



Bakerloo Line Extension

Background to 2017 Consultation
February 2017

PLEASE NOTE: Sections 7.2.4 and 7.2.5 had a typographical error, referring to the incorrect options presented in Figure 22. This has now been corrected and does not affect the conclusions and outcomes stated in this report.

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I Executive Summary

- 1.1.1. London's population is growing rapidly, from a record 8.6 million people today to a projected 10 million people by 2030. The number of jobs in London is also projected to grow by 700,000 over the next 20 years. The scale of this growth sets a considerable challenge and London will require between approximately 49,000 and 62,000 more homes per annum from 2015 to 2036 to meet demand.
- 1.1.2. Major transport infrastructure projects are vital to support the Capital by unlocking new housing, regenerating local areas and increasing employment opportunities. An extension of the Bakerloo line would provide new capacity and frequent connections from areas currently underserved by rail and enable new homes and jobs to be delivered close to new stations. This would support London's productivity by providing homes for people within easy reach of central London.
- 1.1.3. We have been working to develop proposals for the Bakerloo line extension (BLE), by assessing how it could best support London's long term growth, and looking into ways that it could be funded. In 2014, we undertook a public consultation on a number of extension options. There was overwhelming support for the proposals, with 96 per cent of the 15,000 respondents in favour of the principle of an extension. Eighty two per cent of respondents also supported a scheme in connection with new development.
- 1.1.4. Following the 2014 consultation, we conducted a further assessment of the consulted route options alongside alternatives suggested by respondents and stakeholders. The Options Assessment Report¹ that we published in December 2015 concluded that an extension to Lewisham via the Old Kent Road would be the best option for an initial extension, as the route would support significant numbers of new homes and jobs for London particularly in the Opportunity Areas² along the route such as Old Kent Road and Lewisham, Catford and New Cross. It is estimated that the selected route corridor could enable up to 25,000 new homes by serving Opportunity Areas and regeneration areas along its length. This would include major

¹ The *Options Assessment Report* published in January 2015 can be accessed on the TfL consultation webpage: <https://consultations.tfl.gov.uk/tube/bakerloo-extension/>

² Opportunity Areas are the capital's major reservoir of brownfield land with significant capacity to accommodate new housing, commercial and other development linked to existing or potential improvements to public transport accessibility. They are detailed in the London Plan (2015), available from <https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan>

new interchanges at Lewisham and New Cross Gate The route can also be a potential initial phase of a further extension beyond Lewisham.

- 1.1.5. In December 2016, the TfL Board chaired by the Mayor of London approved the development of the BLE proposal to Lewisham, beginning with this consultation on possible sites for new stations along the proposed route. We are also seeking views on the location of shafts and associated head-houses. Shafts and their head-houses are required on sections of the proposed new line between stations to provide ventilation and cooling for the Underground line and also access to the running tunnels for staff, maintenance and emergency services.
- 1.1.6. In addition to new stations and shafts on the extension route itself, we will also need to undertake improvements to the existing Bakerloo line station at Elephant and Castle to facilitate the extension. Due to the highly constrained nature of the site surrounding the existing Bakerloo line station at Elephant and Castle, a preferred site or sites have not yet been selected. To assist us to select a preferred site to enable these essential station improvements to be undertaken, we are seeking views on the possible use of locations within a defined zone surrounding the station.
- 1.1.7. This Background to Consultation report provides further details on the case for the extension of the Bakerloo line to Lewisham, our planned timescales for progressing the scheme, and explains why we have selected the locations for stations and shafts that we are now seeking views on.

2. Introduction

- 2.1.1. The Bakerloo Line Extension (BLE) is a proposal to extend the existing Underground line from its current terminus at Elephant and Castle to Lewisham in south east London. The extension would include new stations along the route serving the Old Kent Road area and New Cross Gate. A map of the proposal is shown in Figure 1.
- 2.1.2. We have been developing proposals for the extension to Lewisham following further assessment of route and destination options undertaken in 2015. The routes and destinations we considered took account of feedback received during the 2014 public consultation on initial destination and route proposals across south east London³.
- 2.1.3. Since the 2014 consultation, we have also considered how the extension could best support London's long term growth and provide the accessibility and capacity improvements required to support much needed new housing close to central London.
- 2.1.4. Extending the Bakerloo line currently has high public and stakeholder support - more than 15,000 responses to the consultation in 2014 were received with 96% supporting the principle of the extension, and only 2% opposed. Eighty two per cent of respondents also supported a scheme in connection with new development.
- 2.1.5. After considering the responses received during the 2014 consultation, including 4,500 comments received regarding alternative options, we published our Options Assessment Report⁴ in December 2015. The Options Assessment Report set out why we concluded that an extension to Lewisham via the Old Kent Road would be the best option as an initial extension - as the route would serve the Old Kent Road and Lewisham, Catford and New Cross Opportunity Areas and support significant numbers of new homes and jobs in London.
- 2.1.6. Subsequent to the publication of that report, the London Borough of Southwark has published draft proposals for significant new regeneration and development proposals in the Old Kent Road Opportunity Area. The proposals set out a vision to achieve at least 20,000 new homes and 5,000 new jobs. The proposals make clear that sustainable public transport, centred on the BLE, is at the heart of that vision.

³ The Bakerloo Line Extension 2014 Public Consultation Analysis Report and the Responses to the Main Issues Raised, both published in 2015 are available from <https://consultations.tfl.gov.uk/tube/bakerloo-extension/>

⁴ The *Options Assessment Report* published in January 2016 can be accessed on the TfL consultation webpage: <https://consultations.tfl.gov.uk/tube/bakerloo-extension/>

These proposals further support the case for the extension to Lewisham via Old Kent Road. Our work with the London Borough of Lewisham suggests that there is likely to be additional capacity for approximately 5,000 further homes that the extension can support by serving the New Cross-Lewisham-Catford Opportunity Area

- 2.1.7. We are now seeking to progress the proposals and intend to seek the necessary planning powers and funding to construct and operate the extension. We have also brought forward the extension's delivery, to help unlock the growth potential and deliver improved journeys sooner. Delivery is now timed to coincide with the planned upgrade of the Bakerloo line, which is scheduled to complete in 2029.
- 2.1.8. This consultation is an important step in the progression of the scheme. We are seeking views on the proposed site options we have identified for new stations and intermediate shafts (which are required for ventilation and access to the underground tunnels) along the route of the extension. Once these stations and shaft sites are determined, we will then be able to design the running tunnels between these points and assess the impacts of the construction and operation of the proposed extension.
- 2.1.9. The benefits of an extension would be significant and we want to retain the potential for those benefits to be as widespread as possible. As we reported in early 2016, our previous proposals for an extension included consideration of an extension beyond Lewisham, including the conversion of a National Rail line and further tunnelled extensions off that, such as to Bromley town centre. The options assessment further considered alternative routes such as additional tunnelled sections to East Croydon or alternative National Rail lines that could be converted to Underground operations such as the National Rail line to Slade Green via Bexleyheath. No such extensions are precluded by our current proposal to extend to Lewisham.
- 2.1.10. Whilst an initial extension to Lewisham is being progressed at this stage, we will review the case for a potential onward extension beyond Lewisham in the future.

Figure 1 - Bakerloo line extension proposal



3. The case to extend the Bakerloo line to Lewisham via Old Kent Road and New Cross Gate

- 3.1.1. We are proposing to extend the Bakerloo line to Lewisham via Old Kent Road and New Cross Gate because it can deliver a range of benefits to London by improving passenger journeys and supporting the capital's growth. This section provides further details of the case for the extending the Bakerloo line, and why we are progressing proposals for the route to Lewisham.
- 3.1.2. The Bakerloo line forms part of the London Underground network. The line runs from Harrow and Wealdstone in the north-west to Elephant & Castle at the southern boundary of fare zone 1 on the edge of central London. It includes 12 central London stations including Paddington, Baker Street, Oxford Circus, Piccadilly Circus and Waterloo. It is the only major Underground line that has a route that terminates close to central London in fare zone 1 – the Bakerloo line remains underground at its south eastern terminus in Elephant & Castle. The line currently operates with assets nearing obsolescence and is relatively lightly used – with 114 million passenger journeys in 2015 which is less than half the number carried on other major lines (Central, Northern, Jubilee and Victoria lines).
- 3.1.3. An upgrade of the Bakerloo line is planned, including new trains and improved signalling, allowing a more frequent service to operate. This upgrade is currently expected to be completed by 2029, delivering a major uplift in the line's capacity.
- 3.1.4. The line's relatively low levels of demand and the planned capacity upgrade provide significant opportunities which an extension could capitalise on, by making greater use of available capacity to support London's growth. An extension to Lewisham would utilise the additional capacity created by the line upgrade, helping to support London's economic and population growth in a sustainable way over the long term.
- 3.1.5. The published Options Assessment Report details our conclusion that an extension to Lewisham would deliver the best balance of benefits relative to the challenges of its delivery. We determined that the BLE could address the south east London sub-region's challenges, with the route to Lewisham via Old Kent Road and New Cross Gate being the preferred option as importantly it would support new housing and employment growth.
- 3.1.6. The BLE to Lewisham would support London's growth by providing:
- Improved connectivity
 - Improved accessibility
 - Reduced journey times
 - Increased capacity of the transport network

- 3.1.7. The chosen extension route would be best suited to support the long term growth of London, and would create the required improvements to support much needed new housing. The BLE would improve accessibility, connectivity, journey times and capacity of the transport network along the route including in Opportunity Areas such as Old Kent Road and Lewisham, Catford and New Cross. The BLE proposals are in conformity with emerging policies and plans such as for Old Kent Road area, where proposals have been developed by Southwark Council to deliver at least 20,000 new homes and 5,000 new jobs and for the regeneration and improvement of existing communities. Much of this new development would be dependent on the delivery of the BLE.
- 3.1.8. The Old Kent Road area currently has no direct rail access, with stations in its peripheral areas such as South Bermondsey and Queens Road Peckham. This has led to reliance on the Bus network. The Bus network along Old Kent Road is operating close to capacity in both demand and operations terms, with over 60 buses per hour timetabled to operate along it. The Bus network, already with very high demand levels, cannot expand to provide the same level of capacity as the BLE could due to the constraints from traffic conditions and the capacity of the highway. The BLE, together with an integrated bus network and improved access in local areas for pedestrians and cyclists, could provide the long term sustainable transport network to support the growth that is forecast.
- 3.1.9. Our work with the London Borough of Lewisham suggests that there is likely to be additional capacity for a further 5,000 homes that the extension can support by serving the New Cross-Lewisham-Catford Opportunity Area. We are continuing to work with Southwark and Lewisham Councils to understand the impact of the BLE on enabling growth in future borough plans and policies.
- 3.1.10. London's growing population will, more widely, benefit from the volumes of housing that will be supported by the BLE. New housing sites will help to further support the productivity of London's Central Activities Zone (CAZ), because the Old Kent Road corridor is relatively close to central London. Delivery of the BLE would mean this area and other areas on the extension route would become much more accessible whilst the enhanced connectivity by public transport would allow new development to be built to higher densities.
- 3.1.11. As with all areas of London, south east London needs to play a large role in helping to house Londoners and address the housing undersupply problem and meet demand from a growing population. Without the BLE, there would be a continued under-utilisation of the significant capacity that south east London has to support new homes on brownfield sites close to central London.

- 3.1.12. South east London experiences economic and social deprivation. The BLE would deliver improved access to employment and other services, as well as better functioning of labour markets and leisure opportunities. The improved opportunities will help support and potentially accelerate the regeneration of the area benefiting local communities and the places people live and work.
- 3.1.13. The BLE could deliver significant journey time improvements and improved connectivity across south east London and in to central London, by providing fast and frequent new rail services to areas which are currently under-served or are suffering from road and rail congestion. This would improve access to labour markets for central London businesses and make travelling to jobs from communities in south east London easier. It would also enable some businesses (such as Small and Medium Enterprises) that need access to the City and West End to locate in more affordable parts of London. The BLE would achieve this through reduced travel times and improved service frequencies for passengers, thereby increasing access to employment opportunities.
- 3.1.14. For Lewisham town centre, given London's projected growth, the BLE would make over 1.2 million jobs across London 10 minutes closer in travel time by 2031 – providing a step change number of jobs that could be accessed by residents in these locations and also benefiting businesses that would be able to access a significantly larger labour market when recruiting.
- 3.1.15. While Crossrail, proposed schemes such as Crossrail 2, HS2 and the planned Underground line upgrades will not directly serve south east London, they will enhance the connectivity benefits that can arise from BLE. An extension would therefore be a key part of an integrated package of transport improvements for London which would help to maximise network benefits across the whole city.
- 3.1.16. Increasing capacity by serving south east London with a high frequency and high capacity metro service would also help relieve pressure on the National Rail network by providing an alternative route and increasing the network's resilience to disruptions. Future forecasts show that south east London rail services into London Bridge and Charing Cross will continue to experience crowding on services and especially at London termini where passengers would also interchange to already busy Underground services such as the Jubilee line.
- 3.1.17. The BLE would also relieve congestion on road corridors. As an Underground extension with near-zero local emissions and being a very low noise alternative to road-based transport, BLE would help to contribute toward reducing air pollution and CO2 emissions it would also contribute towards creating a better local environment for both existing and future communities in London.

- 3.1.18. By providing capacity for 65,000 journeys in each direction during peak times, the BLE would also assist with relieving pressure on local bus and National Rail services. The journey time between central London and Lewisham can be expected to be reduced by 9 minutes, with an Underground train on the extension available to board every 2-3 minutes. This could make the time taken for journeys to Paddington from Lewisham approximately 30 minutes and to Oxford Circus approximately 21 minutes.
- 3.1.19. By serving Lewisham, a strategic interchange point on the south east London transport network, the BLE could improve connectivity and access to the benefit of the wider region. Exploitation of these connectivity benefits will be an important consideration as TfL continues to set out its proposals for how transport in this part of London can be improved with partners such as the local boroughs and other operators such as the train companies and Network Rail.
- 3.1.20. Looking beyond Lewisham, the work we have carried out so far has shown that a further extension may have the potential to provide additional benefits to wider rail capacity, by potentially converting an existing line and reallocating rail services to other busy routes. An extension beyond Lewisham in the future has not therefore been ruled out but is not the subject of this consultation. We will review the case for a potential extension beyond Lewisham in the future as plans and proposals for south east London's transport network and future growth aspirations are developed.

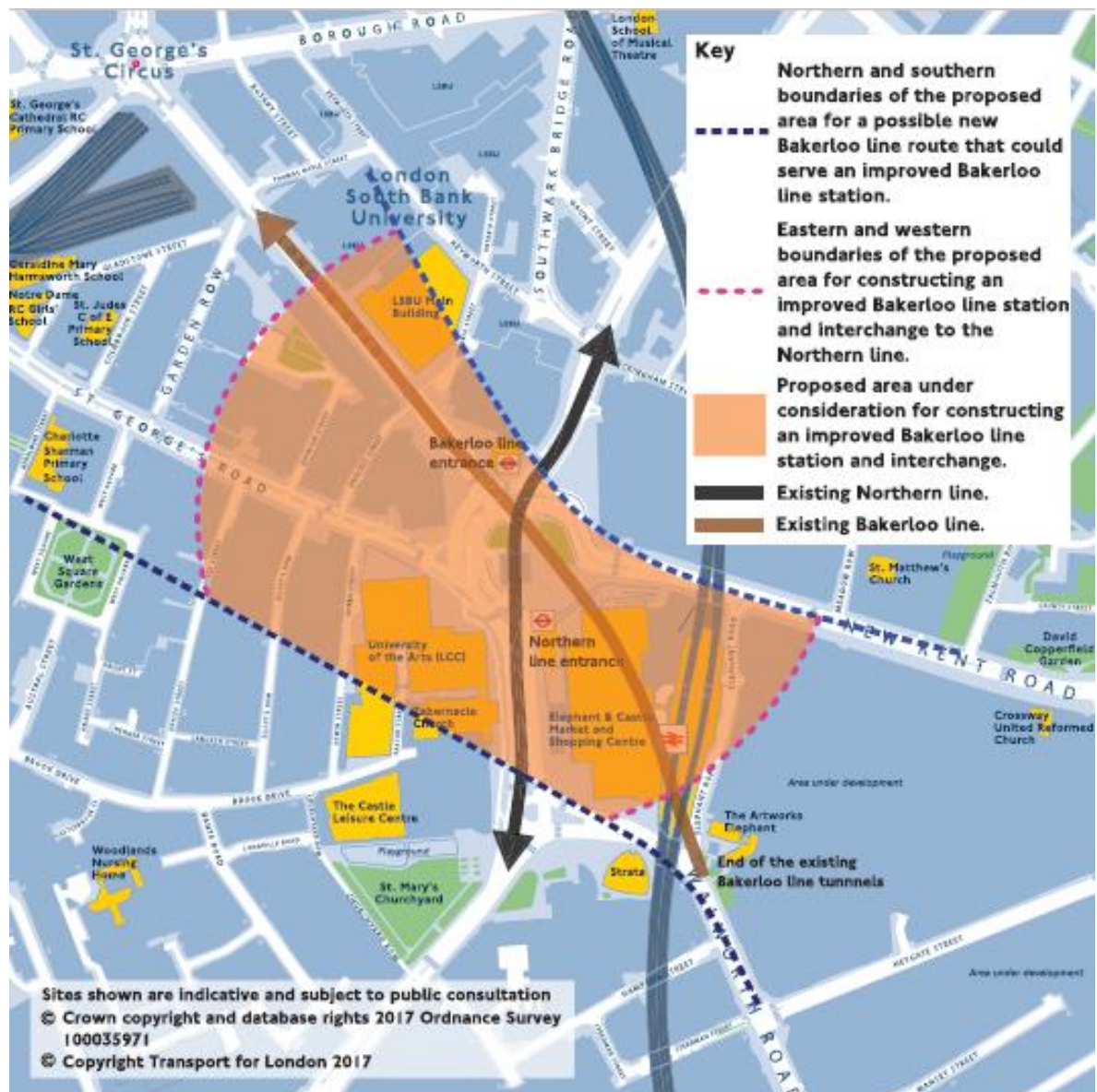
4. Overview of the February 2017 Consultation

- 4.1.1. The 2017 BLE Consultation proposes four new stations along the route between Elephant & Castle and Lewisham, and provides potential options as to where these could be located. The consultation also sets out the area which we are considering to undertake required improvements to upgrade Elephant and Castle station.
- 4.1.2. The consultation also proposes three shafts along the route. These shafts are required either due to the distance between two stations or because we will need to access trains stabled in tunnels underground. The shafts would provide ventilation, cooling, and emergency access to Underground tunnels.
- 4.1.3. The 2017 consultation is seeking views on the proposed locations of these stations and shafts as explained in the remainder of this section.

4.2. Consultation content on proposed improvements to Elephant and Castle Station

- 4.2.1. The BLE will increase demand at Elephant and Castle station as more passengers enter and exit the Bakerloo line and change between the Bakerloo and Northern lines. To accommodate this increased demand we need to improve the ticket hall, platforms for the Bakerloo line at the station and also improve the interchange to the Northern line. Without these improvements the station will become crowded and passengers will be less able to make their journeys without delays. The required works for the BLE at Elephant and Castle are additional to our existing plans to upgrade the Northern Line ticket hall, as set out in more detail in section 5 of this report.
- 4.2.2. Due to the highly constrained nature of the site surrounding the existing Bakerloo line station at Elephant & Castle, a preferred site or sites for the station upgrade have not yet been selected. Instead, a wider area of the land within which it is considered that the upgrade can take place has been identified based on the existing station and line infrastructure and where new underground tunnels and a new station could be built whilst maintaining interchange with the Northern line in the Elephant and Castle area – see Figure 2. The 2017 consultation is seeking views on which locations within the identified area of land which we could consider further as possible sites for the station improvement works for the extension.

Figure 2 – Proposed Elephant and Castle Station site option area



4.3. Consultation content on proposed Old Kent Road 1 and 2 Stations

- 4.3.1. There are two proposed new stations along Old Kent Road which are referred to as Old Kent Road 1 and Old Kent Road 2. These stations would support Old Kent Road's local Area Action Plan to increase housing levels and job opportunities, and support key interchange capabilities with the existing bus network. Two possible locations are presented in the case of each of the proposed Old Kent Road stations, and comments are invited on these proposals. The stations would be below ground level with both entry and exit from street level. The station options were identified following an assessment against key criteria that is further explained in subsequent sections of this report.
- 4.3.2. The Old Kent Road 1 site options included in the consultation are: near the junction of Mandela Way with Dunton Road; and near the junction of Old Kent Road with Dunton Road and Humphrey Street - see Figure 3 and Figure 4.

Figure 3 – Proposed Old Kent Road 1 station option A

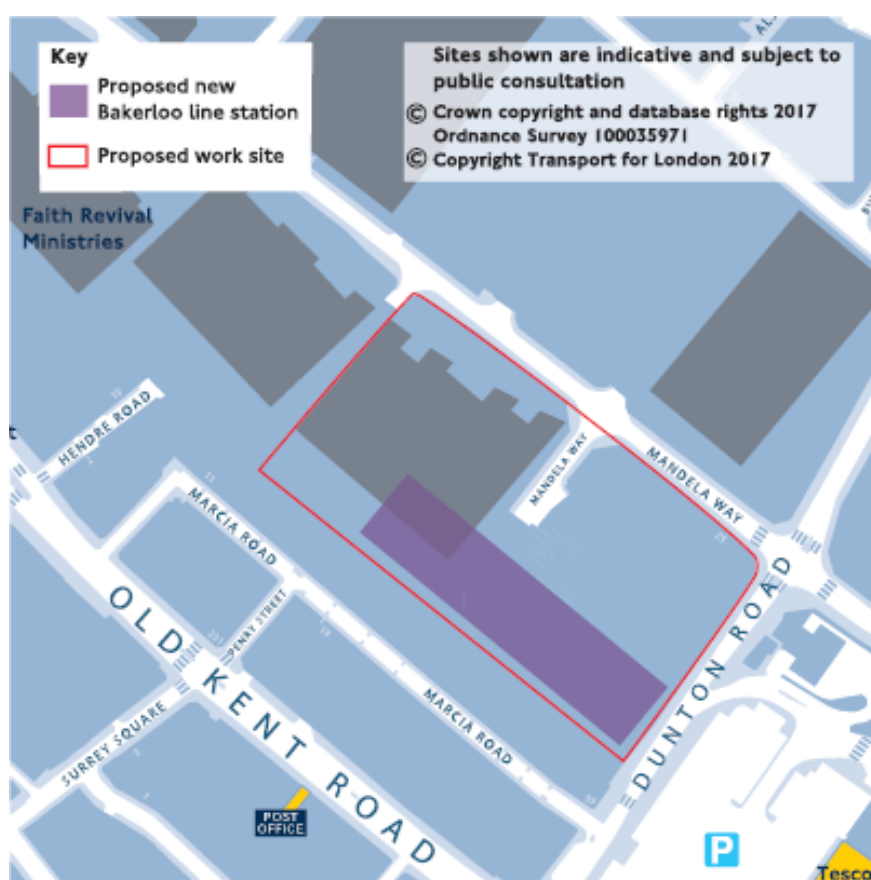
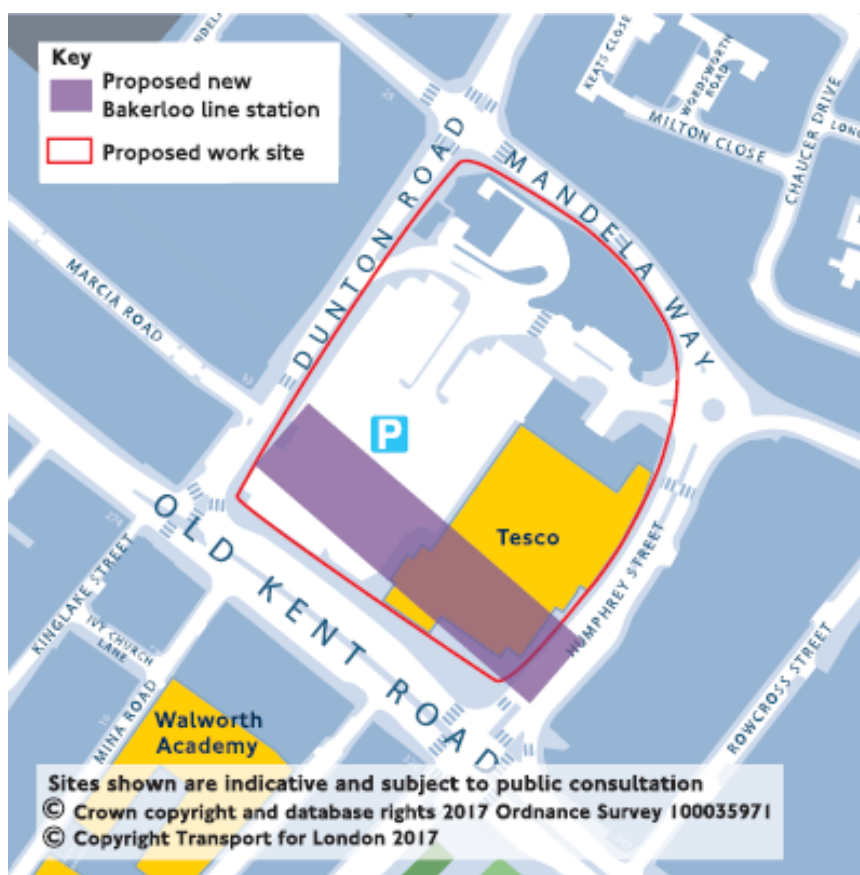


Figure 4 – Proposed Old Kent Road 1 station option B



4.3.3. The Old Kent Road 2 site options included in the consultation are: (A) near the junction of Old Kent Road with St James's Road; and- (B) near the junction of Asylum Road with Old Kent Road – see Figure 5 and Figure 6.

4.3.4. Consultees are invited to provide their views on the shortlisted options for the proposed new Old Kent Road stations.

Figure 5 – Proposed Old Kent Road 2 station option A

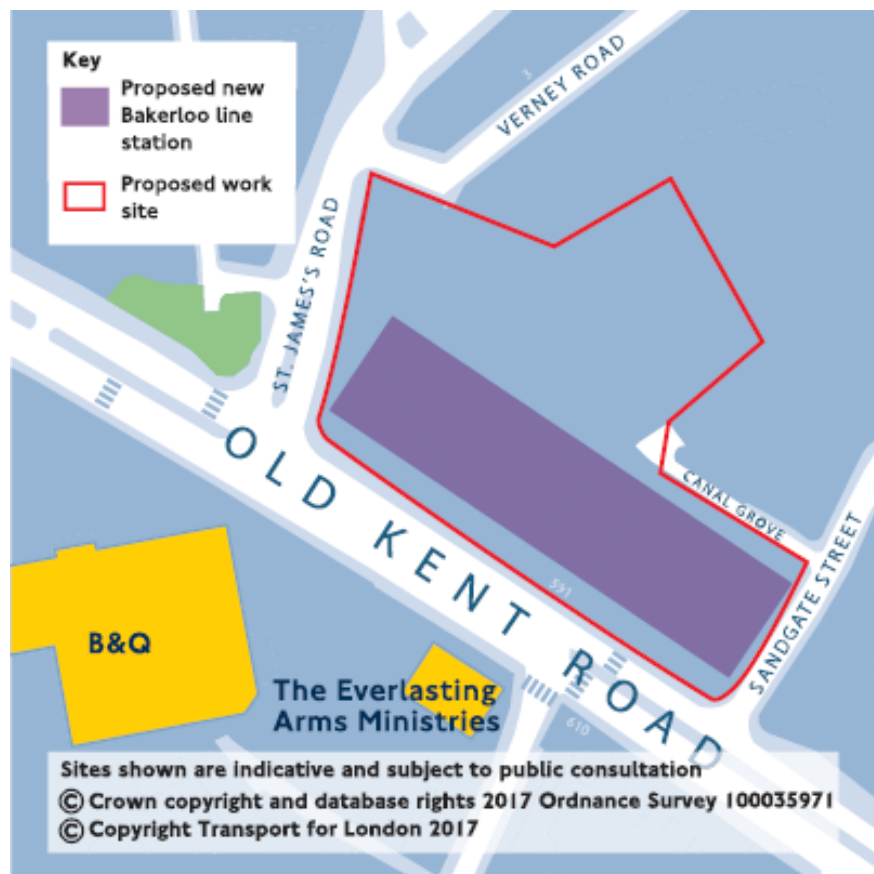


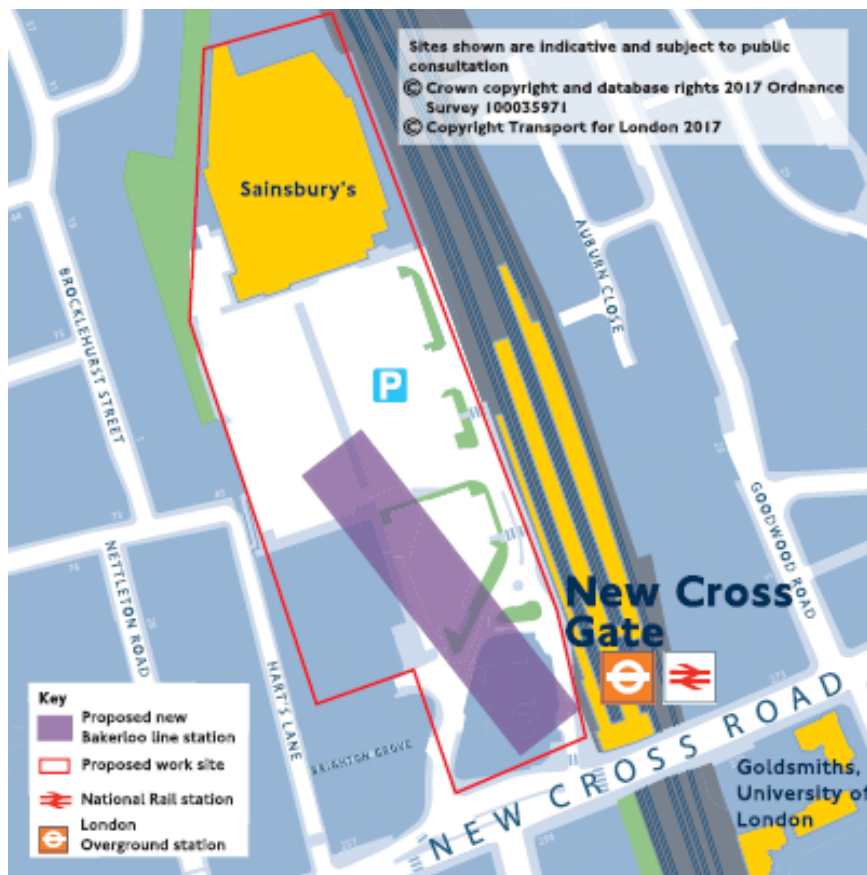
Figure 6 – Proposed Old Kent Road 2 station option B



4.4. Consultation content on proposed New Cross Gate Station

- 4.4.1. The proposed extension route runs via New Cross Gate, and a single preferred location for this station has been identified. This site is strategically located to create effective interchange for passengers with National Rail and Overground services that currently operate from the existing New Cross Gate station. The proposed Bakerloo line station would be constructed underground and provide access to the western side of the existing national rail station.
- 4.4.2. The preferred location for the New Cross Gate station is on the Sainsbury's owned site on New Cross Road - see Figure 7. It is also proposed that the site could be used to construct the tunnels, including launching of the tunnelling machines that undertake the excavation of tunnels. The site's location, adjacent to the mainline railway could provide the opportunity to support the removal of excavated material by rail avoiding significant lorry movements.
- 4.4.3. Consultees are invited to provide their views on the proposed New Cross Gate station.

Figure 7 – Proposed New Cross Gate station option



4.5. Consultation content on proposed Lewisham Station

- 4.5.1. The consultation includes a preferred station option for Lewisham which is located on Thurston Road along the south western side of the existing National Rail station- see Figure 8. This station would provide interchange to National Rail and DLR services at the existing station and with buses and taxis. This would improve access to Lewisham town centre and would also support the development of Lewisham as a major south east London transport hub.
- 4.5.2. Lewisham would be the final station as part of the initial BLE plans. Tunnels running beyond Lewisham station would also be required. These overrun tunnels would be necessary to avoid restrictions being placed on the speed of trains approaching the station. It would also provide a means to stable trains that were not in operation.
- 4.5.3. Consultees are invited to provide their views on the proposed Lewisham station.

Figure 8 – Proposed Lewisham station option



4.6. Consultation content on proposed shaft between Elephant and Castle and Old Kent Road I

- 4.6.1. An intermediate shaft would be required between Elephant & Castle and the proposed new station known as Old Kent Road I. The consultation identifies two preferred site options; (A) a site in the Bricklayers Arms road junction area; and (B) a site at the Faraday Gardens public park site on Portland Street- see Figure 9 and Figure 10. There is additional information in subsequent sections of this report explaining how options for this shaft were evaluated.
- 4.6.2. Consultees are invited to provide their views on the shortlisted options for the proposed new shafts between Elephant and Castle and Old Kent Road I stations.

Figure 9 - Proposed Elephant & Castle to Old Kent Road I shaft option A

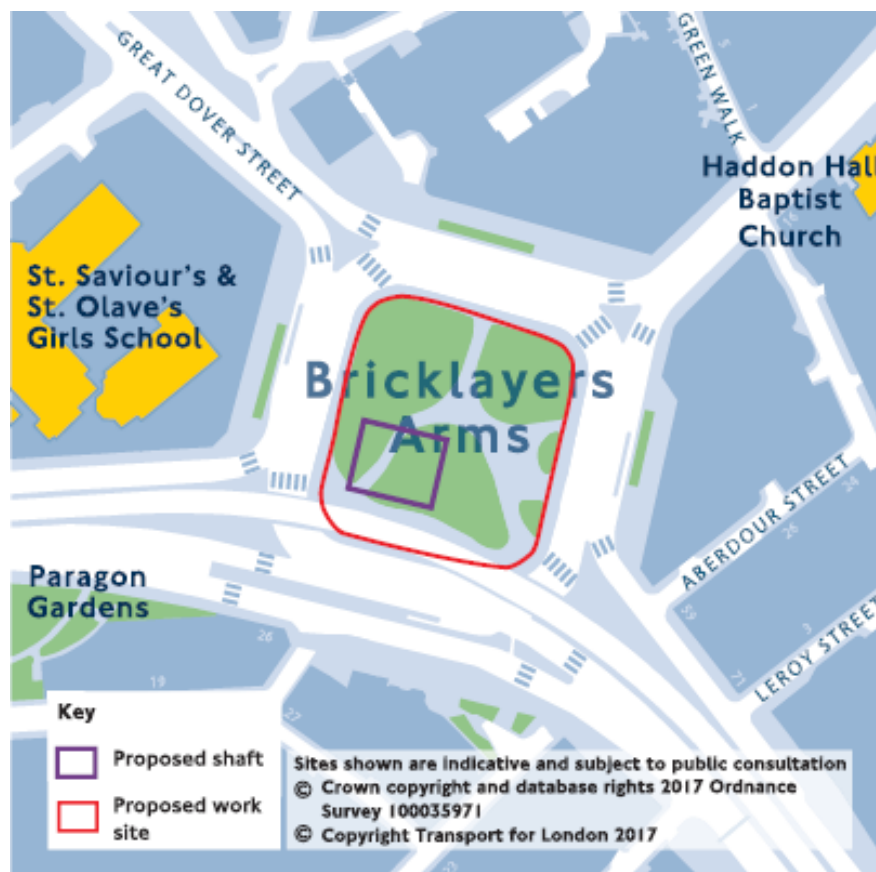


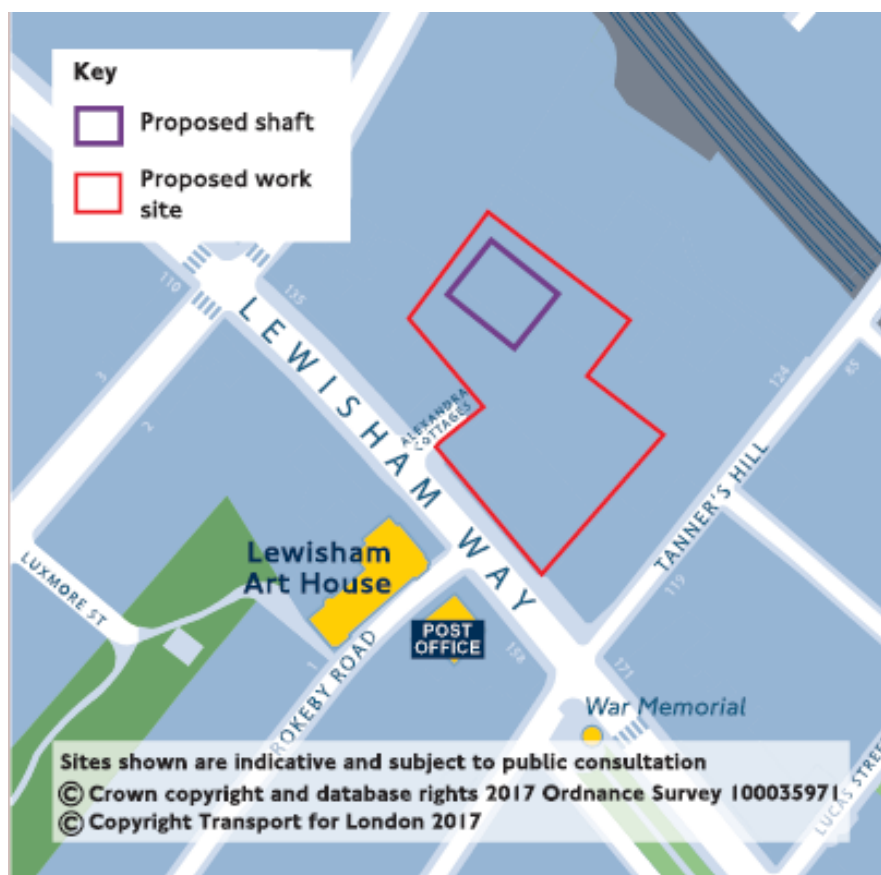
Figure 10 - Proposed Elephant & Castle to Old Kent Road I shaft option B



4.7. Consultation content on proposed shaft between New Cross Gate and Lewisham

- 4.7.1. An intermediate shaft would also be required between New Cross Gate and Lewisham. The consultation identifies a single preferred site location for this shaft, situated in the industrial estate at the site that is entered via Alexandra Cottages a road off Lewisham Way- see Figure 11. There is additional information in subsequent sections of this report explaining how options for this shaft were evaluated.
- 4.7.2. Consultees are invited to provide their views on the proposed new shaft between New Cross Gate and Lewisham stations.

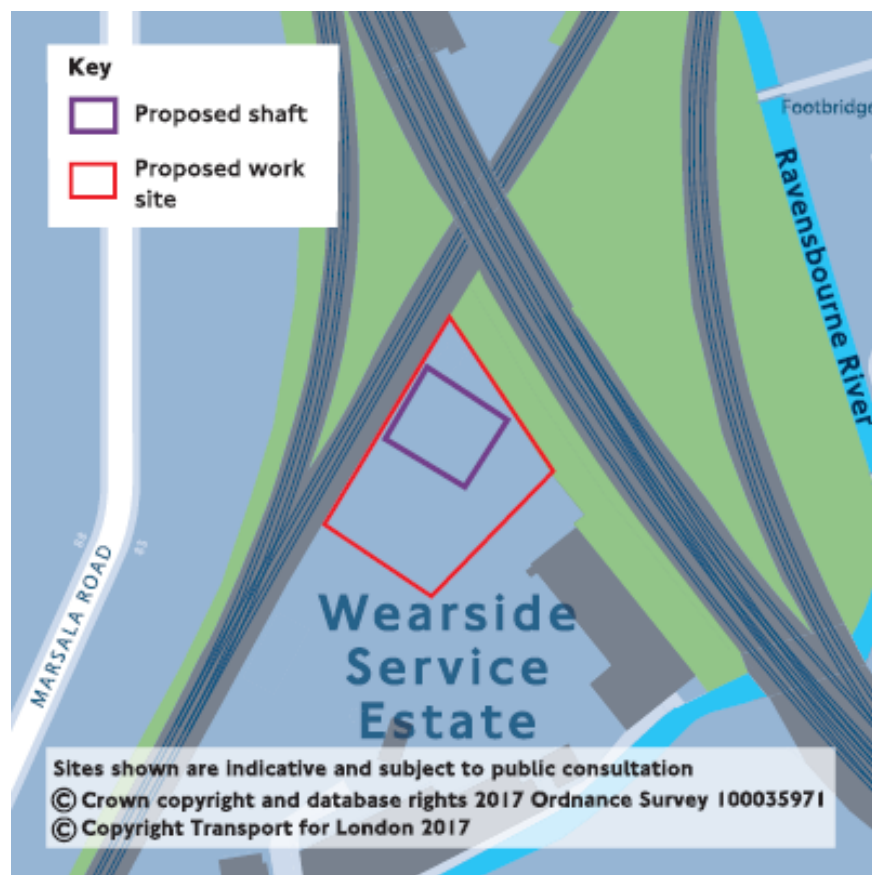
Figure 11 - Proposed Shaft between New Cross Gate and Lewisham stations



4.8. Consultation content on proposed shaft at the line-end overrun tunnels

- 4.8.1. The final shaft required along the route of the proposed extension would be located at the end of the proposed overrun tunnels. The consultation identifies a single site location at the Lewisham Council fleet depot site which is situated off Wearside Road – see Figure 12.
- 4.8.2. The overrun tunnels would also offer potential for an extension beyond Lewisham in the future, if a case for such an extension can be demonstrated and funding to deliver it becomes available.
- 4.8.3. Consultees are invited to provide their views on the proposed new shaft at the end of the line on the overrun tunnels in Lewisham.

Figure 12 – Proposed shaft location at line end overrun tunnels in Lewisham



5. Our proposals for Elephant and Castle

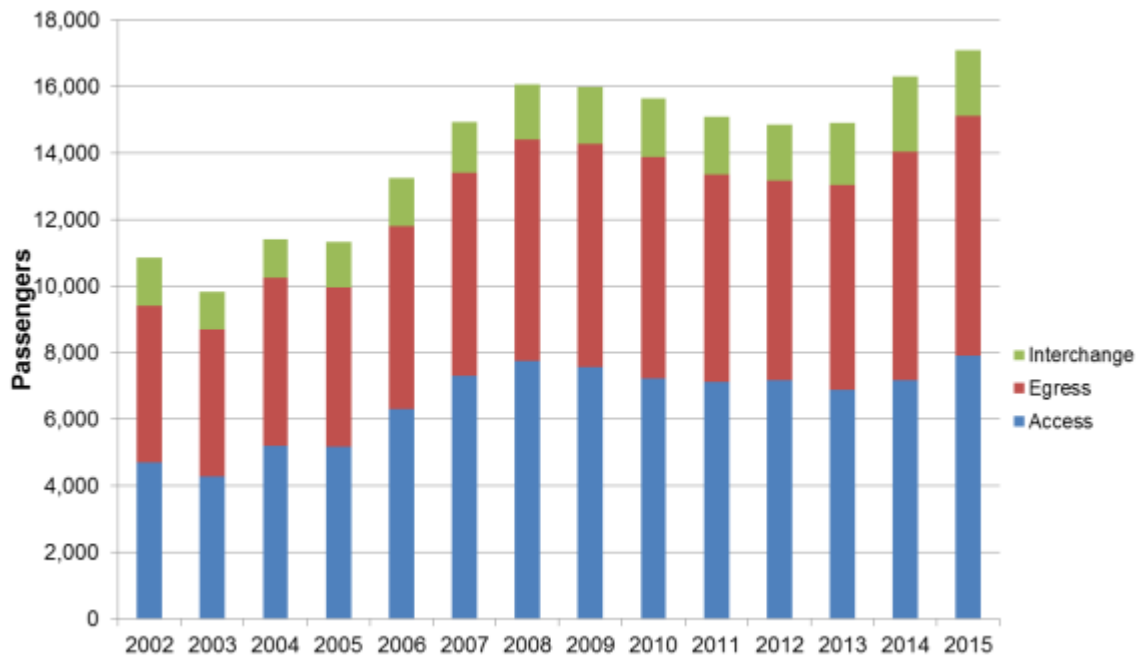
5.1. The existing town centre plans and the planned Northern line ticket hall upgrade

5.1.1. We need to upgrade the capacity of the Bakerloo line ticket hall, platforms and interchange at Elephant and Castle station in order to accommodate the increased demand from the BLE. Our requirements at the station to enable the BLE have been identified in the context of an existing built-up town centre and local residential area, with conservation areas and listed structures additional to substantial change under way in the Elephant and Castle town centre from new development. We also have our own existing proposals for Elephant and Castle station that have been developed to cater for rising demand on the Northern line and from town centre development. Those works entail a planned upgrade of the Northern line ticket hall and vertical access routes to the Northern line platforms, henceforth known as the Northern Line station capacity upgrade (NLSCU).

5.1.2. The NLSCU is required because, as Figure 13 shows, since 2002 demand has increased by over 60% in the busiest times at the station and this pressure is currently felt most in the Northern line part of the station. The requirement for the NLSCU works is reflected in Southwark Council's Elephant and Castle Supplementary Planning Document⁵. The town centre is also designated an Opportunity Area in the Mayor of London's London Plan. The Northern Line ticket hall suffers from overcrowding and station control measures due to the low capacity of the lifts and ticket hall size, and this is exacerbated during inevitable times of disruption on the train service or due to lifts being out of service.

⁵ More details on the Elephant and Castle Supplementary Planning Document at the following address http://www.2.southwark.gov.uk/info/200151/supplementary_planning_documents_and_guidance/2040/elephant_and_castle_spd_oapf

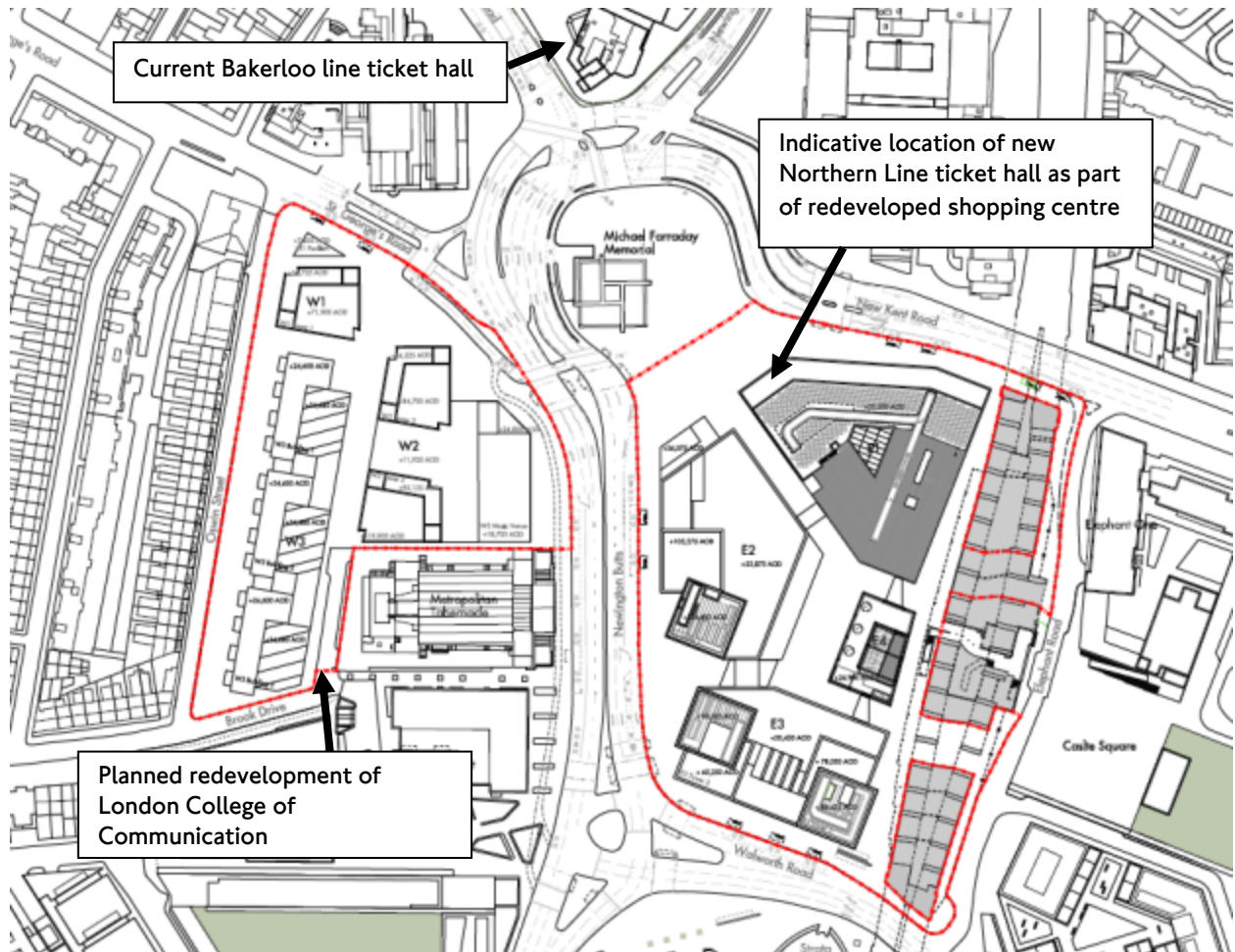
Figure 13 - Elephant and Castle Station Weekday AM Peak Period Demand since 2002



- 5.1.3. As well as accommodating the demand from development in the town centre, the station upgrade is integral to the redevelopment of the existing Elephant and Castle shopping centre. We are working with the developer of the shopping centre to find a way of upgrading the ticket hall as part of a redeveloped shopping centre to support the town centre's growth. The site plans of the developer are shown in Figure 14.
- 5.1.4. Whilst no specific agreement exists with the shopping centre developer, their recent planning application reflects the outline requirements we have developed for the station upgrade. If the planning application is approved, the developer will construct their development with active provision of a basement-level station ticket hall, with a new entrance to it from the street.
- 5.1.5. The NLSCU is urgently required to deliver an upgrade in the station concourse area and the vertical capacity to the platforms. The latter is planned to be provided by escalators rather than the existing lift access, with new lifts for step free access being provided. A new overbridge from the foot of the escalators to the Northern line platforms is also planned to be provided, again alongside lifts to enable step free access from the platforms to the ticket hall and street.
- 5.1.6. The delivery timescales for the NLSCU are subject to the progression of the shopping centre development. The shopping centre will need to obtain a planning permission and then undertake a significant phased delivery exercise as existing tenants such as the London College of Communication (LCC) will need to be moved across sites. Based on the current programme and assuming that the necessary planning consents and agreements are put in place, the NLSCU could be completed around 2022/2023.

5.1.7. Given the urgent need for the NLSCU and that plans have already been developed as part of an integrated development of the shopping centre, we will consider how the required works for the BLE can linking in to and utilising the planned NLSCU infrastructure.

**Figure 14 - Elephant and Castle shopping centre and LCC sites development plans
(shown inside red bounded site)**



- 5.1.8. In the area we are considering there is substantial existing developing, including residential streets, existing residential apartment blocks with deep foundations such as on the former Heygate Estate. Some buildings are also listed such as the Metropolitan Tabernacle, the Metro Central Heights complex and the Faraday Memorial. Also there are existing conservation areas such as West Square and Elliots Row. There are also two educational institutions in the area under consideration – the University of Arts London College of Communication and also London South Bank University’s main campus.
- 5.1.9. Other development proposals in the area include the planning application for the redevelopment of Skipton House - a site that sits to the north of the existing Bakerloo line ticket hall – see Figure 15. The former Heygate Estate, now known as Elephant Park is under construction – see Figure 16 and will establish development with deep foundations that will generate constraints for the BLE proposals in the Elephant and Castle area.

Figure 15 - Proposed redevelopment of Skipton House



Figure 16 - Elephant Park development currently under construction



5.2. The required improvements to the Bakerloo line station at Elephant and Castle Underground station

5.2.1. Future demand at Elephant and Castle would change due to the BLE, with new passenger traffic arriving from and heading to the south. We forecast a net increase in demand at the station and changes to the pattern of movements within it such that:

- Passengers who alight at the Bakerloo line station would no longer be limited to trains arriving from central London;
- Passengers who board Bakerloo line trains would no longer be limited to destinations towards central London; and
- Access for passengers to Northern and Bakerloo line services from the Old Kent Road to New Cross corridor would no longer be reliant on access via Bus and interchange to Tube.

5.2.2. These changes to demand and flows in the station have been compared to its current capacity. Our analysis has found that the capacity of the interchange links, platform width, staircase and lifts to/from the Bakerloo line ticket hall are likely to be insufficient in the future and will need widening or replacement to accommodate future passenger volumes.

- 5.2.3. Since we are already planning the NLSCU, we have considered whether the new capacity from the Northern line ticket hall upgrade would be capable of providing a solution to the lack of capacity for the Bakerloo line ticket hall.
- 5.2.4. At this point we do not consider this to be a viable option because the existing interchange from the Bakerloo line to the Northern line would lack sufficient capacity to accommodate both normal future flows and any additional passenger volumes if passengers were directed to reach the Bakerloo line via the Northern line ticket hall entrance.
- 5.2.5. The impact of demand demonstrates a clear need to ensure that the future station at Elephant and Castle has capacity upgraded beyond the existing urgent requirements for the Northern line ticket hall. The deficits in capacity provide a clear basis for identifying suitable options for further assessment – specifically that those options should:
- Increase the vertical capacity from the Bakerloo line platforms to the surface
 - Increase the platform space to accommodate flows of passengers making conflicting movements as they walk along to reach entrances, exits and interchange with the Northern line; and
 - Increase capacity of the interchange route to accommodate the increased two-way flows associated with new trips from the extension.

5.3. The area we are considering for undertaking improvements to the Bakerloo line station at Elephant and Castle

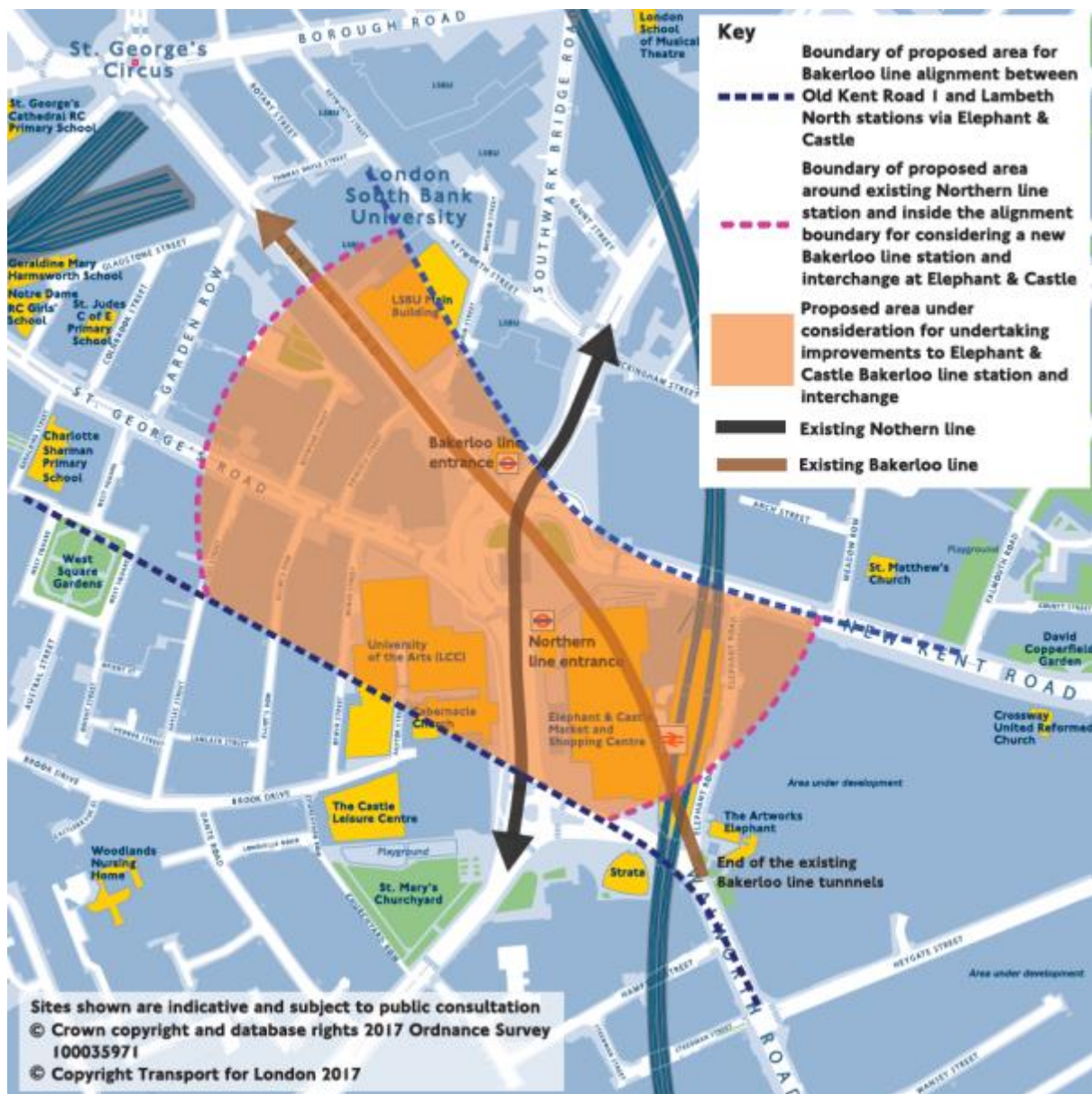
- 5.3.1. We are still considering where and how to construct the improvements required at Elephant and Castle station as part of the BLE works.
- 5.3.2. We are considering options that include using the existing infrastructure at the station by either expanding it or by replacing it with new structures – this includes the ticket hall building, the infrastructure underground between the ticket hall and platforms, the platforms and Bakerloo line tunnels themselves and also the existing interchange infrastructure.
- 5.3.3. We are also considering options for entirely new stations on a new underground line. The BLE construction would require new tunnels to be built to connect the new stations to the existing line. These new tunnels could connect to where the existing tunnels end, underneath Walworth Road just to the south of its junction with Elephant Road, or could connect to the existing Bakerloo line at an alternative point on the line between Elephant and Castle and Lambeth North station.

- 5.3.4. We are not considering constructing new tunnels further north than where the existing line reaches Lambeth North station as to do so would require a new station for Lambeth North to also be built and may impact access to the London Road depot (where Bakerloo line trains are stabled out of service). Doing so would generate unnecessary additional works and costs for the BLE which would also cause additional disruption to passengers on the line and local stakeholders in the Lambeth North station area. This therefore sets an alignment constraint as to where potential new Bakerloo line stations could be located through the Elephant and Castle area.
- 5.3.5. We have also considered the existing and new development that will be constructed by the time of the BLE construction works – such as the Heygate Estate redevelopment known as Elephant Park. New tall development will have deep foundations that the underground tunnels would aim to avoid as tunnelling through foundations is more risky, complex and costly.
- 5.3.6. Given these known constraints, we have been able to identify the area within which we consider a new set of underground tunnels could be constructed through the town centre area – this area also covers where the existing Bakerloo line tunnels are – shown by the hatched blue line in Figure 17.
- 5.3.7. Within this area where the underground tunnels and therefore station platforms could go, we have also considered the area around the existing Northern line platforms that the Bakerloo line currently interchanges with. We want to ensure our future plans enable passengers to interchange between the extended Bakerloo line and the Northern line as this is an important location where passengers can decide between heading to either the West End or the City. In particular, we do not want to make the interchange function worse than it is at the current time.
- 5.3.8. We have set an initial boundary (shown by the pink dashed line in Figure 17) within the area we consider that a new station and its platforms could be located. The boundary is approximately 250 metres from the current interchange with the Northern line platforms. This initial distance is higher than the current distance between the Bakerloo and Northern line platforms, which is approximately 75 metres.
- 5.3.9. This wider scope is designed to enable us to consider a wider range of options for undertaking the improvement works required at the station. Nonetheless, it is important to recognise that achieving a shorter interchange is preferable as it can reduce passenger journey times. This factor will be considered alongside the practicalities of achieving this including the complexity, impacts and costs of the works and infrastructure that would be required.
- 5.3.10. The area within the boundaries we have identified and set out in Figure 17 is highly constrained by existing and planned development. As a result we have not yet

selected one or more preferred location options for where we could undertake the required improvements to the station.

- 5.3.11. Recognising the level of constraint in the local area, we would like to hear people's views on which locations within the shaded area in Figure 17 they would recommend that a new station should be considered, having regard to existing and planned land uses within this area. We will use the feedback from the consultation to help us to develop options for locations where the station improvements could be undertaken. We will plan to undertake further consultation on site specific proposals once we have enough details about their impacts.

Figure 17 - Proposed area currently under consideration for the required improvements to the Bakerloo line station at Elephant and Castle station



6. Our assessment of sites for Old Kent Road 1 and 2 stations

6.1. Two stations to support the existing and planned new communities in the Old Kent Road Opportunity Area

- 6.1.1. We are currently proposing the construction of two new stations in the Old Kent Road area. We have been proposing two, stations since the 2014 consultation we conducted on extension destinations and route options in south east London. At that time we explained that we considered two stations could be feasible in order to support the OKR Opportunity Area⁶ (OKR OA). At the time of the 2014 consultation, details of the scale and pattern of regeneration and redevelopment becoming available for the OKR OA were not known and therefore we did not rule out fewer or more than two stations.
- 6.1.2. Since the 2014 consultation, the London Borough of Southwark has developed and consulted on detailed proposals for the OKR OA, as set out in the OKR Area Action Plan (AAP)⁷. We have considered the proposed pattern of development to help shape our proposals.
- 6.1.3. As part of our consideration of the OKR AAP proposals and requests from stakeholders to consider a third station in the Old Kent Road area, we have re-assessed our previous assumption of providing two new stations. The OKR AAP has consulted on two stations and has indicated where these would be considered to best serve the OKR OA – specifically one between East Street and Burgess Park and the second between Commercial Way and Brimington Park. Initial results shared with us by Southwark Council suggests over 4 in every 5 respondents agreed with the proposed areas by Southwark Council in their AAP consultation.
- 6.1.4. The key aspect in planning terms is whether two stations as envisaged by the AAP would provide a sufficient uplift in Public Transport Accessibility Levels (PTALs) and attract sufficient patronage towards the extension given it is a sustainable form of public transport. Achieving these outcomes would help to ensure that the planned

⁶ An Opportunity Area is a designation in the Mayor of London's spatial planning policies (known as the London Plan), which identifies brownfield land as suitable for future change of land use and densification to deliver new homes and jobs to support London's growth. These Opportunity Areas are cited as frequently experiencing deficient access to public transport.

⁷ More details on the Old Kent Road Area Action Plan are available from the London Borough of Southwark's website at <http://www.southwark.gov.uk/planning-and-building-control/planning-policy-and-transport-policy/development-plan/area-action-plan?chapter=2>

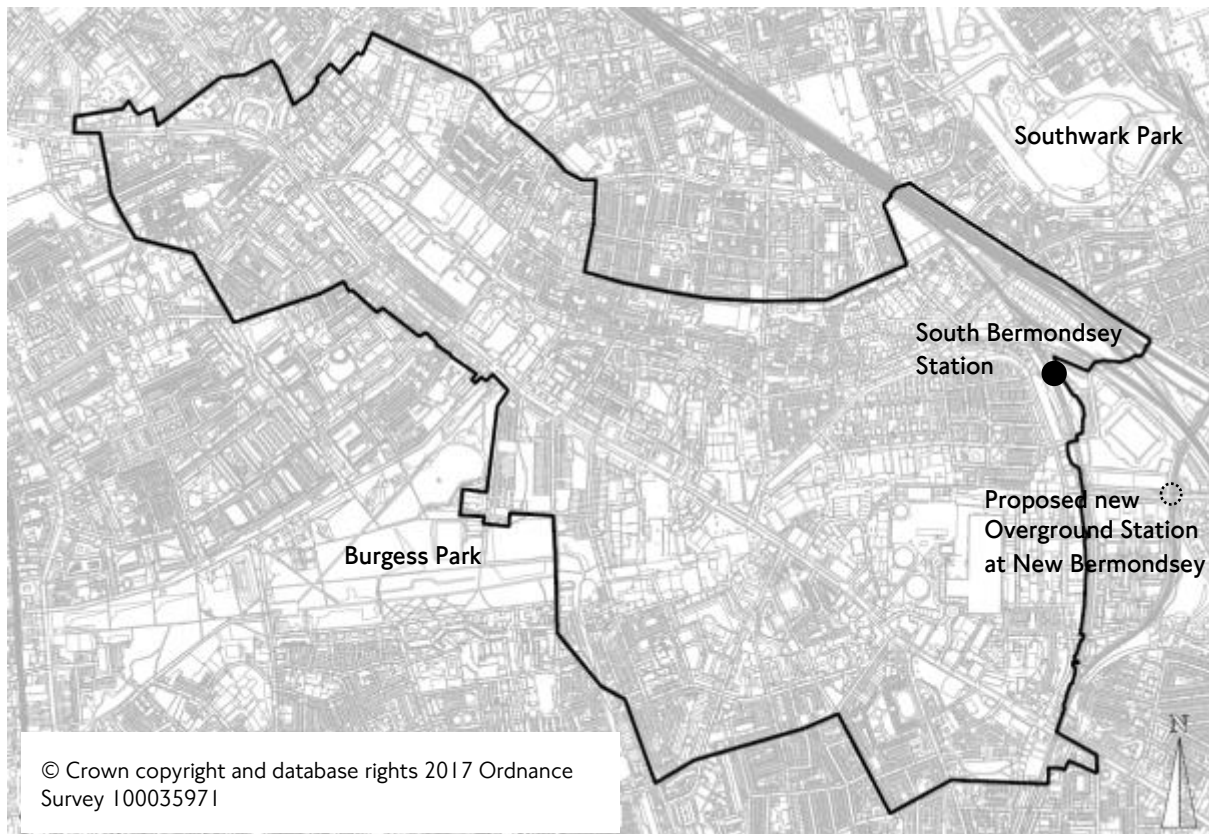
development alongside existing travel demand would be sustainable for the transport network to accommodate.

- 6.1.5. We have concluded that two stations would be sufficient. The PTAL uplift of two stations in the OKR OA would be sufficient to provide for the densities the AAP aims to deliver on the proposal sites. We have also concluded that the BLE, along with committed schemes such as Surrey Canal Road London Overground station and other improvements such as pedestrian, cycling infrastructure and bus service improvements would be sufficient to support the travel demand impacts of the new development.

6.2. Determining location options for the two Old Kent Road stations

- 6.2.1. We used the OKR AAP boundary, shown in Figure 18, as the guide for the area we have considered for the location of the two proposed Old Kent Road stations as this area reflects a key objective of the extension to support new homes and jobs growth. In addition, the AAP boundary covers a large area that includes existing communities and the widespread potential future communities. We have also not constrained ourselves completely by the AAP boundary, with some sites considered outside of it e.g. Burgess Park.
- 6.2.2. The consideration of station locations within this area of Old Kent Road was aided by having some certainty as regards the approximate location of those stations to the north and south of the Old Kent Road section of the proposed route – Elephant & Castle and New Cross Gate. The station to the north will be sited at or near to the existing Elephant & Castle Underground station, whilst to the south the next station is New Cross Gate which is relatively fixed in location due to the aim of serving the existing National Rail and London Overground station with the BLE.
- 6.2.3. The position of the AAP boundary and the key areas where most new development is expected to occur sits relatively equidistant between the Elephant & Castle and New Cross Gate stations. Focusing on locating the two new BLE Old Kent Road stations in this area would likely result in a distribution of stations along the route that would avoid leaving any areas with significantly greater distances to the BLE stations compared to other areas on the extension route.

Figure 18 - Old Kent Road Area Action Plan boundary



- 6.2.4. Consultation responses received by Southwark Council on the AAP proposals, shown in Figure 19 have assisted to establish a range of options for the station locations along the Old Kent Road.
- 6.2.5. Given our current proposal for two new stations in the Old Kent Road area as a whole, we split the OA in half and considered options for a station in each of the northern section and the southern section.
- 6.2.6. We considered where there were large sites which tend to be commercial, vacant or undeveloped land as these are typically expected to have a lower impact on existing communities and would also be likely to be less costly for the scheme. We also considered the proposal sites set out in the AAP where change is expected to take place and where, therefore, the addition of Tube station works could form part of that programme of change. The full range of locations that we considered before arriving at the preferred options presented in our consultation are shown in Figure 20 and Figure 21.
- 6.2.7. We conducted a two staged assessment, sifting options from a long list to a shortlist, and then selected the current preferred options from the shortlist. The following factors were considered at the first stage: the walking catchment of the station site; the impact on the alignment that would be required to connect tunnels to the

Elephant & Castle area; the site size; the existing and planned land use for the site; and the connections the site would be likely to have to the wider local public transport network.

- 6.2.8. In the second stage we undertook a more detailed assessment across a wider set of criteria concerning local connectivity: impact of operations at the site; the cost of operations at the site; how the site would impact construction of the option; impact on stakeholders such as the BLE passengers, local business and local residents; the status of the land's ownership; and consideration of planning policies and other transport plans affecting the site.

Figure 19 - Old Kent Road Area Action Plan consulted areas for BLE stations



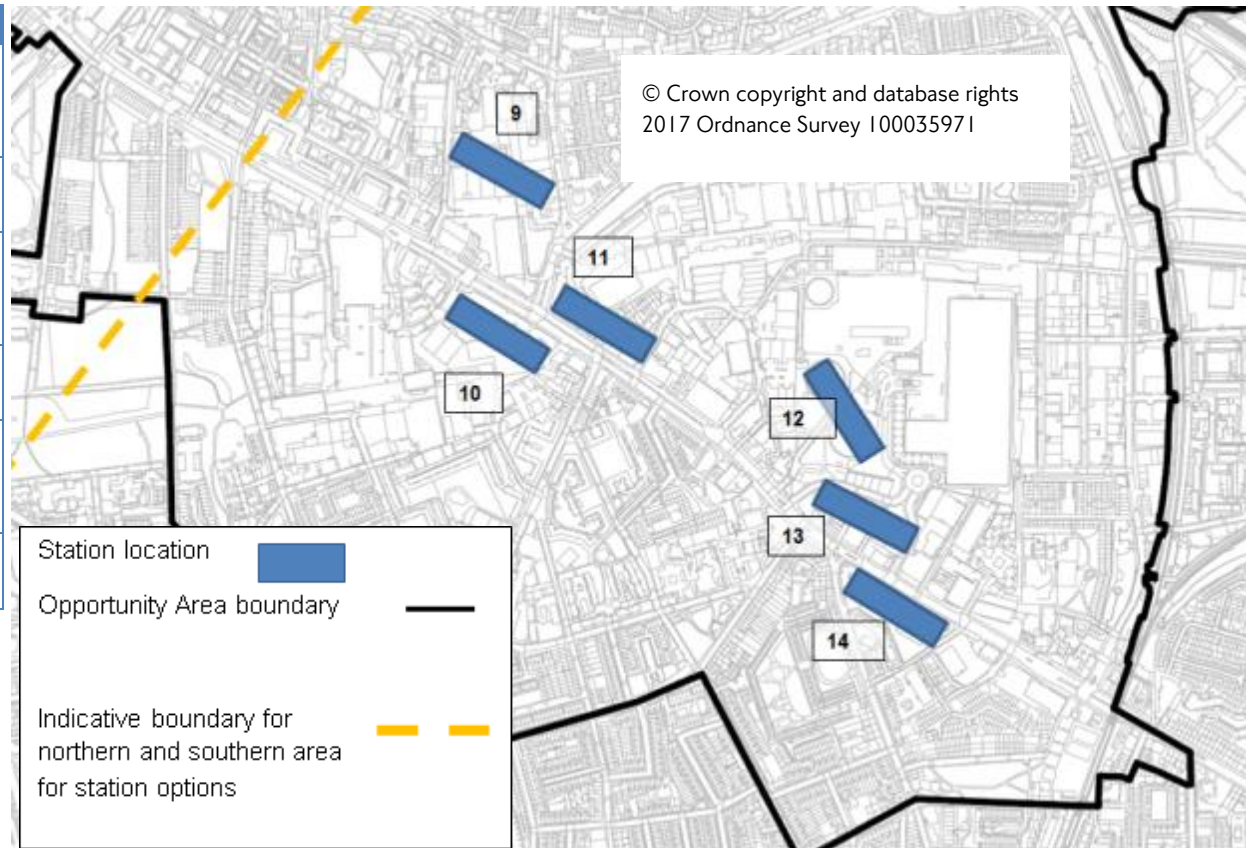
Figure 20 - Locations considered for proposed Old Kent Road I station

Location	Location description
1	At the Bricklayers Arms junction, potentially utilising the junction island
2	Around the Lidl Supermarket site towards the northern end of Old Kent Road
3	Dial a Ride depot
4	On Mandela Way
5	Between Mandela Way and the Old Kent Road
6	Tesco Superstore
7	Burgess Park
8	Glengall Road junction with Old Kent Road



Figure 21 - Locations considered for proposed Old Kent Road 2 station

Location	Location description
9	Marlborough Grove and St James proposal site
10	Cantium Retail Park
11	Sandgate Street and Verney Road area
12	Gasometers
13	Devon Street and Sylvan Grove area
14	Toys R Us site



6.3. Reasons for identification of Old Kent Road I station site options currently under consideration (Options 5 and 6)

- 6.3.1. This section sets out the reasons for selecting the proposed station and worksite options for Old Kent Road I station. The reasons for those alternative site options not considered further are described in section 6.5.
- 6.3.2. We have identified the sites in the Mandela Way industrial estate by Dunton Road (Option 5 in Figure 20) and the Tesco superstore on Dunton Road and Old Kent Road (Option 6 in Figure 20) as the preferred sites for consultation as they performed strongly in our assessment, given their size and situation which in turn affects the extent of the construction impacts they would have and how effectively they would serve the local area.

The site in the Mandela Way industrial estate by Dunton Road (Option 5)

- 6.3.3. This option would utilise sites that are currently occupied by a range of companies (Conway, The Paper Company Ltd) in warehousing on the south side of Mandela Way. Some existing residential buildings are to the south of the site though their access is via Marcia Road which is apart from the station site which is accessed from Mandela Way or Dunton Road.
- 6.3.4. The site size is circa 20,000 sq.m – a size that is over the desirable minimum of 10,000 sq.m to enable the construction of a station. This would be likely to make construction of the site less complex and enable a cut and cover station box to be delivered which can help to reduce costs and construction impacts relative to some other sites we considered.
- 6.3.5. The site is well situated for serving the main new development areas in this part of the OA, with Mandela Way, Crimscott Street, Pages Walk, Tesco and Southernwood Retail Park proposed development sites designated in the AAP all falling within the catchment area of the station. The location also serves the existing communities to the north of the area into the southern part of Bermondsey, the Bricklayers Arms area and also the western side of Old Kent Road in the east Walworth area.
- 6.3.6. Construction of a new Bakerloo line station would need to take place prior to some of the possible redevelopment that the site may see based on the AAP plans. This may therefore delay delivery of development at the site until the station works have completed. The station could make provision within its infrastructure for that future development to ensure it could be delivered over the station site and therefore this is not considered to be a significant constraint at this stage.

- 6.3.7. The proposed station site at its south eastern end could lie close to Dunton Road and also provide an entrance closer to Old Kent Road via a possible subway under the residential and commercial properties between the station and Old Kent Road. This could enable the option to achieve a presence on the Old Kent Road itself where interchange with Bus services would take place. It could also help to provide a more direct route from the main pedestrian corridor on Old Kent Road and its high street into the Tube. However whilst better for way finding, the actual access time would still be longer for this option than the alternative we are considering due to time spent travelling through the subway before reaching the station platforms. A subway would also increase the number of local properties that could be impacted by the proposed station works.
- 6.3.8. It should be noted that the main bus stopping area is by the Tesco site owing to the wider road widths that enable inset bus bays to accommodate the high volume of stopping services. Having an entrance on Old Kent Road parallel to Marcia Road would therefore be likely to require bus passengers to cross the road (either across the Old Kent Road or across Dunton Road depending on the bus they alight from). This is slightly less direct than the alternative site at Tesco that we are considering.
- 6.3.9. The impact of this option on the route alignment would be favourable for the range of potential route options via the identified shaft site options on the route to Elephant & Castle station. The option would place little constraint on route options via the New Kent Road corridor, whilst for the route options via the existing overrun tunnels corridor, the alignment would also be shorter than many other options that are further north of this site. The station would facilitate an onward tunnel alignment that could connect to station options for Old Kent Road 2 via a relatively direct journey. The relatively direct alignment compared to other options we considered would be better for keeping passenger journey times lower and reducing the length of new tunnels we would need to fund and construct.

The site at Tesco on Dunton Road and Old Kent Road (Option 6)

- 6.3.10. The site would utilise a Tesco Superstore site, which comprises the store itself, a large car park and a petrol station operated by the supermarket in the north west corner of the site.
- 6.3.11. The site size is circa 20,000 sq.m – over the desirable minimum site size of 10,000 sq.m for construction of a station. This offers space for construction of a station that would help to increase flexibility and reduce construction impacts, risks and costs as a cut-and-cover station box construction could be delivered.
- 6.3.12. The catchment of the option achieves a good balance between the existing and planned new communities and also given the existing catchments of other

Underground stations to the north. Areas such as the Bricklayers Arms junction, Mandela Way, Crimscott Street and Pages Walk, the Cantium Retail Park development area and those either side of Rotherhithe New Road, could all fall into the catchment.

- 6.3.13. A large part of the Aylesbury Estate and the north Camberwell area would fall into the catchment of the station. The entrance to Burgess Park would also be close by to the station which may provide some benefit for future events that could be held at the Park – the Underground network provides an important function for travel of spectators to events in parks in many other locations across London (e.g. Hyde Park, Victoria Park, and the Queen Elizabeth Olympic Park). The catchment would also avoid substantial overlap with existing stations, particularly Elephant and Castle and Borough stations.
- 6.3.14. Proximity to the existing bus network and their main stopping points is good, with the station located alongside the main southbound bus stops at this part of the Old Kent Road, and also able to link to those services that terminate and start on Dunton Road alongside the northwest end of the station site.
- 6.3.15. It is possible that a relatively short subway entrance to the station could be provided – for Option 6 this could be located on the south side of Old Kent Road removing the need for pedestrians and bus passengers to cross the busy road junction. The station site and its size may provide the scope for further improving the bus interchange without needing to change bus routings along the Old Kent Road.
- 6.3.16. The station construction would need to take place prior to some of the possible redevelopment that the site may see based on the AAP plans. This may therefore delay delivery of development at the site until the station works have completed. The station could make provision within its infrastructure for that future development to ensure it can be delivered over the station site and therefore this is not considered to be a significant constraint.
- 6.3.17. The impact of the option on the route alignment is favourable for the range of potential route corridors, via the identified shaft site options, to Elephant & Castle station. The option places little constraint on the route options via the New Kent Road corridor whilst for the route options via the existing overrun tunnels corridor, the alignment would also be shorter than many other options that are further north of this site. The station would facilitate an onward tunnel alignment that could connect to station options for Old Kent Road 2 via a relatively direct journey. The relatively direct alignment compared to other options we considered is better for keeping passenger journey times lower and reducing the length of new tunnels we would need to fund and construct.

6.4. Reasons for identification of Old Kent Road 2 station site options currently under consideration (Options 11 and 14)

- 6.4.1. This section sets out the reasons for selecting the proposed station and worksite options for Old Kent Road 2 station. The reasons for those alternative site options not considered further are described in section 6.5.
- 6.4.2. We have identified the sites at Sandgate Street and the Verney Road area (next to the junction of St James's Road with Old Kent Road (Option 11 in Figure 21) and the site at consisting of the Toys R Us and industrial / business warehouses on sites next to the junction of Asylum Road and Gervase Street with Old Kent Road (Option 14 in Figure 21) as they performed relatively strongly in our assessment given their locations for serving the spread of existing and future new communities in the southern part of the Old Kent Road, their connections to the local bus network and the ease of access to them for construction.

The site in the Sandgate Street and Verney Road area (Option 11)

- 6.4.3. This option would utilise sites that are currently occupied by a range of retail stores including Currys PC World, B&M Bargains, a Dental Practice, and an Electrical substation. Immediately to the south of the site is the Old Kent Road, whilst to the north is further industrial warehousing and a row of residential properties. The site
- 6.4.4. The site size is circa 14,000 sq.m – a size that is over the desirable minimum of 10,000 sq.m. This would likely make construction of the site less complex and enable a cut and cover station box to be delivered, helping to reduce costs relative to some other sites we have considered. It is noted that the site shares a boundary with existing residential properties on Sandgate Street however their access is separate to the accesses required to the site for the construction of the station which may help to lessen the impact of construction.
- 6.4.5. The site's situation would enable interchange to the bus network operating both along the Old Kent Road but also north-south via Rotherhithe New Road. This could help to increase access to the Tube station from the local area, however it should be noted that the current locations of bus stops are not in the immediate surround of the station site due to the predominance of the road junction and the need to cater for traffic flow and movements at this busy confluence. Therefore it would be necessary for bus stops to be relocated closer to the station site to fully maximise the potential interchange benefits with the station, however there may be challenges in achieving this due to the station's proximity to the road junction.
- 6.4.6. The site location would serve the local communities to the north along the Rotherhithe New Road corridor and the new proposed communities in the Cantium

retail park area and the area east towards to the Gasometers, as set out in the OKR AAP. Public consultation has taken place on initial proposals for the Cantium area, and compared to the alternative station location for Old Kent Road 2, this site would provide the closest point to access the Tube network. However this would result in the catchment of areas to the south east end of the Old Kent Road being relatively far from the Tube compared to the central and northern parts of the Old Kent Road where the Old Kent Road 1 and Old Kent Road 2 station catchments would overlap.

- 6.4.7. The location of the site offers some flexibility on how construction vehicles could be routed to access the site. The location on Old Kent Road and Verney Road means that traffic could arrive via Verney Road, avoiding the need to continue to the site via Old Kent Road and negotiate the busy traffic junctions. Traffic departing the site could access Old Kent Road directly, routing out of this area on London on the main road network.
- 6.4.8. The site itself is a proposal site in the AAP, suggesting that in the future new development may take place on part of the site. The AAP proposals also include part of the site we are considering as an extension of a public park running from Burgess Park towards Surrey Canal Road. This planned future use reduces the risk of potential future development occurring prior to the delivery of the station or a need to delay the delivery of development. Nonetheless it is recognised that undertaking works to a public park, if delivered by the time of the construction works, could have an impact on the local community and its use of the park. Aside from these potential future proposals, there are no other local or national policy designations affecting the site that make it less suitable for a new station.
- 6.4.9. The impact of this option on the route alignment would be favourable for connecting a route to the options for Old Kent Road 1 station and also to the south at New Cross Gate station option. This site option has no clear constraints that require significant deviations away from a direct route between the proposed stations on this part of the extension, however it should be noted that to the immediate north of the site on the western side there is a new tall development under construction which constrains the alignment should it need to be placed towards the north of the site.

Toys R Us and industrial / business warehouses on sites next to the junction of Asylum Road and Gervase Street with Old Kent Road (Option 14)

- 6.4.10. This option would utilise sites that are currently occupied by a Toys R us store and car park, and a light industrial / commercial warehouse unit with associated car park. Immediately to the south of the sites are a Travellers site and a council residential estate. To the north of the Toys R Us store is the Old Kent Road whilst to the north

of the light industrial warehouses is a ground floor commercial store with car park and a block of residential units above it.

- 6.4.11. The site size is circa 13,000 sq.m – a size that is over the desirable minimum of 10,000 sq.m. This would likely make construction of the site less complex and enable a cut and cover station box to be delivered, helping to reduce costs relative to some other sites we have considered. The site shares a boundary with existing residential properties on Leo Street and Gervase Street along with the apartment block in the south east corner of the site. The first two sites access is separate to the accesses required to the site for the construction of the station which may help to lessen the impact of construction on the. The apartment block may face increased impacts due to the proximity to the site works and their accesses however at this early stage we have not determined the full arrangements for how this station site option, as with all other station and shaft site options, would function during construction and what impacts these would have.
- 6.4.12. The site is located alongside the existing location of bus stops for northbound services on the Old Kent Road, with the bus stops for southbound services opposite the site at its south eastern end. In addition, there are some services that operate across Old Kent Road via Asylum Road and Ilderton Road that this station would provide an interchange with, however conversely to the alternative site option, there are routes via Rotherhithe New Road that would be missed.
- 6.4.13. The site is well located to serve existing communities towards Peckham and New Cross and in the immediate area, with less overlap with the Old Kent Road I stations. The site also could serve the large existing industrial area to the north in the Sylvan Grove, Devon Road area and the Gasometers which the AAP has identified as an area for redevelop. Compared to option 11, the site is located further from the middle area of the Old Kent Road such as the Cantium retail park which is also designated for redevelopment in the AAP. However the area would still fall within a 960 metre walk catchment of the option 14 station site, and also within the same catchment of the Old Kent Road I station option catchments.
- 6.4.14. The location of the site, as with option 11, offers some flexibility on how construction vehicles could be routed to access the site. The location on Old Kent Road could enable a left turn into the site, whilst there are existing vehicle accesses on main roads such as Asylum Road and off Gervase Street and Leo Street. It is possible that for efficient construction of the station, it may be necessary to temporarily close a section of Gervase Street to connect to the two worksites together – this could have an impact on the routing that local residents and businesses need to take to access sites however given the road network this should be achievable. At this early stage we cannot confirm if the temporary closure of part

of Gervase Street would be necessary, but it is recognised as a potential impact of site option 14.

6.4.15. The site itself is a proposal site in the AAP, suggesting that in the future new development may take place on part of the site. At this stage we are not aware of any specific proposals aside from the AAP that are different from the current uses of the sites. The proposals for a station at this location would require demolition of the existing uses but after station construction, it would be possible to new development that matches the policy proposals at that time. Aside from these potential future proposals, there are no other local or national policy designations affecting the site that make it less suitable for a new station.

6.4.16. The impact of this option on the route alignment would be favourable for connecting a route to the options for Old Kent Road 1 station and also to the south at New Cross Gate station option. This site option has no clear constraints that require significant deviations away from a direct route between the proposed stations on this part of the extension and there are no immediate tall developments in the vicinity of the site that are expected to place a constraint on a future route alignment.

6.5. Reasons for not progressing alternative identified Old Kent Road 1 and 2 station location options

6.5.1. Table 1 and Table 2 provide the reasons that some sites have not been selected for further consideration in relation to Old Kent Road 1 and 2 stations.

Table 1 - Reasons for not progressing alternative identified Old Kent Road 1 station location options

Option	Description	Outcome of assessment
1	At the Bricklayers Arms junction, potentially utilising the junction island	<ul style="list-style-type: none"> Although a station at this location would serve the northern end of the OKR OA, it is within the catchment of Borough and Elephant & Castle stations and therefore locating a station here would duplicate some of the area covered by the Tube network whilst leaving less of the OKR OA covered by the new station. The area already has very high levels of public transport accessibility given the nearby Underground network and the large number of bus services and routes that pass through the area. This is in contrast to other parts of the OKR OA that have much lower accessibility levels. The unoccupied land at Bricklayers Arms is circa 6,000 sq.m – significantly below the desirable size of at least 10,000 sq.m to construct a station. This location would constrain the range of route options to Elephant and Castle via only the Bricklayers Arms junction shaft site option and may therefore also constrain the range of approaches we can take to deliver the required improvements at Elephant and Castle station.
2	Around the Lidl Supermarket site towards the northern end of Old Kent Road	<ul style="list-style-type: none"> The site of the Lidl supermarket itself would be insufficient to accommodate the entirety of an Underground station. The station site and construction would therefore require land or works at, or under, the Old Kent Road itself and surrounding residential and commercial properties, making construction impacting on a wide number of owners and occupiers. Orientating the station to impact the least number of sites would lead to an alignment that is broadly west to east and result in a longer, more circuitous route towards the southern part of the OA which would increase passenger journey times and construction costs. The catchment of the station is concentrated to the north-west end of the OKR OA, would therefore leave parts of the centre of the OA less well served by the potential OKR 1 station.
3	Dial a Ride and DPD depots	<ul style="list-style-type: none"> To cater for the range of alignment options from Elephant & Castle, the station would need to orientate on a west-east alignment on the site, and so as with option 2, would have an adverse impact on the potential alignment towards the southern end of the OKR OA where the second station options are located.

		<ul style="list-style-type: none"> The site is poorly positioned for interchange with the existing public transport network, with no bus routes currently planned to operate through the Mandela Way area. The site, in the northern part of the Mandela Way industrial estate, would be relatively further from the main bus routes on the Old Kent Road compared to options 4 and 5 that are also in the Mandela Way area, and less well located for serving the main thorough-fare of the high street on Old Kent Road.
4	On Mandela Way	<ul style="list-style-type: none"> This location would require land either side of the highway, increasing the number of sites affected. The highway would also likely need to be closed which could cause significant disruption to businesses along the road. This option would be further from the Old Kent Road and the existing public transport network than others nearby such as option E which is being considered further.
7	Burgess Park	<ul style="list-style-type: none"> The park land is relatively narrow at the junction with Old Kent Road where a station would be ideally located in order to provide access from the busy high street. Works would significantly impact the ease of access to the park for the Old Kent Road area. Station construction may also need to affect the established features of the park such as the watercourse to create room to meet the desirable work site arrangement and size. This could have an impact on biodiversity and public amenity – reflected by the current policy designation as Metropolitan Open Land. This location would require a station oriented south west to north east which would make the onward alignment to the southern part of the OKR OA highly circuitous and long compared to other journeys, impacting passenger journey time and cost of construction.
8	Glengall Road junction with Old Kent Road	<ul style="list-style-type: none"> This site, like site option 7, is also designated as Metropolitan Open Land and is connected to Burgess Park. Therefore construction works would lead to a loss of local amenity and could impact local biodiversity. At circa 8,000 sq.m, the site is under the desirable size of least 10,000 sq.m, which would make construction more complex and constrained. The station site, to fit on the footprint of the public open space would need to orientate south west to north east and so, as with option 7, would make the onward alignment to the southern

		part of the OKR OA highly circuitous and long compared to other journeys, impacting passenger journey time and cost of construction.
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Table 2 - Reasons for not progressing alternative identified Old Kent Road 2 station location options

Option	Description	Outcome of assessment
9	Marlborough Grove and St James proposal	<ul style="list-style-type: none"> • The catchment does not extend fully to the south east corner of the OA boundary, leaving a some potential development sites identified in the OKR AAP, outside of the catchment of this station location option. • This site would significantly overlap with the catchment of the proposed options for stations in the northern part of the OA. • This site would require several premises and sites relative to other areas considered, which would increase the number of stakeholders impacted by the proposal. • Unless located close to the Old Kent Road, the potential onward alignment to New Cross Gate station area could be made more circuitous due to a likely need to avoid deep building foundations associated with a stretch of new development running up the eastern side of Rotherhithe New Road that has recently been built.
10	Cantium Retail Park	<ul style="list-style-type: none"> • The station is slightly further north westwards of option 11, creating slightly more overlap with the catchments of the station options for Old Kent Road 1 station. • There would be relatively less flexibility in terms of accessing the site aside from utilising Old Kent Road, which would reduce the potential to either spread the distribution of construction traffic to lessen its impacts or to avoid delays and congestion that is common place at the current time on the Old Kent Road.
12	Gasometers	<ul style="list-style-type: none"> • To fit the station on the Gasometers site and avoid impacts on surrounding occupied land, the station would need to orientate northwest to southeast, which would be likely to generate an alignment from the Old Kent Road 1 station areas and onwards to New Cross Gate that would have larger arcs and overall longer passenger journey times. • This site sits adjacent to a large waste processing facility which would be unlikely to generate

		<p>significant traffic for the station. The site is located in an area that would fail to maximise the proximity to existing and new communities relative to other options.</p> <ul style="list-style-type: none"> • This site is set back behind the Devon Street area. This would reduce the proximity of the station to the Old Kent Road and lead to longer interchange times between the Bus network and this busy thoroughfare for pedestrians.
13	Devon Street and Sylvan Grove area	<ul style="list-style-type: none"> • This site sits to the south of a large waste processing facility that receives a high volume of traffic. Maintaining traffic access around a site for BLE station works may make construction more complex and costly and / or risk disrupting access to the waste facility which provides a very important function for London. • There are a large number of properties and occupiers on the site, which could make assembly of the land more complex and mean that the construction works impact a large number of stakeholders including potential residences along the front of the site on Old Kent Road. • To the south east of the site, there are tall buildings (on the Tustin Estate) that are likely to have deep foundations which BLE tunnels running towards New Cross Gate would aim to avoid. This might require us to position the station further north on the site, however the consequence of doing so would be that the distance from Old Kent Road increases and leads to longer interchange times between the Bus network and this busy thoroughfare for pedestrians.

7. Our assessment of sites for New Cross Gate station

7.1. An interchange station in New Cross Gate for improved connectivity within the area and to wider London

- 7.1.1. We are proposing a BLE station at New Cross Gate to provide fast interchange links with the existing National Rail and London Overground services, helping to connect the BLE with wider south and southeast London. An interchange between the Underground, National Rail and London Overground, along with improved provision for access from the local area by buses, walking and cycling would support the wider aspirations in the area.
- 7.1.2. Working with stakeholders, we have developed an understanding of the planned changes in the New Cross Gate area, such as the potential expansion of Goldsmiths University and the potential for future new residential development along either side of the existing New Cross Gate station. A consultation on regeneration plans for the Achilles Street redevelopment has also recently been undertaken by Lewisham Council and the Council has also implemented part of a series of upgraded walking and cycling corridors in the area as part of its Lewisham Links plan.
- 7.1.3. These current and future plans and policies have informed our assessment of station location options. At this stage, in comparison to the area around Lewisham, less new development has taken place although we understand that there are some existing planning permissions for sites we have considered such as on the land to the east of the railway, as well as potential future plans for development on the Sainsbury supermarket site. Overall, the constraints for running tunnels due to tall buildings with deep piled foundations is currently relatively low, and broadly enables a focus on developing a good, fast interchange for passenger journeys with good links to the local area.

7.2. Determining locations options for the Underground station in New Cross Gate

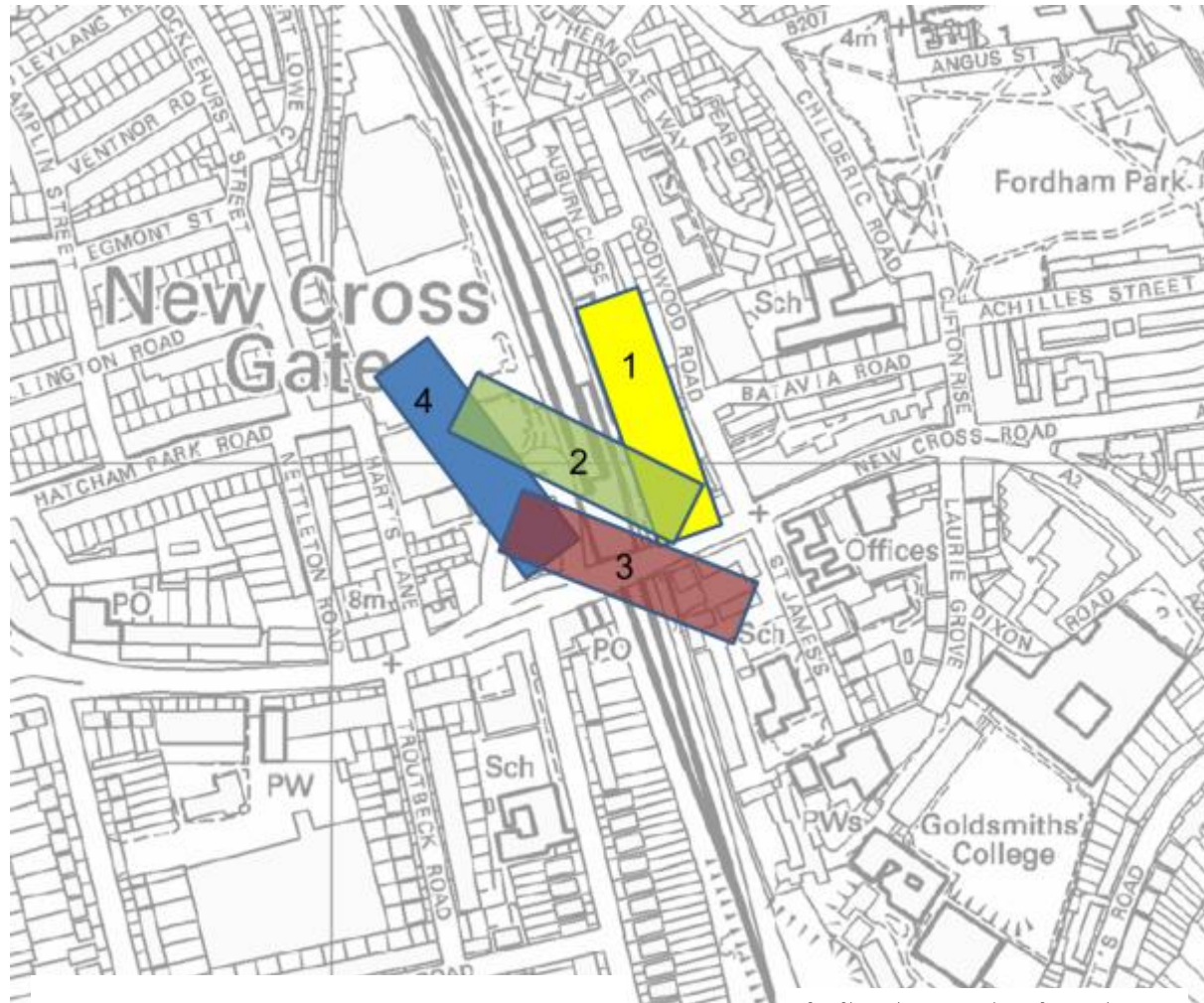
- 7.2.1. We identified a long list of sites which included locations such as Fordham Park, New Cross Gate Cutting Nature Reserve, New Cross Bus Garage and Council Housing on Achilles Street. These site options were not considered further, owing to their distance from the New Cross Gate station interchange that was often significantly greater than other options we have considered. Some of the sites also have local policy designations that mean their loss would have a high impact on the local area and would not be suitable for station construction and / or operations.
- 7.2.2. We initially identified in a first stage of assessment options on sites that may meet the desirable minimum size of 10,000 sq.m for station construction works and that

had the least impact on existing communities; vacant, undeveloped land or commercial land uses to reduce the impact on the local community where possible.

- 7.2.3. Following our initial assessment of the long list of options, six sites around New Cross Gate were identified. Within this group, two of the options represent variations to option 2 and option 4 shown in Figure 22 that have been progressed further.
- 7.2.4. One option that was discounted is similar to option 4, situated on the same site but parallel to the existing rail station. This option has been discounted as it is considered to have a similar requirement in terms of land required and from construction to option 4, but is less preferred as its orientation could create a less direct route to the next stations which would make passenger journeys longer.
- 7.2.5. The other option that was discounted is similar to option 2, situated approximately 100 metres further north. This alternative to option 2 is considered to have broadly the same impact on land required and from construction. However, being further from the existing station entrance and interchange and New Cross Road, the option would create a longer interchange for passengers, adding to the length of passenger journeys.
- 7.2.6. The four shortlisted options we have assessed are shown in Figure 22. Consistent with the approach taken on assessments of other new station sites on the extension, we undertook a detailed assessment across a wide set of criteria concerning local connectivity; impact of operations at the site; the cost of operations at the site; how the site would impact construction of the option; impact on stakeholders such as the BLE passengers, local business and local residents; the status of the land's ownership; and consideration of planning policies and other transport plans affecting the site.

Figure 22 - Site options considered for proposed New Cross Gate station

Option	Description
1	An Underground station with a station box (cut and cover construction) at vacant site to east of railway
2	An Underground station (excavated construction) at a southerly diagonal alignment across Sainsbury's site, the rail station and a vacant site on the east side
3	An Underground station (excavated construction) at Sainsbury's Site, the rail station and New Cross Road and an area on St James' Road (Goldsmiths)
4	An Underground station with a station box (cut and cover construction) at Sainsbury's site



Indicative station location options shown

7.3. Reasons for identification of the Sainsbury's site as the preferred location option (Option 4)

- 7.3.1. This section sets out the reasons for selecting the Sainsbury's site for the proposed station and worksite at New Cross Gate. The reasons for those alternative site options not being considered further is described in section 7.4.
- 7.3.2. We have identified the Sainsbury's site as the preferred option in New Cross Gate for the proposed BLE station. This site has been selected for a number of reasons including proximity to the existing rail station for fast and attractive interchange links; the site's size which allows for flexibility and which could help to minimise construction impacts to surrounding residents; the strategic position with connection to the walk and cycle network and potential for a better bus interchange; and the site impacting only one land owner.
- 7.3.3. The Sainsbury's site was referenced for use to construct all four of the shortlisted options. This is due to the strategic advantage the site would offer in terms of position and land available for constructing or locating a station at New Cross Gate. In comparison to the alternative station site options that were assessed, option 4 would only require the Sainsbury site however it would be expected to utilise a larger part of the site relative to alternative options. This would potentially mean that no access to the existing commercial units on the site could be maintained for all or part of the construction works, with a temporary loss of jobs.
- 7.3.4. As with any major construction site on the route, the BLE project would generate employment on a temporary (through construction) and permanent (for train and station operations) basis, and following works the current or alternative development for employment could be reinstated, subject to local planning policies.
- 7.3.5. The site would enable works to be contained to a single site with direct access from the main road, reducing the impact on local highways from construction traffic. The site size would also be likely to offer flexibility so where possible noise and vibration can be reduced where possible for surrounding residents.
- 7.3.6. The site is privately owned by Sainsbury's, impacting one land owner, although it is recognised that there are additional commercial tenants on the site. In comparison, alternative options would have an impact across a wider number of land owners and occupiers and could also more adversely impact residents, increasing impacts across a wider number of people and a wider local area in some instances.
- 7.3.7. The location of this site relative to the current New Cross Gate station would provide an important interchange for commuters who are changing from rail services from

across wider south London. The site would allow for an adjacent ticket hall or consolidated building with the New Cross Gate ticket hall which would reinforce the established connections to the station for the local area. Furthermore, these improvements would help to overcome the existing constraints around the current entrance, by creating more space for passengers entering and exiting the station from New Cross Road.

- 7.3.8. The site at its frontage with New Cross Road sees the main stopping points for east-bound bus services, whilst there are also Bus stands in the site itself. The option would be best located to lead to an improved location around the Tube and Rail ticket hall for Bus stopping and standing, helping to further strengthen New Cross Gates role as a local interchange.
- 7.3.9. The site has been allocated in current local policy for new development and it is our understanding that plans are being prepared to develop the site. The option to construct a station on the site would therefore delay the delivery of any planned housing. However, by ensuring the station could support development at the surface above it, new development would not be precluded once construction completes. We would work with the local council and the land owner to ensure that designs for the proposed station support future development plans the council and land owner may have and ensure that links through the site and with the station can be achieved.
- 7.3.10. Aside from the benefits of the site for the locating of the proposed new station, the site could also be used to construct the tunnels, including launching of the tunnelling machines that undertake the excavation of tunnels. The site's location, adjacent to the mainline railway could provide the opportunity to support the removal of excavated material by rail avoiding significant lorry movements.

7.4. Reasons for not progressing alternative identified New Cross Gate station location options

- 7.4.1. Table 3 sets out the reasons for not progressing some of the identified location options.

Table 3 - Reasons for not progressing alternative identified New Cross Gate station location options

Option	Description	Outcome of assessment
1	An Underground station with a station box (cut and cover construction) at vacant site to the east of railway	<ul style="list-style-type: none"> • The access to this site would likely be via Goodwood Road which is a connecting road to the A2. This is a less preferable access route for construction and maintenance vehicles as this is a busy commuter road • The site alone is not a viable option for station construction due to its size not meeting the desirable minimum of 10,000 sq.m. The station box footprint may also need to extend onto areas that are currently occupied by local residential development, increasing the distribution of the options impacts on the local community. • To be a viable station construction site size, the option would require additional land which would likely be from the Sainsbury's site adjacent. This would create a wider spread impact to the community as two sites would be impacted and access to the Sainsbury's site could be obstructed. • Construction traffic, equipment and staff may need to travel between the sites via New Cross Road which would create inefficiencies during construction and potentially add to congestion on the highway.
2	An Underground station (excavated construction) at a southerly diagonal alignment across Sainsbury's site, the rail station and a vacant site on the east side	<ul style="list-style-type: none"> • This option would utilise a proportion of the vacant site to the east of the current New Cross Gate station and the opposite Sainsbury's site, creating a larger impact than the use of a single site as access to the Sainsbury's site would likely be impacted throughout construction- to construct an underground station below the railway, excavation would be initiated from these two sites to create the station below the railway. • The excavation process carries higher construction risks and could increase costs, in comparison to a cut and cover station construction process. • The construction of a major new underground station within the footprint of an existing heavily used strategic rail interchange would be likely to require significant changes to operations of the rail station during the works, and a higher likelihood of station closures, impacting on passenger travel in the region and access to and from New Cross Gate. • The site size is below the minimum desirable 10,000sq.m, which would restrict construction operation and likely require additional surrounding residential or commercial property – but

		having a wider impact on the surrounding community.
3	An Underground station (excavated construction) at Sainsbury's Site, the rail station and New Cross Road and an area on St James' Road (Goldsmiths)	<ul style="list-style-type: none"> • The site only extents to 4,000sq.m which is below the desired minimum area needed for the station's construction. • It is unlikely that a large enough site from the University's grounds could be outlined for redevelopment and station integration. • The construction of a major new underground station within the footprint of an existing heavily used strategic rail interchange would be likely to require significant changes to operations of the rail station during the works, and a higher likelihood of station closures, impacting on passenger travel in the region and access to and from New Cross Gate. • The site is not large enough to be a single option but could be combined with the Sainsbury's site to outline an area large enough for station construction – but having a wider impact on the surrounding community.

8. Our assessment of sites for Lewisham station

8.1. An interchange station for a major town centre undergoing extensive change

- 8.1.1. We are proposing a BLE station at Lewisham that provides interchange with the existing National Rail, Docklands Light Railway (DLR) and London Bus services that stop at Lewisham station. Creating an effective interchange at Lewisham will be important to ensure the BLE becomes an attractive onward mode of travel to and from Lewisham town centre and for journeys changing between the wider transport network in south east London, Kent and the Underground.
- 8.1.2. The station is a strategic interchange and has seen increasing demand for rail and DLR services, along with an increase in the wider local catchment as town centre development has occurred. This local development has also created opportunities for new urban realm and changes for road-based modes such as Buses and Taxi. These changes known as the Lewisham Gateway scheme are nearing completion and will be complete before the BLE construction.
- 8.1.3. Serving the existing National Rail station at Lewisham should also be considered within the wider context of the opportunities to improve the rail network in south east London. Improvements to the suburban rail network in London are a priority for TfL. With these wider plans, an extension to Lewisham provides the opportunity to generate a significant improvement in radial and orbital connectivity across the region. The potential improvements to the wider rail network along with a Bakerloo line extension to Lewisham via Old Kent Road could deliver a total of up to 60 trains per hour between Lewisham and central London, providing a step-change in connectivity and capacity to support long term growth.
- 8.1.4. The reliance on the existing rail network in Lewisham for journeys to central London would be reduced, with the BLE providing an alternative rail route which could help increase the network's resilience during disruptions. Links to Lewisham will enable passengers that board services from across south east London into Kent to make changes to the Underground at this location, and avoid travelling into the busy central London termini such as London Bridge and Charing Cross.
- 8.1.5. Many parts of the town centre are undergoing or are planned to undergo significant change. The Lewisham Gateway scheme will deliver new residential and commercial development between the station and the existing town centre shopping centre, and some parts of that development are already complete.

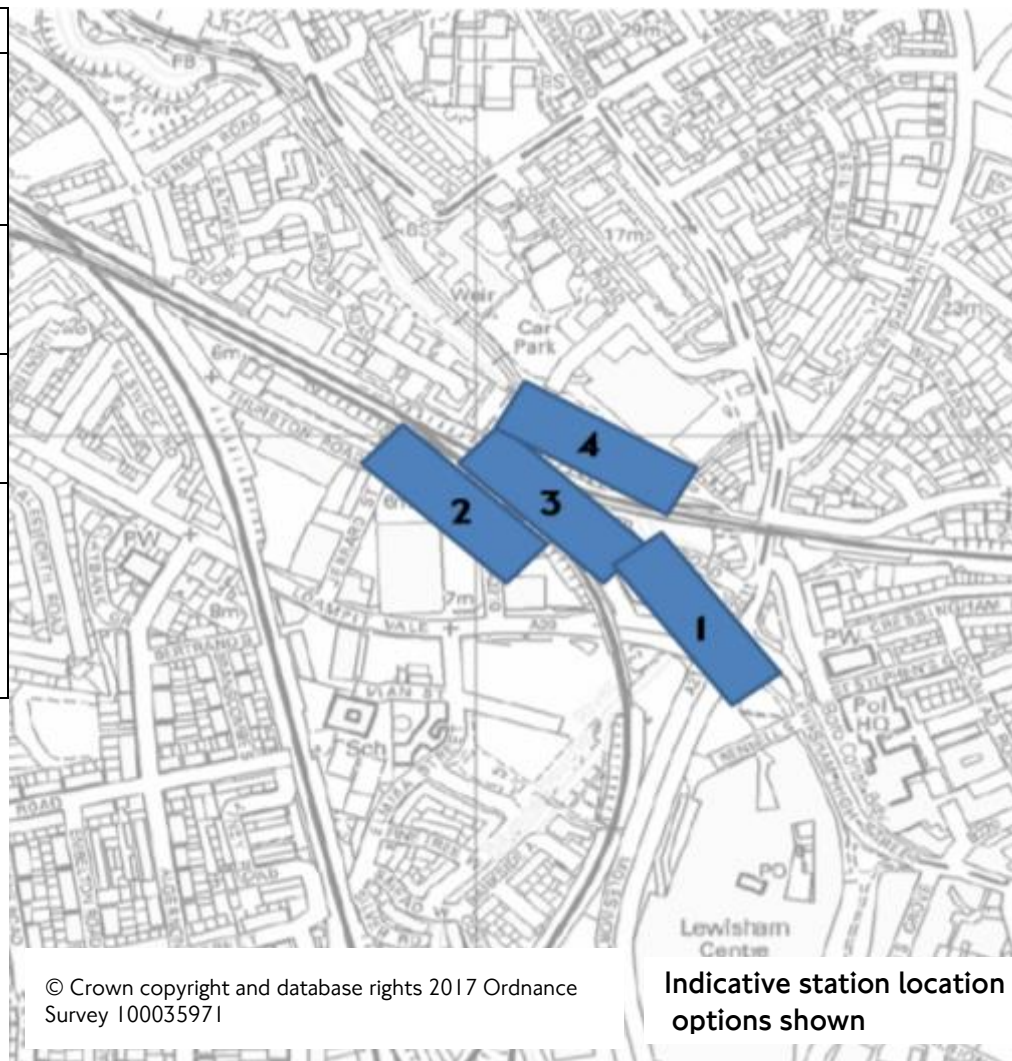
- 8.1.6. To the north side of the station, the car park sites around the Tesco Superstore are understood to be subject to redevelopment. Similarly to the west side of the station, the existing Lewisham retail park that currently hosts branches of Matalan and Sports Direct is the subject of a planning application submitted (but not yet determined) for a redevelopment to residential-led mixed uses. Sherwood Court has recently been completed and opened, providing new student accommodation for London's Universities and Colleges. We also understand that there is potential for the existing Carpetright store site at the junction of Thurston Road and Loampit Vale to be redeveloped although no planning application has been submitted or approved for the site.

8.2. Determining location options for the proposed Underground station in Lewisham

- 8.2.1. We focused on the options for constructing a station as close as possible to the existing National Rail and DLR station. Enabling passengers to make a short interchange between other rail services, buses and the BLE will be important to realising the benefits of the investment in the BLE and spreading the benefits more widely across south east London. We have focused on where there is currently vacant land, land that is already used for transport uses and land that is within TfL's ownership as these factors could help reduce the impact of an option on the wider area. This produced a localised area, smaller in scope than for some other station options such as the Old Kent Road stations.
- 8.2.2. As with the station assessments for New Cross Gate and the Old Kent Road stations, we considered these options by applying a wider set of criteria concerning local connectivity; impact of operations at the site; the cost of operations at the site; how the site would impact upon construction of the option; impact on stakeholders such as the BLE passengers, local business and local residents; the status of the land's ownership; and consideration of planning policies and other transport plans affecting the site. It should be noted that due to the constraints and low number of options identified for Lewisham station, there was no initial sifting of a long list of options prior to this stage, such as occurred for the Old Kent Road and New Cross Gate stations.
- 8.2.3. The four station options we have assessed are described and shown in Figure 23.

Figure 23 - Site options considered for proposed Lewisham station

Option	Description
1	An Underground station beneath phases C to E of the Gateway development scheme
2	An underground station at the TfL Bus Stand and Thurston Road
3	An underground station beneath Lewisham National Rail station
4	An underground station beneath the River Quaggy, Tesco car park site, DLR tracks and the eastern end of Armoury Road



8.3. Reasons for identification of the Bus Stand and Thurston Road site as the preferred location option (Option 2)

- 8.3.1. This section sets out the reasons for selecting the Bus Stand and Thurston Road site for the proposed station and worksite for Lewisham. The reasons for those alternative site options not considered further are described in section 8.4.
- 8.3.2. We have selected the site of the existing Bus stand and Thurston Road for a number of reasons including the potential it offers to deliver access improvements to the existing station, the links to the local area, the fit with current plans and policies and the reduced impact on land owned and occupied outside of TfL's ownership.
- 8.3.3. This option could achieve a good quality access for cyclists as it is located on the National Cycle Network Waterlink Way as it runs up Thurston Road. Therefore this option would not require any off-route crossing to access the station, making it the safest and most direct-access option for cyclists.
- 8.3.4. The Loampit Vale masterplan⁸ and the developments associated with it will deliver a well-designed pedestrian environment and seeks to improve access to the station via the new commercial ground floor uses and public spaces towards a new National Rail station entrance. Hence the Tube station option would be on a key thorough-fare that pedestrians and cyclists use to access the National Rail station.
- 8.3.5. This location also therefore means that the station would be well-located for connectivity from many of the existing communities in the local area that walk and cycle to the existing station as well as serving the significant new community that has built up to the west of the station along Loampit Vale and Thurston Road. Depending on the timing of when the BLE and local development works take place, it is possible that new local development adjacent to the site may have been completed which could increase the potential impacts on the local community from the station construction works.

⁸ As detailed in the Lewisham Local Development Framework, available from <http://www.lewisham.gov.uk/my services/planning/policy/LDF/Pages/default.aspx>

- 8.3.6. The option could support a potential onwards extension beyond Lewisham, including those options previously considered in our Options Assessment Report⁹ published in 2016.
- 8.3.7. This option has the capability to provide a close and speedy interchange with the rail station, located closest to the platforms 1 and 2 where passengers would be able to trains heading to Cannon Street and London Bridge. At the same time, the option would be seen as helping to improve access to Lewisham and forming part of a wider strategic interchange with rail, DLR and Buses.
- 8.3.8. This option has the potential to increase pedestrian traffic through the Loampit Vale masterplan area where ground-floor commercial and retail uses would benefit from the passing trade. In addition, the delivery of an Underground station serving the town centre via the existing rail station would also improve access to retail and commerce in the town centre which could benefit local businesses.
- 8.3.9. The station location is positioned to utilise an existing TfL-owned site in the area. This would reduce the scale of impact on other land-owners, though it should be recognised that there remains an interface with neighbouring land owners such as Network Rail and the owners of the Carpet Right site. It is important to note that the relocation of the bus stand on Thurston Road would be required on at least a temporary basis and potentially permanently once station infrastructure is in place.
- 8.3.10. The site we have identified at Thurston Road and the TfL Bus stand is constrained based on its size which could make construction more challenging to deliver. As with all sites along the extension route, we will continue to develop our plans and identify if additional land may be required to enable construction and operation the proposed extension.
- 8.3.11. The option is considered to offer good compliance with the policies and aspirations held by the Council for the Loampit Vale area and also Lewisham more widely. The option would support the immediate local retail as described previously, whilst supporting access to the goods and services provided by the wider town centre. The option is well situated to provide a good interchange with National Rail and DLR services and hence good connectivity with wider south east London could be achieved. The option could also be integrated into the Loampit Vale masterplan

⁹ The *Options Assessment Report* published in January 2016 can be accessed on the TfL consultation webpage: <https://consultations.tfl.gov.uk/tube/bakerloo-extension/>

development proposals to achieve integration with a distinctive and enhanced urban realm, building on the emerging plans that Lewisham Council have been developing.

8.4. Reasons for not progressing alternative identified Lewisham station location options

- 8.4.1. Table 4 sets out the reasons for not progressing some of the identified location options.

Table 4 - Reasons for not progressing alternative identified Lewisham station location options

Option	Description	Reasons that location option is not being progressed
1	An Underground station beneath phases C to E of the Gateway development scheme	<ul style="list-style-type: none"> • The site would be likely to result in a longer interchange distance between the National Rail and Underground services on the extension. This would increase passenger journey times and reduces the benefits of the extension compared to other options. • Although the option could deliver step-free access to and from the Tube platforms, the distance of the site from the existing rail and DLR interchange station means it would be unlikely that paid-side step-free access could be achieved between these modes and the Tube. An on-street unpaid-side interchange would be a likely requirement, which as a result would likely increase the length of the interchange and mobility impaired passengers could have the challenges of negotiating the busy public realm. • The option has the potential to increase operational costs relative to other options as its distance from the existing station and proximity to the town centre would be likely to lead to the station having its own entrance and ticket hall that would be apart from the existing National Rail station facilities. • The site offers poor fit with existing local policy and consented plans, with construction of a station requiring a significant change to the development underway for the Gateway scheme, or potential demolition of recently completed parts.
3	An underground station beneath Lewisham National Rail station	<ul style="list-style-type: none"> • Due to the option utilising the existing station infrastructure, the scope for potential connectivity improvements to the local area would be reduced. Other options have a greater potential to add directly as part of their works new entrances and integrate with urban realm improvements to provide new high quality connections and public spaces in the vicinity of the busy town centre. Many of these aspects are aims and aspirations reflected in the local policy objectives held by the Borough. • The construction of a major new underground station within the footprint of an existing heavily used strategic rail interchange would be likely to require significant changes to operations of the rail station during the works, and a higher likelihood of station closures, impacting on passenger travel

		in the region and access to and from Lewisham town centre.
4	An underground station beneath the River Quaggy, Tesco car park site, DLR tracks and the eastern end of Armoury Road	<ul style="list-style-type: none"> • The station at this site would be the furthest of those considered from the main town centre located around the shopping centre and market, making passenger journeys between these two key points longer than other options. This impact would be increased if a direct link through the existing National Rail and DLR stations to the town centre could not be delivered, leading to a circuitous walk route around the existing rail viaduct via Silk Mills Path to Lewisham Road. • There is the possibility that the DLR tracks and River Quaggy would need to be diverted in order for the Underground station works to take place. These two aspects would add to the complexity, risks and costs of the station works, their potential environmental impact, and also potentially impact a large number of DLR passenger journeys for a period during construction. • The site would require the largest proportion of land, excluding the DLR tracks, that the public sector has no involvement or share in compared to other options under consideration. This could increase complexity and costs of undertaking the works and their impact on stakeholders of this option compared to some others.

9. Our assessment of sites for the shaft between Elephant and Castle and Old Kent Road I stations

9.1. Requirement for a shaft between Elephant and Castle and Old Kent Road I stations

9.1.1. A shaft is required between Elephant and Castle and Old Kent Road I stations because the section of line would exceed the distance over which a shaft is required. We are currently proposing to provide a shaft between where the running tunnels could go underground and the surface to provide the following functions and comply with standards and guidelines for tunnelled railways:

- Provide access to the tunnels for emergency services and an evacuation route for passengers, staff and emergency services.
- Provide ventilation to the tunnels to help control their temperature.
- Undertake smoke extraction using fans in the event of a fire.
- Provide access to the tunnels for the undertaking of maintenance on the line.

9.1.2. These functions of shafts are also fulfilled at the stations along the extension as they provide access to the running line and include ventilation equipment to move air in and out of the underground tunnels. We therefore need to consider shafts based on the distance between stations.

9.1.3. To build a shaft, we estimate we will require a site of at least 1,500 sq.m and ideally up to 3,000 sq.m to enable works to be undertaken efficiently and with less impact on the surrounding area. Following construction of the shaft between the underground tunnels and the surface, the equipment for ventilation and controlling access to the shaft requires a structure known as a head-house. The head-house sits over the shaft where it breaks surface, and is typically up to 900 sq.m in area, and can be up to two storeys tall.

9.1.4. At this early stage in the BLE scheme proposals we do not know enough about the precise design of the shaft to know exactly what the size and scale of the head-house would be. Nonetheless, we will ensure that any head-house is designed sympathetically to help reduce any impact on the local area that it sits within.

9.2. Determining location options for the proposed shaft between Elephant and Castle and Old Kent Road I stations

- 9.2.1. At this stage of our proposals for the BLE, we have not identified the alignment of the underground tunnels that a shaft would need to connect to, however we do have site options for the stations that the tunnel alignments would need to connect to. We therefore can determine those areas between stations that a shaft would need to be located in.
- 9.2.2. We have outlined for potential new Bakerloo line tunnels that we are considering through the Elephant and Castle area and where the existing line runs to, (see section 5 for more details) along with the proposed locations for the Old Kent Road I station we are considering. Based on the area, we have identified two route corridor options between the two areas for the stations that the underground tunnels could run through.
- 9.2.3. The corridors – the area between red bounded areas in Figure 24 and Figure 25 show the limit of a potential underground line alignment along either the New Kent Road area or via the Walworth area. The marked area on each of the figures shows the area an alignment for underground tunnels could run through that would meet London Underground standards on track curvature and also provide a direct route between potential stations, helping to keep passenger journey times as low as possible.
- 9.2.4. The potential corridors from either the existing Bakerloo line end tunnels that currently stop on the Walworth Road just south of Elephant Road, or a more northerly alignment along the New Kent Road, are constrained by the presence of tall new buildings either already built or currently under construction (e.g. the former Heygate estate).
- 9.2.5. Within the area itself there are further tall buildings either in existence or planned, which, whilst potentially avoidable, represent constraints to tunnelling. Tall buildings could have an impact if a shaft site is situated in close proximity to it and leads to an underground tunnel alignment that could come into conflict with the piling of these buildings.
- 9.2.6. Within the area in scope, shown in green in Figure 24 and Figure 25, we identified an area approximately equidistant between Elephant and Castle and Old Kent Road I station – the next intervention points on the line in either direction. This is because the equidistant point represents the location from which the longest possible route to a point in the running tunnels from either the shaft site or one of the stations is minimised which is beneficial in the context of the potential access and egress time for emergency services, passengers and staff.

Figure 24 - New Kent Road area route corridor and area under consideration for proposed shaft site

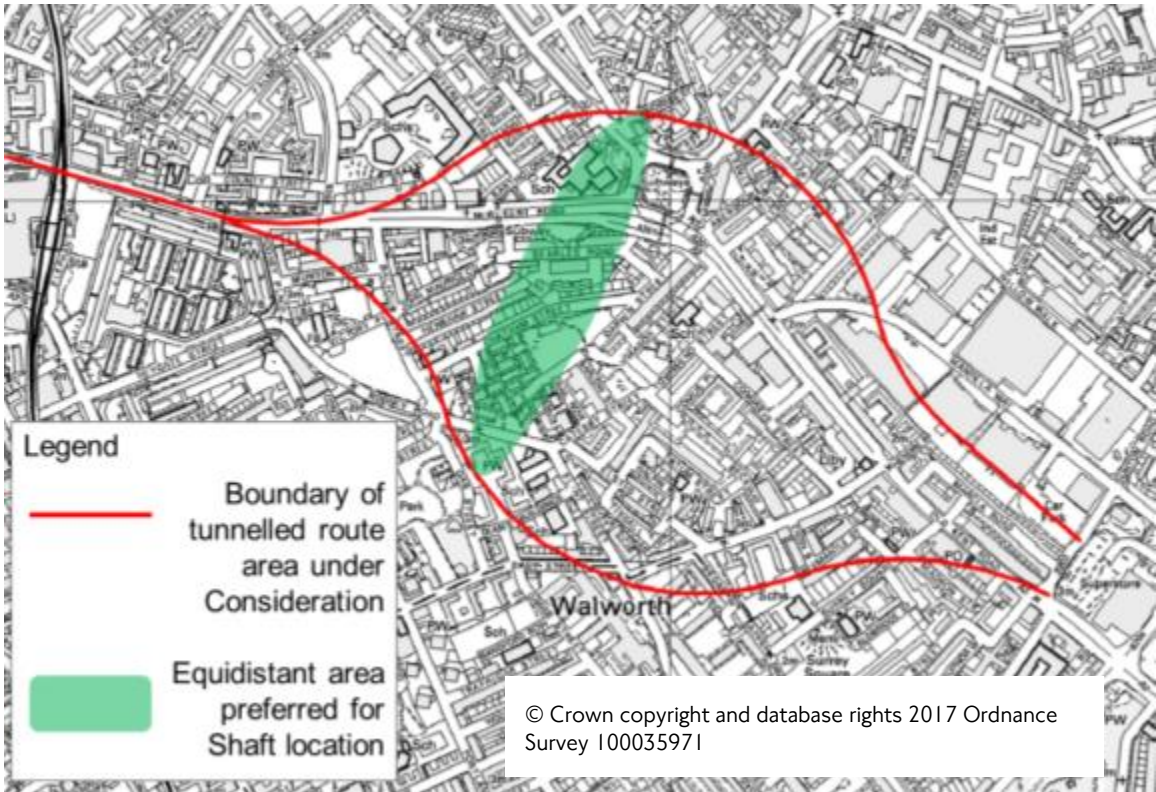
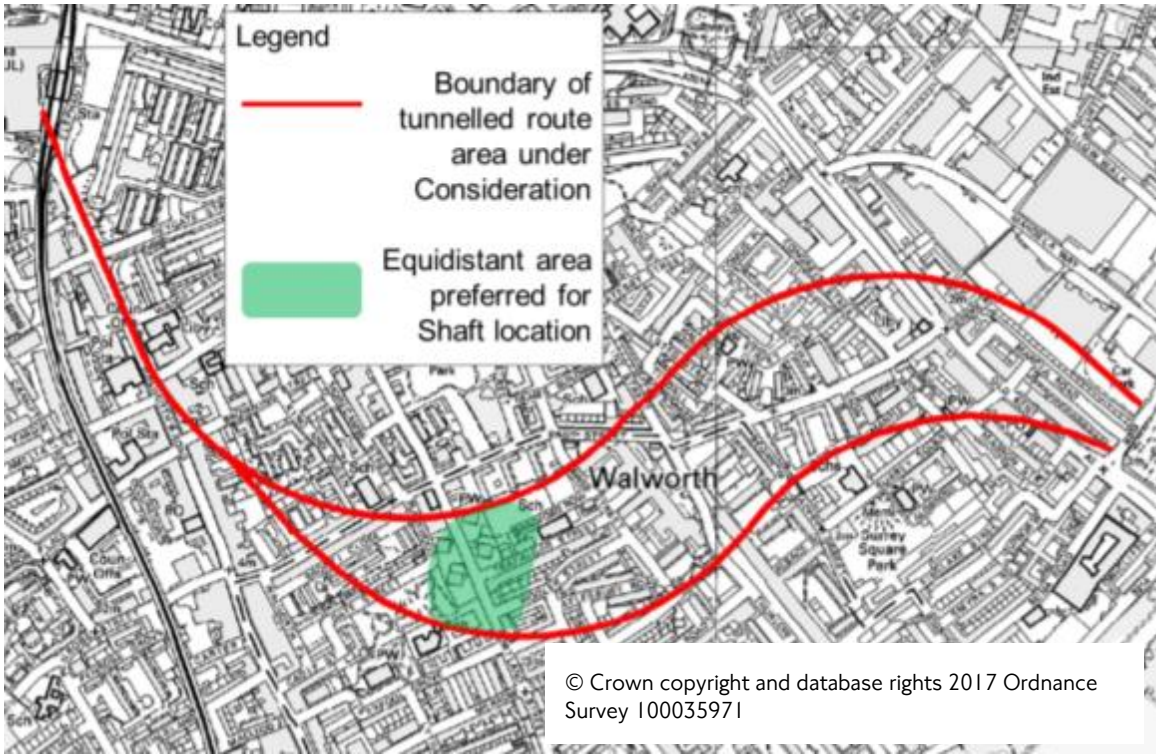


Figure 25 - Walworth area route corridor and area under consideration for proposed shaft site



9.2.7. Within the areas, we identified a number of sites and appraised them against some key criteria, specifically:

- Is the site size above the minimum of 1,500 sq.m and, if so, up to a desirable size of 3,000 sq.m?
- What existing vehicular access arrangements are given to construction vehicles and emergency service vehicles which will need to reach the site?
- What is the existing land use and does it have any prevailing planning policy designations?
- How close is the site to the equidistant area between Elephant and Castle and the proposed Old Kent Road 1 station.

9.2.8. An initial exercise identified a long list of sites. Some locations were quickly disregarded following a preliminary review, reducing the number of initial sites in the New Kent Road corridor from 15 to 9. The areas disregarded at the preliminary review had more suitable alternative sites close by or were disregarded because they were too small and / or too far from the equidistant point that a shaft site is best located in. For the area via Walworth a total of six initial sites were narrowed down to 5 on the same basis.

9.2.9. The remaining sites, shown in Figure 26 and Figure 27 were assessed in more detail against the key criteria listed above, with conclusions identifying a shortlist of sites for consideration in more detail based on both the temporary requirements and impacts of construction also the permanent requirements and impacts of shaft and head-house operations.

Figure 26 - Site options considered for proposed shaft in the New Kent Road route corridor option area

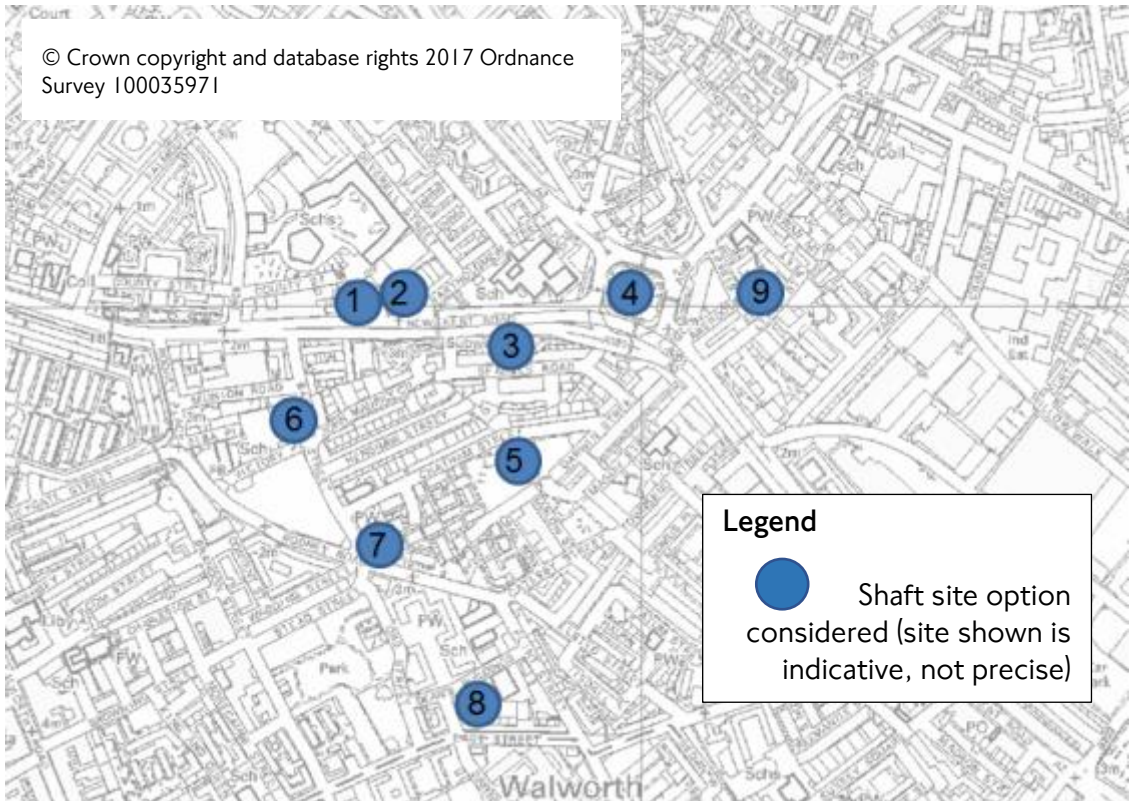
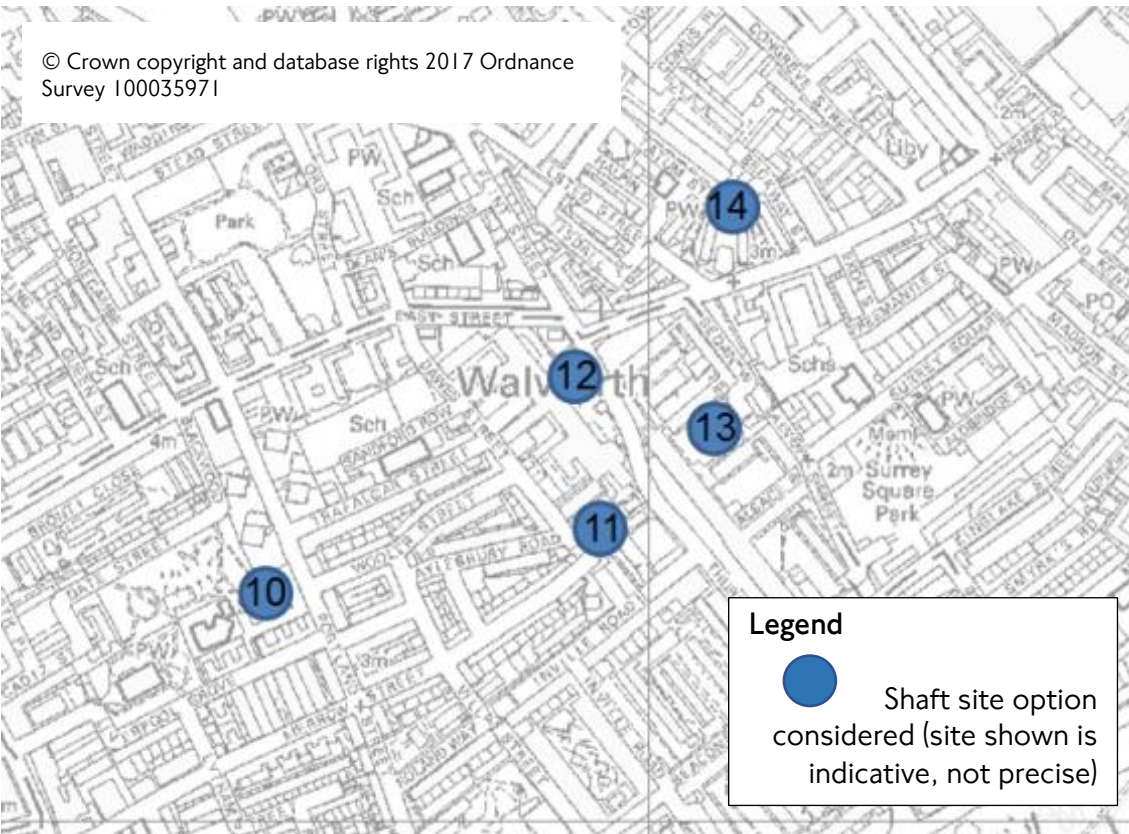


Figure 27 - Site options considered for proposed shaft in the Walworth route corridor option area



9.3. Reasons for selection of the proposed shaft sites at Bricklayers Arms and Faraday Gardens (Options 4 and 10)

9.3.1. This section sets out the reasons for selecting the proposed shaft and worksite options between Elephant and Castle and Old Kent Road I stations. The reasons for those alternative site options not considered further are described in section 9.4.

Bricklayers Arms junction island shaft site (Option 4)

9.3.2. The preferred shaft site along the New Kent Road corridor is the Bricklayers Arms road junction island. The island has a number of key strengths relative to other options owing to its size and location.

9.3.3. The Bricklayers Arms junction island is circa 5,800 sq.m in area. This is significantly higher than desirable size of 3,000 sq.m (and therefore the tolerable minimum of 1,500 sq.m). The site size affords significant flexibility which is important for ensuring that the shaft site itself can be situated away from where utilities under the highway exist.

9.3.4. The location on a major road junction on a key radial route means that access to the site would be very good and suitable for the construction vehicles, operational and emergency services vehicles that would need to reach the site. Construction vehicles could be kept away from local roads helping to reduce the impact of BLE works on the local area.

9.3.5. The site location, surrounded by busy main roads also means that the shaft, its head-house and construction activity could be set back from any surrounding occupied land uses. This would help to minimise the impact of noise and vibration during construction. Once the construction works are complete the operation of the site would be likely to be indiscernible from the existing busy activity on the highways surrounding it.

9.3.6. Although not the closest site option relative to the equidistant point between stations, the sites proximity to the area is sufficiently close to this point to support effective operations.

9.3.7. The land is owned by TfL, which also significantly reduces the costs and risks of acquiring and undertaking the works on the land. The land itself has some landscaping and vegetation, with benches available for pedestrians to spend time on the junction island, however there is no public open space designation in local planning policy. The works on the site may be able to retain the pedestrian crossing routes via the junction island and following completion of the shaft and head-house, there will be

scope to replace the island site with land uses that continue to provide benefit to the local area.

Faraday Gardens shaft site (Option 10)

- 9.3.8. The preferred shaft site along the Walworth corridor is the hard paved recreation facility in Faraday Gardens just off Portland Street. The island has a number of key strengths relative to other options in the Walworth area owing to its size and the potential to lessen the impact of works and operations on the local area.
- 9.3.9. The site is estimated to be circa 2,100 sq.m – significantly above the tolerable minimum but below the desirable size of 3,000 sq.m. Due to the proximity to Portland Street for vehicle access into and out of the site, and its regular square shape, we estimate that the site should be able to function relatively efficiently and therefore the size is not currently considered to be a major constraint.
- 9.3.10. Portland Street provides relatively direct links to the main road network in the area, and is sufficiently wide for HGVs to operate on. Access for construction and operations on the site would therefore be relatively good compared to the other options considered along this part of the route. It is recognised that one or two car parking bays may need to be relocated however doing so is not anticipated to be a significant constraint or impact.
- 9.3.11. The part of Faraday Gardens selected is hard-paved and hence whilst included in the area designated by the local council as public park has less natural vegetation covering it than the wider park and could therefore have less impact on the local environment in the park compared to utilising the wider park area.
- 9.3.12. The loss of the hard paved sports court would lead to the loss of a local amenity on a temporary basis during construction works. We anticipate that there would be potential to reinstate facilities on the site following completion of construction works as well as potential local alternative provision during construction and could investigate these as plans develop.
- 9.3.13. The site sits within a conservation area and there are residential properties to the south and a Primary school to the west of the site. As our proposal for the consultation demonstrates, we anticipate that there is scope to locate the shaft and head-house towards the north east corner of the site away from these existing buildings, and where there would remain a set back between the residential buildings to the north and the natural buffer of Portland Street for residences to the east.
- 9.3.14. As we further develop our proposals we will work closely with the local authority to develop a design for the shaft head-house that would minimise the impact on the

local townscape as far as practicable by being considerate to the existing areas character and design and the sites setting in Faraday Gardens.

9.4. Reasons for not progressing alternative identified shaft sites between Elephant and Castle and Old Kent Road stations

- 9.4.1. The outcomes of the assessment for those sites we are not progressing further for the route corridor along the New Kent Road area are shown in Table 5. The outcomes of the assessment for those sites we are not progressing further for the route corridor in the Walworth area shown in Table 6.

Table 5 - Reasons for not progressing alternative identified shafts sites in the New Kent Road area

Option	Description	Reasons that site is not currently under further assessment
1	Esso Petrol Station	<ul style="list-style-type: none"> • The site is relatively far from the equidistant point between stations, making the site less preferable for operations. • The site is close to residences on the western side of the site which would likely have a greater adverse impact to residents. • The site is below the desirable size of 3,000 sq.m but above the tolerable minimum. Due to the site size, reinstatement of the current petrol station, which provides amenity to local and strategic traffic into and out of central London could not be achieved.
2	Theobold Street business buildings	<ul style="list-style-type: none"> • The site is smaller than other nearby options such as option A .This site is only marginally above the minimum tolerable site size of 1,500 sq.m, and this is likely to reduce flexibility over the site arrangement and shaft placement to minimise impacts on the local area. • The site is adjacent to listed residential terrace just to the east of the site, increasing the risk of noise and vibration during construction and operations on local heritage and the occupants. • The site is not as close to the equidistant point between stations as some other sites, including the current preferred option.
3	Paragon Gardens	<ul style="list-style-type: none"> • The site is a recognised Public Park managed by the local council. The use of the site for a number for years for construction would cause a significant loss of amenity in the local area owing to the proportion of the park required for works (the Park is circa 4,300 sq.m) of which over two thirds may be required for BLE shaft works). • The Park also provides an important buffer between residential areas along the south of the site and the busy New Kent Road. Therefore the loss of the site to construction works may increase noise from both the construction and local highway for those residential areas. • To enable operations, the shaft and head-house could have a significant impact on the townscape and amenity value of the park, as amendments to the park may also be required to facilitate a

		<p>stopping bay off New Kent Road for construction and emergency vehicle access as well as the land required for the head-house itself.</p> <ul style="list-style-type: none"> • We note that although this site meets the key criteria of being close to the equidistant point, this is outweighed by the impacts on the community.
5	Salisbury Row Park	<ul style="list-style-type: none"> • The access to the Park is poor. The park sits within a residential area with narrow roads that already have on-street parking. Access for construction vehicles could be constrained and lead to greater impact on the wider area during works. • The local road network is less well suited to access by LU operational vehicles and, most importantly, emergency services. The risk of frustrated access during an emergency may be higher given the lower road capacity, making the site less suitable in operational terms. • As with site option 3, the temporary and permanent impact on amenity is recognised from construction and the permanent structure of the head-house, although relative to other options in park land this may be reduced due to the scale of the park in question and the increased flexibility that may exist for the siting of the shaft and head-house. • We note that although this site meets the key criteria of being close to the equidistant point, this is outweighed by the access disadvantages.
6	Balfour Street Play Area	<ul style="list-style-type: none"> • Access to the site is poor, with narrow residential roads and a one way system around part of the site. Whilst emergency service vehicles are less constrained by these arrangements, they pose constraints for construction works. • The play area is recognised as offering significant amenity value to the local community. Given the existing hard sports court across much of the rest of the park, there is the risk of less potential to provide alternative play areas in the park during construction. • The site is adjacent to the Grade II listed Elephant House to the west of the site, increasing the risk of noise and vibration during construction and operations on local heritage and the occupants. • This site is not as close to the equidistant point in comparison to other options.

7	Chatham Street Car Park	<ul style="list-style-type: none"> • The site is adjacent to a residential area on the east side and across from a Grade II listed Church that sits on the north side of Chatham Street. These land uses may be more sensitive to the construction works on the site and therefore the impacts from noise and vibration may be higher compared to some alternative sites. • The site is currently occupied by resident car parking. The undertaking of works and the presence of a shaft and head-house in operation would reduce the capacity of the car park. In construction the whole site would be likely to be required. This could impact the wider area as on-street car parking could need to increase but there is not clear additional capacity based on site observations of the local roads. • The site is further from the equidistant point between the stations that is preferable for shaft operations, compared to other options including the current preferred option on this corridor.
8	Dawes Street market compound	<ul style="list-style-type: none"> • The site provides an important local business function, acting as the compound for market trader's equipment for East Street Market. Using the site for construction would require displacement of this compound, with the risk that alternative sites would impact on the efficient operation of the market which provides an important community function. • The access to the site is very poor, with narrow local roads to the site. The site is also relatively far from the equidistant point between stations that is preferable for shaft operations. • The site is sat to the west of a nearby Primary school which would be likely to generate significant stakeholder concerns and possible opposition due to safety risks during construction from construction vehicles and noise and vibration impacts from the shaft site construction on school activities. The school is also a listed building.
9	Leroy Street Garages	<ul style="list-style-type: none"> • The site is smaller than other nearby options such as the current preferred site, and is close to the minimum tolerable site size of 1,500 sq.m, which would likely reduce flexibility over the site arrangement and shaft placement to minimise impacts on the local area. • Access to the site is poor, with narrow local roads that are less suitable for construction traffic. This constraint may also be worsened if the displacement of the garages leads to increased on-

		<p>street car parking.</p> <ul style="list-style-type: none">• The site is also relatively far from the equidistant point between stations that is preferable for shaft operations.
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Table 6 - Reasons for not progressing alternative identified shafts sites in the Walworth area

Option	Description	Reasons that site is not currently under further assessment
11	Site adjacent to Aylesbury Health Centre	<ul style="list-style-type: none"> • The site is smaller than the required site size, at 1,000 sq.m. However the site lies in an area that is due to be redeveloped as part of the Aylesbury Estate redevelopment programme and may increase in size to 1,500 sq.m or more. At this time there is no certainty as to when the redevelopment at around the site will take place due to the planning powers not having yet been secured. As a result there is no certainty this site will meet BLE requirement by the time works would need to begin. • This site is situated outside the equidistant area that is most suitable for shaft operations.
12	Thurlow Street	<ul style="list-style-type: none"> • The site is currently marginally over the tolerable minimum site size, at circa 1,600 sq.m and therefore likely to reduce flexibility over the site arrangement and shaft placement to minimise impacts on the local area. • The site is relatively far from the equidistant point between stations that is most suitable for a shaft for operations. • Similar to option 11, the site falls under future proposals for the Aylesbury Estate redevelopment, however there is no certainty on those timescales. The notion, therefore, of integration of a shaft into those redevelopment plans at time when the BLE works need to occur cannot currently be determined.
13	Wendover Estate	<ul style="list-style-type: none"> • The site is circa 1,800 sq.m, so over the tolerable minimum size of 1,500 sq.m, but a site of this size would be likely to reduce flexibility over the site arrangement and shaft placement to minimise impacts on the local area. • The site sits within a built up residential estate and would be overlooked on all boundaries by multi-storey blocks of flats. The undertaking of construction works in this location and the subsequent head-house on site could have significant impact on the noise, vibration, townscape and the amenity that is currently enjoyed from the estate courtyard open space. • Access to the site is relatively poor, with routes between the apartment blocks relatively narrow,

		<p>and is outside the equidistant area.</p> <ul style="list-style-type: none"> • As with site options 11 and 12, the site falls under the future proposals for the Aylesbury Estate redevelopment. There is therefore no certainty on those timescales and so the notion of integration of a shaft into those redevelopment plans at time when the BLE works need to occur cannot currently be determined.
14	Tatum Street	<ul style="list-style-type: none"> • The access to the site is poor with single lane local roads running through the existing estate area that would not be suitable for construction traffic. • The site would also require blocking off a local road, which would add to severance within the local area and occupation of open space frontage around blocks of flats which would lead to a loss of amenity and works close to residences which would increase the risks of disruption and impacts on quality of life due to construction activity. • The site is relatively small, at circa 1,700 sq.m, over the tolerable minimum size of 1,500 sq.m, but likely to reduce flexibility over the site arrangement and shaft placement to minimise impacts on the local area. • The site is very far from the equidistant point between stations and therefore significantly less preferable for operations.

10. Our assessment of sites for the shaft between New Cross Gate and Lewisham stations

10.1. Requirement for a shaft between New Cross Gate and Lewisham stations

10.1.1. A shaft is required between New Cross Gate and Lewisham as the distance between the sites is over the threshold distance. Section 9.1 provides details on the reasoning for a shafts being required on the extension route.

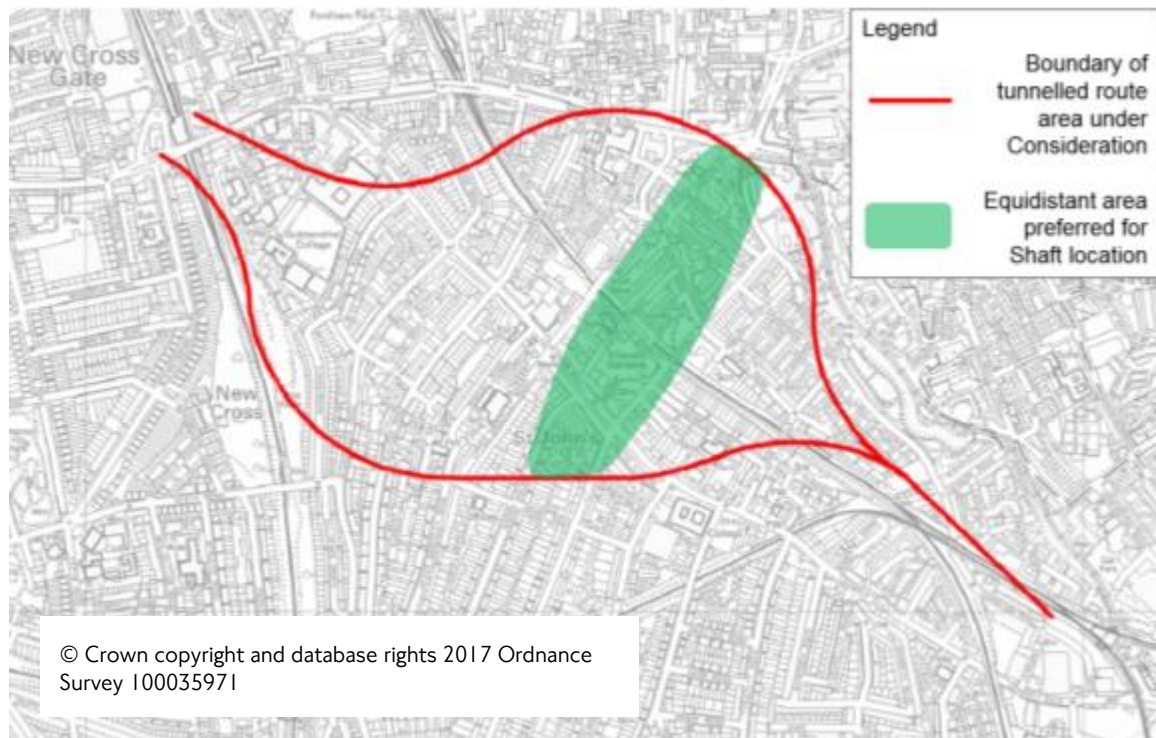
10.2. Determining location options for the proposed shaft between New Cross Gate and Lewisham stations

10.2.1. As with other shaft locations on the route, although we have not yet determined the location of the BLE running tunnels, we have identified preferred locations for the stations that the shaft lies between. We have therefore identified an area within which tunnels could be constructed and therefore where shaft sites can be considered. The corridor shown in Figure 28 shows the limit of a potential underground line alignment between Lewisham and New Cross Gate stations that we can consider a shaft in. The area identified would meet London Underground standards on track curvature whilst also providing a direct route between the proposed stations to help keep passenger journey times as low as possible.

10.2.2. The area shown in Figure 28 represents an area broadly equidistant between the two stations and therefore the location from which the longest possible route to a point in the running tunnels from either the shaft site or one of the stations is minimised. This area is therefore preferable in the context of the potential access and egress time for emergency services, passengers and staff.

10.2.3. On this part of the BLE, the potential area identified for a shaft includes a large number of conservation areas (Brockley, St John's, and Brookmill Road), as well as sites with existing environmental and heritage planning policy designations. Additionally, tall buildings have an impact on an alignment on the northern boundary of the identified area. An alignment that runs beneath tall buildings can become subject to conflict with the piling of the buildings, thus creating an increased impact to construction and associated cost implications.

Figure 28 - New Cross Gate to Lewisham route corridor and area under consideration for proposed shaft site

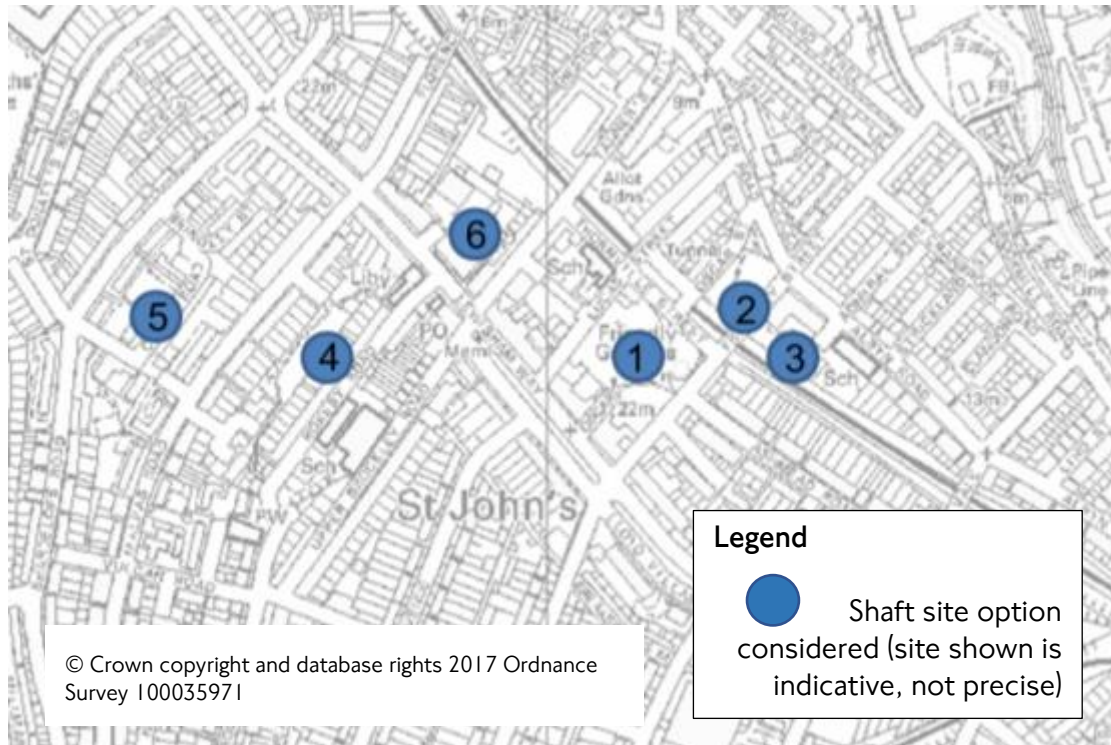


10.2.4. The key criteria used to appraise potential shaft sites in this part of the route is the same as for the route section between Elephant and Castle and Old Kent Road I stations, as described in section 9.

10.2.5. We identified an initial long list of sites - a total of eight sites, with two sites being disregarded through preliminary appraisal based on their land designations (one site is designated as Metropolitan Open Land), and the adverse impact to the community and stakeholders (one site is a Community Centre and local charity).

10.2.6. The remaining six sites shown in Figure 29 were then considered in further detail including against the key criteria and the temporary and permanent impacts and requirements of construction and operations of the shafts and their head-houses.

Figure 29 – Site options considered for proposed shaft in the New Cross Gate to Lewisham route corridor area



10.3. Reasons for selection of the current preferred shaft site at the industrial estate on Lewisham Way (Option 6)

- 10.3.1. This section sets out the reasons for selecting the proposed shaft and worksite option between New Cross Gate and Lewisham stations. The reasons for those alternative site options not considered further are described in section 10.4.
- 10.3.2. The Lewisham Way site has been selected as the preferred location for a shaft as it could avoid residential property and local parks that provide important local amenity value. It is also of sufficient size to enable efficient construction and operations. These features would help to reduce the wider impacts of constructing and operating a shaft on this site.
- 10.3.3. The site has no environmental or heritage planning policy designations, sitting outside of all nearby conservation areas. Nonetheless we recognise that the site's proximity to these local conservation areas and also that it sits adjacent to the listed Lewisham Art House building across Lewisham Way, would mean that considerate construction and design of the head-house structure would need to be undertaken. We would work with the local planning authority to ensure that the design is sympathetic to the site's setting.

- 10.3.4. We also recognise that the site itself is a designated Local Employment Location and that the use of the site could have an impact on employment due to the displacement of the existing commercial occupiers. We will work with the affected businesses and local planning authority where necessary to mitigate the impact of works on the site on these occupiers. There would also be the potential for the shaft to be sited such that employment land uses could be reinstated on the site post construction, in compliance with the local policies held at that time.
- 10.3.5. The shaft site meets the desired size of 3,000 sq.m, which increases the flexibility for how the construction site could be set up and where the shaft and head-house itself could be sited. This should enable us to keep impacts of construction and operations to a lower level.
- 10.3.6. The site sits just off Lewisham Way via a short slip road. The short slip road named Alexandra Cottages has only one additional property along it aside from those that the construction site would need to demolish for the construction works- A storage company, and three retail sheds. This would help to minimise the impact of the construction traffic on the local road network, whilst the proximity to Lewisham Way - a main road that is suitable for HGVs, means that the site would be well located for keeping construction vehicles to the main road network for movements in London.
- 10.3.7. Along with the good vehicle access, which would also help aid fast access by emergency services during operations, the shaft site also sits close to the equidistant point between the stations. This would make the site suitable for minimising the distance to access the farthest locations in the underground tunnels from the shaft and stations. The potential alignment that could be achieved via the shaft site between the stations is also relatively direct which could also reduce track curvature and whole life asset costs, whilst also helping to keep passenger journeys on the BLE as low as possible.

10.4. Reasons for not progressing alternative identified shaft sites between New Cross Gate and Lewisham stations

10.4.1. The assessment outcomes for the sites that were not carried forward for further consideration between New Cross Gate and Lewisham are shown in Table 7.

Table 7 - Reasons for not progressing alternative identified shaft sites between New Cross Gate and Lewisham

Option	Description	Outcome of assessment
1	Friendly Gardens	<ul style="list-style-type: none"> • The site is designated borough public open space within a quiet residential area which provides amenity to the surrounding community. A significant portion of this would be lost temporarily and some part of the open space permanently for the head-house. • The site is surrounded by residential property which could increase the impact of noise and vibration arising during the construction process. • The site access is poor for HGV access, as the roads are narrow and have traffic calming measures constraining access for construction and operations.
2	Green space to north of Friendly Gardens	<ul style="list-style-type: none"> • Similar to Friendly Gardens, this site is public open space within a quiet residential area which provides amenity to local residents. • This site is smaller than other options considered, which would increase the impact of its use as the entire site would likely be required for construction and a larger proportion lost permanently for the operation of the head-house. • There are traffic calming measures in place on the adjoining roads and a weak bridge that links this site to the main road (Lewisham Way) which would constrain routings for HGVs. This could result in traffic routing along more local roads in residential areas to reach the site which could increase the impacts from construction.
3	Commodore Court	<ul style="list-style-type: none"> • Road access to the site is shared with the local school which uses it for pupil drop-off and servicing which would have to be reinstated elsewhere although no clear alternative exists. • The works would be in an area with a high volume of pedestrian traffic associated with the school which would be likely to create concern in the local area and may require addition mitigations as part of the BLE works to reduce any risks. • The outlined site would occupy green space that is attached to a retirement/sheltered housing building which would inevitably be a valued aspect of the buildings grounds by residents. Loss of

		this space could have a significant impact on the residents' quality of life.
4	Luxmore Gardens	<ul style="list-style-type: none"> • The site is designated borough open space, and is green park land within a quiet residential area which would likely be deemed to have a high amenity value to surrounding community. • There are several large trees on the site which would likely require an application for removal via the local council if preservation orders are in place as well as being difficult to extract from the site due to restricted access and road links that are narrow. • The site is narrow which creates logistical issues for construction and vehicle access. • Permanent loss of land use as the site is not large enough for a portion to return to its prior use.
5	Park and green within Residential block off St Donatts Road	<ul style="list-style-type: none"> • The site is public open space with a children's play area within a quiet residential block surrounded by residential buildings. Works that remove this open space would both impact the amenity residents gain from the space, and also the proximity of works could significantly impact quality of life due to noise and vibration impacts. • The site includes residential vehicle parking which would require displacement on to the local highways which may already be constrained. • Property access is via the construction site, which could lead to complex and constrained construction works in order to maintain access to residential properties. • The site is far from the equidistant point between stations which would require a longer alignment route increasing journey times and construction costs.

11. Our assessment of sites for the shaft at the end of the proposed extension

11.1. Requirement for the line-end overruns shaft

11.1.1. The BLE would require the Bakerloo line train fleet to increase in order to maintain planned future train service levels on line and on to the extension. Our current estimate is that nine new trains would be required to operate the planned future service levels of up to 27 trains per hour on the Bakerloo line in the peak periods.

11.1.2. To operate train services on the BLE, we would require stabling of these new trains. This train stabling, where trains are parked when not in use, would be required on the extension so that at the start and end of passenger services from Lewisham, trains on the extension would have a short distance to travel to the stabling, saving on train mileage and staff time which helps to minimise the whole life cost of operating the extension. The stabling of trains towards the line end would also enable a prompt start to passenger services and impact less on the time available for overnight engineering works.

11.1.3. Our current proposal is to stable trains underground in the tunnels on the extension. As these stabling spaces could not be on the section of the extension where passenger services would operate (since a parked train would block the line) we would propose to continue the extension in a south-easterly direction beyond Lewisham station to a length that would fit all the trains we would need to park in the stabling.

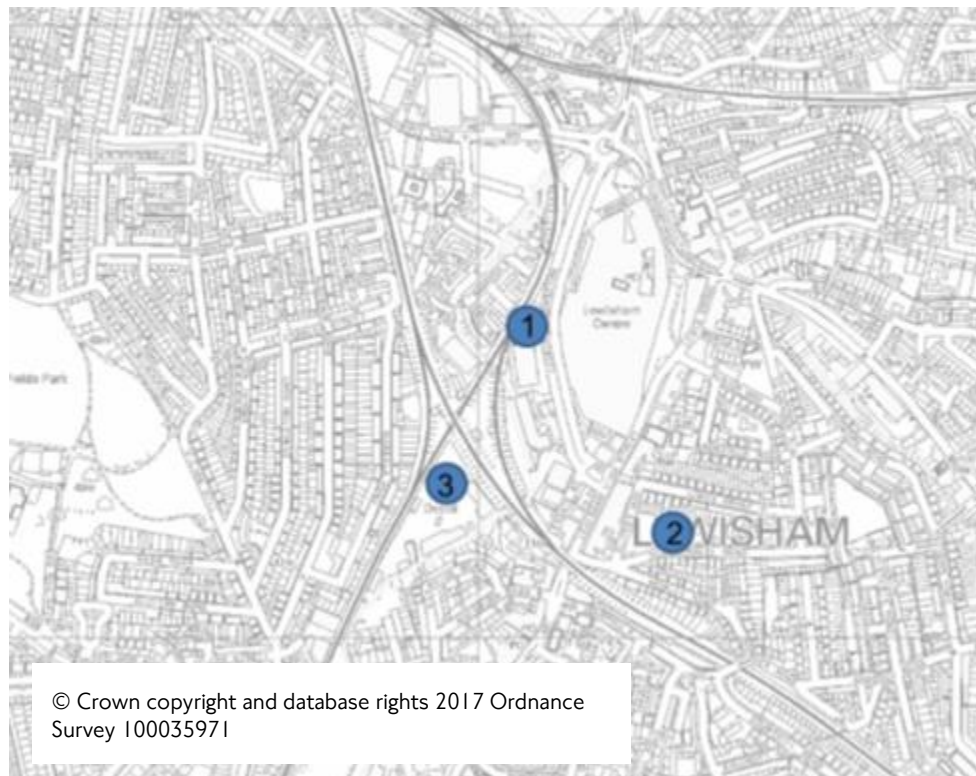
11.1.4. The proposed tunnels beyond Lewisham station terminus are known as overrun tunnels. Overrun tunnels would be required beyond where the station platforms end, regardless of the need to accommodate train stabling, because they would enable trains to enter the platforms at higher speeds. The higher speeds would mean trains could arrive and leave the station quicker, helping to increase the operable frequency of trains on the extension. Our proposal therefore entails the lengthening of these overrun tunnels so that they could also accommodate the required stabling for the additional nine trains required.

11.1.5. A potential extension beyond Lewisham in the future has not been ruled out. The overrun tunnels could therefore become a future section of the line for passenger services were the line to be further extended and would also help enable construction on a potential onward extension with fewer closures to the existing line to Lewisham. In considering the site for a line end shaft, we have considered the impact of the shaft on the alignment of the overrun tunnels and the potential onward extension routes that would not preclude.

11.2. Determining location options for the proposed line-end overrun shaft in Lewisham

- 11.2.1. The scope of the area to the south east of Lewisham terminus station was established based on the required length of the overrun tunnels we would require to stable the fleet of trains for the BLE. In total, eight trains would need to be stabled between the close and start of passenger services in the tunnel, with one train stabled in the platform at the station.
- 11.2.2. We are proposing two overrun tunnels, a continuation of each of the tunnels running through Lewisham station. Each overrun tunnel would therefore need to stable four trains. A junction between the tunnels would also be required in order that we could move trains between the southbound and northbound overrun tunnels. Based on these requirements for stabling and a junction, each overrun tunnel would be circa 700 metres long.
- 11.2.3. The areas we can consider to the south east of Lewisham are constrained by the presence of a large number of existing and planned sites of tall buildings. Tall buildings have deeper foundations which can reach down towards the level underground that we would plan to construct the overrun tunnels. We would seek to avoid these deep foundations as there would be risks and potential impacts and mitigations required for undertaking works close to or through deep foundations that would add to the complexity, time and cost of constructing the extension.
- 11.2.4. In Lewisham town centre, the most significant constraints are a planned development adjacent to the end of the proposed Lewisham station platforms; a completed development along the southern side of Loampit Vale; and the Lewisham Shopping Centre (and its multi-storey car park). There are some additional buildings along the west side of Molesworth Street that would also pose constraints. Reflecting these constraints and the required length of the overrun tunnels, the areas we have considered are shown in Figure 30.

Figure 30 - Site options considered for proposed shaft at the end of the line in the Lewisham area



11.3. Reasons for selection of the current proposed line-end overruns shaft site at the Lewisham Council fleet depot (Option 3)

- 11.3.1. This section sets out the reasons for selecting the proposed shaft and worksite option at the end of the line for the overrun tunnels. The reasons for those alternative site options not considered further are described in section 11.4.
- 11.3.2. We have selected the shaft site at the Lewisham Council fleet depot, which lies off Wearside Road, because it has a number of strengths relative to the two alternative options.
- 11.3.3. The existing Council fleet depot is large relative to the other sites at circa 20,000 sq.m. This should enable some flexibility over the site size and layout to enable the shaft construction to take place within a site that meets the desirable size of 3,000 sq.m. Whilst the layout and scale would not be fixed until the shaft has been designed in more detail, the overall site size means that if our requirements were to change, these changes would continue to be limited in their impact to the Council and their operations on the site. This reduces the risk of the site being highly constrained or the impacts becoming more widespread on a wider number of stakeholders as our requirements develop.
- 11.3.4. The fleet depot has established vehicle movements to and from the site, which includes HGVs (Refuse vehicles). The traffic associated with BLE shaft construction works and operational activity, whilst additional to the existing activity on the site, would not represent a significant change from the current activity in the area.
- 11.3.5. The site is located in a suitable location for a potential onwards extension which we have not ruled out extension options towards the south or potential eastwards.
- 11.3.6. The existing land use on the site and surrounding it would be relatively less sensitive to construction works in comparison to the other sites considered. This would be particularly achieved if the shaft site were located in the north west corner of the fleet depot, bordering the National Rail lines from Hither Green and Hayes. The site could mean construction works and operations take place a good distance from built up areas, thereby reducing the impacts of noise and vibration. The works close to the National Rail may require approvals from Network Rail. However, in principle the works would not represent construction or operations that do not already occur in many places around the National Railway and this is not therefore considered to be a constraint.
- 11.3.7. The site also has an advantage in terms of safety and security. The site, sat within the fleet depot, is already a managed entry and exit site operated by Council (or

contracted Council) staff. This potentially provides an added layer of security for the shaft and head-house and the equipment they contain relative to having the structures in more public areas such as car parks.

- 11.3.8. A further reason that the site would be more suitable than the two alternative car park sites is that at the alternatives, the occupation of the head-house at surface would displace the car parking on that site. This would therefore lead to either a reduction in car parking for the town centre or a need to increase on-street car parking provision. These potential requirements could increase the impacts of the alternative shaft sites and their delivery relative to the fleet depot site. The fleet depot site size would increase the potential for avoiding displacement of part of the existing fleet and we could work with the Council to explore the potential to enable greater utilisation of the site to retain the depots capacity alongside a shaft site.

11.4. Reasons for not progressing alternative identified shaft sites for the line-end overruns shaft in Lewisham

- 11.4.1. Two sites were determined to be less suitable for the line end shaft compared to the preferred option – the reasons are shown in Table 8. The reasons relate primarily to their location and the potential impacts on the local area as well as the impact on the line alignment and site size.

Table 8 - Reasons for not progressing alternative identified shafts sites at the end of line in Lewisham

Option	Description	Reasons that site is not currently under further assessment
1	A shaft at Molesworth Street Car Park	<ul style="list-style-type: none"> • The site is the smallest of the three sites considered, and is above the tolerable minimum but substantially below the desirable size of 3,000 sq.m. • The constraints along the alignment corridor for the overrun tunnels via this shaft site would mean that the shaft itself would need to be offset from the existing running tunnels. This would make the shaft more complex to construct, as works to connect to the tunnels would take place under the National Rail lines. It may also make the required shaft and head-house structure larger, which would be challenging given the limited site size. • The site is closer to Lewisham station than other locations. This means that, were the line extended to a new destination beyond Lewisham via a tunnel, a greater distance between this shaft and the next station on the line would exist compared to other options, and so the likelihood of needing additional shafts on a potential future extension beyond Lewisham would be higher and therefore potentially costlier.
2	A shaft at Slaithwaite Road Car Park	<ul style="list-style-type: none"> • The site is surrounded by a residential area, with housing bordering the site on Slaithwaite Road and Limes Grove. The sites proximity to these areas would increase the impacts of construction and operations on site and would likely mean greater mitigations would be required which could add time and cost to construction. • The site has less suitable access than option 1 in particular (which should be able to limit construction traffic to the Transport for London Route Network (TLRN) in the local area), as construction traffic would need to join the local highway off the A21 Lewisham High Street. • The site is to the east of a potential corridor for the overrun tunnels along Molesworth Street. To reach the site, the overrun tunnels would need to swing further eastwards than other options. This makes the site less suitable for catering for potential onward extensions either southwards or eastwards as for the former direction a far more circuitous curved route would be required towards destinations to the south.

12. Progressing the proposed Bakerloo line Extension

- 12.1.1. An extension to Lewisham via Old Kent Road and New Cross Gate would improve transport capacity, accessibility and connections along the proposed route. This would help enable development in south east London to support London's growth and improve journeys for existing communities.
- 12.1.2. We have identified a number of site options for the proposed station and shafts on the Bakerloo line extension. We will use the public consultation responses to help us develop our proposals for the extension. We will analyse the feedback we receive and publish the results once the consultation has closed. We plan to analyse and respond to the key issues raised by the end of 2017, subject to the volume of responses and the particular issues that are raised.
- 12.1.3. Subject to further consultation and securing funding for the proposal, we plan to apply for planning powers to construct the extension by 2020. If our application for planning powers is successful, we aim to complete construction by 2029.
- 12.1.4. You can have your say on our proposals for the extension by visiting tfl.gov.uk/bakerloo-extension to leave a comment or provide a response to the consultation questions. The consultation will close on 21st April 2017.