



Bakerloo line extension

Option selection summary report



Date: December 2015

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1. 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.
- 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 to the Bakerloo line in south east London would provide new capacity and frequent connections from areas currently underserved by rail and enable development close to new stations. This will 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, by assessing how it can best support London's long term growth, and looking into ways that it could be funded. In 2014, we undertook a public consultation exercise on a number of extension options shown in Figure 1. 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 have conducted a comprehensive assessment of the consulted route options alongside alternatives suggested by respondents and stakeholders. The work has concluded that an extension to Lewisham via the Old Kent Road is currently the best option as a first phase, as the route would serve the Old Kent Road Opportunity Area and support significant numbers of new homes and jobs for London. This would include a major new interchange at Lewisham. It is estimated that the selected corridor could enable over 25,000 new homes by serving Opportunity Areas and regeneration areas along its length.
- 1.1.5. This first phase to Lewisham can form part of a wider package of improvements the rail network in south London that would support growth and investment in areas such as Catford and Ladywell. Similarly, we are working with Southwark Council to look into the re-opening Camberwell station on the Thameslink line to improve access into Central London and support local development.
- 1.1.6. This summary document sets out the findings from the public consultation and how we have assessed the various options against their potential to unlock new homes and improve transport provision in south east London. It also explains the work underway to improve the wider rail network in south London. Finally, it sets out the next steps in terms of our work to develop the scheme and support the planned Old Kent Road Opportunity Area, including the key milestones as we progress the project

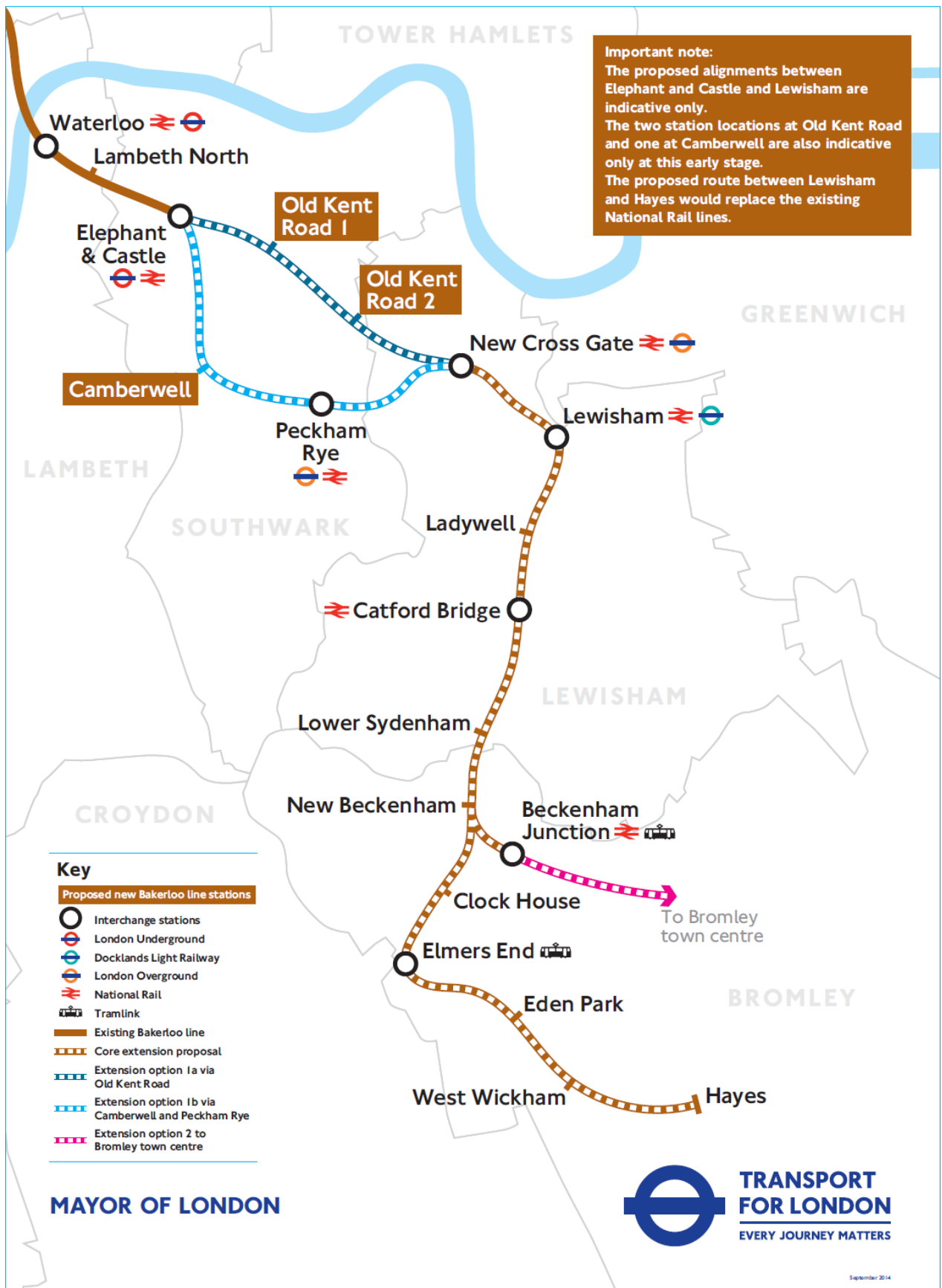
in the shorter and longer term. As we do this we will work closely with stakeholders to develop the scheme, including the London Borough of Southwark, the London Borough of Lewisham and Network Rail.

2. Introduction

- 2.1.1. The Mayor's Transport Strategy, the London Plan and the London Infrastructure Plan 2050 all support an extension of the Bakerloo line as it will enable the building of new homes and contribute to London's future growth and prosperity. In addition, many parts of south east London are currently poorly served by public transport.
- 2.1.1. We have been developing proposals for the extension to assess how it can support London's long term growth and provide the accessibility and capacity improvements required to unlock new housing close to central London. In 2014 we undertook a public consultation exercise on a number of extension options shown in Figure 1. We also sought views and measured support for the extension on the basis that an extension should enable new development in south east London and that without this new development an extension would be unlikely to happen.
- 2.1.2. More than 15,000 responses to the consultation were received with 96% supporting the principle of the extension, and 2% opposed. Eighty two per cent of respondents also supported a scheme in connection with new development.
- 2.1.3. Approximately 4,500 comments were also received regarding other options or routes for an extension, including alternatives to a Bakerloo line extension and also other routes and destinations that a Bakerloo line extension could serve.
- 2.1.4. In September 2015 we published the Response to the main issues raised¹. This report addressed the main issues raised during the consultation concerning each of the options put forward. This included setting out why alternatives to an extension put forward would not provide sufficient benefits.
- 2.1.5. With alternatives to a Bakerloo line extension having been addressed in the Response to the main issues raised report, 3,816 consultation suggestions remained concerning alternative routes and destinations for the extension to serve. These alternative extension destinations and route options, numbering over 200, have now been assessed through a three stage process. This process developed a short list of alternative options for comparison with the consulted options in order to determine the best route option to address the challenges in south east London (see section 3.1.5). We then further considered the case for each of the short-listed route options.

¹ Available at www.tfl.gov.uk/bakerloo-extension

Figure 1 - 2014 Public consultation: Proposed Bakerloo line extension routes



3. Assessing the Bakerloo line options

The extension needs to address the challenges in south east London – focussing on the lack of new housing, limited public transport accessibility and constrained capacity, each of which can limit London’s economic growth.

- 3.1.1. Whilst we are already investing billions of pounds to support London’s population and employment growth and support the national economy, further investment is required. Growth is forecast in many areas across south east London, particularly in the Opportunity Areas as designated in the London Plan - London’s reservoirs of brown-field land which are currently constrained by a lack of transport access, such as Old Kent Road and New Cross-Lewisham-Catford.
- 3.1.2. On the transport network within south east London, public transport is also crowded and many of the roads are congested. Predicted population growth will further increase the pressure on the area’s rail and road networks.
- 3.1.3. Overcoming these challenges requires significant funding for new infrastructure at a time when our core investment programme for the existing network and for new transport infrastructure such as Crossrail 2 is constrained. As has been the case for other major infrastructure projects (such as Crossrail and the Northern Line extension), any funding package will need to include contributions from new residential and commercial developments along the proposed extension. By enabling new development to support London’s long term economic growth and provide much needed new homes for Londoners, there is also a greater likelihood that an extension can be funded through receipts from the development it enables.
- 3.1.4. This means that in order for the Bakerloo line extension to be progressed, further development along the proposed route is not only an objective in order to support London’s long term economic growth, but is also required to help fund the transport improvements the region requires. It is therefore unlikely the extension can happen without this new development.
- 3.1.5. These challenges and objectives as set out in the consultation material in autumn 2014 include:
 - Supporting growth in south London Opportunity Areas (OAs);
 - Improving connectivity between sub-regional centres in south and south east London;
 - Improving connectivity to central London from south and south east London;
 - Improving access to employment and increasing transport provision for areas of deprivation; and
 - Increasing capacity on the transport network in south and south east London

3.1.6. Alongside these objectives, we have also considered how extension options can contribute towards addressing the challenges and fulfilling the goals of the Mayor's Transport Strategy. These goals and challenges are shown in Table 1.

Table 1 - Mayor's Transport Strategy (2010) Goals and Challenges

MTS Goals	MTS Challenges
Support economic development & population growth	<ul style="list-style-type: none"> • Supporting sustainable population & employment growth • Improve Transport connectivity • Delivering an efficient & effective transport system for people and goods
Enhance the quality of life for all Londoners	<ul style="list-style-type: none"> • Improve journey experience • Enhancing the built and natural environment • Improving air quality • Improving noise impacts • Improving health impacts
Improve the safety and security of all Londoners	<ul style="list-style-type: none"> • Reducing crime, fear of crime and antisocial behaviour • Improving road safety • Improving public transport safety
Improve transport opportunities for all Londoners	<ul style="list-style-type: none"> • Improving accessibility • Supporting regeneration and tackling deprivation
Reduce transport's contribution to climate change and improve its resilience	<ul style="list-style-type: none"> • Reducing CO₂ emissions • Adapting to climate change

The challenges and objectives have been central to the development of the proposals and have been considered as part of the further assessment we have undertaken of the route options.

3.1.7. We have undertaken a three stage process, in considering the large number of extension options as provided by the 2014 consultation responses and to further assess the consulted options themselves. The three stages are shown in Figure 2.

3.1.8. Stage 1 of the assessment focused on the high level benefit, engineering, and operational considerations associated with each destination. For each of the destinations that were identified, numbering over 200 (a full list is available in the Consultation Report²), a justification has been given for the inclusion or exclusion from stage 2 of the assessment. Some common reasons for destinations being excluded from further assessment in stage 2 were that destinations were either

² Consultation Report available from www.tfl.gov.uk/bakerloo-extension

outside of the south east London area considered; beyond the boundaries of the GLA area in south east London and hence considered too far for an Underground extension; were locations already well served by the existing and planned rail network; or were locations on the rail network that could not be converted to use for Underground services without having significant wider adverse impacts on rail journeys.

3.1.9. The stage 1 assessment reduced the range of destinations for further consideration to those along the extension corridors shown in Figure 3 (note that the map is indicative and not all destinations are shown).

Figure 2 - Stages of options assessment

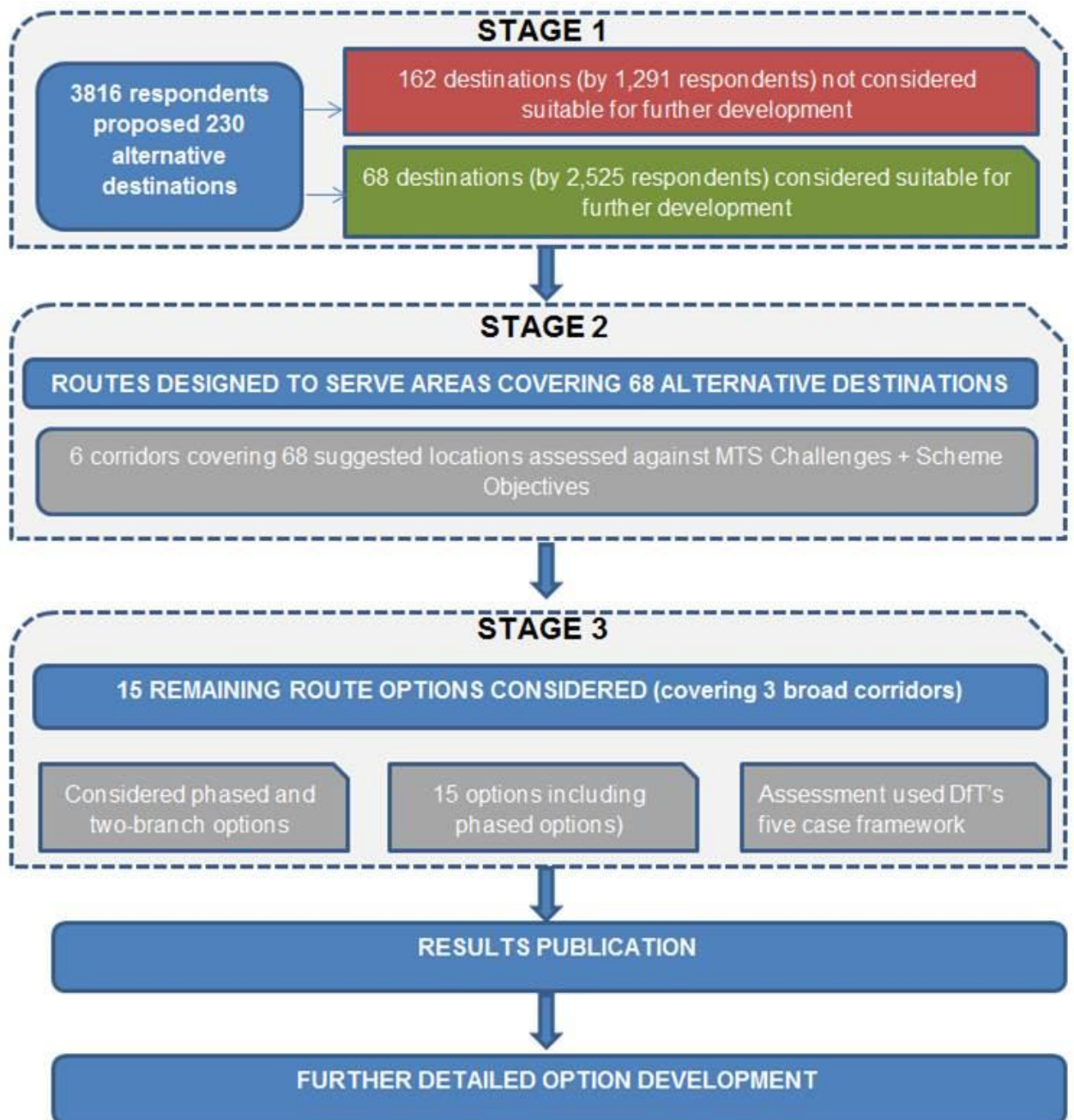
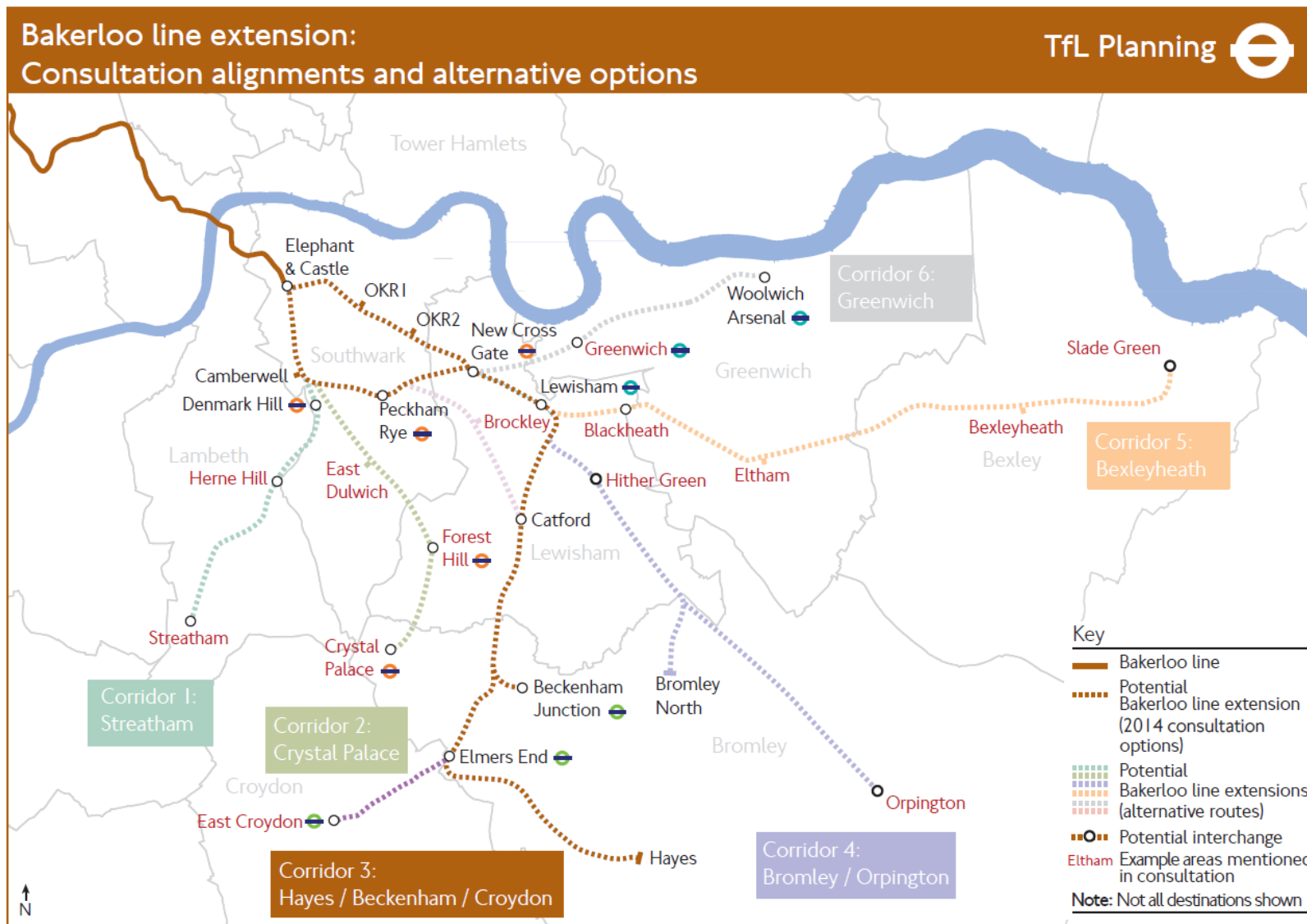


Figure 3 - Stage 2 assessment extension options



- 3.1.10. In Stage 2, options were devised to serve the alternative routes/destinations taken forward from Stage 1. In doing so, the options designed sought to serve locations that received a significant number of responses and that could lie on the alignment of the route without making it overly circuitous.
- 3.1.11. Options were assessed based on their ability to meet the challenges identified in the Mayor's Transport Strategy (MTS) as well as their performance against the scheme objectives. This ensured that the specific growth and connectivity objectives for south east London were captured along with the broader London-wide objectives of the MTS.
- 3.1.12. The stage 2 assessment resulted in a shortlist of options for stage 3 – these options for assessment in stage 3 are shown in Figure 4. Across these corridors, 15 route options were identified – the full list is provided in section 3.1.18.
- 3.1.13. The stage 2 assessment ruled out routes to destinations such as East Croydon, Crystal Palace, Orpington and Woolwich Arsenal as these have less potential to make a significant positive contribution towards the MTS and provide limited benefits in terms of supporting the growth and connectivity objectives for south east London.
- 3.1.14. These options also tend to replicate existing rail connections to central London and in many instances these existing services are also quicker. For example, East Croydon currently has services to London Victoria that take less than 25 minutes. The proposed Bakerloo line extension option could provide some improved links to areas such as Lewisham, but for many other locations, such as central London, journeys would take longer. Similarly, there are currently rail services from Orpington to Charing Cross that take less than 45 minutes, and Crossrail will provide a high capacity route from Woolwich Arsenal from 2019. These existing, or planned rail, services mean a Tube extension could not deliver as many benefits compared to other route options that currently lack rail services.
- 3.1.15. Many of these options ruled out at stage 2 would also be likely to be higher cost as they would consist of greater amounts of tunnelling.
- 3.1.16. The stage 3 assessment considered permutations of the shortlisted options. This included shorter extension options, for example an extension to Camberwell and Peckham Rye only. Split branch options were also considered, such as a two branch extension to Streatham *and* Lewisham, or a two branch extension to Lewisham with a branch via Camberwell *and* a branch via Old Kent Road. This approach addressed questions raised by respondents to the 2014 consultation – that an extension could serve multiple areas by having more than one branch and that an extension could be delivered in phases if it means the benefits could be realised sooner.

3.1.17. A two-branch extension beyond Lewisham (such as an extension to both Slade Green and Bromley) was not considered at stage 3. This is because splitting the service over two branches would mean that each of the individual branches would be operating at a lower frequency than a single line. The reduced frequency, and resulting reduced capacity, would be insufficient for a longer line. In the case than where one branch of a two-branch line replaced an existing rail service, this could also lead to an overall worse service.

3.1.18. The options assessed at stage 3 include:

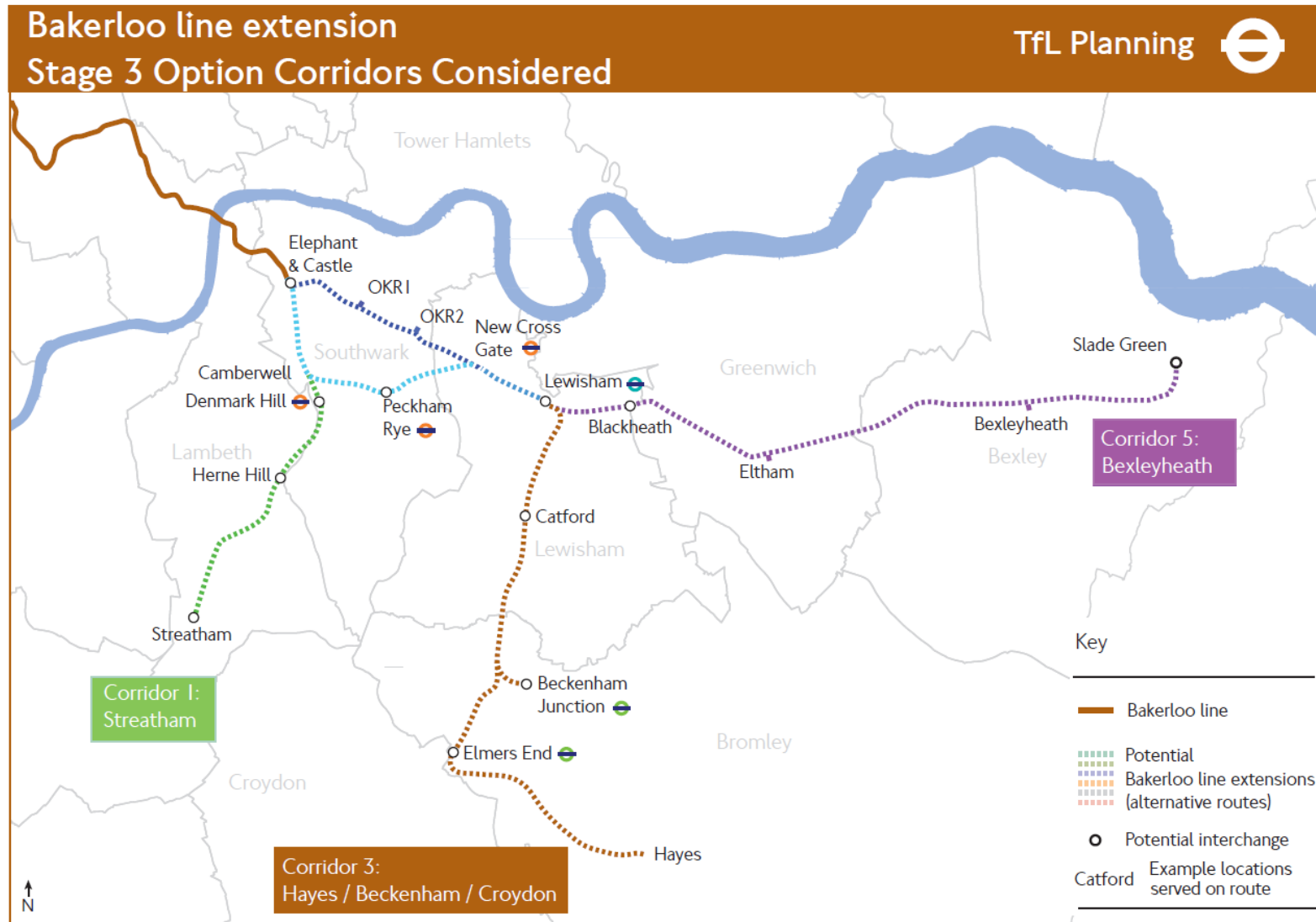
- An extension to Old Kent Road
- An extension to Peckham Rye via Camberwell
- An extension to New Cross Gate via Old Kent Road
- An extension to New Cross Gate via Peckham Rye and Camberwell
- An extension to Lewisham via Old Kent Road
- An extension to Lewisham via Camberwell and Peckham Rye
- A two branch extension to Lewisham – one branch via the Old Kent Road and one branch via Camberwell and Peckham Rye.
- A two branch extension consisting of one branch to Lewisham via Old Kent Road and with one branch to Streatham via Camberwell
- A two branch extension consisting of one branch to Lewisham via Camberwell and Peckham Rye and with one branch to Streatham via Camberwell
- An extension to Hayes and Beckenham Junction via Old Kent Road and Lewisham
- An extension to Hayes and Beckenham Junction via Camberwell and Peckham Rye
- An extension to Bromley town centre and Hayes via Old Kent Road and Lewisham
- An extension to Bromley town centre and Hayes via Camberwell and Peckham Rye
- An extension to Slade Green via Bexleyheath, via Old Kent Road and Lewisham
- An extension to Slade Green via Bexleyheath, via Camberwell and Peckham Rye

3.1.19. The stage 3 assessment appraised each option against a five-case framework, based upon the principles of the Department for Transport's (DfT) Early Appraisal Sifting

Tool (EAST). The principle of the EAST tool is to expand the assessment of an option beyond the strategic case (the scheme objectives and MTS objectives in Stage 2) to include the consideration of each options performance across four other cases.

3.1.20. The five-case framework is a best-practice approach to assessing a scheme as it provides a balanced and broad assessment of the strengths and weaknesses of options across not only the strategic case, but also the economic, financial, management and commercial cases. These cases helps to ensure that our assessment to reach a preferred option has considered practical aspects, risks and complexities in areas such as construction, consents, timescales, funding and delivery. This approach ensures that we arrive at an option that delivers against the strategic objectives whilst also being a realistic proposition to plan, fund and construct.

Figure 4 - Stage 3 assessment extension options



4. Assessment results

4.1. Route option results from Elephant and Castle

Assessment of the alternative route options suggested during the 2014 public consultation has demonstrated that the options towards Lewisham remain the most effective for addressing the challenges in south east London.

- 4.1.1. From the wide range of alternatives suggested in the public consultation, the stage 2 assessment narrowed options down to a shortlist for stage 3 of those consulted on in 2014 and two alternative corridors; a corridor to Streatham and; a corridor to Slade Green on the national rail network via Kidbrooke and Bexleyheath. The full list is provided in section 3.1.7.
- 4.1.2. With the exception of the route to Streatham, each of the route options would enable a service to Lewisham town centre to be provided. Whilst the Streatham option did present some benefits, the assessment demonstrated that these would be significantly less than would be provided by an alternative route towards Lewisham. In particular, the assessment demonstrated that there was low potential for enabling new homes and jobs for London along the Streatham route compared to the routes to Lewisham such as via Old Kent Road. The corridor also has existing rail services to a variety of destinations – a stronger existing provision relative to other route options that have been considered.
- 4.1.3. Furthermore, considering the corridor to Streatham alongside a second branch along a corridor to Lewisham showed that splitting the line's train service would reduce the capacity and frequency provided on each route. Splitting the line would therefore lower the number of potential new homes that could be unlocked towards Lewisham. Given this and the higher cost of the scheme involving two tunnelled routes, it is unlikely that the Streatham options could obtain sources of funding from development enabled by the extension that could meaningfully contribute towards the scheme cost relative to alternative options towards Lewisham.
- 4.1.4. The conclusion that an extension towards Lewisham is currently the best route for an extension leads to a comparison of the two consulted corridors (via Camberwell and via Old Kent Road) and also the different destinations along their routes as part of addressing whether options of shorter phases of extensions could address the challenges more effectively.

4.2. Route option results for phased options to Lewisham

An extension should serve Lewisham station due to the new homes that could be unlocked in growth areas along its route, and the wider transport connectivity and access improvements it would provide.

4.2.1. Our assessment work has found that although shorter options could unlock significant numbers of new homes, such as in the Old Kent Road Opportunity Area, their performance on other objectives concerning improving transport connectivity and access was relatively low. Extending to at least Lewisham town centre would also serve the northern part of the New Cross-Lewisham-Catford Opportunity Area where further homes and jobs growth could be unlocked by an extension. Therefore, extending to Lewisham delivered a relatively high level of benefit in the strategic and economic cases compared given their costs and challenges, and compared to options that would terminate prior to Lewisham.

4.3. Route option results for two branch extension options to Lewisham

4.3.1. Our assessment process, utilising the DfT five-case model approach, further considered the route options to Lewisham and compared the performance of delivering a two-branch extension along both the Camberwell and Old Kent Road corridors against single branch extensions along each route.

4.3.2. We have found that a two-branch extension has a number of key disadvantages that mean it is not proposed for further development. The extension would have a very high cost as it would require significantly more tunnelling and stations as well as the provision of an underground junction where the two branches converge.

4.3.3. A two branch extension would also split the capacity and service frequency along each route which would then reduce the number of new homes that could be unlocked. As with the two-branch extension to Streatham and Lewisham, the impact of unlocking a lower numbers of new homes along with the significantly higher cost, means the likelihood of obtaining funding for future delivery would be lower. In addition, the complexities and challenges associated with construction of each branch would require addressing, which would increase the risks and potentially add to the timescale for achieving an extension.

4.3.4. With a dual branch extension currently ruled-out, the assessment has compared the respective cases for an extension to Lewisham along with the Old Kent Road route or the Camberwell and Peckham Rye route.

4.4. *Route option results to Lewisham*

We currently recommend a route to Lewisham via Old Kent Road for further development as part of an initial phase for an extension. We have found that this option has the greatest potential to unlock new homes to support London's growth and significantly improve transport provision in south east London.

- 4.4.1. Our assessment process has demonstrated that both extension options to Lewisham; via the Old Kent Road and; via Camberwell and Peckham Rye have significant strengths. However, overall the route via Old Kent Road performs better both in terms of the core strategic rationale that any extension option has to achieve and also the wider practicalities and complexities of securing delivery of major transport infrastructure scheme. The key differences between the options are explained in sections 4.5 to 4.9.

4.5. *Transport network improvements from each route option to Lewisham*

An extension via Old Kent Road would provide a step-change in the capacity, connectivity, accessibility and speed of travel for residents.

- 4.5.1. Our assessment shows that an extension via the Old Kent Road route would provide significant new capacity in a corridor lacking reliable, high capacity and frequent public transport. Reliance on bus travel through the corridor is currently impacted by highways congestion. The Old Kent Road would go from having zero capacity on rail to capacity for approximately 65,000 passengers in each direction between Old Kent Road, New Cross Gate and Lewisham per three-hour AM peak period.
- 4.5.2. The alternative route via Camberwell and Peckham Rye has some parts with poor access to rail transport. Camberwell in particular has no direct rail connection, being reliant on frequent bus services along Camberwell Road and Camberwell New Road towards the nearby rail and Underground stations and City and West End or a walk to Denmark Hill or Loughborough Junction stations. In contrast, Peckham Rye is already relatively well connected, particularly following the Overground and Thameslink network upgrades, with some of the services duplicating the route of the extension to Elephant and Castle. London Overground, Thameslink, Southeastern and Southern already provide services towards Docklands, the City and City Fringe, Croydon, Victoria and Farringdon and King's Cross.
- 4.5.3. Bus journeys along both the Old Kent Road and Walworth Road have similar levels of journey time unreliability per kilometre travelled; however the distances are smaller from Camberwell to Elephant and Castle compared to the equivalent journey from the southern end of the Old Kent Road. The current total journey time is, therefore, on average lower between Camberwell and Elephant and Castle than from points along the Old Kent Road.

- 4.5.4. The Old Kent Road route would deliver greater journey time improvements, with services on the extension providing travel with journeys of seven minutes compared to existing bus journeys from Lewisham and New Cross to Elephant and Castle that take up to 25 minutes (compared to 15 minutes from Camberwell) and will worsen if road congestion increases. An extension via Camberwell and Peckham Rye is comparatively longer due to the more circuitous route - journeys would therefore take an estimated further two minutes on the extension for the equivalent journey between Lewisham and Elephant & Castle.
- 4.5.5. Both routes would provide a faster connection direct to the West End from Lewisham, with the route via the Old Kent Road providing the faster journey times. This will help the route attract patronage from Lewisham station as passengers interchange from city-bound services or use the Tube from the local area. It will also help to reduce crowding on services bound for the termini of Cannon Street, Charing Cross and London Bridge and also reduce the need for onward change to services such as the District and Jubilee lines for travel onwards to the West End.
- 4.5.6. Both route options can deliver connectivity benefits between town centres in south east London as they would link town centres on the routes with locations such as central London, Lewisham and New Cross, and beyond to Catford, Bexleyheath, Croydon, Bromley, and Woolwich via Lewisham national rail services. This would maximise the range of employment locations and number of jobs accessible to existing and also future residents in growth areas along the extension.

4.6. ***Potential for each option to unlock new homes and support London's growth***

The greatest growth potential exists in London's Opportunity Areas, which are currently constrained by a lack of transport accessibility. The Old Kent Road extension route is the best route option to unlock this constraint in that area.

- 4.6.1. Southwark, the GLA and TfL, as part of the development of the Old Kent Road Opportunity Area Planning Framework, have both demonstrated the feasibility of significant new growth being delivered on the Old Kent Road. The draft Planning Framework is expected to be subject to public consultation in summer 2016.

- 4.6.2. The new growth potential in the Old Kent Road Opportunity Area would be the largest opportunity on the fringe of London's Central Activities Zone (CAZ)³ since the commencement of delivery of the Vauxhall Nine Elms Battersea Opportunity Area. Furthermore, as the latter Opportunity Area has demonstrated, the demand for housing within close proximity of the CAZ is high due to the benefits it offers including short journeys by Tube in to central London. The original target of 16,000 homes has therefore been surpassed, with a new minimum target of 20,000 homes.⁴
- 4.6.3. Outside of the Old Kent Road Opportunity Area, further growth potential has been identified in the New Cross to Lewisham area, with approximately 2,000 to 3,000 additional homes are estimated to be unlocked by an extension, and gross capacity for 8,000 homes given what is already planned and likely to be built long term. These homes would be common to both extension options.
- 4.6.4. In total, an initial extension to Lewisham via Old Kent Road and New Cross Gate could unlock significant levels of new housing and provide sustainable transport for between 20,000 to 30,000 homes.
- 4.6.5. The Camberwell and Peckham Rye route option would, by comparison, serve more established town centres that have existing travel markets with new high frequency and fast rail services into the heart of the West End. This would help the areas develop by providing quicker and more direct access to jobs for local residents. The station at Camberwell would provide the greatest step-change on the route as there are no current rail services directly serving the town centre. If the extension does not serve Camberwell, improved rail access can still be delivered by other means such as the option of re-opening Camberwell station on the Thameslink line.
- 4.6.6. Our work has not identified a significant potential increase in new homes that could be enabled along the route option relative to the Old Kent Road Opportunity Area. In total, between 5,000 and 10,000 homes may be deliverable along the corridor to Peckham Rye – less than half of the alternative route.
- 4.6.7. The London Borough of Southwark has a new local plan under development which will provide an updated target for new homes in locations across the borough. The existing dense urban area along the Camberwell and Peckham Rye route and the lower amount of large-scale brownfield non-residential land (compared to that

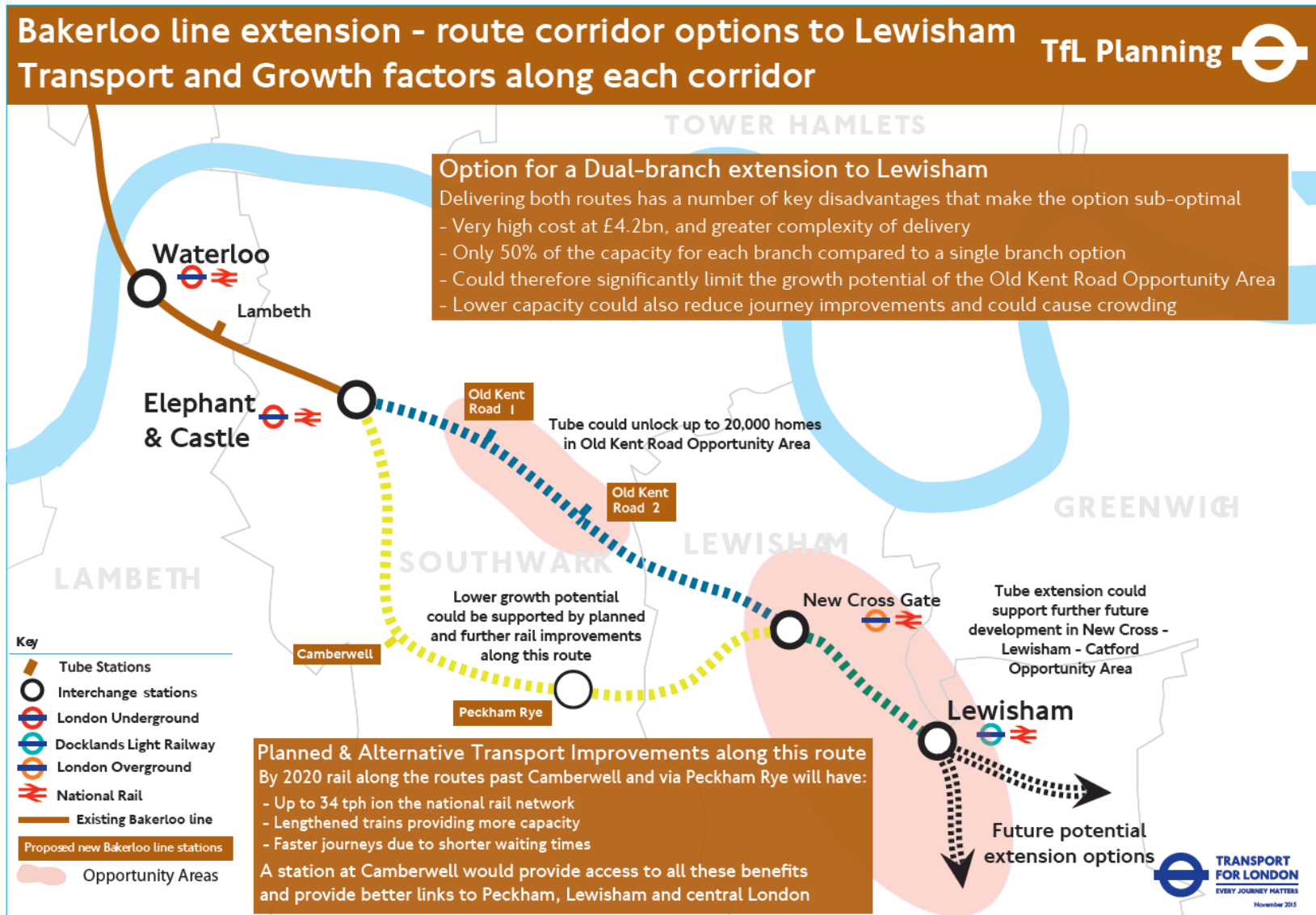
³ The CAZ is a defined area in the London Plan (2015), covering London's geographic, economic and administrative core

⁴ See London Plan (Further Alterations 2015), page 356

available in Opportunity Areas such as Old Kent Road) means the potential for widespread redevelopment and densification is relatively low.

- 4.6.8. The Camberwell and Peckham Rye areas are considered to be able to accommodate less than half the number of new homes that could be built in the Old Kent Road Opportunity Area, unless major changes were made to the existing urban fabric. Furthermore, the potential growth in Camberwell and Peckham Rye is unlikely to be dependent on improved transport access and investment of the scale of a Tube extension, with the significant planned and potential further improvements to rail (for example Thameslink and London Overground train lengthening) in that corridor likely to be capable of supporting further growth. Alternative options that cost less and are easier to deliver can be developed to unlock the growth potential identified on the corridor, such as re-opening Camberwell station.
- 4.6.9. The main factors concerning delivering new homes and improving the transport network are shown in Figure 5 along with the disadvantages of a two-branch extension along both routes to Lewisham. The splitting of the extension along both branches to Lewisham would significantly reduce the frequency and capacity of the service that could operate along each branch. This would reduce the growth potential that could be unlocked in the Old Kent Road Opportunity Area and also risk crowding on either branch due to the lower capacity. In addition, the lower growth potential would reduce the extent to which the higher cost of a two-branch extension could be part-funded by new development.

Figure 5 - Growth and transport factors along each extension corridor to Lewisham



4.7. *Economic and financial considerations of each route option to Lewisham*

By improving transport and unlocking new homes and jobs growth, the economic benefits of the Old Kent Road option are higher than the route via Camberwell and Peckham Rye. The latter option is estimated to be more expensive to deliver and has a lower potential of obtaining funding.

- 4.7.1. Both routes can unlock sites for delivery of new housing which will help to further support the productivity of London's economy; however the number of homes and therefore the resultant benefits would be much greater for the route along the Old Kent Road. The Old Kent Road Opportunity Area is very close to central London, which means it would be an excellent location for new residential development, as the cost and time spent travelling into central London would be relatively low compared to typical commuting times. For both routes, wider connectivity to Lewisham and beyond would also help support town centre economies, such as Lewisham's, by improving access to the opportunities and services they offer.
- 4.7.2. An Underground extension would provide fast and frequent underground rail services that are high volume with near-zero local emissions and a very low noise alternative to road-based transport. This will help to improve air quality in a designated Air Quality Management Area and create a better local environment for the existing and future communities. These impacts have a positive economic impact and would exist for both routes.
- 4.7.3. The route option via the Old Kent Road is estimated to cost £2.57 bn, approximately £480m less to construct than via Camberwell and Peckham Rye. This significant difference is owing to the shorter length which reduces tunnelling, ventilation and evacuation shafts along the route, land purchases, rolling stock requirements and associated train sidings for stabling. The lower cost of the option to Old Kent Road along with the beneficial impacts means the option would have better value for money case, notwithstanding the wider economic impacts from delivering new homes and jobs to support long term economic growth and productivity improvements in central London.
- 4.7.4. Combining the total costs for construction of each option with the development potential which could provide a source of alternative funding, it is clear that the Old Kent Road route option has a significantly higher potential to obtain funding through alternative sources. The Old Kent Road option has potential to recover up to a quarter of its cost from alternative funding sources. This could increase towards half if additional value capture mechanisms were introduced. This is in comparison to the option via Camberwell and Peckham Rye which is higher cost, delivers lower levels of new development and therefore could recover less than a fifth of the scheme cost. The option to the Old Kent Road therefore has a higher prospect of being delivered as

it is more affordable than the alternative route with potential to reduce the amount of funding that would be required from public spending by central Government and TfL.

4.8. Practical management and commercial considerations of each route to Lewisham

Delivering a major transport infrastructure project is a challenging and often risky process. By integrating planning with the Opportunity Area development, the proposed route via the Old Kent Road offers the best prospect of successful delivery.

- 4.8.1. The Old Kent Road Opportunity Area provides a key strength for the extension in terms of the practicalities associated with planning and delivery. By working with the Greater London Authority and Southwark Council on the plans and policies for the area, an extension could be integrated as part of the masterplan. This approach would enable integrated design and planning work to reduce construction impact by co-ordinating construction of the new development with extension construction, helping to reduce the complexity of delivery and the consents risk from objections to construction.
- 4.8.2. In contrast, the densely populated existing commercial and residential communities at Camberwell and Peckham Rye may experience significant disruption from the construction works for an extension. The road network in areas along the route provide a more local function and is likely to have less capacity for construction traffic and diversions compared to the Old Kent Road route. A lack of low value brown-field land in the area also means achieving delivery of the stations in the town centre locations may bring greater construction impacts and local resident and business objections.
- 4.8.3. The master planning activity for the Old Kent Road Opportunity Area also provides the potential to maximise the extension's benefits through design by optimising public transport accessibility and enabling creation of high quality urban realms focused on the new Tube stations. This would help to realise the full growth potential of the Opportunity Area and in turn help to ensure developer funding makes a significant contribution towards the cost of the extension.
- 4.8.4. Between the two route options, the differing levels of consents risk due to construction impacts, complexity, and optimisation of benefits arising from the scheme provides contrasting levels of certainty and timescales for how soon TfL could embark upon development and delivery of an extension.
- 4.8.5. By integrating planning of the Old Kent Road extension route with the Opportunity Area Planning Framework development, we can put in place the necessary safeguards and mechanisms to help ensure that an extension remains deliverable and that

funding from the enabled development can be utilised to support the cost of construction.

- 4.8.6. The route to Camberwell and Peckham Rye has a greater number of construction challenges due to the dense existing urban area, congested highways and complex works required to construction stations in Camberwell town centre and at Peckham Rye rail station. The higher cost and lower levels of development also mean the route option has a lower prospect of achieving the required funding. To address the challenges in the route corridor, and in particular at Camberwell, alternatives may exist which have significantly lower challenges in terms of their financial, commercial and practical feasibility. These include improvements to the existing network and stations in the area, as opposed to constructing a new Tube line.

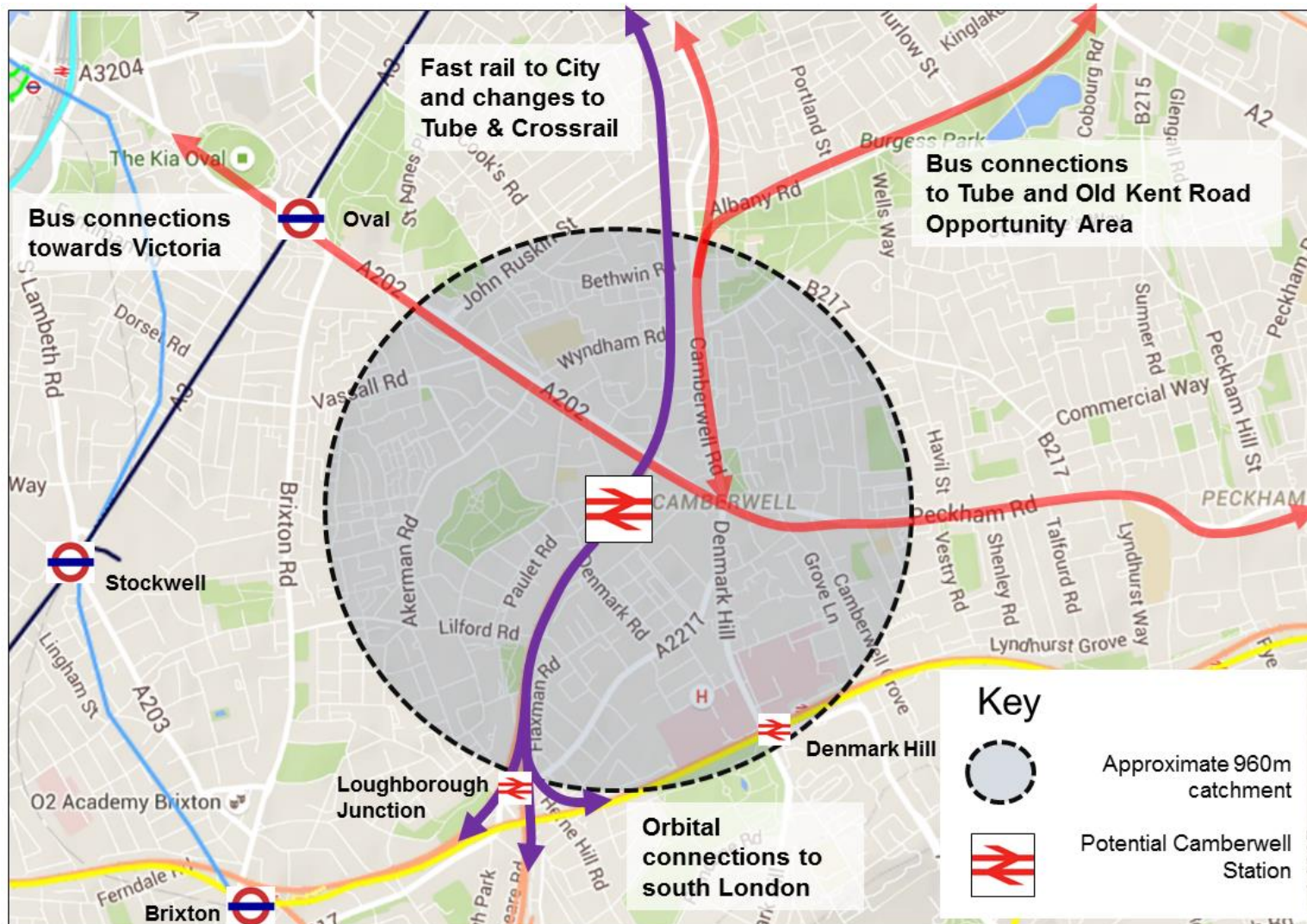
4.9. *Alternative options for transport improvements in the corridor to Lewisham*

An initial extension to Lewisham can make a significant contribution to transport and growth challenges in south east London and where challenges remain we will continue to explore options to address them.

- 4.9.1. The work we have undertaken has demonstrated that parts of the alternative route option via Peckham Rye and Camberwell would benefit from transport improvements as they have similar challenges to the Old Kent Road regarding capacity and access. Whilst Peckham Rye is already well connected, Camberwell lacks reliable and frequent transport to central London and the south east region.
- 4.9.2. An alternative option put forward by respondents during the 2014 public consultation included re-opening the Thameslink station at Camberwell. A new station at Camberwell would be a significantly lower cost option to a Tube extension, whilst serving the same catchment area. Investigations show significant journey time improvements could accrue to Camberwell passengers and that operationally there may be scope to integrate re-opening of the station into the launch of the completed Thameslink programme. We will therefore undertake further planning work with Network Rail and the London Borough of Southwark to assess the proposal.
- 4.9.3. As Figure 6 shows, a station would have a catchment covering the core of Camberwell and the Green, capturing those residential areas that lie between the satellite rail stations of Oval, Denmark Hill and Loughborough Junction. The station would provide a reliable means of travelling to the city and to the Bakerloo line at Elephant and Castle. This could take the pressure off bus services for commuting into central London, whilst local bus services would connect to the regenerated Old Kent Road Opportunity Area and the new jobs and services that could arise there.

4.9.4. In contrast, for the Old Kent Road route, which lacks any existing rail routes along much of its area, an extension is the only current option that could deliver the objectives for the scheme and unlock the Opportunity Area to support London's population growth.

Figure 6 - Location map of potential New Camberwell Rail Station

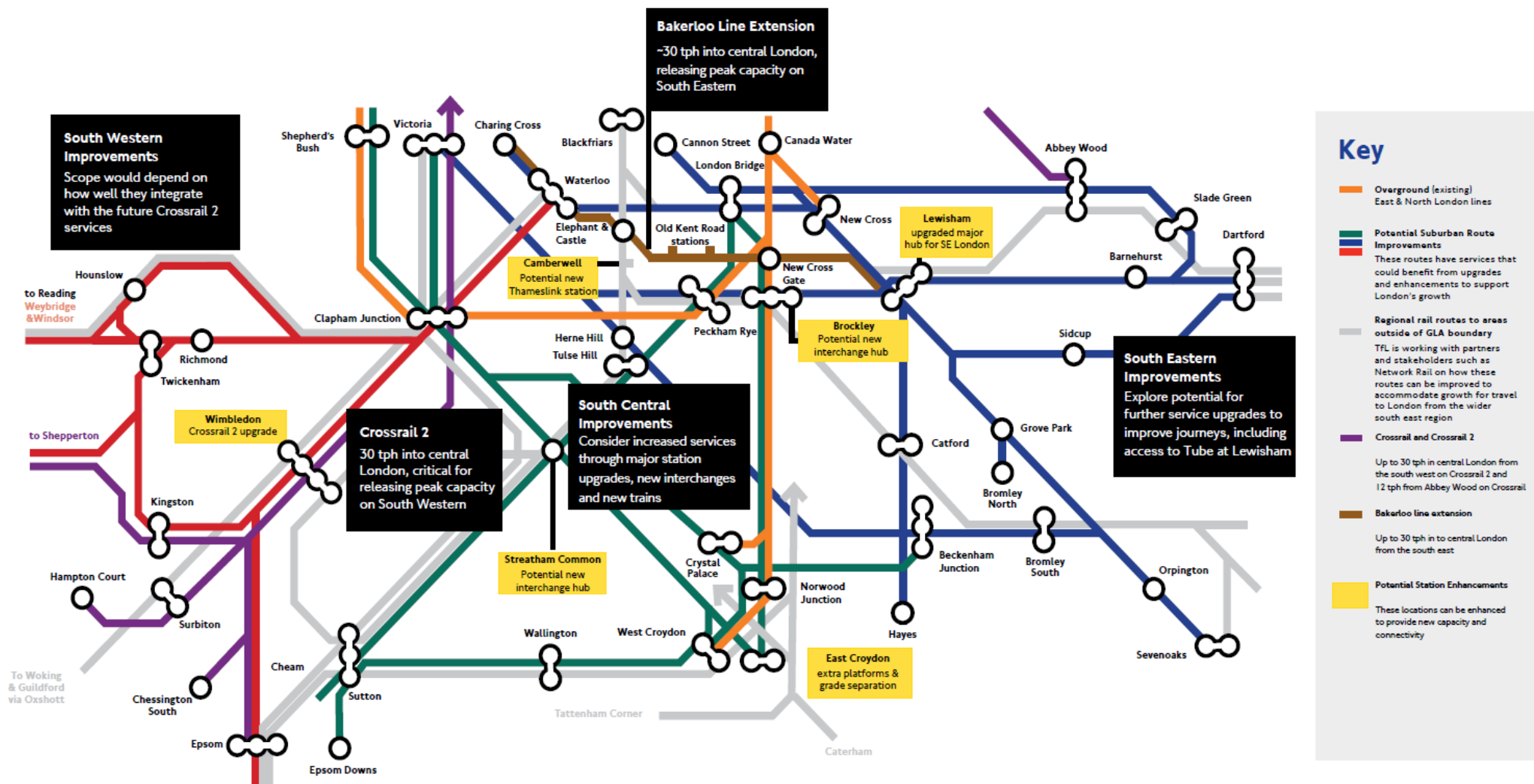


4.10. An initial extension to Lewisham connecting to the wider rail network

An initial extension to Lewisham could form part of a wider package of complementary rail improvements across south and south east London, providing improved journeys via Tube and rail connections.

- 4.10.1. An extension to Lewisham as a first stage, could achieve significant transport improvements and unlock growth in south east London. It can achieve this sooner, at lower cost and with less delivery challenges than with an extension beyond Lewisham on to the National Rail network.
- 4.10.2. In contrast to options beyond Lewisham on existing rail routes, it also requires entirely new infrastructure which means it would need to be safeguarded to ensure it remains deliverable. This means that more planning and scheme development work is required for the route to Lewisham, than would be required beyond Lewisham. The current approach to planning for routes beyond Lewisham has been based upon potential conversion of an existing rail line. This factor means that in terms of safeguarding, comparatively less would be required for a potential future onwards extension as rail infrastructure already exists.
- 4.10.3. The beneficial strategic impact of this extension proposal 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, as shown in Figure 7. The potential improvements to the wider network along with a Bakerloo line extension to Lewisham via Old Kent Road has the potential to deliver up to 60 trains per hour between Lewisham and central London, providing a step-change in connectivity and capacity to support long term growth.
- 4.10.4. Creating an effective interchange at Lewisham will be important to ensure a Tube extension becomes an attractive onward mode of travel to and from Lewisham town centre and for journeys to change to from the wider transport network. 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 from road-based modes such as Buses and Taxi.
- 4.10.5. To support realisation of the benefits of an extension to Lewisham, TfL will work with partners and stakeholders to ensure extension designs help to strengthen the wider interchange at Lewisham, making journeys between services easier and to improve the station's function within the local area serving the surrounding communities.

Figure 7 Initial extension option and potential long-term wider region rail improvements



4.11. *The case for a future phase of an extension beyond Lewisham*

The assessment shows there could be significant additional benefits from an extension beyond Lewisham and therefore it has not been ruled out at this stage, with further work required to develop the deliverability and case further.

- 4.11.1. Our assessment has shown that an extension beyond Lewisham can provide specific benefits to wider rail capacity, by potentially converting an existing line and re-allocating rail services to other busy routes. A future extension beyond Lewisham has, therefore, not been ruled out.
- 4.11.2. Further assessment of the challenges and options to improve National Rail services is being undertaken by Network Rail and we will provide support in assessing what role an extension beyond Lewisham has in the long term.
- 4.11.3. Working with our stakeholders and partners, such as Network Rail on their long-term planning process and with the London Boroughs, will provide an up-to-date understanding of the challenges on the national rail network in south east London and we can further consider if a Bakerloo line extension is the best option to address them. Furthermore, given the requirement to enable development to support London's growth and provide funding for the extension, it will be necessary to work with partners such as the London Boroughs to understand the potential growth an extension and the wider impacts on the rail network may unlock.
- 4.11.4. Until this further planning work is completed, options beyond Lewisham currently carry a relatively higher risk relating to delivery and commercial complexities of undertaking a significant change to the rail network, without certainty that potential benefits can be realised. Furthermore, due to options beyond Lewisham currently planning on the basis of utilising existing rail infrastructure as far as possible, the imperative to develop planning to assist with safeguarding for future delivery is lessened.
- 4.11.5. Planning and engineering work for options to Lewisham will be undertaken on the basis of avoiding preclusion of a future onwards extension including to Hayes and potential other locations such as towards Bexleyheath. This will include working with stakeholders to safeguard necessary delivery of the infrastructure that may be required.

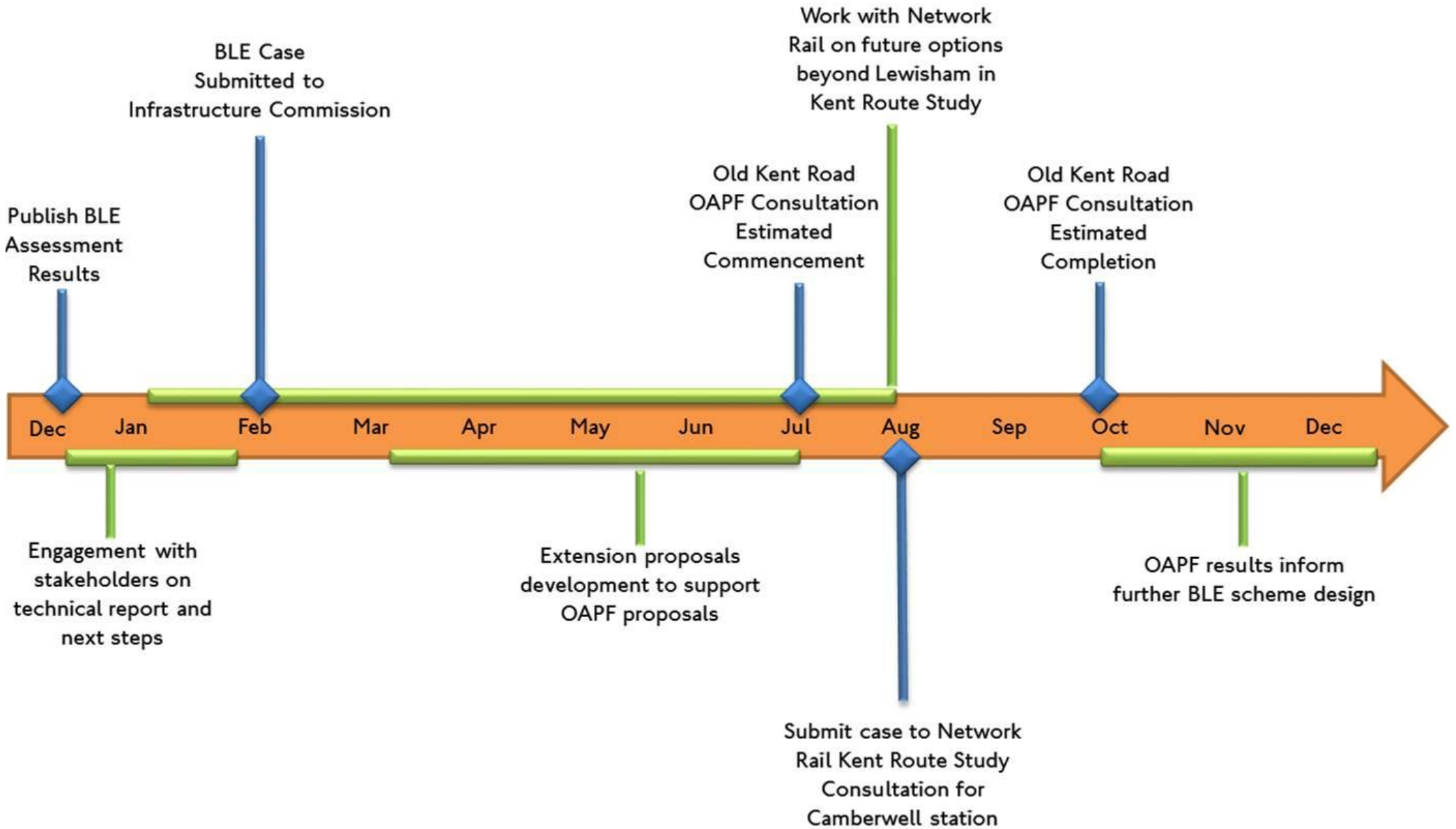
5. Next steps

5.1.1. A timeline for developing the extension proposals is provided in Figure 8.

We will focus developing plans for the first phase of an extension to Lewisham via the Old Kent Road, with further public consultation anticipated in 2016.

5.1.2. We will develop the case for the extension proposal given the new development that it could unlock along its route. Following this, we anticipate carrying out a further public consultation in 2016 to gain people's view on the proposals. This will enable their consideration and incorporation into the extension scheme proposals as we develop those to support the planned Old Kent Road Opportunity Area policy development in 2016. A longer term programme with key milestones through to implementation is provided in Appendix A.

Figure 8 – Indicative timeline of next steps for developing the extension proposal in 2016



Developing the scheme will enable integrated planning with the Old Kent Road Opportunity Area and support its summer 2016 consultation on the plans for new homes and jobs and the transport improvements required.

- 5.1.3. The GLA and London Borough of Southwark plan to undertake a consultation on proposals for new homes and jobs in the Old Kent Road Opportunity Area in summer 2016. We are currently supporting the assessment of the impacts of those plans for the area and helping the GLA and the London Borough of Southwark determine what different transport interventions could best help realise the potential of the Opportunity Area. This work will include demonstrating how a Bakerloo line extension can support new jobs and homes.
- 5.1.4. By focusing on an extension route via Old Kent Road to Lewisham, more detailed planning can occur to fully consider the access and capacity improvements that an extension would bring and the levels of new homes and jobs that could be supported to help drive London's long term economic growth.
- 5.1.5. We propose to develop the route option via the Old Kent Road, developing the funding case and addressing key risks and issues relating to construction and cost such as station locations and route alignments and worksite and shaft site requirements. This development work would support any future safeguarding that could be required.
- 5.1.6. Following the initial consultation on the Old Kent Road Opportunity Area Planning Framework (OAPF), we will focus on addressing key issues and requirements concerning the extension in response to consultation feedback and seek to optimise the design to maximise both the development that can be supported and the subsequent use of the extension for sustainable travel.
- 5.1.7. If the adopted OAPF demonstrates an extension is required, we will progress scheme development work towards safeguarding delivery and, subject to funding, prepare an application for planning consent for construction to begin in the 2020s.

An extension beyond Lewisham remains an option for a future phase and we will continue to consider the options and their case by as we work with partners on improving the wider rail network in south east London.

- 5.1.8. Given the potential strengths of an option beyond Lewisham, we will continue to explore the case for an extension. Our previous proposals for an extension included 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 lines to convert such as the National Rail line to Sidcup via Bexleyheath. Our initial assessment has shown that additional tunnelled sections are high cost and challenging to deliver.

These options require extensions on to the part of the rail network that is currently being assessed by Network Rail's long-term planning process. We will support Network Rail and work with wider stakeholders in assessing the challenges on the Kent national rail routes in London and the study will provide an up-to-date assessment of whether an extension remains a preferred long term option for addressing the challenges that are identified. This further work will provide a renewed basis upon which to carry out any future optioneering of further extension phases.

- 5.1.9. Along with working with Network Rail on their long-term planning process, we will undertake further work on rail improvements for south London. This work will identify where strategic interchanges could be created to maximise the connectivity benefits, including those arising from the extension, to improve orbital and radial travel. The work will consider the scope for upgrading existing strategic interchanges such as Lewisham, to deliver faster and more attractive interchanges. Identifying whether more rail services can stop at interchange points on the network, including those along the extension for journeys in and out of central London to reduce pressure on the busy London rail termini, will also be investigated.

As part of the wider development work for improving rail services in south London, we will work with partners in addressing remaining challenges and opportunities such as re-opening the Camberwell Thameslink Station.

- 5.1.10. Rail access to Camberwell is an improvement that could make a significant contribution to improving travel for residents and businesses along a corridor that has been considered for an underground extension.

- 5.1.11. Given that these improvements could be delivered sooner, and at less cost than an underground extension, we will support Southwark in developing the case for a re-opened station, assisting with the submission a full business case to Network Rail as part of their long term planning process for the Kent routes. To achieve this, the next steps of planning a station at Camberwell include:

- Continuing to work with Network Rail to confirm construction feasibility and establish a programme for operational modelling as part of the Kent route study
- Undertaking an assessment of the transport network benefits and growth development growth impacts for Camberwell
- Developing the commercial and financial case, identifying potential sources of income from local development, commercial development at the station and public sector funding, along with the commercial impacts on train operating companies operating on local routes.

Appendix A – Indicative long term timeline

