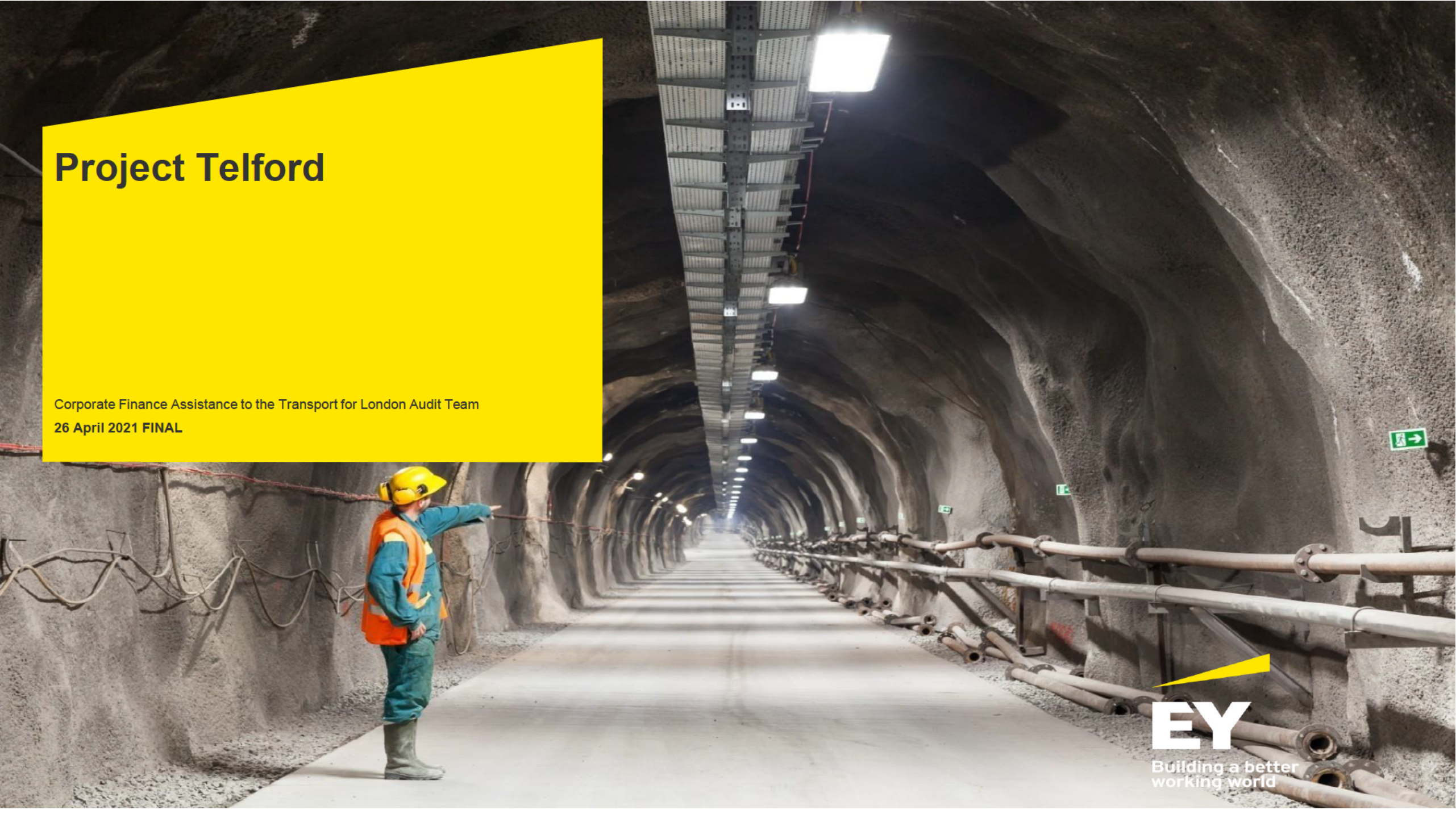
Project Telford

Corporate Finance Assistance to the Transport for London Audit Team

26 April 2021 FINAL



EY

Building a better working world

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26 April 2021

Project Telford – Corporate Finance Assistance to the Transport for London Audit Team

In accordance with the agreed scope of work, EY Corporate Finance have supported EY Audit in investigating objections received regarding the Silvertown Tunnel ("Project") as part of the broader Transport for London (TfL) audit engagement.

This report details our findings on reviewing the Silvertown Tunnel Scheme Business Case in the context of challenges received by the Silvertown Tunnel Coalition (SSTC) around (i) the optioneering (ii) value for money and (iii) contractual termination provisions.

An update to the report presented to TfL's Audit and Assurance Committee on 17 March 2021 was made to take into account additional correspondence received from individuals within the SSTC, Transport Action Network and Friends of the Earth.

Purpose of our Report and restrictions on its use

This report was prepared on the specific instructions of the EY TfL Audit team solely for the purpose of responding to SSTC, Transport Action Network and Friends of the Earth objections received and should not be used or relied upon for any other purpose.

This report and its contents may not be quoted, referred to or shown to any other parties without our prior written consent.

We accept no responsibility or liability to any person other than to Transport for London, or to such party to whom we have agreed in writing to accept a duty of care in respect of this report, and accordingly if such other persons choose to rely upon any of the contents of this report they do so at their own risk.

Nature and scope of the services

The nature and scope of the services, including the basis and limitations, are detailed on Slide 16 & 17.

Our work is in response to the specific objections raised by the Stop Silvertown Tunnel Coalition (SSTC) and select concerns from the Greater London Authority ("GLA") Oversight Committee, Transport Action Network and Friends of the Earth, as such, is restricted to the areas set out in the Scope of Work. As part of the review process, we only considered information available at the time decisions were made. This excluded the impact of COVID-19, at this stage, which would have been unforeseeable at the business case / procurement stage.

The contents of our report have been reviewed by TfL's management, thus confirming the factual accuracy of the Report.

Whilst each part of our report addresses different aspects of the work we have agreed to perform, the entire report should be read for a full understanding of our findings and recommendations .

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Our work commenced on 20 November 2020 and for the purposes of this report was completed on 26 April 2021. Our report has undergone confirmation of factual accuracy and our definitive findings and recommendations are detailed within the report. Our report does not take account of events or circumstances arising, or information made available, after 31 March 2021 and we have no responsibility to update the report for such events or circumstances or information.

Yours faithfully,

EY Corporate Finance Partner

Ernst & Young LLP

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Glossary

Abbreviation	Full Name	Abbreviation	Full Name	Abbreviation	Full Name
AMCP	Analysis of Monetised Costs and Benefits	HMG	Her Majesty's Government	PFI	Private Finance Initiative
AQMA	Air Quality Management Areas	IAR	Internal Assurance Review	PF2	Private Finance 2
AQP	Air Quality Plan	IIPAG	Independent Investment Programme Advisory Group	PPD	Projects and Programmes Delivery
BPH	Buses Per Hour	IP	Interpeak Traffic Period	PPP	Public Private Partnership
CAPEX	Capital Expenditure	KEXIM	Export-Import Bank of Korea	Project Co	Project Company
CO_2	Carbon Dioxide	LGV	Light Good Vehicle	PT Max	Maximum Public Transport
DCO	Development Consent Order	MTS	Mayor's Transport Strategy	PV	Present Value
DfT	Department for Transport	NPSNN	National Policy Statements for National Networks	SOBC	Strategic Outline Business Case
DSR	Debt Service Ratio	NOx	Nitrogen Oxides	SoS	Secretary of State
EE	External Experts	NPV	Net Present Value	SPV	Special Purpose Vehicle
EPC	Engineering Procurement and Construction	NSIP	Nationally Significant Infrastructure Project	SSTC	Stop Silvertown Tunnel Coalition
ExA	Examining Authority	OBC	Outline Business Case	TAG	Transport Analysis Guidance
FBC	Full Business Case	OHV	Over Height Vehicle	VfM	Value for Money
GHG	Green House Gases	OPEX	Operating Expenditure	VoT	Value of Time
GLA	Greater London Authority	O/S	Outstanding	WebTAG	Web based Transport Analysis Guidance
HGV	Heavy Good Vehicle	PA	Project Agreement	WLRC	Wider London Road Charging

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Executive Summary

1 Executive Summary

Executive Summary

Background

- Following high levels of development and expansion in East London in recent years, the Blackwall Tunnel, London's most important cross river road link by volume, is unable to accommodate current demand leading to traffic issues (i.e. congestion, closures, lack of resilience), and more broadly a "barrier effect" from the Thames inhibiting the growth of East London.
- Following public consultation and an extensive approval process (running from 2012-2019), the Silvertown Tunnel Scheme, a twin bore tunnel adjacent to the Blackwall Tunnel, was approved and has begun construction.
- The project is structured as a private public partnership (PPP), with the concessionaire assuming DBFOM responsibilities. TfL will make availability payment for 25 years following construction (funded by tolls), subsequent to which ownership will transfer to TfL.
- Since the award in 2018, TfL have received a number of objections against the project in relation to the optioneering and Value for Money ("VfM") assessment.

Purpose & Scope

- This report has been prepared by EY Corporate Finance to assist EY Audit in reviewing the objections raised by the Stop Silvertown Tunnel Coalition ("SSTC"), and select concerns from the Greater London Authority ("GLA") Oversight Committee, Transport Action Network and Friends of the Earth.
- This report focuses on:
  - The governance process which the Silvertown Tunnel Business Case has been subjected to (including stakeholder challenges in the DCO process);
  - A review of optioneering carried out by TfL, with a specific focus on the alternate options of tolling Blackwall Tunnel option (i.e. no Silvertown Tunnel) and wider London road pricing
  - VfM considerations with regard to the treatment of toll revenues and traffic sensitivities
  - A review of the voluntary termination provision (i.e. termination by TfL) in the Silvertown contract and a high-level review of TfL's termination cost calculation

Business Case Process

- The project development has been underway for nearly a decade. During this period, the project has been through an extensive governance process, most notably:
  - Review by TfL Project Assurance, Independent Investment Programme Advisory Group and External Assurance Experts
  - Review by Her Majesty's Government's (HMG) Infrastructure Planning Inspectorate
  - Review by the Secretary of State for Transport
- The Business Case was drafted in line with Her Majesty's Treasury Green Book guidance, which guarantees a reasonable level of quality control for the business case and optioneering process.

Business Case Review

- TfL defined the Core Project Objectives as solving the specific issues around capacity (for growth), congestion and resilience of the road network in East London. Thus, there was focus on the area around the Blackwall Tunnel, as this is the main strategic river crossing in East London.
- TfL drew up a long list of options in the first stage of the options appraisal process (incorporating both road demand reduction (e.g. through new public transport, tolls, etc..) and new road infrastructure. Most options did not address the qualitative Project Objectives and/or were not technically feasible. This resulted in a select number of options being considered viable. This logic flow is highlight on Figure 1-1 overleaf.
- Specifically with regard to initial SSTC challenges:
  - The option for a Silvertown single bore tidal flow tunnel was omitted from the long list due to safety and engineering constraints (e.g. emergency service access and escape routes); and,
  - A Blackwall Tunnel toll only option (i.e. no Silvertown Tunnel) was not considered further as it could not meet the resilience and growth objectives and only partially addressed congestion (without creating unacceptable side-effects). Alternate options incorporating a tolled Blackwall Tunnel were investigated and found unsuitable following traffic modelling. In light of this, we consider the TfL decision not to perform a full NPV analysis as reasonable.

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Business Case Review (cont'd)

- Given the limited extent to which the Wider London Road Charging (WLRC) scheme has progressed, developing a precise scenario to assess the impacts of the WLRC was not possible. On a broader level, the growth and resilience objectives could not be met solely by implementing WLRC. As such, detailed consideration could not and was not given to the WLRC scheme.
- The 2018 MTS policy goal around the modal shift was announced fairly late into the approvals process (i.e. shortly before the Secretary of State for Transport granted their approval and two years after the DCO application, but prior to the FBC and contract signing).
- We note that broad scenarios/sensitivities analysis around modal share shifts in line with the 2018 MTS objectives have not been carried out, with the most recent modelling undertaken in 2016, and we have not received documentation to set out why the analysis was not possible or not considered necessary.
- While the implications of a modal shift are not explicitly considered, the resilience and growth Project Objectives could not be met in the absence of the Silvertown Tunnel.

- An update to the report presented to TfL's Audit and Assurance Committee on 17 March 2021 has been made to take into account additional correspondence received from individuals within the SSTC, Transport Action Network and Friends of the Earth.
- Since the Audit and Assurance Committee meeting, TfL has provided additional documentation (Mayor's Transport Strategy: Supporting Evidence – Outcomes Summary Report – July 2017) detailing that the Silvertown Tunnel Scheme was considered as committed infrastructure within the 2018 MTS. This however, does not include scenario/sensitivity analysis on the impact of the 2018 modal shift target on traffic modelling for the scheme.
- With regards to the additional challenges received:
  - A scenario illustrating the impact of raising the toll on Blackwall (no Silvertown) beyond the level of charges in the assessed case has not been modelled by TfL. We as such, cannot comment more extensively on the level of impact on traffic, a toll above the assessed level would have on the Blackwall tunnel.
  - Fungibility of income from tolling the Blackwall tunnel cannot be considered on a stand alone basis because, the option to toll the Blackwall tunnel was included as a complementary measure to the Silvertown tunnel.

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Figure 1-1 – Overview of Decision Process by TfL

Overview of Problem: Current road river crossings in East London are limited and not fit for purpose, especially given Olympic Legacy requirements and re-generation/growth of the East

Problem Statements & Project Objectives (PO)

1 PO1: Improve the **resilience** of East and South East London river crossings

The Northbound bore of the Blackwall Tunnel was designed in the Victorian era, and has height restrictions, which cause frequent closures due to over height vehicles attempting the crossing.

Road river crossings in the East are c.8 km apart, and already operate at capacity, as compared to in West London where they are spaced c.2 km apart. Traffic following incidents at Blackwall cannot easily be diverted to other crossings.

2 PO2: Improve the road network performance of the Blackwall Tunnel and its approach road (i.e. tackle **congestion**)

Congestion at Blackwall adds c. 20 minutes on average to peak journey times. Blackwall is a key East London artery and the busiest cross-river link with 91k crossings per day.

3 PO3: Support economic and population **growth** by providing improved cross-river transport links

Congestion at Blackwall creates a Thames barrier effect limiting economic growth. Population in neighbouring boroughs was forecasted to grow 40-60% between 2011-2041. The current tunnel cannot accommodate the increased population, and more specifically an increase in bus services.

Options

- Demand reduction options not viable

1. **Tolling only** – not appropriate because creates unacceptable congestion in alterative crossings + hampers cross-river connectivity
2. **Public transport options** – do not produce the modal shift desired and therefore do not help congestion

- Therefore, a **fixed crossing** is required

1. **Bridges** are not viable due to visual and physical impact on surrounding area and marine river traffic on the Thames

- Only viable option is therefore a **tunnel**, and twin bore sub-option is most feasible from engineering / safety standpoint

Financing

- Funding options limited given allocation of TfL existing budget to other commitments and other borrowing
- Project nature suited a PPP structure (i.e. scope for creating a dedicated user pay model)
- PPP structure therefore pursued

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Value for Money Assessment Summary

- VfM analysis assumed no material increase in traffic on the road network throughout the day (although there are higher peak flows and a slight rerouting towards Blackwall and Silvertown from other routes)
- The primary scheme benefits are travel time savings (c. £1.7 Bn PV in 2010 prices). As businesses and private car users pay a user charge (together of c. £1.0Bn PV in 2010 prices), the primary beneficiaries of the scheme are coach and bus users (who benefit from a new bus lane, increased frequency / capacity and new routes).
- A secondary scheme benefit accrues in the form of reliability benefits of c. £0.2Bn PV (in 2010 prices)
- Investment and operating costs of the road infrastructure (of PV £0.4Bn and £0.6Bn respectively) are offset by Availability Payments (c. PV £1.0Bn), which leaves a net cost of PV £0.1Bn corresponding to the net cost of operating bus services (after including bus fare revenue).
- In our review of select inputs (and associated sensitivities) in the VfM analysis, we found that the analysis included several areas of conservatism:
  - Use of the national value of time against the London value of time, which would increase the NPV by c. £300m (note TAG guidance specifies the use of the National value of time so as not to concentrate all investment in affluent areas)
  - Conservative modelling of scheme enforcement income (note: effect is not quantified but is suspected to be substantial)
  - Non-inclusion of Wider Economic Impacts and role in fostering regeneration of East London
  - For bus users, use of current cross-river travel times as opposed to post-Silvertown Tunnel construction travel times
- We were not presented with traffic (including bus) modelling prepared post 2016, which explicitly reflects or tries to approximate the impact of the 2018 MTS modal shift targets.
- Even if the shift away from cars accelerates in London, the Silvertown Tunnel is very likely to still be needed as key problems which are addressed by the scheme remain (lack of resilience, inability to support growth through step change in bus services, persistent car traffic at Blackwall which evidence suggests is difficult to shift to other modes, etc.)

Contractual Obligations on Project Termination

- The full findings on Project Termination have been included as Appendix B, due to the inclusion of commercially sensitive information, and to permit this section of the report to be issued separately.
- The PPP Contract for the Project includes Termination provisions, whereby payments for voluntary termination by TfL include Senior Debt repayment, staff redundancy, sub-contractor losses and the market value of equity plus subordinated financing.
- The termination conditions are market standard, and designed to ensure a fair outcome where the Project Authority (TfL) terminates for no default by the Project Co.
- TfL takes an approach to estimating the termination cost which differs from the contractual provisions, by omitting the Senior Debt repayment, taking a historical as opposed to forward looking view, and applying a more limited definition of sub-contractor breakage costs.
- Termination costs make a voluntary termination at this point expensive. In addition to the costs of Contractual Termination, we note that there will be additional costs following termination to bring the site back to the original condition, which in itself could be substantial.
- It was not within our remit to carry out a Value for Money assessment of the cancellation costs. As such, consideration was not given to the added benefit of building the tunnel against the cost of cancellation.

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Executive Summary

	Challenge	EY Conclusion
Summary of EY Findings in relation to SSTC, Transport Action Network and Friends of the Earth Challenges	**Single-bore tidal flow tunnel at Silvertown was a viable alternative**	This was not considered viable for safety, engineering and economic reasons (i.e. requires an associated escape bore in any case) and did not meet the resilience and growth Project Objectives set out by TfL
	Toll revenue is fungible and available to TfL from existing Blackwall users	The VfM correctly considers the toll on its own to be a net nil (income for TfL and cost for road users). Fungibility of income from tolling the Blackwall tunnel cannot be considered on a stand alone basis because, the option to toll the Blackwall tunnel was included as a complementary measure to the Silvertown tunnel.
	A Blackwall only option with tolls (i.e. no Silvertown) was a viable alternative to building Silvertown Tunnel	Further to traffic modelling, TfL did not consider this option further as a short-listed option as it would not meet the project's fundamental objectives around resilience (i.e. does not address height restrictions which contribute to accidents or provide spare road capacity) and growth (i.e. does not support economic and population growth through facilitating a step change in bus services). We therefore conclude the TfL decision not to run a full economic analysis is reasonable. We note for completeness that TfL did run more limited economic analysis on the option, which is of limited value because the option does not address the scheme objectives (i.e. NPVs are not comparable).
	Traffic forecasts underpinning the Business Case are incompatible with MTS 2018's modal shift targets (and proposals for WLRC)	We have not been provided with clear documentation on TFL's rationale to rely on pre 2018 traffic forecasts (following a major policy shift on modal shift). We understand that due to the early stage of policy development, at the point of assessment, substantial analysis would have been difficult to undertake and would not have changed the underlying need for Silvertown. On WLRC, given the limited extent to which the Wider London Road Charging (WLRC) scheme has progressed, developing a precise scenario to assess the impacts of the WLRC was not possible.
	The termination conditions are not market standard and too onerous on TfL	The termination conditions are aligned to PF2 and market standard to produce a "fair" outcome. The termination costs (+ the remedial costs) of the project make termination an uneconomic outcome.
Summary of EY recommendations	Our assessment concluded that the Business Case was well constructed, in line with Green Book guidance, and went through an extensive governance process. However, there are some observations we make where further attention could be beneficial and TfL should consider these in future projects: ► The introduction of an ambitious modal shift target in the 2018 MTS was a significant change in policy that could affect traffic and project economics. Despite the uncertainty around the implementation roadmap of the modal shift policy, further scenario analysis and an update to the 2016 traffic modelling would have been beneficial. Alternately, TfL could have considered a position paper explaining why the aforementioned steps were not needed. ► Revalidation of accuracy of VfM (given policy changes) in the 2019 FBC prior to entering into the contract ► We note that TfL have developed a preliminary estimate for termination costs. We observe that the calculation is not in line with the contractual provisions, and so amendments are required if the numbers are to be relied upon	

2

Background

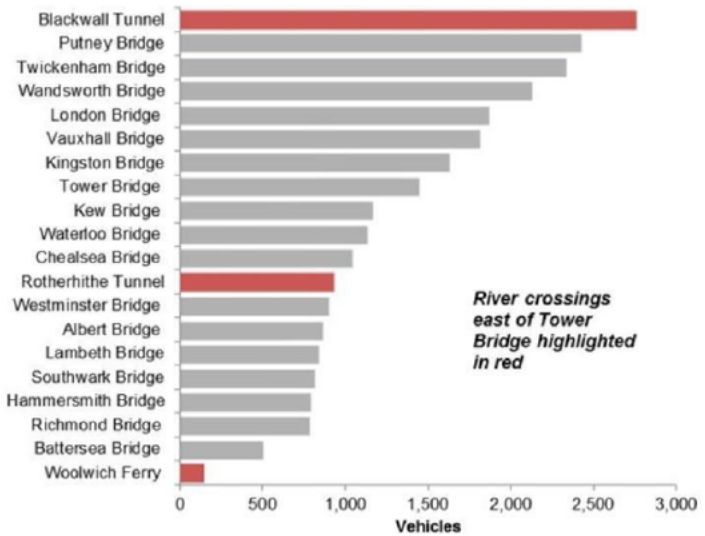
2 Background – Drivers for the Silvertown Tunnel Scheme

Following high levels of development and expansion in East London in recent years, the Blackwall tunnel is unable to accommodate current demand leading to traffic issues (i.e. congestion, closures, lack of resilience), and more broadly a "barrier effect" from the Thames.

Road Links in East London

- On average, Central and West London river crossings are spaced 1km apart and 2km apart respectively. **In East London, there are only four highway crossings spaced 8km apart**.
- However, population and population density are now not dissimilar between East and West London
- The Outline Business Case (OBC), dated 2016, forecasts **growth in the East Sub Region of 28% (2011-2031), with even higher growth of 40-60% across Tower Hamlets, Greenwich and Newham**. Despite a forecasted increase in the modal share of Public Transit, there is expected to be growth in demand for road river crossings

Figure 2-1: Weekday AM peak hour northbound traffic on GLA river crossings



Source: Silvertown Tunnel Outline Business Case (2016)

Blackwall Tunnel

- The Blackwall Tunnel (a two-lane two bore tunnel) is the busiest Greater London Thames crossing with an average of 91,000 daily trips. It is also the **sole strategic river link in the East**.
- The Blackwall Tunnel operates at capacity, resulting in **congestion and low speeds, adding 20 minutes** on average to peak journey times
- The Northbound tunnel bore dates from the Victorian era and does not meet modern tunnel design standards for size, safety or curvature. The narrowness of the tunnel means that vehicles over 4 metres high (in the right hand lane) and 2.8m (in the left hand lane) cannot be accommodated. This means that **large lorries and double decker buses are not able to use the tunnel**. However, unsuitable vehicles continue to attempt to use the Tunnel leading to **a high rate of incidents and closures**.
- TfL compared the closure rate of the Blackwall Tunnel with similar tunnels in the UK and noted that there were almost **four times as many closures compared to other tunnels** with 25 unplanned closures occurring for every million km travelled.
- Incidents in the Blackwall Tunnel often lead to closures which require a significant number of vehicles to seek alternative routes.
- Alternative crossings to the Blackwall Tunnel are: (i) Rotherhithe Tunnel (5km west) (ii) the Woolwich Ferry (7.5 km east) (iii) Tower Bridge (9km west); and (iv) Dartford Crossing (25 km east)
- The nearest alternative to the west is the Rotherhithe Tunnel which cannot accommodate heavy good vehicles (HGVs).
- In events of longer closures, the only option for many users of the Blackwall Tunnel is to travel to the Dartford Crossing. The Dartford Crossing however does not have the capacity to accommodate the additional volumes of traffic.
- The **lack of viable alternatives to the Blackwall Tunnel highlights its lack of resilience.**
- There is currently **only one bus route through the tunnel**. Additionally, about 90 commuter coaches from Kent also use the northbound route in the morning peak. It is important to note that there are 47 cross-river bus routes west of Vauxhall Bridge but only a single 108 bus route east of Tower Bridge via Blackwall Tunnel which only allows single decker buses.
- In sum, the lack of road links and issues with the Blackwall Tunnel were seen to **create a "barrier effect" from the River Thames** with repercussions for businesses, commuters (both on public transit and in private vehicles), employment and economic activity.

2 Background – Overview of the Silvertown Tunnel Scheme

Following public consultation and an extensive approval process, the Silvertown Tunnel Scheme was approved and has begun construction, however it continues to receive objections…

Figure 2-2 Blackwall Tunnel

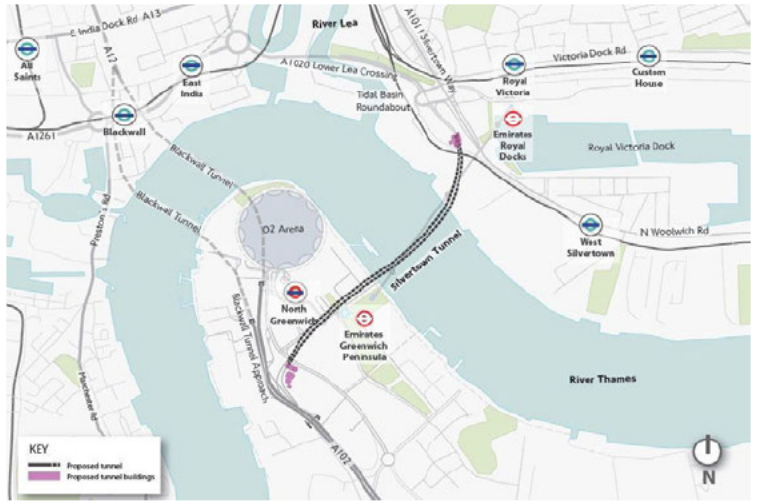
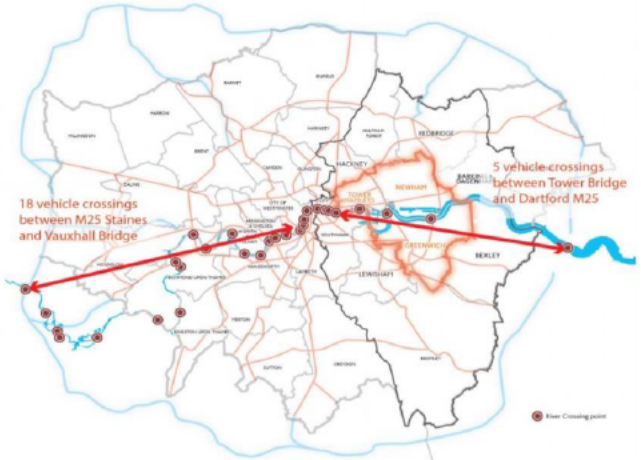


Figure 2-3: Vehicle crossings in east and west London



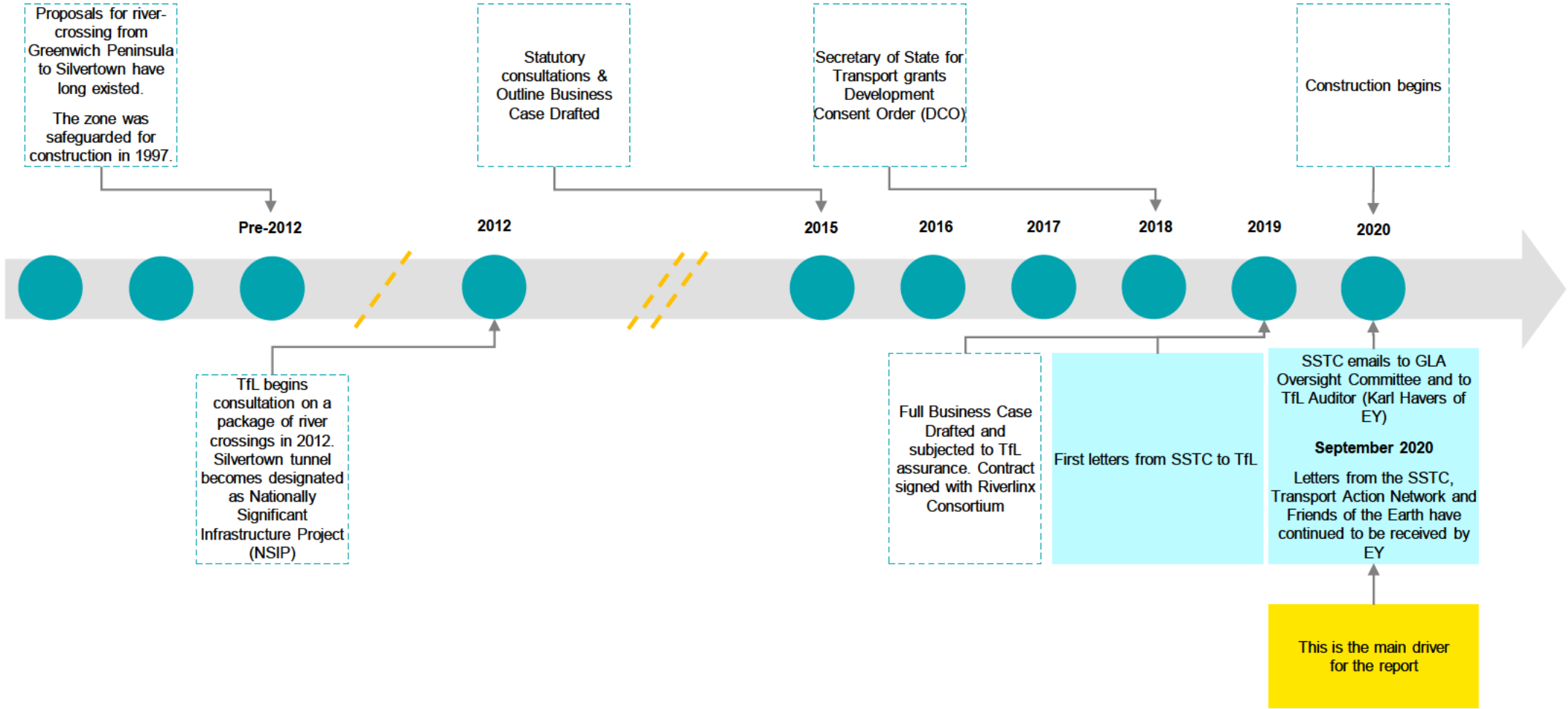
Overview of the Silvertown Tunnel Scheme

- The Silvertown Tunnel Scheme consists of a twin bore road tunnel connecting the A102 Blackwall Approach on the Greenwich Peninsula (Royal Borough of Greenwich) with the Tidal Basin roundabout junction on the A1020 Lower Lea Crossing//Silvertown Way (London Borough of Newham).
- The case for the scheme was brought forward to address a perceived need for additional road crossings in East London.
- It **was designated as a Nationally Significant Infrastructure Project** (NSIP) in 2012 by the Secretary of State for Transport under (s)35 of the Planning Act 2008, as a result of the scheme being nationally significant but falling outside the definition of an NSIP. The reasons why it was designated as an NSIP are:
  - London being an engine room for growth nationally;
  - The projected growth of London;
  - Current congestion at the Blackwall Tunnel having a direct impact on the strategic road network; and
  - The size and nature of the Silvertown Tunnel and comparison to other NSIPs.
- Following feedback from the statutory consultation, changes were then made to the scheme prior to submission of the scheme application to the Planning Inspectorate. Technical reports were also drafted, including an assessment of needs and options (described in greater detail in Section 4), where the key criteria were (i) improved resilience (ii) improved performance (i.e. decreased congestion) (iii) enabler of growth in East London.
- **Solutions not creating additional road capacity were dismissed on the basis that they would not enable growth and meet the growing needs of East London which were key objectives for the project**. Other solutions creating capacity (i.e. 3rd Blackwall tunnel bore, Silvertown bridge and Silvertown immersed tunnel) were dismissed due to engineering challenges or local environmental considerations.
- The project was approved under a Development Consent Order process in 2018 and a contract awarded 2019 to the Riverlink Consortium. **The tunnel is presently under construction.**
- The scope of the scheme is to be delivered through a Public-Private Partnership (PPP) where the Riverlink consortium would be responsible for the detailed design, construction, financing and maintenance of the tunnel and supporting infrastructure for 25 years post-construction.
- The scheme has however received a number of objections, around the optioneering, Value for Money (VfM) assessment, and contract termination clauses some of which are addressed in this paper.

Source: Silvertown Tunnel Outline Business Case (2016)

2 Background – Timeline

In September 2020, EY, as auditor, received direct requests to investigate certain aspects of the project. At this point the Silvertown Tunnel has been in development for nearly a decade and has recently begun construction, as detailed below.



2 Background – Purpose, Scope & Sources of Information

Purpose

EY Audit has engaged EY Corporate Finance as subject matter specialists to investigate objections received regarding the Silvertown Tunnel ("Project") as part of the Transport for London (TfL) audit. EY Corporate Finance will review the project, and specifically the business case prepared by TfL.

Objections

Following a series of emails from the Stop Silvertown Tunnel Coalition (SSTC), with TfL and with the Greater London Authority Oversight Committee, SSTC sent a further email on 3 September 2020, to Karl Havers, who represents EY as TfL's auditor, with requests to investigate a number of issues below:

- Flaws in the optioneering process and economic VFM, more specifically with regards to
    1. The option to toll the Blackwall Tunnel only
    2. The effect on the scheme of Wider London road Charging which is being considered to address congestion and pollution challenges
    3. The ability of the Blackwall Tunnel to meet all three core objectives set by TfL
- The treatment of toll revenues from Blackwall/Silvertown (i.e. the contention is that this is a pre-existing revenue source for TfL)
- Implicitly (and explicitly in other emails – i.e. on 7 September 2020 to TfL) around the possibility and conditions of termination i.e. that TfL has entered into a contract with onerous termination provisions

Len Duvall, Chair of the GLA Oversight Committee raised concerns from fellow committee members (email dated 2 September 2020) with respect to (i) cancellation costs and (ii) the financial viability of the project when it was approved

Further emails were received from, the SSTC. the Transport Action Network and Friends of the Earth on 11, 15, 16 and 17 March 2021 respectively. The broad arguments were that:

- Tolling the Blackwall Tunnel (no Silvertown) at a toll set above the assessed case toll, could have met all three objectives that were set out by TfL, these being (i) relieving congestion (ii) achieving resilience (iii) meeting the growth requirements.
- TfL should have assessed the Silvertown Tunnel project on the basis of incremental NPV over and above tolling the Blackwall Tunnel only.

Scope

In light of the aforementioned objections, we have covered the following areas in our review

1. The governance process which Silvertown Tunnel was subjected to (i.e. approvals and reviews the Project has undergone and format of the Full Business Case)
2. A review of the optioneering process from the conception of objectives to the identification of the shortlisted options, including the treatment of the Blackwall Tunnel toll only (i.e. no Silvertown Tunnel) and of Wider London Road Charging.
3. A high-level review of the Economic Value for Money (VFM) assessment with specific regard to (i) the treatment of toll revenues as a pre-existing revenue source, and (ii) the interaction with modal shift objectives in the 2018 MTS (i.e. traffic forecasting)
4. The termination provisions, with a focus solely on (i) whether the terms are market standard (ii) a high-level review of TfL's estimated termination costs and (iii) how these termination costs could impact the decision at the current point in time as to whether to terminate (note we do not opine on whether TfL should terminate the project)

Our assessment is based on information known at the time the decision was made, as opposed in the present day, and with regard to Covid-19.

Cont'd

2 Background – Purpose, Scope & Sources of Information

Sources of information

As part of the work performed, we have reviewed the following Silvertown documentation listed below provided between 20th November 2020 – 01st February 2021:

Governance Arrangements

1. Silvertown Crossing Project – Gate A Review (2011)
2. Corporate Gateway Approach Process – Gate B (2013)
3. Options Integrated Assurance Review (2015)
4. Interim (DCO Application) Integrated Assurance Review (2015)
5. TfL Finance and Policy Committee Meeting Minutes (21 January 2016)
6. TfL Board Meeting Minutes (3 February 2016)
7. Planning Inspectorate's Examining Authority's Report of Findings and Conclusions and Recommendation to the Secretary of State (2017)
8. Secretary of State Decision Letter (2018)
9. TfL Programmes and Investment Committee Meeting Minutes (17 July 2019)

Business Case Process and Review

1. Outline Business Case (2015)
2. Full Business Case (2019)
3. Silvertown Crossing Assessment of Needs and Options (2014)
4. Mayor Transport Strategy 2010 & 2018
5. DCO Documents labelled:
   - 6.5 (Transport Assessment), 7.1 (Case for the Scheme);
   - 7.5 (Charging Statement), 7.8.1 (Economic Assessment Report);
   - 7.9 (Traffic Forecasting Report) (2018); and
   - 8.119 (Applicant's response to question regarding Option Appraisal (Five Case) from the Issue Specific Hearing on 28 March 2017)
6. MTS: Supporting Evidence – Outcomes Summary Report – July 2017

Value for Money Assessment

1. Silvertown Tunnel Growth Assumptions Report (2016)
2. Financial Model (Tower – Financial Model – 21.11.2019.FC.XLSB)
3. Limited Economic Model

Project Termination

1. Schedule 27 on Termination of the Project Agreement
2. Financing agreements (high-level review only for relevant clauses)
3. Termination cost estimate by TfL dated 20 November 2020

We have also engaged with TfL, having a series of calls with relevant staff having participated in the Scheme on

- 23 & 27 November 2020 (regarding Termination Conditions and Cost);
- 7 December 2020 (regarding the Economic Case and touching briefly on the Termination Estimate);
- 26 January 2020 (regarding Governance Arrangements)
- 27 January 2020 (regarding Traffic Forecasting and Modelling)

We have not had any engagement with the Riverlinx consortium while carrying out this review.

Limitations

Whilst TfL have provided EY with access to staff and project documentation, there are a handful of areas where we have requested documents but have not received them. We outline the impact on our work.

Document	Impact
Impact of modal shift targets in the 2018 MTS on the Silvertown Scheme	Medium Impact - Obscures the quantitative impact on the VfM NPV. Such analysis would have been useful to support the case for Silvertown against the backdrop of the 2018 MTS modal shift policy for less cars.
Impact of raising the toll on Blackwall (no Silvertown) beyond the level of charges in the assessed case	Low Impact - We have had to rely on assertions from the traffic modelling consultants (Jacobs), as well TfL's modelling team that raising the toll at Blackwall (with no Silvertown) would have an unacceptable level of impact on traffic on other East London crossings.
Documentation evidence detailing safety, engineering and operation concerns for the Silvertown single-bore with tidal flow option	Low Impact - We have had to rely on commentary from TfL that a single-bore at Silvertown is equivalent to a 3rd bore at Blackwall. Scheme documentation reviewed consistently refers to possible safety issues with a 3rd bore at Blackwall, but we have not had sight of underlying health & safety reports.
Termination costs breakdown specifically possible sub-contractor costs and financing break costs	Low Impact - We have relied on high level TfL calculations of sub-contractor and financing break costs, and we have not sought to validate these, which affects the total contractual termination cost
Full visibility of car ownership and modal share in the sensitivities of traffic modelling	Very low Impact - Has partially limited our understanding of the Low Growth Case. However, we still conclude that it is not a representative proxy for traffic in a scenario where the 2018 modal shift targets are realised.

3

Business Case Process

3. Business Case Process – Introduction

Methodology

- We have sought to understand the Project Lifecycle, Governance Structure and Approval process for the Silvertown Tunnel scheme.
- We reviewed and gained an understanding of the Internal (TfL) and External governance arrangements, and how the findings from the various processes meet the challenges from the Stop Silvertown Tunnel Coalition.
- The Full Business Case has been reviewed for compliance with the HM Treasury Greenbook 'Five Case Model' and, we have commented on the robustness of the Business Case.
- **Note there were no specific in scope challenges received on the governance arrangements for the Silvertown Tunnel from the SSTC, however it is useful to review this process to understand the level of rigour and challenge the scheme has been subjected to.**

Findings

- The Governance arrangements for the Silvertown Tunnel Scheme cover both internal (**TfL**) and external processes (**Planning Inspectorate and Secretary of State for Transport**)
- TfL governance required independent assurance assessments of the project including the development of its Business Cases and obtained this through work performed by **TfL Project Assurance, the Independent Investment Programme Advisory Group (IIPAG)** and **External Experts**
- The Optioneering assurance was covered early on in the **Gate A, Gate B and Integrated Assurance reviews** carried out by **External Experts**
- On reviewing the reports, we conclude that TfL's assurance teams provided **scrutiny and assurance over the optioneering process**.
- The VfM and Economic Case are covered in the Integrated Assurance Reviews. From the documentation reviewed, the VfM review carried out by the EE appeared topical, however this is complemented by the much more in-depth review by the Planning Inspectorate
- It was noted from our discussion with representatives of TfL Project Assurance that the focus on reviewing the Traffic Model centred around the inputs, methodology and outputs.

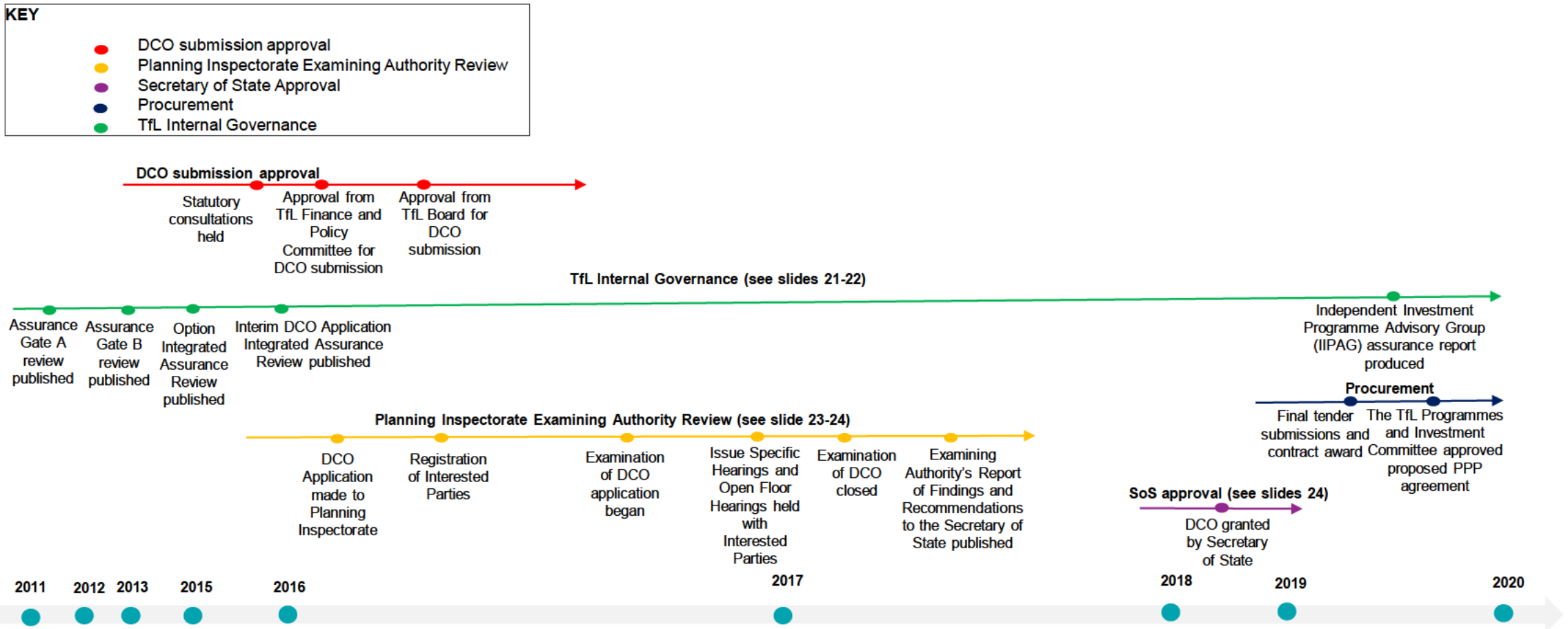
Findings (Cont'd)

- Key areas of the Planning Inspectorate's Examining Authority's (ExA) work included: Transport/Traffic Forecasting, Options Appraisal, Socio-Economic Impacts and Environmental & Air Quality.
- The **areas considered above (in particular the Options Appraisal and Traffic Forecasting) were significantly challenged by the ExA, lending credibility to the scheme's Options Appraisal and VfM**.
- The ExA concluded that in light of their conclusions and findings, DCO be granted by the SoS in a findings report dated 11 July 2017.
- The SoS considered the report, alongside late representations and further consultations.
- DCO was granted to TfL for the Silvertown Tunnel Scheme on 10 May 2018.
- The Outline Business Case was one of the major documents considered in the DCO application process. The document first underwent an assurance process within TfL then additional scrutiny by the Planning Inspectorate's ExA and ultimately, the SoS for Transport.
- The Project has **benefitted from extensive stakeholder input and challenge, and has gone through an extensive governance process prior to contract signing, which guarantees a minimum level of quality to the business case and optioneering**
- The Silvertown Tunnel **Business Case follows guidance prescribed by the Green Book**, which is designed to **ensure a certain level of quality**. The challenges received mostly centre on the VFM modelling in the Economic Case.

3 Business Case Process – Overview of Project Lifecycle and Approvals

The Project lifecycle details a timeline between 2011 and 2019 illustrating the long history of the project. The timeline highlights governance arrangements overseeing the project, DCO application, DCO examination by the Planning Inspectorate, SoS approval and procurement.

Methodology: We have first sought to understand governance processes to gain an understanding of its robustness, and therefore by extension the strength of the optioneering and Business Case. First, we consider the project lifecycle including reviews and key approvals, then we consider whether the Business Case follows Green Book guidance.



3 Business Case Process – Project Lifecycle and Approvals (TfL)

TfL governance required independent assurance assessments of the project including the development of its Business Cases. The process focusses on the most active area of work at each stage, beginning with needs and options and then progressing onto VfM, procurement and finally the bid evaluation.

Silvertown Tunnel Governance Arrangements

- The Governance arrangements for the Silvertown Tunnel Scheme cover both internal (TfL) and external processes (Planning Inspectorate and Secretary of State for Transport) carried out to review, scrutinise and approve the scheme. This structure is detailed in the diagram below.

Figure 3-1 – Governance Arrangements Structure

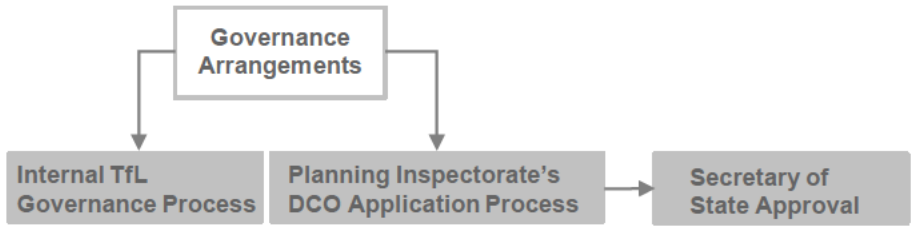
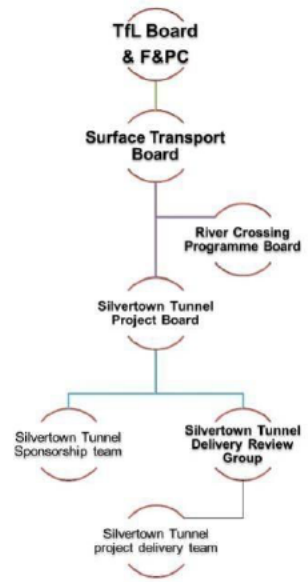


Figure 3-2 – TfL Internal Governance Arrangements Structure [1]



TfL Internal Governance Arrangements

- The diagram 3-2 details the TfL authority levels which oversaw the drafting and approval of the scheme's Outline Business Case (OBC) and Full Business Case (FBC).
- TfL governance required **independent assurance assessments** of the project including the **development of its Business Cases** and obtained this through work performed by **TfL Project Assurance, Independent Investment Programme Advisory Group (IIPAG)** and **External Experts.**
- Reports produced as part of independent assurance engagements were fed back through the hierarchy of various oversight boards.

Timing of TfL Governance Processes

- The assurance process was focussed on the most active area of work;
  - At the start, the governance process was focussed on the needs and options to allow for production of the SOBC.
  - It then moved onto the VfM considerations in the Economic Case during the DCO submission and OBC drafting.
  - This then moved onto the procurement design and documentation process
  - And finally, the bid evaluation
- The main objections raised by the SSTC considered within the governance process relate to the business case and optioneering (see below)
  - The Optioneering assurance was covered early on in the Gate A, Gate B and Integrated Assurance reviews (detailed below)
  - The VfM and Economic Case are covered in the Integrated Assurance Reviews (detailed below)

Assurance on Optioneering Processes

- **Gate A Review -** An initial review was carried out by an External Expert (EE) in 2011. The findings of the review are detailed in a report titled (Cont'd)

1. Source: TfL Silvertown Tunnel Option Integrated Assurance Review

3 Business Case Process – Project Lifecycle and Approvals (TfL)

TfL's Assurance teams provided scrutiny and assurance over the optioneering process. The extent of optioneering was found to be adequate. VfM was last scrutinised in 2015 by the External Experts on a topical basis. At the FBC stage, focus gravitated towards the VfM of the different bids received as opposed to the VfM of the project itself.

TfL Internal Governance Arrangements (Cont'd)

- "Silvertown Crossing Project – Gate A Review" dated February 2011. This initial review formed part of the River Crossings Programme. The review was undertaken prior to drafting the scheme's OBC.
  - The report highlighted that more detailed explanations of the various options assessed were required. This was accepted by the Project Board and resulted in Jacobs being commissioned to draft the 2014 "Assessment of Needs and Options" report.
- **Gate B Review** - A further review was carried out by an EE in 2013 and a report titled "Corporate Gateway Approach Process – Gate B" was drafted.
  - At this stage, the EE was provided with a draft OBC (dated 21 August 2013)
  - The EE recommended that TfL's roadmap **documentation** summarising how the long list options were sifted into a shortlist and how the shortlist to the selection of the preferred option be made clearer. It was also recommended that the roadmap be used consistently across all plans and reports.
  - However, the EE's overall conclusion was that there had been **extensive underlying technical optioneering** which in turn **informed the development of the business case and the selection of a preferred option**.
  - A further Options Internal Assurance Review ("IAR") by an Independent EE was carried out with a report drafted in July 2015. Among other issues, this review considered the Assessment of Needs and Options Report completed by another External Expert, Jacobs, and **deemed that an adequate range of options were considered** (4.2).
  - **We therefore observe that TfL's assurance teams concluded favourably on the robustness of the optioneering process.**

Economic Case/VfM with a focus on Traffic Forecasting

Options IAR (July 2015) -

- The EE considered the traffic modelling in the context of readiness for a DCO consultation, and concluded that there was sufficient traffic modelling information to undertake this process (10.1)
- The review also considers the ability of existing infrastructure to handle the new tunnel and its sizing (four lanes as opposed to two) (10.1 & 10.4)
- The VfM considerations reviewed at this stage were focused around cost (4.3 & 6.1)
- **Interim (DCO Application) IAR (November 2015) –**
  - An EE carried out a further review to determine the Scheme's readiness for the DCO, this included challenging the TfL team on the work done on forecasting traffic. The report quotes the PPD Programme Manager saying "Silvertown is essentially a congestion relief scheme rather than a new river crossing scheme" (4.1)
  - The EE checks the alignment of the Scheme against strategic objectives, with no adverse findings (4.3)
  - The VfM challenge at this stage is again mainly around cost given that the full analysis was still a work in progress (4.4)
  - The EE noted from interviews with TfL representatives that the future demand for the tunnel was not expected to change given the current levels of congestion at the Blackwall Tunnel. Modelling had thus been carried out for the year 2021, 2031 and 2041. The EE concluded that they were satisfied with the approach. (11.3)
  - The EE accepted the presence of significant resilience benefits (11.3)
  - The EE noted from reviews that the single most important factor in managing the traffic demand for both Blackwall and Silvertown tunnels including any induced traffic would be the power of TfL to control and vary the level of user charges (11.3).
  - It was noted from our discussion with representatives of TfL Project Assurance on 26 January 2021, that the EE and TfL Project Assurance review of the traffic model was centred around inputs, methodology and outputs, rather than on the detailed functionality.
- **Overall, VfM was last scrutinised in 2015 by the External Experts commissioned. At the FBC stage, focus gravitated towards the VfM of the different bids received as opposed to the VfM of the project itself. Note the VfM review appears topical, from the documentation reviewed, however this is complemented by the much more in-depth review by the Planning Inspectorate** (see next slide for governance on the VfM and Section 5 for our commentary on the VfM).

3 Business Case Process – Project Lifecycle and Approvals (Planning Inspectorate)

The Examining Authority's Panel examined the traffic modelling and concluded on its appropriateness. It also agreed that the scheme represented acceptable Value for Money. With regard to the options appraisal, the ExA also agrees with the need for the scheme and the selected Project Objectives.

Planning Inspectorate's Examination

A. Overview

- The Silvertown Tunnel Scheme was designated as Nationally Significant Infrastructure Project (NSIP) by a direction given by the Secretary of State (SoS) for Transport on 25 June 2012.
- This direction specified that the Silvertown Tunnel Scheme would require a Development Consent Order (DCO), resulting in significant scrutiny from the Examining Authority (ExA) on behalf of the Secretary of State for Transport (SoS).
- The DCO Examining process comprises of the following:
  - **Documentation Submitted** – the OBC and supporting documentation i.e. Traffic/Transport forecasting, Economic Assessment, Consultation report etc.
  - **Examining Panel** - three examining inspectors appointed with expertise in infrastructure, transport economics and environmental planning. All inspectors had previously been on other Planning Inspectorate panels.
  - **Extensive Consultations:** 383 Interested Parties (Individuals, Businesses, Local Authorities, Interest Groups) participated in consultations, with significant contribution from the host boroughs.
  - **Timeline:** examination began 11 October 2016 and concluded 11 July 2017 with recommendations made to the SoS.
- In relation to the challenges received by the SSTC, key areas of work/ assurance are as follows below (detailed summary in Appendix A)

B. Traffic/Transport Modelling and Forecasting

The ExA and Interested Parties (IPs) carried out a broad examination of the scheme's VfM, particularly in relation to traffic forecasting. The ExA concluded that the modelling was guided by best practice:

> *"The Panel has found that the approach and techniques used by the Applicant in the modelling work are **in line with the appropriate DfT guidance** for the Proposed Development. Although the Applicant has demonstrated to the satisfaction of the Panel that it has **broadly followed WebTAG guidance**, it is clear that there are inevitably significant uncertainties in the traffic forecasting and modelling" (5.2.90)*

- Consideration was given to **possible issues with the forecasting** - e.g. failure of the traffic forecasts to address both **latent and induced demand** due to the new tunnel, **inability of user charging to control traffic** to the required level, the **level of uncertainty within the traffic forecasting** and the **assumptions** underpinning the modelling.
  - Regarding the underpinning Network Assumptions the ExA states the following:

  All committed and funded infrastructure with available plans was included and the Applicant explained that the list of schemes was agreed with the Boroughs on multiple occasions (e.g. Nov 2014 and Feb 2015). No schemes judged to materially change the scheme [Silvertown Tunnel's] impacts had come forward since that time. (5.2.62)
- **TfL engagement and model assurance -** TfL responded to all questions raised and re-audited its traffic models

  *"Furthermore, in 2015, the Applicant supported the host boroughs requests in undertaking a **further audit of the modelling suite**. This audit **concluded that the models were suitable for the purpose of assessing the traffic and transport impacts** of the scheme (5.2.27)*
- It was **concluded by the ExA that TfL being able to adjust user charges would maintain equilibrium between traffic flow demand and supply in the tunnel**.
- **VfM Conclusion -** Finally, further to all the challenge the ExA concludes that it sees no reason to question whether the scheme represents acceptable value for money (4.6.48)

C. Options Appraisal

The ExA considers the project optioneering, we highlight key findings below:

- **Setting of Project Objectives –** The ExA is satisfied on the need for the scheme as well as the Project Objectives

  *"[…] we are satisfied that there are real transport, economic and environmental problems that need to be addressed and we **can see no reason to disagree with the objectives** set by the Applicant for identifying a solution" (4.5.23)*

3 Business Case Process – Project Lifecycle and Approvals (Planning Inspectorate, SoS & Conclusion)

The ExA concludes that sufficient alternatives have been canvassed (including a tolled Blackwall with significant public transport upgrades). The Project has benefitted from extensive stakeholder input and challenge, and has gone through an extensive governance process prior to contract signing, which guarantees a minimum level of quality to the business case and optioneering.

- **Availability of alternatives -** The ExA considers the argument on whether a comprehensive package of alternative measures was sufficiently considered. It considers that TfL successfully refuted the suggestion by pointing to a **Public Transport Max scenario, where additional cross-river public transport improvements are combined with Blackwall tolling**. The option was shown **not to produce the desired resilience** (4.3.34). This is directly **relevant to the SSTC challenge on the viability of tolling Blackwall only**.
- **Economic modelling -** a number of IPs argued that insufficient consideration had been given by TfL to **economic appraisal of alternatives** as specified in the Treasury 'Five case model'. It was noted by the ExA in TfL's response that a full economic appraisal had only been undertaken on the final two tunnel options because **none of the other options met the defined Project Objectives** (4.6.35). In relation to the SSTC challenge, limited economic analysis on tolling Blackwall only was undertaken because it did not meet the Project Objectives.
- The **ExA concluded that given the long history of the of the project**, and in line with paragraphs 4.11 and 4.27 of the National Policy Statements for National Networks (NPSNN), there had been **sufficient assessment of alternatives** (4.6.37).

D. Socio-Economic Impacts – (not directly relevant to SSTC challenge)

E. Environmental and Air Quality – (not directly relevant to SSTC challenge)

F. ExA Conclusions

- In light of their findings and conclusions, the ExA recommended that the SoS grant the Silvertown Tunnel Scheme DCO.
- The areas considered were significantly challenged, lending credibility to the scheme's Options Appraisal and VfM.

Secretary of State for Transport Decision

- The Planning Inspectorate's ExA presented a report on its findings, conclusions and recommendations to the SoS dated 11 July 2017.
- The SoS considered the report, alongside late representations and further consultations. The following key areas were noted:
  - **Need for Proposed Development** – the scheme meets the core strategic Project Objectives of reducing congestion and incidents and providing resilience.
  - **Traffic Forecasting** – SoS was of the view that the ExA had undertaken detailed critique. It was noted that the flexibility in user charging would allow for TfL to meet the desired traffic requirements.
- **User Charging** - The SoS agreed with the Panel that the inclusion of the full charging provisions in the DCO was appropriate and necessary to manage traffic flows and mitigate environmental concerns.
- Air quality, Health and Socio-Economic impacts were also considered.
- Taking all of the above into consideration, the SoS granted the Silvertown Tunnel Scheme DCO to TfL, in a letter dated 10 May 2018.
- The Outline Business Case was one of the major documents considered in the DCO application process. The document first underwent an assurance process within TfL then additional scrutiny by the Planning Inspectorate's ExA and ultimately, the SoS for Transport.

EY Conclusions

- The Silvertown Tunnel Scheme's Outline Business Case went through both internal and external reviews.
  - The need for the scheme was broadly challenged;
  - Options to address the issues and meet Core Project Objectives were challenged, with a detailed Needs and Options report published;
  - The process by which Options were eliminated was adequately challenged; and
  - The project's economics, particularly with regards to traffic forecasting and modelling was extensively challenged.
- In summary, the Project has benefitted from extensive stakeholder input and challenge, and has gone through an extensive governance process prior to contract signing, which supports a level of quality to the Business Case and optioneering

3 Business Case Process – 5 Case Business Plan

The Silvertown Tunnel Business Case is structured using guidance prescribed by the Green Book, which is designed to ensure a minimum level of quality. The challenges received mostly centre on the VFM modelling in the Economic Case.

Methodology: For Silvertown, TfL has prepared a series of Business Cases structured in line with the Green Book. Below we present the 5 Cases from the Silvertown Tunnel Full Business Case (March 2019) and key points from each.

Five Case Model	Green Book Purpose	Business Case Summary	EY Commentary
Strategic Case	Establishing the case for change and how it fits in with wider government policy objectives	• Significant population growth and commercial activity in East London has given rise to a need for more road crossings. • The main road crossing, the Blackwall Tunnel is unreliable due to congestion, user incidents and closures, lack of network resilience, effects on public transport and environmental impacts due to inefficient travel. • The Silvertown tunnel fits into the 2010 Mayor's Transport Strategy (MTS) which sets out to consider a new fixed link at Silvertown to provide congestion relief to the Blackwall Tunnel and provide local links for vehicle traffic. It also fits into the local policies of the host boroughs which all consider crossing projects across the Thames. • The increased capacity and demand management solution aims at the new capacity being maximised through the delivery of new cross-river bus services, fostering economic growth.	The case for change was clearly set out in the Business Case. The outcome expected and how it fits in with wider national, regional and local government policy was also explored and detailed.
Economic Case	Establishing the net value to society of the intervention compared to continuing with Business as Usual	• The Silvertown bored tunnel presents the optimal net value to society. It effectively addresses congestion and resilience problems and supports economic and population growth. • This option has minimal adverse impacts on surrounding urban areas and the river environment • Risk and costs identified are in relation to noise, air quality, accidents and greenhouse gases. • The overall outcome is that the Scheme is shown to have an initial positive Net Present Value of £519m (without reliability benefits) and an adjusted NPV of £708m (with reliability benefits), with user charges covering costs.	TfL sought to demonstrate Value for Money (VfM) to society within the Economic Case. An options analysis was carried out and has been explored in more detail within the section 4 of the report. Risks, costs and benefits have been identified and where possible monetised, giving rise to the Net Present Value (NPV). This is explained in more detail in section 5 of the report.
Financial Case	Quantifying the impact of the proposal on the public sector budget in terms of the total cost of both capital and revenue	• Capex and Opex are assumed by the private sector through a PPP arrangement. • Availability Payments (AP) are expected to be fully funded from new user charging revenues over the 25 years of operations. • Under the March 2019 projections, in the base case, there is an annual deficit of between £6m in 2026, growing to £10m in 2034 and then reducing until the project reaches a breakeven point (i.e. where the toll revenue equals the AP) in 2040, plus the net cost of providing the new bus services. Beyond that point the Scheme will generate surplus revenue. This assumes the proposed charging regime remains in place.	TfL sought to demonstrate that the project is financially affordable within the Financial Case. Forecast project development, design, construction, maintenance and financing costs were detailed. A comparison of forecast user charging income to Availability Payments was illustrated to show affordability.

The challenge received centres around the optioneering and VFM traffic considerations

3 Business Case Process – 5 Case Business Plan (cont'd)

The Silvertown Tunnel Business Case is structured using guidance prescribed by the Green Book, which is designed to ensure a minimum level of quality.

Five Case Model	Green Book Purpose	Business Case Summary	EY Commentary
Commercial Case	Demonstrating that a realistic and credible commercial deal can be struck	• A Private Public Partnership (PPP) delivery model has been established to deliver the main scope of the Scheme where a Project Company will be responsible for Designing, Building, Financing and Maintaining the Silvertown Tunnel ensuring it meets the standards set by TfL to be available for use. • TfL will retain responsibility for 'traffic operations' and the final decision on tunnel opening/closing. • TfL will be responsible for the operation and maintenance of the user charge system and the associated back office function. • Allocation of risk has been established to transfer substantial risk to the private sector whilst creating a clear structure for management of the public sector's retained risks.	TfL sought to demonstrate the commercial viability of the Silvertown Tunnel scheme within the Commercial Case. It established that a PPP delivery model would be used and explored the scope of the PPP including termination rights. The termination conditions are further explored in section 6 of the report.
Management Case	Establishing that delivery plans are realistic and robust	• Enabling works have begun and Construction which was due to start in December 2019 has been delayed to 2021. Construction is estimated to be completed in 2025. The Silvertown Tunnel Programme is split into a number of projects each with their own delivery structures with appropriate governance, assurance and resourcing. The Project Agreement sets a structure for management of the PPP relationship with clearly defined roles, responsibilities and risks for both the construction and operational phases.	TfL sought to demonstrate the achievability of the scheme within the Management Case. Within the Business Case, the scheme was split into a range of projects with resourcing, governance and assurance detailed.

There is a further challenge around the termination conditions

4

Business Case Review

4 Business Case Review – Introduction & Findings

Methodology: As much of the challenge from the SSTC revolves around the optioneering, we review and analyse the Project Objectives, the determination around the long-list of options and those advanced to the short-list (on which a full Cost Benefit study was performed). We also specifically address two SSTC challenges.

Challenges

- The initial decision by TfL not to do a cost/benefit analysis of the various options at Silvertown, instead, only ranking options on their ability to reduce congestion at the tunnel mouths. In particular, **the decision not to do a full cost/benefit comparison of the options of 'toll Blackwall Tunnel only' to fully remove congestion** versus 'build Silvertown and toll both Silvertown and Blackwall (the Silvertown Project)'
- TfL **failing to consider the option of Wider London Road Charging** as an alternative to the scheme.

Analysis

In order to assess the challenges, we have utilised a Q&A approach to focus the narrative and draw out key points. The key questions we have answered are:

1. The policy context of the objectives, the Project Objectives TfL set out to address, their impact on project selection, their reasonableness and how leading in nature they are
2. The completeness of the long list of options based on our understanding
3. Compliance of the short listing process with Green Book requirements
4. The specific work done by TfL to toll Blackwall Tunnel only (no Silvertown Tunnel)
5. Consideration given to Wider London Road Charging

Findings

- **Objectives** - Project Objectives were aligned to key themes and proposals from the 2010 MTS, TfL business drivers and the River Crossings Programme objectives. However, considering the Core Project Objectives and further constraints (around safety and engineering), the fact emerged (following optioneering) that only a few of the long-list options would be viable.
- **Focus Area -** The broad issue being tackled is the lack of connectivity in East London. Consideration then narrows down to the Blackwall Tunnel being the only strategic crossing in East London. In light of this, we consider the objectives are reasonable and do not bias the choice of options towards a pre-determined solution.
- **Shortlist option set** – The shortlist option set was reasonably broad, taking into account both road demand reduction (e.g. new public transport, cycle ways and tolls) as well as new road infrastructure (both at Silvertown and in neighbouring areas, and in different formats (i.e. ferries, bridges, tunnels))
- **Alternate short-list options (not in FBC):**
  - **Silvertown single-bore tidal flow**- The option for Silvertown Tunnel with single bore tidal flow was not explicitly presented in the FBC. However, from conversations with TfL we understand there are safety, engineering and operational concerns around single-bore tunnels.
  - **Wider London Road Charging** – The do-maximum option was not considered as a potential solution in the FBC. This is likely driven by the limited development of such a scheme and its aims.
- **Shortlisting -** options not meeting core priorities were dismissed
  - **Blackwall Toll Only** - Was dismissed on qualitative grounds of not meeting resilience and growth Core Project Objectives. Alternatives incorporating a tolled Blackwall Tunnel were investigated and found unsuitable. These alternatives included a maximum Public Transport Scenario ('PT max'). TfL's decision not to pursue further economic analysis on qualitative grounds (i.e. option not meeting Project Objectives) following traffic modelling is therefore reasonable
  - **Do-Minimum Option** – There was no viable lower commitment option addressing the qualitative Project Objectives – therefore no "Do-Minimum" option. This is in line with Green Book guidance.
- **Examining Authorities** – TfL Assurance, the Examining Authority and the Secretary of State in his conclusion on granting the DCO noted the options appraised and alternatives canvassed. The SoS agreed with the Panel of the Examining Authority that sufficient options appraisal was conducted.

4 Business Case Review – Project Objectives

The Core Project Objectives are tailored to solving the specific issue around capacity (for growth), congestion and resilience of the road network in East London, which quickly results in a focus on the Blackwall Tunnel area which is the critical artery for East London.

Q1-A: What is wider policy context in which the Project Objectives were developed?

- The London Plan and 2010 MTS specifies a policy to adapt London's transport system to accommodate sustainable population and employment growth (Policy 1), including with enhancement to the strategic road network (Policy 2). The 2018 MTS is still geared toward "good growth", albeit it is less explicitly focused on enhancing the strategic road network. [A.]
- The 2010 MTS identifies the lack of river crossings (beyond rail) in East London, the growth of East London through major developments (i.e. Canary Wharf, Excel, Stratford), and congestion of existing road infrastructure proposing a package of river crossing options (Proposal 39) to address the issue.
- TfL's East London River Crossings (December 2012) – Assessment of Options identifies issues at Blackwall tunnel and begins investigating options to address the issue [B.]
- The 2018 MTS's Proposal 93 supports the construction of Silvertown Tunnel to address the issue of road crossings in East London, and the scheme is treated as a committed project.

Q1-B: What were the Project Objectives that TfL sought to address through the Silvertown Tunnel project? And, how did they impact project selection?

TfL sought to address the following objectives:

PO1 (CORE): To improve the resilience of the river crossings in the highway network in east and southeast London to cope with planned and unplanned events and incidents
PO2 (CORE): To improve the road network performance of the Blackwall Tunnel and its approach road (i.e. tackle congestion)
PO3 (CORE): To support economic and population growth, in particular in east and southeast London by providing improved cross-river transport links
PO4: To integrate with local and strategic land use policies
PO5: To minimise any adverse impacts of any proposals on communities, health, safety and the environment
PO6: To ensure where possible that any proposals are acceptable in principle to key stakeholders, including affected boroughs
PO7: To achieve value for money and, through road user charging, to manage congestion

The Project Objectives were aligned to key themes and proposals from the Mayor's 2010 Transport strategy, TfL business drivers and the River Crossings Programme objectives.

Considering the set of Core Project Objectives above and further constraints (around safety and engineering), a situation where only a few of the long-list options would be viable was created.

Q1-B: Are the objectives reasonable and not leading in nature?

Per the Green Book, identifying objectives begins with making the case for change.

The TfL objectives cover the case for why, how and where.

- ***Why?*** *To improve resilience, improve road network performance and support economic and population growth.*
- ***How?*** *Provide improved cross-river transport links and manage congestion through road user charging.*
- ***Where?*** *The highway network in East and South East London.*

The Green Book suggests that 5 or 6 SMART objectives be established to allow focus and delivery.

Objectives will often be described as the changes experienced by people receiving a service. Objectives may also be described as increases in existing service levels, the delivery of new services or changes to service efficiency and effectiveness.

The objectives however, should not bias the choice of options towards a particular pre-determined solution.

- Core Project Objectives PO1-3 are focused on resolving connectivity problems in East London (a change in service efficiency), and specifically at the Blackwall Tunnel as a key transport artery.
- PO4 to PO7 are based on the wider River Crossings Programme
- As seen in Q2, the objectives in principle leaves the door open to a range of solutions beyond a new road at Silvertown to address connectivity issues in East London. In practice however, once options are evaluated, owing to the existing approach roads at the Blackwall Tunnel, the only options which meet the stated goals are new road infrastructure at Silvertown.

The objectives set are also in line with national, London-wide and local policy objectives, with a particular reference to the London Plan and Mayor's Transport Strategy (excluding modal shift objectives).

The objectives are reasonable and do not bias the choice of options towards a pre-determined solution. The lack of connectivity in East London narrowed down consideration to issues facing the Blackwall Tunnel specifically due to its strategic position and utility, as well as the location of approach roads.

4 Business Case Review – Long list of options

In line with guidance from the Green Book, a long list of options with a broad range of solutions was developed. While challenging to assess due to being in its infancy stages, there is the notable omission of Wider London Road Charging, and whether new road infrastructure in this context is ultimately needed (see slide 35).

Q2-A: What were the long list options considered?

There are two broad categories of options: i) Demand Reduction and ii) New Highway Infrastructure

Demand Reduction

These are options focussed on reducing the level of cross-river highway demand, through the provision of enhanced alternatives (such as walking, cycling ad public transport improvements) and/or through direct demand management (such as road user charging). The options considered were:

- **DLR extension to Falconwood**
- **Local links for pedestrians and cyclists**
- **Congestion charging at Blackwall Tunnel**

New Highway Infrastructure

These are options involving the provision of new highway infrastructure capacity/connections at various locations. The options considered were:

- **Ferries** – Woolwich, Gallions Reach and Silvertown
- **Lifting Bridges** – Woolwich and Silvertown
- **Bridges** – Thames Gateway, Gallions Reach
- **Tunnels** – Woolwich, Gallions Reach, Blackwall third tunnel bore, Silvertown bored and Silvertown immersed tunnel

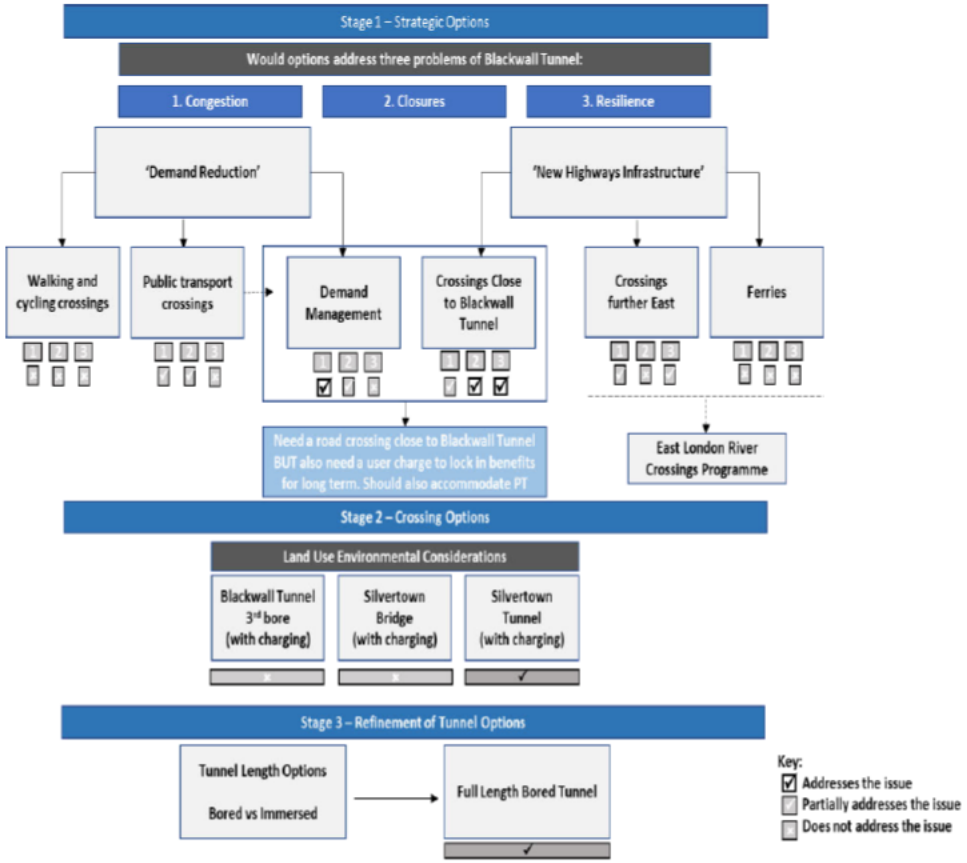
Q2-B: Was the longlist option set complete?

- Green Book Guidance specifies with regard to longlist options generation:
  *"Proposals should initially be considered from the **perspective of the service needed to deliver the required policy outcome** and not from the perspective of a preconceived solution or asset creation"*
- We believe the longlist option set to be sufficiently broad and open-ended in considering how to address concerns around congestion, resilience and growth at the Blackwall Tunnel. In other words the range of options was broad including (i) possible modal shifts through non-road infrastructure (ii) alternate locations (iii) different forms of infrastructure.
- There are however two options we have identified in reviewing project documentation and challenges from the SSTC, Transport Action Network and Friends of the Earth, which merit further discussion:
  1. The option for a **single bore tidal flow tunnel at Silvertown** is not explicitly considered in the Needs and Options Report. However, per discussion with TfL, there are safety, engineering and operational concerns as a single bore **does not meet the design standards for new tunnels**. Specifically, a single bore **requires a parallel evacuation and emergency services tunnel**. This becomes in effect similar to a twin bore tunnel without the benefits.
  2. The (Do-Maximum) option for **Wider London Road Charging** was also not considered in the Needs and Options report (this issue is discussed further on Slide 34). However, this issue was subsequently considered as part of the review process. It was noted that wider road pricing would impact on traffic modelling undertaken and the outcomes delivered, however **as the Wider London Road Charging scheme was not yet sufficiently developed or confirmed, the quantitative impacts were speculative, and it was therefore not considered further** (see slide 35)

4 Business Case Review – Shortlisting of options

TfL filters down a broad list of options using a qualitative criteria centred around the Core Project Objectives (congestion, resilience and growth). This in effect shortens the list to new fixed river crossing infrastructure coupled with demand management (i.e. tolls).

Figure 4-1 – TfL Qualitative Shortlisting Process



Q3-A: What does the Green Book say about taking options forward to the shortlist?

Per the Green Book, once a long-list is developed it can then be filtered down to a set of viable short-list options ahead of detailed economic analysis. Viability can be assessed from the perspectives of **strategic fit to wider policy objectives**, potential Value for Money, affordability and achievability. Dependencies and constraints (e.g. legal frameworks) should also be considered.

The short-list should **include a "preferred way-forward"**, the **Business as Usual benchmark**, and a viable "**do-minimum option that meets minimum core requirements** to achieve the objectives identified" and at least **one viable alternative option**.

Q3-B: Which options were taken forward and assessed and which were not and why?

The long list of options was first presented at the 2012 East London River Crossings consultation and then refined to 8 options (plus "Do Nothing") in the 2014 Silvertown Needs and Options report. Options were shortlisted based on their ability to address the three key problems: (i) congestion; (ii) closures; and (iii) resilience faced at the Blackwall tunnel (see diagram)[1].

Walking and cycling crossings were dismissed on the basis that they were not capable of reducing demand sufficiently to overcome the problems in relation to the Blackwall Tunnel.

The **DLR extension to Falconwood** was dismissed because although it would provide an alternative for some trips, there would still be a substantial number of trips requiring use of the Blackwall Tunnel. This is supported by historical data showing constant capacity issues at the Blackwall Tunnel despite significant investment in East London cross-river public transport connectivity.

A number of options were not taken forward based on geographic location, because by virtue of their location, they would not be able to meet the objectives of reducing congestion, providing resilience and mitigating closures at the Blackwall Tunnel (and the network of approach roads). The options dismissed were:

- **Ferries** – Woolwich and Gallions Reach
- **Bridges** – Woolwich, Thames Gateway, Gallions Reach
- **Tunnel** – Woolwich, Gallions Reach

1.Note the objectives are slightly different in that addressing closures is a separate objective in the diagram but result in the same outcome, as this inextricably linked to PO1 (resilience), PO2 (performance including congestion and closures), and PO3 (growth)
Source: Silvertown Tunnel Outline Business Case (2016)

4 Business Case Review – Shortlisting of options (cont'd)

From a qualitative standpoint, a twin bore at Silvertown emerges as the preferred option. Despite the absence of full economic analysis on alternative options, owing to inability of other options to meet the Project Objectives, the Examining Authority and SoS concluded that sufficient options appraisal had been conducted.

Q3-B: Which options were taken forward and assessed and which were not and why? (Cont'd)

A Blackwall Tunnel only with toll (no Silvertown) option is dismissed on a qualitative basis – while it could meet the congestion/performance objective (through very high tolls which may not be politically acceptable, move traffic to untolled crossings and/or impede crossings altogether contrary to Scheme's objectives), it does not materially increase resilience, and foster growth (i.e. still cannot run HGVs on Northbound bore and precludes double-decker and bendy buses)

As is clear from the diagram, only fixed road crossings at/around Blackwall with Demand Management could address the Project Objectives.

Other road crossing options at Silvertown were dismissed for the following reasons:

1. A **ferry at Silvertown** was deemed not to provide sufficient capacity (and thereby resilience)
2. A **third bore at Blackwall** was deemed to have operational and engineering constraints (due to deep pilled foundations of neighbouring buildings)
3. A **lifting bridge** was deemed to be suboptimal from an aesthetic/planning perspective and from a resilience standpoint

An twin bore or immersed tunnel are left as the only with strong positive performance across resilience, congestion and growth objectives.

4. A immersed tunnel is however dismissed due to an adverse impact on the local community (requires more visible excavation) and on the river environment

From a qualitative standpoint a twin bore tunnel at Silvertown quickly emerges as the preferred way forward.

Q3-C:What scrutiny did the selection of a twin bore at Silvertown receive?

- The documentation (Outline Business Case, Needs and Options Assessment and Full Business Case) do not perform economic VfM appraisals on a shortlist of options as one would expect
- The Examining Authority Panel probes this omission, and we have reviewed TfL's written response dated 17 January 2017 and commented below.
- TfL answers that there have only been full NPV appraisals for the two tunnel options, however economic appraisals have underpinned the optioneering at various stages. NPV estimates are provided for
    1. Silvertown Immersed Tunnel
    2. Silvertown Lifting Bridge
    3. Silvertown Tunnel plus uncharged Blackwall Tunnel
    4. The economic benefits are also quantified for FY 2021 only for a Blackwall only toll option (discussed further on Slide 33)
- In TfL's response it is specifically stated that "*a **very wide set of options was considered** and consulted on, **very few of which were considered to meet the above core project objectives** of solving the problem of congestion at the Blackwall Tunnel, and addressing the critical issue of resilience*"
- The Examining Authority in its recommendation to the Secretary of State concludes "*given the long history of this project that has been detailed earlier in this part of 32 Paragraphs 3.23 to 3.27 Report to the Secretary of State 68 Silvertown Tunnel our report, we are **satisfied that there has been sufficient assessment of alternatives** to satisfy paragraph 4.27 of the NPSNN*"
- In **the Secretary of State**'s subsequent DCO decision letter dated 10 May 2018, **concurs that there has been sufficient consideration of alternatives and options appraisal**.
- See Section 3 for a more complete description of the assurance process undergone.

Q3-D: What are conclusions regarding the shortlist?

- The shortlist includes the twin bore Silvertown Tunnel as the preferred way forward
- Modelling was also performed on a number of Silvertown fixed-crossing options (Immersed Tunnel, Lifting Bridge)
- As expected, a Business as Usual (Do Nothing) case is included
- It should be noted that a viable **Do Minimum Scenario does not exist**, as meeting the qualitative goals around resilience, congestion and growth through cross-river connectivity requires new infrastructure – **this is consistent with Green Book guidance**.
- The option of tolling the Blackwall Tunnel only does not the Project Objectives and is therefore dismissed – again, in line with Green Book guidance
- It **follows that a full economic VfM analysis is only conducted on options shortlisted**, those options which meet the Project Objectives

4 Business Case Review – SSTC Challenges (Blackwall Tunnel Toll Only)

Following traffic modelling of the option to toll Blackwall Tunnel only (with an without public transport improvements), the option was dismissed on the basis of not meeting Project Objectives at the point of moving from the long-list to the short-list. The decision to not perform a full NPV is then reasonable.

Q4 - Challenge 1: Investigate TfL's decision not to carry out a full cost/ benefit NPV of the option to toll Blackwall Tunnel only (i.e. no Silvertown Tunnel) and dismissing the option too early on

Sources of evidence: TfL's Silvertown Crossing Assessment of Needs and Options report, TfL's response to Examining Authority dated 5 April 2017[1], DCO submissions[2], and discussions with TfL.

Q4-A: Why was the option of tolling the Blackwall Tunnel only ultimately dismissed (Recap)? And how does this impact whether to perform a full NPV?

- A Blackwall Tunnel toll would ultimately **only help with one of three Core Project Objectives** and was therefore felt to be unsuitable to meet the scheme's objectives:
  1. **Performance/Congestion (Slight Positive)** – a toll would reduce traffic levels; however owing to very high demand TfL found tolls needed to be set very high and thought this unlikely to be politically acceptable. More specifically, as explained in discussion with TfL, a high toll either pushes traffic to other crossings (with an unacceptable impact on network performance) or users stop crossing the river, which is contrary to the spirit of the scheme.
  2. **Resilience (Slight Positive)** – a toll would slightly reduce incidents but would not address the issue of the Northbound bore being unsuitable for certain HGVs leading to continued incidents
  3. **Growth (Neutral)** – A toll without new infrastructure is unlikely to support increased demand from a growing East London population (e.g. Blackwall Tunnel cannot support high-frequency cross river bus services due to congestion, absence of a dedicated bus lane and no double-decker/bendy-buses due to design constraints)

- Substantial work was performed to understand whether a Blackwall Tunnel only option with and without tolls coupled with a large package of public transport initiatives (targeted at Blackwall users) could resolve the qualitative objectives. It was found that
  - There was **"no discernible drop" in Blackwall Tunnel traffic volumes in the uncharged PT Max scenario** and reductions in traffic in the PT Max charged scenario were driven by the toll as opposed to new public transport infrastructure.
  - "*A large proportion of the London based car drivers currently using the Blackwall Tunnel already have good public transport access (the implication being that these users would be unlikely to be encouraged to use public transport by the provision of further infrastructure*)"[3]
  - This appears borne out by the fact that the Blackwall Tunnel remains congested despite sustained public transport cross-river connectivity improvements over the past 20 years.
  - TfL indicates that **users of the Blackwall Tunnel are hard to shift** because of (i) the dispersed origins/destinations of trips through the tunnel and (ii) the purpose of trips (e.g. trade employment which requires a car).
- Given the **option was incompatible on a qualitative basis with Project Objectives**, **TfL's decision** to not perform a full economic NPV **is reasonable**.

Q4-B: What work was done specifically by TfL on the VfM of tolling the Blackwall Tunnel only with no Silvertown project?

- In its response to the Examining Authority, TfL presents a high-level economic assessment to charge the Blackwall Tunnel only for 2021 only (presented against the Assessed Case to build the Silvertown Tunnel and charge both the Blackwall and Silvertown Tunnels)
- The results are shown in Table 4-2 below.
- Option to charge Blackwall only would offer lower benefits at a lower cost. The option would however, not achieve the Core Project Objective of improving resilience of the local network. It would also offer only limited benefits for public transport provision as the extent to which the bus network can be improved would be limited.

Table 4-2 – Economic Summary - 2021 assessment (PV 2010)

Public Transport and Highway Benefits (£ m) – 2021 Only	Charge Blackwall and Silvertown Tunnel (Assessed Case)	Charge Blackwall Tunnel Only	Differential
Commute	£ 21.36	£10.12	£11.24
Business	£4.87	£2.33	£ 2.54
Other	£12.25	£6.11	£ 6.14
Total	**£38.48**	**£18.56**	**£ 19.92**

1. 8.119 Applicant's response to question regarding Option Appraisal (Five Case) from the Issue Specific Hearing on 28 March 2017
2. Documents 6.5, 7.1 and 7.9 of he DCO Submission

Source: DCO Submission – 7.1 Case for the Scheme

4 Business Case Review – SSTC Challenges (Blackwall Tunnel Toll Only)

Had a full NPV been performed, the NPV from tolling Blackwall only may have been higher than the option implemented; however, this would not address the scheme objectives, and is therefore not comparable. The decision to dismiss the option early on without performing a full NPV is reasonable and in line with Green Book guidance.

Q4-C: What does TfL's limited economic modelling imply?

- A rudimentary calculation in Table 4-3 (below) using the PV Differential in the 2021 reference year suggests that had a full NPV been performed on the toll Blackwall Tunnel only option, it may have outperformed the Silvertown + Blackwall option on a pure VfM basis.
- However, the VfM are not fundamentally comparable as a toll Blackwall Tunnel does not address the Project Objectives.

Q4-D: What were the key findings and recommendations from our review?

- The toll Blackwall Tunnel was dismissed on qualitative grounds (meeting only 1 of 3 Project Objectives), and therefore **does not qualify as a viable "Do Minimum" option per Green Book guidance**.
- Traffic modelling was performed on a scenario including a tolled Blackwall Tunnel with a significant package of public transport improvements, where PT improvements were not found to materially improve congestion.
- As a result, limited economic analysis was carried out for the Blackwall Tunnel toll only, with analysis on a single reference year 2021 (see Table 4-2).
- While the limited economic analysis suggests to us (see output of Table 4-3) that the Blackwall Tunnel toll offers value in excess the status-quo ("Do Nothing") and possibly in excess of the Silvertown Tunnel, it does not address the fundamental problems the scheme is attempting to address.
- **Business case evaluation begins with solutions that meet Project Objectives**, as opposed to starting with the option with the highest VfM NPV.
- The NPV of the toll Blackwall Tunnel option is therefore fundamentally not comparable to the NPV of the Silvertown scheme.
- **In summary, a toll Blackwall Tunnel only option did not meet the Core Project Objectives, and the decision not to perform a detailed Economic Appraisal is therefore reasonable.**

Table 4-3 – Net Present Value Consideration

Differential Net Present Value Consideration	£m
Differential in 2021 (PV 2021)	£38.97
Discount rate (per TfL Business Case)	6.29%
Growth rate (assumed inflation)	2%
Years	60
Present Value of Differential in perpetuity (PV 2020)	£908.34
Annuity reduction factor	0.9156
Revised Present Value of Differential (PV 2020)	£861.65
Revised Present Value of Differential (PV 2010)	£451.88
PV of Additional Costs (Capex and Opex) (PV 2010)	£832.00
Differential Net Present Value	**£ (380.12)**

Q4-D: Update to key findings and recommendations from our review

- In light of additional correspondence received from the SSTC, Transport Action Network and Friends of the Earth, which highlight that a toll that fully removes congestion at Blackwall Tunnel would fulfil the three core project objectives at lower costs, we have made an update to the report.
- As was disclosed within the limitations to the report, a scenario illustrating the impact of raising the toll on **Blackwall (no Silvertown) beyond the level of charges in the assessed case** has not been modelled by TfL.
- We have as such, had to rely on assertions from the traffic modelling consultants (Jacobs), as well TfL's modelling team that raising the toll at Blackwall (with no Silvertown) would have an unacceptable level of impact on traffic on other East London crossings.
- We thus, cannot comment more extensively on the impact of a toll above the assessed level on the Blackwall tunnel.

4 Business Case Review – SSTC Challenges (London Wider Road Charging)

As the WLRC scheme aims and mechanics were not developed, concrete traffic modelling around WLRC was not possible. The impact of the scheme was considered at a high level. There is however the wider question of how the modal shift policy away from cars was considered, given the policy changed in 2018 just prior to the 2019 FBC and contract signing. Traffic modelling from 2014-2016 was not updated to reflect the changed policy.

Q5- Challenge 2: Investigate the extent to which TfL considered Wider London Road Charging (WLRC)

Sources of evidence: Silvertown Charging Statement, information provided to the TfL Programmes and Investment Committee on the consideration of wider road pricing, Mayor Transport Strategy 2010 & 2018, miscellaneous information on the state of the Wider London Road Charging scheme and discussions with TfL.

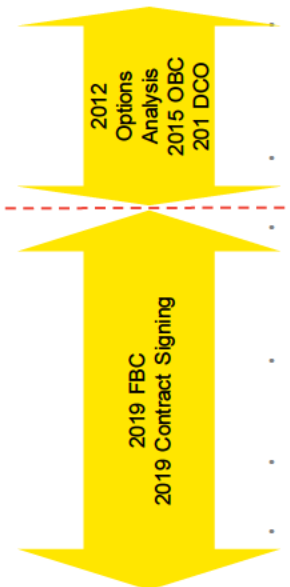
Q5-A: What work was done specifically by TfL on the consideration for wider road pricing?

- During the review process, questions around the impact of a Wider London Road Charging scheme were raised in the Programmes and Investment Committee.
- From correspondence shared with us by TfL, a specific question on how the Wider London Road Charging scheme might affect the user charges for Silvertown and Blackwall tunnels was asked. It was further asked if:
  - (i) **TfL had worked on the assumption that a distance-based London wide road user charge scheme could have add-on fixed charges for use of the tunnels; or**
  - (ii) **If the charges for use of the tunnels would be abolished**
- TfL stated that the response of user charging at the tunnels to a Wider London Road Charging scheme would depend on the specific objectives of the WLRC scheme (e.g. schemes geared toward air quality versus demand reduction would produce different Silvertown charging responses)
- **TfL believe the charging policies and procedures provide flexibility to adapt to a Wider London Road Charging scheme.** Regardless of the scheme, TfL would be required to assess the impacts of the user charge at Blackwall and Silvertown and make changes to ensure it continuously meets the environmental and economic objectives set out within the DCO.
- From an **affordability standpoint**, **revenue from the WLRC scheme could be used to meet Availability Payments** and reduced toll revenues at Silvertown/Blackwall following the introduction of the WLRC scheme, and the corresponding decrease in traffic.
- **As the WLRC scheme aims and mechanics were not developed, concrete traffic modelling around WLRC was not possible**

1. London Assembly 6 July 2020

Q5-B: How has policy with regard to WLRC and a desire to reduce car usage evolved alongside the Silvertown scheme?

- Our review considers the point in time at which appraisal decisions were made and the relevant policy.



- MTS 2010 includes Proposal 130 to manage demand through pricing incentives (including road user charging). The Mayor would also consider tolls to support specific infrastructure improvements.
- Policy 11 aimed to increase the mode share of public transport, walking and cycling to 63% from 57%.
- Developing a Wider London Road Charging scheme was included as Proposal 21 & 23 in the 2018 MTS, which was published **after** the options appraisal decision was concluded.
- Policy 1 is a modal shift 37% of journeys by car, taxi or private hire vehicle in 2015 to 20% by 2041 shown in Figure 4-4 on the following slide
- Silvertown Tunnel is included as committed infrastructure in the 2018 MTS and is an enabler to the modal shift
- In 2019 (and at present per London Assembly[1]), the details and precise objectives of a WLRC scheme are under development and uncertain

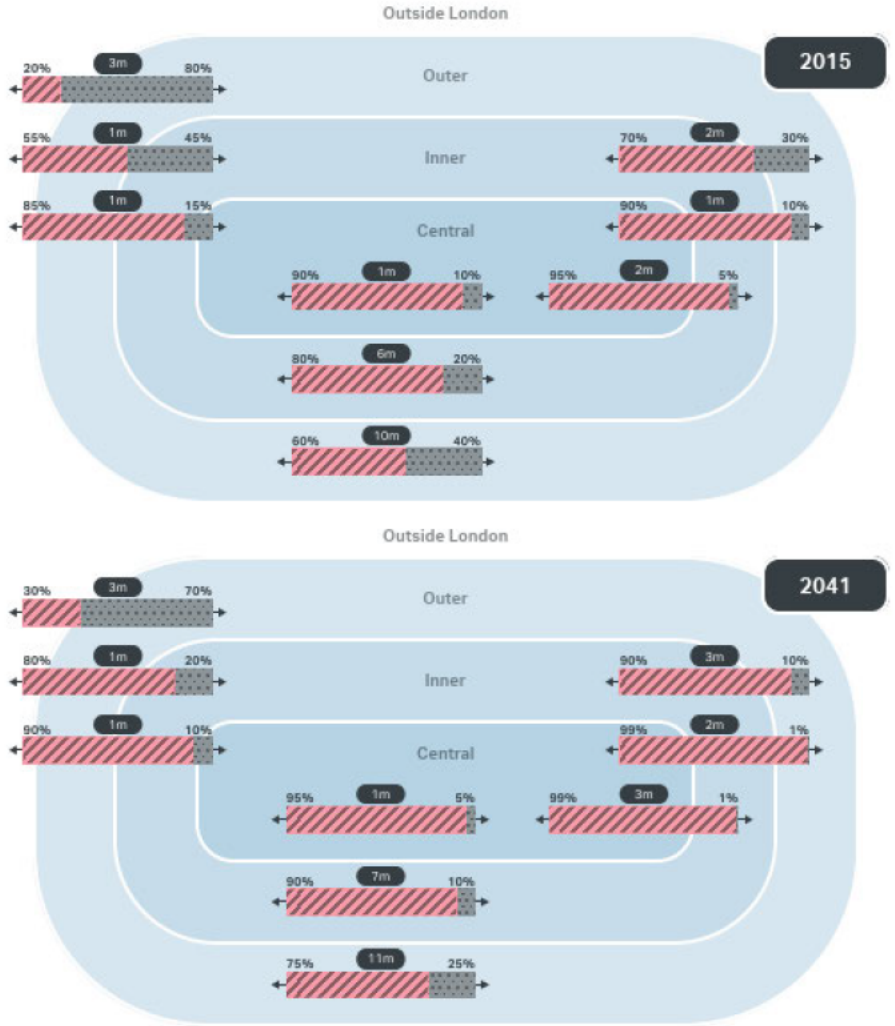
Q5-C: How was the traffic modelling more broadly impacted by the 2018 MTS?

- The latest traffic modelling dates from 2014-2016, and was not refreshed for the 2018 MTS.
- It was explained by TfL on our call on 8 December 2020 that the Silvertown Tunnel was included as committed infrastructure in the 2018 MTS (i.e. it enables the 2018 MTS), and that (i) the outcomes of the modelling would not change as a result of the 2018 MTS and (ii) that TfL would need to revisit the traffic modelling at a later date in any case as a result of DCO obligations
- It was also stated that it was not appropriate to reflect the 2018 MTS modal shift targets (see Figure 4-4) in the traffic modelling as the scheme objectives were not developed for analysis on individual roads but more as a holistic goal across London

4 Business Case Review – SSTC Challenges (Wider London Road Charging)

The impacts of WLRC could not be modelled due to the limited extent to which the scheme was developed. It should be noted that such a scheme on its own does not address the qualitative Silvertown objectives (around resilience and growth). Sensitivity analysis around the modal shift policy ambition was not performed as part of the FBC.

Figure 4-4 – MTS 2018 – Policy 1 – Modal Shift Objectives



Q5-D: What were the key findings and recommendations from our review?

- **WLRC was not contemplated as a potential "Do Maximum" option that could address capacity constraints at the Blackwall Tunnel because it was not developed as a scheme (i.e. no firm proposal to model) and could not address the resilience and growth Project Objectives.**
- The OBC and associated traffic forecasting (2014-2016) was prepared based on the 2010 MTS where targets with regard to a modal shift away from cars were less ambitious and less specific.
- Following the DCO in 2018, Silvertown Tunnel was included as committed infrastructure in the 2018 MTS; however, the **affordability and VfM of the tunnel were not re-tested in 2019 in the context of the new 2018 MTS modal shift objective as part of the Full Business Case**, prior to contract signing.
- Note downside sensitivities were performed with between 5-10% less traffic, but there is no clear link between the 2018 MTS modal shift goal and the sensitivities.
- We contend that the
  - **The FBC is designed to revalidate the scheme** in the context of the **latest information** and policy at the time;
  - **We have not seen documentation from the time justifying why the modelling was not updated following the change in modal share targets**
- **Such analysis would however, have been highly unlikely to eliminate the need for Silvertown Tunnel** given
  - The delay in implementing a WLRC scheme (or other mechanism to reduce car traffic);
  - The achievability of such a drastic modal shift;
  - The degree to which users of Blackwall Tunnel can be shifted to other modes (note users persist in using the tunnel despite severe congestion and, for many users, the availability of public transport alternatives);
  - A growing population;
  - Constraints with regards to HGVs and implementing a step change in bus services in the Blackwall Tunnel; and,
  - A lack of alternative routes creating issues with resilience.

Next >

5

Value For Money Assessment

5 Value For Money Assessment – Introduction & Findings

Methodology: The Value for Money ("VfM") assessment is an integral part of the Business Case which has received challenge by the SSTC. We outline the build-up of the VfM and review sensitivities performed, with a particular focus on traffic forecasting.

This section covers our review of the VfM assessment and the key challenges around this area raised by the Stop Silvertown Tunnel Coalition (SSTC)

Challenges

- Broader concern around the financial viability of the project as a whole (including VfM) – GLA concern
- Treatment of tolling income at Blackwall – SSTC claims this income is already available to TfL, which could be spent on other schemes
- Economic analysis failing to take account of scenarios with significant traffic reductions and modal shift

Analysis

In order to assess the challenges, we have utilised a Q&A approach to focus the narrative and draw out key points. The key questions we have answered are:

1. How is the Economic Case constructed and what is a Value for Money Assessment (VfM)?
2. What are the conclusions from the VfM Assessment?
3. What are the key inputs / assumptions feeding into the VfM Assessment?
4. What sensitives have been performed?

Findings

- **VfM construction** – A VfM calculation includes the broader business, social and public sector account impact of the scheme
- **Treatment of Blackwall toll revenue** – TfL treats the Blackwall toll revenue correctly. Ignoring the impact on traffic and congestion, the toll is a net economic nil (i.e. negative to toll road users but positive to public sector accounts)
- **NPV-** TfL calculates an NPV of £519m (excluding reliability benefits) and £708m (including reliability benefits)
- **Benefits** – Principally composed of reduced travel time with reliability as a secondary benefit. Private road users (private cars and businesses) are charged for using the tunnels, meaning the main beneficiaries of the scheme are bus and coach users (capture £603m of the benefit). Note traffic flows are assumed to stay materially consistent.
- **Costs** – user charging of £1,091m offsets operation and construction costs of £440m and £635m respectively. The net cost of £68m is mainly comprised of the net cost in operating bus routes.
- **Conservatism** – our review reveals a number of areas of conservatism with regards to:
  - Use of a National Value of Time (VoT) as opposed to the London VoT
  - Conservative estimates into the modelling of enforcement income
  - Undervaluing bus time savings by using current congested travel times as opposed to post-construction reduced travel times
  - Omission of Wider Economic Impacts and role in regenerating East London
- **Environmental impact** – there is a marginal increase in traffic coupled with decreased congestion driving a net reduction in CO_2 and a small (imperceptible) increase in NO_x
  - User charging gives TfL the flexibility to control traffic flows, types of vehicles, enabling it to minimise the Scheme's adverse environmental impact
- **Traffic modelling** – The Low Growth scenario includes c. 5% less traffic than the Assessed/Base Case. It is therefore unlikely that this scenario can be used a proxy for a scenario where the 2018 MTS ambitions around modal shift are realised (there would likely be more bus users and less passenger cars).

5 Value For Money Assessment – What is a VFM Assessment?

A VfM assessment is an economic assessment that includes broader non-financial costs and benefits and subsequent sensitivity analysis. SSTC's challenge regarding the pre-existing fungible source of income from the Blackwall crossing is not valid, as the fungibility of income from tolling the Blackwall tunnel (no Silvertown) cannot be considered on a stand alone basis.

Q1 - How is the Economic Case constructed and what is a Value for Money Assessment (VfM)?

The Economic Case assesses the Value for Money (VfM) implications of the shortlisted options appraised in the Business Case.

The VfM assessment follows a four stage process as follows:

1. **Monetised Impacts:** Impacts are valued to provide an initial assessment in an Analysis of Monetised Costs and Benefits (AMCB) table. **This includes business impacts, social impacts, environmental impacts and public account impacts**. Costs assessed include the investment and operating costs including capital renewal and maintenance costs.
2. **Qualitative and Quantitative Information:** Secondly, further quantitative and qualitative information is added – this provides an adjusted assessment. The relevant adjustment by TfL was the adjustment for reliability.
3. **VfM category:** This adjusted assessment provides an initial VfM assessment.
4. **VfM Statement:** Finally, the benefits, costs, risks and sensitivities of the project are combined to provide a VfM statement.

Note the Transport Analysis Guidance (TAG) recommended 60 year appraisals for projects deemed to have an 'Indefinite Life', such as tunnels, was used.

SSTC Challenge: The user charge income from tolling Blackwall users is a fungible source of income available to TfL (i.e. the Silvertown Tunnel NPV should not include tolling income from Blackwall because this is already accessible to TfL)

First, all the income used to build the scheme is fungible - it comes from tolling the crossing at Blackwall/Silvertown, so can be accessed whether or not a new tunnel is built. […] So money being spent on the tunnel could equally be spent on other schemes, and spending it on the tunnel means it's not available for these other schemes. – Email from Victoria Rance dated 3 September 2020.

The Economic VfM considers both the benefits (income to TfL) and cost (societal cost to motorists) of imposing a toll at the Blackwall Tunnel. **In other words, in absence of benefits to the congestion, resilience and the environment, the toll in itself is treated as an economic net nil rather than a positive.**

This concept has been correctly applied to the Silvertown Tunnel VfM assessment.

In this respect, we consider that TfL has correctly constructed its Business Case and there is no fundamental flaw as claimed by the Stop Silvertown Tunnel Coalition.

In light of additional correspondence received from the SSTC and Transport Action Network highlighting that fungibility of toll revenue is in the context of the 'toll only' scenario revenue potentially being spent on options other than building the Silvertown tunnel, we have highlighted below that:

- As has been detailed in Section 4 – Business Case Review (Q4-D), the option to toll the Blackwall tunnel does not meet all core project objectives and was dismissed on this basis, thus not requiring full economic analysis.
- Consideration was then given to the proximity of the tunnels and the fact that drivers could very easily opt for an uncharged Blackwall tunnel. On this basis, the option to toll the Blackwall tunnel was included as a **complementary measure** to the new tunnel at Silvertown.
- As such, **fungibility of income from tolling the Blackwall tunnel** cannot be considered on a **stand alone basis**

5 Value For Money Assessment – What are the conclusions from the VFM Assessment?

The VfM assumes no material increase in traffic. The bulk of the economic benefit accrues to coach and bus users, arising from a reduction in travel time and new routes. Reduced travel time is the primary benefit of the scheme (although private vehicles are charged for this benefit), followed by reliability benefits.

Q2- What are the conclusions from the VfM Assessment?

Present Value of Benefits

- It should be noted that the key Project Objectives for the tunnel are to improve resilience, improve road performance (i.e. reduce congestion) and foster growth without increasing the level of traffic (controlled through user charging) and environmental impacts.
- The reliability benefits account for reductions in the variations of journey times that individuals are unable to predict such as congestion or non-recurring events such as incidents. It is calculated based on the standard deviation of travel time.

1 As there is **no material increase in traffic** (c. +6% due to a re-routing of existing traffic), the environmental impacts are minimal with bus services driving a small increase in NO_x

- Local bus services drive a small increase in NO_x – overall an "imperceptible change in pollutants" is forecasted
- The FBC outlines a **reduction in GHG worth £12m** although this is not included in the final NPV – we understand this improvement to be due to decreased congestion

2 The **primary beneficiaries of this scheme are Coach and Bus users**, who do not pay user charges) **benefiting by £603m** (note no reliability uplift is included for this user group and the overall benefit is conservatively modelled)

- Secondary benefits accrue to private cars and businesses:

3 **Private car small benefit by £41m** (£120m with reliability); and,

4 **Businesses benefit by £58m** (£167m with reliability)

5 A loss in indirect taxation has been included as a result of estimated reduction in fuel duty and other vehicle related taxes (PV over 60 years)

6 The total **present value of benefits comes to £587m** (representing mostly travel time savings) with an **additional £189m of reliability benefits (for a total of £776m)**

Table 5-1 - Analysis of monetised costs and benefits PV (2010 Prices)

£m		No Reliability Adjustment	With Reliability Adjustment
Noise	1	(5.6)	(5.6)
Local Air Quality	1	(3.0)	(3.0)
Greenhouse Gases	1	-	-
Journey Quality			
Physical Activity			
Accidents		12.4	12.4
Travel time & Vehicle operating costs (Private cars)	3	423.9	503.6
User charges & other (Private cars)	3	(383.5)	(383.5)
Travel time and other (Coach and Bus Passengers)	2	603.2	603.4
Travel time & Vehicle operating costs (Business)	4	676.9	786.4
User charges & other (Business)	4	(619.0)	(619.0)
Wider Public Finances (Indirect Taxation Revenues)	5	(118.8)	(118.8)
Present Value of Benefits (PVB)	6	**586.7**	**775.9**
User charge revenue (Road Infrastructure)		(1,090.9)	(1,090.9)
Operating cost (Road Infrastructure)		439.9	439.9
Investment cost (Road Infrastructure)		634.8	634.8
Bus revenue (Bus)		(157.7)	(157.7)
Operating Cost (Bus)		241.4	241.4
Present Value of Costs (PVC)		**67.5**	**67.5**
Net Present Value (NPV)		**519.2**	**708.4**

Source: Full Business Case (2019)

5 Value For Money Assessment – What are the conclusions from the VFM Assessment?

The total economic NPV is £519m and £709m (with reliability benefits). Net economic costs are minimal with user charging offsetting the investment and operating costs of the tunnel. The PVC is mainly comprised of operating loss making bus routes.

Q2- What are the conclusions from the VfM Assessment (cont'd)?

Present Value of Costs

7 The **investment cost of £635m and operating costs £440m is fully offset by the user charging revenue of £1,091m** (all in PV terms)

8 The new bus routes result in a net loss of £83m

9 Therefore, the **vast majority of the PV of costs (£68m), is comprised of loss making bus routes** offset by a slight benefit on the road infrastructure

Net Present Value

10 **The NPV with and without reliability benefits is £519m and £708m respectively**

Table 5-1 - Analysis of monetised costs and benefits PV (2010 Prices)

£m		No Reliability Adjustment	With Reliability Adjustment
Noise		(5.6)	(5.6)
Local Air Quality		(3.0)	(3.0)
Greenhouse Gases		-	-
Journey Quality			
Physical Activity			
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Present Value of Benefits (PVB)		**586.7**	**775.9**
User charge revenue (Road Infrastructure)		(1,090.9)	(1,090.9)
Operating cost (Road Infrastructure)	7	439.9	439.9
Investment cost (Road Infrastructure)		634.8	634.8
Bus revenue (Bus)	8	(157.7)	(157.7)
Operating Cost (Bus)		241.4	241.4
Present Value of Costs (PVC)	9	**67.5**	**67.5**
Net Present Value (NPV)	10	**519.2**	**708.4**

Source: Full Business Case (2019)

5 Value For Money Assessment – What are the conclusions from the VFM Assessment?

There are a number of additional benefits not included in the NPV, including around facilitating local regeneration and productivity increases. Another source of additional benefit are fuel cost savings to road users, owing to higher speeds which were explained to have not been included.

Q2- What are the conclusions from the VfM Assessment (cont'd)?

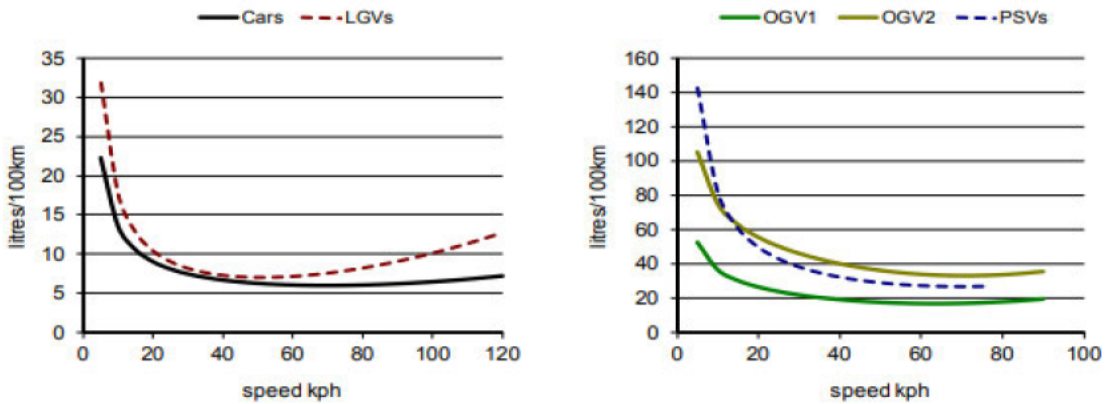
Wider Economic Impacts

- Wider Economic Impacts (e.g. Agglomeration, Increase in Output, Tax revenues from additional labour) were last calculated in 2016 under the old methodology, equating to £92m of benefit in PV terms. These have not been included in the NPV presented – highlighting a degree of conservatism
- Note the Wider Impacts outlined above mainly correspond to increased productivity c. £40m from increased accessibility to labour, products and knowledge) and c. £51m from increased consumer welfare (i.e. additional local output) resulting from more profitable products (i.e. less delivery cost) in imperfectly competitive markets
- The scheme also encourages regeneration of East London (the benefits of which have not been quantified)

Miscellaneous benefits which are excluded from the VfM

- The Business Case includes a reduction in indirect taxation revenue of £118m, mainly in respect of reduced fuel duty from increased fuel efficiency arising from higher speeds.
  - TfL has clarified in responses to EY that the corresponding reduction in fuel costs to users has not been included.
  - This is an area of conservatism, as we would expect the change in vehicle operating costs to reflect a benefit in excess of £118m (i.e. fuel duty + underlying fuel cost) per TAG Unit A1.3 (March 2017)
- The ancillary benefit to private bus operators, is not attributable to the public sector accounts and cannot be claimed, but has a benefit of c. £24m
- The benefit to existing coach and bus (single-route) users was deemed small and not quantified
- The GHG reduction benefit of £12m was calculated, but omitted in error
- Journey quality benefits flowing from a reduction in congestion are qualitatively described but not quantified

Figure 5-2 – TAG Unit A1.3 Fuel consumption at different speeds (2010 fleet)



Source: Full Business Case (2019), Correspondence with TfL and TAG guidance

5 Value For Money Assessment – Key Assumptions – Overview and Traffic Assumptions

Per our understanding, the Base Case (Assessed Case) for the traffic forecasting, last performed in 2014-2016, assumes significant population growth 40-60% between 2011 and 2041 in the host boroughs, with a backdrop of reduced car usage. Even the Low Case appears far from the 2018 MTS's policy ambition for a 20% car modal share by 2041.

Q3A - What are the key inputs / assumptions feeding into the VfM Assessment?

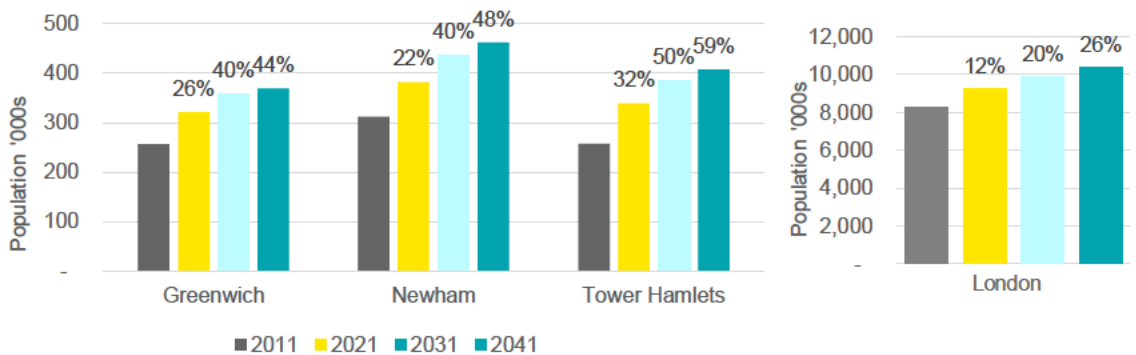
In our view the project has received the most challenge from a benefit quantification standpoint. We will therefore choose to focus our attention on the following areas:

- Traffic forecasting – this is one of the areas which has received the most challenge from the SSTC, particularly around modal share sensitivities
- User charging
- Value of time
- Benefit to bus users

Q3B – What are the traffic assumptions?

- The last traffic modelling dates from April 2016, and was submitted alongside the DCO application (DCO granted in 2018)
- The traffic modelling begins with a forecast for population and employment growth (see chart)
    - While the models anticipate London population growth from 2011-2041 of 20%-30%, growth in the three Silvertown Tunnel host boroughs (Greenwich, Newham and Tower Hamlets) is cumulatively forecasted between 40-60%

Figure 5-3 - Reference Case Population Growth Projections[1,2]



- Modal share and car ownership assumptions are then applied, over which we have limited visibility. TfL has clarified that the Low Case uses projections for London car ownership, which are lower than the High Case national car ownership projections.
- The October 2014 version of the Traffic Forecasting Report shows a modal share for private cars which is slightly decreasing with a decrease of 2 percentage points (between 2012 and 2021)
- Over 2021-2041, the Assessed Case (Base Case) shows an increase in passenger car unit / hr in demand terms, from 6k,7k and 9k (in the IP, AM-peak and PM-peak respectively) to 7k, 8k and 11k
- The 2014 Traffic Forecasting Report explains
    - The forecast increase at Blackwall and Silvertown Tunnels combined was around 1,200 vehicles in the morning peak hour compared to the reference case. Most of this increase comes from the release of previously queued traffic at Blackwall and re-routeing of traffic that previously used other crossings
    - Daily (0600-2200) weekday traffic is expected to increase by around 4% northbound and 3% southbound
    - Modelling showed that across the host boroughs delays would reduce by around 8% in the morning peak and 7% in the evening peak.
    - **In other words, forecasted demand reflects a quickly growing population against a backdrop of reduced car usage**
- The 2016 Traffic Forecasting Report also looks to a low growth scenario with low car ownership
    - Under this Low Case, demand for the Blackwall Tunnel over 2021-2041 is only 3-5% lower than the Assessed Case. Actual flows are 0-5% lower than the Assessed Case.
    - In other words, **the Low Case** (S214, S234 and S215) **is not materially different to the Assessed Case**, and **not reflective as a sensitivity of the 2018 MTS's goal to reduce the modal share of cars** (inner/inner London from 20% to 10% and inner/outer London from 30% to 10% by 2041)

1. Note % increase are relative to 2011 IN Figure 5-3
2. Source: 7.9 Traffic Forecasting Report – Sensitivity Testing (April 2016)

5 Value For Money Assessment – Key Assumptions – User Charging Input Assumptions

User charging serves two purposes, to manage demand (thus limiting congestion and environmental harms) and to finance the scheme. It should be noted that enforcement income accounts for 25% of revenues in the opening year and appears to have been modelled conservatively. TfL has discretion to modify the charge to ensure objectives around congestion, resilience and environmental targets are met.

Q3C- What are the user charging inputs?

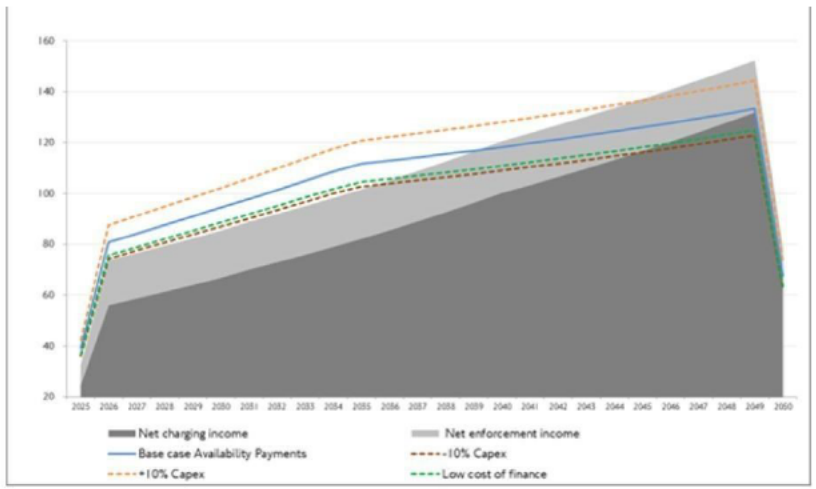
- **Both the Silvertown and Blackwall Tunnels will be tolled to avoid increased traffic flows** (and associated environmental impact) and/or traffic re-routing to the uncharged tunnel
- A secondary, but important, benefit of user charging is that users of the new infrastructure pay. Note that **user charging underpins the financeability of the scheme**.
- Exemptions exist for NHS and emergency services vehicles, while there is a 100% discount for taxis & private hire vehicles, low emission vehicles and busses & coaches. Note coaches and minibuses are included as the scheme also tries to encourage public transport commuting. 8% of all car trips were modelled as exempt.
- The application concludes that no local resident discount is appropriate – as giving free access to large neighbouring populations would undermine the demand management, coupled with the fact that only a narrow proportion of residents utilise the tunnel crossing on their commute (i.e. public transit is the preferred mode). A low-income discount for residents of host boroughs will however be implemented.
- It should be noted that enforcement income, from penalty charge notices (for delayed payment), accounts for c. 25% of revenue in the opening year (declining gradually – see light grey area in chart). It assumes 1.5% of trips pay an average Penalty Charge Notice (PCN) of £50. This is based on 50% of the Congestion Charge (CC) Zone penalty rate and reflects two conservative forecasting assumptions: (i) PCN charge is not increased by inflation in the Availability Period (i.e. the first 25 years of operation) and (ii) a lower PCN charge than for the CC zone and parking fines.
    - We note for completeness that Dartford Crossing issues PCNs to between 4-5% of users, at c. £25/PCN, and generates c.38% (2018/19 financial year) of its income from enforcement. PCN charges are currently set at £35/£70 (early payment/normal payment). **There therefore appears to be a slight element of conservativism in the modelling of enforcement income.**
- It should also be noted that the charging statement pricing is broadly consistent with the charges assumed in the 2014-2016 traffic modelling and build up of costs
- **It should be stressed that the DCO allows TfL discretion in setting the user charges in life to ensure that Project Objectives around congestion, resilience and the environment are met.**

Table 5-4- Charging Statement used in the Assessed Case[1]

Charge per trip in 2015 prices (during charging hours: 6 am to 10 pm – no charge from 10pm to 6am)			
User type	Account holder		Non account holder
Charge rates	Off peak charge	Peak charge	Headline charge
Time	Weekdays **outside of peak** period and all times on weekend	Weekday **peak periods** between 6-10am going Northbound **and** 4-7 pm going Southbound	At all times
Motorcycle , moped, motor tricycle	£1.00	£2.00	£3.00
Car and small van	£1.00	£3.00	£4.00
Large van	£1.65	£5.00	£6.00
HGVs	£4.00	£7.50	£8.50
Bus ,Coach and minibus	Zero charge (100% discount)		

Table 4-1: Charges for the assessed case

Figure 5-5 - Revenue and Availability Payment Projection (£m)[2]



1. Source- Full Business Case p.46
2. Source - Business Case p.114

5 Value For Money Assessment – Key Assumptions – Value of Time

The national value of time is used, which we understand is per TAG guidance. The actual benefit, owing to higher earnings in London, is however greater as seen in the following slide when using the London value of time.

Q3D- What are the value of time assumptions?

Key inputs (cont'd) – Value of Time

- The Assessed Case (i.e. Base Case) assumes the national value of time (VoT) as presented to the right
    - Different values of time are applied to different vehicle types, income groups and time periods
- **Sensitivities have been applied with the London Value of Time (London VoT) - reflecting a 34% uplift on the users' value of time** (corresponding roughly to a c.1.4x multiple on the median annual earnings in London versus the UK as a whole)
- As noted later**, this an area of in-built conservatism, but is by design** (i.e. Web TAG guidance specifies the use of the national value of time so as not to disadvantage development in low income areas which are likely to be less well connected)

Table 5-6 - Values of Time by group

	PPM 2021 - National VoT (2015 prices)[1]			PPM 2021 - London VoT (2015 prices)[1]		
	AM Peak	Inter Peak	PM Peak	AM Peak	Inter Peak	PM Peak
Car (low Income)	13.51	16.11	15.49	17.5	20.8	20.0
Car (medium)	18.12	19.92	19.92	23.4	25.8	25.8
Car (high income)	23.49	24.02	24.91	30.4	31.1	32.2
Car in work time	56.48	57.59	58.66	78.6	80.1	81.6
Taxi	56.48	57.59	58.66	78.6	80.1	81.6
LGV	25.40	25.40	25.40	35.3	35.3	35.3
HGVs	51.38	51.38	51.38	71.5	71.5	71.5

Adjusted for inflation
Source: 7.9 Traffic Forecasting Report – Sensitivity Testing (April 2016)

5 Value For Money Assessment – Key Assumptions – Benefits to Bus Users

Bus users are the primary beneficiaries of the scheme saving time worth c. £0.6 in PV terms. This time saving benefit is likely understated owing to conservative modelling assumptions. Note the scheme benefits not just cross-river connectivity but also same side of the river journeys.

Q3E- How are benefits to users quantified?

Changes in route network

Per TfL, Silvertown enables a step change in bus connectivity that is not possible with Blackwall Tunnel alone. The bus service upgrade package includes

- Two new routes (Eltham-Beckton and Grove Park- Canary Wharf)
- Increased frequency to the 108 from 6 buses per hour (bph) to 7.5
- Extensions of the 129 (including a doubling of frequency), 104, 309 to cover the other side of the river
- The Silvertown Tunnel as we understand it, includes a dedicated bus lane

Key elements of modelling methodology

- Looks at time saving benefits (distinguishing between in work-time and out of work time)
- Time is saved for both existing bus users (through increased frequency and capacity); and,
- Attracting new demand from other modes (note rule of half applies here)
- Only the benefit/disbenefit to the neighbouring 12 councils are quantified
- Travel times used are existing travel times for existing bus segments (e.g. 108) and SATURN software journey times for other segments – therefore Jacobs concludes the journey times are likely overstated

Summary of outputs

- The scheme gives bus passengers a time saving benefit with a PV of c. £0.6Bn
- The savings due to reductions in bus journey times are likely understated, reflecting once again an element of conservatism
- Interestingly, connectivity on the same side of the river also benefits sharply from increased frequency and capacity of bus services, with same side of the river bus users (taking c.60% of the PV benefit)
- The Assessed Case forecasts show that by 2021 c. 25-30% of person trips through the tunnels will be by bus or coach as opposed to c. 10% in 2012 (the Base Year).

Figure 5-7 – Map of bus route improvements[1]

Table 5-8 -Assessed Case – 2021 Bus User Time Benefit (minutes pre-annualization)[2]

	Cross-river		Same-side of river		Total	
	IWT	OWT	IWT	OWT	IWT	OWT
AM	481	18,323	1,892	30,721	2,373	49,044
IP	1,571	51,640	4,268	80,890	5,839	132,530
PM	1,128	29,009	1,899	34,033	3,027	63,042
Total	**3,180**	**98,972**	**8,059**	**145,644**	**11,239**	**244,616**

1 & 2 - Source: 7.8.1 Economic Assessment Report

5 Value For Money Assessment – Sensitivities

The London value of time sensitivity shows the schemes offers c. £300m of NPV upside owing to higher wages in London (this is an area of inbuilt conservatism). The Low Growth Case shows that the NPV is sensitive to traffic reductions, however the sensitivity is not representative of a world where the 2018 MTS's policy ambitions regarding modal shift are realised.

Q4A - What sensitivities have been performed?

1. The Assessed Case – Base Case on which the Economic Case has been constructed
2. Use of London Value of Time ("London VoT") – reflecting a 34% uplift on the users' value of time (corresponding roughly to a c.1.4x multiple on the median annual earnings in London versus the UK as a whole)
3. Increasing and decreasing the operating and capital costs by +/- 10%
4. High and low growth scenarios were performed (but the NPV result is not presented in the FBC, so we have included the change in NPV per the OBC)
5. Sensitivities were also applied to user charging which has not been shown

Q4B - What are the results of those sensitivities?

A. Using the London VoT, a reasonable proposition albeit East London's borough's are amongst the most disadvantaged, **reveals c. £300m of NPV upside. This is a major source of conservatism.**

B. A +10% higher cost reduces the NPV by c. £130m . The project could therefore tolerate c. 40% higher costs and still break-even from an Economic NPV perspective. Note however, that a 40% higher cost scenario could have adverse budgetary implications for TfL.

C. The Low Growth Case (with Assessed Case charges) shows **demand that is roughly 5% lower than the Assessed Case**. This was at the OBC stage (2015) thought to reduce the project NPV by c. £300m.

Q4C - And, are the sensitivities adequate specifically in regard to traffic forecast?

- **We note that broad scenarios/sensitivities analysis around modal share shifts in line with the 2018 MTS objectives have not been carried out and we have not received documentation from TfL justifying why this analysis was not possible or considered unnecessary.**
- We recognise that the modal shift goal is aspirational, that the 2018 MTS was released during the DCO process after key workstreams had been completed, that the 2018 MTS incorporates Silvertown as committed infrastructure and that there was much uncertainty around enabling policies such as Wider London Road Charging.

Table 5-9 –NPV Sensitivity Analysis Summary (2010 Prices)

£m	1. Assessed Case	2. London VoT	Low Cost (-10%)	High Cost (+10%)	Low Growth + Low Car + w/ Assessed Case Charges	High Growth + High Car w Higher Charges
With no reliability benefit						
PVB	587	917	587	587		
PVC	(67)	(67)	64	(199)		
NPV	**519**	**849**	**651**	**388**	**Δ (278)**	**Δ 155**
With reliability benefit						
PVB	776	1,106	776	776		
PVC	(67)	(67)	64	(199)		
NPV	**708**	**1,039**	**840**	**577**	**Δ (304)**	**Δ 170**

We would stress that the proposed analysis is likely to have shown that the Silvertown Tunnel was still required as the scheme's key challenges remained:

- Relieves congestion by providing capacity to meet peak demand.
- Evidence suggests that users of Blackwall are hard to shift to public transport due to occupations, dispersed trip origins/destinations, etc.
- Provides optionality if the aspirational goal is not met
- Provides the East London road network with resilience
- Accommodates future growth beyond 2041 (it is very possible that even with an aggressive modal shift by 2041 Blackwall would be at overcapacity) as the population of the three host boroughs is forecasted to rise by c. 50% (over 2011-2040)
- Creates value for users of new and existing bus routes, which in turn supports the 2018 MTS aims. The Scheme provides TfL the possibility of scaling public transport bus alternatives at scale (as double-deckers can be run with a dedicated bus lane), and if the modal shift is successful then more users would be beneficiaries of the project (as bus rather than car users)
- VfM currently incorporated multiple areas of conservatism

6

Appendix A: Business Case

6 Appendix A - Business Case Process – Project Lifecycle and Approvals

The areas considered by the Planning Inspectorate's Examining Authority were significantly challenged, lending credibility to the scheme's Options Appraisal and VfM.

Planning Inspectorate Examining Authority

Application

- The Silvertown Development Consent Order (DCO) was made by Transport for London (TfL) to the Planning Inspectorate on 3 May 2016. It was accepted for examination on 31 May 2016.

Documents

- The relevant documents included in TfL's application include:
  - Draft DCO
  - Consultation Reports
  - Environmental Statement
  - Case for the Scheme
  - Charging Statement
  - Outline Business Case
  - Traffic Impacts Mitigation Strategy
  - Economic Assessment Report
  - Transport Assessment; and
  - Traffic Forecasting report

Initial Assessment of Principal Issues

- All submissions were reviewed by the Examining Authority (ExA) who carried out an initial assessment of Principal issues. The ExA sought to test the following:
- **Air quality, noise and other environmental impacts (4.1.1)**
  - whether the scheme would materially worsen air quality in breach of statutory requirements
  - whether there would be adverse noise impacts; and
  - whether there would be any other significant effects on human health
- **Biodiversity, ecology an natural environment – (not directly relevant to scope of work)**
- **Policy and objectives (4.1.1)**
  - whether the scheme would meet the objectives set in terms of relieving congestion, improving resilience of the road and effectiveness of cross-river (cont'd)
  - Public transport and benefitting the local economy
  - Consistency of the scheme with the London Plan and local plan documents, the National Planning Policy Framework (NPPF), the National Policy Statement for National Networks (NPSNN) and other relevant policy documents
- **Redevelopment, urban renewal and other socio-economic issues (not directly relevant to scope of work)**
- **Traffic and Transport (4.1.1)**
  - the soundness of baseline data and modelling, and the appropriateness of the forecasting techniques to factor in the proposed user charging
  - the effects on public transport; and
  - the adequacy of alternatives assessed.
- **User Charging (4.1.1)**
  - if the proposed charging in both tunnels would result in the vehicles flow sought
  - concessionary charges for local residents; and
  - the economic impact on different classes of users.

DCO Examination

- The DCO Examination began on 11 October 2016. Several Issue Specific Hearings (ISHs) and Open Floor Hearings (OFHs) were held between October 2016 and March 2017, the most relevant being:
  - ISH on DCO held on 12 October 2016
  - ISH on Traffic/Transport Modelling held on 7 December 2016
  - ISH on Traffic/Transport Modelling, Forecasting and User Charging and Economic Issues held on 17 January 2017
  - Issue Specific Hearing on Air Quality, Noise and Other Environmental Issues held on 18 January 2017
  - ISH on any other outstanding issues including Environmental Matters held on 28 March 2017
- Key findings from the DCO examination as detailed in the ExA report are explored in the subsequent page.

6 Appendix A - Business Case Process – Project Lifecycle and Approvals

A further audit of the traffic modelling suite by TfL concluded that the models were suitable for assessing transport and traffic impacts. The Examining Authority's Panel examined the traffic forecasting and modelling and concluded on its appropriateness.

Hearings	Areas considered in Examination	TfL Response	Examining Authority's conclusion
Traffic/ Transport Modelling and Forecasting Hearings	TfL was questioned by over 150 IPs during the examination on the Traffic/Transport Modelling. Areas considered include (5.2.39): • the assumed Values of Time (VoT) used in modelling • failure of the traffic forecast to address both latent and induced demand and population growth • potential increase in the number of Heavy Good Vehicles (HGVs) in the area due to removal of height restrictions in the Silvertown Tunnel • inability of user charging to control traffic to the required level • The host boroughs 2015 request for an audit of the modelling suite • the level of uncertainty within traffic modelling; and • assumptions made on journey lengths, impacts on other crossings and worst case scenarios	In view of the IP's questions, TfL responded as follows: • the VoT used had to reflect the local characteristics of existing and potential users of the tunnel. Given the disparity in income levels, it was their view that the WebTAG National VoT was more representative than the London VoT. (5.2.61) • the trip frequency demand with the addition of the Silvertown tunnel scheme was estimated to be minor (5.2.54) • provided a report considering the impacts of an additional 400 HGV's would not materially change long and short term operational noise effects (5.4.29) • the ability to adjust the user charge would provide a 'very powerful means of altering the Scheme's effects, should circumstances differ from those forecast' (5.2.60) • The modelling assumptions reflect the effects that would be most likely to occur when the scheme is implemented. The modelling approach is also in accordance with industry wide guidance and good practice. (5.2.101) • TfL responded to all questions raised and also re-audited its traffic model. In 2015, TfL supported the host boroughs requests in undertaking a **further audit of the modelling suite**. This audit **concluded that the models were suitable for the purpose of assessing the traffic and transport impacts** of the scheme (5.2.27)	• The Examining Authority found that the approach used by TfL in the modelling work were in line with the appropriate DfT guidance for the Proposed Development (5.2.90) • It however acknowledged IP's concerns regarding the potential for an undefined level of errors, which could potentially lead to actual traffic levels exceeding those projected (5.2.94) • The Panel accepted that the availability of a user charging would enable any uncertainty and unexpected outcomes that might present themselves to be monitored and mitigated against. "*The availability of such a mechanism would allow the Applicant to adjust user charges to maintain equilibrium between demand and supply in relation to traffic flow through the Tunnel.*" *(5.2.95)*

6 Appendix A - Business Case Process – Project Lifecycle and Approvals

Hearings	Areas considered in Examination	TfL Response	Examining Authority's conclusion
Environmental and Air Quality Hearings	The Examining Authority and a number of IPs raised concerns about the impact of the scheme on ambient air quality, noise and health impacts Areas considered include: **Air Quality (5.3.105)** • the potential for uncertainties in modelling both traffic forecasts and in the air quality assessments • the significance of impacts of the Proposed Development on air quality in respect of specific receptors and the use by TfL of Design Manual for Roads and Bridges (DMRB) and Interim Advice Note (IAN) 174/13 for the assessment of significance • whether the Proposed Development would result in breaches of statutory requirements in relation to the EU directives **Noise (5.4.29)** • Consideration given to noise impacts of additional Over Height Vehicles (OHV) **Health Impacts (5.6.18)** • impacts of air pollutants from vehicles in terms of causing asthma and other respiratory diseases.	In view of the IP's questions, TfL responded as follows: **Air Quality** - reiterated that uncertainty is inherent in any forecasting but substantial evidence was submitted to provide assurance that it can be managed by the design of the scheme and mitigation strategy (5.3.114) - argued that the proposed development would not affect the three host boroughs Air Quality Management Areas (AQMA) (5.3.127) - TfL was also very confident that the impact of the scheme on air quality would not be significant and would not delay the date that the Greater London Urban Agglomeration will become compliant with the EU Air Quality Directive.(5.3.145) **Noise** - provided a report considering the impacts of an additional 400 OHV's would not materially change long and short term operational noise effects (5.4.29) - proposal for noise barriers submitted for specific communities (5.4.28) **Health Impacts** - Public Health England noted that following a population exposure to NO_2 or particulate matter as a result of the scheme. Also reiterated that TfL would re-run the air quality assessment prior to the scheme opening using latest evidence at the time. (5.6.20)	**Air Quality** The Examining Authority's conclusion was that there would be no significant impact on Air Quality overall, on the basis that the input data used for the air quality assessment is based on the assessed case traffic levels reflecting the scheme being operational. (5.3.159) **Noise** The Examining Authority The Panel concluded that TfL's proposed mitigation measures including low noise surfacing, barriers and mitigation during construction would be sufficient to ensure that a significant noise (5.4.44) **Health Impacts** The Examining Authority was satisfied that the scheme would not give rise to any harmful impacts upon human health (5.6.29)

6 Appendix A - Business Case Process – Project Lifecycle and Approvals

Hearings	Areas considered in Examination	TfL Response	Examining Authority's conclusion
Socio-Economic Impacts	The Examining Authority and a number of IPs raised concerns about the socio-economic impacts of the scheme (5.13.61). Areas considered include: • Concerns were raised by host boroughs and other boroughs over the effect of the scheme on certain groups in the population, notably lower income groups. • Absence of assurance that the bus routes, on which socio-economic benefits are predicated, are an integral part of the proposal • Disproportionate impact on RBG residents and businesses of paying a peak charge in both peak periods in the absence of a discount scheme within charging proposals, despite high levels of local deprivation. • IPs sought a committed and funded public transport element to a quantum that, at least, matches the public transport modal increase forecast in the Transport Assessment	In view of the IP's questions, TfL responded as follows: - the impact of the scheme on low income highway users would depend on the time of day they travel, the availability of alternative river crossing options and the frequency with which they travel (5.13.77) - projections indicate no difference in the total change in cross-river trips by low income users compared to medium and higher income users as a result of the DCO scheme. (5.13.77) - Low income residents also receive the majority of the user benefits of the DCO scheme. Although there is a forecast reduction of 550 low income cross-river highway trips, this is offset by an increase in 2,020 cross river public transport trips – a significant proportion of which are low income users.(5.13.78) - a general residents' discount for the host boroughs would significantly increase demand for use of the tunnel thereby requiring user charges to be increased to manage flows resulting in reduced user benefits.(5.13.87) - A discount would thus be limited to qualifying residents of the host borough. (5.13.88)	The Examining Authority was satisfied that the overall robustness of the economic case indicates that there would be economic benefits to society as a whole from the implementation of the scheme. (5.13.97) The Examining Authority welcomed an updated charging Policies document to be included within the DCO which granted a 50% discount on charges for qualifying residents of the host borough (5.13.89) The Examining Authority also highlighted the importance of securing bus services through the tunnels that would maximise the economic benefit to low income residents. (5.13.98)

6 Appendix A - Business Case Process – Project Lifecycle and Approvals

With regard to the options appraisal, the ExA agrees with the need for the scheme and satisfactory level of optioneering.

Hearings	Areas considered in Examination	TfL Response	Examining Authority's conclusion
Other Outstanding Issues	• **Appraisal Process –** The Examining Authority sought to understand whether TfL had properly undertaken the economic appraisal of alternatives as specified in the Treasury 'Five case model'. (4.6.35)	- TfL provided a response document which illustrated that they had only undertaken a full economic appraisal of the final two tunnel options because none of the other options met the defined key scheme objectives. (4.6.35) - The additional documents submitted also indicated that limited economic appraisals were undertaken in the elimination process of some other options, reiterating that the other options did not meet the defined key scheme objectives. (4.6.35)	The Examining Authority was satisfied that there had been sufficient assessment of alternatives to satisfy requirements within the National Policy Statement for National Networks (NPSNN) (4.3.66)

6 Appendix A - Business Case Process – Project Lifecycle and Approvals

The SoS considered that there was a clear justification for authorising the proposed development and therefore decided to accept the Panel's recommendation to grant the DCO.

Secretary of State for Transport Approval

Documents

- The Secretary of State for Transport gave consideration to:
  - the report dated 11 July 2017 of the Examining Authority, a Panel of three examining inspectors consisting of Peter Robottom, Lillian Harrison, and Austin Smyth ("the Panel") who conducted an examination into the application made by TfL for the Silvertown DCO;
  - late representations received by the Secretary of State following the close of the examination; and
  - further consultation undertaken by the Secretary of State following the close of the examination in respect of the application.

SoS's Consideration of the Panel's Report

- **Legal and Policy Context:** in line with assigning the Silvertown Tunnel development as "nationally significant", the SoS considered the application in accordance with the designated National Policy Statement for National Networks ("NSPNN").
- **Legal Agreements:** separate development consent undertakings were to be put in place between TfL and the Host Boroughs (Royal Borough of Greenwich, London Borough of Tower Hamlets and London Borough of Newham). The SoS noted that agreements had been executed for RBG and LBTH but no agreement had been reached for LBN. LBN argued that an agreement should be secured under section 106 of the Town and Country Planning Act. The SoS agreed with the Panel that an agreement under section 106 was not an absolute necessity.
- **User Charging:** The SoS agreed with the Panel that the inclusion of the full charging provisions in the DCO was appropriate and necessary to manage traffic flows and mitigate environmental concerns. It is also lawful and within the powers available to the SoS under the 2008 Act.
- **Need for the Proposed Development:** The SoS noted that whilst there were concerns from IP's, there was no challenge to the fact that Blackwall Tunnel had existing problems. The SoS agreed with the Panel that there are no reasons to disagree with the objectives set by the Applicant for identifying a solution.

SOS's Consideration of Potential Impacts on the Development

- **Traffic and Transport**
  - The SoS noted that the Panel had undertaken a detailed critique of TfL's traffic forecasting work in order to assess the reliability of the results
  - The SoS was of the view that once operational, with the user charge in place, the scheme would help reduce congestion and provide resilience for vehicles currently using the Blackwall Tunnel
- **Air Quality**
  - ClientEarth took legal action against the government in 2016 and was successful leading to the publishing of a new Air Quality Plan (AQP). This updated AQP was published after the close of the examination, it was not considered during the examination.
  - The Panel highlighted that the updated AQP would need to be taken into account in the SoS's decision
  - The SoS was satisfied with the approach taken and the assessment provided by TfL with regard to air quality and how the scheme would impact the updated AQP and the Zone Plan for the Greater London Urban area.
  - The SoS placed weight on the fact that while some receptors will experience a worsening in air quality but the scheme overall will have a beneficial impact on air quality.
- **Noise Vibration**
  - The SoS noted that TfL's Environmental Statement identified that there would not be a significant effect upon noise levels as a result of the scheme
  - The SoS noted that TfL committed to providing acoustic barriers along Seibert Road to attenuate existing noise from the A102 due to additional Over height vehicles. This is to be secured as part of a legal agreement with the RBG.
  - The SoS agreed with the Panel that the range of noise mitigation measures are sufficient to ensure that significant noise impact does not occur at ant identified noise sensitive receptors. Mitigation measures are also in line with planning policy guidance on noise.

6 Appendix A - Business Case Process – Project Lifecycle and Approvals

The SoS considered that there was a clear justification for authorising the proposed development and therefore decided to accept the Panel's recommendation to grant the DCO.

SOS's Consideration of Potential Impacts on the Development

- **Health Impacts**
  - The SoS noted that Public Health England (PHE) encouraged TfL to make continued efforts to identify air quality improvement opportunities or mitigate adverse effects.
  - The SoS further noted that TfL had addressed PHE's concerns through mitigation measures in the DCO
  - The SoS thus agreed with the Panel that the scheme would not give rise to any harmful impacts upon human health
- **Socio-Economic Impacts**
  - The SoS noted that the Host and Neighbouring Boroughs considered the implementation of local discount schemes, enhanced bus services and enhanced crossing facilities to mitigate the effect of the road user charge on lower income groups
  - The SoS agrees with the Panel that Blackwall and Silvertown tunnels need to be managed in such a way that does not induce demand. However, it was also noted that the latest version of the Charging Policies and Procedures document grants a 50% discount on charges for qualifying residents of the Host Boroughs.
  - The SoS agreed with the Panel that the same consideration given to possibly widening the local residents discounts scheme needs to be given to concession for motorcyclists.
  - The SoS concurred with the Host Boroughs' aspiration of a higher level of bus service consistent with the assessed case

SoS Decision

- The SoS considered that there is a clear justification for authorising the proposed development and has therefore decided to accept the Panel's recommendation to grant the DCO.
- The Development Consent Order was granted to TfL in a letter dated 10 May 2018.

7

Appendix B: Project Termination

7 Appendix B - Project Termination – Termination Conditions and Market Alignment

Project termination conditions include Senior Debt repayment, staff redundancy, sub-contractor losses and market value of equity or subordinated financing. The termination conditions are market standard, and designed to ensure a fair outcome where the project authority terminates for no default by the Project Co.

Background & Approach:

- Concerns have been raised by the GLA Oversight Committee on project termination conditions and costs and subsequently by the SSTC.
- This is a particularly relevant area given that Covid-19, has had an adverse impact on TfL finances and may have permanently altered transport patterns, thereby impact the Project's economics. It should be noted that the impact of Covid-19 on project economics is outside the scope of this report.
- As part of our review we have therefore made the following enquiries:

1. What are the key termination conditions and where are they located?
2. Are the termination conditions market standard (i.e. aligned to PF2)?
3. Why is termination for convenience expensive?
4. What is in the financing agreements with regard to a Voluntary Termination by TfL?
5. What are the approximate costs to terminate the Silvertown Tunnel Project Agreement today?
6. What options are currently available?

Q1: What are the key termination conditions and where are they located?

- **Methodology:** We have reviewed the termination conditions located in Schedule 27 of the Project Agreement ("PA"), and provided a brief summary of the most relevant provisions here, and a more detailed summary in Appendix C.
- **Limitation:** We only provide our high-level understanding of the termination provisions in the contract, and this understanding should be validated and substantiated by your legal counsel prior to relying on the below.
- The type of termination contemplated by the SSTC would be a termination of convenience – i.e. a Part 6 **Voluntary Termination**, which as per our understanding points to the compensation provisions in Part 1 – Compensation on Termination for TfL Default.
- Broadly the compensation amounts can be simplified into the following items:

1. **Senior Debt** Termination including (i) principal outstanding, (ii) accrued interest, (iii) swap breakage costs including market value movements (iv) make-whole costs to senior debt holders (if included in financing agreements)
2. **Redundancy** payments for *employees* of Project Co
3. **Sub-contractor breakage costs** (i.e. losses incurred by subcontractors) including materials/goods that cannot be cancelled, preparatory expenditure, demobilisation costs and redundancy payments. Note lost profits could potentially be included as "losses", and would be subject to negotiation. This point is best confirmed by your legal counsel.
4. **Market value for share capital and subordinated financing** (i.e. equity bridge loan) *under a hypothetical no termination scenario*

Q2: Are the termination conditions market standard (i.e. aligned to PF2)?

Yes, we have reviewed the standard PF2 contract template (see Appendix C) and the termination conditions in the Silvertown PA are aligned.

Q3: Why is termination for convenience expensive?

- Bidders on Public Private Partnership (PPPs) invest significant resource in bidding for projects, raising financing and constructing the project.
- Commercial parties will only invest where they believe they can recover their costs either in-life (e.g. through Availability Payments) or where Government decides to terminate for convenience.
- Conceptually, Termination for Convenience must either result in the same PV of outflows or more by the Government to the Bidder – if not the Government would simply be incentivised to terminate every agreement. This would deprive the Bidder of its economic return, through no fault of its own, and make the PPP unviable and un-investable.
- The PF2 termination conditions achieve a fair outcome by putting the Project Co into the same position had the agreement not been terminated.

> *"The objective should be to ensure that the Contractor and its financiers are fully compensated (i.e. no worse off because of Authority Default than if the Contract had proceeded as expected)" (PF2 Guidance)*

[cont'd next page]

7 Appendix B - Project Termination – Financing Agreements

Break costs on financing are primarily linked to mark to market movements ("MTM") on the interest rate swaps and make-whole costs [redacted]

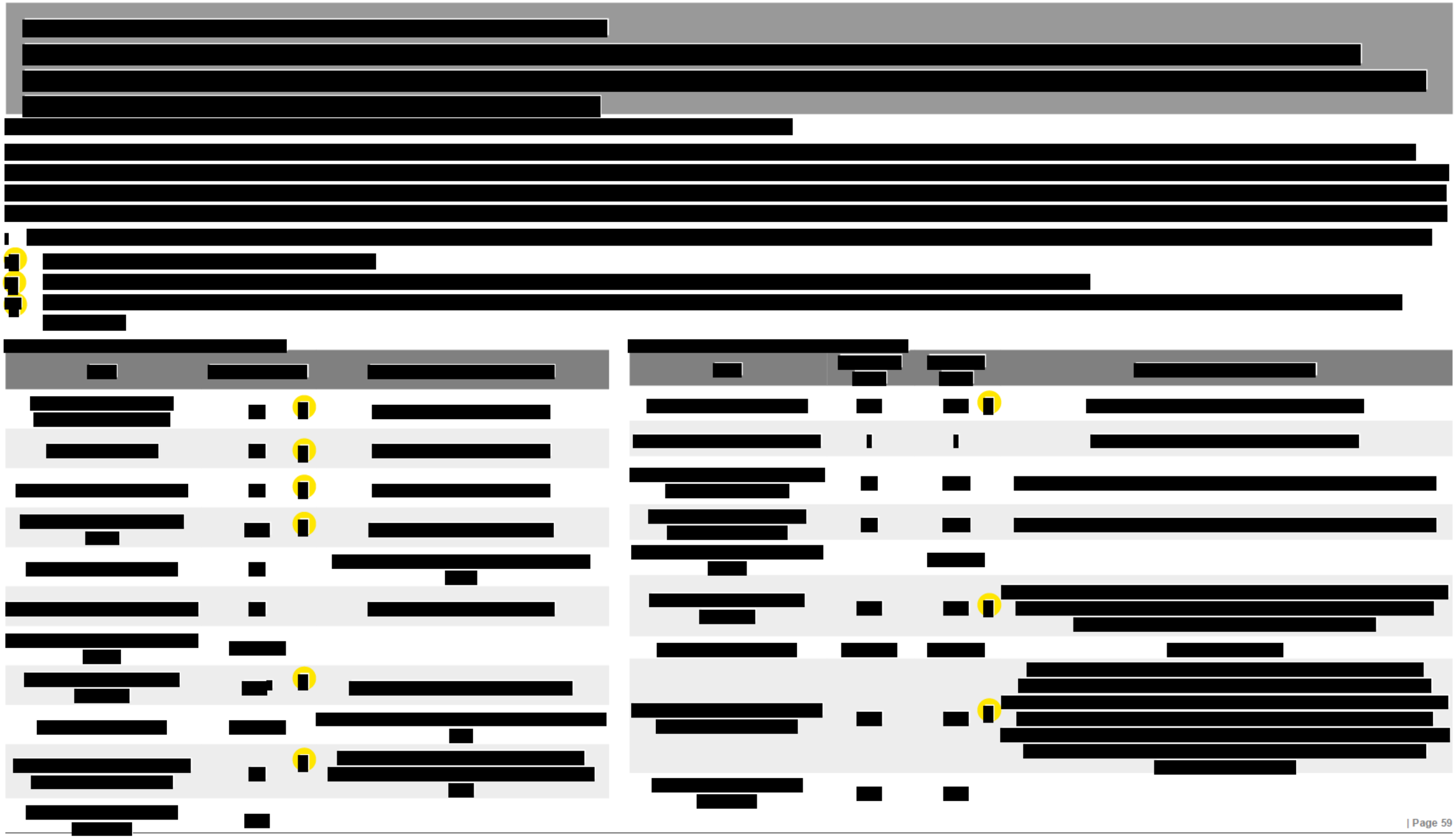
[redacted]

Q4: What is in the financing agreements with regard to a Voluntary Termination by TfL – i.e. costs of termination?

- **Methodology:** We have reviewed the five financing agreements, Master Definitions Agreements and Common Terms Agreements at a very high-level. Below we outline our understanding of the financing agreements, which should be validated with legal counsel.
- Note our findings are in line with our experience of project finance transactions.

Table 6-1 – Review of Financing Agreement termination costs

[redacted]



7 Appendix B - Project Termination - Options

Termination costs [redacted] which are commercial and market standard, make it such that termination at this very point is likely to be uneconomical. The PV of Benefits would have to be misstated by in excess of £1Bn (this would equate to eliminating all time-saving, public-transport and reliability benefits) to justify project termination. Contractual termination costs is but a single component of project termination.

Q6: What options are currently available?

Context

- If the initial VFM assessment was wrongly calculated or if changes since the calculation of VFM have adversely impacted the economic VFM, **TfL may wish to terminate or modify the current arrangement to extract better VFM based on the current situation**.
  - As we emerge from Covid-19 travel patterns (especially around commuting may be permanently changed) influencing the demand for Silvertown Tunnel;
  - Equally a more ambitious political green agenda (as envisioned in the 2018 MTS) may drive forward proposal for Wider London Road Charging, which could significantly influence demand (if also aimed at increasing the non-car modal shares);

Options

- We identify four options (on the right with their pros, cons and possible issues)

Conclusions

- We would stress that **contractual termination costs are only a single component relating to the termination and closure of the Silvertown Tunnel project**. There are a number of follow-on decisions which also need to be made with their own financial and commercial considerations.
- In summary, the **termination costs** [redacted], which are commercial and market standard, **make it such that termination at this very point is likely to be uneconomical.**
- Given an NPV (and PV of Benefits) at the FBC of between £500m and £1 Bn, **the PV of Benefits would have to be misstated by in excess of £1Bn (this would equate to eliminating all time-saving, public-transport and reliability benefits) to justify project termination**.

A. Continue with current PPP arrangement	• No termination costs • Additional piece of infrastructure addressing performance, resilience and growth goals • TfL remains liable to make availability payments for 25 years • **At a very high-level, project continuation is likely to be the best economic option, given that the PV of Benefits would have to be reduced by c. £1 Bn (either through mis-estimation of the Benefits initially or changes related to Covid-19). It should be noted that the PV of Benefits in the FBC were estimated between c. £500m and £1 Bn.**
B. Terminate PPP arrangement and disband the project	• Termination costs [redacted] • Clean-up costs on partially constructed asset • Loss of ability to raise toll revenue • Liability to make availability payments removed • Issues that project was designed to address remain outstanding • **Unlikely to be good VFM given [redacted] of possible sunk costs in a project of an NPV of c. £500m-£700m (i.e. if the assumptions in the FBC still held the project would now have an Economic NPV of over £1 Bn). Further economic modelling would be needed to confirm this**
C. Terminate PPP agreement and pick up the construction of the project	• Termination costs • TfL may re-incur EPC and subcontractor costs • Significant capital cost will need to be funded • Ability to raise toll revenue is preserved • Liability to make availability payments removed • Issues that project was designed to address are resolved • **Unlikely to be good VFM given that TfL is likely to first pay contractor termination, pays the equity investors the value of their shares today, and must then recontract with an EPC for the same project**
D. Amend the scope of the project	• Poss ble termination costs • Significant Change negotiation costs and considerations around planning permissions • TfL may re-incur EPC and subcontractor costs • Issues that project was designed to address may or may not be resolved • **It may be possible to repurpose the Silvertown Tunnel to yield a different outcome. How the tunnel could be repurposed (e.g. cycle lanes, public transport, etc.) is outside the scope of our review.**

8

Appendix C: Termination Conditions

8 Appendix C: Termination Conditions

The Voluntary Termination conditions are aligned to the PF2 guidance and therefore market standard

Methodology:

- We have take the Standardisation of PF2 Contracts Guidance from December 2012 (Section 23.1.3), and
- Compared it to the Silvertown Project Agreement (Schedule 27)
- This is to verify whether the Voluntary Termination conditions are market standard
- Other termination conditions (i.e. on Project Co Default, for Corrupt Gifts & Fraud, for Breach of Refinancing and on Force Majeure were briefly reviewed but have not been presented below

Findings

- **The Voluntary Termination conditions are aligned to the PF2 guidance and therefore market standard**
- From a high-level review of the other termination scenarios, the wording was also aligned

Guidance Issue	Guidance	Silvertown PA Commentary	Alignment to standard PF2
Equity & Junior Debt - 23.1.3.2-23.1.3.6 and 23.1.3.9	*23.1.3.2* *The Contractor should be required to specify its preferred method of calculation of equity return at the time of its bid. It should choose between the level set out in the original base case, the market value at the time of termination and the original base case return from the Termination Date* *Excerpts from 23.1.3.6 – Market Value Option* • *Compensation to reflect the market value of both equity and Junior Debt for the entire duration of the Contract. The purpose is to allow the equity investors to take the full benefit of good Contractor performance but bear the risks associated with poor performance.* • *The Authority pays an amount for both equity and Junior Debt based on their market value on a going concern basis immediately prior to the termination i.e. the amount for which the equity and Junior Debt could have been sold to a willing buyer at the relevant date (the calculation being based on the assumption that there had been no Authority Default and that both equity and Junior Debt were freely transferable).* • *The market valuation will reflect the value of anticipated future cashflows (both revenue and costs); risk allocation under the Contract; and market appetite for Contracts of a similar nature. It will also take into account the value of the Assets (including any cash balances) held by the Contractor at the Termination Date.* *Required Drafting for Market Value Option* *[the aggregate amount for which the share capital of the Contractor and the amounts outstanding under the Subordinated Financing Agreements could have been sold on an open market basis based on the Relevant Assumptions.*	Schedule 27 – Part 1 (which is referenced in Part 4) para 1.2(c) uses the market value (on equity and junior debt) model wording verbatim	Yes
Redundancy Costs & Sub-Contractors 23.1.3.7	*The Contractor is likely to incur redundancy costs as a result of the termination of the Contract and, to the extent that these will occur, these should be included in the compensation payable by the Authority. Similarly, the Sub-Contractors may incur losses as a direct result of the early termination of the Contract (e.g. in respect of cancellation of orders for materials and goods). The Contract should specify those heads of loss which the Authority will pay to the Contractor, on account of the Sub-Contractors' losses. If the Authority proposes to offer compensation to cover the Sub-Contractors' future loss of profits, it should limit the period of time for which it will pay for such future loss (e.g. for a one year period from termination) and satisfy itself (through conducting due diligence over Sub-Contracts or otherwise) that the quantum of the loss of profit and other consequential losses and breakage costs are reasonable and appropriate* *Required Drafting* *redundancy payments for employees of the Contractor that have been or will be reasonably incurred by the Contractor as a direct result of termination of this Contract and any Sub-Contractor Breakage Costs*	Schedule 27 – Part 1 (which is referenced in Part 4) para 1.2(b) uses the model wording verbatim	Yes

8 Appendix C: Termination Conditions

The Voluntary Termination conditions are aligned to the PF2 guidance and therefore market standard

Guidance Issue	Guidance	Silvertown PA Commentary	Alignment to standard PF2
Asset-ownership – 23.1.3.8	The Authority should also decide what happens to the Assets following a compensation payment. As the Authority has fully compensated the Contractor, they should usually revert to the Authority. Where the assets may have a significant residual value and the Contractor retains the assets then different considerations will apply (see, for example, Section 24.6 (Retention of Assets by Contractor on Termination)). *Required Drafting* On payment of the amount referred to in paragraph (a) above, the Authority shall have the option to require the Contractor to transfer its right, title and interest in and to the Assets to the Authority or as directed by the Authority.	Wording is not copied verbatim; however main Project Agreement Paragraph 38.2 specifies that on termination shall transfer all "rights, title and interest in and to the Assets"	Yes
Additional Permitted Borrowing / Increase in Default Termination Sum – 23.1.3.9	In certain termination scenarios, the amount payable will be adjusted for any Additional Permitted Borrowing advanced by Senior Lenders (on a rescue refinancing) – see Section 24.3 (Certainty of Compensation Payment Amounts and Changes to Financing Agreements) and definitions in Schedule 1 *Required Drafting* *If the aggregate of the amounts referred to in paragraphs (a)(i) and (a)(iii) is less than the Revised Senior Debt Termination Amount, then the Authority Default Termination Sum shall be increased so that it is equal to the aggregate of the Revised Senior Debt Termination Amount and the amount referred to in paragraph (a)(ii) provided always that: (i) the amount referred to in paragraph (a)(ii) shall only be paid to the extent that the Contractor has demonstrated to the reasonable satisfaction of the Authority that the amount will not be paid in payment (in whole or in part) of any Distribution; and (ii) if, at the time of termination, there are any Additional Permitted Borrowings outstanding, no Sub-Contractor Breakage Costs shall be paid in respect of any Sub-Contract in circumstances where there is an event of default under such Sub-Contract which would entitle the Contractor to terminate such Sub-Contract.*	Schedule 27 – Part 1 (which is referenced in Part 4) para 2 reflects the same wording with modified section references	Yes
Base Senior Debt – Required Drafting	23.1.3.1 The objective should be to ensure that the Contractor and its financiers are fully compensated (i.e. no worse off because of Authority Default than if the Contract had proceeded as expected). 23.1.3.9 below the Authority Default Termination Sum shall be an amount equal to the aggregate of: (i) the Base Senior Debt Termination Amount	Schedule 27 – Part 1 (which is referenced in Part 4) para 1.2(a) specifies that the Base Senior Debt Termination Amount is payable	Yes

8 Appendix C: Termination Conditions

The Voluntary Termination conditions are aligned to the PF2 guidance and therefore market standard

Guidance Issue	Guidance	Silvertown PA Commentary	Alignment to standard PF2
Distributions – Required Drafting	*Required Drafting* If a Distribution is made whilst any Additional Permitted Borrowing is outstanding and the Contractor has wilfully, or through gross negligence, failed to comply with its obligations under Clause 11(d)(iv)(A) of the Direct Agreement then in addition to the deduction of the Distribution referred to in paragraph (v) of the definition of Revised Senior Debt Termination Amount, the Authority shall be entitled to set off the value of that Distribution a second time against the Authority Default Termination Sum, provided that the amount of the Authority Default Termination Sum will never be less than the Revised Senior Debt Termination Amount.	Wording is not copied verbatim; however largely similar in Schedule 27 Part 1 Para 3	Yes
Overstatement Cash Balances – Required Drafting	*Required Drafting* If the Contractor has wilfully or through gross negligence failed to comply with its obligations under Clause 11(d)(iv)(B) of the Direct Agreement and there has been an overstatement of the cash balances by the Contractor as at that date which has caused the Authority to reasonably believe that it would be required to pay a lesser sum at the Termination Date than it actually is required to pay under the terms of this Clause 23.1.3, then the Authority Default Termination Sum, shall be reduced by the amount of such overstatement (to the extent such overstatement is still applicable at the Termination Date), provided that the amount of the Authority Default Termination Sum will never be less than the Revised Senior Debt Termination Amount.	Wording is not copied verbatim; however largely similar in Schedule 27 Part 1 Para 3	Yes

8 Appendix C: Termination Conditions

The Voluntary Termination conditions are aligned to the PF2 guidance and therefore market standard

Guidance Issue	Guidance	Silvertown PA Commentary	Alignment to standard PF2
"Losses" - Definition	*Required Drafting* *means all damages, losses, liabilities, costs, expenses (including legal and other professional charges and expenses), and charges whether arising under statute, contract or at common law or in connection with judgments, proceedings, internal costs or demands;*	Included verbatim on p.205 of Main Project Agreement	Yes
"Relevant Assumptions" - Definition	*Required Drafting* *means the assumptions that the sale of the Contractor is on the basis that there is no default by the Authority, that the sale is on a going concern basis, that no restrictions exist on the transfer of share capital, that no Additional Permitted Borrowing has taken place and therefore that the effect of the Additional Permitted Borrowing on the calculation of such amount is disregarded but that otherwise the actual state of affairs of the Contractor and the Project is taken into account;*	Included verbatim on p.221 of Main Project Agreement	Yes
Sub-Contractor Breakage Costs - Definition	*Required Drafting* means Losses that have been or will be reasonably and properly incurred by the Contractor as a direct result of the termination of this Contract, but only to the extent that: (a)the Losses are incurred in connection with the Project and in respect of the provision of Services or the completion of Works, including: (i) any materials or goods ordered or Sub-Contracts placed that cannot be cancelled without such Losses being incurred; (ii) any expenditure incurred in anticipation of the provision of services or the completion of works in the future; (iii) the cost of demobilisation including the cost of any relocation of equipment used in connection with the Project; and (iv) redundancy payments; and (b) the Losses are incurred under arrangements and/or agreements that are consistent with terms that have been entered into in the ordinary course of business and on reasonable commercial terms [and [ ]];15 and (c) the Contractor and the relevant Sub-Contractor has each used its reasonable endeavours to mitigate the Losses;	Included verbatim on p.231 of Main Project Agreement	Yes

8 Appendix C: Termination Conditions

The Voluntary Termination conditions are aligned to the PF2 guidance and therefore market standard

Guidance Issue	Guidance	Silvertown PA Commentary	Alignment to standard PF2
"Losses" - Definition	*Required Drafting* *means all damages, losses, liabilities, costs, expenses (including legal and other professional charges and expenses), and charges whether arising under statute, contract or at common law or in connection with judgments, proceedings, internal costs or demands;*	Included verbatim on p.205 of Main Project Agreement	Yes
Base Senior Debt Termination Amount - Definition	means, subject to Clause 12.2 (No increased Liability from Changes to Project Documents or Financing Agreements): (a) all amounts outstanding at the Termination Date, including interest and Default Interest accrued as at that date, from the [Contractor and/or the] Issuer to the Senior Lenders in respect of Permitted Borrowing (other than in respect of Additional Permitted Borrowing) and (b) all amounts including costs of early termination of interest rate hedging arrangements and other breakage costs (including for the avoidance of doubt any Make-Whole Payment), payable by the [Contractor and/or the] Issuer to the Senior Lenders as a result of a prepayment in respect of Permitted Borrowing (other than in respect of Additional Permitted Borrowing), or, in the case of early termination of interest rate hedging arrangements only, as a result of termination of this Contract, subject to the [Contractor, the] Issuer and the Senior Lenders mitigating all such costs to the extent reasonably poss ble [(unless the amount, or the formula for determining the amount, of such costs is fixed in advance under the terms of the relevant Senior Financing Agreements)], less, to the extent it is a positive amount, the aggregate of (without double counting in relation to the calculation of the Base Senior Debt Termination Amount or the amounts below): (i) all credit balances on any bank accounts (but excluding the Joint Insurance Account) held by or on behalf of the Contractor and/or the Issuer [and/or Holdco]11 on the Termination Date; (ii) any amounts claimable on or after the Termination Date in respect of Contingent Funding Liabilities; (iii) all amounts, including costs of early termination of interest rate hedging arrangements and other breakage costs, payable by the Senior Lenders to the [Contractor and/or the] Issuer as a result of prepayment of amounts outstanding in respect of Permitted Borrowing (other than in respect of Additional Permitted Borrowing), or, in the case of early termination of interest rate hedging arrangements only, as a result of termination of this Contract; and (iv) all other amounts received by the Senior Lenders on or after the Termination Date and before the date on which any compensation is payable by the Authority to the Contractor as a result of enforcing any other rights they may have	Included in very similar language (e.g. Senior Lenders replaced by Senior Funders) on p.178-179 of Main Project Agreement	Yes

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