OBJ3/P4

Transport and Works (Inquiries Procedure) Rules 2004

Proposed London Underground (Victoria Station Upgrade) Order

LAND SECURITIES PLC AND OTHERS (Objector No. 3)

PROOF OF EVIDENCE of ROY MCGOWAN of STEER DAVIES GLEAVE

1 INTRODUCTION

Contents

1.1 This evidence contains seven sections:

1.1.1 Section 1 – Introduction.

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1.1.3 Section 3 – The Victoria Transport Interchange development scheme and the benefits it delivers in relation to public transport improvements and delivery of policy/planning objectives.

1.1.4 Section 4 – The process by which London Underground Limited (LUL) identified and assessed alternatives to the TWAO scheme.

1.1.5 Section 5 – The alternative options proposed by Land Securities.

1.1.6 Section 6 – A comparative assessment of the alternative options proposed by Land Securities with the TWAO scheme in relation to transport matters.

1.1.7 Section 7 – Summary and Conclusions.

Qualifications

1.2 I am Roy McGowan and I am a Transport Planner with 28 years experience. I hold a Masters degree in Transport Planning and Management. I am a Director with Steer Davies Gleave who are an independent international transport consultancy with more than 350 staff.

We have been ongoing transport advisors to Land Securities for over six years and were commissioned in January 2004 to provide transport and passenger movement advice with regard to the emerging Victoria Transport Interchange VTI1 and VTI2 proposed development schemes.

1.3 Our previous experience includes over 20 years provision of ongoing transport advice for new developments in London, supporting the major city developers such as Canary Wharf Group, British Land and Land Securities. We are experts in pedestrian movement and modelling, and our most recent ongoing projects include a study of crowd flow and evacuation routes for London 2012 Olympic Games, the provision of crowd flow and transport solutions for Arsenal's Emirates Stadium and passenger modelling for the preferred development option at Euston Station. We have also worked for a number of London Boroughs assessing pedestrian movement and the interaction with the public realm.

1.4 In addition, we have extensive experience in providing transport advice on various aspects of major transport scheme developments. We have had a major input into the Crossrail scheme since its inception providing services to support the business case, planning and development and station pedestrian modelling. We have worked with both promoters of and objectors to Transport and Works Act Order schemes including Thameslink for Department for Transport (DfT), Network Rail and the Strategic Rail Authority (SRA) in developing the transport case and local transport impact assessments for the project.

1.5 I am the Head of the Development Planning business unit at Steer Davies Gleave for the UK and European region. I joined in 1992 after fourteen years of transport planning in the public sector and have extensive

experience in regeneration, development, stadia and major events, transport interchange and master planning. My project experience includes the King's Cross Railway Lands, Channel Tunnel Rail Link, Merseytravel Public Transport, RAF East Camp (Hendon), Victoria Transport Interchange, Canary Wharf, major commercial and leisure development, Thameslink 2000, the Royal Opera House, and the Emirates and Wembley stadia. I am currently directing Steer Davies Gleave's transport services for the London 2012 Olympic and Paralympic Games, including pedestrian and vehicle movements for the Olympic Stadium, as well as directing the transport planning for the Victoria Transport Interchange which for VTI 1 is a joint development by Land Securities and Transport for London, and for VTI2 is a development by Land Securities.

1.6 Appendix A1 **[OBJ3/P4/A1]** includes my CV and a selection of my project experience.

Subject Matter of the Inquiry

1.7 The Inquiry is being held to consider the case of LUL and those who have made objections to the draft London Underground (Victoria Station Upgrade) Order made on 22 November 2007 pursuant to the provisions of Sections 1 and 5 of the Transport and Works Act (TWA) 1992 in accordance with the Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006.

1.8 The Explanatory Memorandum accompanying the draft TWA Order **[VSU.A3]** explains its purpose, which is:

"to permit the company [London Underground Limited] to construct and operate works and compulsorily acquire land and rights in land for the

purpose of the improvement of Victoria underground station. The proposed works comprise a new sub-surface ticket hall beneath Bressenden Place, the expansion of the existing Victoria Line ticket hall beneath Wilton Road, new lifts, sub-surface escalators and pedestrian links and new surface-level entrances to the ticket halls."

1.9 The matters about which the Secretary of State for Transport particularly wishes to be informed are set out in the Department of Transport's letter dated 8 May 2008, including the following:

1.9.1 The aims and objectives of, and the need for, the improvements to Victoria Underground Station.

1.9.2 The justification for the particular proposals in the draft TWA Order, including:

a) *the extent to which they are consistent with national, regional and local planning, transport and environmental policies;*

b) *the anticipated transportation , regeneration, environmental and socio-economic benefits of the schemes; and*

c) *the main alternatives considered by the promoters for the proposals.*

1.9.3 The likely impact on local residents, others visiting or passing through the area, businesses and the environment of constructing and operating the scheme, including:

a) *the effects of noise, vibration and dust;*

b) *the effects of groundwater;*

c) *the impact of the scheme on air quality;*

d) the impact of the scheme on the built environment;

e) the impacts of the scheme on the operation of buses and taxis in the area including the re-routing of bus services and the temporary relocation of the taxi rank;

f) the impacts of the scheme on private and commercial road traffic;

g) the impact on pedestrians, including the effects of reducing footpaths and re-routing pedestrian walkways;

h) the impact on main line rail or underground travellers using Victoria main line or underground stations;

i) the proposed demolition of properties, including any proposals by the promoters to provide alternative temporary or permanent accommodation for those affected, and site reinstatement proposals within the application;

j) the impact of the scheme on rights of access to property;

k) the impact of the scheme on the townscape, including the effects of the scheme on the setting, fabric and use of listed buildings including the Victoria Palace and Apollo (Victoria) Theatres; and

l) the impact of the scheme on archaeological remains.

1.9.4 The compatibility of the scheme with any other development proposals for which planning permission has been granted or for which applications have been made for planning permission.

1.9.5 The effects of the scheme on statutory utility companies and telecommunications providers and their ability to carry on their

undertakings effectively, safely and in compliance with any statutory and contractual obligations.

1.9.6 The measures proposed by the promoters for mitigating any adverse impacts of the scheme, including:

a) the proposed code of Construction Practice;

b) the provisions in the proposed Order for the protection of the interests of statutory undertakers, highway authorities and other affected bodies;

c) the measures proposed to alleviate the effects of the scheme on residents and businesses;

d) any measures to avoid, reduce or remedy any major adverse environmental impacts of the scheme.

e) any measures to avoid, reduce or remedy any other significant adverse environmental impacts of the scheme: and

f) whether, and if so to what extent, any adverse environmental impacts would still remain after the proposed mitigation measures had been put in place.

1.9.7 Whether there is a compelling case in the public interest for conferring on the promoters powers compulsorily to acquire and use land for the purposes of the scheme, having regard to the guidance on the making of compulsory purchase orders in ODPM Circular 06/2004, paragraphs 16 to 23; and whether all of the land over which the promoters have applied for such powers is required in order to secure implementation of the scheme.

1.9.8 The conditions proposed to be attached to deemed planning permission for the scheme, if given, and in particular whether those conditions meet the tests in DOE Circular 11/95 of being necessary, relevant, enforceable, precise and reasonable.

1.9.9 Whether the proposals are reasonably capable of attracting the necessary funding.

1.9.10 The purpose and effect of any substantive changes to the TWA Order proposed by LUL since application was made and whether anyone likely to be affected by such changes has been notified."

2 VICTORIA STATION UPGRADE SCHEME

2.1 The Victoria Station Upgrade scheme (VSU) proposes the provision of a new North Ticket Hall (NTH) below Bressenden Place, extension of the existing ticket hall (the Southern Ticket Hall) and the construction of new underground links connecting the existing Victoria line ticket hall and new Northern Ticket Hall. New lifts for persons with reduced mobility and stairways and escalators will also be provided together with new emergency services access and evacuation core.

The draft Transport and Works Act Order Scheme (TWAO)

2.2 The Transport and Works Act Order (TWAO) for the VSU scheme was submitted to the Secretary of State in November 2007 and has the following features:

2.2.1 A new Northern Ticket Hall (NTH) situated beneath Bressenden Place;

2.2.2 An enlarged Southern Ticket Hall (STH);

2.2.3 Three new banks of escalators (each bank comprising three escalators);

2.2.4 A Paid Area Link (PAL) connecting the NTH to the STH following a route just west of the northbound Victoria Line running tunnel, directly beneath Allington Street: the PAL splits into two mid-way along Allington Street with one branch continuing south towards the D&C Line interchange concourse and the other branch continuing south towards the Duke of York pub towards Vauxhall Bridge Road;

2.2.5 New lifts providing step free access;

2.2.6 Improved emergency services access and evacuation core in the NTH;

2.3 Further supplementary information was submitted by LUL on 5th August 2008 which detailed changes to the proposed works including additional mitigation measures.

2.4 The revised TWAO scheme within the Supplementary Environmental Statement (SES) **[VSU.A31]** detailed the following main changes in the scheme;

2.4.1 The realignment of the PAL and reduction in size and depth of the NTH as shown in Figure 2.2 "VSU Scope of Works with overlay of scheme submitted with TWA" of the SES **[VSU.A31]**;

2.4.2 Removal of the cooling tunnel (provision retained); and

2.4.3 Revised costs for the scheme based on the changes made to the scheme.

2.4.4 The accompanying Estimation of Cost [VSU.A28] shows a revised total figure of £453m at 2008 prices, including £79.67m for acquisition of land and rights over land. This is significantly less than the figure of £510m at 2007 prices, including £66.791m for acquisition of land and rights over land set out in the November 2007 TWAO Application **[VSU.A31]**.

2.5 A revised business case was supplied on 17th September 2008 **[VSU.B36]**. It should be noted that in this revised Business Case, the contingency allowance of £77.07m **[VSU.B36, Appendix 8]** has not been included in

the appraisal process **[Table 21, page 33, VSU.B36].** The scheme cost figure excluding contingency of £474.346m has instead been used.

2.6 Plans of the TWAO scheme and revised scheme are provided in **[Land Securities core documents OBJ3/2/4 to 8A].**

2.7 Further supplementary information provided by LUL included updates to the TWAO documents as well as additional information. The revised or additional information as relevant to this proof of evidence includes:

2.7.1 Supplementary Environmental Statement **[VSU.A31].**

2.7.2 Technical Appendix A – Traffic and Transport Effects **[VSU.A31].**

2.7.3 Technical Appendix C – Scheme Option Selection **[VSU.A31].**

2.8 Technical Appendix C describes in more detail the process by which options were discounted or carried forward in addition to that presented in the November 2007 Environmental Statement **[VSU.A13]**.

Construction Impact of the Scheme on Traffic and Transport

2.9 The Transport Assessment for the TWAO Scheme sits within the 2007 submission documents **[VSU.A13]**. The Assessment details the base transport conditions around Victoria Station, and explains the proposed impacts and subsequent mitigation during construction of the TWAO scheme.

2.10 The main effects on the transport network during construction as a result of temporary work sites are detailed in the summary section of the Transport Assessment **[VSU.A13]** and **the section on Transport in the ES [VSU.A13 paragraph 6.2.36]** to be as follows:

2.10.1 The significant loss of footway area outside the National Rail station and adjacent to the eastern exit to Terminus Place, and the need to balance the provision of temporary replacement footway with the operational requirements of other, competing, road users such as buses and taxis;

2.10.2 The loss of carriageway area at the eastern end of Terminus Place and the adjustments to the operation, and physical layout, of the bus station necessary to maintain bus operations around the worksites, and the consequences of this for both taxis and pedestrians;

2.10.3 The narrowing of Wilton Road for a significant period of time, and the closure of Wilton Road and parts of Allington Street and the effects such actions have on general traffic, pedestrians, cyclists, buses and taxis; and

2.10.4 The narrowing of Bressenden Place and the effect this has on general traffic capacity as well as the effect on pedestrians arising from amendments to the pedestrian island at the Bressenden Place/Victoria Street junction.

2.11 A subsequent Supplementary Transport Assessment, and 'Technical Appendix A – Traffic and Transport Effects' **[VSU.A31]** was submitted by LUL with the Supplementary Environmental Statement (SES) on 5th August 2008.

2.12 The description of impacts in the SES **[VSU.A31]** is the same as those submitted in the November 2007 Transport Assessment **[VSU.A13]**. However, the detail of the construction works and mitigation measures differs.

2.13 With regards to proposed mitigation works in Allington Street the ES **[VSU.A13, paragraph 20.1]]** and the SES **[VSU.A31, paragraph 17.1]** states that Allington Street will have to be closed at some stage of the works and proposes two potential mitigation strategies: AS1 (buses turning westbound on to Victoria Street from Terminus Place, then go straight ahead to Grosvenor Gardens and then turn right into Lower Grosvenor Place and on to Bressenden Place); and strategy AS2 (new contraflow bus lane to be provide on Victoria Street between Allington Street and Bressenden Place) to provide a more direct, shorter access.

2.14 Paragraph 20.1.2 of the November 2007 ES Transport Assessment **[VSU.A13, Transport Assessment, page 126]** states that 'Following discussions with London Buses and Transport for London and based on the findings of initial modelling which indicated the contra-flow bus lane in Victoria Street proposed under Strategy AS2 is viable, Strategy AS2 has been selected as the preferred mitigation measure.'

2.15 Paragraph 17.1.2 of the August 2008 SES Transport Assessment **[VSU.A31, Transport Assessment, page 203]** also states that AS2 is viable, and that 'Since November 2007 this proposal has been confirmed and approved in principle by London Buses."

2.16 Further to this, paragraph 6.2.62 of the SES **[VSU.A31]** notes that "the proposed contra-flow bus lane in Victoria Street will provide satisfactory mitigation for routes travelling between Terminus Place/Wilton Road and Victoria Street (east-side) and for these routes such mitigation, would result in there being "no significant residual effects".

2.17 Paragraph 6.2.63 **[VSU.A31]** notes "For the remaining routes that would normally use Allington Street as a means of accessing Vauxhall Bridge

Road, and would be unable to use the proposed contra-flow bus lane, the need to use the 'emergency' diversion route would result in there being a significant residual effect".

2.18 Section 8.5.1 (ii) of the 'Technical Appendix A – Traffic and Transport Effects' **[VSU.A31, paragraph 8.5.1]** states that since the proposal of the above mitigation measures "discussions have taken place with stakeholders, including London Buses, and mitigation for Victoria Street-bound buses, in the form of a contra-flow bus lane in Victoria Street, has been agreed. This will provide a reduction in current mileage and is therefore an overall benefit for bus operations when judged against the current arrangement".

2.19 Chapter 18 of the SES **[VSU.A31, paragraph 18.2]** proposes that during the closure of the southern arm of Allington Street, taxis will be required to access the proposed taxi rank on the west leg of Allington Street via Warwick Row. And that the closure of the eastern section of Allington Street will also mean that taxis will have to reroute via Warwick Row. Although, there is no reference to the closure of Allington Street in this Chapter **[VSU.A31, Chapter 18]** the November 2007 ES [VSU.A13, paragraph 21.3] states that 'during times when the entire southern leg of Allington Street is closed, it will not be possible for taxis to use Allington Street.' Therefore both the ES **[VSU.A13]** and the SES **[VSU.A31]** both imply that at some point during construction, no taxis will be able to use the eastern and southern section of Allington Street.

2.20 The report **[VSU.A13, Technical Appendix A, paragraph 8.5.2]** also states that there remains a 'significant effect' and there will be occasions (of approximately two to three months duration) during the closure of Allington

Street when the contra-flow bus lane is not available because of other construction works in Victoria Street and at such times the affected routes will have to make a detour via the established emergency route, namely Victoria Street (west), Grosvenor Gardens, Lower Grosvenor Place and Bressenden Place during which the buses affected will be subjected to additional mileage and additional delays. However, the opportunity to re-schedule some elements of the work so as to avoid this situation is still under investigation.

2.21 LUL therefore clearly support the proposed contra-flow bus lane in Victoria Street as an appropriate measure to mitigate the impacts of the closure of Allington Street on bus operation.

Aims and Objectives

2.22 The proof of evidence of Mr Hugh Bullock **[OBJ3/P5]** sets out the policy and planning context of the TWAO scheme and its assessment against those objectives. Below I focus on the transport aims and objectives for the Victoria Station area as set out in the relevant local plans as well as the scheme objectives as expressed by LUL.

The London Plan (consolidated with alterations since 2004) – February 2008

2.23 The London Plan **[VSU.C20]** was recently consolidated with alterations since 2004 and adopted in February 2008. It includes some changes to transport policies including experience in the implementation of the London Underground Private Public Partnerships (PPP's).

2.24 The Mayor puts improvements in public realm and quality of life at the centre of the London Plan. One of the key objectives is "*to make London a*

better city for people to live in; … to improve the quality of Londoners' lives and the environment through better designed buildings and public spaces" **[VSU.C20, page 7, Key Objective 2].**

2.25 Objective 3 aims "*to make London a more prosperous city with strong and diverse long term economic growth*" and Objective 5 aims to *"to improve London's accessibility".*

2.26 Chapter 3, part C of the London Plan sets out the key policies and proposals for improving travel in London. Of particular relevance are:

a) Integrating transport and development;

b) Matching development to transport capacity;

c) Sustainable transport in London;

d) Land for transport functions;

e) London's international, national and regional transport links;

- Increasing the capacity, quality and integration of public transport to meet London's needs;

f) Phasing of Transport Infrastructure;

- New cross-London links within an enhanced London National Rail Network, including implementing Crossrail 1 and developing Crossrail 2;

g) Improved Underground and DLR services.

2.27 Policy 3C.1 promotes integration of transport and development through the improvement of public transport capacity and accessibility where it is needed, for areas of greatest demand and areas designated for development and regeneration, and encouraging integration of the Major

Transport Infrastructure Plan with improvements to the public realm, particularly in key areas around major rail and underground stations and interchanges, using land assembly powers where necessary.

2.28 The proposals for the Land Securities development at Victoria (VTI) will enable the integration of both improvements to Victoria station and public realm.

2.29 Policy 3C.2 of the Plan looks at "matching development to transport capacity" states that '*Boroughs should take a strategic lead in exploiting opportunities for development in areas where appropriate transport accessibility and capacity exists or is being introduced. The cumulative impacts of development on transport requirements should be taken into account. Boroughs should also facilitate opportunities to integrate major transport proposals with development in a way that supports the London Plan's priorities.*'

Victoria Area Planning Brief – April 2006

2.30 The Victoria Area Planning Brief (VAPB) **[VSU.C42]** was adopted by Westminster City Council in March 2006 and sets out a framework for development at Victoria. Chapter 7 of the report describes the existing situation at the Victoria Interchange as being under stress, and particularly (Para 7.7, Page 44):

- *"The LUL station is regularly closed for short periods during the morning peak due to excessive demand;*
- *The existing bus station cannot accommodate the proposed articulated services and frequency increases;*

- *The Inner Ring Road passes the station, and adequate highway capacity must be maintained;*
- *Pedestrian space is limited."*

2.31 The report then goes on to broadly describe development proposals for Victoria Transport Interchange and VSU, with the principal objective to improve passenger flow between Underground services, street level and the National Rail station for both current and forecast passenger demand.

2.32 The guidance places emphasis on the priority of pedestrian movement around proposed sites and meeting transport requirements. The Land Securities VTI development proposals at Victoria will include widening of footways, the provision of a new pedestrian corridor, and the creation of additional bus stands on Buckingham Palace road.

2.33 Mr Hugh Bullock **[OBJ3/P5]** sets out the objectives of the VAPB which relate to the regeneration of the Victoria area.

City of Westminster Unitary Development Plan - January 2007

2.34 The planning strategy of the Unitary Development Plan (UDP) is guided by the following six planning aims:

a) Enhancing the attraction of central London.

b) Fostering economic vitality and diversity.

c) Building sustainable communities.

d) Integrating land use and transport policies and reducing the environmental impact of transport.

e) Ensuring a high quality environment.

f) Working towards a more sustainable city.

2.35 The Land Securities VTI development proposals at Victoria contribute towards each of these objectives through providing a mix of land uses; establishing an accessible public realm; providing pedestrian and transport benefits, and will be extremely well served by non-car modes.

2.36 Policies STRA 20 to 25 of the City of Westminster Unitary Development Plan (UDP) **[VSU.C35]** deal with integrating land use and transport. In terms of transport development, the UDP policies include the following objectives (Para 4.15, Page 190):

a) Reduce the impact on the environment;

b) Reduce the impact on air quality;

c) Ensure the continued attractiveness and economic viability of Westminster;

d) Reduce non-essential traffic;

e) Give priority to more sustainable forms of transport: walking, buses, rail and cycling;

f) Improve accessibility to services within Westminster, by reducing dependence on the car and promoting other forms of transport;

g) Reduce the number and risk of traffic accidents;

h) Improve the efficiency of the existing road and rail networks and minimise traffic congestion;

i) Improve residential amenity by reducing the impact of traffic, particularly large vehicles, on local, residential streets;

j) Control on and off street parking to reduce overall parking demand and increase the availability of space for essential users such as doctors, disabled people and those that genuinely need to use a car as part of their daily business and other priority users such as residents;

k) Promote development of a kind which reduces the need to travel;

l) Maintain and improve the quality of the townscape and physical environment;

m) Provide safe and convenient access to services for disabled people.

Summary

2.37 The integration of development and transport, and increasing the attractiveness and economic viability of the Victoria area is a key theme throughout the relevant local policy documents. Mr Hugh Bullock **[OBJ3/P5]** sets this out in further detail. It is therefore essential that the VSU scheme is not considered in isolation but rather considers proposed development in the surrounding areas and the need for integration in the wider public interest.

2.38 The VSU scheme meets some of the objectives set out in the local policy of the London Plan, the VAPB and the Westminster UDP in so far as it focuses on the need to facilitate increased future demand for public transport and underground use, and encourages the use of sustainable modes of transport. However the VSU scheme fails to meet the objectives in a form that supports other policies for delivering regeneration and redevelopment in the area and would result in unwarranted prejudice and detriment to those objectives to integrate transport and development. The

proposals for Land Securities development and new public space at Victoria will provide a new public realm that will be in line with the main principles that the Mayor has set out as key ambitions for London. I set out details of the Land Securities VTI proposals for development at Victoria in Section 4.

2.39 Furthermore, as Mr Hugh Bullock sets out in his evidence **[OBJ3/P5]** and I set out in Section 5 of my evidence in relation to transport matters, there are other scheme options that could better deliver these important broader policy objectives including scheme options put forward by Land Securities that are less prejudicial to its proposed VTI development at Victoria and therefore are better supported by policy including maximising the opportunities for economic regeneration and related development. The proposals for Land Securities VTI development and new public space at Victoria will deliver a new public realm in accordance with the main principles that the Mayor has set out as key ambitions for London. I set out details of the Land Securities VTI proposals for development at Victoria in Section 4.

Transport and Works Act Order Scheme Objectives

VSU TWAO Environmental Statement – Main Report, November 2007

2.40 The principal objective stated in the Environmental Statement (ES) **([VSU.A13] paragraph 2.2.1, pages 2-2)** is: *'To increase the capacity of Victoria Underground station so that it is fit for purpose for handling present and forecast demand, and to minimise passenger journey time and improve the quality of access, interchange and ambience, to the maximum extent practicable within physical, scheduled and financial constraints.'*

2.41 Table 2-1 in the ES shows the objectives in more detail. This is provided in **Appendix A2 of my evidence [OBJ3/P4/A2].**

VSU TWAO Supplementary Environmental Statement – August 2008

2.42 The objectives set out in the November 2007 Environmental Statement remain unchanged.

VSU TWAO Statement of Case of London Underground Ltd. – March 2008

2.43 The Statement of Case for the TWAO VSU scheme states the principal objectives of the scheme as follows **[VSU.A38, paragraph 2.3.1, page 4]:**

- To increase the capacity of Victoria Underground Station so that it is fit for purpose for handling forecast 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.

2.44 In order to support these main objectives, four more specific supporting objectives have been included as follows (paragraph 2.3.2, page 4):

a) Increasing the entrance capacity of the underground through delivery of:

- *A 50% increase in escalator capacity to/from the Victoria line with linking routes providing at least matching capacity; and*
- *A new station entrance near the Victoria Street/Bressenden Place junction.*

b) Minimising the journey times for passengers entering, leaving and interchanging at the Underground Station through:

- *A targeted improvement of at least 5 minutes in the current journey time from Victoria Street to the Victoria line platforms;*
- *Making the location, orientation, facilities and signage of the Bressenden Place entrance prominent and welcoming in order to attract passengers towards the quickest route into the Underground Station;*
- *Designing passenger flows in normal operation to avoid queues, blocking or conflicting with other flows;*
- *Avoiding in normal operation closures of the inward ticket gates;*
- *Making routes through the station as short, and as self-directing as possible; and*
- *Avoiding flows entering and leaving the Victoria line platforms delaying the operation of the upgraded train service.*

c) The provision of step-free access between the existing National Rail Station entrance and Bressenden Place entrance and all platforms.

d) Fitness for purpose: the Underground Station should meet standards and consents from regulatory and planning authorities.

LUL TWAO Business Case (V3.0) – January 2008

2.45 The Business Case (V3.0) for the TWAO scheme **[VSU.B9]** states the prime objectives of the project as follows (paragraph 4.1):

- *To reduce existing and future expected peak delay to passengers using the Victoria Line as a way in, way out or interchange with the District and Circle Lines;*
- *To provide a faster connection from the Victoria Line platforms to the large employment and commercial area around Victoria Station;*
- *To provide step free access from street to all platforms and step free interchange between all platforms.*

2.46 These are unchanged in the revised Business case produced in September 2008 but dated July 2008. I note that the objectives are wholly focussed on transportation effects without reference to wider regeneration objectives or the importance of seeking to reduce any adverse effects on the regeneration of the area.

Summary

2.47 The proposed TWAO scheme will help to accommodate additional future demand and relieve congestion from the southern end of the Victoria line platform through providing an alternative route (via the PAL) to encourage greater use of the northern ends of the platform and therefore reduce passenger delay. Provision of the new Northern Ticket Hall (NTH) will help to relieve the busy pedestrian flows between the Southern Ticket Hall (STH) and the commercial hub in the Victoria area and towards the east end of Victoria Street.

2.48 The issues of adequate capacity and journey time savings have clearly been given overriding consideration by LUL in deriving the objectives for the VSU scheme. It appears that little, if any, consideration has been given to

seeking to minimise adverse impacts on the potential regeneration of the Victoria area despite this being a major policy consideration when setting the scheme objectives.

2.49 Furthermore, as Mr Tim Chapman sets out in his evidence **[OBJ3/P3]** and I set out in my evidence in Section 6, there are also other scheme options including scheme options put forward by Land Securities that could better deliver these objectives through enabling VSU to be constructed alongside the proposed VTI development at Victoria and thus providing the associated transport and regeneration improvements at Victoria in a much shorter time period and with greater certainty and less risk. Delivery of the integrated but separately deliverable VSU and VTI schemes would better serve the public interest than the TWAO scheme by allowing the regeneration benefits to also be delivered and would also cause less prejudice to adjacent land.

2.50 The scheme objective of minimising journey times was subsequently used by LUL as one of the main criteria to assess the alternative scheme design options. I review the process by which alternatives were assessed by LUL in my evidence in Section 3.

Anticipated Transportation Benefits of the Scheme

2.51 The LUL Business Case appraisal **[VSU.B36, paragraph 4.3]**.states that is 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').

2.52 LUL submitted with their statement of case, a Business Case **[VSU.B9]**, published in January 2008. Subsequent to this a document entitled Updated Business Case "Business Case Background Paper" **[VSU.B36, dated July**

2008] was provided to Land Securities on the 17th September 2008. This document is an update to the business case provided in the January 2008 document.

2.53 The following section provides an initial assessment of the derivation of costs and benefits in the LUL VSU. This assessment however is based on the limited information provided by LUL. A number of requests were made to LUL for more detailed information about their business case.

2.54 The correspondence included the following emails and letters:

2.54.1 Land Securities to Bircham Dyson Bell: 30 November 2007 **[Land Securities core document OBJ3/1/12]** and the reply of the same **date [Land Securities core document OBJ3/1/13]**.

2.54.2 Land Securities to Bircham Dyson Bell: 3 December 2007 **[Land Securities core document OBJ3/1/14]**.

2.54.3 Land Securities to Bircham Dyson Bell: 6 December 2007 **[Land Securities core document OBJ3/1/15]**.

2.54.4 Land Securities to Bircham Dyson Bell: 11 December 2007 **[Land Securities core document OBJ3/1/16]**.

2.54.5 Bircham Dyson Bell to Berwin Leighton Paisner: 17 December 2007 **[Land Securities core document OBJ3/1/17]**.

2.54.6 Sharpe Pritchard to Bircham Dyson Bell: 16 May 2008 **[Land Securities core document OBJ3/1/18]**.

2.54.7 Bircham Dyson Bell to Sharpe Pritchard: 24 June 2008 **[Land Securities core document OBJ3/1/19]**.

2.55 LUL subsequently agreed to a meeting to discuss the PEDROUTE modelling for VSU but this was not held until 25th September 2008, which is the day before the exchange of proofs.

2.56 In the absence of this information a review of the business case has been undertaken on the assumptions outlined below and I have undertaken my own assessment of passenger movements relating to journey times. This is provided in Section 6 of my evidence. I will make any further comments on the Business Case and underlying PEDROUTE analysis in the light of the information which will hopefully finally have been made available by LUL.

Benefits

2.57 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.

2.58 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.

2.59 The table in Appendix A3 **[OBJ3/P4/A3]** includes the 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 September 2008 Business Case **[VSU.B36]**. This demonstrates the dominant influence of journey time savings to the total scheme benefits derived. It also shows that the forecast Journey Time Savings and Accessibility benefits have increased between January 2008 and September 2008 contributing to an overall net increase of £192,135 (current value) in total net 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]**.

2.60 **Appendix 4 to my evidence [OBJ/3/P4/A4]** provides a review of the LUL Business Case.

2.61 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/3/1/18]** and their response dated 24 June 2008 **[Land Securities core document OBJ/3/1/19]**. 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.

2.62 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.

2.63 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.

2.64 However, It is stated in the Business Case **[VSU.B9 and VSU.B36, paragraph 4.5.1]** that the AM Peak 2016 + 5% and 2016 + 10% demands were still unable to be assessed due to the level of delay reaching '*very high levels*' ,

2.65 Whilst this limitation of PEDROUTE is understood, it is not clear from the documentation provided what 'reconfiguration' (operational management and passenger routing assumptions) of the PEDROUTE model took place to enable the model to derive the passenger journey time benefits to increase the BCR to 3.8:1 in the January 2008 Business Case and the more recent 4.4:1 BCR.

2.66 When this information is provided to Land Securities along with the PEDROUTE model itself, a further review of the document and alternative schemes will be carried out incorporating the additional information (time permitting) in order to assist the TWAO Inquiry.

2.67 No specific tangible measures of success have been quoted in the LUL VSU Business Case **[VSU.B9 and VSU.B36]** document in order to describe a measurable means of ensuring the scheme objectives are achieved. In addition, no details are provided of the comparison of the options against each of the eight option selection criteria used in the options assessment/selection process (as discussed in Section 3 of my evidence). It is therefore not clear that any comparative business case appraisal has been undertaken to compare the preferred TWAO scheme, not only against the base case, but also incrementally against the other options that were discarded by LUL. There appears to be no allowance made for the potential disbenefits of the TWAO Scheme on redevelopment and regeneration proposals in the area which would be in the wider public interest.

Costs

2.68 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 £395 million, £67 million for acquisition of land and rights over land, £43 million for professional fees and £5m for surveying, drilling etc.

2.69 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 £79.67m 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.

2.70 The January 2008 Business Case states Core Works Costs as totalling £510.497m (including contingency and £1.928m for property acquisition

including compensation) **[VSU.B9, Appendix 8].** This figure for Core Works Costs increases to £551.423m in the September 2008 Business Case (including contingency and £67.8m for acquisition of land and rights over land) **[VSU.B36, Appendix 8].**

2.71 The January 2008 Business Case **[VSU.B9, Appendix 8]** includes £75m allowance for project risk. This has been reduced in the September 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.

2.72 The September 2008 Business Case specifies a total cost of the core works (including contingency of £77.07m) of £551.423m **[VSU.B36, Appendix 8]**. The business case spreadsheets **[Table 21, page 33, VSU.B36]** indicate that this £77.07m contingency allowance has not been included in the appraisal process before allowances for inflation, 18% optimism bias and other costs have been allowed for. The figure excluding contingency of £474.346m has instead been used. It is unclear why this contingency allowance has been excluded in the scheme appraisal.

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

2.73.1 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]**.

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

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

2.73.4 A cost of £67,800,000 has been accounted for land, land rights and acquisition **[VSU.B36 paragraph S4.1]** (increased from the £60,631,000 quoted in the January 2008 Business Case **[VSU.B9]**).

2.73.5 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]**. It is suggested by Tim Chapman in his Evidence **[OBJ3/P3]** that a safer method of tunnel construction may reduce these costs.

Funding

2.74 The statement of funding **[VSU.A8]** sets out the proposed funding for the scheme. It notes:

TfL's current investment programme covering the period 1 April 2005 to 31 March 2010 was approved by the TfL Board on 24 October 2007. It includes the full £117m cost for the scheme during this period. Thereafter, funding for the completion of the scheme is dependent upon TfL Board approval of the allocation of funding provided to TfL under HM Treasury's Comprehensive Spending Review of October 2007, which contains

provision for schemes such as this. The scheme was confirmed at LUL's Investment Delivery Meeting (a Director level meeting) on 16 October 2007 as a priority scheme and LUL intend to apply to TfL for this funding.

2.75 Evidence submitted by R. Fourt **[OBJ3/P6]** details the effects of any potential increase in cost of land, land rights and acquisition.

2.76 In terms of increased capital costs a significant issue is likely to be that any increase in compensation payments on this level will have a major impact on TfL's Investment Programme, from which VSU is funded. The current 5 year plan runs to 2010, beyond which there is significant uncertainty on the availability of funding, due to projects such as Crossrail, the London 2012 Olympic Games and funding for LUL Public Private Partnership (PPP) contracts with Tubelines.

2.77 The Public Private Partnership (PPP) Arbiter's Guidance on Tube Lines second period costs, an extract of which is at **Appendix 5 in my evidence [OBJ3/P4/A5]** was released on 9th September 2008 and covers the funding of maintenance and renewal works from 2010 to 2017. The report indicates that the LUL network is facing a funding gap of over £1bn. This places significant pressure on TfL's forward investment programme.

Analysis

2.78 The business case for the TWAO scheme implies that journey time savings are the major monetary benefit of the scheme, representing as much as 96% of the total scheme benefits (taken from the Table in **Appendix 3 of my evidence [OBJ3/P4/A4)**.

2.79 Journey time benefits result from a number of factors including length of route, walk speed, simplicity of the interchange (i.e. turns, stairs etc.) and

level of passenger conflict of movement. The overall journey time benefit calculated is a result of all these factors and is derived through a computer dynamic modelling tool, PEDROUTE. In the absence of the PEDROUTE model being made available by LUL for the preparation of this evidence, an assessment of the journey time benefits can only be undertaken as a comparative exercise by looking at the factors likely to affect the model. This is addressed in my evidence in Section 6 where I compare it to other alternative options. When the full PEDROUTE model is made available by LUL, a revised review of the journey time benefits of alternative options will be undertaken (time permitting) by Land Securities to assist the Inquiry.

2.80 The more significant issue is likely to be that any increase in capital costs, including compensation payments, will have a major impact on TfL's Investment Programme from which the VSU scheme is funded, and as already referred to, the Public Private Partnership (PPP) Arbiter's Guidance on Tube Lines suggests that where the LUL network is facing a funding gap of over £1bn **[OBJ3/P4/A5]**, funding beyond 2010 for major schemes is not guaranteed, and that overall capital costs are a significant issue for TfL schemes.

2.81 Section 2.1 of Transport for London's Business Case Development Manual (BCDM) **[VSU.B35]** states that "*The purpose of an appraisal is to identify the effect that a course of action will have both on the finances of TfL and on "securing efficiency, economy and safety of operation in ... transport services*" [Greater London Authority Act 1999]. The achievement of efficiency is interpreted here as the following business objective: to maximise net social benefit within available funds". It also notes that major projects should adhere to the DfT's New Approach to Transport Appraisal (NATA) (the relevant extract of which is at **Appendix 6 of my evidence**

[OBJ/3/P4/A6]). The NATA framework notes the role of appraisal as "*informs whether a proposal represents value for money (VfM), sitting alongside evidence on a scheme's deliverability and strategic fit*".

2.82 BCDM also states that (section 2.3.1) "*In order to give decision makers confidence that a particular project is the best way to achieve an objective, a range of alternative options with similar objectives needs to be defined and appraised in a consistent way*". The emphasis here is on the need to appraise a range of alternative scheme options in a consistent way so that decision makers can be confident.

2.83 The impact of the scheme on the regeneration aims of the Victoria area and the associated development proposals would need to be taken in to consideration to properly "*maximise* [the] *net social benefit*" of the VSU scheme. In addition it would seem reasonable that the assessment should also have taken into account the regeneration aims of the Victoria area and the associated development proposals in terms of *"value for money sitting alongside evidence on a scheme's deliverability and strategic fit."*

2.84 *Furthermore, there does not appear to be evidence in LUL's submission that other scheme options have been "appraised in a consistent way" as required by appraisal guidance documents. There are other scheme options including scheme options put forward by Land Securities that could better deliver these business case benefits and enable the VSU scheme to be constructed alongside and at the same time as the proposed VTI development at Victoria. Delivery of the integrated but separately deliverable VSU and VTI schemes would therefore be more in the public interest and avoid the delay and risk that will be incurred from the TWAO scheme. I review the option assessment of LUL in more detail in Section 3.*

3 LONDON UNDERGROUND ALTERNATIVES TO VSU

3.1 LUL began the option review process in July 2005 with Scott Wilson as the Multi Disciplinary Design consultants. The VSU Stage B+ Option Review report (July 2005) was produced to assess each of the options for VSU **[VSU.B5]**.

3.2 LUL later held an Option Selection Workshop for VSU-W5D1 on 16th January 2007 in order to decide on a preferred option, using the apparent preferred Stage D option from the Scott Wilson report of July 2005 as a basis for comparison. This was summarised in the Mott Macdonald W5-D1 Scheme Option Selection report **[VSU.B6,** May 2007]. Reviews of these documents in relation to transport matters are described in the paragraphs below. I rely on the evidence of Mr Tim Chapman **[OBJ3/P3]** to cover the engineering aspects.

3.3 The additional information and review of the Option Selection process submitted alongside the SES **[VSU.A31, Technical Appendix C]** describes a further review that was undertaken by the MDC2 design team in May 2008 which revisited all the options previously considered and compared them against the project selection criteria.

3.4 A detailed review of the optioneering process undertaken by LUL including the methodology used at each stage is provided in Appendix A7 to my evidence **[OBJ3/P4/A7]**.

Stage B+ Option Review – Scott Wilson, July 2005 [VSU.B5]

3.5 The Stage B+ Option Review **[VSU.B5]** evaluates 15 options through a staged acceptance process, whereby any option that fails one of the assessment criteria does not continue to the next stage.

3.6 The report concludes with a cost benefit summary, whereby the Modified Base Option delivers the greatest benefits in journey time savings relative to the cost of the scheme. However, it also states that '*there are a number of key issues that need to be resolved prior to any final decisions on the preferred scheme*' **[VSU.B5, section 7.2, page 29]**.

W5-D1 Scheme Option Selection – Mott Macdonald, May 2007 [VSU.B6]

3.7 This document describes the selection process for the preferred VSU option (TWAO scheme). A total of 20 possible schemes were originally assessed by LUL using the parameters below with their associated 'weightings" used to assess the relative importance of each VSU project objective against other criteria.. These parameters are required parameters which must be met by schemes for further consideration:

3.7.1 Journey Time (38%)

3.7.2 Programme (8.3%)

3.7.3 Project Cost (12.2%)

3.7.4 Buildability (6.5%)

3.7.5 Operational Impacts (21.1%)

3.7.6 Stakeholder Impacts (6.0%)

3.7.7 Utilities (1.5%)

3.7.8 Environmental Impacts (6.0%)

3.8 Appendix E **[VSU.B6, Appendix E]** details that Journey Time has been calculated in total passenger hours for free flow weighted street to platform movements, reverse and platform interchange movements. Information regarding the methodology is given which assumes a passenger walk speed of 1.34m/s through the PAL. Of the five schemes assessed in this journey time analysis (Options Stage D, 2A, 2B, 2C and 6) **[VSU.B6, Appendix E]** three were rejected on grounds of increased passenger walk distance. Where other scheme options have been rejected due to Journey Time within this document **[VSU.B6]**, it has been on grounds of '*reduced operational flexibility*,' and '*insufficient escalator capacity*.'

3.9 The considerable emphasis placed on options which reduce journey times within this document **[VSU.B6]** given the 38% weighting assigned to journey time relative to other project criteria, resulted in the immediate elimination of certain alternative options without these necessarily being assessed on their relative merits or on the basis of other key project success criteria such as cost, programme and construction risk.

3.10 No details have been provided in either this document, or the LUL Business Case **[VSU.B9]** or the TWAO ES **[VSU.A13]** or SES **[VSU.A31]** as to how the relative weightings assigned to the key option comparison criteria were applied during the scheme option selection stages. This information is essential in order to test the robustness of the selection of the VSU scheme

as the most appropriate alternative having regard to the overall objectives for the Victoria area.

Supplementary Environmental Assessment (SES), Technical Appendix C – LUL, August 2008 [VSU.A31]

3.11 LUL considered it appropriate to revisit the option selection process in light of the scheme changes submitted as part of the **SES [VSU.A31],** and as a result, provided further information on the past process, and reasons why the SES TWAO scheme was ultimately chosen.

3.12 Tables 4-1 to 4-3 of the SES **[VSU.A31, pages 29-39]** provide an additional list of primary and secondary reasons for rejections of the Options in light of the review of the Option Selection process carried out for the SES **[VSU.A31, Technical Appendix C].**

3.13 Although the 2007 Mott MacDonald Scheme Option Selection **[VSU.B6]** dismissed Option 2A (similar to LandSec Option 1) on grounds of Journey Time, the SES **[VSU.A31, Table 4-2, page 34]** lists the primary and secondary reasons for rejection of Option as follows;

3.13.1 Primary: Buildability - Increased construction risk: potential for undermining District and Circle Tunnel due to PAL alignment immediately adjacent, parallel and below footings of District and Circle line tunnel. Also increased construction risk under frontage of the Victoria Palace Theatre and the Kings Scholars Pond Sewer.

3.13.2 Secondary: Journey Time - Way finding difficult and passenger walk distance increased relative to Option 0.

3.13.3 Secondary: Operational Impacts - Potential impacts on District and Circle line operations

Review of the Options Assessment Process

3.14 The following paragraphs provide a critical review of the LUL Options Assessment process. A more detailed critical review of the assessment of each specific option is provided in **Appendix 7 of my Evidence [OBJ3/P4/A7]**.

3.15 It appears that the criteria and weightings used to assess the options (paragraph 3.8 above) were derived following the W5_D1 Options Selection Workshop held on 16th January 2007 the when only two of the options assessed in this workshop remained for consideration.

3.16 A significant weighting has been assigned to journey time (38%). The overarching objectives of VSU as stated are to increase station capacity and to minimise passenger journey time and this appears to be the reason why it has been given the highest weighting. However, in contrast, a relatively low weighting has been assigned to stakeholder impacts (6%) which underestimates the potential public benefits to be gained by recognising schemes such as the development at Victoria (VTI) and other stakeholder impacts. It is of note that any public benefits to be gained from journey time savings cannot be said to be such if they are detrimental to the overall public interest. Mr Hugh Bullock goes into more detail with regard to the regeneration benefits to be gained from VTI in his evidence **[OBJ3/P5]**.

3.17 Programme, cost criteria and buildability (is said to include risk but it is not clear how) also have relatively low weightings at 8.3%, 12.2% and 6.5% respectively. This is surprising as these factors contribute to the overall

public interest. They are covered in more detail in the evidence of Mr Tim Chapman's **[OBJ3/P4].**

3.18 Further to this, no evidence has been provided as to how the relative weightings (as set out in paragraph 3.8 above) have been used when assessing any of the options throughout the options selection process. Therefore it appears that Options have been dismissed on the grounds of failing to meet the criteria rather than applying the weightings to each criteria for each of the options. There is no reference as to how the weightings are applied within the Option Selection reports **[VSU.B5 and VSU.B6]**, or the TWAO ES **[VSU.A13]** or SES **[VSU.A31]**. It is therefore difficult to understand how, for example, the journey time criteria for each option has been assigned a weighting of 38% as there is no evidence of this process within the option selection process.

3.19 Limited details are provided on how the options included in the Mott MacDonald Scheme Option Selection process **[VSU.B6]** (January to May 2007) compare against all the eight option selection criteria listed above. Additionally, there is a lack of transparency as to whether any comparative business case appraisal has been undertaken to compare the preferred TWAO scheme against the base case and the other proposed options included in the January-May 2007 option selection process.

3.20 The additional information and review of the Option Selection process submitted alongside the SES **[VSU.A31, Technical Appendix C]** states that in considering the modified scheme proposals it was decided that where an option had been rejected because it did not meet one of the project criteria it would be tested against all of the criteria **[VSU.A31, Technical Appendix C, Section 7]**, which makes clear that this exercise

had not been carried out previously and certainly not before the TWAO application made in November 2007. Table 7.1 **[VSU.A31, Technical Appendix C]** of this document details the results of this assessment. However, the Table does not detail the performance of each option against each criterion. Rather, it lists the primary and secondary reasons for rejection.

3.21 Paragraph 4.7.2 for the Supplementary Environmental Statement (SES) **[VSU.A31]** also states that "*The May 2008 review examined all options against the parameters and recorded the findings for each parameter. The main reasons for reaching the conclusions on the alternatives should be regarded as being those in May 2008*". In spite of this statement, options were rejected between January-May 2007, and there is no way of determining whether reasons for rejection remain the same, or whether there is a retrospective justification on decisions made one year previously.

3.22 There also appear to be several inconsistencies between the option selection process undertaken over time. Unique features of the LUL TWAO scheme seem to increase in significance between various option selection reports. One such example of this is with the District and Circle Line (D&C) link between the D&C Eastbound platform and the PAL. If this link is assumed to be fully operational for two-way pedestrian flows diverting the interchange concourse then under normal operational circumstances, it will carry a maximum of 15% of the total movements within the station (see Appendix 8 **[OBJ3/P4/A8]** of this Proof).The value of this link in normal operational circumstances is questionable, as it appears to be an 'add on' of the scheme and does not relate to the overall objectives of the VSU scheme, which are essentially to reduce congestion between the National Rail station and the Victoria Line platforms.

3.23 This D&C link was described in the original November 2007 ES as "*passive provision for future construction*" **(ES, Option #6 in Table 4-3, page 4-11)** meaning that LUL did not intend to complete this link as part of the initial VSU proposals. It appears that this link has become more significant within the option selections process as time has progressed, with the result that other options without the link have been dismissed on the grounds that it is not provided. This approach has not been explained or justified by LUL.

3.24 The SES also states that "*The May 2008 review of the design changes concluded that none of the other options previously considered would perform better relative to Option 6...*" **[Paragraph 4.7.2].** In this respect I note that some of the options would perform better than Option 6 **[SES Technical Appendix C, Appendix B]** against certain criteria, for example cost, risk, stakeholder impact and duration. However, assessment of these criteria were not carried out for the options dismissed in the initial stages that appear to have been mainly discarded at this preliminary stage due to journey time alone.

Summary

3.25 I consider that the LUL option selection process does not properly justify the reasoning behind rejecting Option 2A which is very similar to the LandSec Option 1 and Option 1a. Instead the process of option selection by LUL seems to have been subjective and lacking in detailed technical appraisal to ensure a consistent methodology. It is my view that a directly comparable and credible business case should have been developed in order to make an informed and fair comparison between all proposed options in line with LUL guidance requirements.

3.26 I have commented on the position as to PEDROUTE earlier. If a dynamic model was developed for LandSec Option 1, it is possible that despite a slight increase in the distance of the route along the PAL, the model may well reflect journey time savings and passenger movement improvements to be achieved by rationalising cross path movements in this Land Securities scheme. Option 1a would result in a reduction in the distance and a more direct line of communication. The LUL TWAO scheme requires a much greater number of cross path and merging movements than for the LandSec Option 1 or 1a schemes, particularly at the top of the northern escalators. I discuss the issue of passenger movement including cross path movements further in Section 6 of this Proof. This is irrespective of the other benefits of LandSec Option 1 and 1a as to the avoidance of delay and prejudice to regeneration. Nor was there consideration of adopting differing methods of construction such as the use of Cut and Cover for the key sections of the TWAO scheme or the LandSec Option 2 alternative.

3.27 On the evidence presently available, the alternative schemes, including the four scheme options put forward by Land Securities, provide better options to take forward when assessed against all the option selection criteria. Delivery of the integrated but separately deliverable VSU and VTI schemes would therefore better serve the public interest than the TWAO scheme.

4 VICTORIA TRANSPORT INTERCHANGE (VTI1 AND VTI2)

Victoria Transport Interchange 1 (VTI1)

4.1 Land Securities proposes to redevelop and regenerate the area to the north of Victoria Station bordered by Buckingham Palace Road and Bressenden Place, which would deliver benefits that would serve the wider public interest as set out in the Westminster City Council Victoria Area Planning Brief (VAPB) **[VSU.C42]**. This is also set out in the evidence of Mr Hugh Bullock **[OBJ3/P5, Section 10]**. There is a long held public policy objective to regenerate the Victoria area and to optimise the beneficial use of the scarce land within central London and the Land Securities proposals seek to achieve this. Mr Hugh Bullock explains this further within his evidence.

4.2 On 17th August 2007 Land Securities submitted a planning application for a regeneration scheme known as Victoria Transport Interchange (VTI), which is now known as 'VTI1'. This scheme extended from the area immediately north of Victoria mainline station to Bressenden Place in the north and east and Buckingham Palace Road in the west. VTI1 development proposals consist of a mixture of retail units, commercial buildings, two residential towers and two large areas of public realm.

4.3 VTI proposals (which were developed in partnership with TfL) address pedestrian congestion issues and re-allocate all bus stops and stands on-street, providing capacity to better accommodate TfL forecast growth in buses through to 2021. Wider pedestrian footways, improved crossing facilities and clear wayfinding are proposed with a significant improvement to visual connectivity across the development site. The VTI1 Development addresses the current dominance of vehicular traffic over pedestrians at the

interchange by re-allocating the existing bus station and its expanse of vehicular carriageway to open pedestrian space.

4.4 The scheme was developed in collaboration with TfL and proposed to redevelop land belonging to both Land Securities and TfL. It required the demolition and reconstruction of most of the existing D&C Line station, which was to be financed and constructed by Land Securities as their main Section 106 contribution.

4.5 Improvements to the District & Circle Line part of Victoria Underground Station are omitted from VSU proposals. The TWAO application VSU scheme emerged from what was previously referred to by LUL as the Phase 1-6 scheme, where Phases 1-3 set out to address capacity issues with the Victoria Line Station and Phases 4-6 addressed the District & Circle Line Station. Phases 1-3 were found to have a strong business case, whereas Phases 4-6 performed poorly in the business case. Consequently Phases 1-3 were taken forward and emerged in 2005 as the VSU scheme, addressing the Victoria Line part of the station. The VTI1 proposals effectively addressed the Phases 4-6 scheme, through the Section 106 contribution.

4.6 VTI1 remains a current planning application.

Victoria Transport Interchange 2 (VTI2)

4.7 A subsequent planning application has been prepared by Land Securities, which responds to Westminster City Council's concerns expressed for VTI1 (at the steering committee meeting for the VTI1 planning application, held 6th December 2007). This amended scheme is known as VTI2 and was submitted on 19th September 2008. It is described by other witnesses.

4.8 The alternative master plan is known as 'VTI2'. VTI2 is approximately half the size of VTI1 and focuses on Land Securities' existing land holdings on the site bounded by Bressenden Place to the north and east, Victoria Street to the south and Buckingham Palace Road to the west, and remains related to the Victoria Transport Interchange zone through the provision of extensive kerb-side bus facilities, access to commuter coach interchange and the incorporation of the VSU Bressenden Place entrance to the NTH.

4.9 VTI2 provides significant transport benefits, as per VTI1, including additional bus stop and stand capacity on Buckingham Palace Road, Victoria Street and Bressenden Place. The VTI2 redesign of Buckingham Palace Road will allow for potential accommodation of alighting, layover and boarding facilities for the two busiest bus services that serve Victoria; Routes 38 and 73. In addition, there would be a widening of footways within and surrounding the proposed VTI2 site, and an additional generous north/south pedestrian route running parallel with Buckingham Palace Road to relieve the pedestrian congestion on Buckingham Palace Road.

4.10 In the context of the proposed development at VTI, the development will form a key part of what TfL refers to as the 'interchange zone'. This term was established in TfL's Intermodal Interchange Best Practice Guide, 2001 **[VSU.B32].** It describes the physical space between two or more transport services or modes.

4.11 In designing effective interchanges an important factor is the need for integrated planning and delivery to address common problems or deficiencies with interchanges which are often the result of poorly coordinated design or management by different organisations. This results

in the interchange experience falling short of the passengers or users 'seamless journey'.

4.12 The proposals for VTI will add value to the interchange experience by providing a high quality public realm which passengers will pass through when interchanging from bus to underground and national rail or taxi at the mainline station. The key pedestrian routes between these different locations will be clearly seen, as a consequence of the opening up of visual corridors, and where this is not the case, signposting and other measures will be introduced to facilitate easy wayfinding and navigation. Mr Hugh Bullock explains how VTI is supported by policy within his evidence **[OBJ3/P5]**.

5 LAND SECURITIES ALTERNATIVES OPTIONS FOR THE VSU TWAO SCHEME

5.1 Land Securities has objected to the VSU TWAO proposals to ensure that the wider public interest is best served.

5.2 As explained in the evidence of Ms Colette O'Shea **[OBJ3/P1]** Land Securities and LUL signed a Heads of Terms (HoT) agreement in March 2007 to promote coordinated progression of the Land Securities and TfL development proposals at Victoria (which include public transport interchange proposals) and the LUL VSU proposals. VSU proposals submitted as part of the TWAO application differ from the proposals tabled at the signing of the HoT and these differences impact upon the Land Securities development proposals at Victoria.

5.3 The VSU HoT scheme is shown in **Land Securities core document OBJ3/2/3** and has the following features:

5.3.1 A Northern Ticket Hall (NTH) situated beneath Bressenden Place.

5.3.2 A Signal Equipment Room situated directly above the Victoria Line between the two running tunnels.

5.3.3 A Paid Area Link following a route just east of the southbound Victoria Line running tunnel, directly beneath the Victoria Palace Theatre (VPT).

5.3.4 A bank of escalators and concourse connecting the PAL to the Victoria Line platforms.

5.3.5 Additional connecting tunnels between the PAL and the District & Circle (D&C) Lines.

5.3.6 An enlarged Southern Ticket Hall (STH).

5.4 The HoT scheme / MDC1 RIBA Stage D Design was discounted by LUL following optioneering workshops held by the MDC2 designer from January to May 2007. Table 4.3 in the Supplementary Environmental Statement **[VSU.A31]** notes that this scheme was rejected due to '*Stakeholder Impacts – Disadvantage of tunnelling at shallow depth under the VPT*'. This was without appropriate consultation with Land Securities. From this workshop, the TWAO Scheme was selected and taken through the LUL Business Case appraisal. Again this was without consideration of alternatives such as Land Securities Options 1 or 1a or 2 or changing to open Cut and Cover along Allington Street or indeed any meaningful consultation with LandSec.

5.5 As I set out in Section 3, I consider that the LUL option selection process did not justify the reasoning behind rejecting alternative schemes similar to the Land Securities options.

5.6 Following the LUL TWAO VSU application in November 2007, Land Securities 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). It is differences between the routing of the PAL in the HoT proposals and the routing in the TWAO application which impact most significantly on the Land Securities' development proposals. The alternatives developed by Land Securities have a much reduced impact on the VTI scheme and hence the redevelopment of the Victoria area whilst

still achieving the objectives and delivering the benefits set out by LUL for VSU. I provide the basis of this assessment in Section 6.

5.7 The SES **[VSU.A31] Appendix A, Traffic and Transport** sets out proposals for traffic management during construction. It states that during a significant part (9 months) of the construction programme the worksite on the western side of Bressenden Place will extend across the mouth of Allington Street, necessitating a closure to all vehicular traffic.

5.8 There are four Land Securities alternative schemes:

5.8.1 Land Securities Option 1 – via VSU NTH escalator lower concourse.

5.8.2 Land Securities Option 1a - via VSU NTH basement

5.8.3 Cut-and-Cover construction.

5.8.4 Land Securities Option 2 – via VTI2 Basement.

5.9 Plans for the schemes are shown in **Land Securities core document OBJ3/2/3**.

Land Securities Option 1 – via VSU NTH Basement

5.10 In this option the PAL is realigned from the north of the D&C Line underpass and turns eastwards following Victoria Street immediately south of the Victoria Palace Theatre. The PAL would then have an alignment under the southern end of the VSU NTH box.

5.11 The Option 1 PAL route would be provided beneath the NTH basement and would deliver passengers to the bottom of the NTH escalators where they would merge with passengers arriving from surface level.

5.12 The route from the southern end of the NTH to the bottom of the escalator bank from surface level would be segregated and fire-separated from the other operational / back of house facilities contained within the NTH for the safety of the passengers using the PAL.

5.13 SES Technical Appendix C **[VSU.A31]** notes that this option is similar to the route described in the ES **[VSU.A13]** as Option #2A. This has been confirmed by the subsequent issue by LUL of sketches depicting the various options described in the ES **[VSU.A13]** (received 20th February 2008).

5.14 Passive provision for Crossrail within the LandSec Option 1 is provided.

Land Securities Option 1a

5.15 Land Securities have developed Option 1a. This option has a similar but more direct route for the PAL as compared to LandSec Option 1 and uses a different method to form the tunnels, which will improve safety and reduce cost and construction time through reduced project risk and construction period in comparison with the LUL TWAO scheme as described in the evidence of Mr Tim Chapman [OBJ3/P3].

5.16 The walk distance of the PAL will be shorter than LandSec Options 1 and 2 and effectively the same as the TWAO Scheme, as discussed in Section 6 of my Evidence.

Cut-and-Cover construction

5.17 A further option would be to construct as much of the PAL as possible using 'Cut-and-Cover' to form the tunnel. Given that Allington Street needs to be closed and its buried services diverted, this option seeks to reduce the

length of tunnel for which more high risk construction methods are needed. This option would have the same alignment as the TWAO scheme but use this different construction methodology. This is shown in the proof of evidence of Mr Tim Chapman **[OBJ3/P3]**.

5.18 In terms of the transport elements of the scheme, the issues associated with the PAL and construction impacts and traffic impacts would be as for the TWAO scheme, which also allows for the closure of the southern section of Allington Street.

Land Securities Option 2 – via VTI2 Basement

5.19 In this option the PAL follows a north-westerly alignment from the north of the D&C Line underpass and enters the VTI2 basement approximately half-way along Allington Street. The PAL then continues through the VTI2 basement before turning eastwards and leaving the basement to connect to the Victoria Line Overpass.

5.20 To enable this option to be provided, a passenger route corridor would be constructed within the VTI2 basement by Land Securities. This route corridor would be fire-separated from the rest of the basement area. The fit-out of this section of the corridor would be carried out by LUL under the VSU project.

5.21 A difference in the schemes with regard to the transport implications are the journey times for passengers using the PAL. There are considerable other differences in terms of engineering, buildability and risk which are set out in the evidence of Mr Tim Chapman **[OBJ3/P3]**. Since all escalator capacities remain identical, the walk distances and user benefits of the PAL are factors

for comparison as well as the deliverability, risk, stakeholder impact and other wider impacts.

5.22 Passive provision for Crossrail within the LandSec Option 2 is provided.

5.23 Operational assessments of the TWAO application scheme and the Land Securities alternative schemes are set out in Chapter 6. Each of the four Land Securities alternative schemes would allow VTI2 proposals to proceed, with Option 1a having least detrimental impact on the ability to deliver the regeneration proposals in their entirety whilst also allowing the implementation of the VSU scheme according to the programme as set out in the TWAO application.

5.24 The VTI2 and VSU schemes being implemented simultaneously would also bring about a reduced construction programme than if the VSU scheme was constructed as per the SES submitted to support the TWAO application on 5th August 2008. Construction as per the SES would prohibit VTI2 from commencing construction until around 2014.

6 COMPARATIVE ASSESSMENT OF TWAO AND LAND SECURITIES ALTERNATIVE OPTIONS

6.1 A comparison of the alternative options has been undertaken in terms of a technical comparison, a comparison of journey time benefits, and compliance with policy and scheme objectives.

6.2 A summary of the assessment assumptions is included in **Appendix 8 to my evidence [OBJ3/P4/A8]**. A copy of the LUL Station passenger matrices is included in **Appendix 9 to my evidence [OBJ3/P4/A9]**.

Technical Comparison of Options

Passenger Walking Distances

6.3 The lengths of the different options are shown in **Appendix 10 to my evidence [OBJ3/P4/A10]**. The lengths of the PAL route based on plan only analysis for the various options are:

6.3.1 TWAO Scheme – 206m

6.3.2 LandSec Option 1 – 237m

6.3.3 LandSec – Option 1a - 207m

6.3.4 LandSec – 'Cut and Cover' – 206m

6.3.5 LandSec Option 2 – 213m

6.4 As can be seen from the above, the walk distances along the PAL route for all options are 'broadly similar'. The longest option 6.3.2 is 15% longer than the shortest option 6.3.1. There is only 1m difference between TWAO

Scheme and the preferred LandSec Option 1a, so the schemes are directly comparable in terms of passenger journey time.

Route of Travel

6.5 The number of significant changes of direction was considered in this comparison, on the basis that direct routes without sharp changes in direction are considered better from a passenger safety and security perspective.

6.6 There is no general guidance, or guidance within the LUL Station Planning Standards and Guidelines **[VSU.B31]** on what may be considered a major change in direction suggesting that this factor does not carry much weighting in the assessment. LUL simply specifies that mirrors must be provided on blind corners within the tunnel (Para 3.10.1.9, Page 16 of LUL SPSG 1-371 – see the relevant extract at **Appendix 11 to my evidence [OBJ3/P4/A11**). LandSec Option 1a has no blind corners, within the PAL. By contrast, the TWAO Scheme has two blind corners along the route of the PAL.

Operation and Flexibility

6.7 Another aspect considered is related to the routing of passengers along the PAL and the interchanging between the D&C line and the Victoria Line.

6.8 The TWAO scheme provides a link between the Eastbound D&C Line platform and the northern section of the PAL. It is not clear why this is provided as the existing link between the Eastbound D&C Line platform and the interchange escalators. It is not believed that the interchange escalators are ever closed due to demand exceeding capacity. In fact, using the forecast matrix [REF] 2016+20% there are no capacity issues forecast. As

was discussed earlier in Chapter 3, this D&C link was described in the original November 2007 ES as "passive provision for future construction" (ES, Option #6 in table 4-3, page 4-11) meaning that LUL did not intend to complete this link as part of the initial VSU proposals. The justification behind the significance of this link has yet to be fully justified by LUL.

6.9 Under normal operational circumstances the existing D&C links for both the Eastbound and Westbound platforms work well and that the proposed link will only be used should passengers be forced along it to the NTH escalators, thereby increasing their journey times through the station. LUL has not given any explanation why this has been required Passenger preference will be more likely to use the interchange escalators.

6.10 In total, there are forecast to be 25,754 interchanging movements using these escalators under the current arrangement, and the figure is likely to be very similar to the demand for the three northern escalators. There is unlikely to be any capacity issues on these escalators. Assuming that this link tunnel is open to passengers walking northbound only, the link will carry a maximum of 6,552 passengers. This equates to 25% of all interchanging passengers at this point, and will result in increased demand for the northern escalators. As there is unlikely to be any capacity issues at the interchange escalators, the benefits of this link being included in the scheme are unclear.

6.11 According to assumptions made in Technical Appendix C of the revised SES **[VSU.A31, Technical Appendix C, Appendix C]**, this tunnel will only be open for passengers walking northbound to the Victoria Line from the D&C Line via the northern escalators. If this is the case under normal operational circumstances, then this tunnel will only carry between 6-7% of

the total underground movements within the station. This is a relatively small proportion of all movements and therefore any operational necessity for it to be provided is questionable.

6.12 The LUL TWAO scheme has an arrangement at the top of the northern escalators that will allow multiple movements to take place. If applying the standard London Underground convention that passengers will walk on the left hand side of tunnels and escalators, then this area is likely to be subject to a number of crossed path and merging movements. Section 3.1.3 of LUL's Station Planning Guidelines **[VSU.B31]** states that '*Station planning shall ensure obvious routes...which are free from obstructions and have good lines of site.*' – see the relevant extract at **Appendix 11 to my evidence [OBJ3/P4/A11]**.

6.13 The LandSec Options 1 and Option 1a have no conflicting movements at the top of the northern escalators in LandSec Option 1, as all passengers arrive and depart from/to the same direction.

6.14 The LandSec Options 1 and 1a provide the dual benefits of an even distribution of passengers between the Northern Escalators and the Central Escalators and reduce the number of conflicting movements. The LUL TWAO scheme, depending on station management under normal operational circumstances, can offer an even split between both Escalators but has over three times the amount of conflicting movement. I explain this is more detail in paragraphs 6.28 to 6.38 and Appendix 13 to my evidence **[OBJ3/P4/A13]**.

Capacity of Schemes

6.15 The capacity of the PAL route is dictated by the escalator capacity and the minimum widths of the passageways (walkway capacity). Since escalator capacity remains the same for all options and all proposed escalators are within capacity in the peak periods this is not relevant to the comparative assessment and therefore the capacity of the PAL is assessed using the minimum widths.

Walkway Capacity

6.16 One of the indicators used to assess the pedestrian conditions on the PAL route is the widely accepted Fruin Levels of Service (LOS) indicator, which rates the level of congestion based on pedestrian flow and density measures.

6.17 Fruin classifies six levels of service (A-F). At the highest level of service (A), pedestrians are able to select freely their own walking speed and to pass others. At the lowest level of service (F), the density is such that walking speeds are extremely restricted and forward progress can only be made by shuffling. The table **Appendix 12 to my evidence [OBJ3/P4/A12]** shows the capacity of the PAL for each route using the Fruin Levels.

6.18 With a pedestrian flow rate of 27peds/m/min, and an associated capacity of 121 peds/min, LandSec Options 1 and 1a offer slightly more capacity than the other options. All options achieve a Fruin Level B which allow pedestrians to select their own walking speed. For contra-flow pedestrian movements in the PAL, minor conflicts will occur, causing average walk speeds to reduce slightly and congestion to increase slightly.

6.19 The TWAO Scheme appears to have a minimum width of 3.36m which appears to cover 75% of the PAL route. This is a considerably higher

percentage of the route than LandSec Option 2 which has the same minimum width (3.36m) but spanning only 5% of the route, and therefore provides a much better user experience. LandSec options 1 and 1a have the widest minimum width at 3.68m. In addition, LandSec Options 1 and 1a have the potential to be expanded in width in the section beneath the NTH improving the Fruin LoS to Level A in this area and therefore further improving user experience. Through improving user experience, the use of the public transport system will become a more attractive option and therefore will encourage increased use and will better meet the policy objectives included in section two of this Proof.

6.20 Again the LandSec – 'Cut and Cover' scheme would be the same as for the TWAO scheme for capacity and Fruin assessment, and will achieve the same level of operation as the TWAO scheme but with reduced detrimental impact on the construction of LandSec VTI2 proposals.

6.21 Fruin guidelines are summarised in the table in **Appendix 8 in my evidence [OBJ3/P4/A8]**.

6.22 As mentioned in my earlier evidence regarding journey times, both the LandSec Option 1 and Option 1a schemes will have a significantly lower number of crossed path movements than the TWAO scheme. A lower number of crossed path movements will improve the passenger interchange experience and will give the appearance of a less congested station. It is difficult to accurately quantify the benefits that reduced cross movements will bring however as they depend on individual preferences, but they should be considered beneficial.

6.23 I have already raised questions over the proposed use of the link between the District & Circle Line (which seems to primarily serve the eastbound

District & Circle Line platforms) and the PAL earlier in my evidence, so the lack of a similar link in LandSec Options 1 and 1a would not appear to be detrimental. In any event, in LandSec Options 1 and 1a a direct link is proposed between the westbound District & Circle Line platform and the PAL, that could equally be used to divert a proportion of interchanging passengers away from the interchange concourse.

Construction Impacts

6.24 The construction impacts for the different options are discussed in the proof of evidence of Mr Tim Chapman **[OBJ3/P4]**. In relation to the traffic related impacts of the different schemes, the 'Cut-and-Cover' option and LandSec Option 2 will have similar impacts to the TWAO scheme and proposed mitigation measures in the form of the contraflow bus lane on Victoria Street as proposed by LUL and agreed with stakeholders **[VSU.A31, Transport Assessment, Page 203].**

6.25 Further to this, traffic modelling for VTI1 confirmed with TfL suggests that it would be viable to allow taxis to use the contraflow bus lane detailed in Section 2 of this Evidence to enable the southern section of Allington Street to remain permanently closed as part of the VTI1 proposals. The Revised Transport Assessment, submitted as part of the SES to support the TWAO application includes a summary of taxi surveys undertaken at Victoria in June 2008. This highlights that 93 taxis (22% of all movements from the Terminus Place pick-up) moved from the current Terminus Place rank towards the east along Victoria Street between 07:30 and 09:00. This number of taxis (approximately one per minute) could be easily accommodated at the proposed right turn from Wilton Road into Victoria Street, with the minimum green time for traffic (seven seconds as detailed in

Design Standards for Signal Schemes in London **[VSU.B26, paragraph 3.4.1]**).

Comparison of Benefits

Journey Times

6.26 Journey time benefits result from a number of factors including length of route, walk speed, simplicity of the interchange (i.e. turns, stairs etc.) and passenger conflict of movement. In the absence of the LUL PEDROUTE model these factors have been considered below using static analysis. Should the PEDROUTE model be provided by LUL, the journey time assessment will be reviewed and updated accordingly.

Walk Time

6.27 Comparison of passenger walk time for the various options has been based on the route length of the PAL (measured from a point at the bottom of the STH escalators to the top of the NTH escalators down to the Victoria Line Platforms).

6.28 Assuming an underground walk speed of 1.34m/s[1] (consistent with the LU approach), the following walk times have been calculated for the TWAO scheme and the four alternative scheme options:

6.28.1 TWAO Scheme – 2m 34s

6.28.2 LandSec Option 1 – 2m 57s

6.28.3 LandSec Option 1a - 2m 34s

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1 An underground walk speed of 1.34m/s[1] has been used for the comparison to be consistent with the LU approach (as set out in [VSU.B6])

6.28.4 LandSec – 'Cut and Cover'– 2m 34s

6.28.5 LandSec Option 2 – 2m 39s

6.29 It can be seen that the walk times are identical for the TWAO scheme and LandSec Option 1a broadly similar for all options. There may even be an journey time experienced in the Land Securities Option 1a as a result of the reduction in movement delay and improved ambiance as a result of fewer conflicting movements at the top of the new Victoria Line escalators than in the TWAO Option.

Passenger Conflict of Movement

6.30 This initial comparison and assessment of passenger movement has originally been based on static analysis, with passengers assumed to make general routing decisions. The analysis makes logical assumptions as to the likely choice and therefore demand for routes (excluding decisions influenced by congestion on the network). Specific attention is then paid to crossing and merging movements which can contribute to an increase in journey times and reduced ambiance.

6.31 Passenger flows for route choices have been quantified using the 2016+20% interchange matrix for a 3 hour AM peak period, as outlined in ES **[VSU.A13 Table 2-1, Background to Key Objectives, p.2-2]**.

6.32 For the purposes of modelling, the LUL TWAO scheme features six sections that involve a route choice for interchanging passengers. These are:

6.32.1 Tunnel A - the connecting tunnel between the D&C EB and the PAL;

6.32.2 North Escalator Bank – three sets between the Victoria Line platforms and the northern end of the PAL (which links to the NTH);

6.32.3 Central Interchange Escalators – to/from the Victoria Line platforms;

6.32.4 Tunnel B - link between the Central Interchange Escalators and the PAL;

6.32.5 Southern Escalators – to/from the STH and the Victoria Line platforms; and

6.32.6 PAL – the connecting tunnel between the STH and the North Escalator Bank

6.33 The sections for crossing and merging movements is provided in **Appendix 13 [OBJ3/P4/A13]**.

6.34 In total, ten different scenarios were tested:

6.34.1 TWAO Scheme, Scenario 1 – makes maximum use of Tunnel A assuming that the tunnel will be open to two-way pedestrian flows. Tunnel B is closed

6.34.2 TWAO Scheme, Scenario 2 – As Scenario 1 but with Tunnel B open

6.34.3 TWAO Scheme, Scenario 3 – Tunnel A is open northbound only, with Tunnel B closed

6.34.4 TWAO Scheme, Scenario 4 – As Scenario 3 but with Tunnel B open (consistent with assumptions outlined in Technical Appendix C of the SES [VSU.A13].

6.34.5 TWAO Scheme, Scenario 5 – Tunnel A is opened southbound only, with Tunnel B closed

6.34.6 TWAO Scheme, Scenario 6 – As Scenario 5 but with Tunnel B open

6.34.7 TWAO Scheme, Scenario 7 – Tunnel A and Tunnel B closed

6.34.8 TWAO Scheme, Scenario 8 – As Scenario 7 but with Tunnel B open

6.34.9 LandSec Option 1a, Scenario 1 – Tunnel B closed

6.34.10 LandSec Option 1a, Scenario 2 – Tunnel B opened (consistent with assumptions outlined in Technical Appendix C of the SES **[VSU.A31]**

6.35 It should be noted that the static analysis in the eight Scenarios for the TWAO scheme can also be applied to LandSec Option 2, given the similarities between the two schemes. Similarly, the static analysis for both LandSec Option 1 and Option 1a can be applied to both Options.

6.36 Analysis of these Scenarios is summarised below. Greater detail is provided in **Appendix 13 of my evidence [OBJ3/P4/A13]**. The table in **Appendix 13 of my evidence [OBJ3/P4/A13]** provides a summary of the analysis.

Analysis Conclusions

6.37 Of the ten scenarios modelled, LandSec Option 1a Scenario 1 provides the twin benefits of a relatively even distribution of passengers between the Northern Escalators (48%) and the Central Interchange Escalators (52%), as well as possibly improving passenger journey time and the walking experience by reducing the amount of crossed path and merging movements by 67%. This scenario assumes that the link between the PAL

and the central interchange escalators (Tunnel B) is closed off under normal operational circumstances, in order to ensure that passengers better utilise the northern end of the Victoria Line platforms.

6.38 Moreover, LandSec Option 1a Scenario 1 provides the same twin benefits of both an even distribution of passengers and reduced crossed path movements, as well as a reduced journey time along the PAL.

6.39 TWAO Scheme, Scenario 4 is the best TWAO Scenario in providing an even distribution between the northern escalators (49%) and the central interchange escalators (51%). There are, however, some 35,599 crossed path movements in this Scenario, and 18,713 merging movements, which will negatively impact on passenger ambiance and ease of passenger journey time. This compares unfavourably with the LandSec Scenarios 1 and 1a, which only have 9,753 crossed path movements and only 8,210 merging movements.

6.40 Of the TWAO Scheme Scenarios, Scenario 5 is likely to provide the lowest number of crossed path (19,293) and merging movements (18,714). This still compares unfavourably with LandSec Options 1 and 1a Scenario 1, and a further negative associated with Scenario 5 is that the northern escalators (64%) are far more heavily used than the central interchange escalators (36%) which will force a large proportion of passengers to walk an unnecessarily longer distance to the NTH. A more even distribution between these two escalator banks is highly desirable such as that provided in LandSec Option 1a Scenario 1. However, I have seen no evidence why the link to and from the D&C Line should be used for operational reasons to deter use of the central interchange escalators.

Assessment against LUL Options Assessment Criteria

6.41 Section 3 of my evidence set out and reviewed the option assessment process undertaken by LUL. As noted LUL used eight weighted parameters, A-H below. Parameters A-E were required parameters which LUL determined must be met by schemes for further consideration:

A) Journey Time (38%)

B) Programme (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%)

6.42 LandSec Option 2 is most similar to the TWAO scheme than other alternative options and therefore was not rejected. LandSec Option 1 is similar to LUL Option 2A and was theoretically rejected on the grounds laid out in Section 3 of this Evidence. Of all the options considered by LUL, Option 2A is most similar to LandSec Option 1a. Howeve, LandSec Option 1a provides a more direct link from the NTH to the STH than LUL Option 2A.

6.43 Section 3 of my evidence concludes that the LUL option selection process did not fully justify the reasoning behind rejecting Option 2A which is very

similar to the LandSec Option 1, and that a directly comparable and credible Business Case should have been developed in order to make an informed and fair comparison between the main proposed options as required by LUL's own Business Case Development Guidance [VSU.B35].

6.44 LandSec Options 1 and 1a would have incurred less project cost and programme risk as detailed Mr Tim Chapman's Evidence **[OBJ3/P3].** In addition, if a comparison of journey times between the schemes was made using the PEDROUTE model used in the LUL TWAO Business Case **[VSU.B9 and VSU.B36],** it is believed that, while Option 1a is effectively the same length as the TWAO PAL, despite a slight increase in the distance of the LandSec Option 1 route along the PAL, the model would reflect the journey time savings likely to be made by significantly reducing the cross path movements in the Land Securities Option 1 scheme.

6.45 LandSec Option 1a has a similar length of PAL, and therefore passenger walk times through the station are likely to be at least consistent with but probably better than the TWAO scheme given the reduction in crossed path movements.

Assessment against Scheme Objectives

6.46 In Section 2 I reviewed the VSU scheme objectives as set out in the Environmental Statement **[VSU.A13]**, Statement of Case and Business Case documents **[VSU.B9]**.

6.47 The Land Securities options would also better deliver these scheme objectives by:

6.47.1 Relieving congestion and delay through:

6.47.2 Provision of a more even distribution of passengers to the Victoria line platforms.

6.47.3 Ensuring less conflicting passenger movements.

6.48 In addition, the options would better fulfil the wider objectives and better serve public interest through enabling development to be delivered in a much shorter timeframe. The VSU scheme, if constructed as described in the 5th August SES, would delay the start of VTI2 construction by approximately four years to 2014 as its construction methods would not allow both schemes to be constructed simultaneously. All of the four Land Securities VSU alternative schemes would allow VTI2 to proceed simultaneously, with land Securities Options 1 and 1a having least detrimental impact on VTI2.

6.49 The alternative schemes meet the objectives set out in the VSU scheme documentation, and although there may be slight differences in journey times between the schemes, it is considered that these will make little difference in the overall business case had this been undertaken for these alternative scheme options.

6.50 All alternative schemes also have the potential to accommodate a passive link with the Crossrail aspirations.

Assessment against Policy

6.51 A comparison of the schemes against the relevant policies is summarised in Section 2 of my evidence.

6.52 All of the alternative schemes meet the objectives set out in local policy such as the London Plan, the VAPB and the Westminster UDP.

7 SUMMARY AND CONCLUSIONS

7.1 The alternative LandSec VSU Options meet the objectives set out in local policy including the London Plan, the VAPB and the Westminster UDP, and these schemes also meet the objectives set out in the VSU scheme documentation. The significant issue is that the TWAO proposal will prevent the regeneration proposals progressing at the same time as VSU which will not serve the public interest. The wider public interest will be best served by a VSU scheme that enables the construction of the development proposals across a similar time frame as the construction of the transport infrastructure.

7.2 There are differences in journey times between the schemes when assessed simply over length of route, but these differences need to be seen in the context of other considerations including conflict and user experience as well as risk and the wider implications including the effect on regeneration and redevelopment in the area generally and with specific regard to the VTI.

7.3 LandSec Options 1 and 1a result in a more even distribution of passengers using the D&C interchange escalators and the northern escalators, and will create significantly fewer conflicting movements at the top of the northern escalators (35,599 crossed path movements in the TWAO Scheme compared with 9,753 crossed path movements in LandSec Options 1 and 1a).

Conclusions on Statement of Matters

7.4 I respond to the specific matters raised by the Secretary of State for Transport which I have addressed in my evidence as follows:

Matter 1 - The aims and objectives of, and the need for, the improvements to Victoria Underground Station

7.5 The Environmental Statement (ES) **([VSU.A13] paragraph 2.2.1, page 2-3)** recognises that demand for the northbound Victoria line is very high during AM and PM peak periods, and forecast to rise from 70,000 in the AM Peak to 84,000 in 2016.

7.6 Station control and closures are common every weekday morning and passengers entering the station from the National Rail station are regularly disrupted by gate-line controls for entrance to the Victoria Line platforms.

7.7 Up to 60% of passengers use the southern half of the Victoria Line train and platforms where the escalators feed onto the platforms and bunching at this point prevents many people reaching the far northern end of the platform.

7.8 The principal objective stated in the Environmental Statement (ES) **([VSU.A13] paragraph 2.2.1, page 2-3)** is: *'To increase the capacity of Victoria Underground station so that it is fit for purpose for handling present and forecast demand, and to minimise passenger journey time and improve the quality of access, interchange and ambience, to the maximum extent practicable within physical, schedule and financial constraints.'*

7.9 As Mr Tim Chapman sets out in his evidence **[OBJ3/P3]** and I set out in my evidence in Section 6, there are other scheme options including scheme options put forward by Land Securities that would better deliver these objectives that would enable VSU to be constructed alongside and at the same time as the proposed development at Victoria (VTI) and thus provide the associated improvements at Victoria in a shorter time period. Delivery of the integrated but separately deliverable VSU and VTI schemes would

therefore better serve the public interest than the TWAO scheme. LandSec Option 1 and Option 1a also deliver an improved passenger ambience with a significantly lower number of crossing movements.

Matter 2 - Justification for particular proposals in the draft Order: consistency with policy, anticipated benefits, main alternatives considered.

7.10 The integration of regeneration development and transport infrastructure, and increasing the attractiveness and economic viability of the Victoria area is a key theme throughout the relevant local policy documents. The VSU TWAO scheme cannot be looked at in isolation. It is essential to consider the wider public interest of delivering regeneration in the Victoria area.. The objectives set out in the London Plan, the VAPB and the Westminster UDP would be achieved through the alternative scheme options proposed by Land Securities by meeting the broader policy aim of achieving integrated transport planning and land use. The proposed VSU scheme if allowed to proceed would prejudice that policy aim and to that extent is inconsistent with policy. Any benefits from the TWAO scheme would need to be balanced against the harm caused to the public interest by delaying the regeneration of the Victoria area.

7.11 It is correct that the proposed TWAO scheme will help to accommodate additional future demand and relieve congestion from the southern end of the Victoria line platform through providing an alternative route (via the PAL) to encourage greater use of the northern ends of the platform and therefore reduce passenger delay. Provision of the new northern ticket hall (NTH) will relieve the busy pedestrian flows between the southern ticket hall (STH) and the commercial hub at the east end of Victoria Street.

7.12 However, my assessment of the key determinant of benefit for passenger movement and resulting journey times in Section 5 of my evidence demonstrates that the scheme options put forward by Land Securities would better deliver these benefits and therefore it would be more in the public interest to deliver one of these alternative options. LandSec Options 1 and 1a also reduce cross movements and conflict within the PAL in comparison to the TWAO scheme, and this reduced cross flow would result in reduced journey time through the VSU and will significantly improve passenger ambience.

7.13 Section 3 of my evidence concludes that the LUL option selection process lacked consistency, and that insufficient detail has been given regarding the reasons for the rejection of alternative options. Further to this, the options selection process did not properly consider project cost, programme and construction risk for all options and failed to consider different methods of working.

7.14 In addition, LUL did not justify the reasoning behind rejecting Option 2A which is very similar to the LandSec Option 1, and broadly similar to Option 1a, and that a directly comparable and credible Business Case should have been developed in order to make an informed and unbiased comparison between the proposed options at this time.

Matter 3 - likely impact of constructing and operating the scheme

7.15 As set out in evidence provided by Tim Chapman **[OBJ3/P3]** there will be significant impacts of constructing and operating the proposed TWAO VSU scheme for the Land Securities development proposals. Scheme options put forward by Land Securities could reduce the impact of construction and operation and deliver transport policy aims and better meet the objectives.

In my opinion, there has been insufficient consideration by LUL of these alternatives.

Matter 4 - Compatibility of the scheme with any other development proposals

7.16 As set out in the Evidence of Ms Colette O'Shea **[OBJ3/P1],** the draft Order would have a substantial impact on Land Securities rights of access to the company's property in order to undertake the necessary redevelopment. Insufficient justification has been made for the extent of interference to these rights.

Matter 10 – Reasonableness of attracting funding

7.17 As set out in my evidence, up to March 2010 the funding for the VSU scheme is identified in TfL's current investment programme, funding after this is subject to TfL Board approval of the allocation of funding provided to TfL under HM Treasury's Comprehensive Spending Review of October 2007.

7.18 In addition, the Public Private Partnership (PPP) Arbiter's Guidance on Tube Lines suggests that the LUL network is facing a funding gap of over £1bn.

7.19 Land acquisitions and rights over land to deliver the TWAO scheme is currently estimated at £79.67 million, representing around 18% of total VSU costs. The alternative Land Securities Options would have reduced Capital and Acquisition costs.