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Transport and Works Act 1992  
**London Underground (Bank Station Capacity Upgrade) Order**

# Supporting Statement

September 2014

**MAYOR OF LONDON**



**TRANSPORT  
FOR LONDON**  
EVERY JOURNEY MATTERS





Transport and Works Act 1992

## **London Underground (Bank Station Capacity Upgrade) Order**

# **Supporting Statement**

September 2014

Bank Station Capacity Upgrade Project  
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10 King William Street  
London EC4N 7TW

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## Glossary and list of abbreviations

Abbreviation	Definition
BCR	Benefit cost ratio
BSCU	Bank Station Capacity Upgrade
BSI	British Standard Institute
Bank Station	<p>The Bank Monument Station Complex is an amalgamation of London Underground stations containing:</p> <ul style="list-style-type: none"> <li>• six lines - District, Circle, Waterloo &amp; City, Central, Northern Lines and the DLR;</li> <li>• five sets of platforms – District &amp; Circle, Waterloo &amp; City, Central, Northern Lines and the DLR terminus;</li> <li>• three existing ticket halls – Central Line (under Bank Junction), Northern Line (under Lombard Street) and Monument (under Monument Junction) as well as the Bloomberg entrance currently under construction for the Waterloo &amp; City Line; and</li> <li>• 15 entrance/exits.</li> </ul>
CAZ	Central Activities Zone
The City	City of London. It is both a city and ceremonial county within Greater London and also colloquially known as the Square Mile, as it is 1.12 sq mi (2.90 km <sup>2</sup> ).
DAS	Design and Access Statement. Document explaining the design rationale underpinning the proposed locations, layouts and design for the project.
dB	Decibel. The ratio of sound pressures, which we can hear, is a ratio of 106 (one million: one). For convenience, therefore, a logarithmic measurement scale is used. The resulting parameter is called the 'sound pressure level' (Lp) and the associated measurement unit is the decibel (dB). As the decibel is a logarithmic ratio, the laws of logarithmic addition and subtraction apply
DfT	Department for Transport
DLR	Docklands Light Railway
EIA	Environmental Impact Assessment. A technique for ensuring that the likely effects of new development on the environment are fully understood and taken into account before the development is allowed to go ahead. It provides a focus for public scrutiny of the project and enables the importance of the predicted effects, and the scope for modifying or mitigating them, to be properly evaluated by the decision-making authority.
ES	Environmental Statement. The outcome of the Environmental Impact Assessment presented in a formal document or documents in accordance with EC Directive 85/337. Includes such information that is reasonably required to assess the environmental effects of a development.
GLA	Greater London Authority
London Plan 2011	Spatial development plan for Greater London – adopted July 2011
LUL	London Underground Limited
MTS	Mayor's Transport Strategy

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<b>Abbreviation</b>	<b>Definition</b>
NLU	Northern Line Upgrade
OSD	Over Site Development
PRM	Person with Reduced Mobility
RIBA	Royal Institute of British Architects
SPD	Supplementary Planning Document
SPG	Supplementary Planning Guidance. Non-statutory guidance that supplements Unitary Development Plan (UDP) policies.
TfL	Transport for London
tph	Trains Per Hour
TWAO	Transport and Works Act Order. Can authorise railways, tramways, guided transport schemes and certain other types of infrastructure project in England and Wales.
UK	United Kingdom
WEI	Wider Economic Impacts
Whole Block Site	Site bounded by King William Street, Nicholas Lane, Cannon Street and Abchurch Lane (The term Cannon Street Site is used within the consultation and some other application documents).

# 1 Introduction

1.1.1 London Underground Limited (LUL) is applying for an Order under the Transport and Works Act 1992 (TWA) to authorise upgrade works (Bank Station Capacity Upgrade) to Bank Monument Station Complex (Bank Station) in the City of London. This Supporting Statement document is a summary of the case that supports LUL's TWA application.

1.1.2 The overarching aim of the Bank Station Capacity Upgrade (BSCU) project is to ensure that Transport for London (TfL) continues to provide a fit-for-purpose public transport station complex to support the City of London. It shall do this by:

- increasing the capacity of Bank Station so that it is able to handle present and forecast demand, and thereby support the economic growth of the city;
- minimising passenger journey time through the station, and thereby reduce crowding;
- improving the quality of access, interchange and ambience, including the provision of step free access routes from street level to Northern Line trains and provide step free interchange between Northern Line and Dockland Light Railway (DLR) trains; and
- improving emergency fire and evacuation protection measures.

1.1.3 This Supporting Statement explains briefly how the project will achieve those aims. Accordingly, this Supporting Statement is structured as follows:

Section 2: The case for the Bank Station Capacity Upgrade

Section 3: The Strategic Planning Case

Section 4: Policy context

Section 5: The Project Development

Section 6: The Proposed Scheme

Section 7: Consultation

Section 8: Cost and funding

Section 9: Project Effects

Section 10: Conclusions



## 2 The Case for the Bank Station Capacity Upgrade

### 2.1 Background

- 2.1.1 Bank Station is located in the heart of the City of London financial district. It is served by six lines, Northern, Central, Waterloo & City, DLR, and the District and Circle at Monument and is a major gateway to the City of London for employees and visitors. The station's name is synonymous with the area it serves, and it is of strategic importance to London and the UK's economy. Approximately 50% of users at peak times are interchanging between lines. This also makes the station a strategic network interchange and its effective operation is critical not just to maintaining access to the City of London, but also to the effective operation of the London transport network as a whole.
- 2.1.2 The station complex has grown piecemeal since 1884 as additional lines have been constructed, and it reached its present form in 1991 when the DLR opened. Most of the infrastructure was built in expectation that passenger numbers would be far fewer than the number that use the station today. As a result, passenger circulation space on platforms, ticket halls, connecting staircases and passageways can be extremely congested. The congestion is exacerbated by the layout of the station, which reflects the piecemeal way the station has been developed over time.
- 2.1.3 Because of the complex layout, passenger way-finding is difficult, particularly for those interchanging between lines. Interchanging passengers make up more than half the total users, and the difficulty of providing intuitive routes-around the station adds to the congestion problem, particularly as there is a lack of separation between interchanging and entering/exiting passengers.
- 2.1.4 Most of the platforms are at deep levels, and are therefore dependent upon escalators, stairs or lifts for passenger interchange, access and egress. The station has three ticket halls and the Bloomberg Development Ticket Hall currently under construction, 15 entrances/exits, ten platforms, 15 escalators, six lifts and two 300ft moving walkways.
- 2.1.5 **Figure 1** shows the current station layout.

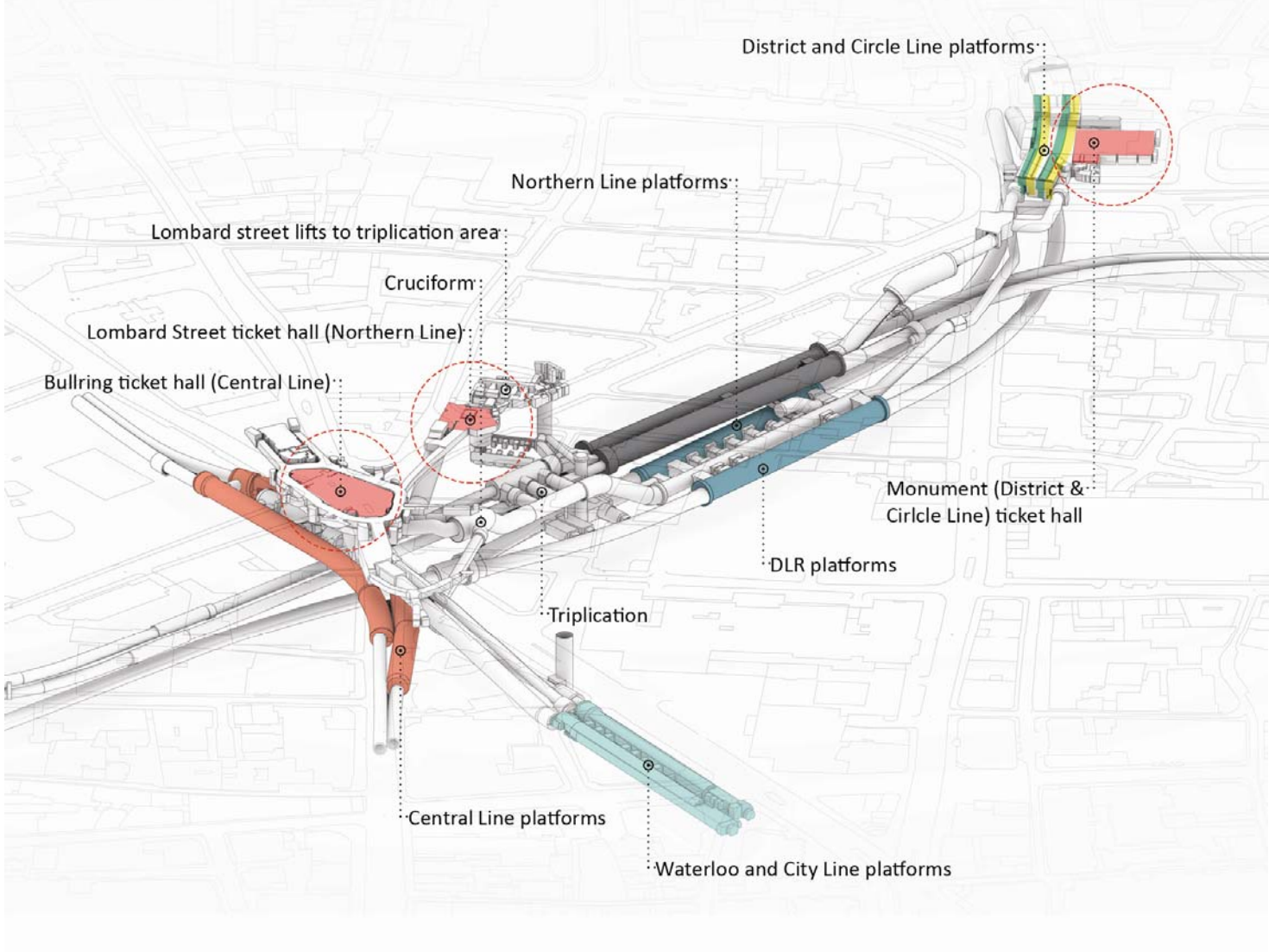
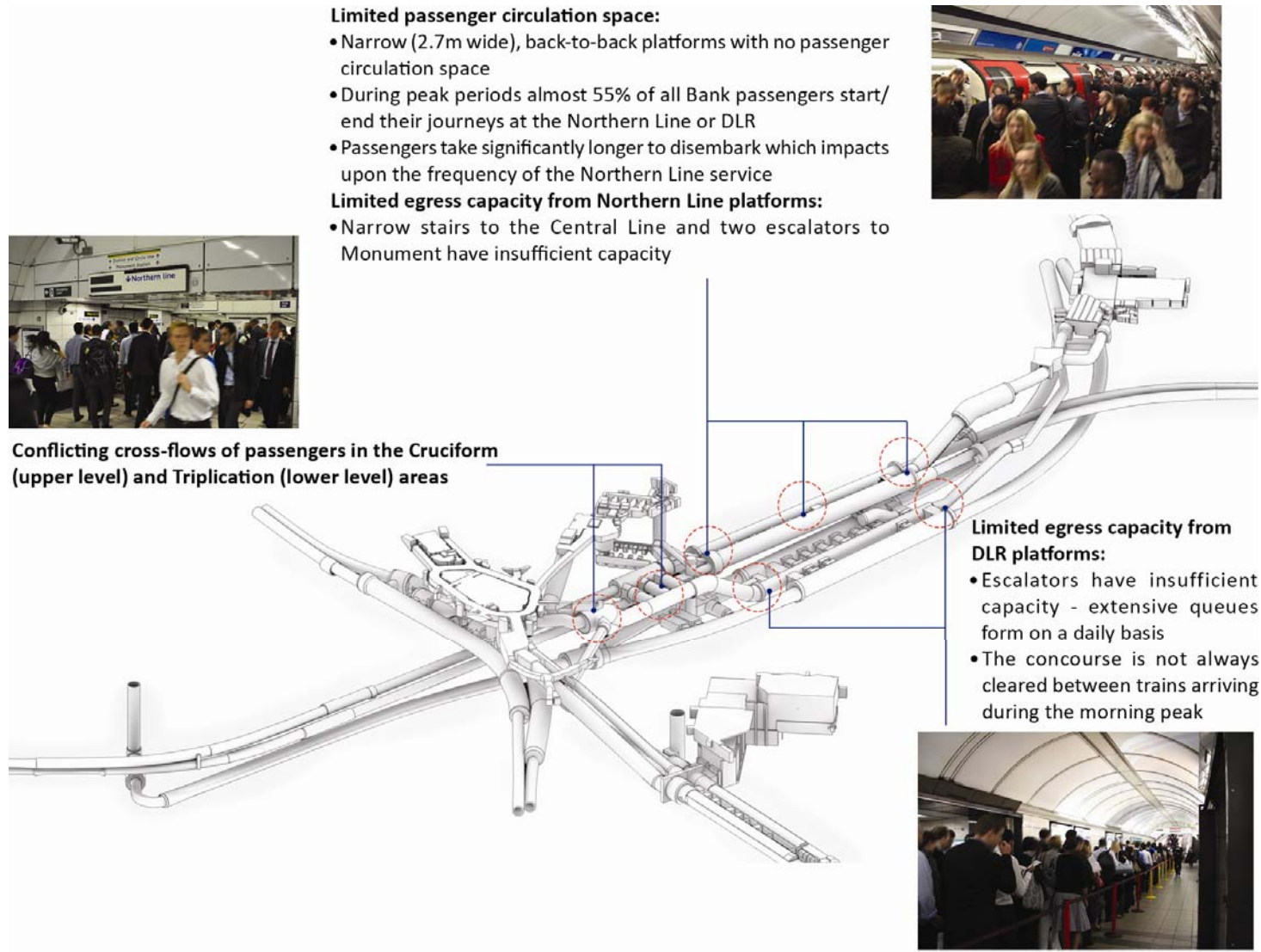


Figure 1: Current Station Layout

2.1.6 As a significant number of passengers interchange, congestion problems at the station cannot simply be addressed by preventing passengers from entering the station from the street. Examples of particular pressure points at the station include:

- a number of interchange routes converge on two passenger areas known as the Triplication and Cruciform (shown in **Figure 1**), which passengers use to move between the Central/Waterloo & City Lines areas of the station and Northern Line/DLR areas of the station. For example, of 20 possible interchange routes within Bank Station, 12 pass through the Triplication area (approximately 25,000 people in the evening peak) and 10 through the Cruciform (approximately 15,300 people). This results in cross-flows, congestion and difficulties with wayfinding;
- the Northern Line Platforms (during peak periods almost 55% of all Bank passengers start or end their journeys at the Northern Line or DLR); and
- the DLR Platforms, including particularly the approach to the platforms and the central concourse where queuing and congestion are common.

2.1.7 **Figure 2** shows the areas of key congestion within the station complex.



**Figure 2:** Present levels of congestion in the station

2.1.8 There are multiple additional physical difficulties with the piecemeal way in which the station has developed over many years including:

- only the DLR is currently accessible via a step free route, although even that route is time-consuming and indirect, requiring passengers to take a small lift from King William Street into the Northern Line Ticket Hall, a second lift down to the Triplication area and then a third lift down to the DLR level;
- narrow passage ways through Bank Station create busy and indirect routes and multiple cross-flows, adding to the length and complexity of journeys;
- conflicting cross-flows are partly caused by the absence of a direct exit to surface for the Waterloo and City Line and the DLR, meaning that passengers to and from these lines have to use the interchange routes to enter and exit the Station;
- access from street to Northern Line and DLR is possible via a number of routes (many of which are indirect) involving use of escalators, stairs and lifts;
- many interchange options require multiple level changes, narrow stairs and doubling back, adding significantly both to journey times and to congestion; and,
- the stairs at the Bank (north) end of the Northern Line Platforms are narrow and their limited capacity makes it difficult to clear the platform between train arrivals.

2.1.9 Furthermore, the bulk of Bank Station was designed and built at a time when demand was not as high and fire safety measures and regulations had not been developed to the extent that they are today. Measures have been developed with London Fire Brigade to keep the station operating safely but it is essential that the station layout at Bank Station is brought into line with modern best practice for fire safety design to allow LUL to provide compliant fire and evacuation measures for the Northern Line and DLR passengers in particular.

## 2.2 The current operational situation

2.2.1 Since 2003 demand at Bank Station has risen by over 50% from 222,000 to 337,000 customers per day. Areas of the station are close to 'saturation' point, where day to day demand overwhelms capacity, even during 'normal' operations. When this happens even small incidents can have a disproportionate effect on services. Interventions in the form of operational controls then need to be implemented which vary depending on the severity of the situation. There is a regular need to deploy additional staff on platforms to

manage crowding and ensure safety. Other controls deployed at the station are described in the paragraphs below.

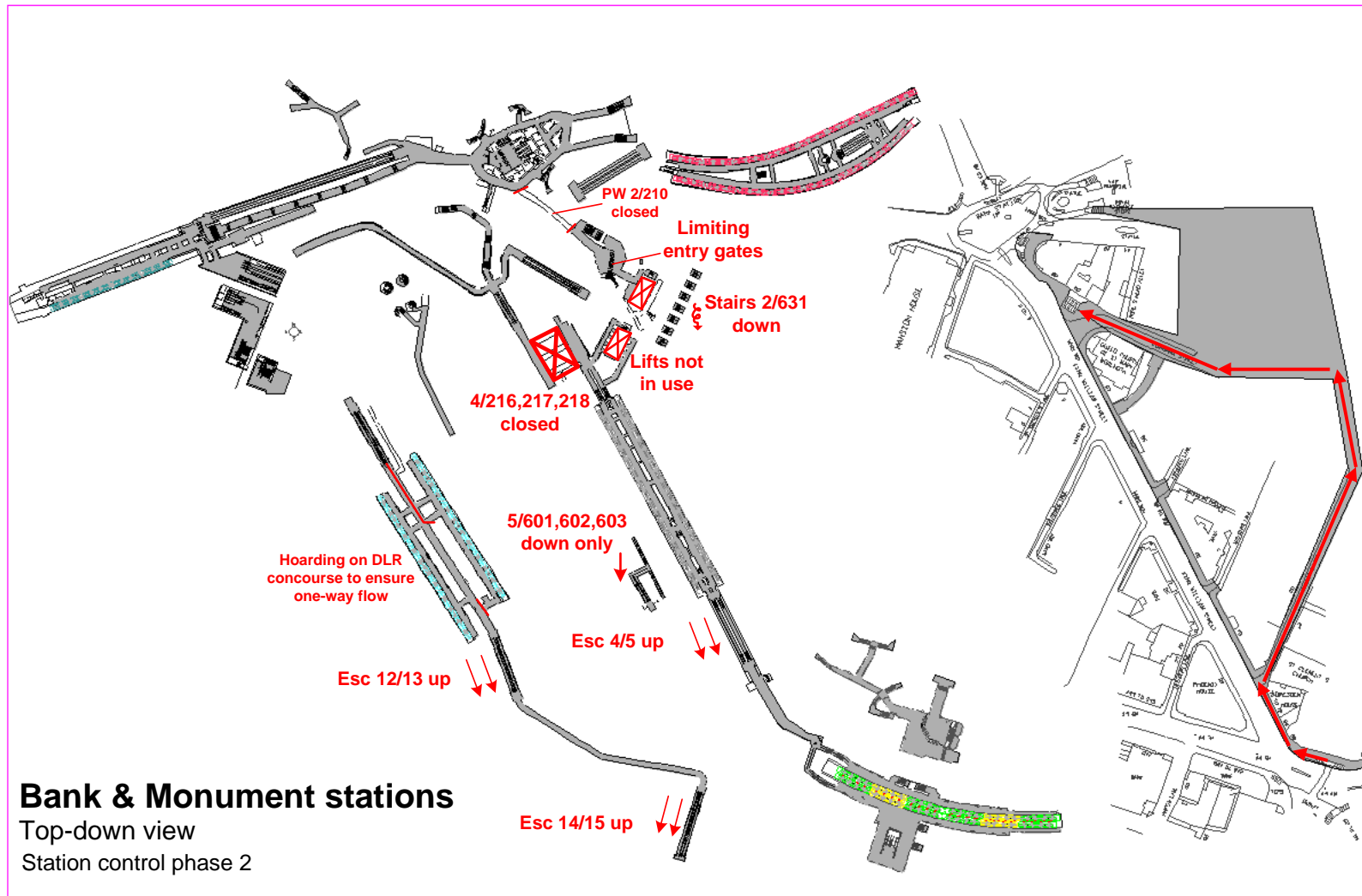
- 2.2.2 One type of operational control used is delaying a train from departing until the platform has been cleared of passengers. At times of excessive platform crowding the train may be delayed from departing for up to a minute. This can have a large knock on effect on the performance and capacity of the entire line. Currently Northern Line train services on the Bank branch operate around 20 trains per hour (tph) in each direction, meaning that there is only 3 minutes between arrivals and considerably less between the departure of one train and the arrival of the next. This means that a delay in one train departing delays the following train arriving. Delaying the departure of successive trains by only 30 seconds has a significant impact on the entire Northern line, reducing capacity of the line by up to 15%.
- 2.2.3 Another type of control measure used is non-stopping the Central and Northern Lines at Bank Station. If congestion builds up in the interchange passages then, depending on where the congestion occurs, the decision may be made not to stop either the Central or Northern Line trains – i.e. requiring them to run through Bank Station without stopping because platforms are too crowded. When this happens significant numbers of passengers are diverted to adjacent stations, a major inconvenience for them but also an inconvenience for those at adjacent stations. Moorgate and London Bridge Stations in particular are already capacity constrained, and the imposition of additional passengers alighting at these stations can add to congestion and affect their operation, leading to parts of those stations also having to close.
- 2.2.4 A further control measure which can be used is the suspension of DLR services to and from Bank. Although the DLR is served by a second terminus at Tower Gateway, this does not have capacity to accommodate all of the DLR trains that operate into Tower Gateway and Bank Station and neither is it conveniently placed for those who wish to access Bank Station. If DLR services are suspended at Bank Station then some services from east London will be diverted away from Central London. Under these circumstances, the Jubilee Line is a natural alternative to the DLR but this exacerbates an already congested Jubilee Line and the respective stations that serve it. The suspension of DLR services at Bank Station causes major disruption to the network and delays for hundreds of thousands of passengers using DLR.

### **Future implementation of one-way systems**

- 2.2.5 Bank Station is a network-critical destination and interchange station on the Rail and Underground network. Each of the controls described above has a significant impact on the wider London transport network and can only be accommodated for a short period of time. If demand exceeds capacity at Bank

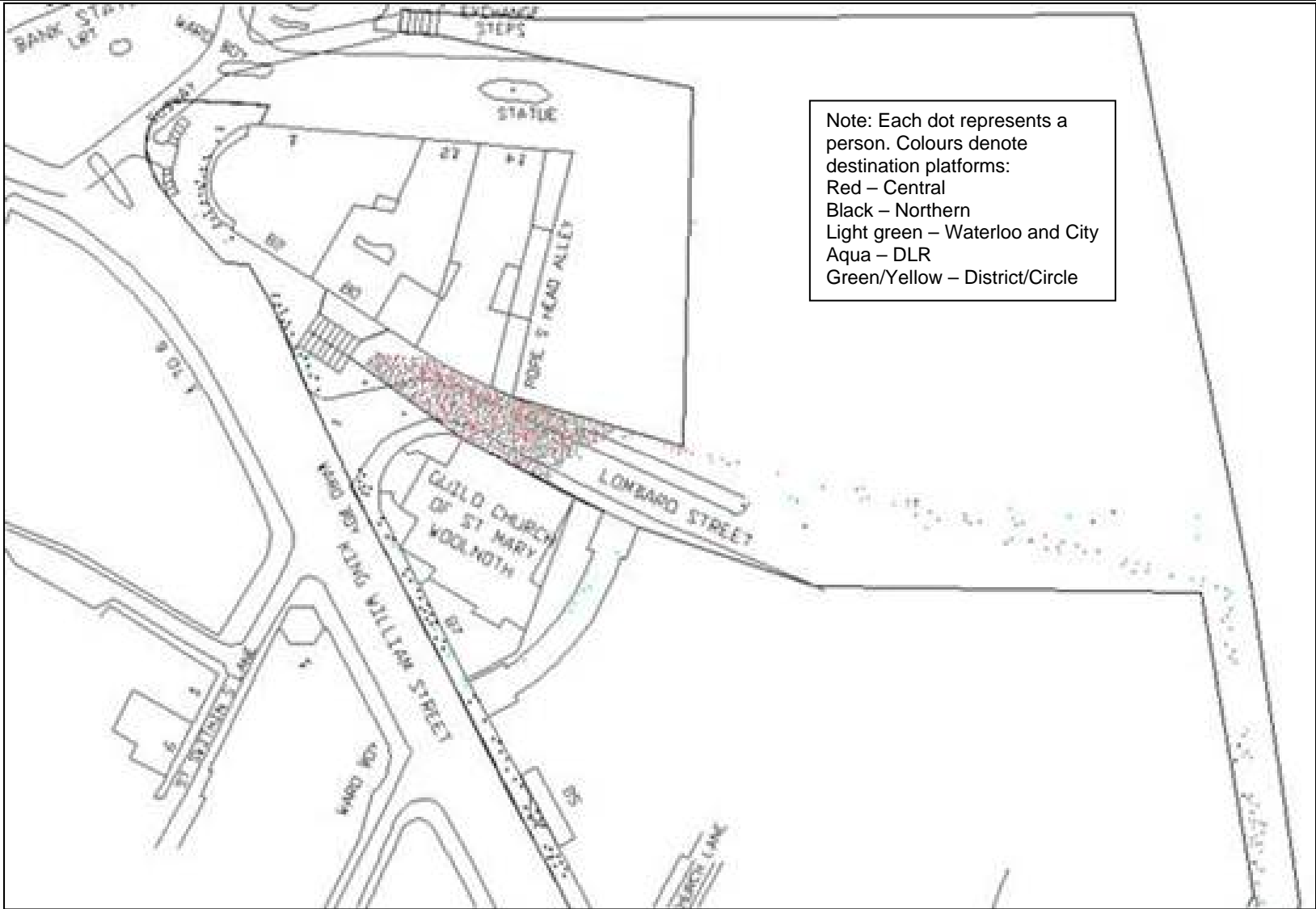
Station for extended periods then it will become necessary to implement a more significant intervention which can be extended for a longer period of time. The crowding at the station has now reached levels where only a very small increase in the DLR or Northern line entry exit or interchange passenger numbers will mean there is a significant risk of needing to implement this type of intervention.

- 2.2.6 The only such option that is considered viable is a one-way system in the station. In this mode of operation, passengers wishing to interchange from the DLR to the Northern Line would be directed out of the Monument exits to the street. They would then have to walk at street level to Lombard Street entrance where they re-enter the station, mixing with passengers accessing the Northern Line and causing large queues to develop in Lombard Street. Modelling shows that passengers making this movement would suffer a significant dis-benefit, with over 1500 unable to re-enter the station within 15 minutes, although there would be a benefit for some of those making other movements within the station. Furthermore, Lombard Street would become impassable to traffic. The potential one-way system is summarised in the **Figure 3**, and the scale of the projected crowding in Lombard Street forecast by the modelling is shown in **Figure 4**.
- 2.2.7 LUL has estimated that this one-way system will need to be implemented when the station demand in the 0700 to 1000 morning peak period exceeds 100,000 passengers. Current passenger figures are around 98,000. It is therefore highly likely that this one-way operation will be implemented on a daily basis if the station capacity upgrade works are not implemented.



**Figure 3:** One-way system to enable operation





**Figure 4:** Crowding at Lombard Street in 2026 if the station is not upgraded

## 2.3 Future increases in demand

- 2.3.1 Lines passing through or terminating at Bank Station have all experienced or will experience increased train service capacity as a result of line upgrades. This additional capacity will lead to additional passenger demand at Bank Station, creating further pressure on the station itself.
- 2.3.2 The Northern Line Upgrade (NLU) programme will increase the frequency of the Northern Line Bank branch to 24/26tph in 2014 (the programme known as NLU1) and then again to 28/32 tph in 2021 (NLU2). These upgrades are required to meet forecast demand across the whole of the underground network. Failure to address the congestion on the Northern Line Platforms would seriously compromise the effectiveness of these upgrades as future train services will be affected by the congestion at Bank Station, for the reasons described in section 2.2.2.
- 2.3.3 Given the location of Bank Station at the heart of London's main financial district, passenger demand is expected to continue to grow in the future due to significant new employment generated by major commercial development which is promoted by and relied upon in the London Plan. As an example of the scale of growth pressures, data shows that passenger entry and exit flows through the station have increased steadily from 41 million in 2001 to 48 million in 2012.
- 2.3.4 **Table 2.1** presents TfL's forecast growth until 2026 (data generated by Railplan, TfL's strategic public transport forecasting tool). The table also shows a further 31% growth beyond 2026 as being indicative of the further growth which might occur over the 60 years after planned scheme completion, based on London Plan growth projections.

**Table 2.1:** Observed and forecast growth in passenger numbers at Bank Station

Bank Station	Observed demand, 2003	Observed Demand, 2012	% Growth 2003-2012	Forecast demand 2026	Additional 31% growth beyond 2026
AM Peak	72,000	98000	36%	107000	140170
PM Peak	65000	101000	55%	106000	138860
All Day	222,000	337,000	52%	N/A	N/A

- 2.3.5 As a critical transport node at the heart of the City, it is essential that the capacity of Bank Station is enhanced in order to support continued employment growth in the City and to enable growth across a wider area.

- 2.3.6 In the absence of additional capacity being provided within the station, further operational controls will be required on an ongoing and increasingly disruptive basis to manage congestion at safe operating levels.
- 2.3.7 Modelling shows that by 2026, without improvements, the level of demand at the station during the morning peak would be unacceptable and in order to keep the station operational, the severe control measures described in section 2.2.5 onwards would need to be implemented.
- 2.3.8 The case for significantly enhancing the capacity, quality and safety of Bank Station is compelling.

## 3 The Strategic Case for Growth

### 3.1 Background

- 3.1.1 The need to accommodate growth in London's population and economy is supported by planning policy at all levels.
- 3.1.2 London is the economic powerhouse of the country. Its prosperity and its ability to continue to grow are central to the national economy. London is a world centre for business, tourism, media and culture and home of the UK Government. Inner London alone contributes around 14% of the UK's GDP.
- 3.1.3 London was the fastest growing region across England and Wales in the period 2001 to 2011 and population growth is forecast to continue. The London Plan predicted an increase of 790,000 households in the capital by 2031 and a growth of 776,000 jobs over the same period. Those estimates have more recently been updated by the Greater London Authority (GLA) in its Draft Further Alteration to the London Plan, January 2014, which predicts that between 2012 and 2036 there will be 980,000 additional households in the capital by 2036 and a growth of 861,000 jobs over the same period.
- 3.1.4 A focused strategy of growth has been at the heart of strategic planning for London since at least the publication of the Government's Strategic Guidance for London (RPG3 in 1996) and it lies at the heart of the London Plan spatial strategies of 2004, 2008 and 2011.
- 3.1.5 The London Plan sets out the framework for growth and change over the next 20 years and establishes a clear link between growth and public transport capacity. It highlights the critical importance of this link. The City of London's position as the world's leading international financial and business centre is highly dependent upon good transport accessibility. Planning policy is reviewed in more detail in the next section of this statement but the overall policy objectives are clear that London must fulfil its role as a "World City" and that the continued success of the City of London (the City) is of central importance.

### 3.2 London's Economic Role

- 3.2.1 London is one of the leading capital cities on a global scale. It needs to be able maintain its competitive edge when compared to other major cities such as New York, Paris, Frankfurt, Hong Kong, and Singapore by retaining the highly productive businesses and industries which have chosen to locate here and by continuing to attract new economic opportunities and investment.
- 3.2.2 The City plays a pivotal role within London's economy and the UK as a whole. It is the most economically productive area in the UK, with an average output

per worker of £121,900 compared to the London average of £74,600. The City's exceptional productivity is a direct function of the high density of employment hosted within the City, which itself is made possible by the quality and capacity of the City's transport links (both to deliver the necessary workforce but also to foster the necessary interaction between the City and other important concentrations of employment). These benefits of agglomeration mean that, at present, the City contributes over £50 billion, or around a fifth of London's total output (in Gross Value Added terms) from jobs in the area – and almost half of all of London's output in financial and professional services. This is important in and of itself – but also because the City's economy supports a significant number of jobs, land value and development in surrounding areas through support services. The City of London must be able to continue to prosper and develop to avoid damaging the economy of London and the UK as a whole.

- 3.2.3 The main factors considered by businesses in choosing where to locate include good access to a high quality and large labour market, and fast and easy connections to their market/client base. Both these factors are ruled by the effectiveness of the transport infrastructure at a particular location. London must continue to invest in its transport infrastructure in order to remain competitive and attractive to business – especially the kind of sectors that rely on efficient processes to retain a competitive advantage.

### 3.3 Employment Growth

- 3.3.1 Employment growth within the City is facilitated by three main factors: new office development; increased intensification of that development (including increased building heights); and changes to the way offices work and function with increased employment densities achieved through advancing technology, modern design and flexible/alternative working patterns. In order to underpin this growth London's transport network needs to respond to allow for additional demand.
- 3.3.2 The London Plan set out employment growth projections for each London Borough. This estimated that employment in the City would grow significantly from 339,000 jobs in 2007 to 435,000 in 2031, which represents a growth of 28.1%. The draft Further Alteration to the London Plan has revised these projections from 418,000 in 2011 to 475,000 in 2036 which represents growth of a further 13.6%.
- 3.3.3 An assessment even of the known planned office pipeline developments within the City which have gained planning consent and are either under construction or soon to be under-construction estimates that this new office floor space could accommodate around 40,000 jobs based on standard job densities. A number of these developments stalled following consent due to the downturn in

the office market, including iconic developments such as the 20 Fenchurch Street, the Pinnacle and the Leadenhall Building (the Cheese Grater), but these are now all being brought forward. The infrastructure in the City must respond to meet the coming demand.

### 3.4 The Role of Bank Station

- 3.4.1 Bank Station also plays a pivotal role in connecting the City of London with Canary Wharf and the Isle of Dogs. Since the 1980's Canary Wharf has become a global financial centre. The DLR provides a key link between the City and Canary Wharf. In order to remain an attractive global financial centre and continue to attract business to locate here, this transport link needs to continue to function efficiently and reliably.
- 3.4.2 London's economic function continues to evolve and change. The financial sector remains one of the main drivers of London's economy; however other emerging sectors are increasing the diversity of the capital's economic base. Not only does Bank Station provide a link to Canary Wharf and the Isle of Dogs, but the station also links to other key employment and economic hubs throughout London. This includes the traditional business sectors in Mayfair and the West End as well as new areas such as Kings Cross, Stratford City, Old Street and Shoreditch. Significant levels of growth are expected in these industries in particular, with increased demand for high quality office space, which will lead to the generation of new employment in London. The City of London plays a key role in supporting all business sectors by providing financing and other professional services such as legal and accountancy services.
- 3.4.3 Wider Economic Impacts (WEIs) reflect links between transport, employment density and productivity. This approach was first developed for Crossrail in 2003 where the additional rail capacity provided by Crossrail was shown to enable an increase in central London employment. The essence of WEIs is the positive link between employment density and productivity: higher densities of employment are associated with higher levels of productivity. Transport is not generally a creator of economic growth but a lack of transport can constrain growth. If there is high demand from employers to locate in particular locations but no available transport capacity then they will have to locate elsewhere. If additional transport capacity enables higher density of employment it can add to productivity and output.
- 3.4.4 Conventional economic thinking suggests that the congestion at Bank Station imposes costs on its users, and adversely affects the economic activity that occurs in the area around the station. This cost will continue to mount as the congestion increases, driven by Bank Station users demanding higher wages because of the discomfort and unreliability or simply refusing to put up with

those conditions. Or, the costs may come from developers refusing to invest in more new developments in an area which is clearly transport capacity constrained or they may come from businesses choosing to locate in areas where there is less crowding and unreliability for their staff journeys to work (in the UK or even overseas). Whatever the mechanism, the outcome could be lower growth around Bank and potentially in other areas affected such as the major interchange movement at Bank Station to Canary Wharf and the Isle of Dogs. The effect could also be a dilution of the benefits that flow from the clustering of activity which creates enhanced employment densities. Even if business decisions are made such that economic activity occurs in a different location to avoid these costs, the relocation of economic activity has the potential to directly affect UK economic output due to the significant productivity differential between the City of London and the rest of the UK. It is widely accepted that capacity constraints do impact on land use and a capacity constraint at a key destination and interchange station in the centre of the City of London, which is growing rapidly, should be expected to impact upon future growth.

- 3.4.5 Therefore, the impact of BSCU is wider than the important direct benefits to passengers at Bank Station. The scheme forms part of a wider package which will allow for the continued success of the City of London and London as a whole, which in turn will have a major beneficial impact on the London and UK economy.

## 4 Policy Context

4.1.1 The project is consistent with and supported by all levels of planning policy – from national policy to specific local policy. It is also supported by wider economic and transport strategies.

### 4.2 National Policy

4.2.1 The National Planning Policy Framework (NPPF) is based upon a presumption in favour of sustainable development, requiring development proposals that accord with the development plan to be approved without delay. The thrust of the NPPF is perhaps captured in paragraph 19, as follows:

*“The Government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. Planning should operate to encourage and not act as an impediment to sustainable growth. Therefore significant weight should be placed on the need to support economic growth through the planning system.”*

4.2.2 Paragraph 17 requires plan making and decision taking to proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. Planning authorities are encouraged to work closely with the business community to understand their needs and to identify and address barriers to investment, including a lack of infrastructure capacity (paragraph 160).

4.2.3 The NPPF provides a strong positive framework for decision making. Major planned infrastructure investments which facilitate growth in the City of London qualify for the strongest national policy support.

### 4.3 London Policy

#### **The London Plan (Spatial Development Strategy for Greater London) 2011**

4.3.1 The London Plan is concerned with ensuring that London’s status as a world city within the global economy, which continues to attract international investment, is maintained and enhanced. Policy 2.1 makes clear that *“London supports the spatial, economic, environmental and social development of Europe and the United Kingdom”*.

4.3.2 While all parts of London have a role to play, Policy 2.10 recognises the *“globally iconic core of one of the world’s most attractive business locations”* that the Central Activities Zone (CAZ), including the City of London provides. It specifically requires that *“The Mayor will, and boroughs and other strategic partners should: ... sustain and enhance the City of London... as a strategically important, globally-oriented financial and business services centre.”*



- 4.3.3 Policy 2.11 sets out the strategic functions for the CAZ, with transport identified as one of nine strategic functions necessary for the CAZ. Planning policies must:
- “h) secure completion of essential new transport schemes necessary to support the roles of CAZ... maintain and enhance its transport and other essential infrastructure and services; realise resultant uplifts in development capacity to extend and improve the attractions of the Zone...”*
- 4.3.4 The London Plan is a spatial development strategy; it recognises that transport plays a fundamental role in addressing a whole range of spatial planning, environmental, economic and social policy priorities. Policy 6.1 encourages close integration between transport and development by *“b) seeking to improve the capacity and accessibility of public transport, walking and cycling, particularly in areas of greatest demand.”*
- 4.3.5 Policy 6.4 continues in this theme in section B, requiring authorities *“...to improve the public transport system in London... and increase public transport capacity by: completing upgrades to, and extending, the London Underground network”*.
- 4.3.6 Policy 6.2 is the most scheme specific policy. It sets out the need to *“increase the capacity of public transport in London over the Plan period by securing funding for and implementing the schemes and improvements set out in Table 6.1.”* The BSCU is specifically listed under the heading ‘*Tube station congestion relief schemes*’. In other words, the BSCU has direct policy support in the strategic plan for London.

#### **The Draft Further Alterations to the London Plan January 2014**

- 4.3.7 Consultation was carried out from January to April 2014 on further alterations to the London Plan to reflect that the population has grown to a significantly greater extent than that anticipated in the 2011 London Plan. The Draft Further Alterations seek to take account of the anticipated population growth from 8.2 million in 2011 to 10.1 million in 2036 and the forecast growth of 861,000 jobs over the same period.
- 4.3.8 As a result, if possible, the emphasis on the need for infrastructure investment is even stronger. Paragraph 4.4A identifies how investment in new infrastructure is *“critical to securing sustainable growth and development. This Plan seeks to maximise the economic, social and environmental benefits from such investment in London. For the London economy, these benefits include economic output, employment, productivity, business opportunities, regeneration and the capital's contribution to the wider UK economy.”* This is further expressed in the amended Policy 4.1, which sets out the objective to

*“maximise the benefits from new infrastructure to secure sustainable growth and development”.*

### **The Mayor’s Transport Strategy**

- 4.3.9 The Mayor’s Transport Strategy (MTS) was adopted in May 2010 and was developed alongside the London Plan (2011) and the Mayor’s Economic Development Strategy, forming a strategic policy framework to support and shape the economic and social development of London. The MTS sets out the Mayor’s vision for transport and identifies the transport investment needed to support London’s growth over the next 20 years.
- 4.3.10 BSCU is specifically identified as part of Proposal 19, which lists *“Congestion relief schemes to complement Tube line upgrades and/or integrate with Crossrail at the key central London interchanges of... Bank.”* The MTS refers directly to Bank Station and the role its operation can play in bringing benefits to the economy through ensuring that the transport network is accessible to all.
- 4.3.11 The BSCU scheme is consistent with several policies, including the policies quoted below:

*“Policy 5: The Mayor, through TfL, and working with the DfT (Department for Transport)... will seek to ensure efficient and effective access for people and goods within central London through providing improved central London connectivity and appropriate capacity. This will include improving access to major public transport interchanges for pedestrians, cyclists and by public transport.”*

*“Policy 20: The Mayor, through TfL, and working with the DfT... will implement measures that seek to improve operational safety and security on public transport.”*

*“Policy 21: The Mayor, through TfL, and working with the DfT... will seek to increase accessibility for all Londoners by promoting measures to improve: a) The physical accessibility of the transport system, including... stations and vehicles”.*

### **The Mayor’s Economic Development Strategy for London**

- 4.3.12 In May 2010 the Mayor published the Economic Development Strategy for London. The Economic Development Strategy sits alongside the Mayor’s Transport Strategy and supports the strategic direction and growth ambitions set out in the London Plan. Underlying the Economic Development Strategy is a projection of continuing growth in London’s economy and population to 2031 and beyond. To support this, the Strategy sets out that sustained investment in infrastructure, including transport, housing, energy, waste, water, and communications will be essential if London’s competitiveness and innovation are to be maintained.

### 2020 Vision: the Greatest City on Earth

- 4.3.13 In June 2013 the Mayor of London published the Vision 2020 document. It signals London's determination to meet the connected challenges of rapid population growth and economic success. On page 17 it states the Mayor's transport agenda includes "[Securing] a stable 10 year funding settlement for TfL to: ... rebuild Bank and Holborn stations to increase capacity."
- 4.3.14 The funding statement which accompanies the application for the TWA Order sets out the commitment that exists between TfL and the Department for Transport to deliver the BSCU scheme.

### London Infrastructure Plan 2050

- 4.3.15 The Mayor of London is consulting on a 2050 Infrastructure Investment Plan for London. This sets out the case for sustained investment across a range of sectors including transport within the context of a central population projection of 11.3m (from 8.5m today) and an employment projection of 6.3m (from 4.8m today). The Plan identifies key transport challenges and opportunities including a set that relate to ensuring the foundations for London's continued global city success. A main element of this is making the case for growing the Central Activities Zone, where high employment densities support economies of agglomeration and very high average productivity levels that generate benefits for the wider economy. Growing these agglomeration benefits in the future is critically dependent on enhancing the rail systems that link the CAZ to its large employment catchment in and around London. The Bank Station Upgrade scheme is fully consistent with this objective.

### Local policy – City of London Corporation

- 4.3.16 The **Core Strategy** was adopted 8 September 2011. It sets a number of key objectives for the City, including that it will "*remain the world's leading international financial and business centre and a driver of the national economy*" (Strategic Objective 1).
- 4.3.17 Core Strategy Policy CS16 provides direct, up to date development plan support for the proposed development and, in particular supports proposals:
- "To build on the City's strategic central London position and good transport infrastructure to further improve the sustainability and efficiency of travel in, to, from and through the City by:... Facilitating further improvements to public transport capacity and step-free access at existing mainline rail and London Underground stations including... Bank."*
- 4.3.18 The BSCU is consistent with a number of important policies of the Core Strategy, including:

- Policy CS3 requires that the City has safe systems of transport which are designed to satisfactorily accommodate large numbers of people;
- Policy CS10 seeks high standards of design to meet the needs, inter alia, of disabled people;
- Policy CS6 is an area specific policy for the area of the City which includes Bank Station and it requires an enhanced environment for public transport users and others.

4.3.19 The same policy support is apparent in the emerging **Local Plan**, which was published for consultation in December 2013, except that CS16 is amended to include even more direct reference to the BSCU scheme: “1. *Securing increased public transport capacity through support for Crossrail and the Northern Line/Bank Station upgrade...*”

4.3.20 The City of London Corporation’s **Rail Strategy** 2009 outlines the position of the City of London Corporation on railway issues that both directly and indirectly affect the City. The document updates the previous version which was published in 2003, to take account of significant progress on a number of key projects. The overall purpose of the document is to ensure that the City’s position as the world’s leading international financial and business centre is not undermined by an inadequate transport system. To do this it sets out a range of investment priorities it considers necessary to support the existing and planned growth in the area.

4.3.21 During the peak periods, the strategy identifies that the majority of services are operating at or above the intended levels of capacity, especially when arriving or departing the main termini. It recognises that trains and stations operating beyond their intended capacity can result in service disruption and unreliability and that closure during busy periods may be required for safety reasons. The Rail Strategy, therefore, identifies the key priorities for rail investment that are required to support the City, with BSCU directly identified as a key project. Page 13 of the Rail Strategy notes:

*“The City is particularly keen to see new capacity proposals for Bank, and maintains regular contact with London Underground to investigate options for improving passenger provision. Increasing capacity within the station without causing significant disruption to passenger services is a major logistical and engineering challenge which will require continued liaison.”*

4.3.22 In March 2013 the **Bank Area Enhancement Strategy** was published. This document sets out the City of London’s vision for transport and urban realm improvements to be delivered in the Bank area over the next 10 years. The strategy seeks “*to maintain the Bank area’s prominence as an internationally renowned destination by creating a safe and attractive environment. By*

*improving integration, reducing conflict between modes of transport, enhancing the current pedestrian environment and the area's public spaces, the Bank area will continue to be a dynamic and desirable place to work and visit."* The document recognises the issues associated with growth at Bank Station and the need to upgrade the station (page 63, 3.5 Future Pressures).

- 4.3.23 To assist with the implementation of policy and in recognition of the fact that new development places extra demands on the transport system, the City of London Corporation's **Supplementary Guidance on Planning Obligations** (2004) allocated an average of 15% of Section 106 (S106) planning obligation contributions towards transport improvements, and recognises that the upgrading of Bank Station is identified as a key priority. The primary justification for requiring S106 contributions for transport improvements at Bank Station is to assist with securing an increase in the capacity of the station, along with a need to upgrade the station and provide new entrances.
- 4.3.24 This position is also evident in the evidence base supporting the Core Strategy and the emerging Local Plan, and with the Implementation Plan supporting the City of London Corporation's Community Infrastructure Levy Charging Schedule, which notes that "*Continued investment in public transport capacity and improvements are therefore critical to ensure that the City can continue to grow and accommodate the projected significant increase in employment*".
- 4.3.25 As a result, the City of London Corporation has been collecting section 106 contributions towards planned improvements in public transport in the City as it has granted consent for large scale development. **Table 4.1** provides a summary of some of the obligations entered into by developers in recognition of the need for capacity improvements and of the policy support for those initiatives, both generally to improve public transport and also specifically to Bank Station.

**Table 4.1:** Summary of major section 106 contributions for developments near Bank Station

<b>Scheme</b>	<b>s106 Amount for transport improvements</b>	<b>Purpose specified in s106 agreement (where specified)</b>
20 Fenchurch Street (Walkie-Talkie)	£910,000	implementing the Bank Underground Station Congestion and Step Free Proposals
The Leadenhall Building (Cheesegrater)	£731,745	transport improvements in the City and City Fringes
The Pinnacle/ Bishopsgate Tower	£2,256,396	the Bank Station improvements
Heron Tower	£104,012	the provision of transport improvements in the City
100 Bishopsgate	£2,501,660	carrying out the Transport improvements”.
The Willis Building	£997,512	a study to define and cost the potential to construct a new entrance and/or to increase the number of travellers at Bank Underground Station to increase passenger access.
The Walbrook	£240,933	carrying out such transport improvements in the vicinity of the site as are in accordance with a scheme to be drawn up by the City of London Corporation.
33 King William Street	£61,018	Transport Improvement Works [...] with a preference to the bank and Fenchurch and Monument Strategy Areas
Mondial House	£273,035	for the purpose of carrying out improvements to public transport provision in the City and in particular at Bank.
Bloomberg Place	£91,580	Not specified
45 Cannon Street	£35,702	Not specified
8-10 Moorgate	£292,702	Not specified
11-19 Monument Street	£40,935	Not specified
Allianz Building	£398,862	Improving conflicts between modes
120 Fenchurch Street	£421,141	improvements to the accessibility and advancement of sustainable transportation

## 4.4 Policy conclusions

- 4.4.1 The BSCU is not only directly supported by comprehensive, up-to-date planning policy, but is also key to the delivery of national, London wide and local planning objectives. Collectively, this amounts to a high level of policy support.

## 5 Scheme Development

### 5.1 The Bank Masterplan

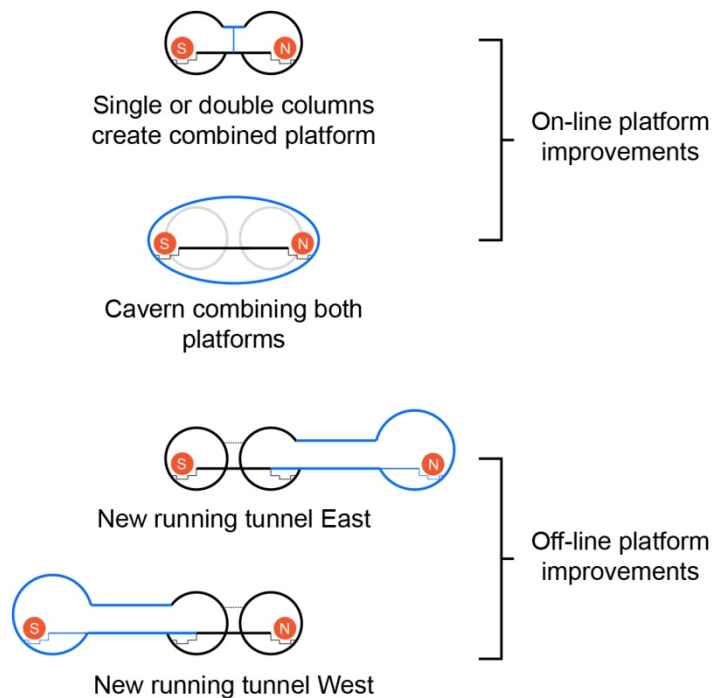
- 5.1.1 The first studies to look at increasing capacity at Bank Station started in 2002 in response to a proposal to increase the capacity of the DLR system by 50%. As a result of this work it quickly became apparent that unlocking individual bottlenecks within the station would merely shift the congestion elsewhere. Further studies undertaken in 2003 developed more holistic approaches to solving the problem by developing station wide Masterplans that could be developed in a phased manner, as opportunities and funding became available.
- 5.1.2 Many options were developed and tested in the period to 2006 and assessed in terms of cost, constructability and potential benefits. The options that were developed focused on the key constraints at the station which are reflected in the project aims - congestion relief, accessibility and emergency evacuation.
- 5.1.3 An integrated approach for the station as a whole, with capacity improvements targeting the Northern Line, DLR and interchange between other lines was considered to represent the most effective long term solution to improving congestion relief, while also providing step free access and fire evacuation.
- 5.1.4 Options were developed and considered which sought to address the key problems at Bank Station, which are summarised in more detail below. These have developed over time into the requirements and overall aims for the project.

### 5.2 Providing Congestion Relief

- 5.2.1 A critical area for congestion within the station is the Northern Line/DLR platforms and the connections between them. Options for providing more capacity to Northern Line tunnels are limited and include variations of on-line solutions (where the existing platform is widened) and off-line options (where a new passenger platform linked by a new railway tunnel is constructed).
- 5.2.2 Two on-line options were developed (see **Figure 5**) either by opening more passenger space between the platforms, or by expanding the existing tunnels to realign the tracks to provide a larger platform cavern. These options do not provide sufficient congestion relief and their construction would require substantial closure of the station and lengthy disruption to the Northern Line service over a period of years with wider secondary impacts to the network.
- 5.2.3 Two off-line options have been considered involving construction of a new tunnel adjacent to the existing tunnel. This is an approach that has been adopted at London Bridge as part of the construction of the Jubilee Line Extension.



- 5.2.4 A new running tunnel aligned to the east of the existing tunnel was not considered feasible due to existing infrastructure and building foundations as well as being in close proximity to the Bank of England. Constructing a new running tunnel to the west was therefore taken forward for further design and assessment. This remains the only practicable option in terms of meeting the project aims and requirements.



S = southbound tunnel; N = northbound tunnel

**Figure 5:** Northern Line tunnel alignment options

### 5.3 Providing Additional Station Entrance Capacity

- 5.3.1 A new station entrance is needed to improve fire evacuation and protection measures and step free access, as well as further alleviate existing bottlenecks within the station by removing conflict between exiting and interchanging passenger flows. A new station entrance would also provide improved evacuation times for DLR and Northern Line passengers, as well as direct step free access from the Northern Line to surface and introduces an access point between surface level and the below ground infrastructure that can be used to provide fire-fighting and PRM lifts.
- 5.3.2 Given the sensitive townscape, with numerous listed buildings located within a conservation area and consequent design requirements of City of London Corporation, as well as connectivity to existing LUL infrastructure, the selection of a suitable site is severely constrained. The area between King William Street and Cannon Street was identified in conjunction with the Corporation of

London as being ideally placed in relation to both the existing and proposed below ground works as well as good for providing access at street level during construction. Two options were identified, Phoenix House and 10 King William Street, both requiring the demolition of existing buildings.

5.3.3 The Phoenix House location for a new station entrance is constrained by below ground infrastructure that would limit the potential to increase capacity from the DLR to surface, and would not ease congestion or reduce journey times within the station sufficiently. On this basis, the King William Street location was selected as the preferred station location site and endorsed by the Corporation of London.

5.3.4 This remains the best performing option for the station entrance that is able to meet the aims and requirements of the project. The recent planning consent that has been granted for the over station development which includes the space for the station entrance, reconfirms the planning policy support for this option.

## 5.4 Improving Interchange within the station

5.4.1 Congestion within Bank Station for people interchanging between different lines is a major problem, particularly for those moving between DLR and Northern Line and the Central Line. Improving the interchange capacity between the DLR and Northern Line, by providing additional stairs or escalators, would reduce journey times within the station and alleviate the congestion that is currently experienced. Escalators are preferred because they provide greater capacity than stairs and are normally required where the vertical travel distance exceeds 5m (the vertical distance between Northern Line and DLR is approximately 10m).

5.4.2 The proposals within the TWAO application for improving interchange remain the most effective and viable way of meeting the overall project aims and requirements.

## 5.5 Improving step free access

5.5.1 Improvements to congestion, interchange and particularly provision of a new station entrance, would provide improved evacuation times for DLR and Northern Line passengers, as well as providing direct step free access from the Northern Line to surface. Construction of a new station entrance introduces an access point between surface level and the below ground infrastructure that can be used to provide fire-fighting and PRM lifts.

5.5.2 The proposals for improving step free access at the station will lead to a major improvement on the existing arrangements and remain the best performing and

most viable and deliverable option for meeting the overall aims and requirements of the project.

## 5.6 Summary

5.6.1 The work between 2002 and 2012 has enabled a clear set of requirements and project aims for Bank Station to be identified. This is based on a clear understanding of how the station operates today and how this is going to change in the future. As these requirements have evolved over a long period of time it is important to reconfirm they remain valid as the project aims for the future of Bank Station. This final review has confirmed that the stated aims for the project are the right aims for Bank Station going forward.

## 5.7 Development of the “Base Case” Proposal

5.7.1 This design and development work led to the preparation of a base case proposal for Bank Station, which included a new running tunnel west of the existing tunnel with a new station entrance at 10 King William Street.

5.7.2 This base case proposal met the overall aims of the project but needed further work in relation to cost, programme and constructability. Further work was undertaken to consider the options for building the station including the location of worksites and how these could be integrated with locations for station entrances.

5.7.3 Different options for worksites were considered involving varying degrees of land take within the site bounded by King William Street, Nicholas Lane, Cannon Street and Abchurch Lane. The land take options studied included 10 King William Street only, the ‘Whole Block Site’ (all the buildings within the site), and various options of partial site acquisition. This work was undertaken in conjunction with the Corporation of London.

5.7.4 The conclusion of this appraisal was that the use of the Whole Block Site would give significant benefits to the constructability of the BSCU and allow for the use of escalators from the new station entrance hall (referred to as the Reference Case in other documentation). However escalators were not incorporated in to the base case design due to budget limitations, but rather lifts were proposed for vertical access. The Whole Block Site would also enable the provision of a coherent and high quality development above the station that was better able to meet the planning requirements of the Corporation of London.

5.7.5 The use of the Whole Block Site remains the best performing way of delivering the aims and requirements for the BSCU whilst meeting the planning policy requirements of the Corporation of London. The decision to adopt the Whole

Block Site, which includes the new station entrance, was recently endorsed by the decision to grant consent for the over station development on this site.

## 5.8 Innovative Contractor Engagement Tender Process

5.8.1 Given the complexity of constructing new infrastructure at Bank Station in a highly constrained environment, it was essential that the preferred base case scheme was properly tested in terms of its deliverability and cost. An Innovative Contractor Engagement (ICE) process was adopted as the most appropriate procurement approach for the project. The process was designed to enable bidders to propose and discuss innovative ideas to delivering cost, risk and programme benefits.

5.8.2 Under this process, four pre-qualified bidders entered into a confidential dialogue with LUL in order to formulate their proposals which would demonstrate delivery of the core requirements of the scheme, either by improvements to the base case proposal or through any other proposals they felt met the aims and requirements of the project, and thereby improve the design by reducing risk, cost and programme and developing ways to address any negative impacts of building the project.

5.8.3 The four bidders submitted different proposals which were then assessed by LUL against the overall aims and requirements of the project. The winning bid by Dragados SA was the most successful bid, delivering significant improvements against the base case scheme, programme, value and scope. These include a moving walkway for passengers interchanging between the Central Line and Northern Line and DLR; an escalator and lift for access from the new Station Entrance Hall and a reduction in programme and cost. This demonstrated the greatest potential to meet the overall aims and requirements of the project. The decision to appoint Dragados SA was approved by the TFL Board in July 2013.

## 5.9 Development of the TWAO Scheme

5.9.1 Since award, LUL and Dragados SA have continued to focus on progressing the design in a way that seeks to minimise impacts both on users of the station and the Underground network and landowners and stakeholders in the City, identifying further areas to provide local improvements to the constructability and operation of the station. This has included extensive engagement with stakeholders, landowners and the public on the proposals which has in turn led to changes to the design. Refinements have included:

- improving sight lines towards and through the new Station Entrance Hall;

- seeking to locate plant and equipment to below ground locations while maintaining suitable access for maintenance and replacement, as well as to maximise active frontages at street level; and
  - optimising the route alignment of the new tunnel to minimise pile interfaces with existing buildings and reducing risk and magnitude of settlement to structures and utilities.
- 5.9.2 The joining of the new Northern Line tunnel to the existing will have an impact on the existing Northern Line City Branch. A number of possible options have been considered for constructing the new junction between the “old” and “new” tunnels including a step-plate junction, where two tunnels are joined by enclosing them in a stabilising encased structure.
- 5.9.3 In this particular location where the existing Northern Line tunnels lie directly over each other and given the proximity of the Bank of England vaults, this solution is not feasible in engineering terms.
- 5.9.4 A temporary blockade of the Northern Line was identified as the only feasible option for construction of the new tunnel and the impact on users of the Northern Line has been assessed. The impact on passengers can be minimised by minimising the duration of the blockade and undertaking the work over a summer period and through the provision of alternative routes via the Charing Cross Branch of the Northern Line, Thameslink services and additional services on local bus routes.

## 5.10 Constructability

### **Second Work Site**

- 5.10.1 The Dragados scheme confirmed the need for a second site for the main tunnel construction access point, which would also lead to substantial benefits in terms of programme and reducing impacts overall. The second work site could decouple the construction of the station entrance box, and escalator box from the construction of the new running tunnel and could also allow for the most intensive construction traffic (for removal of excavated material) to be kept away from the Bank Conservation Area, a location already heavily used by pedestrians, cyclists and vehicles. To be effective, the second site would need to have direct access to the new running tunnel and allow sufficient space to maintain a safe system of working, including construction plant, storage and welfare facilities.
- 5.10.2 A number of locations for a second work site have been considered. These sites have been assessed in terms of their ability to meet the overall requirements and potential impacts. In summary, Arthur Street was selected as the location of the second worksite because it is located directly over both

the new tunnel alignment and is also located above the disused King William Street platform tunnel. The existing below ground infrastructure provides a suitable storage facility for construction operations. Furthermore, the location of the chosen access work site is adjacent to the strategic road network thereby reducing local disruption from construction traffic and road removal could be conducted on a 24 hour basis in line with tunnel excavation. The use of Arthur Street does not require the demolition of any buildings, but does require the carriageway to be shut to through vehicle access (with service access maintained for local occupants) for the duration of the construction programme. All other options were not capable of meeting the overall project requirements in the way the Arthur Street is.

### **Connection to the existing railway**

- 5.10.3 The joining of the new railway to the existing will require extended closure, or Blockade, of services on the Northern Line City Branch. Connection to the existing tunnel via step-plate junction, where two running tunnels are joined by enclosing them in a stabilising encased structure, was originally considered as it could potentially be constructed during extended weekend or holiday period possessions of the Northern Line, and therefore reduce the duration of the Blockade. However, at the northern tie in, the arrangement of the existing tunnels directly over each other (and in the proximity of the Bank of England vaults), make this solution not feasible in engineering terms. Whilst the approach is feasible for the southern tie in, there is no benefit to adopting this approach unless it can be applied to both connections. Additional information regarding the Blockade can be found in section 6.3.

### **Removal of excavated material**

- 5.10.4 Excavated material from tunnel construction would need to be removed from the access work site. Three main transportation options were considered; river, rail and road. Transportation by river would require double handling, quayside storage, and was subject to tidal constraints. The rail option would require additional excavation at the worksite to construct loading facilities. However the main problem with this approach is the interaction with the operational railway (delays to the start of service caused by construction work at the site or at the depot), and the need for a backup provision for road removal in the event of train unavailability. The location of the chosen access work site is adjacent to the strategic road network thereby reducing local disruption from construction traffic and road removal could be conducted on a 24 hour basis in line with tunnel excavation. Whilst, there is the potential for secondary noise and air quality impacts, the advantages over the other modes make removal by road the preferred option.

## 5.11 Summary

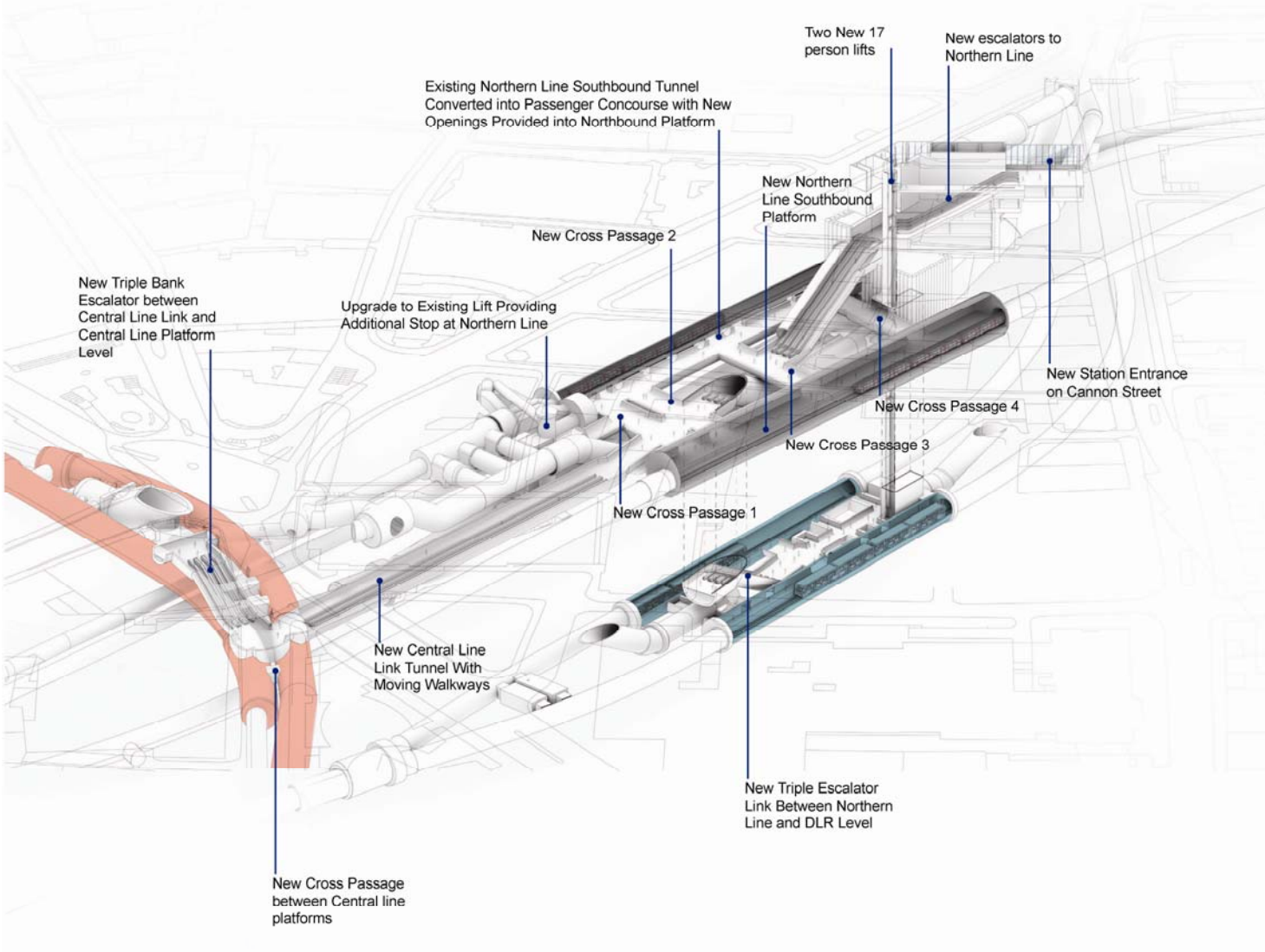
- 5.11.1 The extensive work undertaken between 2002 and 2012 enabled a clear set of requirements and project aims for Bank Station to be identified. This is based on a clear understanding of how the station operates today and how this is going to change in the future. This enabled an innovative procurement process to be run, which focussed on these requirements and resulted in an improved station design being procured.
- 5.11.2 The development of the final scheme with the input of LUL's contractor Dragados SA has provided greater confidence that the overall aims and requirements of the project can be delivered. The use of a second worksite enables the overall programme to be reduced and the impact on the surrounding area to be minimised, thus more able to meet the overall aims and requirements of the project.

## 6 The Proposed Scheme

### 6.1 Description

- 6.1.1 The BSCU includes provision of a new passenger entrance with lifts and escalator connections; a new Northern Line passenger concourse using the existing southbound platform tunnel; a new Northern Line southbound train and platform tunnel; and new internal passenger connections between the Northern Line, the DLR and the Central Line.
- 6.1.2 The following sections describe the various parts of the BSCU and how these will be constructed. **Figure 6** illustrates the proposed improvements.

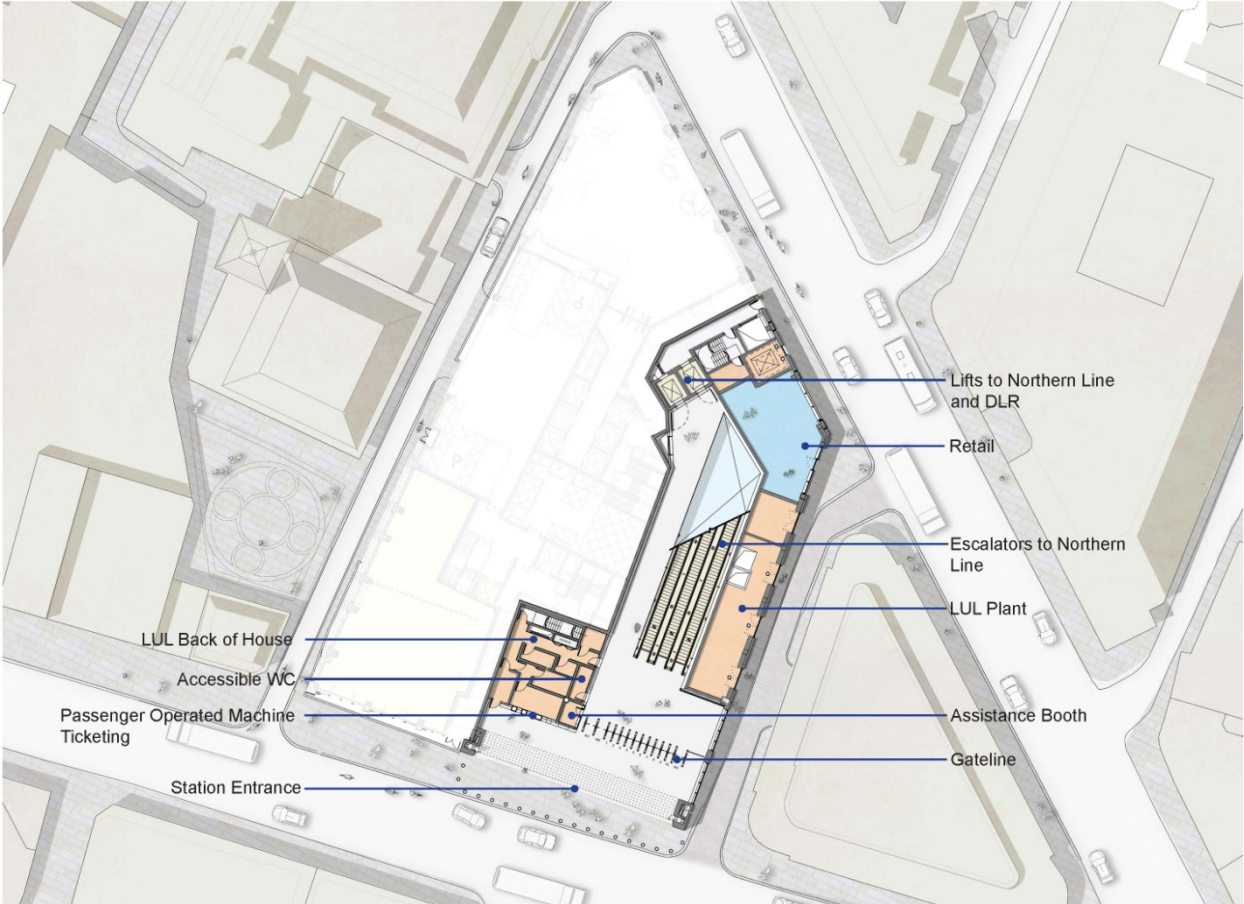




**Figure 6:** Main elements of proposed improvements

### A new Station Entrance Hall

6.1.3 A new Station Entrance Hall will be constructed within the footprint of the site bounded by King William Street, Nicholas Lane, Cannon Street and Abchurch Lane. **Figures 7 and 8** show the general arrangement and how the new Station Entrance Hall might look on Cannon Street.



**Figure 7:** General arrangement of new Station Entrance Hall



**Figure 8:** Proposed station entrance

- 6.1.4 The new entrance will open on to Cannon Street at the junction with Nicholas Lane. The entrance will have a canopy extending over the pavement for weather protection as well as to advertise the station. Bollards at the pavement boundary will be provided for security and to protect passengers at the entrance. Nicholas Lane will feature a level surface for pedestrians and vehicles. The new entrance will include staff facilities, plant rooms and associated retail space. The Nicholas Lane facade will include louvers to ventilate the plant rooms. A new pedestrian crossing will also be provided along Cannon Street.
- 6.1.5 From the Station Entrance Hall, a set of triple escalators will take passengers to the Northern Line concourse via an intermediate level. Two 17-person passenger lifts (which also double as fire-fighting lifts) will be provided to access the Northern Line, one of which will also continue down to the DLR level. An emergency intervention/escape staircase will be provided within the lift shaft. The existing passenger lift linking the TriPLICATION with the DLR will be upgraded to allow additional connection with the Northern Line. A walkway will be provided from this lift to the Northern Line concourse and platforms.

#### **Northern Line Improvements**

- 6.1.6 A new platform and running tunnel to accommodate the southbound Northern Line, which will be constructed west of the existing platform. The new tunnel will be approximately 700m long. It will diverge from the existing southbound track beneath a point approximately 14m north of the junction of Gresham Street with Lothbury and it will link into the existing Northern Line tunnel south of Lower Thames Street. To improve circulation at the Northern Line Platform level, the existing southbound platform will be converted into a new central concourse.
- 6.1.7 Four new cross-passages will be constructed which will link the platforms and concourse, with three also connecting with new interchange routes. These comprise (see **Figure 6**):
- the northernmost cross passage (CP1) which will link with a new tunnelled passageway that will provide improved passenger interchange between the Northern and Central Lines via a pair of moving walkways (see below);
  - cross passage two (CP2) which will connect to a set of triple escalators that will allow improved interchange between the Northern Line and DLR;
  - cross passage three (CP3) which will provide access to the escalators up to the Station Entrance Hall; and
  - the southernmost cross passage (CP4) which will link to the north and southbound platforms.

- 6.1.8 Three new adits (openings) will be created linking the new passenger concourse and the existing northbound platform.

### Central Line Improvements

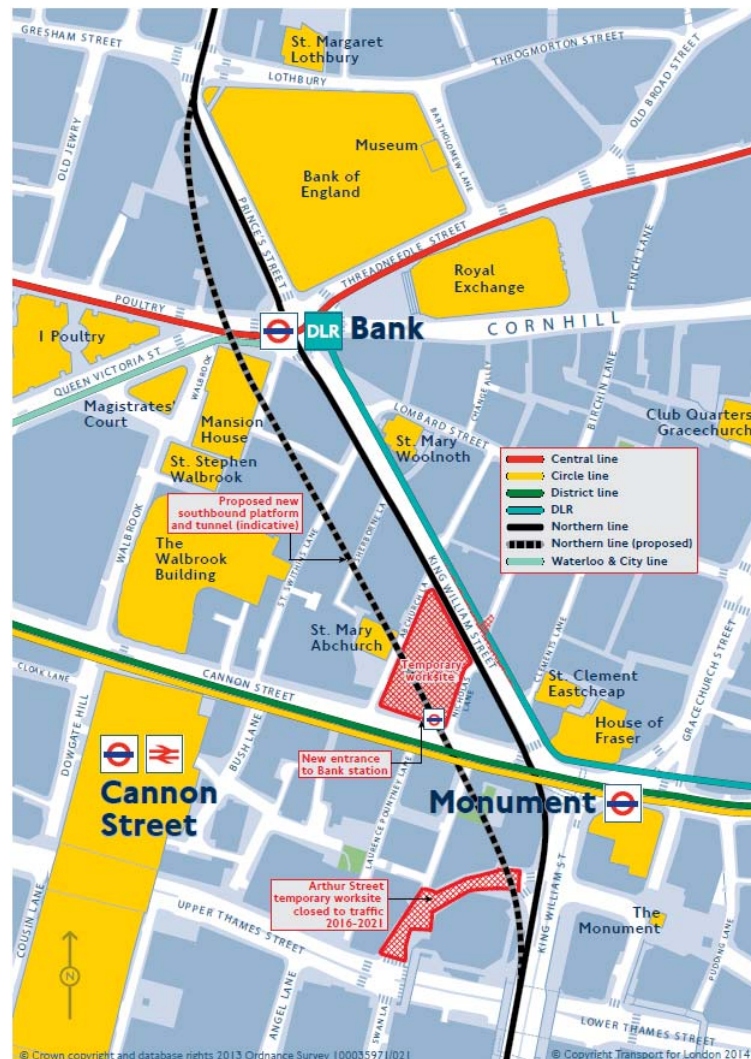
- 6.1.9 A new tunnelled passageway (Central Line link) from the Northern Line concourse with its moving walkways approximately 95m long, will provide access to a set of triple escalators which will take passengers up to the Central Line platforms via an existing cross passage which will be reconstructed and enlarged (see Figure 6). A second cross passage at the far (western) end will provide improved access between the eastbound and westbound platforms.
- 6.1.10 Supporting infrastructure will include a cable tunnel between the Central Line link and the existing Central Line ticket hall, and new electrical and communications rooms for the operation of the station.

### DLR Improvements

- 6.1.11 A new set of triple escalators connecting the Northern Line and the DLR will be provided. Two new cross passages will link the DLR arrival and departure platforms with the existing DLR passenger concourse and a third will link the DLR arrival platform to the existing passenger concourse.

## 6.2 Construction of the BSCU

- 6.2.1 **Figure 9** shows how the BSCU will be constructed from two work sites. The first work site will be at the site bounded by King William Street, Nicholas Lane, Cannon Street and Abchurch Lane (the Whole Block Site – note that this is referred to as the Cannon Street Work Site in consultation material). The Whole Block Site will be used to construct the escalators, cross passages and new Northern Line passenger concourse. A second smaller work site will be located on Arthur Street (see **Figure 9**). A shaft will be sunk at Arthur Street and used to excavate the new Northern Line southbound train tunnel. The disused King William Street underground station located beneath the junction of King William Street and Arthur Street will be used for logistics purposes during construction.



**Figure 9:** Overview of scheme showing construction work sites

- 6.2.2 Construction will commence in 2016 with the diversion of utilities within Arthur Street prior to construction of the Arthur Street shaft. The tunnelling and below ground excavation will start towards the end of 2016 and will take approximately four years (completing late 2020) with peak tunnelling activity occurring in 2017. Construction of the Station Entrance Hall is programmed for 2021.
- 6.2.3 The construction of the new tunnel, cross passages, openings, walkways and escalator barrels will be carried out using the sprayed concrete lining technique. This involves excavating the ground and spraying excavated surfaces with steel fibre reinforced concrete. This has been used extensively in the a number of recent projects including construction of the Crossrail stations.

- 6.2.4 The Whole Block Site is currently comprised of six buildings. The majority of these buildings will be demolished during 2016 –2017. The rear extension of 20 Abchurch Lane will also be demolished and the rear of the building made good. The main building and associated façade will be retained and used for project offices and site welfare facilities during construction works. In demolishing the Whole Block Site to construct the BSCU there is a need for a replacement development. Planning permission for an over site development (OSD) located over and around the new station entrance was granted by the City of London on 27 June 2014. It is expected that construction of an OSD is likely to be undertaken between 2021-22 and 2023-25. Demolition of the remainder of 20 Abchurch Lane, including dismantling of its facade, will be undertaken as part of the OSD construction works.
- 6.2.5 The Arthur Street work site will temporarily occupy the road between Upper Thames Street and King William Street (see **Figure 9**). It will require closure of Arthur Street for the duration of the construction works. Pedestrian access to buildings and vehicular access to two service bays located on Arthur Street will be maintained. Arthur Street will also be used as a regulating area for construction vehicles needing to access the Whole Block Site, 130m to the north.
- 6.2.6 The closure of Arthur Street will require the removal of the lorry restriction at Monument junction to enable vehicles to access the Whole Block Site from the Arthur Street Work Site. In addition, alternative access to the City of London for emergency service vehicles will be required.

## 6.3 Northern Line Blockade

- 6.3.1 During the final phases of construction when the new tunnels and infrastructure are connected to the existing network, a period of closure (referred to as the Blockade) of the Northern Line will be required between specified points. The Blockade will comprise the following:

### Full closure

- Northern Line both northbound and southbound – 40 days track closure between Kennington and Moorgate (April- May 2020).

### Partial closure

- Northern Line northbound – trains non-stopping at Bank Station for 77 days (May -August 2020).
- Northern Line southbound – 77 days track closure between Kennington and Moorgate (May -August 2020).

6.3.2 Alternative routes via the Charing Cross Branch of the Northern Line, and additional services on local bus routes will be utilised to maintain commuter services.

## 6.4 Utilities, Protective Measures and Other Works

6.4.1 Works to divert and protect utilities affected by construction are also proposed. The main utility works for the BSCU comprise:

- diversion of utilities at Arthur Street to allow construction of the shaft;
- diversion of utilities and protective works to the Low Level 2 Sewer (an west-east sewer between Cannon Street and King William Street) and to the London Bridge Sewer (a north-south sewer running beneath King William Street); and
- minor protective works to utilities to ensure there are no impacts from settlement.

6.4.2 Tunnelling and shaft excavations during the construction phase can generate varying amounts of movement in the overlying and surrounding ground. Monitoring and surveying structures and roads both prior to and during the construction works will be undertaken to provide data to:

- inform the need to protect existing assets or their operation; and
- inform decisions for construction activities.

6.4.3 Protective works to buildings (including listed buildings) and roads will be carried out where the ground movements and damage analysis indicates this is required. This may include grouting works which need to be carried out via excavated shafts.

6.4.4 During this period there will be a requirement for part closure of a number of roads. Appropriate phasing of the works will ensure that only one lane of any strategic road will need to be closed at a time.



## 7 Consultation

### 7.1 Consultation phases

7.1.1 Consultation with stakeholders likely to have an interest in the scheme has taken place at key stages of the BSCU. Four phases of public consultation have been carried out to help publicise the project and inform the design of the scheme. **Table 7.1** provides a summary of these phases.

**Table 7.1:** Consultation phases

Phase	Consultation objectives	Consultation period
1	<ul style="list-style-type: none"> <li>Communicate the concept of the BSCU Works and proposed tunnel alignments.</li> <li>Seek early feedback on the proposal from the public.</li> </ul>	Autumn 2011
2	<ul style="list-style-type: none"> <li>Seek feedback on two proposed property acquisition options.</li> <li>Seek feedback on three proposed station entrance layout options.</li> </ul>	Spring 2012
3	<ul style="list-style-type: none"> <li>To give stakeholders and the public easily-understandable information about the proposals and provide opportunities for them to respond.</li> <li>To understand the level of support or opposition for the proposal.</li> <li>To understand any issues that might affect the proposal which the project team were not already aware of.</li> <li>To understand concerns and objections.</li> </ul>	Autumn 2013
4	<ul style="list-style-type: none"> <li>Seek feedback on the assessment of the potential environmental effects of the construction and operation of the proposed scheme.</li> <li>Seek feedback on the approach to mitigating impacts.</li> <li>Seek feedback on the assessment of the implications of the temporary closure of the Northern Line in 2020 and proposals to mitigate the effects.</li> </ul>	Summer 2014

### 7.2 Approach to pre-application consultation

7.2.1 Stakeholders consulted have included: Government bodies; statutory bodies; transport, travel and equalities groups; the travelling public; local businesses and guilds; the media; sensitive community receptors; and those directly affected by the project through pile interception, access, land and property acquisition or potential settlement issues.

- 7.2.2 Recognising the diverse range of stakeholders with different interests in the project, consultation has been carried out using a variety of communication and engagement activities.
- 7.2.3 Information about the project has been produced in different formats and with different levels of detail. A series of websites were developed to support each phase of the public consultation. These websites have provided up-to-date information on the BSCU as the proposed scheme was developed and enabled stakeholders to provide feedback direct to the project team via a dedicated email address. Project information was also included on the main TfL website in the context of material about the Tube Upgrade Programme. Factsheets and briefing notes providing general project information; details of key project impacts and their mitigation; and design decisions were also made available.
- 7.2.4 Public exhibitions have been held to enable interested parties to review details of the scheme, speak to members of the project team and provide feedback. Exhibitions were held over several days in accessible locations in the Bank area during each consultation phase. A model, animated presentation and images were provided at these exhibitions to help illustrate key elements of the scheme design.
- 7.2.5 Written communication has included letters and emails sent directly to key stakeholders to provide updates on the proposals, advertise consultation exhibitions and encourage feedback. In addition, leaflets were sent to property owners and occupiers in the vicinity of the BSCU project area on four separate occasions to provide information on the project and publicise the exhibitions. Furthermore, leaflets providing an overview of the project were distributed to the travelling public at Bank Station during each of the four consultation phases.
- 7.2.6 Publicity for the project and the consultation phases was also delivered through adverts in the Metro; emails to Oyster Card users who use Bank Station (and in phase four, users of the Northern Line); and posters displayed at stations potentially affected by the scheme.
- 7.2.7 Communication and engagement with Government and statutory bodies, local businesses and guilds, community receptors and those directly affected by the project has and will continue to include face-to-face meetings and briefing sessions. Consultation with stakeholders, including City of London Corporation, English Heritage, Travelwatch, Diocese of London and the Greater London Authority has also been maintained to identify and agree suitable design principles and mitigation requirements associated with the BSCU. LUL has sought to develop ongoing dialogue with these stakeholders since the start of the project. LUL has also signed Memorandums of Understanding (MoU) with the City of London Corporation and the Diocese of London. The MoU set out

the principles of working together. Additional briefing sessions were offered to 140 interested parties.

### 7.3 Feedback received

7.3.1 From the start of the first consultation in November 2011 stakeholders have had the opportunity to respond to the proposal in a number of ways, specifically:

- written representation via the feedback forms available at the public exhibitions;
- electronic submissions via the dedicated email address on the project's consultation websites;
- direct contact with members of the project team following meetings or briefing sessions; and
- written submissions to the Bank project office.

7.3.2 **Table 7.2** summarises the level of written feedback received during each consultation phase and the number of people attending the exhibitions.

**Table 7.2:** Responses to consultation phases

Consultation Phase	Written responses received	Exhibition visitors
1	185	254
2	288	221
3	621	430
4	694	261

7.3.3 Strong support for the BSCU was expressed at all consultation phases. Respondents cited the current issues of overcrowding and interchange difficulties experienced at the station as reasons why they supported the scheme. Themes emerging during the phase 1 consultation included requests to accelerate the programme for the works so the benefits for passengers could be delivered sooner. Concerns were raised regarding the disruption to services during the construction. The need for more congestion relief for the Central Line and Waterloo and City Lines was also raised. During phase 2 the majority of respondents expressed support for the acquisition of all the buildings at the Whole Block Site and the provision of escalators with lifts to provide a step free route to both King William Street and Cannon Street.

7.3.4 At phase 3, the main themes emerging were the need for improvements to circulation space and interchange for the Northern Line, DLR, Central Line and

Waterloo and City Line; step free access throughout the station; improved passenger comfort (e.g. temperature); and also shorter timescales for project completion. Concerns were also expressed about the temporary closure of the Northern Line City branch and disruption to the station during construction. Respondents also raised concerns regarding the disruption above ground as a result of the construction work sites off Cannon Street and Arthur Street.

- 7.3.5 At phase 4, there was strong support for and recognition of the need for the project. Other key themes were the need for better interchange and accessibility throughout the station, and shorter timescales for project completion. Concerns were expressed about disruption to the station during construction, and the inconvenience caused by the temporary closure of the Northern Line City branch in 2020, particularly the ability of alternative routes to provide sufficient capacity. Local businesses and property owners raised concerns about the effect on their businesses of the Cannon Street and Arthur Street construction sites.
- 7.3.6 All feedback received by the project team has been recorded, reviewed, taken into consideration and, where appropriate and practicable, incorporated into the iterative development of the BSCU scheme. Engagement with the project's stakeholders will be maintained through regular and ad hoc briefings, events, meetings and correspondence. The Consultation Report accompanying the application provides further detail regarding the project's response to the feedback received.

## 8 Cost and funding

- 8.1.1 The anticipated costs of the BSCU are identified in the costs estimates submitted with this TWA application and are £563 million.
- 8.1.2 The current TfL investment programme covers the period from 2012 to 2021. The investment for BSCU was included as part of the Treasury's Comprehensive Spending Review of 2012 (as well as previously in 2009). This spending review provides the capital grant for funding major capital spending such as this scheme. The BSCU has been included in TfL's 10 year business plans and yearly budgets. Incremental approval for spending on the scheme has been approved at TfL Board, most recently in July 2013 for the approval to enter into a design and build contract with Dragados SA, including procurement authority for the full contract. The structure of this contract provides a level of price certainty not usually found on projects at this stage given its early engagement with contractors and timing within the design development as described above in section 5.9.
- 8.1.3 As a measure of LUL's commitment to the BSCU, LUL has spent over £100m since 2003, the majority of this being the acquisition of property on the Whole Block Site.
- 8.1.4 Funding for the scheme is provided by the Department for Transport, as set out in the 2010 spending review letter to the Mayor of London, dated 20th October 2010.

## 9 Project Effects

### 9.1 Assessment of effects

- 9.1.1 The TWA application is supported by detailed assessments of all principal effects of the project, drawn from extensive experience of tunnelling in London on Crossrail, Jubilee Line Extension, DLR and Northern Line Extension. These are set out in the Environmental Statement (ES), which includes a comprehensive Transport Assessment, which accompanies this application. It would not be appropriate to attempt to summarise the detail of those assessments in this Supporting Statement and the ES will need to be considered in detail together with the other application documents. There are, however, some principal factors that can be drawn from the ES and summarised here.
- 9.1.2 Overall, the ES identifies relatively limited adverse effects from the development of the BSCU. Chapter 18 of the ES draws together the residual effects after mitigation into a summary table. A small number of significant adverse effects arise for a temporary period only through the construction of the project. The relatively limited scale of the impacts arises partly from the fact that the main works proposed are underground but also, importantly from the care that has been taken in scheme design and site selection, aided by extensive public consultation.
- 9.1.3 The project design has evolved through a process of detailed technical appraisal and close engagement with the City of London Corporation, the public, landowners and other interested parties. It is this approach which makes the most significant contribution to maximising the practical benefits of the project, whilst limiting its adverse effects. In addition, strategies have been developed to further limit potential adverse effects through commitments which would form part of any TWAO and related planning permission. These include the following measures described in the paragraphs below.
- 9.1.4 LUL will comply with a Code of Construction Practice (CoCP) and Construction Logistics Plan (CLP). The CoCP details the work site controls and environmental monitoring that will be implemented at each work site to protect the environment and limit nuisance, and the CLP presents the measures to manage the movement of construction traffic within and between the work sites to minimise impacts on the surrounding road network, including on cyclists and pedestrians. Final versions of both documents will be submitted to, and agreed with, the City of London Corporation taking into account other stakeholders. This is a condition of the deemed planning consent for the works.
- 9.1.5 A commitment is made to undertake defect surveys prior to any tunnelling activities taking place so that any effects of settlement to buildings can be

monitored and addressed as appropriate. This would be undertaken on property predicted to experience 10mm or more of settlement as result of tunnelling.

- 9.1.6 A design level for operational ground borne noise and vibration of 35 decibels (dB) will be used for residential properties and 40dB for offices. This is at least equivalent to the levels committed to in other contemporary large scale UK rail projects.
- 9.1.7 LUL will comply with a set of planning conditions.
- 9.1.8 Collectively, these amount to a substantial framework of mitigation and control by which the project will be delivered in accordance with the assessment presented in the ES.

## 9.2 Benefits for the proposed scheme

9.2.1 The BSCU will generate significant long-term benefits which need to be weighed against any temporary residual adverse effects, within the context of planning policy. These benefits can principally be grouped under three headings:

- transport benefits;
- economic benefits; and
- environmental benefits.

9.2.2 Again, the detail of these is a matter for other application documents but the principles are summarised briefly in the following sections.

### **Transport benefits for the proposed scheme**

9.2.3 The primary benefit of the scheme is reduced congestion and improved journey times through the station, delivered through increased capacity. To assess the effect of the improvements, computer modelling of passenger movement through the station has been carried out. The process involves taking the estimated passenger demand for 2026 and using proprietary software to simulate both the existing station and the proposed scheme and calculate passenger delay in both cases.

9.2.4 The peak time gridlock forecast in the 'do nothing' scenario, explained in Section 2 of this Statement, means that it is not meaningful to calculate delay. Therefore the one-way system described in section 2.9 is assessed as a 'do minimum' scenario.

9.2.5 A computer model of the station with the addition of the proposed scheme has then also been assessed using the same tools assuming both forecast 2026 demand and a further 31% growth. In both future tests the proposed station

scheme is shown to operate effectively, delivering significant journey time savings and with crowding staying below carefully controlled limits.

- 9.2.6 Modelling has been used to compare the delays and journey times within the station between the current position and that forecast with the BSCU in place. The resulting social cost savings delivered by the scheme is a reduction from the severe station control measures described in section 2.9. Although the table appears to show the primary benefits for those interchanging from the DLR to Northern Line, it should be remembered that under the scenario described in section 2.9 these passengers are severely dis-benefited in order to allow the station to operate. If this control was not put in place, the station would be gridlocked.

**Table 9.1:** Comparison of modelled journey times per passenger for key routes through the station between the “Do Minimum” and “BSCU”

Route	Base "Do Minimum" Case (seconds) (see note)	Bank Station Capacity Upgrade (seconds)
	Average	Average
Central line to DLR	186	194
Central line to Northern line southbound	107	144
Central line to Northern line northbound	115	138
Northern line southbound to Central line platforms	161	148
Northern line northbound to Central line platforms	160	167
DLR arrivals to Central line platforms	214	204
DLR arrivals to Northern line northbound	759	110
DLR arrivals to Northern line southbound	785	100
Northern line northbound to DLR departures	69	72
Northern line southbound to DLR departures	72	96

Note: in the “do minimum” scenario the severe crowd control measures divert those interchanging DLR to Northern line out of the station to re-enter at Lombard Street. The delay shown is for those able to re-enter the station. However modelling shows that in excess of a further 1500 are unable to re-enter the station within a reasonable time and will probably choose to walk to nearby stations.

- 9.2.7 There are further benefits through the provision of step free access from the Northern Line trains to street and improvements to the DLR step free access.



The existing step free access from the street to the DLR trains will be altered so that passengers will reach the platform via one direct lift rather than the current route which requires the use of three separate lifts.

- 9.2.8 The operation controls described in section 2.8 cause considerable problems to the wider network which will all be avoided if the scheme is implemented.
- 9.2.9 In addition, reducing platform crowding enables the benefits of the Northern Line Upgrade to be achieved.

### **Economic benefits**

- 9.2.10 In line with TfL practice and Department for Transport guidance the ratio of benefits to cost has been calculated. The scheme has an overall benefit cost ratio (BCR) of 4:1 as assessed following the submission of the Concept Design Submissions in June 2014. The benefits come primarily from the monetisation of the improvement in journey time through the station. This ratio is based on a conservative methodology for calculating the cost. This exceeds the recommended TfL pass mark threshold of 1.5:1 and for a major project with this level of capital investment this is considered a good return.
- 9.2.11 In terms of direct time savings alone, it is forecast that the BSCU scheme would significantly enhance journey times for users of Bank Station, particularly at peak times, compared with journey times in a non-scheme station. It has been estimated that these time savings alone would be worth approximately £32 million pa.
- 9.2.12 The scheme will deliver a number of other benefits through the creation of additional capacity at Bank Station which are not quantified in the calculation of the BCR. The strategic importance of Bank Station within the City of London and the station's many interchange routes (including to inner East London) creates a dependency for future employment growth on the station continuing to operate efficiently. Furthermore, station control measures create a domino effect on nearby stations, potentially causing closures as well as limiting the ability of the Northern Line upgrade to realise its planned benefits. Other non-quantified benefits include reliability benefits, safety benefits, security benefits, and reputation benefits associated with a modern station. The calculation of BCR also makes a conservative estimate of the commercial revenue which new infrastructure space might generate.
- 9.2.13 As described in Section 3, an estimation of one element of the wider Economic Benefits has been made in the application documents. The assessment considers the extent to which capacity constraints would actually prevent workers accessing employment in the City of London with the effect that economic activity would be displaced to the next most productive location

(which is a very conservative assumption because growth might simply be lost or lost overseas).

- 9.2.14 That assessment calculates conservatively that the capacity constraint could result in a loss to the City economy of 830 jobs and that, even on that basis, this would represent an impact of £597m, which by itself would enhance the already strong business case by approximately 60% - demonstrating why the value of transport capacity in Central London is so important.

### **Environmental benefits**

- 9.2.15 The Design and Access Statement (DAS) submitted with the application demonstrates the transformation of the internal environment of Bank Station that would be achieved by the BSCU works. The aged, congested and confusing internal network of the complex would be dramatically enhanced to provide a modern, high quality station with a quality of environment consistent with the design standards that TfL has demonstrated in other recent station upgrades. Bank Station would become a station fit for its place at the heart of the City of London. The quality of that transformation is nationally important given the pivotal role which Bank Station plays in London's role as a world city.
- 9.2.16 The station design includes provision for improvements to Nicholas Lane (by providing a level surface and active frontage) and Abchurch Lane (by relocating the facade to 20 Abchurch Lane to the south, and therefore improving the setting of St Mary Abchurch and its yard).
- 9.2.17 The new station entrance has been designed to reflect and enhance the historic context, which will result in overall benefits to the local townscape especially as part of the OSD with which it is integrated. In conjunction with the station entrance hall, the completed OSD is likely to significantly benefit the local townscape, as well as local views along King William Street and Cannon Street.
- 9.2.18 The ES includes a Sustainability Statement which demonstrates how the BSCU meets the requirements of national policy, the GLA and City of London Corporation. A number of tools have been used to assess this, including CEEQUAL (an industry accepted method for assessing the sustainability performance of infrastructure projects) against which a target of 'Excellent' is expected. The main sustainability benefits are:
- climate change impacts are reduced, for example by using passive and energy efficient measures to cut the amount of operational carbon dioxide emissions by 23 per cent;
  - improved quality of life, by reducing journey times and crowding for Bank Station passengers;

- providing transport for all, through introducing areas of step free access, escalators and moving walkways;
- enhancing safety and security; and
- ensuring economic progress, such as introducing a strategic learning needs and training plan for construction workers, and enabling the City of London to develop as a key financial and employment centre.

## 10 Conclusions

- 10.1.1 There is a very clear case for change at Bank Station. The levels of current usage and the growth that is forecast for the future support a case for major change at the station. The station is at critical capacity, requiring special measures to maintain operations and even small incidents having a disproportionate effect on service and capacity. Interventions in the form of operational controls are commonly implemented due to passenger congestion. Given the level of growth planned, major change is necessary at Bank Station to keep the station operating.
- 10.1.2 The proposal is in accordance with the various policies which affect the area, in particular The London Plan (Spatial Development Strategy for Greater London) 2011, The Draft Further Alterations to the London Plan January 2014, The Mayor's Transport Strategy and The Mayor's Economic Development Strategy for London as well as the City of London Corporation Core Strategy.
- 10.1.3 The extensive public and stakeholder consultation undertaken has provided a critical input into the overall scheme and comments raised during the consultation in relation to construction impacts on adjoining sites and the blockade are all being considered through the development of the draft Code of Construction Practice and other documents that will control the construction of the project.
- 10.1.4 The environmental effects of the BSCU have been predicted and comprehensively assessed through an EIA. Although some adverse effects will be experienced during the demolition/construction phase of the Project, this would be expected for a project of this scale and complexity. Furthermore, the adverse effects anticipated to arise will be managed through the implementation of mitigation measures, incorporated into the design and during demolition/construction and operation. Assuming the implementation of this mitigation, most of the anticipated effects have been reduced to negligible or minor significance.
- 10.1.5 The BSCU has been designed in a way that will maximise the beneficial effects, whilst responsibly limiting and mitigating its impacts. BSCU is therefore directly supported by planning policy, including the NPPF and the relevant policies of the Development Plan.
- 10.1.6 In order to underpin the growth London requires, its transport network must respond to allow for additional demand. BSCU forms an important part of a wider package of improvements which will allow for the continued success of the City of London, which in turn will have a major beneficial impact on the London and UK economy. TfL believes that there are no viable alternative options other than to implement physical works which improve the

infrastructure at Bank Station in order to meet the projects aims and requirements.