OBJ3/P4/B

Transport and Works (Inquiries Procedure) Rules 2004

Proposed London Underground (Victoria Station Upgrade) Order

LAND SECURITIES PLC AND OTHERS (Objector No. 3)

REBUTTAL PROOF OF EVIDENCE of ROY MCGOWAN of

STEER DAVIES GLEAVE

1 INTRODUCTION

1.1 This rebuttal addresses the Proofs of Evidence submitted by LUL on 26th September 2008 in relation to the Victoria Station Upgrade Public Inquiry. Specifically I focus on the operational, demand and transport aspects of the Proofs of Evidence of Phil McKenna (Scheme needs and Benefits **[LUL.P1, P1S and P1A]**, Alan Finch (Scheme Selection) **[LUL.P3, P3S, P3A]** and Richard Bland (Surface Transport) **[VSU.P7, P7S and P7A]**. I also address further information provided by LUL on 25th September 2008 for PEDROUTE Modelling during the AM peak period, and some planning policy issues raised by Mr Philip Rowell on behalf of LUL.

1.2 This Rebuttal Proof of Evidence includes the following sections:

1.2.1 Section 1 - Introduction

1.2.2 Section 2 – TWAO PEDROUTE modelling provided by LUL 25th September 2008;

1.2.3 Section 3 – Development of Land Securities scheme options;

1.2.4 Section 4 – PEDROUTE Modelling for TWAO and for LS Options;

1.2.5 Section 5 – Victoria Transport Interchange (VTI) and Victoria Station Upgrade (VSU) construction traffic and transport Interface;

1.2.6 Section 6 – Business Case Comparisons;

1.2.7 Section 7 – Review of LUL Planning;

1.2.8 Section 8 - Review of LUL Surface Transport;

1.2.9 Section 9 – Review of LUL Scheme Selection;

1.2.10 Section 10 – Review of LUL Scheme Need and Benefits;

1.2.11 Section 11 - Summary and Conclusions.

Overview

1.3 I have only dealt with selected points in the evidence of Mr McKenna, Mr Finch, Mr Bland and Mr Rowell, where I consider it necessary to respond. Where I have not dealt with matters contained within their evidence, this does not mean that I accept the points they have raised.

2 TWAO PEDROUTE MODELLING FROM LUL 25TH SEPTEMBER 2008

Introduction

2.1 This section describes the proposed operation of the LUL TWAO proposal for Victoria Station Upgrade. Following a meeting with Phil McKenna and Alan Kerr of LUL on 25th September 2008, Steer Davies Gleave were issued with a CD containing LUL's PEDROUTE modelling for the AM peak period only which we had first requested in January 2008. The model enables us to examine how LUL plan to operate the station once the TWAO scheme is built. Previous to this model our understanding was limited to assumptions which were based only on the 2016 Interchange Matrix **[LUL CD, Information for Land Securities, 20-02-2008]**, and additional supplementary information contained in the ES **[VSU.A13]** and Technical Appendix C 'Scheme Option Selection' of the Supplementary Environmental Statement (SES) provided in September 2008.

Previous SDG Assumptions

2.2 Details of the assumptions made by SDG prior to the receipt of these models are documented in my Proof of Evidence **[OBJ3/P4]**, in particular in Appendix 13. These assumptions were logical and were based on the limited information provided by LUL before the exchange of Proofs on 26th September 2008, aside from a general demand Origin-Destination matrix **[LUL CD, Information for Land Securities, 20-02-2008]**.

Information provided by LUL

2.3 On 25th September 2008 LUL provided a CD which contained two models of Victoria Station. The first model was of the existing station layout and the second model was of the proposed TWAO VSU station layout.

2.4 In addition to the models we were provided with a matrix for the year 2016 for the 07:00-10:00 period in the existing station. This matrix contained 10 Origin-Destination points. A further matrix for 07:00-10:00 was developed for the proposed TWAO VSU station featuring 11 Origin-Destination Points, incorporating the proposed Northern Ticket Hall. The total demand remains consistent with the existing matrix, however the Origin-Destination profiles vary to account for the new Northern Ticket Hall. These matrices are included within a .trn input file which includes an OD matrix, arrival profiles, characteristics of Victoria and District & Circle Line trains (D&C) and entry points.

2.5 On top of the TWAO base matrix for 2016, there are 7 additional files that include a Demand Scale parameter. This parameter increases the demand in 5% increments in each folder. For example, in the base matrix the Demand Scale is 1.00, whilst Demand Scale is 1.35 in the 2016+35% matrix. 1.35 is the highest demand scale included within the modelling.

2.6 The Demand Scale parameter is found in the .run input file which also includes details on the Value of Time, speed flow and capacity for passageways, escalators etc.

2.7 No further files were included in the information sent to SDG on 25th September 2008 such as PM peak demand matrices or any output files. No sensitivity models are included, for example running all three central interchange escalators up from the Victoria Line, despite these being referred to in McKenna's PoE as a critical method of operation in the future.

2.8 PM peak demand matrices and Pedroute files were subsequently provided by LUL on Tuesday 21st October 2008 but this was not in time to be of use in this rebuttal evidence.

Critical Model Assumptions

PAL 22

2.9 During the meeting with LUL on 25th September 2008 it was learned that the link referred to in my proof **[OBJ3/P4]** as 'Tunnel A' (the connection between the D&C EB link and the northern section of the PAL) is referred to within LUL documentation as 'PAL 22'.

2.10 PAL 22 is included in the TWAO Option, with neither of the alternative LandSec Option 1A or Option 1 including this link although Land Securities Option 2 and "Cut and Cover" does include the PAL 22 link. As a result, it is important to determine the way this link is proposed to be used and the number of passengers who are likely to use it.

2.11 Using the design year of 2016+20% **[VSU.A13, Table 2-2],** PAL 22 is not used at all in the LUL PEDROUTE model over the three hours of the AM peak from 07:00-10:00. No passengers are routed along this route, and indeed Para 12.5.7 of Phil McKenna's Proof of Evidence states that PAL 22 will only be used for 'overflow'.

TABLE 1 3 HOUR AM PEAK PASSENGER FLOW - LUL TWAO PEDROUTE MODEL - PAL 22

PEDROUTE Demand Profile	Passenger Flow PAL 22
2016	0
2016 + 10%	0
2016 + 20%	0

Link Between Central Interchange Escalators and PAL (Tunnel B)

2.12 It is also important to determine how the link between the central interchange Escalator and the PAL will operate. This link is referred to as 'Tunnel B' in my proof **[OBJ3/P4]** and 'PAL 7' in the TWAO Environmental Statement **[VSU.A13, Plan E11]**. One assumption I considered in my

analysis was that this link would remain closed under normal operating circumstances, in order to divert more passengers via the new northern escalators and achieve a more even spread of passengers along the Victoria Line platforms.

2.13 Instead of adopting this approach, LUL plan to open Tunnel B (also known as PAL 7) under normal operating circumstances for one-way flows heading towards the central interchange escalators and subsequently on to the Victoria Line platforms. This operation leads to an imbalance between demand for the central interchange escalators and the new northern escalator bank.

TABLE 2 3 HOUR AM PEAK PASSENGER FLOW – LUL PEDROUTE MODEL – 'TUNNEL B'

PEDROUTE Demand Profile	Passenger Flow
2016	8406
2016 + 10%	8431
2016 + 20%	8935

Northern Section of PAL

2.14 The northern section of the PAL is infrequently used in the LUL PEDROUTE modelling, even in 2016+20%. The LUL models show approx 1,100 passengers over three hours in the AM peak travelling north only along this section of the route. This route provides an alternative should congestion occur on 'Tunnel B' (also known as PAL 7). Passengers would also be routed along this section were PAL 22 to be opened.

2.15 Of the 1,100 passengers heading north to the northern escalators, 92% will have come from the southern ticket hall, with the remaining 8% coming from the Westbound D&C platform.

TABLE 3 3 HOUR AM PEAK PASSENGER FLOW - LUL PEDROUTE MODEL - NORTHERN PAL

PEDROUTE Demand Profile	Passenger Flow
2016	0
2016 + 10%	704
2016 + 20%	1130
2016 + 35%	5903

Access to and from D&C Eastbound Platform

2.16 There are currently two tunnels linking the Eastbound D&C platform with the central interchange escalators. Following VSU, LUL propose that that northern most of these links is made one-way only for passengers heading towards the central interchange escalators.

2.17 The link to the south of the existing link will be reconstructed incorporating step free access and will also be used as a one-way link in the opposite direction for passengers heading to the D&C Eastbound from the central interchange escalators.

2.18 It should be noted that all of the LandSec options have provision for these links to and from the District and Circle westbound platform and can be managed in the same way as the LUL TWAO scheme, or using other management options as required.

Access to and from D&C Westbound Platform

2.19 There is currently one tunnel linking the westbound D&C platform with the central interchange escalators. Following VSU, LUL propose that this link is made one-way only for passengers heading towards the westbound D&C platform from the central interchange concourse.

2.20 A new link to the south of the existing link will be used as a one-way link in the opposite direction for passengers heading to the central interchange escalators from the westbound D&C platform. Passengers are directed via the southern part of the PAL and access the central interchange escalators via Tunnel B (also known as PAL 7).

2.21 It should be noted that all of the LandSec options have provision for these existing and proposed links with the D&C platforms and can be managed in the same way as the LUL TWAO scheme.

Operation of Central and Northern Escalators

2.22 As mentioned earlier in this section, the way the station is proposed to be managed will likely see a significant imbalance between the level of use of the central interchange and northern escalators. This imbalance is shown in Tables 4 and 5.

TABLE 4 3 HOUR AM PEAK PASSENGER FLOW - LUL PEDROUTE MODEL - NORTHERN ESCALATORS

PEDROUTE Demand Profile	Passenger Flow - Up	Passenger Flow - Down	Passenger Flow - Total
2016	8017	1104	9121
2016 + 10%	8789	1962	10751
2016 + 20%	9551	2462	12013

TABLE 5 3 HOUR AM PEAK PASSENGER FLOW - LUL PEDROUTE MODEL - CENTRAL INTERCHANGE ESCALATORS

PEDROUTE Demand Profile	Passenger Flow - Up	Passenger Flow - Down	Passenger Flow - Total
2016	11218	13577	24795
2016 + 10%	12304	14085	26389
2016 + 20%	13547	14972	28519

Further Observations

2.23 At the meeting with LUL on 25th September 2008 it was stated by Phil McKenna that when demand for the STH exceeds capacity, many passengers wishing to access the Victoria Line would divert via the D&C ticket hall. This trend is not represented in the future scheme LUL PEDROUTE modelling with all STH passengers using either the existing southern escalators or the new escalators leading down to the PAL in order to access the Victoria Line.

2.24 The LUL PEDROUTE model for the existing station does not reflect that passengers travelling from the STH to the Victoria Line may route via the D&C Ticket Hall, so if this does occur then the model is not wholly representative of existing conditions.

2.25 With the exception of the modest amount of (1130 in 2016+20%) passengers who are routed by PEDROUTE to use the northern section of the PAL in the three hour AM peak, the northern escalators are exclusively for the use of passengers travelling between the Victoria Line platforms and the NTH (and vice-versa). Subsequently, the issue of crossed path movements as referred to in my proof of evidence **[OBJ3/P4, Section 6.30-6.40]** is much less pertinent due to these now known reduced flows following the LUL meeting on 25th September 2008.

2.26 In the LUL PEDROUTE all passengers from the Victoria Line travelling to the D&C use the Central Escalator Concourse rather than the PAL, and all passengers from the Victoria Line travelling to the STH use the southern escalators rather than the PAL.

2.27 There is no physical barrier preventing passengers from the Eastbound D&C routing along PAL 22, instead they choose not to in the PEDROUTE model due to the increased walking time via the northern escalators.

2.28 Passengers heading north along the southern section of the PAL are also free to choose whether to turn left along Tunnel B (also known as PAL 7) to the central interchange concourse or whether to continue north along the PAL to the northern escalators. Increased walk time influences the decision.

2.29 In his Proof of Evidence, Phil McKenna states in para 15.8.5 **[LUL.P1]** that "when the demand level rises by more than 10% above the 2016 level, escalators 4, 5 and 6 (i.e. the central interchange escalators) are all set to up". The PEDROUTE models that have been issued do not include this scenario, with currently only two of the central interchange escalators heading up from the Victoria Line and one still heading down.

2.30 In Mr McKenna's Appendices to Proof of Evidence, Figures 11a-11f **[LUL.P1A]**, there is nothing to suggest that there are likely to be unacceptable levels of congestion in the 2016+10% scenario based on the Service Factors. Therefore there is no clear justification that has been presented to confirm the central interchange escalators would need to be set to 3 up for 2016 + 10%, and therefore the need for PAL 22 is questionable.

2.31 However, in light of Mr McKenna's comment **[LUL.P1, paragraph 15.8.5]** and with the recent provision by LUL of the PM Peak files on the 21st October 2008 we are currently reviewing the LUL PEDROUTE modelling further.

Conclusions

2.32 LUL propose to manage the Victoria underground station post VSU using one-way links and reducing the number of crossed path movements. The LUL PEDROUTE modelling puts into question the need for the provision of PAL 22 as there is no flow assigned to this link in the files provided by LUL on 25th September 2008 even when using 2016+20% demand.

2.33 There is also a question over the demand for the section of the PAL between the central interchange concourse and the northern ticket hall. In the 2016+20% demand scenario only 1,100 passengers are observed in the LUL PEDROUTE model to travel the full distance along the PAL. Considering the 38% weighting that Journey Time has within the LUL business case, the longest journey in terms of distance is along the length of the PAL. With that in mind, the fact that only around 1% of the total demand within the underground station in 2016+20% observed in the LUL PEDROUTE model is likely to make the journey along the full length of the northern PAL this appears to decrease the significance of applying the 38% weighting for this particular measure.

2.34 SDG's assumptions included in my proof **[OBJ2/P4]** indicate that crossed path movements would be greatly reduced in the LandSec Options 1 and 1A. Whilst this is still the case, the small demand arriving at the northern escalators from the PAL in the TWAO scheme as modelled by LUL in PEDROUTE is likely to decrease the significance of this point. The LUL

PEDROUTE model suggests that PAL 22 is not necessary in terms of accommodating demand up to 2016+20%, and that the northern section of the PAL is expected to be used by only around 1% of all passengers using the station in the peak hours.

3 DEVELOPMENT OF ALTERNATIVE LAND SECURITIES SCHEME OPTIONS

3.1 Following the LUL TWAO VSU application in November 2007, Land Securities have subsequently developed alternative schemes to the TWAO scheme and investigated the engineering and operational implications of alternatives to the TWAO proposals, particularly with regard to the Paid Area Link (PAL). The alternatives developed by Land Securities have a much reduced impact on the VTI development scheme and hence potential delay on the redevelopment of the Victoria area whilst still achieving the objectives and delivering the benefits set out by LUL for VSU.

3.2 There are four Land Securities alternative schemes:

3.2.1 Land Securities Option 1 – via VSU NTH.

3.2.2 Land Securities Option 1A - via VSU NTH.

3.2.3 Cut-and-Cover construction of TWAO.

3.2.4 Land Securities Option 2 – via VTI2 Basement.

3.3 Land Securities Options 1 and 2 were put forward for examination in March 2008, and further details of these options were submitted in the 'VSU PAL Engineering, Operational and Demand Case' joint report submitted by Steer Davies Gleave and Arup on behalf of Land Securities in August 2008.

3.4 Since August 2008, Arup further developed these Options resulting in the addition of the two further Options, 'Cut and Cover construction' and 'Land Securities Option 1A' which were presented in Land Securities Proofs **[OBJ3]** on 26th September 2008.

3.5 Following additional information provided by LUL on 25th September 2008, the alignment of LUL Option 1A has been slightly amended in order to accommodate constraints expressed by LUL and to retain as much of the engineering method of the TWAO Scheme where it crosses the District and Circle line as possible.

3.6 As a result of this change in alignment, the walk distance of Land Securities Option 1A has been increased from 207m to 213m. This marginal increase in length results in a 5 second increase in free flow walk time along the PAL to 2mins 39secs. (using the methodology set out in **[OBJ3/P4, para 6.28]**). This is considered similar to the revised TWAO scheme, and is the same walk time as the original TWAO Scheme submitted in 2007 which at that time was considered an acceptable length for PAL by LUL.

3.7 Axonometric PEDROUTE plans for the TWAO and Land Securities options schemes are shown in **Appendix 1.**

4 PEDROUTE MODELLING TWAO AND FOR LS OPTIONS

4.1 We have modelled in PEDROUTE Option 1A. Appendix 1b shows the layout of Option 1A which differs from the TWAO scheme in as far as PAL 22 is not provided and the northern section of the PAL from Tunnel B to the northern ticket hall is re-aligned. Therefore within this option the central escalators are required to operate as 2 up 1 down. Appendix 2 of this report shows the congestion density levels in the Option 1A station for 2016 for 15 minute time slots at 08.30, 08.45, 09.00, 09.15, 09.30 and 09.45. The Service Factors figures are comparable with Mr McKenna's Appendices to Proof of Evidence, Figures 11a-11f, and show the same level and locations of congestion within the station.

4.2 This evidence suggests that Option 1A produces similar Service Factors as the TWAO scheme and therefore operates with similar levels of congestion for 2016+10% and 2016+20%.

5 VICTORIA TRANSPORT INTERCHANGE (VTI) AND VICTORIA STATION UPGRADE (VSU) INTERFACE

VSU Construction

5.1 The LUL Revised Transport Assessment (RTA) submitted as part of the Supplementary Environmental Statement **[VSU.A31]** replaces the original Transport Assessment submitted in November 2007. It states that the utility diversion and construction works will have an impact on the road network, reducing capacity for both pedestrians and traffic, and requiring a diversion for general traffic away from Wilton Road. As well as capacity issues, a number of signalised junctions will be affected, requiring temporary changes to their layout and/or method of control.

5.2 The construction methodology in the SES **[VSU.A31]** is substantially the same as the original Environmental Statement **[VSU.A13]**, the main changes and effects on the transport network that will affect surface transport including construction vehicles are described below.

5.3 The SES describes the locations of the worksite locations together with key construction activities for each site **[VSU.A31, Transport Assessment Section 12.3]**. In short there are two primary worksites located at Bressenden Place for the Northern Ticket Hall (NTH) and at Wilton Road for the Southern Ticket Hall (STH) **[VSU.A31, Transport Assessment, Section 12.4]**. The former will involve the re-alignment of Bressenden Place and the closure of the eastern end of Allington Street whilst during construction of the STH Wilton Road will be closed initially for general traffic except taxis and buses then followed by a full closure to all traffic. Secondary worksites are located at Allington Street, Victoria Street and Vauxhall Bridge Road **[VSU.A31, Transport Assessment, paragraph**

12.5.1].

5.4 Allington Street (east) will be temporarily closed for all traffic for a nine month period. Two junctions on Vauxhall Bridge Road will require modifications to accommodate temporary closures; these are Vauxhall Bridge Road/Wilton Road and Vauxhall Bridge Road/Neathouse Place.

5.5 Allington Street (south), as referred to in my POE **[OBJ3/P4, paragraph 2.19]**, will be closed at some stage of the VSU construction works in addition to the eastern section. Chapter 18 of the SES **[VSU.A31, paragraph 18.2]** states that during the proposed closure of the southern arm of Allington Street taxis will be required to access the proposed taxi rank on Allington Street (West).

5.6 Various changes and diversions will be in place throughout the construction period and a general diversion for all non-local traffic is shown in Figure RTA_12.1.1 **[VSU.A31, Transport Assessment]**. This will result in the removal of all traffic except buses and taxis from Wilton Road and will have an immediate effect in reducing traffic flows adjacent to the existing rail station. Table 12.2.1 and Figures RTA_12.2.1 and 12.2.2 show a summary of the key construction events and associated traffic management measures respectively.

5.7 In summary, the proposed traffic management measures include the closure of Allington Street (east) for all vehicles for nine months with a contra-flow bus lane eastbound on Victoria Street. Allington Street (south) will also be closed during construction (it is not specified for how long). In addition the carriageway will be narrowed on Bressenden Place reducing capacity. A taxi rank is also proposed on the southern side of Allington Street (west) with taxis being diverted along Warwick Row.

5.8 The provision of the contra-flow bus lane by VSU for these works will not impact on the ability of Land Securities to deliver VTI2, however the proposed taxi rank on Allington Street and the diversion on Warwick Row will as these will be contained within the VTI2 construction site.

VTI Construction

5.9 Mace Group has produced a construction phasing programme for the VTI2 scheme which is shown in Chapter 10 of the VTI2 TA **[Appendix 5]**.

5.10 Allington Street (south/east) will remain open throughout the duration of the VTI2 construction phase therefore retaining the existing bus routes along Allington Street for the duration. As a result a contra-flow bus lane is not proposed or required eastbound along Victoria Street for the VTI2 scheme. Allington Street is the proposed location for taxis during the construction programme of VSU and these would need to be relocated to enable the VTI construction works.

5.11 Due to the size and complicated nature of the VTI development the main access points for construction will vary considerably and will depend on construction phasing. The main access points have been identified on the construction time slices that are shown in Appendix G of the VTI2 TA **[Appendix 5]**. The main access points are from (but not confined to) Warwick Row, Allington Street (west & south), Victoria Street and Bressenden Place.

5.12 A construction vehicle assessment throughout the construction period is also given with the expected peak flow of construction vehicles occurring during Quarter 3 2011 through until Quarter 2 2012 **[Appendix 5, paragraph 10.10]**. Construction vehicle flows would peak at 22 to 24 vehicles per hour **[Appendix 5, para 10.11].**

5.13 Construction traffic movements will be reduced through bulk transit trips (such as muck away and steelwork delivery) being undertaken in off-peak periods only.

VTI and VSU Combined Construction Programme

5.14 Mace Group has also produced a construction programme for VTI2 and VSU LS Option 1A which would allow concurrent construction of both schemes **[Appendix 3]**. This is further discussed in the supplementary evidence of Mr Tim Chapman **[OBJ3/P3/B]**. Mace has produced a key activities timeline **[VTI2-KAT-001B]** indicating activity durations. Mace has also produced four key phasing time slices: Timeslice 1 (Sept 2010 – Dec 2010); Timeslice 2 (Jan 2011 – Feb 2011); Timeslice 3, (Mar 2011 – Aug 2011); and Timeslice 4 (Aug 2011 – Feb 2012). The timeslice drawings show construction traffic routes to/from both the VTI2 and VSU (Bressenden Place) sites. Of the four timeslices 3 and 4 are when the highest number of construction vehicles would be generated with access to the VTI2 site from Buckingham Palace Road and access to the VSU site off Allington Street and Bressenden Place. In Timeslice 4, VTI2 construction access would continue from Buckingham Palace Road with VSU access from Bressenden Place. Allington Street would be opened to all traffic including buses and service vehicles for the theatre.

5.15 Mace Group has been in consultation with the VSU construction engineers, Mott Macdonald, to agree an approach to the construction programme for the VTI2 and VSU schemes being constructed in conjunction. The programme prepared above has been agreed in principle with Mott Macdonald.

5.16 The Construction programme produced by Mace ensures that the VTI2 and

VSU construction sites are independent of one another and will be for all operational needs including access for construction traffic. To facilitate this independence Land Securities would be delaying the building of their basement area and foundation for building 6A until after the completion of the relevant VSU works on the basis that VSU proceeds to their programme. VSU. This would allow total segregation of the VSU and VTI2 worksites.

5.17 The proposed contra-flow bus lane along Victoria Street will remain in place as in the VSU construction programme until August 2011 (Timeslice 4) when it would be again viable to re-open Allington Street for all traffic (including buses). Allington Street would be realigned slightly between the VSU and VTI2 sites. This would allow buses to follow their existing route and remove the need for the proposed contra-flow on Victoria Street thereby reinstating full carriageway width and capacity to 3 lanes for all traffic westbound.

5.18 As described in paragraph 5.6 above it is proposed to hold taxis on Allington Street (west) as part of the VSU scheme as described in my POE **[OBJ3/P4]**. During construction of the VT12 scheme Allington Street (west) will be closed and it is therefore proposed to relocate the relocated VSU taxi rank to the western side of Buckingham Palace Road between numbers 26-42.

5.19 It is expected that areas within the VTI2 construction site will accommodate all construction traffic and this will be managed throughout all phases of construction. In addition to these areas Mace has been investigating proposed locations for holding areas for construction vehicles off-site. Potential sites are being investigated in Battersea and Wandsworth.

5.20 Land Securities are investigating various alternative options to the VSU development. This includes their Option 1A and 'Cut and Cover' schemes. Both of these would have similar construction programmes in terms of logistics especially in terms of the length of time Allington Street east/south) would have to be closed.

5.21 If the VSU and VTI2 schemes were constructed in parallel then there would be an increase in the number of construction vehicles on the highway network as opposed to the VSU scheme or VTI2 scheme being constructed independently. The cumulative effects of the VTI2 construction vehicles on the highway network is covered in further detail in the VTI2 TA [10.14-10.19].

5.22 The Revised Transport Assessment **[VSU.A31, Transport Assessment, Chapter 12]** (to support the TWAO application for the form promoted by LUL) provides estimates of peak construction lorry movements (Figure TA_12.9.3) in the form of a bar chart, broken down between five VSU construction sites. The peak number of construction vehicles collectively generated would be greatest at approximately 147 construction vehicles per day in 2012.

5.23 No hourly figures are provided, but average vehicles per hour over an assumed ten hour working day would be 15, giving a construction vehicle movement into each one of the five VSU construction sites every four to five minutes if all movements are generated at one site.

5.24 The peak construction activity for VSU in 2012 could coincide with the peak for VTI2. The total number of construction vehicles generated by both sites would be (worst case) 24 VTI2 construction vehicles and 15 VSU construction vehicles per hour, resulting in a total of 39 construction

vehicles per hour equating to one construction vehicle every 90 seconds.

5.25 In terms of the peak flow of construction vehicles for the two schemes, 39 vehicles represent less than 5% of the traffic flows on the IRR (which are generally at least around 1,000 vehicles per hour in each direction) meaning this is a negligible and manageable effect.

5.26 The VSU TA concludes that the volume of construction traffic will be insignificant compared to overall traffic volumes with the main effects arising from the reconfiguration of the public highway and footways around the worksite and not from the construction traffic itself **[VSU.A31, Transport Assessment, para 12.9.4]**.

5.27 It is therefore concluded that there would be a negligible effect on the highway network during the construction phasing from construction vehicles for a combined construction programme for VTI2 and VSU.

5.28 The VTI1 scheme involved extensive modelling of the highway network in the Victoria Area using VISSIM as the overall traffic model, which was based on LINSIG and TRANSYT modelling. The VTI feasibility report on the Victoria Transport Interchange produced by TfL states that '*The traffic modelling completed has met all of the scheme objectives'* and that *'Overall TfL has approved the VTI scheme at its current level of feasibility design as a workable concept*' **[Appendix 6, paragraph 2.1.6]**

Cumulative Impacts

5.29 The VTI2 TA assumes that the delivery of the TWAO VSU scheme or similar scheme achieving the same objectives will not be required to mitigate the effects of the VTI2 development on the Victoria Underground Station. Detailed assessments, for all modes, have been undertaken

against baseline data shown in Table 2.1 **[Appendix 5, page 5]**. All assessments on the underground gate capacity and for the number of additional passengers per train assume that the existing Victoria Underground Station is in place following the completion of VTI2.

5.30 Capacity of the underground services to/from Victoria Underground Station was assessed against the baseline demand data. An assessment of the existing gate counts and line loads was undertaken using the proposed underground trips generated by a combination of the VTI2 scheme together with other cumulative schemes in the Victoria area. This is detailed in Chapter 8 of the VTI2 TA **[Appendix 5, pg 135]**. The worst case scenario in 2017 following completion of VTI2 shows that there would be a 4.4% increase in the number of people exiting from the station in the AM peak hour **[Appendix 5, Table 8.5, pg 137]**.

5.31 In addition to the gate counts Table 8.8 **[Appendix 5, pg 138]** shows the net increase in passengers on each underground line by direction. The highest increase would be an additional 10 passengers on each northbound Victoria Line train in the AM Peak hour.

5.32 The assessment of both the gate counts (exit flow increase of 4.4%) and the additional passengers per train (10) is considered negligible based on the significance criteria defined in Table 7.1 **[Appendix 5, pg 123]**. Paragraph 8.13 states that the assessment of development trips against baseline underground counts in Chapter 8 will be a worst case scenario as there are likely to be capacity improvements as a result of VSU and the Victoria Line Upgrade **[Appendix 5, pg 138]**. Therefore the likely impact on the Victoria Underground Station and specifically the Victoria Line is expected to be much lower than reported for VTI2. In addition there is the

effect of Thameslink (which is assessed at a reduction of some 15% in movements but as I explain later underestimates the reductions on the Victoria Line.

6 BUSINESS CASE COMPARISONS

6.1 This section covers the following:

- An assessment of the costs and benefits detailed in the LUL Business Case documents (VSU.B9, January 08) and the subsequent revision (VSU.B36, July 2008). Note that this assessment is covered in **[Appendix OBJ3/P4/A4]** of my original evidence.

- A summary of LUL's PEDROUTE methodology for estimating the anticipated journey time savings generated by TWAO scheme compared to the existing station ('do nothing') for 2016 demand and how this feeds into their 4.4:1 Benefit/Cost Ratio **[VSU.B36, July 2008].**

- A summary of the anticipated journey time savings generated by Land Securities Option 1A compared to the existing station ('do nothing') for 2016 demand based on comparable PEDROUTE modelling undertaken by SDG.

- The Land Securities Option 1A PEDROUTE results, combined with the estimated £40m capital cost saving have then been used as inputs to a comparative Business Case exercise to assess the likely impact on the overall project Business Case if Land Securities Option 1A was progressed.

Review of LUL Business Case

6.2 LUL submitted with their Statement of Case **[VSU.A38]**, a Business Case **[VSU.B9]**, published in January 2008. Subsequent to this a document entitled Updated Business Case "Business Case Background Paper" **[VSU.B36, July 2008]** was provided to Land Securities on the 17th

September 2008 in light of changes to the TWAO scheme detailed in the SES (August 2008).

6.3 The LUL Business Case appraisal **[VSU.B36, paragraph 4.3]** states that it has been undertaken in line with Transport for London (TfL) Business Case Development Methodology, which in turn is based on the Department for Transport Appraisal Guidance (called 'WebTag').

6.4 Journey time benefits within the LUL Business Case have been calculated using dynamic computer pedestrian modelling in the form of PEDROUTE. Following requests from Land Securities, the AM peak PEDROUTE model used by LUL in the TWAO Business Case was provided on 25th September 2008.

6.5 The following section provides an initial assessment of the derivation of costs and benefits in the LUL TWAO Scheme for VSU. This is based on the information provided by LUL within the documents and information stated above.

Benefits

6.6 Journey time reduction is one of the key types of benefit that LUL/TfL use as part of their Business Case appraisal methodology. These benefits are typically calculated by use of computer dynamic modelling tools (in this case PEDROUTE) and are expressed as passenger time savings experienced in a proposed new layout compared to the existing layout. These time savings are then converted into monetary terms (using a standard methodology) for the purposes of comparing them to the costs of the scheme.

6.7 Paragraph 4.1 of the LUL VSU Business Case **[VSU.B9 and VSU.B36]** describes the main method of reducing passenger delays as the provision of extra escalator capacity in various locations, and the provision of an additional interchange passageway from the interchange concourse to the District Line westbound platform. It also suggests that the increase in the time to access the platforms for passengers using the north end escalators is outweighed by the time saved through spreading the load along the platform.

6.8 The Table below is a summary of the monetary benefits (current value up to 2075) listed in Table 20 of the January 2008 LUL VSU Business Case **[VSU.B9]** and the July 2008 Business Case **[VSU.B36]**.

BUSINESS CASE - MONETARY BENEFITS [VSU.B9 / VSU.B36, TABLE 20]

Benefit/Disbenefit	Details	Jan 08 Figure £M (BCR 3.8:1)	July 08 Figure £M (BCR 4.4:1)
Time Savings (AM (0700-1000hrs), PM (1600-1900hrs) and on street)	Assessed using PEDROUTE simulation model for 2006, 2016, 2016+5% (PM only), and 2016+10% (PM only). Shorter time on street east of Bressenden Place.	£3,790,109	£4,038,581
Accessibility	Step free access provided.	£146,360	£156,503
Ambience	Based on Mystery Shopper scores averaged for 4 recently upgraded London stations.	£107,641	£56,403
Construction Disruption		£-12,895	£-28,137
Total Net Benefits (Current Value)		£4,031,215	£4,223,350

6.9 The table demonstrates the influence of journey time savings on the total scheme benefits. It also shows an overall net increase of £192,135 (current value) in total benefits, which is due to inflation applied to the Value of Time which has increased to £8.38/hr from the £6.99/hr value used in the January 2008 Business Case **[VSU.B9]**.

6.10 The Business Case **[VSU.B9 and VSU.B36, paragraph 4.5.1]** describes how it was not possible to assess the AM Peak demand beyond 2016 for the existing station due to the level of delay reaching 'very high levels' whereby some passengers may elect to choose alternative routes thus making the model results less reliable at these higher levels of demand. AM peak scheme benefits have therefore been presented as annual figures for the 2016 reference year. The Business Case appraisal process therefore applies a growth factor to the congestion relief benefits to account for future growth in both the Value of Time and demand.

6.11 For the PM peak, the PEDROUTE model has been used to estimate time savings at both 2016 + 5% and 2016 +10% demand levels before a growth factor has been applied in the same way to account for future growth in both the Value of Time and demand.

6.12 The journey time benefits at street level have also been quantified on the basis that with the new NTH entrance passengers with origins or destinations north and east of Bressenden Place travelling from/to the Victoria Line (at all times of the day) would experience significant journey time savings averaging nearly seven minutes (weighted to take into account various stages of the journey). The weighting factors defined in the TfL Business Case Development Manual **[VSU.B35, Table E3a]** are shown below.

Table E3a: WEIGHTS FOR ELEMENTS OF LUL JOURNEY TIME (1)

Journey Characteristic	Weighting
Pre-journey	
• queuing to get to a ticket office window or machine	3.4
• transaction at a ticket office window or machine	2.5
• queuing at a PASS agent	3.0
• transaction at a PASS agent	2.0
• delay at ticket gates	4.0
Riding	
• standing (or sitting) in a crowded train	1.0 + RFa
• seated in an uncrowded train	1.0
• on escalators	1.5
• in lifts	2.0
Waiting	
• for trains or lifts in acceptable uncongested conditions	2.5
• for trains on crowded platform	2.5 + CF[b]
Walking	
• unimpeded	2.0
• in a congested environment	2.0 + CF[b]
• up stairs or escalators	4.0
• down stairs unimpeded	2.5
Penalties	
• Interchange (LUL/LUL)	3.5 mins fixed
(LUL/National Rail)	5.0 mins fixed

a RF is the formula 0.09 + (2.11-1.13**Y**)**X** giving an overall weighting for those standing and sitting, where **X** = (train load - train seats)/(crush load - train seats) and **Y**, which relates seating capacity to standing capacity, is as follows:

Bakerloo	0.289	Metropolitan	0.405
Central	0.208	Northern	0.247
Circle	0.188	Piccadilly	0.219
District	0.248	Victoria	0.254
Jubilee	0.170		

b CF = 0.667(**P** - 0.5)², where **P** = passengers per m² and **P** is between 0.5 and 2. CF = 1.50 if **P** is greater than or equal to 2, and 0 if **P** is less than 0.5. For example, if **P** = 1.2 then CF = 0.327.

6.13 In the January 2008 Business Case **[VSU.B9, paragraph S5.3]**, the 2016 annual total street level journey time benefits equates to £9.9m. This figure increases to £11.9m in the July 2008 Business Case **[VSU.B31, paragraph S5.3]** due to the increased Value of Time figure used throughout the document. The Value of time has been increased from the £6.99 per hour

(at 2004) figure used in the January 2008 Business Case **[VSU.B9, paragraph S5.2]** to £8.38 (at 2007) in the July 2008 Business Case **[VSU.B31, paragraph S5.2]**. This revised Value of Time figure has been sourced from the most recent May 2008 publication of the TfL Business Case Development Manual.

6.14 Ambience benefits have been quantified using LUL's in-house 'Value of Improvements Model Business Case' (VIM-BC) model which enables the expected improvements in the quality of station facilities and appearance to be quantified based on standard parameters (based on LUL's Mystery Shopper Surveys) benchmarked against other recently modernised National Rail interchange stations such as Kings Cross. For the 2016 reference year this equates to £0.49m annual benefits **[VSU.B31]** (decreased from £0.81m quoted in the January 2008 Business Case **[VSU.B9]** due to exclusion of D&C Line benefits). The LUL VSU Business Case **[VSU.B9 and VSU.B31, appendix 5]** provides a breakdown of current and expected MSS scores for various station ambience attributes and their respective annual benefits. Annual disbenefits experienced during construction are also quantified **[VSU.B9 and VSU.B31, appendix 6]**. The calculations to convert the expected levels of improvements into monetary benefits are performed by an in-house spreadsheet model.

6.15 Benefits totalling £1.4m per annum **[VSU.B31]** (increased from £1.2m quoted in the January 2008 Business Case **[VSU.B9]** for providing step-free access to the Victoria Line have been included in the appraisal for the 2016 reference year. No explanation is provided of how these benefits have been derived so it is assumed that these have been taken from the overall LUL step-free access Core Network Business case. A lagging factor over three

years has been applied to these step-free access benefits since it is assumed that much of the benefit would come from new users.

6.16 Disbenefits during implementation in the form of line closures and associated costs have been included. No reference appears to have been made to how the level of these disbenefits would differ with alternative schemes.

6.17 No secondary revenue benefits appear to have been included in the appraisal. This is considered to be a conservative approach given that the new infrastructure is likely to provide some opportunities to generate secondary revenue.

6.18 An appraisal period of 60 years **[VSU.B9 and VSU.B31, paragraph S5.6]** has been used on the basis that major civil engineering has a design life of 120 years.

Costs

6.19 The capital cost estimate at the time of the original TWAO submission, November 2007, was £510 million (estimate of costs **[VSU.A8]**). This is made up of costs for the transport system of £395m, £67m for acquisition of land and rights over land, £43m for professional fees and £5m for surveying, drilling etc.

6.20 Revised costs for the scheme set out in the August 2008 documents 'Revised Estimates of Cost' **[VSU.A29]** shows a capital cost of £453m at 2008 prices, including £79.7m for acquisition of land and rights over land. The total is significantly less than the figure of £510m and the percentage of the acquisition of land and rights over land cost has increased from 13% to 18% of the total cost.

6.21 The January 2008 Business Case states Core Works Costs as totalling £510.5m (including contingency and £1.93m for property acquisition including compensation) **[VSU.B9, Appendix 8].** This figure for Core Works Costs increases to £551.4m in the July 2008 Business Case (including contingency and £67.8m for acquisition of land and rights over land, of which in the order of £16 m represents the promoters' estimate of compensation due to Lands Securities, which is as Robert Fourt explains a gross underestimate) **[VSU.B36, Appendix 8].**

6.22 The January 2008 Business Case **[VSU.B9, Appendix 8]** includes £75m allowance for project risk. This has been reduced in the July 2008 Business Case **[VSU.B36 Appendix 8]** to £52.1m. There is evidence within Table 21 **[VSU.B36]** that 'construction inflation' has been included within the appraisal as a percentage between 2.5% and 8.9% applied year on year between 2009 and 2016.

6.23 Optimism bias at 18% has been included in the July 2008 Business Case **[VSU.B36]** which is in line with the DfT 'WebTag' guidance for the current stage of design at Stage D, and is therefore considered to be appropriate.

6.24 The July 2008 Business Case specifies a total cost of the core works (including contingency of £77.1m) of £551.4m **[VSU.B36, Appendix 8]**. The Business Case spreadsheets **[Table 21, page 33, VSU.B36]** indicate that this £77.1m contingency allowance has not been included in the appraisal process before allowances for inflation, 18% optimism bias and other costs have been applied. A figure of £474.3m (excluding contingency of £77.1m) has instead been used. It is unclear why this contingency allowance has been excluded in the scheme appraisal.

6.25 In summary, it is difficult to directly compare all the various LUL sources of cost estimate as they all appear to include different assumptions and exclusions.

6.26 Other capital cost items stated in the July 2008 Business Case **[VSU.B36]** include:

6.26.1 Expected increases in staff operating costs have been taken from the Scott Wilson document 1159-GENL-REP-ARC-0004-Rev A, VSU Operating Strategy, October 2006 which have subsequently been modified following the implementation of the LUL shorter working week changes. These staff costs total £0.80m per annum (2007 prices) **[VSU.B36, Appendix 9]**.

6.26.2 Maintenance and additional power costs have been excluded from the appraisal as these are assumed by LUL to be covered under the PPP contract.

6.26.3 Allowances have been made for various elements of future station modernisation, including escalator and lift replacements.

6.26.4 A cost of £26,461,962 has been accounted for additional time and costs due to the closure of the District Line between Embankment and South Kensington for 26 weeks **[VSU.B36, paragraph 4.5.5]**.

Benefit/Cost Ratio

6.27 The Benefit Cost Ratio (BCR) of the TWAO scheme is given as 4.4:1 **[VSU.B36 Section S6.1]** (increased from 3.8:1 quoted in the January 2008 Business Case) **[VSU.B9]** which is mainly due to the increase in Value of Time). I refer to the letter dated 16 May 2008 from Sharpe Pritchard to Bircham Dyson Bell **[Land Securities core document OBJ/3/1/20]** and

their response dated 24 June 2008 **[Land Securities core document OBJ/3/1/21]**. From the explanation in the letter from Bircham Dyson Bell, it is understood that when the VSU scheme was considered by the TfL board some months earlier in June 2007, it was explained to the board that the scheme had a BCR of 2.6:1.

6.28 The letter goes on to explain the reason for the increase in BCR from June 2007 (BCR of 2.6:1) to that given in the January 2008 Business Case Report (BCR of 3.8:1). The letter explains that the initial PEDROUTE model (used to derive benefits in the form of journey time savings for the 2.6:1 BCR) was not able to process the 2016 AM peak demand, and therefore the 2006 demand was used in the knowledge that this would produce a conservative result.

6.29 For the purpose of the January 2008 analysis (BCR of 3.8:1), the letter states that 'LUL had been able to reconfigure the computer model in order to input certain assumptions about how the station would be managed by LUL staff in 2016 so that it would work more efficiently'. This reconfiguration meant that results for the 2016 AM Peak scenario could be included in the analysis, and these additional time saving benefits contributed significantly to the increase in BCR to 3.8:1. At the meeting with LUL on 25th September 2008, it was stated that this reconfiguration was closing the ticket hall gates as well as the ticket hall barriers.

TWAO Scheme - LUL Journey Time Savings

6.30 The following LUL PEDROUTE modelling files were received at the meeting with LUL on 25th September 2008:

- Existing station layout - 2016 demand, AM peak

- TWAO scheme layout – 2016 demand plus 5% increments up to +35%, all AM peak.

- No PM peak modelling was received (subsequently received 15/10/08)

6.31 These PEDROUTE modelling outputs have been reviewed and support the explanation provided in the LUL Business Case **[VSU.B9 and VSU.B36, paragraph 4.5.1]** of how 'In Station' journey time benefits have been derived for both the existing station (the 'do nothing' base case) and the TWAO scheme for both the AM and PM peaks for expected demand in 2016. The LUL Business Case also explains how the journey times for the PM peak have been compared for demand levels 5% and 10% higher than 2016. This has not been done for the AM peak as the level of delay reached very high levels within the existing station and it has therefore been assumed that some passengers may elect to choose alternative routes with overall less delay or travel at different times (as described above in my paragraph 6.11).

6.32 The estimated time savings for the 2016 reference year (5.5 minutes per journey in AM peak and 0.4 minutes in PM peak) is then converted into annual benefits for use in the Business Case appraisal. These annual journey time savings are the most significant input into LUL's assessment of scheme benefits. The LUL PEDROUTE comparative times for the AM and PM peaks **[VSU.B36, paragraph 4.5.1, Table 13 and Table 14]** are shown below for information.

6.33 Movement time is the free flow time given the layout and routeing rules. Delay time is the additional delay time moving between entrance and platform and vice versa caused by congestion. The 'Other' time includes waiting for trains and boarding and alighting times on the platform.

6.34 The biggest improvement is in delay time caused by congestion.

Table 13, paragraph 4.5.1 [VSU.B36]

AM peak 2016	Movement	Delay	Other	Total
Existing Layout	5.5	5.6	1.8	12.9
TWAO Scheme Layout	4.8	0.9	1.8	7.5
Difference	0.7	4.7	0.0	5.5

Table 14, paragraph 4.5.1 [VSU.B36]

PM peak 2016	Movement	Delay	Other	Total
Existing Layout	4.8	1.5	1.5	7.8
TWAO Scheme Layout	4.9	1.1	1.4	7.4
Difference	-0.1	0.4	0.1	0.4

6.35 These per passenger benefits are then converted into annual benefits for use in LUL's July 2008 Business Case appraisal **[VSU.B36]** by multiplying by the 2016 annual peak demand and TfL's 2007 Value of Time (£8.38/hour) to give an annual total of £16.8m benefits (£15.5m AM and £1.3m PM peak). The Business Case appraisal process then applies a growth factor to these annual benefits to account for future growth in both the Value of Time and demand.

6.36 Summary of LUL July 08 **[VSU.B36]** benefit/cost ratio is below:

	£000s (pv)
Overall Costs:	555,120
Overall Revenue:	290,370
Net Financial Cost:	264,750
Overall Benefits:	1,162,635
Benefit/Cost Ratio:	4.4:1

Land Securities Option 1A – Journey Time Savings and Comparative Business Case Assessment

6.37 SDG have undertaken comparable PEDROUTE modelling to assess the estimated journey time savings generated by Land Securities Option 1A compared to the existing station ('do nothing') for 2016 AM demand using the same approach as used by LUL described in paragraphs 6.30 – 6.32 above. No PM peak PEDROUTE models were provided in sufficient time to factor into this comparative assessment.

6.38 The SDG PEDROUTE journey time savings for Land Securities Option 1A (AM peak, 2016 demand) are shown below compared against both the existing station and the LUL TWAO scheme for direct comparison;

AM peak 2016	Movement	Delay	Other	Total
Existing Layout	5.5	5.6	1.8	12.9
TWAO Scheme Layout	4.8	0.9	1.8	7.5
Difference TWAO v Existing	0.7	4.7	0.0	5.5
Land Sec 1A Scheme Layout	4.8	0.9	1.7	7.4
Difference Land Sec 1A v Existing	0.7	4.7	0.1	5.6

6.39 The SDG PEDROUTE modelling therefore concludes that there is only a negligible difference between the modelled journey times for Land Securities Option 1A and the LUL TWAO scheme. The AM peak annual journey time benefits are therefore assumed to be the same for the purposes of the comparative Business Case assessment.

6.40 A comparative Business Case assessment has therefore been undertaken on the basis of the estimated £40m civils cost saving that ARUP have estimated for the alternative Land Securities Option 1A as a result of the removal of the PAL 22 connection.

6.41 The LUL Business Case **[VSU.B36, July 2008]** includes appraisal spreadsheets (Tables 20, 21 and 22) which have been replicated for the purposes of this comparative exercise. All other Business Case inputs are unchanged.

6.42 It should be noted that the £77.1m contingency figure **[VSU.B36, Appendix 8]** is not included in this comparative Business Case, in the same way as LUL have excluded this contingency figure from their Business Case **[VSU.B36]**

appraisal. Whilst it is unclear why LUL have not included this contingency, the same approach has been taken to ensure that the Benefit/Cost ratios for TWAO and LS Option 1A are directly comparable. Moreover the compensation figure of some £16 m for the compensation due to Land Securities is a considerable underestimate as explained by Mr Fourt further increasing the public benefit to be derived from Option 1A.

6.43 A summary of the comparative Land Securities Option 1A Business Case assessment is below showing an improvement in the benefit/cost ratio to 5.2:1 from 4.4:1.

	£000s (pv)	
Overall Costs:	515,316	
Overall Revenue:	290,370	(unchanged from VSU.B36)
Net Financial Cost:	224,936	
Overall Benefits:	1,162,635	(unchanged from VSU.B36)
Benefit/Cost Ratio:	5.2:1	

Conclusions

- The LUL Benefit/Cost ratio has been revised in parallel with VSU scheme development from 2.6:1 (June 2007) to 3.8:1 (January 2008) and most recently to 4.4:1 (July 2008).

- The LUL capital cost estimates provided in various LUL documentation have included different assumptions and exclusions.

- There is no explanation as to why an allowance for contingency has been excluded from the most recent July 2008 Business Case appraisal.

- LUL PEDROUTE modelling has derived annual 2016 peak journey time benefits of £16.8m for TWAO (£15.5m AM peak and £1.3m PM peak).

- PM peak benefits have been estimated to 2016 +10% demand.

- AM peak benefits have been estimated up to the 2016 reference year demand, beyond which the level of delay experienced reaches very high levels and therefore the modelling results are considered unrealistic as some passengers may elect to choose alternative routes with less overall delay. For years beyond 2016, the AM peak journey time savings are therefore inflated by expected growth in demand and the Value of Time.

- The SDG modelling of Land Securities Option 1A has concluded that there is no difference in the 2016 journey time benefits compared to the TWAO scheme.

- On the basis of the ARUP estimated £40m civils cost saving of Land Securities Option 1A, compared with TWAO the comparative Benefit/Cost ratio has been estimated to improve from 4.4:1 to 5.2:1. This will increased if allowance is made for the underestimate of compensation cost for and increased risk with the TWAO scheme.

7 REVIEW OF LUL PLANNING

7.1 The Planning Proof of Evidence was prepared by Mr Phillip Rowell of Adams Hendry Consulting Limited on behalf of LUL **[LUL.P11]**.

7.2 The majority of the planning proof of evidence is reviewed in the supplementary evidence of Mr Hugh Bullock **[OBJ3/P5/S1]** however there are a couple of issues in relation to the transport evidence I highlight below. In terms of integrated development and transport the evidence put forward by Mr Rowell stresses capacity and disabled access objectives and sets out little evidence as to the need for the VSU scheme to comply with policy that requires the integration of development and transport.

7.3 Paragraph 7.4 **[LUL.P11]** refers to Planning Policy Guidance Note 13: Transport (PPG 13) **[VSU.C7]** and the need to "*integrate planning and transport at the national, regional, strategic and local level*". Paragraph 7.5 **[LUL.P11]** goes on to discuss in relation to this guidance "*protect sites and routes which could be critical in developing infrastructure"* and "*the need to protect sites ensure that the needs of disabled people … are taken into account*". The evidence fails to demonstrate how the VSU scheme has sought to integrate planning and transport in the context of planned development. PPG 13 sets out in its objectives that Local Authorities should 'ensure that strategies in the development and local transport plan complement each other and that consideration of development plan allocations and local transport investment and priorities are closely linked' **[VSU.C7, Objective 6.6]**.

7.4 Paragraphs 7.24 to 7.42 refer to the Mayor's 2001 Transport Strategy **[VSU C21]** which discusses the Underground's crowding problems and the need

to increase capacity including the capacity of stations and interchanges such as Victoria.

7.5 Paragraph 7.42 references Chapter 4P of the strategy and discusses interchange between different modes. 4P.14 of the Mayor's Strategy states that "*spatially, improvements will focus on interchanges where investment will: support regeneration …. Potential priorities could include those interchanges that are being upgraded in conjunction with regeneration proposals ... In order to develop these priorities in a consistent manner, a co-ordinated approach needs to be established*". The evidence fails to consider these further points set out in Chapter 4P.

7.6 Paragraph 3.4 states that "t*o support the vision of London as an exemplary sustainable world city, the Strategy will increase the capacity, reliability, efficiency, quality and integration of the transport …. This improved transport strategy will support regeneration … allowing the benefits of prosperity to be experienced more widely*".

7.7 The Scheme Need and Benefits Proof of Evidence was prepared by Mr Phil McKenna of LUL **[LUL.P1]**.

7.8 In paragraphs 7.2 and 7.3 Mr McKenna refers to the London and City of Westminster policies that recognise Victoria as an opportunity area and Westminster as the commercial, cultural and administrative centre for the nation.

7.9 Policies STRA 20 to 25 of Westminster City Council's UDP **[VSU.C35]** deals with integrating land use and transport and reducing the environmental impact of transport as explained in the evidence of My Hugh Bullock section 10 **[OBJ/3/P5].** The evidence put forward by LUL does not

address the integration of land use and transport.

7.10 In paragraph 7.5 **[LUL.P1]** Mr McKenna refers to the City of Westminster Victoria Area Planning Brief **[VSU.C42]** which states "*The City Council fully supports the Victoria Station Upgrade*" and goes on to elaborate that the development of the proposed VSU has taken into account policies on design, the environment and the impact on the built environment.

7.11 Furthermore the principles for development at Victoria set out in the Victoria Area Planning Brief **[VSU.C42]** include joint working between the City of Westminster, Transport for London and the Greater London Authority to support the long-term objectives for Victoria. The brief sets out detailed objectives for transport, urban design and architecture and these objectives for the Victoria area go well beyond just transport infrastructure improvements.

7.12 With regards to taking into account the impact on the built environment, the VSU TWAO scheme would prevent proposed development schemes proceeding for more than four years if the VSU proposals are approved as currently presented for the TWAO scheme.

7.13 In summary, the LUL evidence fails to adequately consider compliance with the need and importance of integrated development and transport policy and the TWO scheme as currently proposed directly conflicts with the ability of regeneration development to progress.

8 REIVEW OF LUL SURFACE TRANSPORT

Overview

8.1 The Surface Transport proof of evidence was prepared by Mr Richard Bland of Mott McDonald on behalf of LUL **[LUL.P7]**. The evidence is based on the Revised Transport Assessment (RTA) submitted as part of the Supplementary Environmental Statement **[VSU.A31]** in September 2008. The RTA replaces the original Transport Assessment submitted in November 2007.

Consultation with Land Securities

8.2 Paragraph 5.1 of Mr Bland's evidence states that "*Since early 2007 there has been extensive engagement with key stakeholders who are likely to be directly affected by the scheme, particularly during its construction*". The remainder of evidence in section 5 does not refer to any consultation with developers of sites within the proximity of the VSU TWAO scheme or those who would be affected by those works.

8.3 Mott MacDonald and LUL did engage with Land Securities during the development of the VTI1 proposals and the subsequent Heads of Terms scheme which I explained in my proof of evidence **[OBJ3/P4, Paragraph 4.3]**.

8.4 Once the Heads of Terms scheme was dropped by LUL (early 2007) there was no further consultation with Land Securities in relation to the selection of the altered VSU PAL alignment or option selection.

8.5 Paragraph 9.4 mentions VTI1 and VTI2 as schemes which "*potentially impact on the VSU* [scheme]". The evidence does not mention any

construction impact that the VSU scheme would have on the development of the Land Securities proposals.

8.6 Paragraph 9.5 goes on to say "*The impact of any or all of these schemes on VSU will be highly dependent on their construction/implementation phasing and particularly the stage of VSU construction*". The promoter has "*assumed that the emerging VTI2 project will follow on after completion of VSU*" and therefore has not considered the impacts on the development or any mitigation measures to reduce the impacts of simultaneous construction.

8.7 Paragraph 9.5 also states "*Even if VTI2 construction were to commence prior to completion of VSU as at mid September 2008 there is no information available on the construction traffic management arrangements for VTI2*." The planning application for VTI2 was submitted on 19 September 2008. Chapter 10 of the VTI2 Transport Assessment **[Appendix 5]** outlines the construction programme for VTI2, as discussed in Section 5 of this rebuttal evidence. LUL and Mott MacDonald were aware of the planning application for VTI1 which remains a current application up to and following the submission of the VTI2 application in September 2008 and therefore this should have been given due consideration. Further, as I set out in Section 5 of this rebuttal evidence, the construction impacts of VTI1 and VTI2 for the proposed development in the area of the VSU works sites are not significantly different.

8.8 Paragraph 18.3 states that "*On completion the VSU scheme effectively returns all the vehicular access arrangements to the current situation and so on that basis would not have any additional highway effects on VTI2*". This assumes that construction work on the VTI development cannot commence

until after completion of the VSU works.

Construction Effects

8.9 Paragraph 7.1 states that "*The changes to the VSU scheme since November 2007 which affect the traffic and transport appraisal are largely confined to the construction stage and primarily relate to work site locations and works phasing. These changes have resulted in* ***material alterations*** *to the proposed diversion routes and mitigation measures for pedestrians, buses and taxis*".

8.10 I have discussed in Section 5 the details of the impacts of the proposed construction mitigation measures.

8.11 Section 11 to Section 15 of Mr Bland's evidence discusses the impacts and proposed traffic mitigation measures during construction. There are a number of areas in the evidence that I disagree with. These are:

8.12 Paragraph 15.12 states that "*There will be an additional flow of taxis on the western arm of Allington Street arising from the proposed rank on the southern side*". Paragraph 15.13 explains that "*During times when the eastern section of Allington Street (leading to Bressenden Place) is closed, it is proposed that taxis are diverted from Allington Street onto Warwick Row before joining Bressenden Place. The closure of the eastern leg of Allington Street will affect taxi operations through the need for a minor detour*".

8.13 As can be seen in the diagrams of the proposed VTI2 development included as appendices to my proof of evidence **[OBJ3/2/2]** the use of Warwick Row and the western side of Allington Street is in direct conflict with the construction of the VTI2 proposals.

8.14 There is no discussion in Mr Bland's evidence of any consideration of mitigating the impacts on the development of these proposed measures.

8.15 Similarly in the discussion about mitigation measures with relation to cyclists, again the use of Warwick Row as a diversion is discussed **[LUL.P7, paragraph 17.2]** without any evidence to suggest that the impact on the VTI2 development proposals would be unacceptable.

8.16 In summary, the evidence put forward by Mr Bland identifies that there will be some surface transport effects during the VSU construction period. The promoter has consulted with the constituent parts of TfL to identify mitigation measures. These measures have not been discussed with Land Securities, a key stakeholder in the area. This is further exacerbated by the fact that some of the mitigation measures proposed for VSU directly conflict with the VTI development proposals which was a current planning application at the time when the mitigation measures were being considered by LUL and TfL. There is insufficient evidence to suggest that LUL has appropriately considered other alternative surface transport arrangements that would reduce the impact of these proposed VSU mitigation measures on the proposed VTI development.

9 REIVIEW OF LUL SCHEME SELECTION

9.1 At paragraph 1.1 **[LUL.P3]**, Mr Finch describes that he has been advising LUL since April 2008. The process for the development of options for VSU began in 2003 **[LUL.P3, para 4.2.1]**, and Mott Macdonald began the process of Stage D Option Selection **[VSU.B6]** in January 2007. Therefore, Mr Finch had no involvement in the initial option selection process undertaken by other consultants, including Mott MacDonald. Since it was this original process which determined the November 2007 TWAO Scheme as the preferred option (which was then developed to become the currently proposed revised TWAO Scheme), and as Mr Finch states in paragraph 4.10.3 of his evidence that 'the May 2007 report did not fully reflect the selection process that was undertaken,' it has to be said that the process appears flawed and far from transparent or consistent..

9.2 It is stated in paragraph 4.1.1 **[LUL.P3]** that more than 60 scheme options, sub options and variations have been identified, reviewed, developed further then rejected since 2003. However, since 2003, four different design consultants (Arup **[VSU.B1-VSU.B3]**, Tony Meadows **[VSU.B4]**, Scott Wilson **[VSU.B5]** and Mott MacDonald **[VSU.B6]**) have been commissioned by LUL to look at various VSU options. It would appear to clearly be the case that all options have not been assessed using a consistent methodology.

9.3 It is stated in paragraph 4.1.5 **[LUL.P3]** that any scheme developed to improve the layout of the station needs if possible to assess, equally and at the same time as other constraints, 'constraints imposed by existing infrastructure, owned by LUL and other stakeholders.' It is noted that this does not include any mention of proposed infrastructure or potential

regeneration and redevelopment opportunities.

9.4 The principal objectives of the scheme are identified in paragraph 4.1.7 **[LUL.P3]** as follows:

- To increase the capacity of Victoria Underground Station for future demand;
- To minimise passenger journey time; and
- To improve the quality of access and interchange and ambience to the maximum extent practicable within physical, schedule and financial constraints.

9.5 The above principal objectives are those set out in the TWAO Statement of Case **[VSU.A38, paragraph 2.3.1, page 4]**. However, as presented in Section 2 of my Proof **[OBJ3/P4]**, other objectives of the scheme are set out in the TWAO Business Case **[VSU.B9 and VSU.B36]** such as to provide step free access, and no reference has been made to fulfilling wider objectives such as the integration of land use and transport policies as discussed in the Proof of Mr Hugh Bullock **[OBJ3/P5]**.

9.6 It is stated in paragraphs 4.2.5 and 4.2.6 **[LUL.P3]** that TfL took the following scheme elements (paragraph 4.2.1, 1-3) forward to develop VSU based on them achieving a worthwhile business case:

1. A new entrance/Northern Ticket Hall connected to the northern end of the Victoria Line Platform.
2. An improved or additional link from the D&C westbound platform to the interchange concourse and then on to the northern end of the Victoria Line Platforms, so that step free access could be provided between the D&C and the Victoria lines.

3. Build additional vertical capacity to and from the existing Southern Ticket Hall to the D&C/Victoria interchange concourse.

9.7 It would appear to be inconsistent and inadequate that despite carrying out a business case for individual elements of the scheme, and selecting the elements based on these comparative business cases, that a comparative business case was not used to compare any of the scheme options in their entirety against each other. Rather, there is only evidence of a business case being produced for the final TWAO scheme once selected as the preferred option.

9.8 In addition, element 2 of the scheme (paragraph 5.2.1 **[LUL.P3]**) was developed on the basis that a link from the D&C interchange concourse to the northern end of the Victoria line would provide step free access between the D&C and Victoria lines, rather than assist with capacity constraints or operational flexibility. This implies that step free access is not provided elsewhere (e.g. with the provision of lifts). However, as this design element has been progressed through Mott MacDonald Stage D design, there has been an addition to the proposed scheme in the form of 'new lifts providing step free interchange between the VL and D&C line platform' (paragraph 4.5.1 **[LUL.P3]**), and therefore eliminating the need for this connecting northern section of the PAL to provide step free access. It is not clear in the 2007 Mott MacDonald report **[VSU.B6]** why this element has remained, despite introducing lifts to provide step free access.

9.9 Paragraph 4.2.7 **[LUL.P3]** explains that, following the decision to develop the three scheme elements listed above, development of VSU from that point focussed on the following:

- Buildability;

- Minimising land take and disruption whilst still meeting the primary project goals;
- Optimising passenger journey times; and
- Providing resilience and redundancy in the design to accommodate assets being out of service for repair, maintenance or replacement.

9.10 Although minimising land take and providing resilience and redundancy in the design are considered important in the development of the scheme at this point, they do not feature later in the Mott McDonald 'mandatory' Option Selection by which options were taken forward or dismissed indicating inconsistency in the option selection process **[VSU.B6, Appendix A]**.

9.11 Paragraph 4.3.2 **[LUL.P3]** describes that Tony Meadows Associates were retained in early 2005 to review the Arup Options with the objective of 'developing an alternative arrangement which minimised the requirement for the acquisition of commercial property'. Despite this being a primary concern at this point, no consideration was given to this objective within the Mott McDonald 'mandatory' Option Selection **[VSU.B6, Appendix A]** by which options were taken forward or dismissed which further illustrates the inconsistency in the option selection process.

9.12 The reasons for rejection of Options A2, A5, A5/1 and A5/2 stated in paragraph 4.7.6 **[LUL.P3]** are different and/or incomplete compared with those set out in the Mott Macdonald report in May 2007 **[VSU.B6, Appendix G, page 3-3, Table 3.1]**. Specifically, the differences are detailed below:

- **A2** – The Mott MacDonald report makes no mention of the option having 'no provision for step free access.' It also states an additional reason for rejection as 'excessive passenger flow past front of VPT.'
- **A5** – The Mott MacDonald report makes no mention of 'Longer passenger journey times (from interchange concourse to PAL) relative to Option A4.' It also states that the option was rejected due to 'poor passenger routing.'
- **A5/1 and A5/2** – The Mott MacDonald report states that the option was also rejected due to the fact that it:
    - Encroaches on LandSec;
    - Stairs not desirable;
    - Beneath Victoria Palace Theatre;
    - Upper sections of tunnel still above London Clay; and
    - Probable lack of run off space.

9.13 Further to this, there is no detail within Appendix G of the Mott MacDonald report **[VSU.B6]** as to how any of these comments were quantified. Rather, it seems that these options were dismissed simply on the opinions of those attending the Option Selection workshop held on 16th January 2007, that is LUL and its consultants.

9.14 It is stated in paragraphs 4.8.3 and 4.8.4 **[LUL.P3]** that certain of the criteria used to assess the options were assigned with 'mandatory' limits. Stakeholder impacts, Utilities and Environmental impacts were not assigned mandatory limits, although the reasoning behind this is not evident. Furthermore, Environmental impacts, although listed as an option selection criteria, was then omitted from the option selection process due to

'limitations of the scheme in terms of location and design restrictions' **[VSU.B6, page 2-2]**. As a result of not assigning Stakeholder Impacts, Utilities and Environmental Impacts with 'mandatory criteria,' the majority of options considered within this process (6 out of 10) were omitted for failure to meet a 'mandatory criteria' without being assessed against all the option selection criteria **[VSU.B6, page 4-5, Table 4.1]**.

9.15 It is stated in the Mott MacDonald 2007 report **[VSU.B6, page 2-2]** that a 'pairwise' ranking methodology was used to determine the relative importance of the various criteria. This methodology uses a matrix format to show how each of the criteria compare against each other, and then ranks the criteria in order of importance. This determined the following criteria ranking **[VSU.B6, Appendix A]**:

A. Journey Time - 38.5%
B. Project Completion – 8.3%
C. Project Cost – 12.2%
D. Buildability – 6.5%
E. Operational Impacts – 21.1%
F. Stakeholder Impacts – 6.0%
G. Utilities – 1.5%
H. Environmental Impacts – 6.0%

9.16 The weightings are heavily biased towards journey time. Buildability, Stakeholder Impacts, Environmental Impacts and Utilities are assigned a relatively low weighting suggesting a low importance for the option selection. In my evidence **[OBJ3/P4, Paras 3.7 - 3.10]**, I provide further details of this. Not only is it unclear how these percentages were calculated, there is also a lack of evidence to show how these relative weightings have then been applied within the Option Selection process. Furthermore, there is no further mention of these relative weightings in either the SES

[VSU.A31] or Mr Finch's Proof **[LUL.P3]**.

9.17 Paragraph 4.8.5 **[LUL.P3]** expresses that in 2008, it was concluded that identifying the 'mandatory' parameters **[VSU.B6, Appendix A]** was in fact a misnomer and rather they should be referred to as 'project preferred design parameters.' Since **[VSU.B6, page 2-2]** states that 'any options not meeting mandatory parameter limits for the following criteria could not be further considered,' it is difficult to justify how these parameters were 'preferred' rather than 'mandatory.'

9.18 Paragraph 4.8.8 **[LUL.P3]** states that the principal reason for the rejection of Option #2A in 2007, which most represents LandSec Options 1 and 1a, was 'Increased passenger walk distance.' If I refer back to Table 4.1 of **[VSU.B6, page 4-5]**, it states that Option #2A was rejected on grounds of a failure to meet a mandatory parameter set out in the Journey Time criteria, and specifically 'Passenger walk distance increased over base option, wayfinding difficult.' **[VSU.B6, Appendix C]**. It is unclear what is meant by 'base option' in this context. On the assumption that 'Base Option' is the 'Option #0 MDC1 Stage D design' detailed in **[LUL.P3A, Figure 3]** and that the 'do nothing' scenario is the existing layout at Victoria, this is not stated within the mandatory parameters for journey time. Therefore the reason for rejection is invalid.

9.19 Further to this, it is stated in paragraph 4.8.8 **[LUL.P3]** that analysis of the journey times shows that this option (Option 2A) would result in a 'marginal increase' in passenger journey times as compared with the selected option (Option 6), implying that this was the reason for rejection rather than any of the possibilities suggested above. In light of my comments above, it is unclear to me as to the reason for the rejection of Option 2A.

9.20 Paragraph 4.9.3 **[LUL.P3]** describes the remaining rejected options in this process. There is no evidence as to how these options were quantified against the other non-mandatory criteria.

9.21 Option #0 was rejected on grounds of Stakeholder Impact **[LUL.P3, paragraph 4.9.3]**, although it is difficult to see how this was the case when this was not classed as a 'mandatory criteria' and was assigned a relative weighting of only 6.0% **[VSU.B6, Appendix A]**.

9.22 Option 2D was rejected on grounds of passenger journey time **[LUL.P3, paragraph 4.9.3]**. However, there is no evidence of an assessment of the journey time of Option 2D (as has been carried out for Options 2A, 2B, 2C and 6 **[VSU.B6, Appendix E]**. Further to this, there is no explanation why, given its similarity to Options 2A, 2B and 2C **[LUL.P3A, Figures 14-16]** it was not rejected along with these similar Options back in 'phase 2' of the process.

9.23 The reason for rejection of Option #5 is 'passenger cross flows in the interchange concourse together with lack of flexibility in station operation/passenger routing' **[LUL.P3, paragraph 4.9.3]**. However, the original May 2007 report **[VSU.B6, page 4-6, Table 4.1]** details the reason for rejection of Option #5 as 'insufficient escalator capacity from VL platforms' and 'difficulty in providing M&E service routes from NTH to STH.' **[VSU.B6, Appendix D]** provides the static analysis for escalator capacity, and recommends the same escalator provision for both Option #5 and the preferred Option #6. The scheme plans **[LUL.P3A, Figures 22-23]** show that Option #5 and the preferred Option #6 provide identical escalator capacity.

9.24 Paragraph 4.10.5 **[LUL.P3]** states that 'it was decided to re-visit the option

selection process to test and record how each of the options measured against all of the project preferred design parameters.' This statement implies that this was not carried out in the Option Selection process back in May 2007. The result of this has been that where an option has been dismissed due to failure to meet the 'mandatory' criteria, any benefits or disbenefits contributing to other criteria have not been assessed. Therefore, any dismissed Options with large benefits in the non mandatory criteria would not have been identified as having so, or been developed any further.

9.25 It is difficult to see how the Option Selection Workshop held in May 2008 set out in paragraph 4.10.6 **[LUL.P3]**, one year after the preferred option was selected, could not have been biased towards the same outcome bearing in mind the progress made in the development of the TWAO scheme over the past year, and the presence of the 'majority of the original team' whose original selection of the scheme (on which the client promoters had relied in committing to the promotion of the TWAO some six months earlier) was at stake .

9.26 Paragraph 4.10.7 **[LUL.P3]** states that 'to establish comparative costs of the individual options a separate workshop was convened' implying that this process was not carried out in the 2007 option selection process. In addition, it is mentioned that 'in carrying out the cost comparison it was assumed that the land costs of the various options were broadly similar.' This statement is questionable given the impact of some of the schemes on other stakeholders, in particular the TWAO scheme.

9.27 Paragraph 4.10.8 **[LUL.P3]** states that the conclusions of the review were tabulated and, 'where the performance of an option failed to satisfy an individual parameter, these were then classified as being either primary or

secondary reasons for rejection of that Option.' It is assumed that Mr Finch is referring to the 'mandatory' or 'project preferred design parameters'. In which case, the only 'mandatory' parameter associated with the cost criteria requires that the project be completed within an estimate of £509m (inclusive of risk, contingency and inflation) **[LUL.P3A, Appendix B1]**. With this in mind, it is apparent that the extent of any cost saving, regardless of how big a saving, was not valid within the option selection process used and therefore rendered meaningless.

9.28 Furthermore, according to the revised TWAO Business Case **[VSU.B36]** the total estimated cost of the TWAO Scheme currently stands at £551,423,943 including risk, contingency and inflation. This is £42m over the 'mandatory' limit of £509m both for the original 2007 Option Selection process **[VSU.B6, Appendix A]** and the 2008 SES review **[VSU.A31, Technical Appendix C, Appendix A]** and with a considerable underestimate of the compensation likely to be due (as presented by Robert Fourt) and an inadequate recognition of risk as presented by Tim Chapman.

9.29 Paragraph 4.10.9 **[LUL.P3]** expresses that Mr Finch's conclusion was that the amendments to the scheme (set out in the SES **[VSU.A31]**) did not alter the TWAO scheme selection. As I have already mentioned in my comment regarding cost in paragraph 9.28 above, I do not consider this to be the case.

9.30 It is suggested in paragraph 5.10 **[LUL.P3]** that in the absence of PAL #22, queues would form in the Interchange Concourse in the PM workday peak backing up onto the stairs from the D&C line Eastbound platform. Following requests by LandSec in January 2008 for movement matrices and the PEDROUTE model for the TWAO scheme, LUL provided movement

matrices and PEDROUTE modelling for the AM Peak on 25th September 2008. However, this was only provided for the PM Peak on 21st October 2008 and I am therefore unable to examine this. I will review this comment further now that the information has recently become available from LUL (originally requested last January 2008).

10 REVIEW OF LUL SCHEME NEED AND BENEFITS

Section 5

10.1 At para 5.4, page 9 of **[LUL.P1]** Phil McKenna states that during 2006 the typical weekday flow of passengers stood at 285,500 with around 72,500 using the station during the morning 07:00 to 10:00 three hour peak. In 2006, the station was the second busiest Underground station (equal to King's Cross) and with only Oxford Circus having higher flows.

10.2 At para 5.5 it is stated by Phil McKenna that in terms of interchange, Victoria is the second busiest on the Underground after Waterloo where in 2006, Victoria processed 26,200 passengers (compared to 42,900 at Waterloo) in the morning peak. At Victoria Station however, the passengers are accommodated on two LUL lines compared to four at Waterloo.

Section 6

10.3 In para 6.4, page 10, it is stated in **[LUL.P1]** that by 2012 LUL plan to have upgraded the Victoria Line train service to provide additional capacity and a faster service. The planned upgrade and growth in central London employment is forecast to add further to current demand. It goes on to state that "the number of passengers using the Underground station in the AM and PM peaks (07:00 – 10:00 and 16:00 – 19:00 Monday to Friday) is expected to increase by 12% from 153,000 to 171,000 from 2006 to 2016."

10.4 It is then stated that "this growth will intensify the congestion problems at the station particularly during the morning peak". It is then assumed that "this rise in peak demand will mean that gateline restriction and closures will continue to be necessary but with increasing frequency".

Section 7

10.5 In para 7.4 of **LUL.P1** it refers to the Mayor's 2001 Transport Strategy **(VSU C21)** which references the Underground's crowding problems and the need to increase capacity including the stations and interchanges such as Victoria.

10.6 It is also useful to refer to the **MTS (VSU C21)** for the importance of planning and coordinating transport and development work effectively.

10.7 **MTS 4P.14** Spatially, improvements will focus on interchanges where investment will: support regeneration; sustain and enhance town centres; facilitate orbital movement; reduce congestion on radial routes by reducing the need to interchange in the central area; and improve or create better route and journey options throughout London. Potential priorities could include those interchanges that are being upgraded in conjunction with regeneration proposals and key nodes on new links. In order to develop these priorities in a consistent manner, a co-ordinated approach needs to be established.

10.8 **MTS 3.4** The fundamental policy direction of all the Mayor's Strategies is to plan investment in London's infrastructure and public services to accommodate the growth in London's population and employment in a sustainable manner. This approach is consistent with Government policy including Regional Planning Guidance for the South East (RPG9)2. Achieving these aims will require high and sustained investment in infrastructure and services to ensure that London's prosperity and major contribution to the UK economy continue to develop.

10.9 **MTS 3.8** To support the vision of London as an exemplary sustainable world city, the Strategy will increase the capacity, reliability, efficiency,

quality and integration of the transport system to provide the world class system the Capital needs. This improved transport strategy will support regeneration and promote social inclusion, allowing the benefits of prosperity to be experienced more widely.

10.10 **MTS 3.12** As far as the Transport Strategy is concerned, key linkages include the link with the emerging London Plan and Economic Development Strategy. These strategies will ensure that the transport system supports economic growth and prosperity by facilitating sustainable population and employment growth. By supporting regeneration, transport improvements will ensure that the benefits of increased prosperity are experienced more widely.

10.11 In para 7.2 and 7.3 Mr McKenna refers to the London and City of Westminster policies that recognise Victoria as an opportunity area and Westminster as the commercial, cultural and administrative centre for the nation.

10.12 In para 7.5 there is reference to the City of Westminster Victoria Area Planning Brief (VSU C42) which states “The City Council fully supports the Victoria Station Upgrade” and goes on to elaborate that the development of the VSU has taken into account policies on design, the environment and the impact on the built environment.

10.13 With regards to taking into account the impact on the built environment. The TWAO VSU scheme as currently promoted risks preventing the proposed development schemes proceeding for more than 4 years due to the proposed tunnel alignments and construction methods.

Section 8

10.14 In para 8.7.8 it is stated that although in the 2006 morning peak period that around 8,700 passengers "came in" and that "most try to use the Victoria entrance and escalators". Mr McKenna goes on to state that "however, a third have to divert via the District and Circle Line or have to queue". There is no explanation as to whether one third of the 8,700 try and use the Victoria Line by entering via the District and Circle Line platforms from the south ticket hall or whether this "third" diverts from the south entrance via the bus station to the District and Circle Line ticket hall and platforms.

10.15 With reference to **OBJ3/P4/A9 (page 34)** the first matrix for the Estimated Base Matrix of Underground Passenger Movements for the Existing Station Layout (assumed 2006). During the morning peak period a total of 16,031 passengers enter from the mainline (Sussex) entrance (of which 7,029 divert to District and Circle) and a further 9,017 enter from the mainline east (Kent) entrance (of which 3,603 divert to the District and Circle). So, out of a total 25,048 passengers who entered the underground station in 2006 during the morning peak period, 10,632 (42%) went towards the District and Circle ticket hall.

10.16 In para 8.8.4 reference is provided to Appendix 2 of LUL.P1 **[LUL.P1A Vol 1 of 2]** for more detailed explanation of station control. In A2.5, page 5, it states that "the Victoria Line platforms are prone to congestion; particularly the Northbound platform" and in A2.6, that the "use of the platforms is affected by the south end loading of trains. That is to say that trains are fuller at the south end of the platform by virtue of the location of platform entrances and exits along the line". Further in A2.7 it continues, "passengers are prone to congregate at the south end of the platform of the Victoria Line platforms".

10.17 With reference to **[LUL.P1A Vol 2 of 2, Figure 10b, page 13]** for Passenger Destinations (Existing Station 2016: 08:45 – 09:00 hours) it is clear that the southern quarter of the northbound Victoria Line platform has a Service Factor of 3 – 4 (yellow), with the second quarter at Service Factor 2 – 3 (green) then a bank of Service Factor 1 – 2 (light blue) with the northern section (dark blue) indicating that this section of the platform is hardly used.

10.18 With reference to Figure 11b (page 19) for Passenger Densities (Scheme Layout 2016: 08:45 – 09:00 hours) it is again clear that the southern quarter of the northbound Victoria Line platform has a Service Factor of 3 – 4 (yellow) with the middle third at Service Factor 2 – 3 (green) then an equally short band of Service Factor 1 – 2 (light blue) as for the Existing (Figure 10b) and then the northern quarter at Service Factor 0 – 1 (dark blue) again indicating that this section of the platform is hardly used.

10.19 From a comparison of these PEDROUTE Service Factor Outputs for Existing and for Future Scheme Layout it seems that the main benefit for the Service Factor along the northbound platform with both PAL 22 and the northern PAL (tunnels 4A and 4B) in place is that the central bank of green for Service Factor 2 – 3 is slightly lengthened for the Future Scheme Layout and that one section of the dark blue northern platform is slightly more heavily used. These PEDROUTE outputs do not indicate significant differences.

10.20 In para A2.13 of LUL.P1A Vol 1 of 2, page 6, it is stated that “the need for control may arise at other times determined by the extent of disruption to the train services on the line serving Victoria.”

Diversions of SWT from Waterloo to Victoria

10.21 In the evidence of Mr Phil McKenna **[para A2.14 of Vol 1 of 2 LUL/P1A]** it is stated that on occasions trains that run into Waterloo, operated by South West Trains, are diverted to Victoria, if there is an incident between Clapham Junction and Waterloo.

10.22 The likelihood of doing this seems to be very small.

10.23 Firstly, the trackwork to allow a train from the south west main line (the line through Earlsfield) to access Victoria simply is not present in the area of Clapham Junction. It is therefore impossible for such a train to call at Clapham Junction and then be diverted to Victoria instead of Waterloo.

10.24 Secondly, whilst it is physically possible for a train that calls on the Windsor line platforms at Clapham Junction (2-6) to run into Victoria instead of Waterloo, such a move is exceedingly unlikely to take place. From certain lines, especially in the down (away from London) direction, it is a complicated manoeuvre, line capacity is very low (compounded by a stretch of single track), and any available capacity in the platforms at Victoria would be extremely limited. Moreover, it is unlikely that most of South West Trains' drivers are trained to drive into Victoria.

10.25 Should an incident arise close the railway between Clapham Junction and Waterloo, trains would be terminated at Clapham Junction, where passengers would be told to use Southern trains into Victoria, Overground trains on the West London Line, or local bus services. South West Trains would also seek to call trains additionally at places such as Wimbledon, Richmond or Putney, so as to give the opportunity of passengers continuing their journey on London Underground.

10.26 With reference to **OBJ3/P4/A9, page 35,** first matrix for Existing Station Layout (Estimated Base Matrix, assume 2006) the total three hour morning peak period follow leaving the Victoria Line northbound platform is 7,355, which is 10.5% of the total morning peak period underground station flow.

10.27 In para 8.10.1 it refers to "some delay ….. in the peak as the concentration of Victoria to District Line passengers alight Victoria Line trains and concentrate around the routes to the interchange concourse. Reference is made to Figure 32 in LUL.P1A Vol 2 of 2, page 45. On closer inspection the escalators (particularly the middle escalator number 5) is not utilised on the upper steps and there appears to be little delay.

10.28 It is acknowledged in para 8.10.3 that the "interchange flows between the District eastbound and the Victoria Line do not suffer delay because there are two sets of stairs to handle this flow".

10.29 Section 9 of LUL.P1 sets out the Principal Project Objections of the Victoria Station Upgrade Scheme.

Section 10 – Safety Matters

10.30 With reference to OBJ3/P4/A9 first matrix there are 10,060 passengers exiting through the Wilton Road exit in 2006 for the three hour morning peak, this increases to 11,699 in 2016 using the existing station layout, 14.37% of the total morning peak interchange of 81,406.

10.31 In 2016 for the VSU Scheme Design the Wilton Road exit flow reduces to 3,483 passengers compared to 8,215 (7,640 + 575) that now exit through the north. This equates to 4.2% of 81,406 using the Wilton Road exit and 10.1% using the North exit. In addition 5,613 (6.9%) continue to use the

Sussex exit and 2,474 (3%) use the Kent exit.

10.32 For the Estimated 2016 Matrix of Underground Passenger Movements (OBJ3/P4/A9) for the VSU Scheme Design there are no passenger movements from either of the District and Circle Line platforms during the morning peak period to the north. It is difficult from these matrices to ascertain when the PAL 22 in particular is used.

Development of the Project

10.33 For the 2016 matrix in OBJ3/P4/A9 for the morning peak period there is a total passenger flow of 28,675 (8,553 + 20,122) leaving the Victoria Line platforms and 26,162 (22,762 + 3,400) arriving at the Victoria Line platforms. With the increased capacity of the Victoria Line Upgrade increasing the line capacity by 16% by 2016 it is assumed that those arriving will do so in more comfort than at present with less congestion on the trains whereas for those departing more will be able to board each train (and there will be more trains increasing from 28tph to 33tph) so any platform congestion will clear faster than at present.

10.34 Para 12.5.2 refers to existing vertical capacity and the current AM peak hour flow at c.8,700 per hour from the Victoria ticket hall and the combined interchange concourse traffic from the District and Circle Line added to the overflow traffic with a peak hour flow of 5,140 just below the capacity of the existing down escalator. Although requested, LUL has still not provided these peak one hour flows so it is difficult to validate for this report.

10.35 Para 12.5.3 refers to “pulses as trains deliver every 2 or 3 minutes a group of up to three hundred passengers on to a platform in just 10 to 15 seconds”. It is understood that the output from PEDROUTE can be represented as a Service Factor and as a Service Level. The Service

Factor output is provided by LUL in Figures 10a to 10b and Figure 11a to 11f in LUL.P1A Vol 2 of 2. This represents the average passenger experience for the existing arrangements and then with VSU.

Service Levels

10.36 A sliding scale of pedestrian congestion running from A (best) to F (worst) – the categorisation of Service Levels is based upon pedestrian density, flow volume, and average speed (in both general descriptive terms and in quantitative terms). The Service Level for each block is displayed on the plots as:

- A = Dark blue
- B = Cyan (light blue)
- C = Green
- D = Yellow
- E = Magenta
- F = Red

10.37 Typically, a worst Service Level of A, B, or C is generally considered acceptable, whereas a worst Service Level of D, E, or F would be considered to warrant further investigation. However, this is only a guide; judgement will have to be exercised in all actual circumstances.

10.38 Although the concept of a Level of Service is clearly useful when considering general levels of congestion, there is still a problem in comparing different degrees of congestion experienced by pedestrians. For example, is 1 minute spent at Level F better or worse than 5 minutes spent at Level D? Similarly, if a block spends 95% of its time at Level C or better, but experiences a 30-second ‘blip’ in demand which pushes it momentarily

into Level F, is that a cause for concern?

Service Factors

10.39 To address this issue, the development of PEDROUTE has also introduced the Service Factor, which provides a relative scale for comparing degrees of congestion as experienced by pedestrians. A block's Service Factor is calculated for a given period of time by summing the proportional amount of passenger time spent in each of the six different Service Levels, assuming a value of 0 for A, 1 for B, etc. up to 5 for F. The Service Factor for each block is displayed on the plots as:

- 0-1 = Dark blue
- 1-2 = Cyan (light blue)
- 2-3 = Green
- 3-4 = Yellow
- 4-5 = Magenta

10.40 Typically, a worst Service Level of 1-3 is generally considered acceptable, whereas a worst Service Level of 3-5 would be considered to warrant further investigation. However, as above, this is only a guide; judgement will have to be exercised in all actual circumstances

10.41 Although requested, LUL has again not provided figures of the pulse demand at Victoria.

10.42 In 12.5.7 it is stated that for the interchange concourse the "option for additional capacity have been of two types":

- An additional set of escalators from the Victoria ticket hall connecting into the existing intermediate concourse plus an 'overflow' connection to

the north end of the Victoria Line **usually from the District eastbound platform**.

- Extending the Victoria platforms south so that an additional set of escalators can come in at the new southern end of the platform.

10.43 In para 12.5.8 it goes on to clarify that "as referred to earlier the option of extending the platforms south would be very disruptive and poor value for money". That being the case, it is not at all clear which the "connection to the north end of the Victoria Line (from the interchange concourse) has been viewed by LUL as "usually from the District eastbound platform".

10.44 A clear alternative once passengers have used 'an additional set of escalators from the Victoria ticket hall connecting into the existing intermediate concourse' is to divert these passengers along "an overflow connection to the north end of the Victoria Line". The walking distance for the 'overflow' is similar and as stated in 8.10.3 (page 17) of LUL.P1, "the interchange flows between the District eastbound and Victoria Line do not suffer delay because there are two sets of stairs to handle this flow".

10.45 In 12.9.3 it is stated that a significant proportion of passengers using Victoria to travel to local employment have destinations to the north and east of the existing station (see Figure 12 and 13 of LUL.P1A Vol 2 of 2). These present 2001 station footprint 07:00 to 10:00 Egress for All Modes. Of interest is the clear predominance of employment destinations to the north of the Bressenden Place and to the east along Victoria Street.

10.46 Given the predominance of employment destinations to the north and to the east it is useful to refer to the matrix in OBJ3/P4/A9 for 2016. The predicted exit flows through the north are ALL from Victoria Line platforms and total

8,215 with 6,291 still exiting through the Wilton Road, Sussex and Kent exits. This compares with 5,279 exiting from the District and Circle lines and no exit flows from the District and Circle line to the north.

10.47 Even with clear predominance of employment modes to the north and south of the station the LUL modelling continues to show a combined passenger exit flow of 11,570 through the Wilton Road, Kent and Sussex exits compared with a flow through the north of 8,215.

10.48 At 12.13.4 it is suggested that alternative scheme options to TWAO were rejected on a range of grounds, including “additional expense” and “more property take”. There should be comparison with the Option selection with regards to these specific parameters as set out in LUL.P1.

10.49 At 12.13.5 it is unclear how the “option selection was further refined in 2008”. It appears to have simply been re-presented.

Section 13 – Victoria and District Line Train Service Upgrades

10.50 Paras 13.2 and 13.3 refer to the existing Victoria Line train capacity. The capacity of 23,324 passengers per hour in each direction is a maximum capacity at a single point on the line, over a one hour period. The Victoria Line is of course transporting more passengers per hour in each direction during the peak hours as passengers interchange and start/finish journeys at stations along the whole length of the line.

10.51 Para 13.4 states that the upgrade of the Victoria Line train service is planned to run 33 trains per hour in each direction in the peak with a 3% increase in train capacity to give a hourly capacity of 28,231. LUL states this is 21% higher than that currently provided yet the DfT states that the Victoria Line Train Service Upgrades will increase the overall capacity per

hour by only 16% (this refers to the London Underground – Victoria Line 09TS vehicles: RVAR exemption application which can be found at http://www.dft.gov.uk/transportforyou/access/rail/vehicles/eo/lonundvictorialine/).

10.52 The District and Circle train line upgrade will deliver an overall increase in capacity of 47% made up of significant increase in capacity of the rains and with an increased frequency of 4tph to a total of 32tph in each direction.

10.53 LUL has confirmed that the Victoria and the District and Circle train service upgrades will be in place by 2011, before the London 2012 Games. LUL has also confirmed that the train service upgrades have been used as part of their PEDROUTE Modelling. It is of note that PEDROUTE Victoria train capacity is 1,018 which compares to Mr McKenna's reference to 857 cap (para 13.4), where as district and Circle PEDROUTE capacity equals 1,019 which is much closer to Mr McKenna's quoted cap of new common sub-surface stock of 1,031.

10.54 In para 13.10 it is stated that the line upgrades as well as providing significantly more capacity will also deliver quicker journey times, shorter dwell times in the station and shorter waiting times at the platforms through higher frequencies.

Section 14 – Assess Demand and Future Years

10.55 Paras 14.1, 14.2 and 14.3 refer to the approach that LUL has taken for assessing demand in future years. TfL has used LTS and Railplan to provide forecasts for 5 yearly horizons, 2011, 2016, 2021 and 2026.

10.56 In para 14.2 LUL states that it "has chosen to use 2016 as a reference year partly as it is close to expected completion date of a number of projects

such as Thameslink and many of LUL's line upgrades".

10.57 Para 14.3 states that after 2016 and the delivery of rail improvements "the scale and timing of growth levels after 2016 and that for business case purposes, **taking a conservative, pessimistic outlook these have been capped at 15% above the 2016 level** (my emphasis). LUL then states that for "design purposes higher levels of demand growth have been used".

10.58 There are a number of issues to explore at this point. At the meeting with Phil McKenna on 15th October 2008 to discuss the LUL PEDROUTE modelling and forecasts it was explained that, in line with Table 2.1 of the ES on p 2-2 **[VSU.A13]**, the LUL 2016 base year model does not account for the provision of Thameslink. When asked where was the standard LUL design proofing modelling for base year (2016) plus 35% and why only 2016 plus 20% was presented it was explained that the 2016 base without Thameslink represented a 15% difference in passengers at the Victoria Underground station.

10.59 This would mean that the base year for 2016 actually represents the base year plus 15% which is why the LUL engineers (Mott MacDonald) were only asked to design for 2016 plus 20% (representing a true 2016 with Thameslink plus 35%).

10.60 When we look at the PEDROUTE AM peak modelling for 2016 + 10% and use the Service Levels as opposed to the Service Factors in LUL.P1A Vol 2 of 2 there is some crowding on the Victoria Line platforms when two trains have arrived and passengers disembarked simultaneously. This crowding is improved by running the three central escalators up. For this reason it is very important to understand the level of passenger demand that is being modelled to determine whether this level of crowding for short periods of

time (which is not present when you view the Service Factors that are averaged over 15 minutes) is a likely scenario or not.

10.61 According to Phil McKenna's comments on the 15th October 2008 (as stated in paragraph 10.59 above), LUL did not take account of the reduced passenger numbers at Victoria Underground station for 2016 when Thameslink and other rail benefits will be operational. Thameslink was then accounted for by taking 15% passenger demand off across the underground station demand matrix. This should allow for the differential effect for the proportion of passengers that will be reduced from the Victoria Line compared with the District and Circle line. Thameslink will increase capacity north – south between Kings Cross (St. Pancras) and Blackfriars/London Bridge. It seems likely that there could be greater reductions on the Victoria Line than for the District and Circle lines but this is not reflected in the flat 15% reduction across both lines used by LUL.

10.62 By 2021, the next five year period after 2016 for the LUL forecast horizons, it is anticipated that Crossrail Line 1 will be operational, at the very least for the central scheme linking Paddington to Liverpool Street via Tottenham Court Road. This will reduce further the passenger numbers using the Victoria Underground station, particularly for the District and Circle line. Without the ability to use Railplan to assess the impact of Crossrail Line 1 it is difficult to know the level of the passenger reduction.

Section 14 – Drivers for Growth

10.63 In para 14.4.4 LUL states that Table 1 on page 39 takes on board "the Thameslink project" and gives the significant changes in passenger flows for the AM peak, between 2006 and 2016. Overall it is stated that the growth from 2006 to 2016 is 12%. This coincides with the origin destination

matrices provided in the Updated Business Case **[VSU.B36]**, and the original Business Case **[VSU.B9]** produced for the November 2007 submission of the TWAO Scheme, and is further confirmed by email from Nigel Kelt to Roy McGowan on 23rd October 2008 **[Appendix 7]**.

10.64 However, the TWAO Statement of Case **[VSU.A38, paras 7.11.1 to 7.11.2, page 37]** details that due to the likelihood of Thameslink starting in the near future, the design year of 2016+35% has been reduced to 2016+20% to take account of this. The ES also refers to the design year as being 2016+20% [VSU.A13, Table 2-1, page 2-2], and Phil McKenna confirmed this 15% reduction due to Thameslink as described in paragraph 10.57 above, meaning that the likely impacts of the Thameslink project seem to have been double counted in the LUL design year of 2016+20%.

Crossrail Impacts

10.65 Mr McKenna says there is a small difference for VSU from Crossrail yet the Crossrail business case working paper states "Victoria Line and District and Circle Line reductions of 3% for Victoria and 4% for District and Circle are achievable.

Section 15 – Description of the Project

10.66 Para 15.7.1 confirms that escalators are planned to have an extensive overhaul or be replaced every 20 years, and that these tasks can take 6 months to a year. It is then stated that it is quite likely that "at any one time one escalator is out of service". Furthermore it is stated that the station could work reasonably comfortably with 8 escalators. It is clear that it will not be possible to operate all three of the central escalators in the up direction beyond 2016+10% when maintenance is required.

10.67 Para 15.8.1, last 2 sentences, confirms that when the interchange

concourse becomes too busy that passengers entering from the south down new escalator 9 are diverted away from the interchange concourse along the PAL to access the Victoria Line platforms via new escalators 11 and 12 at the north end.

10.68 Para 15.8.4 states that "from escalator 9 entry traffic to the Victoria Line then would go down escalator 6 unless the interchange concourse becomes too busy, then traffic would be routed via escalator 12 to the north end". The LUL PEDROUTE Modelling indicates that escalators 4, 5, and 6 to reduce the occasional crowding at platform level in 2016 + 10% not as a result of "the interchange concourse becoming too busy".

10.69 Para 15.8.5 again states that at 2016 + 10% escalators 4, 5, and 6 are all set "up" to avoid overcrowding in the intermediate concourse.

The Need for PAL 22

10.70 In para 15.9.4 it is suggested that Figure 33 confirms congestion is increased on the interchange, by concourse passengers "stopping for way finding purposes". Figure 33 does not show any congestion at all.

Section 16 – Benefits of the Project

10.71 16.2.11 states that PEDROUTE has been used for simulating congestion and that ……. Two layouts have been compared, namely the existing one and the proposed upgrade.

10.72 Para 16.2.15 states that, with reference to Figures 11a to 11f that "the south end of the Victoria northbound platform is very busy but passengers now have other routes via the new escalators". This is a surprising statement given that as stated in para 16.2.10 "PEDROUTE is a computer model used by LUL of passenger flows through the station. It can assess congestion

and delay for different levels of traffic and different layouts". This is what has been assessed.

10.73 Again para 16.2.17 LUL states that with 20% more demand, the model shows some queuing delay entering the gates for escalator 3 yet goes on to state that "in practice one would expect some shift in passenger flow towards the gates and new escalators 7, 8 and 9 to reduce this queuing. However, in para 15.8.4 for "optimising Entry Flow for Upgraded Station" it states in the second sentence that "for modelling purposes 60% of passengers have been allocated to escalators 3 and 40% to escalator 9 in the AM peak and …… the route via escalator 9 is no longer in free flow conditions but the allocation described has been found to minimise the overall time including delay". It would appear that for certain scenarios LUL are prepared to explain away the build up of queues when indicated by PEDROUTE for the layout that has been selected. There is no explanation as to why the allocation has not been adjusted.

10.74 For para 16.2.18 which states that "the Victoria Line platforms are busier but the extra traffic tends to full the less busy north end". This statement is not sufficiently supported by the outputs of PEDROUTE for Figures 11a to 11f.

10.75 Paragraph 16.8.1 refers to LUL's quantified Business Case appraisal (VSU.B36, July 2008) which follows the principles set out on TfL's Business Case Development Manual (VSU.B35). Section 6 of my evidence presents a review of the LUL cost and benefits.

10.76 Paragraph 16.8.4 refers to the capital costs of the project which are set out in the Business Case report (VSU.B36). Section 6 of my evidence also includes a review of the difference capital cost estimates presented in

various LUL documentation and their differing assumptions and exclusions.

10.77 Paragraph 16.8.6 presents the LUL benefit to cost ratio of 4.4:1. Section 6 of my evidence describes how the estimated capital cost savings of Land Securities Option 1A is likely to improve the benefit to cost ratio to approximately 5.2:1.

Section 17 – External Consultation on VSU

10.78 Paras 17.2.3 and 17.2.4 refer to potential schemes arising from consultation for a new escalator link to the mainline station and for a pedestrian link under Victoria Street from the north. No mention is made of alternative scheme options that Land Securities have presented to LUL since January 2008.

Section 18 – Funding and Approved

10.79 Refer to the previous sections in my main Proof.

Section 19 – Response to Objectors

10.80 Para 19.1.1 to 19.1.3 do not properly represent the alternative LandSec scheme options.

11 SUMMARY AND CONCLUSION

11.1 This rebuttal proof has reviewed LUL Proofs on Scheme Benefits, Scheme Selection, Surface Transport and Planning. Further evidence has also been prepared following the provision of LUL PEDROUTE files for the AM peak on 25th September 2008 and since a second meeting with LUL on 15th October 2008.

11.2 The key issues set out in this rebuttal proof include the following:

11.3 The 2016 base year modelled by LUL is now understood to represent 2016+15% as the 2016 demand matrices do not account for Thameslink or other transport improvements which when delivered will reduce passenger demand at the Victoria underground station by 15%.

11.4 THE LUL PEDROUTE modelling for 2016+20% (equates to 2016 +35%) for TWAO in the AM peak period shows that passengers make little use of PAL 22 or of the northern PAL towards the northern ticket hall (NTH);

11.5 Passengers have to be forced to use PAL 22 by operating all three of the central escalators up from the platforms at 2016+10%, which I believe is not justified.

11.6 THE LUL PEDROUTE outputs in LUL Appendix for **LUL.P1A Vol 2 of 2** do not indicate any significant crowding at the Victoria Line platform level for the 2016 modelling of TWAO as presented to the Inquiry;

11.7 It is not clear that the full demand for passenger flow from the Victoria Line platforms in the morning peak to the NTH for exit towards major employment nodes around Bressenden Place and the eastern sections of Victoria Street are being fully represented in the LUL PEDROUTE and

demand matrices. Given the significant number and density of these employment nodes to the north and east of the station higher passenger flows in this direction would be expected.

11.8 The comparative Business Case completed for this rebuttal proof confirms that LS Option 1A delivers the same passenger benefits as TWAO but is able to provide a higher benefit to cost ratio as the scheme cost for LS Option 1A is estimated to be £40m lower than for TWAO and these Option 1A benefits are even greater when the under estimated cost of the TWAO impact on other stakeholders is taken into account as well as the increased risk of delivering TWAO.

11.9 The scheme selection for TWAO has been flawed and retrospective and has not properly considered and assessed alternative schemes. Preliminary schemes have been discarded based on changing selection criteria and “like for like” has not been achieved as would be expected for a major transport scheme.