uncertainty in the traffic/transport modelling has fed through into the application of this data in Air Quality (AQ) and Noise modelling and, with regard to use of the Defra Air Quality Toolkit, a demonstration that the adjustments applied in the COPERT modelling have been at the upper end of the range of adjustments for inferior performance of diesel vehicles so as to be consistent with the Client Earth Judgement (No2) in relation to achievement of Air Quality Limit Values at the earliest possible date for D3. If it cannot be demonstrated that the Environmental Statement (ES) is consistent with the judgement to provide revised ES AQ chapter that would be consistent with the judgment.	Note submitted at Deadline 3.

9	The Applicant to provide a copy of the questionnaire* (including stated preference experiment) used to establish locally estimated values of time to seek to establish whether local values could be evidentially justified for D3. Details of sampling and samples should be included in the note (* refers to 'River Crossings: Behavioural Survey' 2013).	Please see the 'River Crossings Behavioural Surveys Report' submitted at Deadline 2 (REP2-055). Information regarding sampling is in section 2. Copies of the Questionnaires are in Appendices A,B, C and E.
10	The Applicant to provide an interim further update of the TIMS for D3 with a further update including revised/additional thresholds for D4.	The Applicant's approach is set out in the 'Applicant's Update Note' submitted to the ExA at Deadline 3.
11	The Applicant to consider the need to amend the wording of the draft Development Consent Order (dDCO) at D3 to provide for mitigation ahead of opening and for a review after a fixed specified period and not just amendment to the TIMS itself.	The Applicant's response is set out in the 'Applicant's Update Note' submitted to the ExA at Deadline 3.
12	The Applicant to provide a detailed analysis of projected Net Present Value (NPV) without implementation of bus strategy for D3.	Note submitted at Deadline 3.
13	The Applicant to provide a BCR for the scheme assuming without implementation of bus strategy and scheme funded publicly (not PPP) for D3.	Note submitted at Deadline 3.
14	The applicant to provide economic assessment of any alternatives* that were taken through to comparative assessment for D3 to include monetary valuation of costs and benefits *to include performance of preferred scheme at comparable stage of scheme development	Note submitted at Deadline 3.
15	The Applicant to provide an explanatory note on the relationship of the risk allowance included in the costings as	Response provided above in

	compared to inclusion of an optimism bias figure with a note of how the approach is derived from government guidance for D3.	section 6 of the summary of the hearing.
16	The Applicant to provide a comprehensive note explaining the intended local benefits/enhancements to offset the dis-benefits to some low income groups within the host or nearby boroughs for D3. This should include detailed figures by socio-economic group by borough and also displayed in map form.	Response provided above in section 6 of the summary of the hearing. Please also see the document 'Impact of the Scheme on Low Income Residents' submitted at Deadline 3.
17	The Applicant to provide a note to explain the modelling undertaken of categories proposed for exemption from charge for D3.	Response provided above in the summary of the hearing.
18	The Applicant to provide an update on progress towards securing a commitment to the enhanced bus routes strategy in the DCO (including procurement/tendering arrangements) for D3.	See the 'Applicant's Update Note' submitted by the Applicant at Deadline 3.
19	The Applicant to provide a note on how baseline traffic monitoring can exclude construction related traffic if undertaken during construction.	Response provided in section 5 of the summary of the hearing.