



## Old Kent Road Opportunity Area

### Strategic Transport Study



Date: November 2016

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## Glossary

Acronym / Abbreviation	Description
LBS	London Borough of Southwark – the local planning authority in which the Old Kent Road Opportunity Area falls.
AAP	Area Action Plan – the name of the specific development framework document that contains the draft planning policies to apply to the Old Kent Road.
OKR	Old Kent Road – the same of the Opportunity Area under consideration.
OA	Opportunity Area – the formal designation given to the Old Kent Road area in the London Plan.
Railplan	A TfL-owned public transport assignment model
ILoHAM	Inner London Highway Assignment Model - a TfL-owned highways trips assignment model
LTS	London Transportation Studies - a TfL-owned model that forecasts the number of public, private, walking and cycling trips and their distribution across London based upon input assumptions.
BLE	Bakerloo line extension – a proposed extension of the Bakerloo line to Lewisham via Old Kent Road and New Cross Gate
GLA	Greater London Authority – the administrative body comprised of the London Assembly and Mayor of London.
NPPF	National Planning Policy Framework – sets out Government's planning policies for England and how these are expected to be applied
PTAL	Public Transport Accessibility Level – a measure used in London's planning system to help guide suitable development densities based on the level of access available to and from a site by public transport. Of particular relevance to Opportunity Area's as their designation owes in part to low existing PTALs.



Acronym / Abbreviation	Description
PCU	Passenger Car Unit. It is a vehicle unit used for expressing highway capacity. One car is considered as a single unit, whilst cycles and motorcycle, smaller in size, are considered as half a car unit. Buses and trucks, owing to their size, occupy more road space and are considered equivalent to 3 cars or 3 PCU.
CAZ	Central Activity Zones – a designated area in central London based on the London Plan, covering the City, West End and Southbank. The Central Activities Zone is described by the GLA as London’s vibrant centre and one of the world’s most attractive and competitive business locations. It contains the seat of national government and is renowned worldwide for its shopping, culture and heritage.
SAF	Strategic Assessment Framework – a TfL tool developed to assess outline transport policies and infrastructure options against a selected set of criteria.
Mode	A term used to distinguish a main type of transport e.g. Underground, Rail, Bus, Walk, Cycle, Car, Motorcycle, Goods Vehicle etc.
Section 106 (S.106)	A section of the Town and Country Planning Act 1990 (as amended), detailing planning obligations - a mechanism which make a development proposal acceptable in planning terms, that would not otherwise be acceptable
Community Infrastructure Levy (CIL)	CIL is a levy that local planning authorities can choose to charge on new developments in their area. The money should be used to support development by funding infrastructure that the council, local community and neighbourhoods want.

## EXECUTIVE SUMMARY

- E1. The London Borough of Southwark (LBS) is preparing an Area Action Plan (AAP) for their part of the Old Kent Road Opportunity Area. Developed with the Greater London Authority (GLA). The AAP sets out a vision for at least 20,000 new homes and 5,000 additional jobs in the Old Kent Road area, by capitalising on the area's proximity to central London. This will be achieved rationalising the current low density and dispersed industrial, retail and commercial activities in the Opportunity Area to generate the opportunity for effective mixed use housing-lead growth that enables co-location of housing and employment land uses together in an area with fast and frequent public transport access.
- E2. The AAP has considered the opportunities and impacts the current Bakerloo line extension proposal could have for the Old Kent Road. The AAP is clear that the extension would be a step change in public transport accessibility levels that would warrant levels of development that can achieve the AAP vision.
- E3. In developing the AAP vision, LBS generated alternative scenarios of the volume of new homes and new jobs that could be delivered. Our Transport Study has assessed the forecast impact of the scenarios on the public and highways transport network to conclude whether they are sustainable and on what basis in terms of the network upgrades and improvements required.
- E4. We concluded that the Medium and High growth scenarios (which forecast a range of total new homes between 17,000 to 23,000 and a total of new jobs ranging between 8,000 to 11,000) can be accommodated subject to improvements to the public transport network and measures to improve the function of the A2 Old Kent Road highway to facilitate improved walking, cycling and bus journeys whilst ensuring general traffic can continue to flow.
- E5. The primary enabler of the AAP vision's level of development is the delivery of a Bakerloo line extension. TfL's assessment has considered other transport options for improving the provision of high frequency and high capacity public transport services. The work has concluded that the Bakerloo line extension is the only feasible option for delivering the uplift in public transport accessibility levels required to make the densification of the Opportunity Area acceptable and sustainable in terms of the impact on the transport network.
- E6. Alongside the proposed Bakerloo line extension, the existing bus network in the OKR OA will continue to play an essential part in how people travel. Initial phases of development are expected to be delivered prior to a Bakerloo line extension being operable by 2030. Prior to an extension of the Bakerloo line, the bus network will remain the key public transport service for travel within, to and from the OA. TfL's analysis of the forecast impact of development in the OA has concluded that the frequency of bus services operating could be increased to accommodate initial phases of development demand. Alongside recommended bus priority measures, these enhancements to the network would help ensure buses remain attractive for use, providing competitive and reliable journey times compared to non-public transport options.

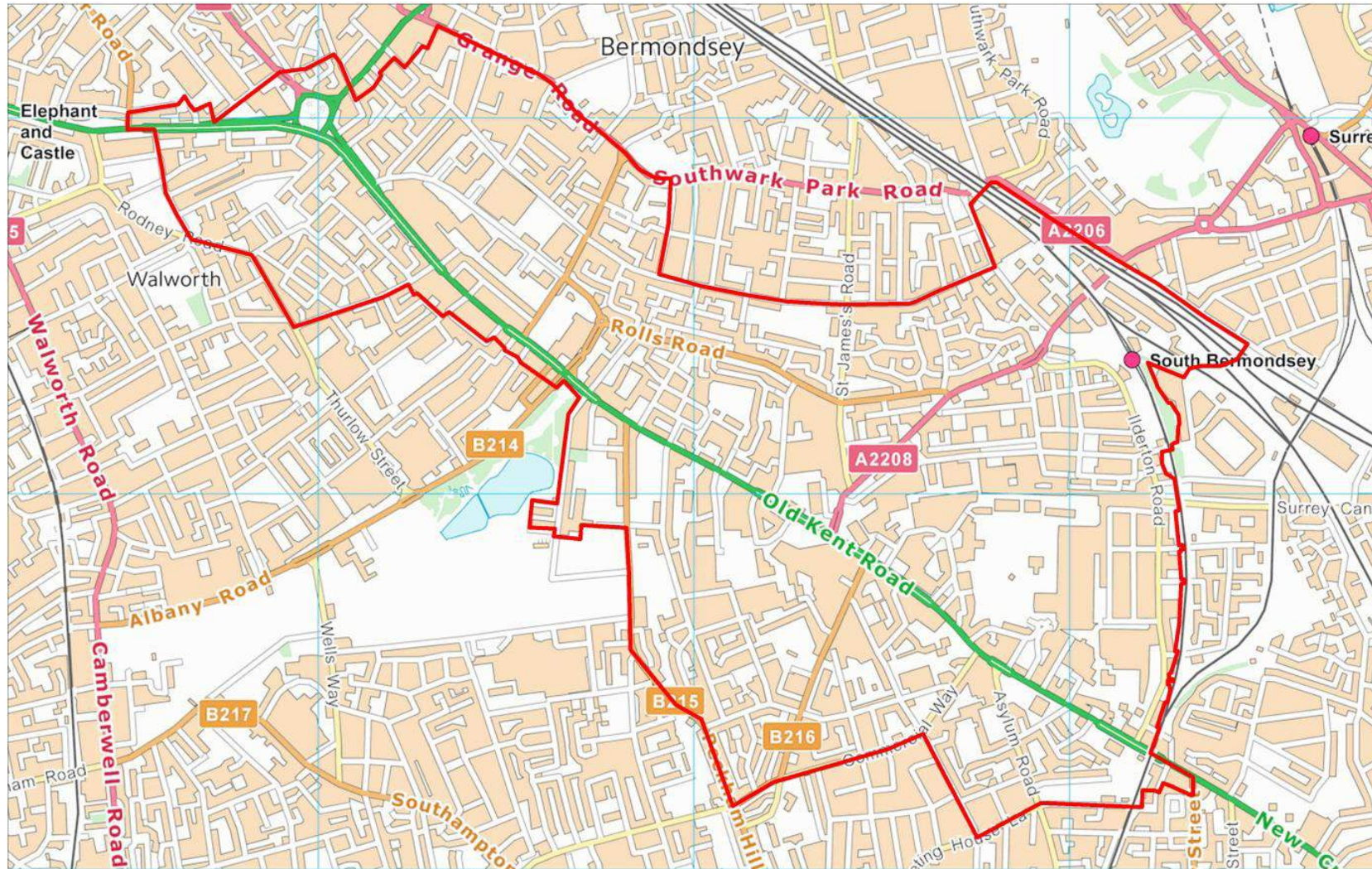
- E7. The scale of additional bus services required to support the low growth scenario considered by the study is significant but considered feasible. It is not sustainable, however, to expect bus services to accommodate the level of homes and jobs considered in the higher growth scenarios that most closely represent the AAP vision and target of at least 20,000 homes and 5,000 jobs. There is a need to establish in more detail the phasing and programme of development expected across the Opportunity Area in order that the programme of bus service improvements can be tailored to address initial development demand and then respond to changing travel patterns generated by the Tube extension.
- E8. The place and movement function of the A2 Old Kent Road will need to evolve further beyond these public transport network improvements to support the AAP vision. The highway will need to retain its strategic movement function owing to its position as a key arterial route between central and outer London and into Kent. To maintain this whilst also providing an improved high street and centre to the OKR OA, the place function of the highway will need to be improved. It is recommended to pursue delivery of measures that meet the principles of the 'High Road' category in the TfL Street Types.
- E9. Working towards improving the place function of the A2 Old Kent Road will contribute towards achieving the AAP vision – to address the barriers to walking and cycling both within the OKR OA and assist with delivery of new and improved connections that integrate into the wider network beyond the OA boundary. The design of the public realm and improvements to the operation and allocation of road space will support this by creating a high quality network of streets and spaces with a cohesive identity and strong sense of place. The approach will help ensure that new development results in sustainable travel, as existing and new residents and workers are encouraged to choose travel options such as walking and cycling.
- E10. The recommended transport improvements, concerning the Bakerloo line extension, bus service improvements, and improvements to the highways and public realm to support walking and cycling should be reflected in the draft AAP. The draft AAP should set out clear planning policies to safeguard these required transport improvements and establish wider principles to ensure development supports and delivers these improvements where appropriate. Furthermore, s.106 and Community Infrastructure Levy (CIL) income should be secured to fund delivery. It is recommended that a Development Infrastructure Funding Study is undertaken prior to adoption of the final AAP, to ensure that there is greater detail and clarity over what transport infrastructure improvements can be funded over what timescale based on the proposed CIL charging regime in the AAP and given the likely phasing of development across the OA up to 2036.
- E11. As greater detail becomes available about the phasing and spatial distribution of detailed development proposals; TfL will develop the plans for the required transport improvements, including the location of Tube stations, specific bus routes requiring frequency improvements, and the detailed designs for the A2 Old Kent Road to deliver improved walking, cycling and bus priority whilst continuing to support general traffic flow.

## 1. Introduction

### 1.1. Background

- 1.1.1. This report details the Strategic Transport Study (STS) of the Old Kent Road (OKR) Area Action Plan (AAP) which is part of the OKR Opportunity Area (OA).
- 1.1.2. ***What is the Old Kent Road Area Action Plan and Opportunity Area?***
- 1.1.3. The London Borough of Southwark (LBS) is preparing an AAP for their part of the OKR OA. Developed with the Greater London Authority (GLA).
- 1.1.4. The Old Kent Road AAP is a plan to regenerate the area along the A2 Old Kent Road – shown in Figure 1. It sets out a vision for how the area will change over the period leading up to 2036, with an aim to deliver at least 20,000 new homes and 5,000 additional jobs as part of the regeneration of the OA. This is supported by a strategy with policies LBS will put in place to achieve the vision. The AAP will also explain why the chosen policies have been selected, and the delivery plan for implementing the vision.
- 1.1.5. Previously, the London Plan set out minimum targets for the OKR OA based upon its location and size. Those minimum targets in the London Plan have been developed further in preparing the AAP, through a detailed place-making and master-planning exercise that has established a clearer vision on the character, function and development capacity of the OA.

Figure I - Map of the OKR OA



#### 1.1.6. *What is the Strategic Transport Study (STS)?*

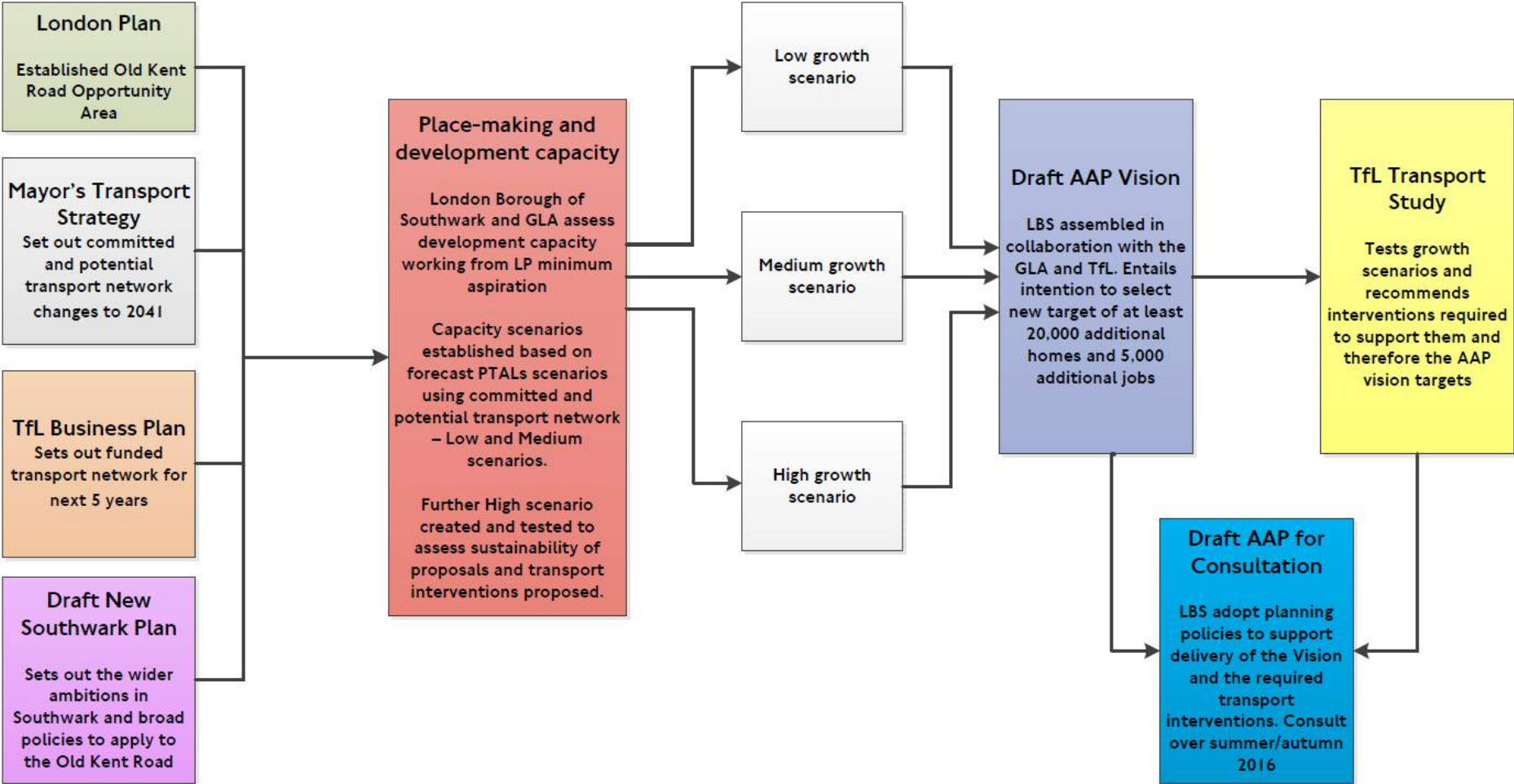
- 1.1.7. The Transport Study assesses the draft AAP's broad targets for the number of new homes and jobs that have been derived by LBS based upon place-making and development capacity assessments. The context in which the Transport Study has been undertaken and its relationship and impact on the AAP is shown in Figure 2.
- 1.1.8. The assessment in the Transport Study applies strategic transport models to test the different development growth scenarios, enabling determination of what measures, if any, are required to make travel demand and associated impacts from the overall scale of the development sustainable to accommodate in the long term. The Transport Study will not remove the need for each specific development to assess the impacts of its site specific proposals on the local transport network as part of the planning application process.
- 1.1.9. The development scenarios from LBS were estimated based on a number of factors including the committed and potential transport network improvements that were known (e.g. Tube Upgrades, Bus network service growth, Thameslink Programme, Crossrail, Bakerloo line extension, Cycle Super Highways and Quiet Ways etc.) and an estimation of what their impact would be on Public Transport Accessibility Levels.
- 1.1.10. The recommended transport improvements will be incorporated into the AAP through the revised planning policies, to ensure that development supports the delivery of the transport improvements required so that the long term impact of growth in the OA is sustainable.
- 1.1.11. Some transport analysis of Old Kent Road has recently been undertaken for a TfL internal study of the Bricklayers' Arms junction and also as part of the published route options assessment of the BLE – released by TfL in January 2016<sup>1</sup>. This Transport Study has therefore been undertaken to be consistent with the findings of those studies.
- 1.1.12. The AAP has been consulted on between June to November 2016. Southwark anticipate that the AAP will be adopted by mid-2018 following an Examination in Public of the final draft next year – revised to take account of the public consultation. In the interim, LBS propose to revise their Community Infrastructure Levy and S.106

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<sup>1</sup> Available at TfL Consultation Hub here: [https://consultations.tfl.gov.uk/tube/bakerloo-extension/user\\_uploads/options-assessment-report\\_final.pdf](https://consultations.tfl.gov.uk/tube/bakerloo-extension/user_uploads/options-assessment-report_final.pdf)

scheme to allow charging to better reflect the infrastructure needs of the area to support development already coming forward.

Figure 2 - The Transport Study in the context of the development of the draft OKR OA AAP





## **2. Policy context for AAP transport study**

### **2.1. National Policy Context**

- 2.1.1. The National Planning Policy Framework (NPPF) states that in preparing Local Plans, local planning authorities should support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport. To achieve this, NPPF states that Local Authorities should work with transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development. As per the NPPF, the Old Kent Road Transport Study has been prepared by TfL in support and collaboration with LBS – the local planning authority.
- 2.1.2. The AAP planning policies, to permit development that delivers the AAP vision and therefore at least 20,000 new homes and 5,000 new jobs, will lead to the generation of significant amounts of new trips. To comply with the NPPF, the TfL Transport Study is therefore the equivalent of a Transport Assessment or Statement, tailored to a strategic level given the lack of detailed development proposals site by site.
- 2.1.3. The NPPF specifically requires that to assess the generated movement from the proposed development, the Transport Assessment demonstrates whether:
- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure
  - Safe and suitable access to the site can be achieved for all people; and
  - Improvements can be undertaken within the transport network that cost-effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.
- 2.1.4. The Transport Study has explicitly considered these aspects and how the proposed levels of development set out in the AAP can be supported and justified given the interventions TfL has recommended be delivered in the OA.

### **2.2. The London Plan**

- 2.2.1. The London Plan consolidated with alterations since 2011, published in March 2015, is the statutory spatial development strategy for London, which sets out the strategic vision for Greater London up to 2036. The London Plan reflects the intent of the National Planning Policy Framework, and in particular the presumption in favour of sustainable development. The London Plan can be seen as the expression of national

policy for London, tailored to meet local circumstances and to respond to the opportunities to achieve sustainable development in the capital.

- 2.2.2. The document considered the strategic issues of the scale of growth London will need to accommodate over the next two decades and considered alternative spatial development policies which could be adopted to meet the forecasts for population and employment growth. This included options of intensification of central London, a decentralised policy with higher levels of development in outer London, and other options including the potential of brownfield land to accommodate growth.
- 2.2.3. The plan states that the only prudent course is to plan for continued growth. Any other course would require fundamental changes in policy at national level or could lead to London being unprepared for growth.
- 2.2.4. The London Plan established the Old Kent Road as a new OA and with significant potential for residential-led development along the corridor. The FALP established minimum targets of additional capacity for 1,000 new jobs and 2,500 new homes, in the absence of any detailed study about the area. The London Plan stated that the minimum targets should be explored further and refined in a planning framework for the Area which should be developed through a review of the Strategic Industrial Locations and the capacity to accommodate a phased rationalisation of these sites and their functions in the OA or re-provision elsewhere.

### **2.3. *The Mayor's Transport Strategy***

- 2.3.1. This Transport Study assesses the outcome of this work that has led to the establishment of revised minimum and preferred scenarios for housing and employment capacity in the OA.
- 2.3.2. The Mayor's Transport Strategy (MTS) sets out the Mayor's transport vision which is that 'London's transport system should excel among those of world cities, providing access to opportunities for all its people and enterprises, achieving the highest environmental standards and leading the world in its approach to tackling urban transport challenges of the 21st century'.
- 2.3.3. To add detail to the strategic outline, the MTS sets out specific policies and proposals related to transport in London. The key policy for a specific scheme which relates to the OKR OA is proposal 22 b) as follows:
- 2.3.4. "A potential southern extension to the Bakerloo line will be reviewed further. This would utilise spare line capacity, improve connectivity and journey times, while providing relief to congested National Rail approaches to central London from the south/south east, subject to resources and results of further study".
- 2.3.5. Prior to the establishment of the draft AAP for the Old Kent Road Transport Strategy, between September 2014 and January 2016, TfL completed this proposal in the MTS,

with a consultation on routes for a Bakerloo line extension informing a comprehensive assessment of route and destination options. TfL reported in January 2016 that a route to Lewisham via the Old Kent Road and New Cross Gate was the current preferred option as it could both support new development along the route as well as provide significant improvements to journeys within south east London and to central London.

- 2.3.6. The Transport Study for the AAP has therefore assessed the current preferred extension route in more detail in the context of the proposed development scenarios specific to the OKR OA. At the time of writing of the Transport Study, London has elected a new Mayor who will develop a new Mayor's Transport Strategy (MTS). In regards to the Old Kent Road and Bakerloo line extension, inclusion of the extension proposal is in the Mayor's election manifesto that stated "*...I will work to secure the proposed Bakerloo line extension to Lewisham and beyond*". The manifesto further links the extension proposal to supporting delivery of new and affordable homes.
- 2.3.7. The Mayor of London is now preparing a new Transport Strategy, for consultation in 2017. The new direction towards this Transport Strategy is set out in A City for All Londoners (October 2016). A City for All Londoners is clear that new homes must be built to meet the demands of the growing population in London. Part of achieving this is to intensify development across the city – and significantly – in well-connected locations that are either already well served by existing transport capacity or where there is planned new transport capacity, such as along the Bakerloo line extension. The new strategy plans to encourage a more compact and connected city with more cycling, walking and public transport to reduce dependency on cars.

#### **2.4. New Southwark Plan**

- 2.4.1. At the time of writing the Transport Study, Southwark has completed a consultation on a proposed new plan for Southwark, to replace those planning policies previously established in the Core Strategy (2011) and saved Southwark Plan (2010) policies. A Submission version of the New Southwark Plan will be published in Autumn/Winter 2016. The policies in the version of the New Southwark Plan that consultation has been completed on will be very close to the actual policies which will form the final adopted plan. The latter will only be changed if there are legal reasons. Therefore, the transport proposals considered in this Transport Study are assumed to need to comply with those policies and objectives set out in the draft New Southwark Plan.

- 2.4.2. The New Southwark Plan has established six strategic policies:

- SPI Quality affordable homes
- SP2 Revitalised neighbourhoods
- SP3 Best start in life

- SP4 Strong local economy
- SP5 Healthy, active lives
- SP6 Cleaner, greener, safer

2.4.3. SP6 Cleaner, greener, safer is the key policy area that sets out Southwark’s ambition for transport. The policy states “Southwark will be a place where walking, cycling and public transport is the most convenient, safe and attractive way to move around.”

2.4.4. The specific policy concerning development proposals and Public Transport is DM42 and states that planning permission will be granted for development that:

- Demonstrates that the public transport network has sufficient capacity to support any increase in resulting trips, taking into account the cumulative impact of adjoining or nearby development;
- Improves accessibility to public transport by creating walking and cycling connections to and from local public transport;
- Supports public transport service improvements to maintain and enhance service quality.

2.4.5. The draft policy DM42 has been cross-referenced to ensure that the study of the development scenarios proposed by the AAP would enable site-by-site applications to meet these policies by identifying the necessary transport mitigations that would enable applicants to show policy compliance.

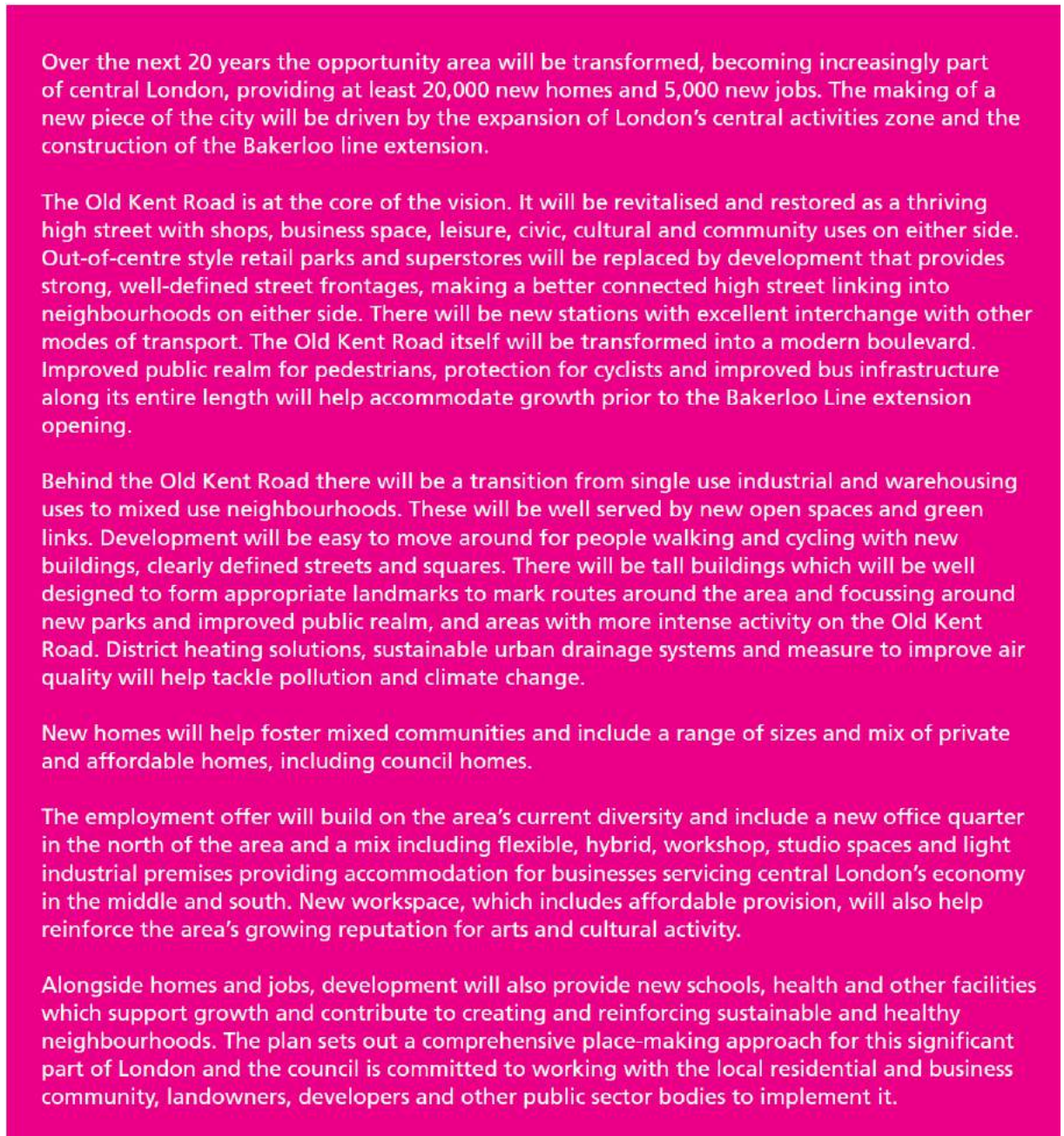
2.4.6. In addition policy DM23 concerning the transition from industrial land uses towards residential-led mixed use development makes reference to the Bakerloo line extension. Referring to the policy DM23 in regards to the Old Kent Road and its AAP, the supporting reasoning for the policy states that:

*The Bakerloo line extension could help drive growth and regeneration but it has a significant cost. New development will be expected to help fund and provide the infrastructure that is required.*

### 3. Objectives of the AAP

3.1.1. The AAP has a clear vision for the Old Kent Road – see Figure 3.

Figure 3 - Old Kent Road AAP Vision



Source: LBS AAP (Draft for Consultation), June 2016

3.1.2. TfL has translated the vision into a series of over-arching objectives relating to transport. These objectives, listed in Table 1, have been used to guide appraisal of the transport intervention options considered for supporting and mitigating the impact of new development of over 20,000 homes and 5,000 jobs.

3.1.3. Appraisal has also included consideration of other critical aspects such as the feasibility and practicality of delivering an intervention locally for the AAP – important factors in comparing options.

Table 1 - Objectives for Transport to serve the OKR OA

Objective Number	Description	Rationale
1	Increase Public Transport Accessibility Levels into the highest bracket of 4 to 6 for the majority of the OA to support densities required for the preferred option of at least 20,000 homes.	The London Plan states that OAs are, by their nature, constrained by public transport access. To achieve high levels of sustainable public transport use and to exploit the development capacity of the OA, a PTAL of 4 to 6b should be targeted as far as possible in those areas of the highest desired density.
2	Increase connectivity from the Old Kent Road to its surrounding areas including central London.	As the vision is primarily residential-led mixed-use development, good connections from the Old Kent Road to the surrounding areas of London will be important to ensure residents can easily reach job opportunities and use services available across wider London. It will also aid commercial enterprise that locates in the OA, in accessing labour markets and their respective industries.
3	Enable the highway and public transport networks to maintain an acceptable level of performance.	The addition of new jobs and homes to the Old Kent Road will add demand for all forms of transport. This objective aims to ensure interventions are delivered that minimise any adverse impacts on both the existing public transport and highways users, helping to ensure the development has a positive impact on the economy.
4	Enable travel by sustainable modes and behavioural change that can cater for growth over the AAP horizon of 2036 and beyond.	It is important that any intervention introduced has the ability to meet both the levels of demand for 2036 but also for any further growth beyond that or else the benefits of the new development will be short-lived once construction is complete. Similarly, any transport intervention should provide resilience for travel to and from the Old Kent Road to ensure the increased

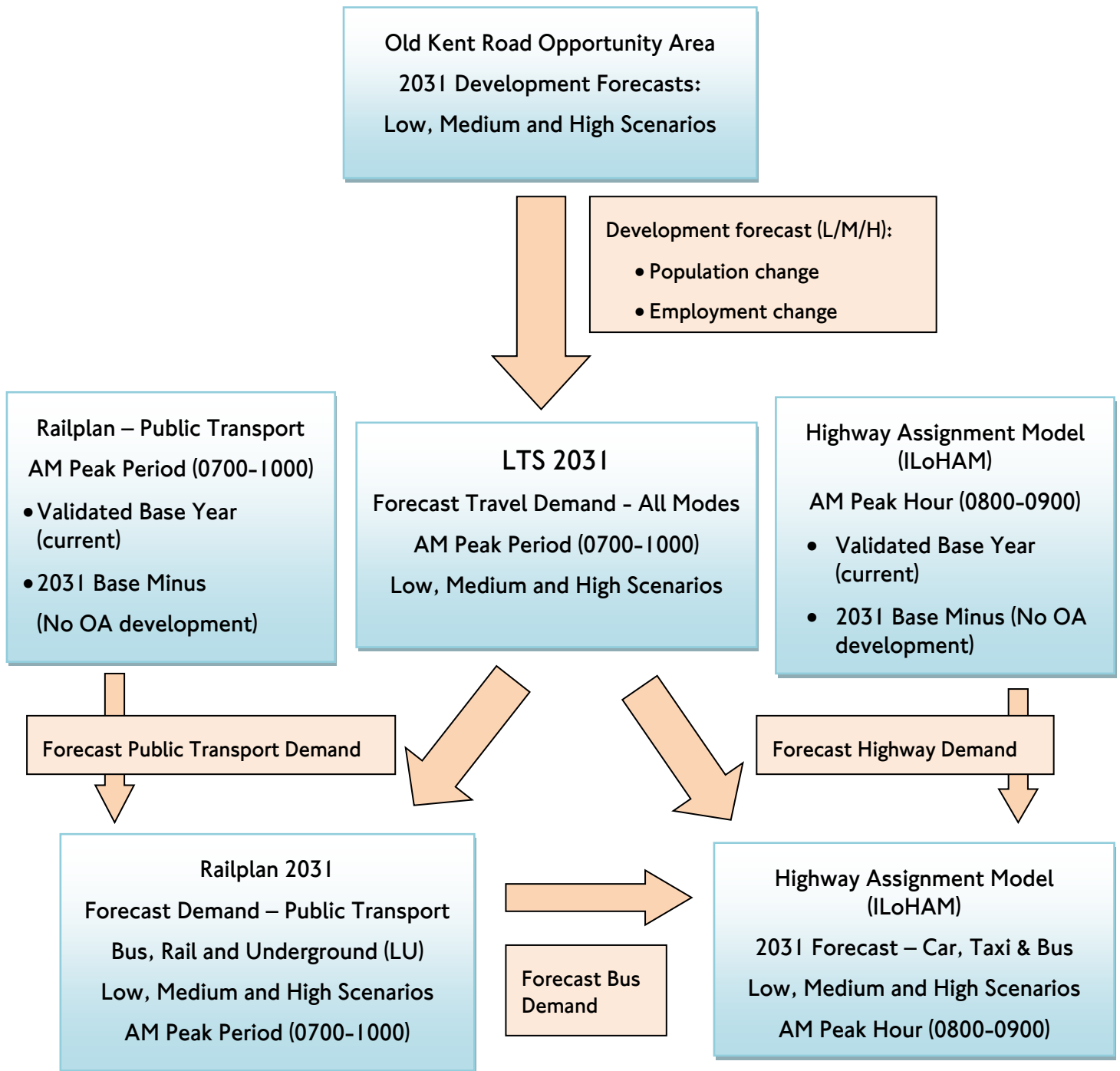
Objective Number	Description	Rationale
		<p>population has a greater number of transport options at times of disruptions. Ensuring active travel options are improved will support access to new transport infrastructure whilst also delivering health and quality of life benefits of their own.</p>
5	<p>Reduce severance within the OA.</p>	<p>To achieve the vision of the AAP, it is important that transport interventions reduce the severance caused by the existing arterial highway, rather than compounding it, whilst also easing movement across the wider area. This will help transform the Old Kent Road into a thriving street which attracts people through an improved high street function rather than purely funnelling them along it. It should also enhance connections to green spaces.</p>
6	<p>Achieve value for money of investment in the public transport network</p>	<p>As per standard practice in the industry, TfL always seeks to ensure that transport projects achieve as high a value for money as practicable.</p>

## 4. Transport modelling methodology

- 4.1.1. Transport modelling and analysis has been undertaken using TfL's in-house strategic assignment models:
  1. London Transportation Studies model (LTS) – forecasts overall travel demand by all transport modes;
  2. Railplan public transport model – detailed model of bus, rail and underground services
  3. London Highway Assignment Model (ILoHAM) – detailed model of highway network
- 4.1.2. Figure 4 illustrates the interaction and application of these models to the Old Kent Road OA study. Forecast population and employment changes from the OA development scenarios (low, medium and high growth) are input into LTS. The LTS model forecasts travel demand for each scenario for all modes of transport. LTS forecast public transport demand is input into Railplan and forecast highway, input into ILoHAM. These models test the impact of the development growth scenarios on the public transport and highway networks in more detail than LTS.
- 4.1.3. Base year validation exercises have been undertaken for Railplan and ILoHAM. This involved adding more zonal and network detail in the Old Kent Road area and using observed count and journey time surveys to calibrate travel demand and congestion.
- 4.1.4. 2031 'Base Minus' forecast scenarios of 'no OA development' have also been created in Railplan and ILoHAM. These include LTS forecast travel demand change due to changes in population and employment across London except in the Old Kent Road OA. The Base Minus scenario can be used to compare against the low, medium and high scenarios.
- 4.1.5. Forecast changes in bus demand from Railplan is converted into a forecast of number of buses required to meet demand (using average occupancy of 75 per bus) and adjustments to bus frequency made in ILoHAM to model the impact of a change in bus demand.
- 4.1.6. The modelling assessment focuses on forecasting travel conditions in the morning peak for the year 2031.
- 4.1.7. Demand estimates for non-mechanised modes of transport (walking and cycling) are obtained from the LTS model. However, due to the model's size (covers whole of London) and limitations on local detail, these estimates should be considered as 'high-level'.



Figure 4 - Summary of transport modelling methodology



## **4.2. Base Year Model Calibration and Validation**

4.2.1. To establish fit for purpose transport models to assess the future impact of the development levels that the OA has targeted, a robust validation of Railplan and ILoHAM Base Year models against current, observed survey data has been undertaken. The below summarises the steps taken – more detail is available in the Railplan and ILoHAM model validation reports. The existing LTS base year validation level is considered robust enough for this OA analysis.

### **Railplan and ILoHAM Calibration and Validation:**

1. Some zone disaggregation to represent the Old Kent Road OA in more detail in the models has been undertaken along with some adjustments to zone connectors to the network – see Appendix C;
  2. Modelled demand on the highway and public transport networks have been compared to recent survey data and, following some matrix estimation calibration adjustments, modelled flows compare well to observed flows in the Old Kent Road areas;
  3. Observed journey time data has been compared to modelled times and, following relevant network calibration adjustments, compare well in the Old Kent Road area;
  4. For Railplan, a review of modelled rail services versus timetabled services was conducted and adjustments made accordingly.
- 4.2.2. By following the Department for Transport’s WebTAG guidance (Unit M3.2), both Railplan and ILoHAM models have been calibrated to within the DfT recommended validation levels. Therefore, these models form a robust base on which to develop forecast models.

## **4.3. Future Year Models**

- 4.3.1. From the Base Year AM peak Railplan and ILoHAM models, forecast 2031 AM peak models were developed using the following steps:
1. The starting point was TfL’s 2031 Railplan and ILoHAM AM peak Reference Case models. These models contain 2031 travel demand forecasts from the LTS 2031 Reference Case model.
  2. Base Year model zone, network and demand adjustments were made during the validation process and are passed on to the 2031 Reference Case models.

3. Committed transport enhancement schemes that are not already in the 2031 Reference Case models are added;
4. A review is carried out of flows, journey time and model performance.
5. Any additional demand compared to the Base Year from new development in the zones covering the OA is removed in order to create the 'Base Minus' scenario.

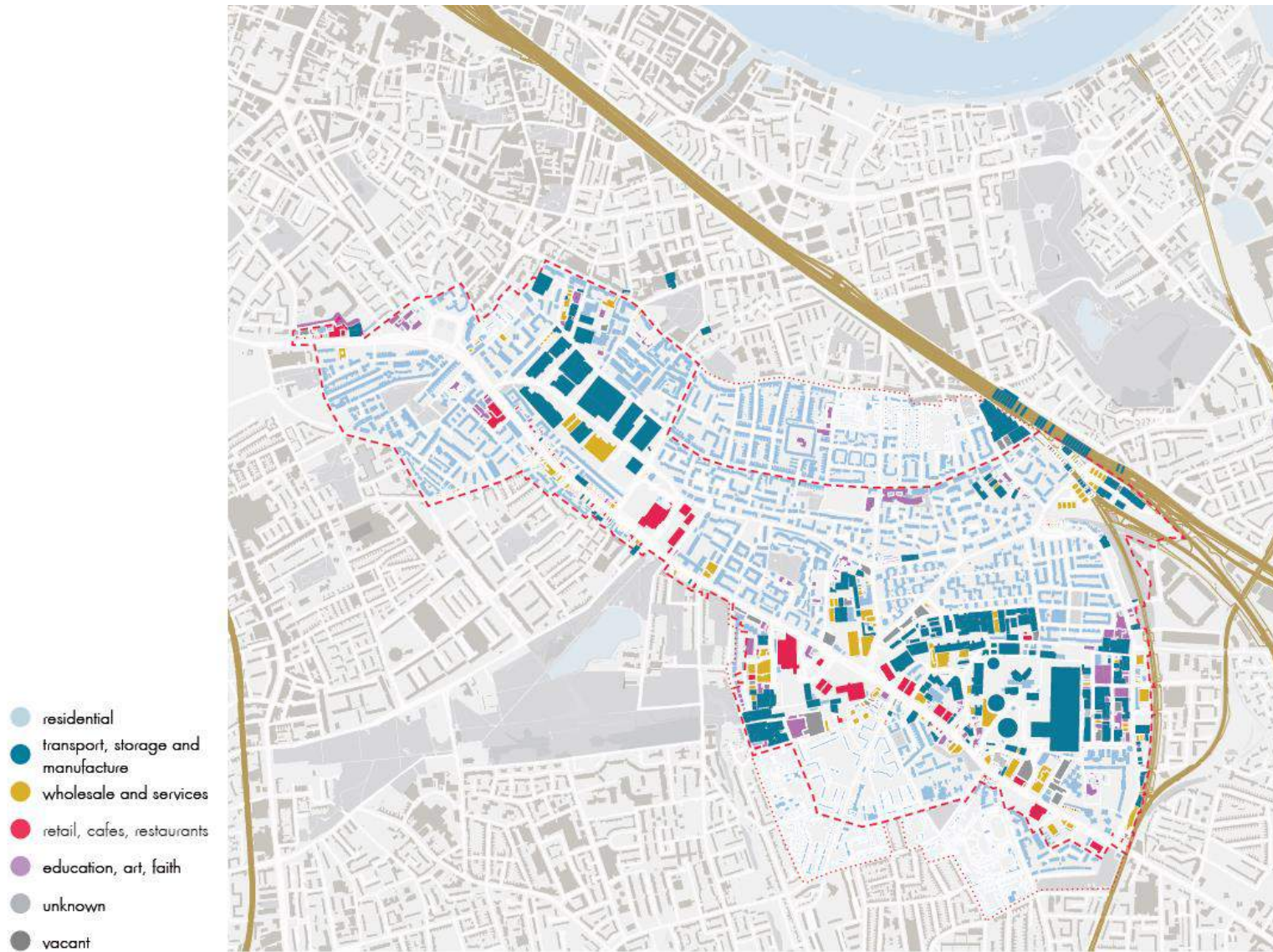
4.3.2. From the 2031 Base Minus Railplan and ILoHAM models, Low, Medium and High development scenarios can be tested by adding in LTS travel demand forecasts for these scenarios.

## **5. Understanding the current situation**

### **5.1. Land use**

- 5.1.1. Current land uses in the OKR OA have been assessed in detail by LBS and the GLA in the Old Kent Road Employment Study and are shown in Figure 5.
- 5.1.2. Figure 5 shows that there are clusters of Transport, Storage and Manufacturing mixed with Wholesale and Services in the Mandela Way area, Cantium, and Verney Road / Gasworks into the Ilderton Road area.
- 5.1.3. The New Kent Road and Old Kent Road host the main areas of Retail, Café and Restaurant land uses – reflecting their part high-street function.
- 5.1.4. The remainder of the Old Kent Road is predominantly residential of different types and age, with social infrastructure such as Schooling and Faith land uses dispersed across them.

Figure 5 - Existing Land Uses in the OKR OA



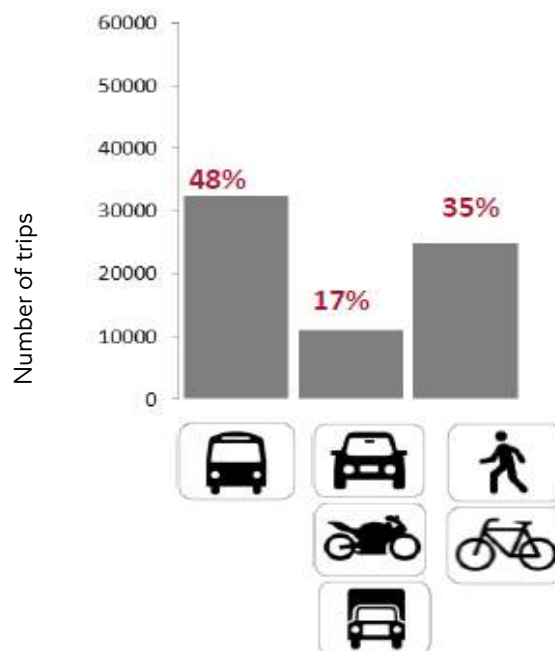
## 5.2. Current Transport Conditions

### 5.2.1. Travel Demand

5.2.2. Estimates of current AM peak period (0700-1000) travel demand and transport mode share of the Old Kent Road and surrounding area can be obtained from the London Transport Studies (LTS) model. The LTS model is currently validated to a 2011 base year, coinciding with the Census 2011 (and the rich source of data that provides) and is used as a proxy for current conditions in 2016. Due to the size of the zones in LTS, estimates obtained from the model cover the OA and its surrounding area – see Appendix A.

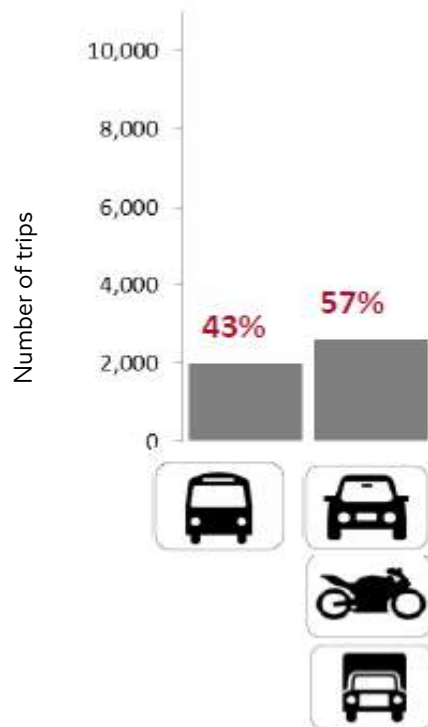
5.2.3. The LTS model forecasts the current split of trips as 48% public transport, 17% private highway and 35% active modes (walking and cycling) as shown Figure 6.

Figure 6 - LTS forecast of private, public and active mode splits in Old Kent Road study area



- 5.2.4. TfL's Railplan and ILoHAM models assign LTS public transport and highway transport demand outputs to more detailed transport networks. This enables a more detailed understanding of travel demand in the transport networks based on a more detailed representation of the OKR OA - see Appendix B. Active modes (walking and cycling), however, are not included in Railplan and ILoHAM. The transport mode shares obtained from these models are for the following sub-modes: bus, rail, Underground – all from Railplan; car, freight, and taxi – all from ILoHAM.
- 5.2.5. Combining outputs from both Railplan and ILoHAM which have more detailed depiction of the OA provide a more accurate estimate of the current public/private mode share for the OKR OA compared to the broader outputs from LTS and presented in Figure 6. These more accurate estimates focused on the OA are 43% public transport and 57% highway private modes - shown in Figure 7. Note that Railplan and ILoHAM do not estimate walking and cycling trips.
- 5.2.6. These estimates, which cover the OA more precisely rather than the wider area, show the share of private highways trips is higher than public transport use. This is due to the OA being limited to Buses for public transport (with no rail or Tube provision that the wider area presented in Figure 6 has) and reflect the dominance of the A2 Old Kent Road and the current industrial and car-oriented retail land uses along its length.

Figure 7 - Railplan and ILoHAM forecast of transport use by mode



5.2.7. Total current estimated demand for travel is shown in Figure 8. These volumes of demand will increase on either or both of highways or public transport modes if new development comes forward. As set out in the OA objectives, the aim is to ensure that public transport, walking and cycling mode shares and trip volumes see the largest increases from new development impacts as these are more sustainable methods of transport.

Figure 8 – Estimated current trip volumes to and from the OKR OA on Public and Private Transport

Type of trip in AM 3 hour period	Public Transport (trips)	Highways private transport (pcus <sup>2</sup> )
Number Trips to the OA	2,100	2,500
Number Trips from the OA	2,700	2,400
Trips within the OA	50	230

*Figures are rounded to nearest hundred (or ten where below one hundred).*

#### 5.2.8. **Distribution of Trips**

5.2.9. Trips from the OA on public transport in the AM peak period disperse across the local boroughs into central London – see Table 2. Just under a third, 31%, of trips travel to other destinations in the Borough of Southwark with 2% travelling within the OA. As Table 2 shows, a further 31% is broadly travelling towards central London (Lambeth, Tower Hamlets, Westminster, Camden, Islington, and City of London) from the OA. A total of 12% travel into the neighbouring borough of Lewisham to the east to access jobs (Lewisham is host to around 73,000 jobs<sup>3</sup>) and other services such as retail, health and education. The remainder, at 17% travel to other London Boroughs or outside of the GLA.

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<sup>2</sup> PCUs are a TfL metric. PCUs stands for Passenger Car Units. It is a vehicle unit used for expressing highway capacity. One car is considered as a single unit, whilst cycles and motorcycle, smaller in size, are considered as half a car unit. Buses and trucks, owing to their size, occupy more road space and are considered equivalent to 3 cars or 3 PCU.

<sup>3</sup> Source – GLA Borough Employment Projections, 2013 available from <http://data.london.gov.uk/dataset/gla-employment-projections>



Table 2 – Estimated current distribution of public transport trips to and from the OKR OA

Borough	Trips to OA Base %	Trips from OA Base %
Southwark excl. OKR OA Dev Area	31	37
Westminster	13	4
Lewisham	12	14
Lambeth	7	6
Camden	5	3
Tower Hamlets	5	2
City of London	5	3
OKR OA Dev Area	2	2
Wandsworth	1	1
Islington	3	1
Other London Boroughs	14	20
External to GLA	3	7

5.2.10. In contrast there is a lower percentage of origins from central London, owing to its lower resident population. In total, for the same set of central London boroughs, 19% of trips originate from them that travel to the OKR OA. The rest of Southwark and Lewisham comprise 51% of total trip origins, demonstrating that a lot of the land use in the current OA provides local employment and services. Given that 27% of trips come from other London Boroughs and outside the GLA, the figures demonstrate there are also some land uses that attract trips from much further afield – likely associated with some of the industries currently in the area.

The prevailing corridor for public transport trips in the OA broadly follows the same orientation as the A2 Old Kent Road given the reliance on the bus network and the lack of other public transport in the OA such as the Rail or Tube network. This lack of access means journey times are relatively high and so the distance of journeys is relatively shorter than other comparable locations in Inner London better served by the public transport network (distribution plots are provided in Appendix D).

- 5.2.11. Vehicle trips on the highway network, detailed in Table 3, show a wider distribution relative to the public transport trips in Southwark, reflecting the A2 Old Kent Road's current primary function for the movement of vehicles within Inner London and between central and wider south east London into Kent. Thirty six per cent of trips have destinations in wider Southwark similar to the levels of distribution for public transport trips. Also similar to public transport trip distribution, the next two most popular destinations are in Lambeth and Lewisham – the neighbouring boroughs.
- 5.2.12. The number of vehicle trips made entirely within the OA is higher than compared to the share of public transport trips starting and ending entirely within the OA. This difference likely reflects local features of the Old Kent Road – an area with light industrial businesses making local trips for goods deliveries, and the retail land uses attracting shopping from the local business and residential communities in the area.
- 5.2.13. The numbers of trips in the highest category – over 25 PCUs, compared to the public transport figures that use a scale above 20 trips, demonstrates that vehicle trip destinations from the OA go further and in greater volumes into southerly areas of Southwark and across wider south London into Lewisham, Lambeth and Wandsworth.
- 5.2.14. Trip origins and destinations distribution demonstrates that the area is dominated by the road based connections associated with the A2 Old Kent Road, which has led to land uses such as industry and big-box retail which generate vehicle trips locally and across this wider area of London. Achieving the objectives and AAP vision will therefore require an improvement in the public transport network in order to improve the ability for trips to and from the OA to choose public transport compared over private vehicles.

Table 3 – Forecast distribution of highways trips to and from the OKR OA

Borough	Trips to OA	Trips from OA
	Base %	Base %
Southwark excl. OKR OA Dev Area	35	36
Westminster	1	6
Lewisham	14	8
Lambeth	5	7
Camden	0	2
Tower Hamlets	3	5
City of London	1	1
OKR OA Dev Area	13	15
Wandsworth	2	4
Islington	0	1
Other London Boroughs	19	13
External to GLA	6	3

### 5.3. Public Transport Conditions

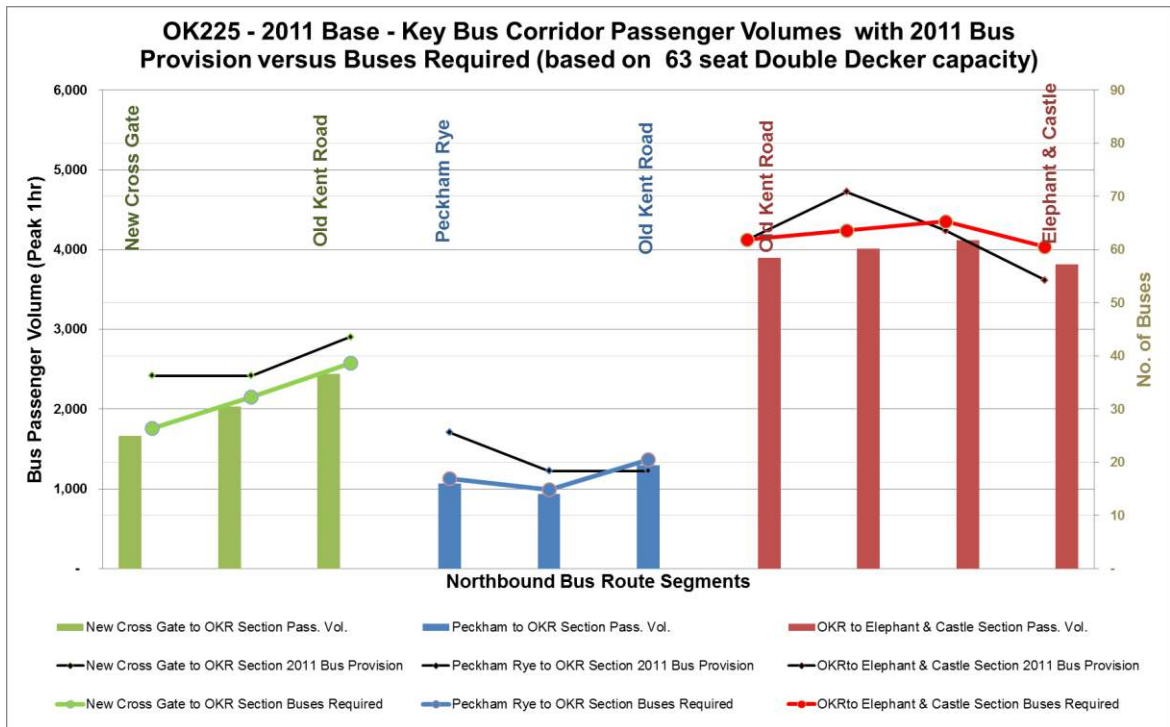
5.3.1. Currently the OKR OA is served primarily by buses. Numerous services run north-south along the length of the Old Kent Road heading to/from key Central London locations, as well as local bus services crossing through the OA east-west. Some services terminate just off the Old Kent Road following transit along it, such as the 168 from Hampstead Heath via central London and the 415 from Tulse Hill via Kennington and Elephant and Castle. Table 4 provides a break-down of the routes along with their origins, destinations and frequencies.

Table 4 - Current Bus routes serving the Old Kent Road

Bus route	Between	Peak frequency
21	Lewisham and Newington Green	Every 5 to 8 minutes
53	Plumstead and Whitehall	Every 5 to 8 minutes
63	Honor Oak and King's Cross	Every 4 to 8 minutes
78	Nunhead and Shoreditch	Every 8 to 12 minutes
168	Hampstead Heath and Dunton Road (Old Kent Road)	Every 6 to 10 minutes
172	Brockley Rise and St Paul's	Every 8 to 12 minutes
363	Crystal Palace and Elephant & Castle	Every 8 to 12 minutes
381	County Hall and Peckham	Every 8 to 12 minutes
415	Tulse Hill and Dunton Road (Old Kent Road)	Every 10 to 13 minutes
453	Deptford and Marylebone	Every 4 to 6 minutes
P12	Brockley Rise and Surrey Quays	Every 8 to 12 minutes

5.3.2. Figure 9 shows the pressure the bus network is under. Along the three main stretches of the consolidated bus routes (New Cross Gate to Old Kent Road, Peckham to Old Kent Road, Old Kent Road to Elephant and Castle), the level of demand is estimated to be relatively close to the actual capacity of the bus services in operation. Given this is based upon 2011 observed data from the Census and other data sources, and given that bus network demand has risen across London as a whole by 2.8% up to 2014/15 (TfL Travel in London 8), overall some bus routes are already at or close to reaching capacity within the Old Kent Road area. Site visits conducted to observe bus patronage levels supported this conclusion.

Figure 9 - Bus demand compared to service capacities, forecast in 2011 Railplan



- 5.3.3. TfL periodically reports journey speed performance of some bus routes that operate along the Old Kent Road. The sample point is Dunton Road, and concerns routes 168 and 415. The performance data indicates that bus journey speeds are on average between 6.8 to 7.9 mph in the AM peak over the course of the year 2015/16. This is below the whole network average for the same time period which has average speeds range between 8.1 to 9.2 mph<sup>4</sup>.
- 5.3.4. This relatively low performance in the OA is due to the volume of passenger boardings which extend dwell times at stops and also due to impedance caused by overall traffic congestion and waiting for space at busy bus stop bays. This makes journeys slower on average and is an indicator of a likely higher level of journey time unreliability.
- 5.3.5. The rail and Tube network do not directly serve the OA, however it is important to place the proposed redevelopment in the context of conditions on the surrounding

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<sup>4</sup> Bus route performance data is published by TfL on the website here: <https://tfl.gov.uk/corporate/publications-and-reports/buses-performance-data>

lines. Figure 10 and Figure 11 show estimated crowding levels on Tube / DLR services and National Rail / London Overground services respectively.

- 5.3.6. The London Overground services operating between Surrey Quays and Queen's Road Peckham that run along the eastern border of the OA are not represented in the 2011 base model as the network had not been completed at that point. London Overground load-weight reports from 2016 provide information on the current level of crowding on those services. The reports demonstrate that London Overground services in the AM peak have crowding at up to 3 to 4 passengers standing per metre northbound from Queen's Road Peckham to Surrey Quays across the peak hour. In the southbound direction passenger loadings are lighter, though generally across the peak hour all seats are taken with passengers standing at a density of 1 to 2 passengers per metre.

Figure 10 - Crowding estimated on the Underground and DLR network in 2011 (output from Railplan model)

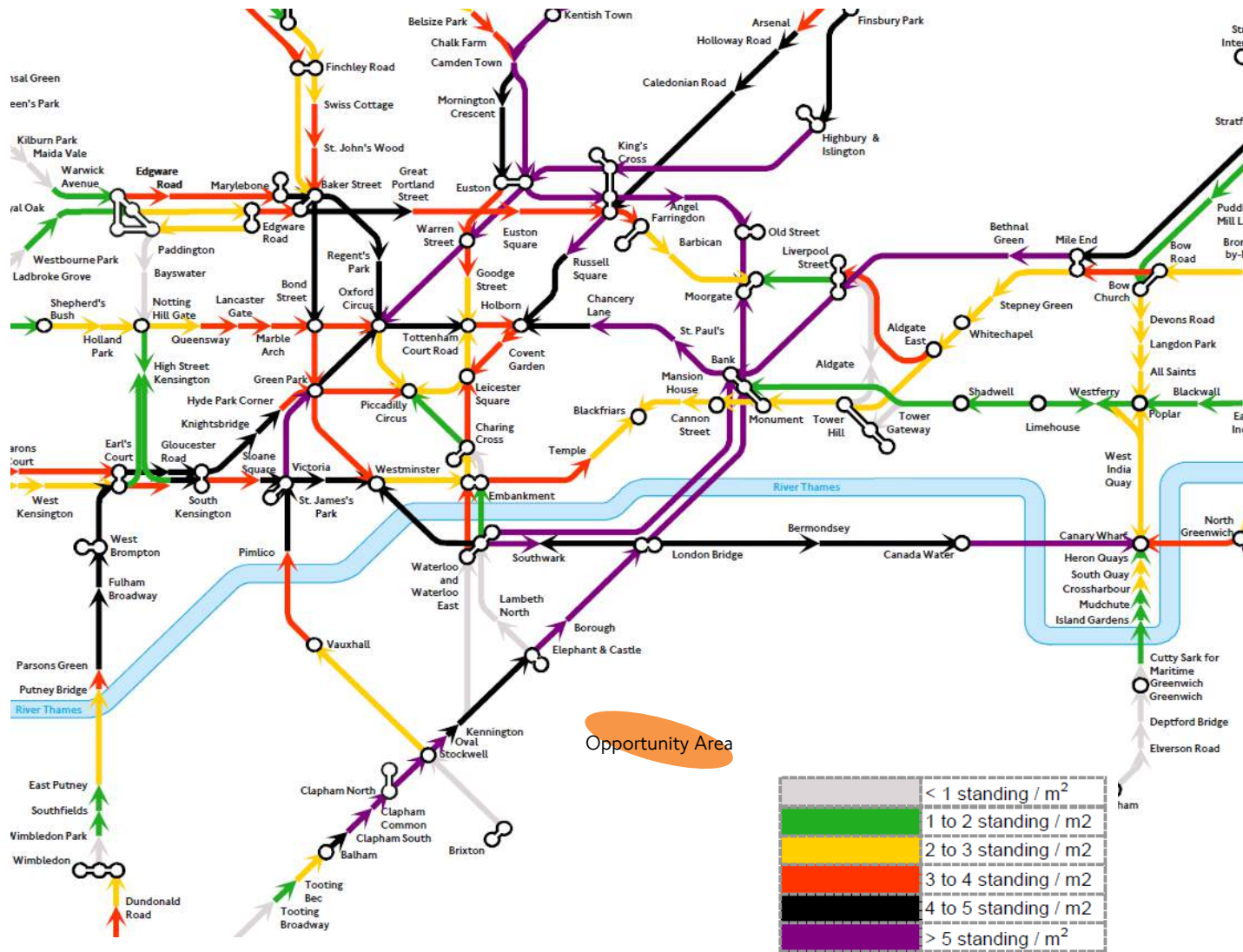
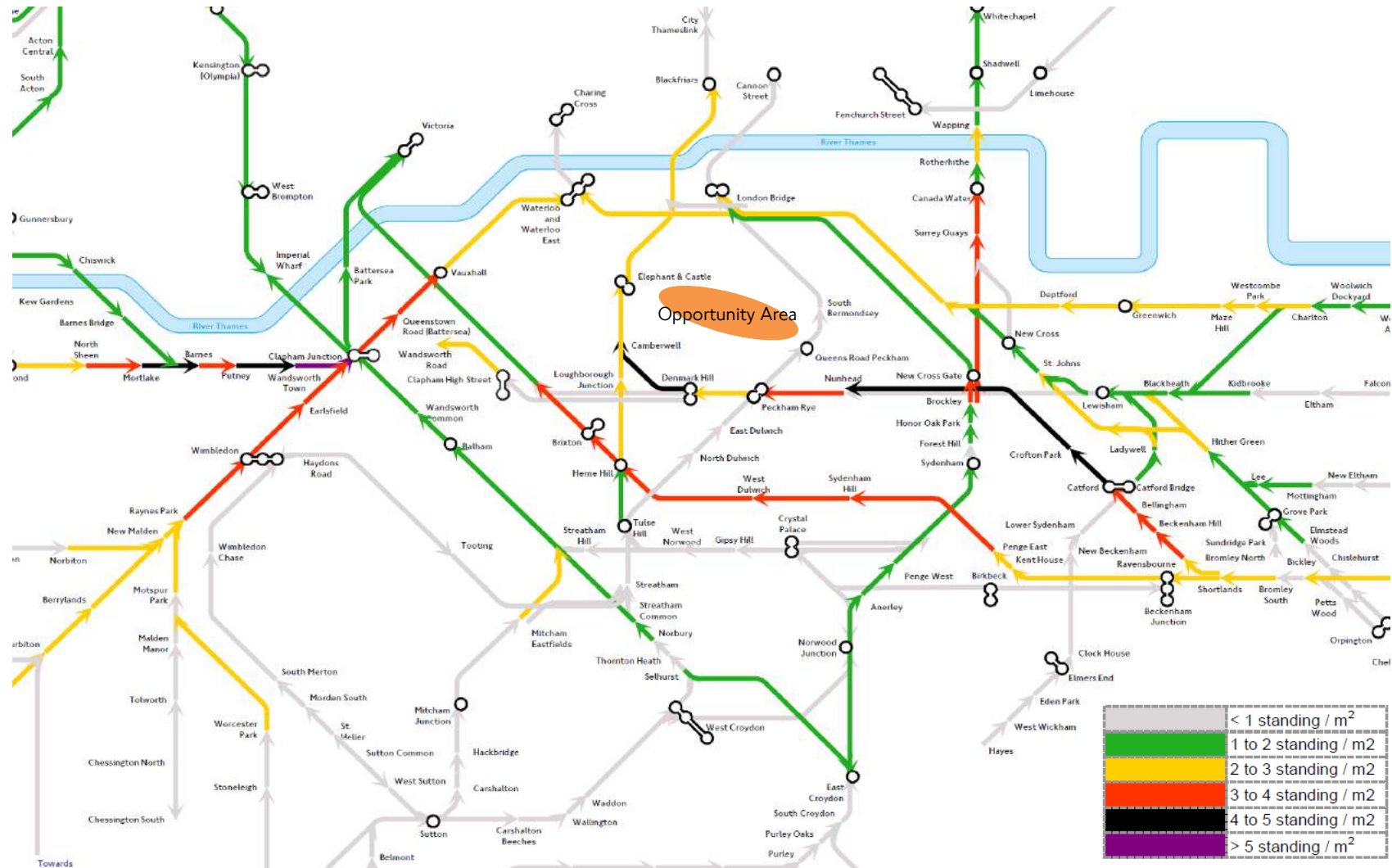


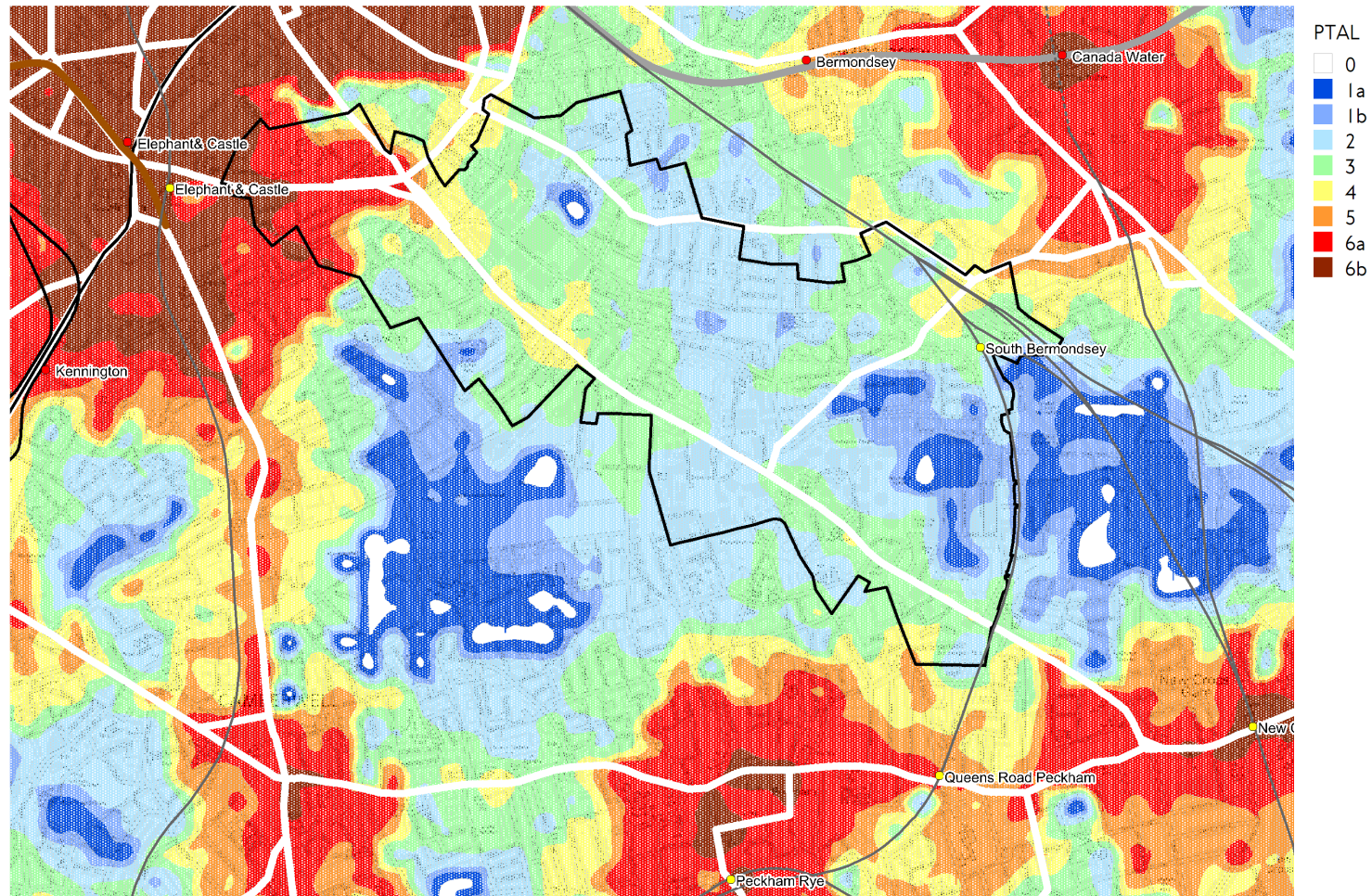
Figure 11 - Crowding estimated on the Rail network in 2011 (output from Railplan model)





- 5.3.7. Given the peripherality of the rail lines and the distance to accessing those services from locations in the OA, the PTAL ratings for the OKR OA are significantly lower than nearby areas such as Elephant and Castle where a range of transport services (Buses, National Rail and Underground) can be accessed.
- 5.3.8. Figure 12 shows that aside from the north-western part of the OA along the New Kent Road (which benefits from many of the Old Kent Road bus services as well as proximity to Elephant and Castle and Borough rail and Underground stations) the remainder of the OA is predominantly rated at PTAL 3 and below. Only some locations where multiple bus services converge or start e.g. Dunton Road, currently achieve PTALs in the higher banding of 4 to 6b. In many industrial, commercial and residential areas offset from the main bus artery of the A2 Old Kent Road, the PTAL is as low as zero to 1a.

Figure 12 - OKR OA PTAL levels based on 2011 calibrated modelled transport network



**Old Kent Road - Opportunity Area**

Public Transport Accessibility Levels (PTALs): 2011 Base Year (OK225A111)

## 5.4. Highways Conditions

- 5.4.1. The Old Kent Road has been classified on the TfL Street Types as a Core Road, owing to its arterial function between central London and Kent – see Figure 13. As the Place-making Study has highlighted, there are some parts of the route that retain the place-function of the route’s former prosperity as a local high street. In some places the A2 Old Kent Road has retained its High Street function, however this can reduce the capability of it to serve its movement function and the high traffic flows of pedestrians, cyclists and vehicles. Overall the A2 Old Kent Road is predominantly a Core Road with many large stretches possessing low levels of function as a place.
- 5.4.2. The current position on the Hierarchy is not conducive to the current AAP vision of the Old Kent Road forming the spine through a residential-led mixed use development and regeneration area. As the hierarchy shows, it is possible to achieve both functions. Achieving a progression towards a High Road or City Hub function will require an improvement in the A2 Old Kent Road’s place functioning whilst ensuring it can continue to effectively provide the important strategic movement function in that part of London. This can be achieved through consistent and appropriate application of design principles that enable the highway to perform this dual function.

Figure 13 - Old Kent Road (A2) current TfL Street Types categorisation



- 5.4.3. The current common areas of delay and junction queuing on the road network in and around the OA are shown in Figure 14 and Figure 15. The figures demonstrate that there are delays at numerous junctions across the area around and in the OA. However these delays do not currently result in junction queues that prevent the function of the overall road network at the end of the busiest periods inside the OA.

Figure 14 - Junctions with delays currently above 50 seconds in a typical weekday AM peak hour in and around the OA

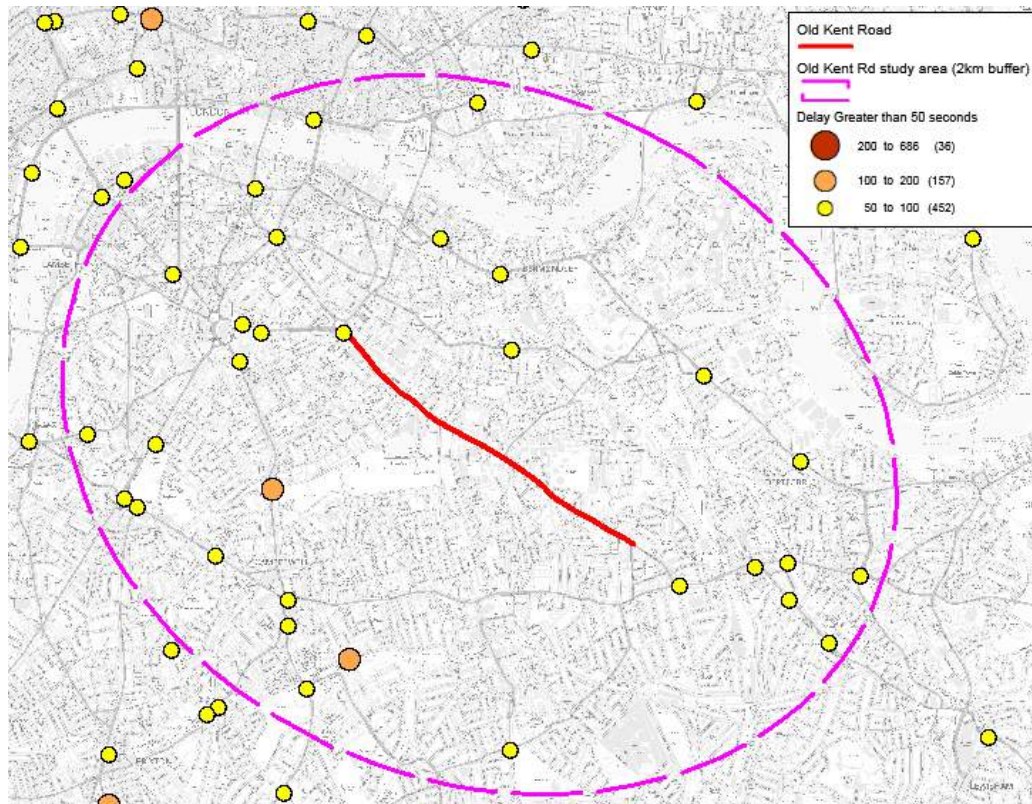
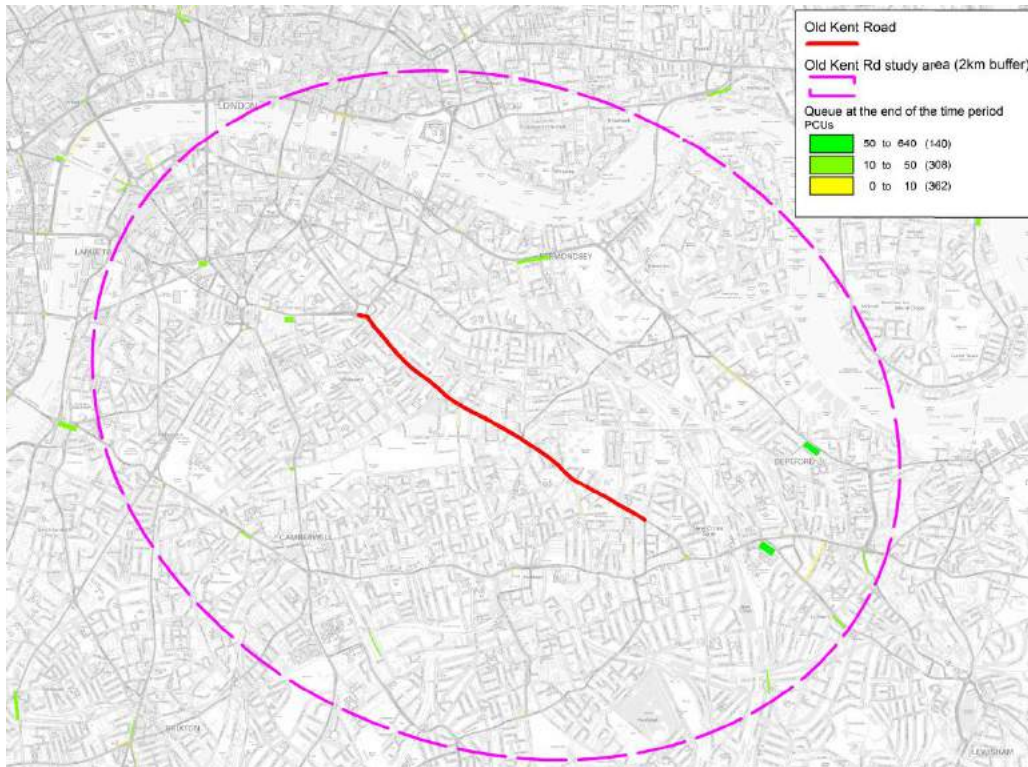


Figure 15 - Junctions with queuing at the end of a typical weekday AM peak hour in and around the OA



- 5.4.4. In addition to traffic flow and junction performance, TfL has identified the key challenges associated with the current road layout for meeting the requirements of pedestrians, cyclists, London Buses, general traffic, goods vehicles, and ensuring road safety. Table 5 lists the main challenges identified for each of these.
- 5.4.5. As detailed in Table 5, there is a fragmented and inconsistent carriageway layout, with the quality of the street environment poor in places and a lack of consistency of edge conditions. These characteristics are caused in part by the large retail sheds and industrial land with large expanses of car parking bordering the Old Kent Road and due to the large junctions dominated by vehicle movements to serve traffic in and out of these sites.
- 5.4.6. In some areas the environment for pedestrians has become secondary to the street's role as a movement corridor for vehicles. Pedestrian crossing provision is limited with a number of barriers to lateral movement across the street. In total, there are 22 signalised pedestrian crossings provided along Old Kent Road within the study area. Fifteen crossings are staggered, leading to higher waiting times and less direct crossing routes for pedestrians. Some of the offsets between the two halves of a staggered crossing are quite large, with the largest being a 30m offset near the junction with St James's Road.
- 5.4.7. Informal crossing across Old Kent Road is also possible along most of its length (notwithstanding that there may not be gaps in traffic); however it is difficult in some sections due to the presence of physical barriers.
- 5.4.8. The locations where this is the case are:
- >> Near Bricklayers Arms, due to the presence of the flyover ramp (210m)
  - >> Two sections of pedestrian guardrail in the centre of the road, in front of Tesco and Burgess Park (170m)
  - >> Between Oakley Place and Trafalgar Avenue the southern footway is significantly higher than the carriageway, creating a large level difference (80m)
  - >> Between Olmar Street and Hyndman Street there are intermittent obstructions, due to raised planters and pedestrian guardrail (230m)
  - >> There is also a short section of pedestrian guardrail between Ilderton Road and the railway bridge (50m).
- 5.4.9. In total, these physical obstructions prevent crossing along approximately 740m of the corridor, which equates to just over 20% of its length.
- 5.4.10. The lack of formal crossing facilities together with the wide carriageway width and low priority at junctions are likely to increase the risks pedestrians take along the corridor.

- 5.4.11. A 2013 TfL Study<sup>5</sup> highlighted that approximately 17% of the collisions on Old Kent Road involve a pedestrian and that at 47% of the locations analysed the proportion of collisions involving pedestrians was above the average recorded across the entire TLRN. Road safety risks for cyclists are also relatively high as there is a lack of infrastructure dedicated to cycling. This is despite relatively high flows of cyclists on the A2 Old Kent Road owing to its directness of route between wider south east London and the Southbank, West End and City.
- 5.4.12. The potential redevelopment of many large sites along the Old Kent Road, along with the need to accommodate the additional demand for road space from new residents and jobs presents an opportunity to address many of these key challenges. In some instances this will be through specific targeted interventions at points along the Old Kent Road highway itself, whilst in other instances it will be enabled by the application of well-thought through design principles that any new development and regeneration activity along the Old Kent Road can deliver.

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<sup>5</sup> TfL 2013 – A2 Old Kent Road – Road Space Reallocation Study

Table 5 - Summary of existing key challenges for the A2 Old Kent Road

**Pedestrian environment**

- **Poor crossing facilities** and strong informal crossing activity
- **Frequent barriers to movements** across the corridor
- Generally **poor quality** of the walking environment
- Relatively **high level of collisions involving pedestrians** (17%) with 47% of locations exceeding the average pedestrian collisions on TLRN

**London Buses**

- **High reliance on buses** as a mode of transport (no rail stations along corridor itself)
- **Limited and discontinuous bus priority** provided along the corridor
- Bus stops not always adequate in terms of **space provision for queuing and waiting**

**Cycling**

- **Lack of cycle facilities along OKR (despite high cycle flows)**
- Low provision of cycle parking
- **Pronounced tidal flows** in the AM and PM peak hours
- Relatively **high level of collisions involving cyclists** (20% of total)

**Freight movements**

- **Strategic corridor for freight movements** in and out of Central London
- The majority of freight traffic comes from LGVs
- HGVs represent only 2% of the people mode share
- Potential for consolidation to be set up along the corridor at key sites

**General traffic**

- Inconsistent **carriageway layout** with varying width, bus lanes, flares and central island
- Caters for both **local and strategic** trips, and both **radial and orbital** movements
- High proportion of **powered two wheelers**
- Significant sections controlled by single red lines
- **High congestion** eastbound in the PM peak due to queuing along the A2 corridor and westbound in the AM peak

## 6. Understanding the future situation

### 6.1. Future scenarios considered

6.1.1. Three core scenarios have been developed for this study, combining varying levels of new housing, employment and transport provision. These are described in detail below and can be summarised as:

- 2031 Future Base Minus – No OKR development and no BLE
- 2031 Low OKR development – no BLE
- 2031 Medium OKR development – with BLE
- 2031 High OKR development – with BLE

6.1.2. All scenarios reflect the 3 hour AM Peak Period (07:00-10:00) in a 2031 forecast year.

6.1.3. The housing and employment land use volumes used in the Low and Medium scenarios for this STS match those derived from parallel studies such as the Placemaking and Employment Land studies undertaken by the Borough.

6.1.4. It is important to note that there is a difference in the naming convention of the growth scenarios between this STS and the Placemaking and Employment Land Studie,. This STS has taken the “high” scenario (known as BI) from the parallel studies and adopted it as the medium growth scenario. This is because to test the long term sustainability of the transport network a further scenario has been developed to represent growth beyond the AAP horizon of 2036.

6.1.5. TfL has an important role to play to help deliver new housing to address London’s shortage and to drive economic growth by supporting new jobs. TfL demonstrates where this can be achieved in a sustainable manner on the transport network so that it can help drive planning policy adopted by the Mayor and local Boroughs. Furthermore, an increasing amount of transport infrastructure funding needs to be captured from new development and therefore it is important to identify where growth can be delivered that can help fund the transport network required. Testing a higher growth scenario helps on this basis.

6.1.6. To establish the TfL high scenario for testing the sustainability of the AAP proposals and the transport interventions required, the “high” BI scenario from the parallel studies was uplifted by 33% for each of the new homes and new employment space (jobs).

#### **Low Development Scenario**

6.1.7. The “Low” scenario reflects the level of development that is expected to be delivered by the development market were existing planning policies to remain in place by 2036



along with current committed and funded transport network upgrades and investments.

6.1.8. The Low scenario includes the following assumptions on the level of new homes and jobs<sup>6</sup>:

- 8,000 additional households over 2011 base levels;
- 4,000 additional jobs over 2011 base levels

6.1.9. The density and distribution of new housing in the Low growth scenario is shown in Figure 16 and for new jobs in Figure 17. Please note that these figures are graphs showing the increased volumes in households and jobs at the main development sites identified in the AAP masterplan.

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<sup>6</sup> Note figures are rounded to the nearest thousand

Figure 16 - Illustrative representation of the Low growth scenario household forecasts across the main identified development sites in the OA

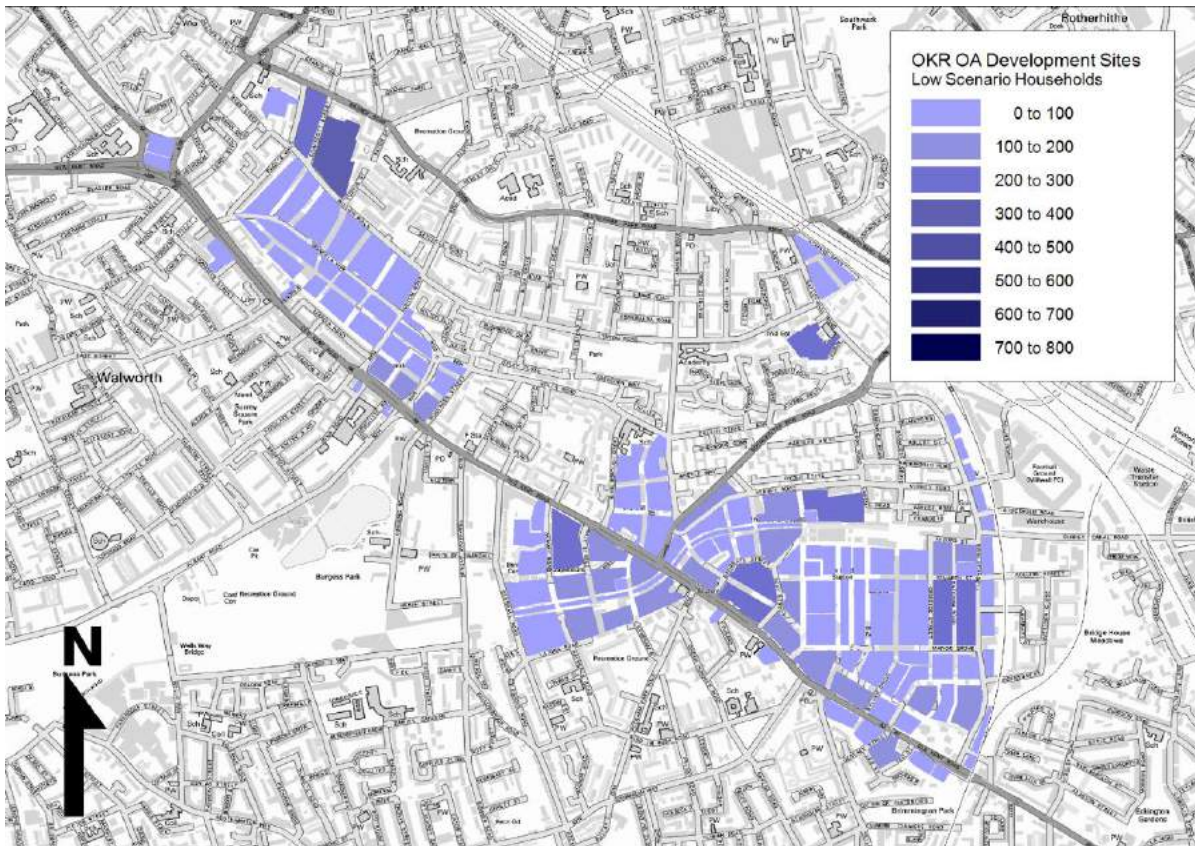
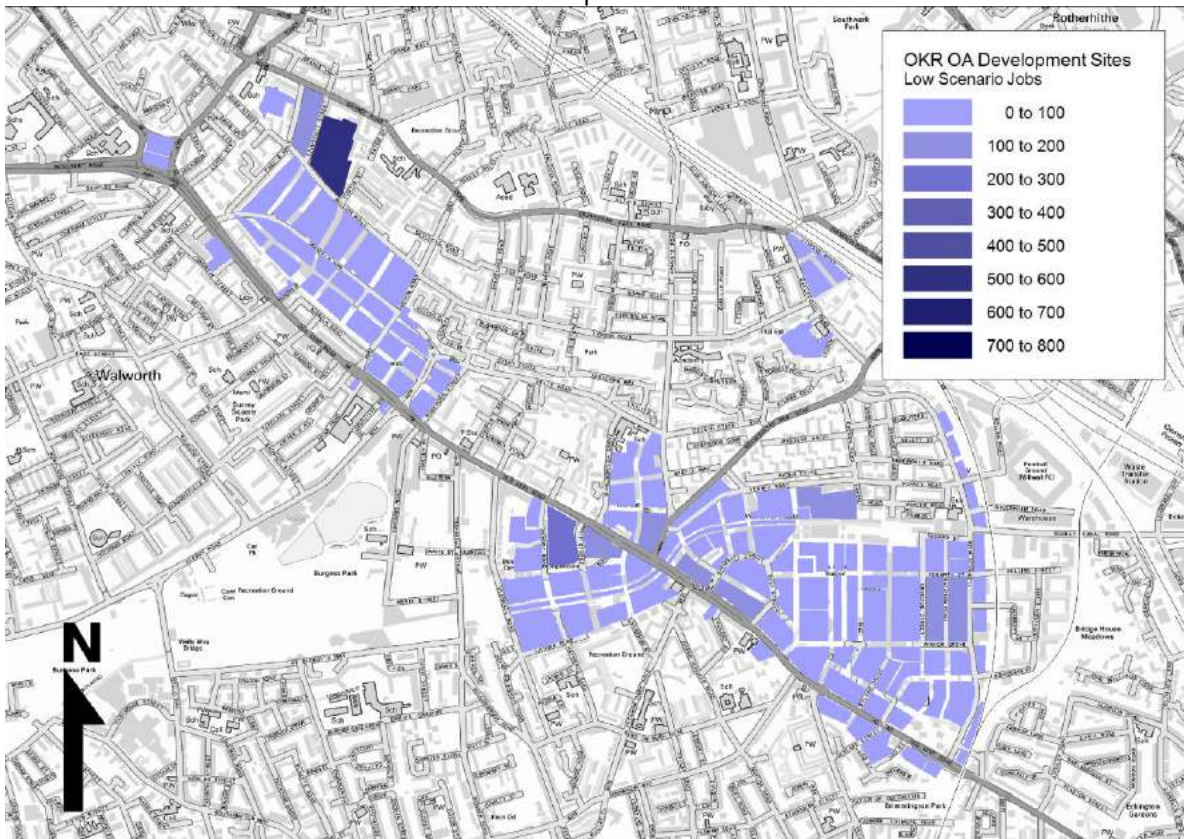


Figure 17 - Illustrative representation of the Low growth scenario jobs forecasts across the main identified development sites in the OA



#### 6.1.10. *Medium Development Scenario*

6.1.11. The “Medium” scenario reflects a desired minimum level of development for the OA that is considered to become viable if the OA PTALs significantly increase due to investment in the transport network.

6.1.12. This step change in public transport is based on the assumption of a potential extension of the Bakerloo Line from Elephant & Castle to Lewisham with two stations along Old Kent Road. Section 7 details the analysis of whether the transport demand generated by the medium scenario can be sustainably accommodated by the transport network and unlocked by PTAL increases based on a range of other transport intervention options.

6.1.13. It is important to note however that the impact of this scenario on the transport network is not the only factor relevant to whether it represents the most suitable target for the AAP. Given London faces a significant shortage of housing and constrained funding, there are other policy imperatives which drive the adoption of the final housing and jobs aspirations for the area. For TfL, accommodating the highest number of new homes and jobs as possible in an integrated manner with the public transport network is an important goal to help drive London’s economy whilst also making the funding and delivery of transport improvements more achievable.

6.1.14. The estimate of new homes and jobs in the Medium growth scenario is<sup>7</sup>:

- 17,000 additional households over 2011 base levels;
- 8,000 additional jobs over 2011 base levels.

6.1.15. The density and distribution of new housing in the Medium scenario is shown in Figure 18 and for new jobs in Figure 19. As is evident from these figures, the step change in households and jobs leads to increases across the main development sites throughout the OA, but particularly leads to new development in the Mandela Way area and the area to the south of Verney Road.

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<sup>7</sup> Note figures are rounded to the nearest thousand

Figure 18 - Illustrative representation of the Medium growth scenario household forecasts across the main identified development sites in the OA

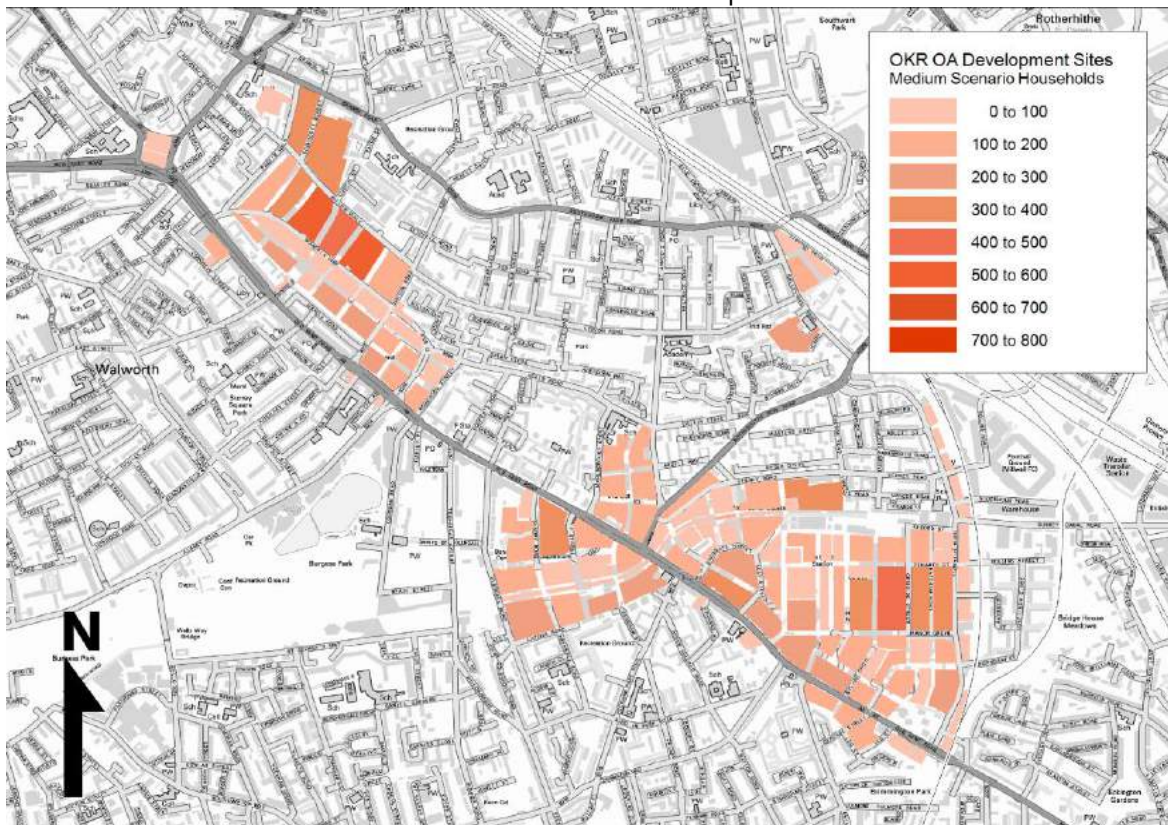
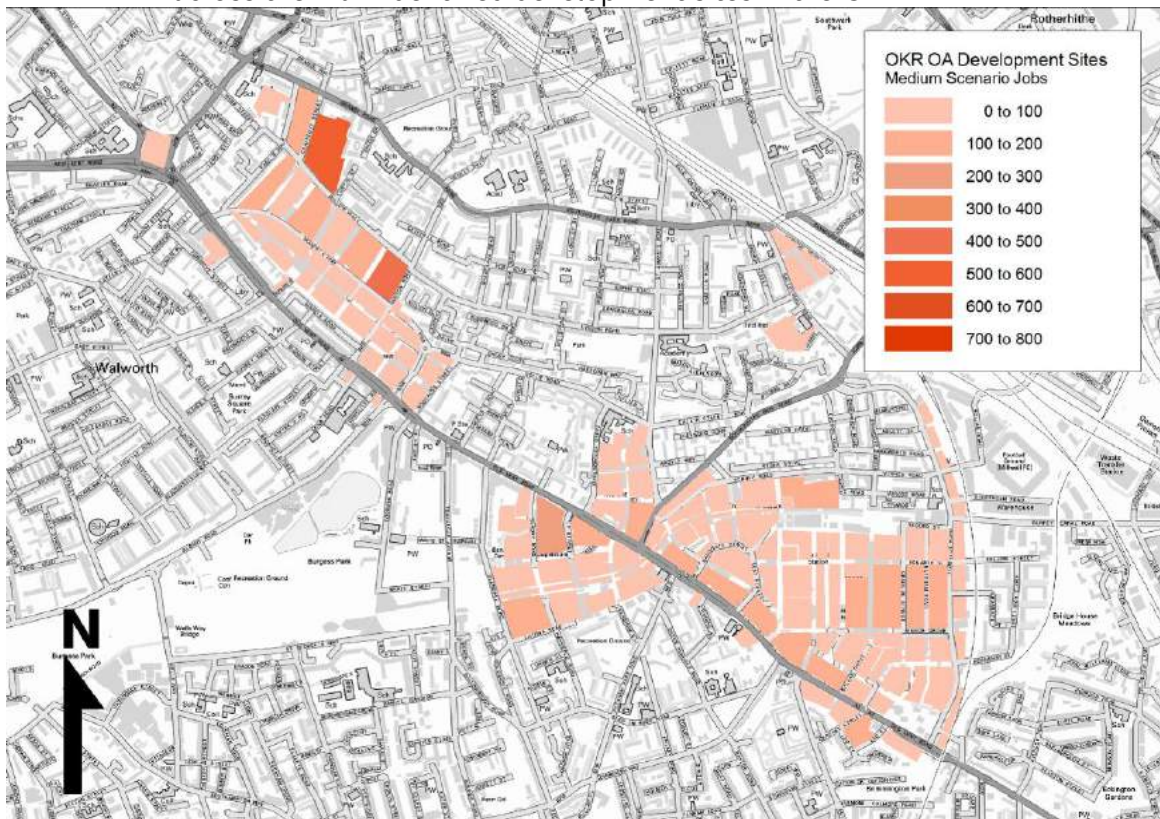


Figure 19 - Illustrative representation of the Medium growth scenario jobs forecasts across the main identified development sites in the OA



#### 6.1.16. *High Development Scenario*

6.1.17. The “High” scenario reflects a potential level of development that Southwark consider could be delivered based on a step change in PTALs from a strategic transport improvement such as TfL’s proposed Bakerloo line extension and a move towards maximising the Old Kent Road’s inner London location to deliver higher OA’s close proximity to the CAZ.

6.1.18. The scenario provides a robust basis upon which to forecast long term development growth in the OA that could be unlocked by a change to the planning policies and the supporting transport networks. Testing transport interventions on the basis of their ability to accommodate the demand impacts from this scenario also ensures that the recommended interventions would support long term sustainable travel in this part of London whilst maximising the amount of housing and jobs growth that can be delivered to address the housing shortage and drive economic growth in London.

6.1.19. As with the Medium scenario, Section 7 details the analysis of whether the transport demand generated by the High scenario can be sustainably accommodated by the transport network and unlocked by PTAL increases, based on a range of preferred transport intervention options.

6.1.20. The High growth scenario new homes and jobs assumptions are<sup>8</sup>:

- 23,000 additional households over 2011 base levels;
- 11,000 additional jobs over 2011 base levels.

6.1.21. The density and distribution of new housing in the High scenario is shown in Figure 20 and for new jobs in Figure 21. Note, the distribution of homes between High and Medium scenarios are the same; the High scenario assumes an uplift in development of 33%.

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<sup>8</sup> Note figures are rounded to the nearest thousand

Figure 20 - Illustrative representation of the High growth scenario household forecasts across the main identified development sites in the OA

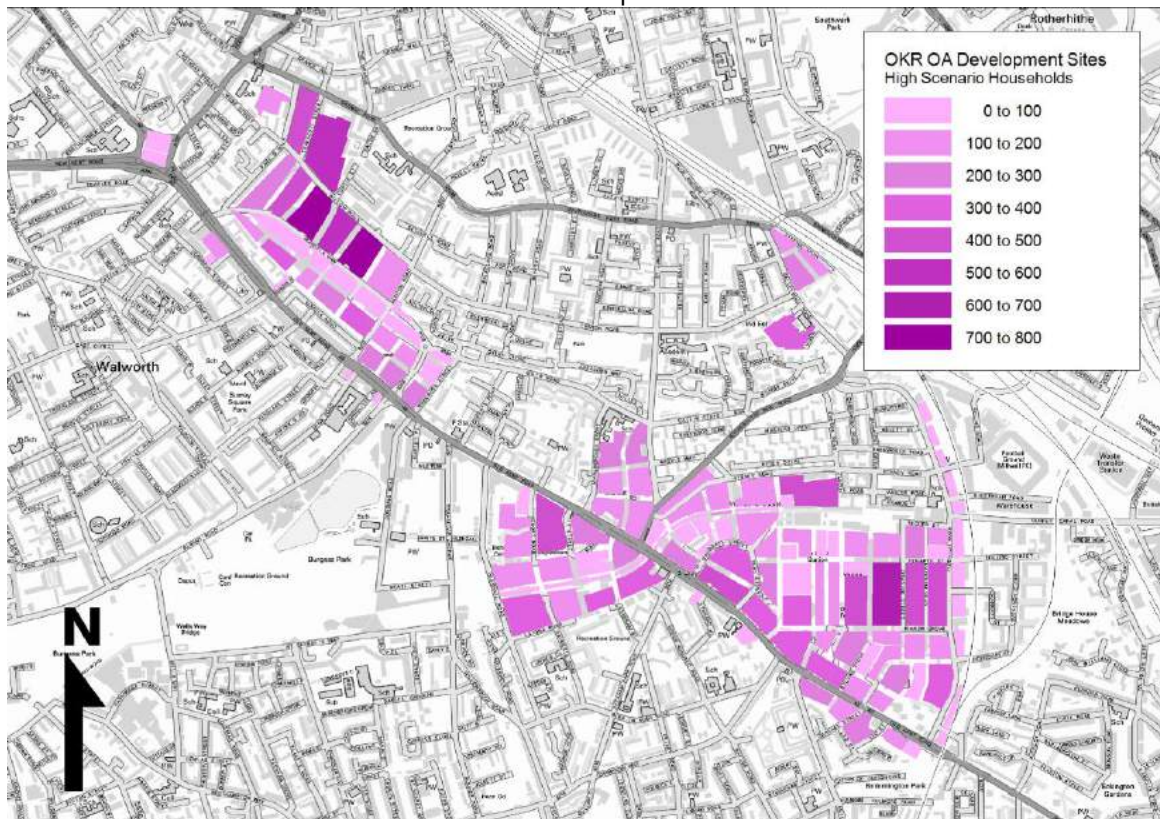
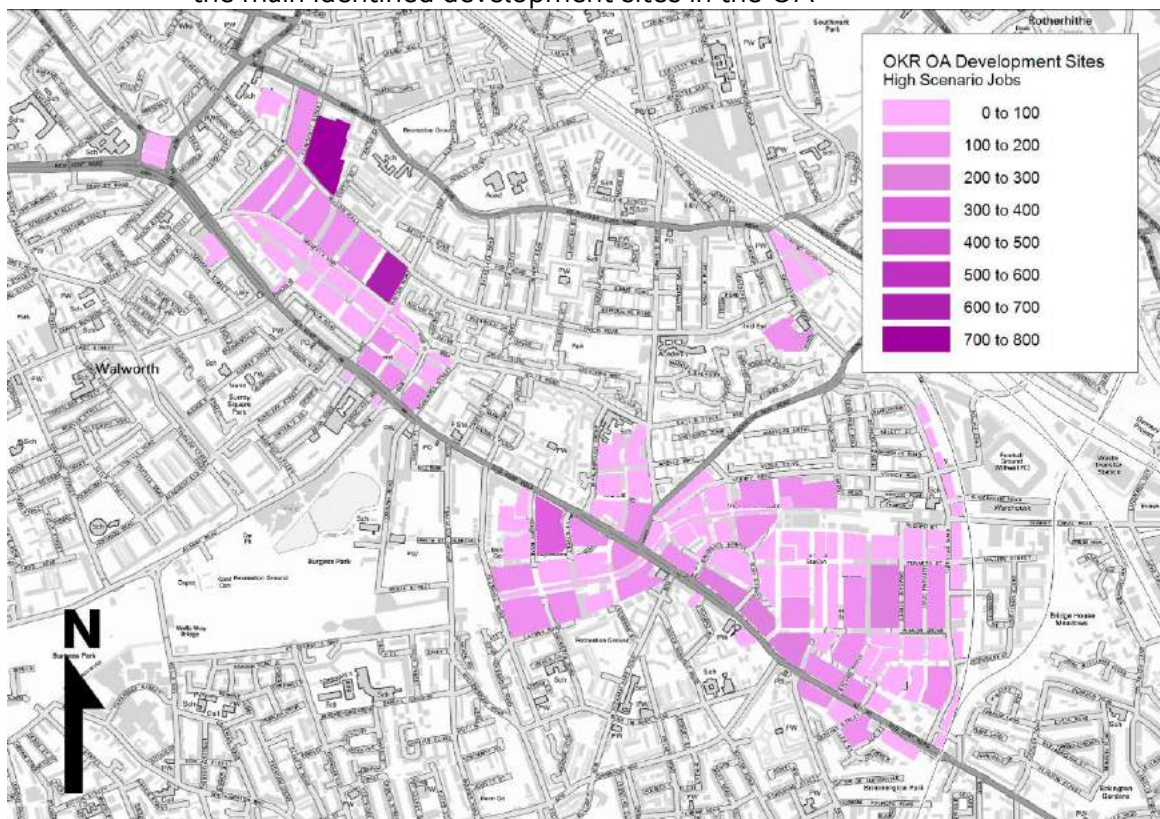


Figure 21 - Illustrative representation of the High growth scenario jobs forecasts across the main identified development sites in the OA



## 6.2. Impact of future development growth on travel demand

### 6.2.1. *Future Mode Share*

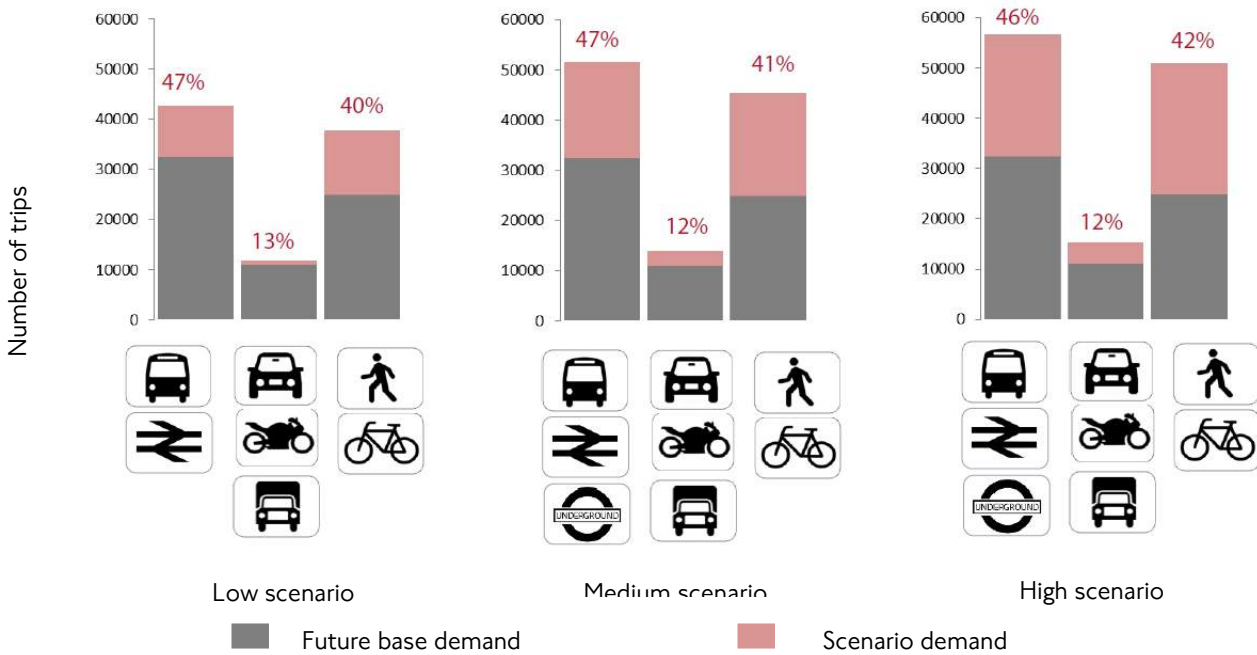
6.2.2. The Low, Medium and High development scenarios have been modelled in LTS for the year 2031. LTS has produced travel and mode share forecasts in the AM peak period for the wider OKR area for the 3 different 2031 scenarios illustrated in Figure 22 . As stated in section 6.1, the Medium and High growth scenarios are assumed to have a Bakerloo line extension to the area, whereas the Low scenario does not. The Medium and High growth tests will demonstrate whether an extension is sufficient to ensure the travel demand impacts from these levels of growth can be sustainably accommodated both at the AAP vision's target and beyond.

6.2.3. LTS model results show that over the wider study area, which includes within it the OKR OA, the transport mode share stays around the same level as the current mode share for all scenarios tested - there is a slight shift from highway to active modes (at 1% to 2%) but this is not a significant change. The impact of the Bakerloo line extension does not result in a significant change in mode share in these forecasts, but as will be seen, is having a significant impact on accommodating the new trips generated and helping to mitigate against a rise in mode share for non-public transport modes.

6.2.4. If total travel demand for the three scenarios is taken into account, however, a significant change in mode trip volumes is forecast to occur. Each test has added an increasingly large number of trips to the current model that had a total of 68,300 trips to/from the OKR OA;

- Low adds 23,900 trips to base model demand
- Medium adds 42,600 trips to base model demand
- High adds 54,500 trips to base model demand

Figure 22 – LTS mode share forecast for Low, Medium and High growth scenarios

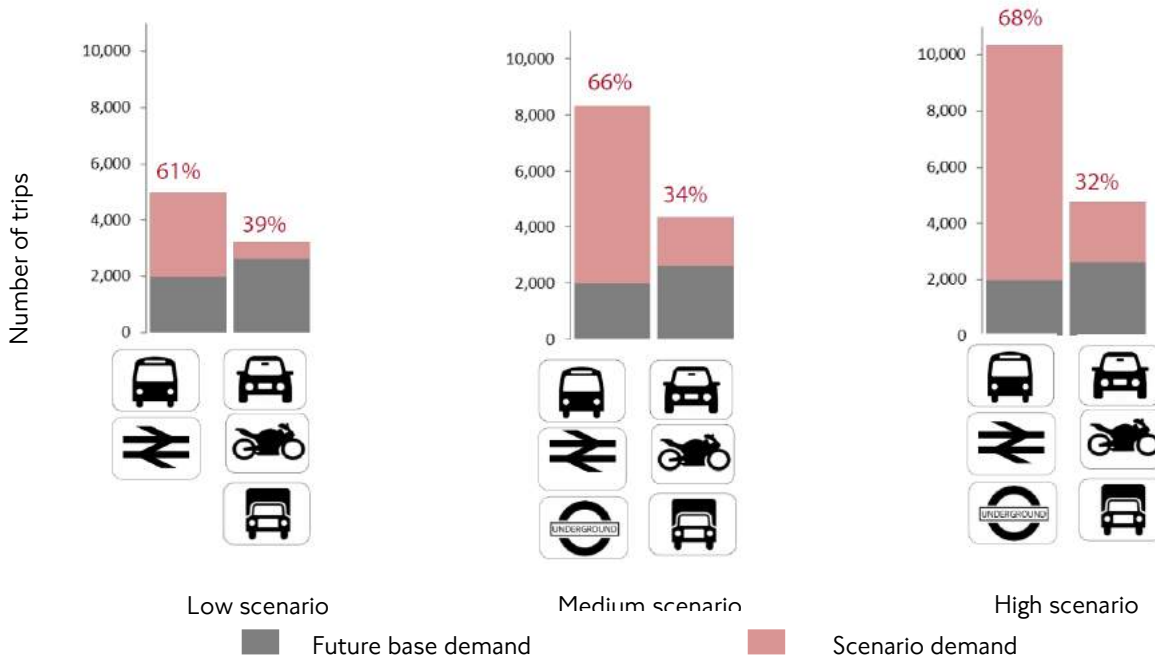


6.2.5. As explained and conducted in the current year forecast (see section 5.2.1), LTS forecasts for public transport and highway demand are carried over to the more detailed Railplan and ILoHAM models. These models, with their more precise coverage of the OA, enable a more accurate estimation of future transport mode shares and trip volumes for development areas with the OA. Also note that demand for active travel modes is not carried over as these are not modelled *per se* in either ILoHAM or Railplan.

6.2.6. From Railplan and ILoHAM, a detailed breakdown of the mode share across cordon points around the OA has then been forecast. Figure 23 shows the mode split between public and private transport forecast to be generated for the OKR OA for 2031 in the AM peak, with Figure 24 showing the forecasts at the more detailed cordon points level in and around the OA.



Figure 23 - Combined Railplan and ILoHAM mode share forecast for Low, Medium and High growth scenarios

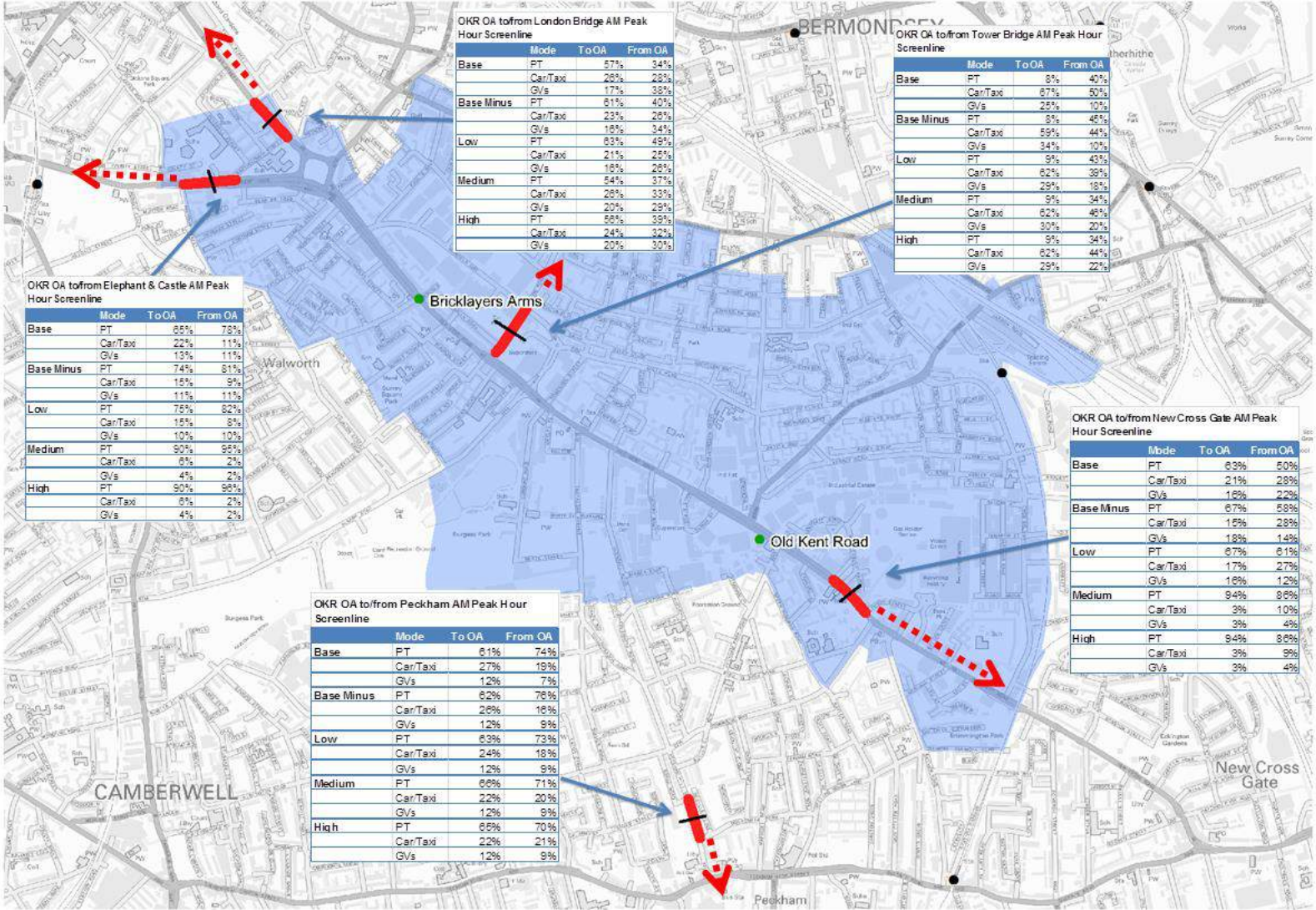


- 6.2.7. Results show a significant increase in the volume of public transport trips between the baseline and Low growth scenarios. The change is driven by the new development planned. New development will be designed to modern planning policies that significantly reduce the level of associated car parking compared to current land uses in the area. Future growth will therefore tend towards public transport use rather than private vehicle trips.
- 6.2.8. Public transport share rises further between the Medium and High scenarios, from 61% in the Low to 68% in the High scenario for the OA as a whole. This is a significant shift as not only is the proportion increasing, but so is the number of trips from around 5,000 public transport trips in the Low to around 10,000 in the High scenario. Therefore, the BLE appears to enable a large increase in and switch to public transport, delivering a considerably higher mode share for more sustainable forms of transport in the OKR OA.
- 6.2.9. The results shown in Figure 24, indicate that mode share on public transport could reach as high as 90% (from a base level of circa 60%) for some routes out of the OA, such as towards New Cross Road. This is due to the forecast impact of the volume of bus services and a potential Bakerloo line extension running along this route to nearby town centres at New Cross Gate and Lewisham.
- 6.2.10. In contrast, other routes where the prevalence of public transport is lower across the growth scenarios, such as along the A2 as it continues north east towards London Bridge from the Old Kent Road, shows that mode share stays broadly static at 57% to

56% for trips from the area and around 35% to 40% for trips to the area between the base to high growth scenario.

- 6.2.11. The cordon point with the lowest mode share forecast for public transport use is the B203 Dunton Road that runs north east from the Old Kent Road towards Bermondsey. Figure 24 shows that for trips to the OA from this direction, mode share of public transport is very low at less than 10% between the base to high growth scenario. The share is significantly higher for trips from the OA, at 34% to 40% but still low relative to movements across other cordon points.
- 6.2.12. These mode share forecasts for detailed movements to and from the OA indicate the variety of public transport options along the A2 Old Kent Road drive a high public transport mode share. On feeder routes to and from the A2 Old Kent Road, the public transport mode share is forecast to remain relatively low, indicating that these are areas where some further development of public transport access and service improvements could be targeted to help increase the share. It should also be noted that these initial tests do not include the potential impact of the proposed London Overground station at Surrey Canal Road, or the impact of wider policy measures to encourage walking and cycling which may lead to some increases in the respective mode shares for access to and from the OA.

Figure 24 - OKR OA mode Shares forecast across cordon points



### 6.2.13. Future Travel Demand – Public Transport Trips

6.2.14. The impact of the demand scenarios on public transport demand is shown in Table 6 and Table 7, for trips from and to the new development areas in the OA. These main development areas are modelled in zones shown in Figure 25 and colour co-ordinated for reference with the zone numbers in the tables provided.

6.2.15. Table 6 demonstrates that trips from the development areas increase significantly between the current day levels and the future scenarios. The low growth scenario, which represents the level of development expected to occur based on current funded and committed transport network improvements and planning policies would lead to an increase in trips of circa 4,480 in the AM peak 3 hour period. The High growth scenario is a further step change – with an increase in the volume of trips from the OA of circa 13,270 over current day levels.

6.2.16. Trips to the OA see a slightly lower level of change though still significant – see Table 7. This is due to the OA development being residential-led, with a smaller proportion of new jobs. New jobs will tend to attract trips from further afield than the OA itself. As a result, between the current day conditions and low growth scenario, trips to the OA are forecast to increase by circa 2,470 and in the High growth scenario, by circa 6,220 – just under half the equivalent number of new trips generated from the OA development.

Table 6 – Public transport trips forecast to be generated by new development from the Base scenario up to the High growth scenario in 2031

Origin Zone	Base (2011)	Base Minus (2031)	Low (2031)	Medium (2031)	High (2031)
3761	381	466	1,712	2,020	2,549
3772	235	266	223	1,309	1,662
3800	417	472	475	1,493	1,845
3801	56	67	358	614	807
3803	48	57	369	633	837
3804	335	398	507	884	1,062
3805	125	143	712	1,106	1,396
3806	1	2	1	712	945
3807	49	59	708	1,128	1,480
3808	236	289	830	1,573	2,006
3809	170	208	464	610	739
<b>Total</b>	<b>2,054</b>	<b>2,425</b>	<b>6,358</b>	<b>12,082</b>	<b>15,327</b>

Table 7 – Public transport trips forecast to be attracted to new development in the different growth scenarios up to the High growth scenario in 2031

Destination Zone	Base (2011)	Base Minus (2031)	Low (2031)	Medium (2031)	High (2031)
3761	367	412	1,018	1,188	1,458
3772	245	287	248	737	908
3800	340	398	358	726	843
3801	264	311	530	601	703
3803	517	608	829	914	1,041
3804	377	443	407	680	776
3805	231	264	558	639	762
3806	87	98	131	367	465
3807	157	176	415	568	708
3808	87	97	322	566	747
3809	76	85	402	453	554
<b>Total</b>	<b>2,747</b>	<b>3,180</b>	<b>5,217</b>	<b>7,440</b>	<b>8,967</b>

Figure 25 - Main development areas model zone numbers in the OA

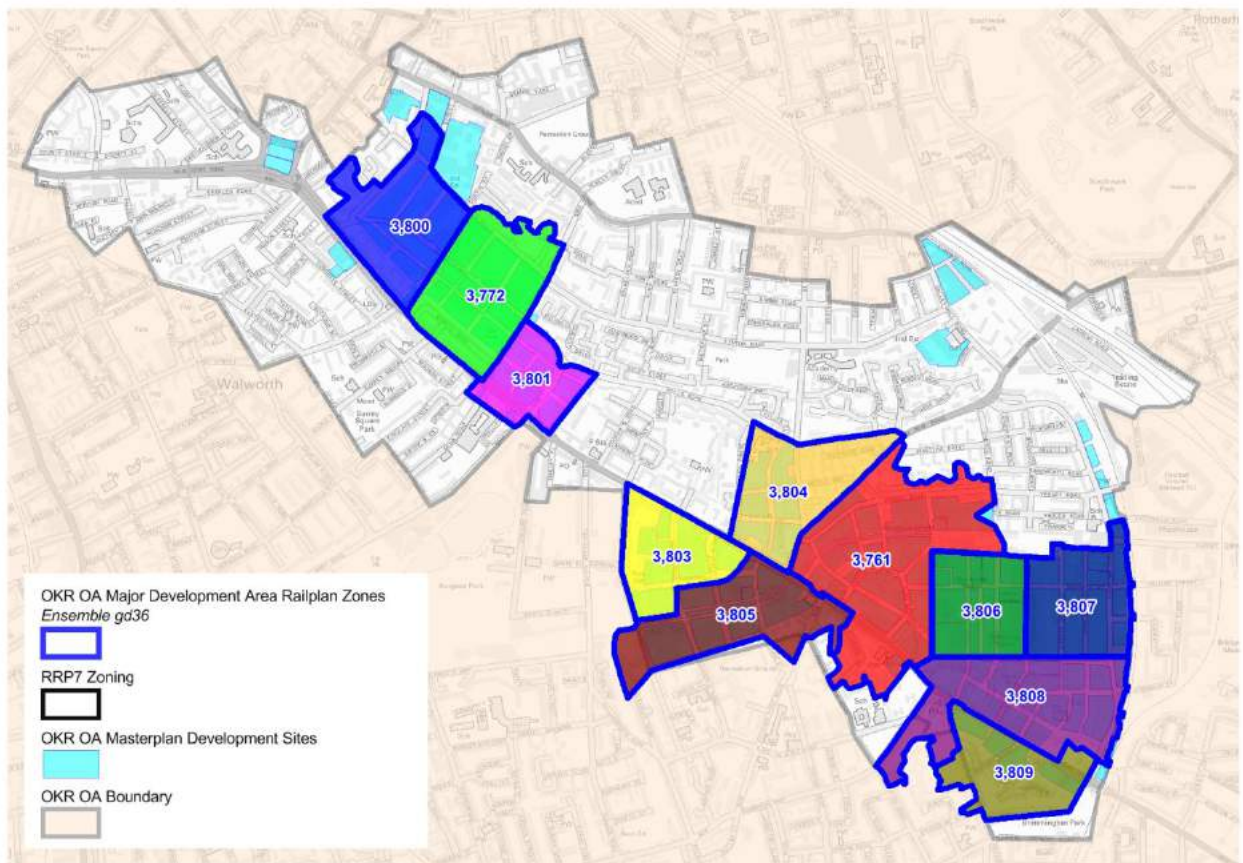


Table 8 - Distribution of forecast public transport trips to the OKR OA in 2031 for the different growth scenarios

Borough	Forecast Scenario		
	Low %	Med %	High %
Southwark excl. OKR OA Dev Area	27	25	25
Westminster	11	11	12
Lewisham	11	10	10
Lambeth	8	7	7
Camden	5	5	5
Tower Hamlets	5	5	5
City of London	5	5	5
OKR OA Dev Area	4	4	5
Wandsworth	3	3	3
Islington	2	3	3
Other London Boroughs	17	18	17
External to GLA	3	3	3

Table 9 - Distribution of forecast public transport trips from the OKR OA in 2031 for the different growth scenarios

Borough	Forecast Scenario		
	Low %	Med %	High %
Southwark excl. OKR OA Dev Area	35	31	30
Westminster	3	3	3
Lewisham	14	13	12
Lambeth	6	7	7
Camden	2	2	2
Tower Hamlets	2	2	2
City of London	2	1	1
OKR OA Dev Area	4	7	9
Wandsworth	2	3	3
Islington	1	1	1
Other London Boroughs	20	22	22
External to GLA	7	7	7

### 6.2.17. *Future Travel Demand – Highways Trips*

6.2.18. The impact of the demand scenarios on highways trips is shown in Table 10 for trips from and to the new development areas in the OA.

6.2.19. The forecasts demonstrate that highways trips rise by circa 530 for trips from the OA and by circa 270 from the OA between the current year estimates for 2012 to the future year forecast of the Low growth scenario in 2031. The increase to the High growth scenario is circa 1,400 trips from the OA and circa 970 attracted to the OA. The number of trips attracted rises at a lower rate than the trips generated primarily again due to the growth scenarios assuming residential-led development which will increase travel out of the OA to the wider London and south east area as residents access services and employment. As stated earlier, the trips metric (PCUs) includes motorcycle, cyclist and public transport vehicles such as Buses.

Table 10 - Forecast highways trips (PCUs) generated from new development in the different growth scenarios up to the High growth scenario in 2031

Zone	Base 2012	Ref Case 2031	Low	Medium	High
Total trips from OA development area	2458	2855	2996	3512	3860
Total trips to OA development area	2419	2503	2698	3112	3398

6.2.20. The distribution of this travel demand is provided in Table 11 and Table 12 whilst Appendix D provides the distribution of trips plotted across model zones in inner London for the different growth scenarios.

Table 11 - Distribution of forecast highways trips to the OKR OA in 2031 for the different growth scenarios

Borough	Forecast Scenario		
	Low %	Med %	High %
Southwark excl. OKR OA Dev Area	38	37	36
Westminster	1	1	1
Lewisham	14	14	14
Lambeth	5	5	5
Camden	0	0	1
Tower Hamlets	4	4	3
City of London	1	1	1
OKR OA Dev Area	11	13	14
Wandsworth	3	3	3
Islington	0	0	0
Other London Boroughs	18	18	18
External to GLA	5	5	5

Table 12 - Distribution of forecast highways trips from the OKR OA in 2031 for the different growth scenarios

Borough	Forecast Scenario		
	Low %	Med %	High %
Southwark excl. OKR OA Dev Area	38	37	37
Westminster	5	4	4
Lewisham	10	10	11
Lambeth	8	8	8
Camden	1	1	1
Tower Hamlets	5	5	5
City of London	1	1	1
OKR OA Dev Area	10	11	12
Wandsworth	3	3	3
Islington	1	1	1
Other London Boroughs	14	14	14
External to GLA	3	3	3



## 7. Transport interventions considered

- 7.1.1. This section outlines the findings of a strategic assessment of transport interventions aimed at supporting the development in the Old Kent Road Opportunity Area. This assessment of transport intervention options forms the first stage in the assessment for the transport study.
- 7.1.2. This first stage was intended to rule out interventions that would not be suitable as a stand-alone option for the OA. At the end of this stage, a **principal intervention** is recommended from each category of options where it performs sufficiently against the assessment criteria used.
- 7.1.3. The selected options were taken forward for further assessment and consideration – this more detailed assessment of the interventions considered is described in chapter 8.

### 7.2. Assessment framework & methodology

- 7.2.1. TfL has developed an approach to assessing options against objectives, known generally as a Strategic Assessment Framework (SAF). This robust approach has been used successfully in assessing schemes over a number of years. It is useful in understanding the broad impacts of each option in relation to a set of defined key criteria and provides a means of establishing the differences between the scenarios against the criteria used.
- 7.2.2. The assessment considered how each intervention defined for a given mode measures against the criteria provided in Figure 26 and relative to other options. The objectives for the OKR OA detailed in chapter 3 are cross-reference in the table. Value for money (Objective 6 in Table 1) is applied in the more detailed stage of assessment following the initial options appraisal owing to the more detailed modelling and assessment resources required to provide the inputs to a value for money assessment.

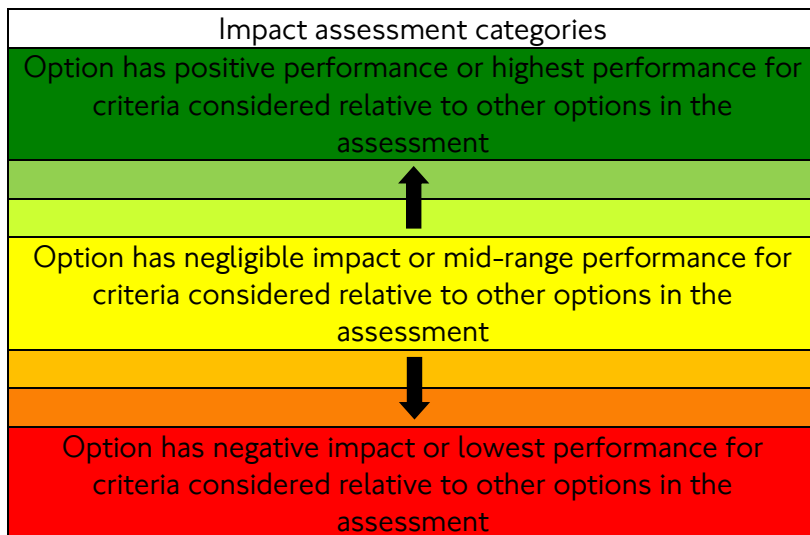
Figure 26 - Options Assessment Criteria

OKR OA Objective (see table 1)	Criteria	Considerations
1; 2; 5	Accessibility & Connectivity	Accessibility
		Connectivity
		Active Travel
3; 4	Service Capacity	Operational Capacity
		Crowding
		Capacity to support new growth in the OA
3	Operations & Reliability	Operations
		PT Reliability
		Highway Reliability
2; 3	Impact on Journey times	PT journey times
		Highway journey times

7.2.3. This assessment has been carried out at an outline level of detail focused on the impact of options against the criteria, including the practicalities and feasibility of implementing and operating the intervention in question.

7.2.4. The results of each option are shown colour coded as described in Figure 27.

Figure 27 - Criteria performance categories



7.2.5. To ensure the process is consistent for each option, the following rules were followed for each criterion:

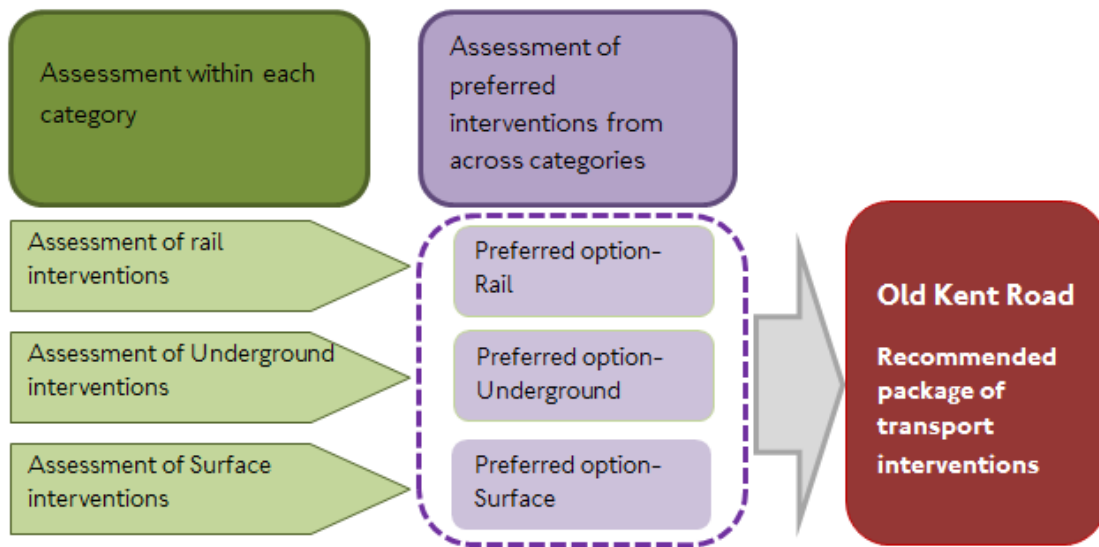
- The assessment is relative – so the performance of one option is considered relative to all other options in the subset considered (e.g. Rail, Surface etc.).

- If the impact of an option against a criterion is positive, then it falls within the green category.
- If the impact of an option against a criterion is negative then it falls within the red category.
- If the impact of an option is negligible then it falls within the yellow category.

### **7.3. Interventions considered**

- 7.3.1. A number of options were considered as transport interventions to support the growth in the Old Kent Road Opportunity Area. Maps of the rail and underground options are available in the appendices. Surface options considered are limited at this stage to the Old Kent Road within the OA and therefore no maps are necessary. For this assessment, each option has been considered as a principal intervention and its delivery in isolation from other options (i.e. no packages have been assessed), to highlight their individual strengths and weaknesses against each criterion relative to each other. The detailed assessment in chapter 8 concludes with how the interventions selected can form a package of improvements to support the realisation of the AAP vision and the planned level of homes and jobs growth.
- 7.3.2. The intervention options assessed in the initial stage have been grouped into 3 main categories as listed below.
1. Rail-based interventions
  2. London Underground interventions
  3. Surface Interventions
- 7.3.3. To ensure consistency in the assessment process that is shown in Figure 28:
- The performance of each option within a mode subset (described in section 7.3.2) was considered relative to other options within the same mode. This process was repeated for the three subset categories – Rail, Underground and Surface interventions – so for example Surface interventions are not scored relative to Underground or Rail interventions.
  - The top performing option for each subset was identified and carried forward into a more detailed assessment to confirm whether it was necessary to enable the planned growth in the OKR OA to occur.

Figure 28 - Summary of Assessment Process



7.3.4. In assessing the performance of each intervention in this category, the following principles underlie the assessment:

1. Interventions that run along the length of the OA serving a wider catchment are considered to be better performing, in comparison to options serving a small section. This is because achieving increased access, demonstrated by PTAL levels is a core requirement for enabling densification of development levels in the OA.
2. Interventions that provide the potential for onward connectivity to the wider public transport network are preferred to options that are stand-alone interventions for the OA. This is because such options reduce severance and avoid limiting journeys to a network within only the OA, providing better journey times due to the avoided need for changing on between services for onward journeys.
3. Rail interventions that require a branch off existing services are not ideal as they generally result in reduced levels of service, particularly on the rest of the line. It is generally considered sub-optimal and not sustainable to reduce operated capacity on one part of the network in order to serve another part close to central London where patronage is typically high across all parts of the network. Only where significant capacity is currently and forecast to be available in the future can an option realistically be considered.
4. Interventions that provide direct connections to central London help to meet the objectives of the OA and are preferred. This is because the OA will be residential-led mixed use development, meaning new residents will require access to jobs, the majority of which will be available in central London in the West End, City and Docklands and which are also the highest value generating in the UK. Connections to the rest of inner and outer London are also important given jobs, services and leisure

opportunities are available more widely, especially in town centres and other planned future growth areas.

## 7.4. Option A – Rail interventions

- 7.4.1. A number of rail options (surface-based given the separate Underground subset of options) have been considered as a means of providing a principal transport intervention to support the development of the OA. Rail-based options, in this case, include extensions, assumed at surface / on viaduct, of national rail, DLR, Tram and London Overground. These interventions could enhance public transport capacity and improve journey times in the area, which is currently heavily reliant on buses for public transport.
- 7.4.2. The specific options considered for serving the OA within this report are listed in Table 13.

Table 13 - Surface based rail interventions tested

Option	Surface based rail intervention description
A1	Extend the Overground network from between Queens Rd Peckham and Surrey Canal Road, with a new branch into the OKR OA
A2	Extend national rail services on a new line between Peckham Rye to London Bridge to serve the OA
A3	A new tram along the Old Kent Road
A4	Extend Thameslink on a new line from the Walworth / Camberwell area to serve the OA
A5	A new Overground station where the South London line between Queen's Road Peckham and Surrey Quays crosses the Old Kent Road
A6	A DLR extension from Deptford Bridge to Elephant & Castle via New Cross Gate and Old Kent Road

## 7.5. Option A1 - Extending the Overground network

- 7.5.1. This option considers an extension of the Overground network from a new station in the Brimington Park area to serve the Old Kent Road. Overground services from the Old Kent Road would join the South London line and serve the existing stations on the Overground network in the southbound and northbound directions. It is estimated that current service levels through Queen's Road Peckham (four trains per hour) on the Overground network could operate on an extended line.
- 7.5.2. A summary of the scoring for the assessment framework is shown in Table 14.

Table 14 - Option A1 Assessment – Extending Overground to OA

Criteria	Impact	Summary of Performance
Accessibility	Low	The extension aligns to the main arterial road in the OA and provides a rail-based public transport access. However, service frequency is relatively low and does not have a significant impact on PTALs. Stations would be step-free street to train.
Connectivity	Low	Provides onward connectivity to rest of PT network from Overground but poor direct connectivity into Central London
Active Travel	Medium	Stations along the OKR encourages walking/cycling to station
Operational Capacity	High	Creating a branch, off an existing branch to serve the OKR would have an adverse impact on train capacity across the wider Overground network. Trains may be unable to operate at current levels of frequency. The capacity on the line as a whole or sections of it would be reduced, depending on the precise service patterns and infrastructure delivered.
Crowding	High	A spur on the Overground would worsen the level of crowding, particularly in the peak period. Passengers would suffer from a less frequent service, longer wait times and in some cases, could become unable to board trains given how busy the Overground network already is and is forecast to remain by 2031.
Capacity to support new growth in the OA	Medium	The service provides a significant PT capacity uplift on the Old Kent Road corridor, which is currently heavily dependent on buses. Although the available PT capacity available on Old Kent Road increases, this is negated by the loss in capacity on other parts of the line, serving a relatively larger population and where other growth areas exist.
Operations	Medium	Generally, creating a spur and operating junctions between branches is more challenging operationally. It would require construction of a T-junction, which would either introduce conflicting movements on an already busy part of the rail network, or would require significant construction works in order to construct a grade-separated junction, significantly impacting land in the AAP masterplan and vision for the area.
PT Reliability	Medium	The intervention has a positive impact on public transport reliability. Currently, buses serving the Old Kent Road suffer significant variation in journey times. A new Overground extension into the area would relieve the pressure and demand on buses, potentially improving average bus speeds and journey time reliability. Adding complexity to the network could adversely impact the Overground's high levels of train service reliability.

Criteria	Impact	Summary of Performance
Highway Reliability	Low	Reduced bus mode share could mean improved journey time reliability as there could be less overcrowding on bus services and the impedance this causes highways traffic due to queuing at bus stops and extended dwell times.
PT journey times	Low	The Overground extension could provide users with a quicker service with connectivity to the wider rail and underground network, although the relatively low frequency train service could mean that wait times for the Overground would typically be much higher than those for a Bus along the Old Kent Road.
Highway journey times	Low	A new Overground service could be expected to reduce the mode share of buses. This would release road capacity for other road users, resulting in possible journey time improvements. The effect is likely to be low though, given the high demand for bus use and the relatively low frequency of Overground service that could be delivered.

## 7.6. Option A2 - Extend national rail services via Peckham Rye to London Bridge to serve the OA

7.6.1. This option considers an extension of national rail services on a new line between Peckham Rye via the Old Kent Road to London Bridge. This option would be in addition to existing services via South Bermondsey to London Bridge. It is assumed the existing 5 tph peak service frequency between Queens Road Peckham to South Bermondsey would be split between the two routes, providing 2.5 trains per hour on each route. This alignment could likely only serve the northerly section of the Opportunity Area.

7.6.2. A summary of the scoring for the assessment framework is shown in Table 15.

Table 15 - Option A2 assessment – extending Southern services to the OA

Criteria	Impact	Summary of Performance
Accessibility	Low	Some positive accessibility benefits. The option only serves a small section of the Opportunity Area. Branched services would constrain capacity and frequency, limiting the scale of impact on PTAL.
Connectivity	Medium	Opportunities for interchange at London Bridge and other stations south of the line would increase connectivity to the wider network and bring central London within shorter travel time of the OA. The option would also provide links to wider



Criteria	Impact	Summary of Performance
		south London via the rail network.
Active Travel	Low	Limited benefits for active travel as the station location may discourage passengers further away from walking, but could encourage cycling
Operational Capacity	Low	A new branch off at Peckham Rye could reduce available capacity on the rest of the line, although the low number of remaining areas served prior to London Bridge north of the OA means the negative impact is likely to be relatively low.
Crowding	High	Given forecast demand for public transport, trains likely to be crowded on approach to station in the OKR, likely with no spare capacity to sustainably support OA development. The OKR station could then add further demand to an already very crowded service.
Capacity to support new growth in the OA	Medium	With a spur to serve the Opportunity Area, train frequencies on either branch would provide up to 2.5 tph in the peak period. This level of service would be inadequate to cater for the level of development anticipated.
Operations	Medium	Creating a new spur off an existing line is operationally more difficult than extending an existing line. During times of service disruptions, for example, it is operationally more complex if trains need to be sent to more than one destination. Adding additional junctions to the main line just east of the approach to the busy London Bridge terminus would add operational risk at a critical point on the national rail network in the south east region.
PT Reliability	Low	Station location would mean heavy reliance on buses would remain. This would negatively impact on bus journey time reliability whilst operational risks identified could lead to a worsening in rail service reliability.
Highway Reliability	Low	Heavy reliance on buses to access new rail station which suffer from journey time performance impacts. Added demand could further increase bus journey times and may also warrant additional services placing further pressure on highway capacity and reliability.
PT journey times	Low	PT journey times would improve for some residents and workers in the OA, and this is likely to be higher than the worsened journey times for those rail users travelling to and from South Bermondsey for whom the train service frequency would reduce.
Highway	Low	Highway journey times are expected to worsen. The option

Criteria	Impact	Summary of Performance
journey times		would not provide improved public transport across the majority of the OA, meaning car use may be higher adding to congestion and lengthening journey times. In addition there may be increased bus usage which will increase bus dwell times and may warrant additional bus services which could impact general highway journey times.

## 7.7. Option A3 – A new tram along the Old Kent Road

- 7.7.1. A new tram extension running along the stretch of the Old Kent Road was considered as an option to support the OA development. This option is considered as a stand-alone intervention for the Old Kent Road, requiring interchange to other public transport such as rail, Tube and Buses at either end. Assuming a Tram beyond the boundaries of the OA would require a much larger assessment of its impacts on a wider region of London.
- 7.7.2. Whilst considered as a rail intervention, a Tram by its nature can also be considered as a surface network / roads-based intervention and therefore the assessment applies across both of these intervention types considered in the study. At the northern end of the Old Kent Road, it is assumed that passenger would continue their journey by bus to Elephant & Castle station for onward connectivity into Central London. This option was considered as a quicker alternative for travelling along the Old Kent Road.
- 7.7.3. A summary of the scoring for the assessment framework is shown in Table 16.

Table 16 - Option A3 Assessment – Tram along Old Kent Road

Criteria	Impact	Summary of Performance
Accessibility	Low	This option runs along the main arterial road in the OA and would require a large amount of road space and likely lead to a replacement of a large number of bus services. Given the range of routes and frequency of those bus services relative to the fixed route of a Tram, it is likely that the option would actually reduce PTAL levels. A Tram would be designed to be easy to board & alight with step-free access.
Connectivity	Medium	Poor onward connectivity as tram is not connected to wider PT network
Active Travel	Medium	This option encourages walking and cycling. Passengers are likely to walk to or from a tram stop along the Old Kent Road.

Criteria	Impact	Summary of Performance
Operational Capacity	Neutral	Given the very high frequency of bus services on the Old Kent Road a Tram would likely provide a broadly equivalent level of capacity. However, the Tram may reduce road space and lead to a reduction in the number of buses that could operate, potentially leading to a net reduction in public transport capacity on the Old Kent Road as well as a loss in wider bus network capacity as routes beyond the OA serving other parts of London could be lost.
Crowding	Low	No crowding concerns as tram is expected to cater for demand on the OKR corridor but there is a risk of crowding increasing on the wider bus network if services are reduced due to a lack of road capacity.
Capacity to support new growth in the OA	Neutral	Scheme would provide entirely new capacity (as it does not utilise / take from existing services operating around or through the area in question) in the OA although this may be at the risk of a reduction in Bus service capacity in the OA and on routes more widely that may serve other growth areas.
Operations	Medium	Full segregation may not be possible resulting in interoperations with highways traffic. Will require significant surface land take for depots and operational facilities, which could undermine the AAP vision and masterplan for land in the OA.
PT Reliability	Neutral	A Tram should have good reliability owing to its potential segregation from other general traffic and priority measures. However providing this could mean increase delay and deterioration in journey time reliability for Bus services operating through the OA to wider London areas.
Highway Reliability	Medium	Tram would take up some of the available road space. This would reduce reliability as congestion worsens
PT journey times	Low	PT journey times along the OKR will improve as a Tram would have high priority and operate largely independent of wider highways traffic flow speeds. Buses serving through the OA and the wider area could suffer long journey times due to the reduce road space and reduced frequency of bus services.
Highway journey times	Medium	Trams would use a fixed track and are expected to replace some capacity taken up by buses on the highway network

## 7.8. Option A4 - extend Thameslink from Camberwell to serve the OA

7.8.1. This performance of this option is similar to Option A2 previously discussed in section 7.6 – an extension on Southern services via Peckham Rye to serve the OA. It is assumed approximately four to six trains per hour could be redirected along the branch. As such, the conclusions discussed in section 7.6 largely apply to this option, but with some slight difference as detailed in Table 17.

Table 17 - Option A4 Assessment – Extend Thameslink from Camberwell to serve the OA

Criteria	Impact	Summary of Performance
Accessibility	Low	The option is likely to provide a relatively low train service level – these branched services would constrain and frequency, limiting the scale of impact on PTAL. Step free access assumed to be available at new stations on the line.
Connectivity	Medium	The option would link the OA into the Thameslink network which would provide good connectivity benefits to south London and to central London. The connectivity benefit is lessened due to the low frequency of service assumed to be able to operate on the line.
Active Travel	Medium	Stations along the OKR encourages walking/cycling to station
Operational Capacity	Medium	A new branch off at Peckham Rye could reduce available capacity on the rest of the line, although the low number of remaining areas served prior to London Bridge north of the OA means the negative impact is likely to be relatively low.
Crowding	High	Trains likely to be crowded on approach to station in the OKR, likely with no spare capacity to sustainably support OA development.
Capacity to support new growth in the OA	Medium	With a spur to serve the Opportunity Area, train frequencies on the route could provide up to 6 tph in the peak period. This level of service would be inadequate to cater for the level of development anticipated.
Operations	Medium	Creating a new spur off an existing line is operationally more difficult than extending an existing line. During times of service disruptions, for example, it is operationally more complex if trains need to be sent to more than one destination. Adding additional junctions to the main line core of the Thameslink network would add operational risk at a critical point on the rail network in the south east region.
PT Reliability	Low	Station location would mean heavy reliance on buses would

Criteria	Impact	Summary of Performance
		remain. This would negatively impact on bus journey time reliability whilst operational risks identified to the rail network from junction working could lead to a worsening in rail service reliability.
Highway Reliability	Low	Heavy reliance on buses to access new rail station. Highway reliability would be negatively impacted as buses take up road capacity
PT journey times	High	Splitting the Thameslink core service and diverting services into the OA would result in significant deterioration in public transport journey times as passengers across the remainder of the expansive Thameslink network in south London would see reduced services.
Highway journey times	Low	Mode shift from private to public transport trips could lead to service changes to free up road space for other users.

## 7.9. Option A5 – a new Overground station to serve the OA

7.9.1. This option considers changes to the Overground network to provide a new station on the existing Overground line. It is therefore distinct from option A1, which considered new Overground stations on a new Overground line. The new station in option A5 is assumed to be in the Brimington Park area, most likely where the line crosses the Old Kent Road. The option assumes the same level of Overground services as stop at Queens Road Peckham and there is potential to also stop national rail services too.

7.9.2. A summary of the scoring for the assessment framework is shown in Table 18.

Table 18 - Option A5 Assessment- new Overground station to serve OA

Criteria	Impact	Summary of Performance
Accessibility	Low	Limited accessibility benefits. New Overground station sited at the boundary of the OA. An additional change may be required for quicker access into the Central Activities Zone.
Connectivity	Medium	Good onward connectivity to rest of PT network
Active Travel	Low	Limited benefits for active travel due to siting of station
Operational Capacity	Low	The service is currently crowded especially in the peak. However, impacts on capacity as a result of opening a new station is much less than an extension to a current service
Crowding	Low	The service suffers crowding, particularly in the peak. Increasing demand with a new station would negatively impact on crowding
Capacity to support new growth in the OA	Low	A new Overground station would not provide the required level of capacity to meet demand in the OA. The station location would also pose a challenge as it is likely to reduce the attractiveness of the new station
Operations	High	Should be straightforward to achieve operationally although the planned addition of Surrey Canal Road Overground station to the network may add some complexity given the increasing proximity that will begin to arise between stations.
PT Reliability	Low	Station would provide access to a high reliability train service, improving the general level of public transport reliability for the OA.
Highway Reliability	Low	Heavy reliance on buses to access new rail station. Highway reliability would be negatively impacted as buses take up road capacity

Criteria	Impact	Summary of Performance
PT journey times	Neutral	PT journey times would improve for those parts of residents and workers in the OA, and this is likely to be higher than the worsened journey times for those rail users travelling to and from South Bermondsey for whom the train service frequency would reduce.
Highway journey times	Low	Buses expected to be a key transport mode on the corridor and a major access mode to the new station. Continued increased patronage would affect PT journey times

## 7.10. Option A6 - Extending the DLR network

7.10.1. DLR services currently originate from Lewisham and Woolwich Arsenal south of the river, to serve central London and other destinations. This option considers a branch off the service from Lewisham at Deptford Bridge to serve the Old Kent Road and terminate at Elephant & Castle. It is assumed half of the service that currently operates to DLR Lewisham terminus could operate onto the extended branch – equivalent to 11 DLR trains per hour.

7.10.2. A summary of the scoring for the assessment framework is shown in Table 19.

Table 19 - Option A6 Assessment – extending DLR services

Criteria	Impact	Summary of Performance
Accessibility	Medium	This option provides the best rail accessibility options relative to the other rail-based options. The extension aligns to the main arterial road in the OA and provides a frequent rail public transport access. It would not require a reduction in any other existing forms of public transport along the Old Kent Road and therefore PTAL would increase to a significant degree compared to other options. However, the frequency of service is still relatively low compared to metro services provided in other areas outside the OA – Lewisham has national rail and 24 tph DLR services, and other areas have frequent Tube services.
Connectivity	Low	DLR would deliver rail connectivity to the rail and Underground networks to the north and south of the OA – by connecting to Lewisham and Elephant and Castle. However, the line would not provide direct connections to central London and the route to Docklands would be long.
Active Travel	High	Stations along the OKR with a turn-up-and-go level of train service are likely to encourage higher levels of walking and cycling to the stations compared to other options that would

Criteria	Impact	Summary of Performance
		provide lower frequency services of more local stopping services which could substitute for walking and cycling.
Operational Capacity	High	Creating a branch, off an existing branch to serve the OKR would have an adverse impact on train capacity across the wider DLR network. Trains may be unable to operate at current levels of frequency. The capacity on the line as a whole would be reduced
Crowding	High	A spur on the DLR would worsen the level of crowding on the DLR route to Lewisham, particularly in the peak period. Lewisham generates high demand for DLR due to National Rail interchange passengers. Halving the service would lead to increased crowding for these many passengers.
Capacity to support new growth in the OA	Low	The service provides a significant PT capacity uplift on the Old Kent Road corridor, which is currently heavily dependent on buses. Although the available PT capacity available on Old Kent Road increases, this is negated by the loss in capacity on other parts of the line, serving other growth areas such as the New Cross-Lewisham-Catford OA.
Operations	Medium	Creating a spur and operating junctions between branches is more challenging operationally
PT Reliability	Medium	Provides a reliable public transport service to the OKR OA.
Highway Reliability	Medium	Could relieve pressure on bus mode share, allowing improved journey time reliability as there could be less overcrowding on bus services and the impedance this causes highways traffic due to queuing at bus stops and extended dwell times.
PT journey times	Neutral	The option would provide journey time improvements in the OA; however a halving of the service on the existing route to Lewisham station on the DLR would significantly worsen journey times for those existing passengers. The net effect is estimated at neutral on balance.
Highway journey times	Low	Mode shift from private to public transport trips could reduce traffic volumes and lead to improved highway journey times. Some service changes to buses could also occur if a large shift from Bus to DLR occurs, adding to a reduction in traffic volumes on the Old Kent Road.



## 7.11. Summary of rail interventions

7.11.1. The options considered for rail-based interventions have been assessed across a number of criteria. The best performing option recommended to be taken forward to the next stage of the assessment is the new Overground station on the existing line near Brimington Park. On balance, other options are likely to have high negative impacts that affect a large number of transport network users more widely and which do not outweigh what positive impacts they may have on travel in the OA itself - as shown in Table 20. These wider negative impacts of options aside from A5 mean they have not been considered in further detail in the assessment.

Table 20 - Summary of assessment for surface based rail interventions

Criteria	Option A1 Extending Overground to OA	Option A2 Extending Southern services to the OA	Option A3 Tram along Old Kent Road	Option A4 Thameslink from Camberwell to OA	Option A5 New Overground station to OA	Option A6 Extending DLR services
Accessibility	Low	Low	Low	Low	Low	Medium
Connectivity	Low	Medium	Medium	Medium	Medium	Low
Active Travel	Medium	Low	Medium	Medium	Low	High
Operational Capacity	High	Low	Low	Medium	Low	High
Crowding	High	High	Low	High	Low	High
Capacity to support new growth	Medium	Medium	Neutral	Medium	Low	Low
Operations	Medium	Medium	Medium	Medium	High	Medium
PT Reliability	Medium	Low	Neutral	Low	Low	Medium
Highway Reliability	Low	Low	Medium	Low	Low	Medium
PT journey times	Low	Low	Low	High	Neutral	Neutral
Highway journey times	Low	Low	Medium	Low	Low	Low

## 7.12. Option B – London Underground Interventions

7.12.1. The assessment has considered a number of interventions based on the extension of London Underground services into the OA. The assessment includes the consideration of the already proposed Bakerloo line extension to Lewisham via the Old Kent Road and New Cross Gate. The London Underground options considered for serving the OA are summarised in Table 21.

Table 21 - London Underground interventions assessed

Option	London Underground Interventions
B1	Extend the Bakerloo line from Elephant & Castle to Lewisham via the Old Kent Road
B2	Create a new branch of the Northern line to extend it from E&C to the Old Kent Road
B3	Create a new branch off the Jubilee line at Bermondsey to the Old Kent Road
B4	Create new branch off the District line near Tower Hill to the Old Kent Road
B5	Create a new branch off the Victoria line at Vauxhall to the Old Kent Road
B6	Create a new branch off the Waterloo & City line at Waterloo to the Old Kent Road

## 7.13. Option B1 - Extending the Bakerloo line

7.13.1. This option considers an extension of the Bakerloo line from Elephant & Castle to Lewisham via the Old Kent Road Opportunity Area. This would provide a direct extension from the current terminus of the service at Elephant & Castle to serve the OA. The extension is assumed to provide at least 27 tph as has been stated in previous published TfL assessments of the Bakerloo line extension proposal.

7.13.2. A summary of the scoring for the assessment framework is shown in Table 22.

Table 22 - Option B1 Assessment- Extension to the Bakerloo line

Criteria	Impact	Summary of Performance
Accessibility	High	Runs along the OKR alignment. Could significantly improve public transport accessibility levels in the OA due to the very high frequency services that would operate. Stations would be step-free street to train although step free access on existing line is currently limited.
Connectivity	High	Direct connections to rest of public transport network through interchanges with London Overground, Thameslink, Crossrail, National Rail, buses and direct connections to central London and town centres in south London.
Active Travel	Medium	High frequency metro services encourage walking and cycling to stations for turn-up-and-go onwards travel on the Tube.
Operational Capacity	High	Bakerloo line currently has spare capacity in sections of Zone 1 in the peak headed northbound and forecast to remain so following planned line upgrade by 2031. The extension would not involve branching so would not reduce the current level of service on the line whilst achieving metro service to OA.
Crowding	Low	Bakerloo line currently has some spare capacity in sections of Zone 1 in the peak and is expected to prevent overcrowding on existing public transport network in the OA from growth. The option will likely increase crowding on the existing line but it is expected to remain at levels where effective Tube operations can be maintained in the peak periods given the additional capacity the line will have post-upgrade.
Capacity to support new growth in the OA	High	Bakerloo line currently has some spare capacity in sections of Zone 1 in the peak. Extending the line would provide significant new capacity due to high frequency services to support new growth in the OA.
Operations	High	Operationally relatively to deliver as service just extends from current line. No junctioning of services between branches. Current assumed operation levels would require the Bakerloo line upgrade. Operations entails largely sub-surface infrastructure so little impact on land entailed in AAP masterplan and vision.
PT Reliability	High	Provides a reliable public transport service to the OA and reduces crowding on remaining public transport network helping to improve wider performance and reliability.
Highway Reliability	Medium	High capacity and frequency rail option could attract users from road based modes reducing road traffic and consequently improving highways journey time reliabilities. Serves whole OKR

Criteria	Impact	Summary of Performance
		so improvement could be along large section of the arterial road route.
PT journey times	High	Services provide significant reduction in journey times due to high frequency, low waiting times and fast runtimes between stations. Reduced crowding on wider transport network also reduces likelihood of extended waiting times to board services.
Highway journey times	Medium	Quicker rail-based public transport mode would reduce the dependence of buses, lowering congestion and achieving mode shift from private modes of travel on highways. This would improve highway journey times as congestion falls.

#### 7.14. Option B2 – Extending the Northern line

7.14.1. This assessment has considered an extension from the Northern line (Bank branch) at Elephant and Castle into the OA. This option would add a third branch to the Northern line.

7.14.2. A summary of the scoring for the assessment framework is shown in Table 23.

Table 23 - Option B2 Assessment- Extending the Northern line

Criteria	Impact	Summary of Performance
Accessibility	Low	Runs along the OKR. Would be lower capacity and lower frequency due to existing branch to Battersea requiring train services, limiting scale of impact on public transport accessibility levels.
Connectivity	Medium	Good onward connectivity to rest of wider public transport network – particularly National Rail, Thameslink, Crossrail and the Underground. Direct connection to central London.
Active Travel	Medium	Frequent underground services encourage walking and cycling to stations for turn-up-and-go onwards travel on the Tube.
Operational Capacity	Medium	The Northern line on the Morden branch operates with busy services in the peak periods. A branch to the OKR would reduce the overall level of service and capacity on the Morden branch. In addition, adding a branch to the Northern line could undermine potential further separation of the line to achieve very high frequency services to meet demand.
Crowding	High	The reduced frequency of trains due to branching would worsen crowding, especially in the peak period

Criteria	Impact	Summary of Performance
Capacity to support new growth in the OA	Low	The option would provide capacity uplift for the OKR however the limitation to capacity and frequency due to the branching from the Bank / Morden branch of the northern line limits the capacity to a relatively low level compared to other options and given the AAP growth aspirations.
Operations	Low	Generally, creating a spur and operating junctions between branches is more challenging operationally
PT Reliability	Medium	Provides a reliable public transport service to the Old Kent Road; however the branch and junctions would make service recovery from disruptions more challenging.
Highway Reliability	Medium	Could reduce pressure on bus services and reduce demand for private vehicle trips freeing up capacity and improving traffic flow. Impact on highway usage reduced relative other options due to lower rail service frequency and capacity that can be achieved.
PT journey times	Low	Quicker option than current public transport to central London. Constrained service frequency and capacity would provide less journey time improvement compared to other options and possible crowding could impact on overall journey times due to delays and having to wait for next train.
Highway journey times	Medium	Related to Highway Reliability - reduced use of road-based modes would reduce congestion and improve traffic flow, improving journey times.

## 7.15. Option B3 – Extending the Jubilee line

7.15.1. This assessment has considered a branched extension from the Jubilee line at Bermondsey into the OA. A summary of the scoring for the assessment framework is shown in Table 24.

Table 24 - Option B3 Assessment- Extending the Jubilee line

Criteria	Impact	Summary of Performance
Accessibility	Low	Low benefit to the OKR as extension would not run the length of the corridor given would be broadly north-south alignment dissecting the OA. Constrained capacity and frequency as branched services constraining impact on public transport accessibility levels. Good for Step Free Access to wider network as much of Jubilee line in central London is already step free.

Criteria	Impact	Summary of Performance
Connectivity	Medium	Good onward connectivity to rest of wider public transport network – particularly National Rail, Thameslink, Crossrail and the Underground. Direct connection to central London.
Active Travel	Medium	Encourages walking to station
Operational Capacity	High	Branching would significantly reduce the available capacity on the rest of the service which has very high demand. The extension would un-do the capacity improvements that TfL is implementing through the world class capacity upgrade scheme in order to cater for passenger demand between central London and Canary Wharf.
Crowding	High	A branched extension would exacerbate crowding on a line already crowded in the peak periods.
Capacity to support new growth in the OA	Medium	The Jubilee line has many other growth areas on it and the limited service achievable to the OKR OA is also not expected to be sufficient to address the AAP growth aspirations.
Operations	Low	Generally, creating a spur and operating junctions between branches is more challenging operationally
PT Reliability	Low	Only serves a small part of the OA. This limits the benefits from PT reliability and the branch and junctions would make service recovery from disruptions more challenging.
Highway Reliability	Low	Extension alignment does not encourage the maximum mode shift from bus. Some reliance on buses as a PT mode remains. Impact on highway usage reduced relative other options due to lower rail service frequency and capacity that can be achieved.
PT journey times	Low	Quicker option than current bus option but constrained service frequency and capacity would provide less journey time improvement compared to other options and possible crowding could impact on overall journey times due to delays and having to wait for next train.
Highway journey times	Low	Proposed alignment of option would provide less journey time improvement on the highway network. Passengers could still depend on buses, contributing to congestion

## 7.16. Option B4 – Extending the District line

7.16.1. This assessment has considered a branched extension off the District line at Tower Hill to terminate within the OA. A summary of the scoring for the assessment framework is shown in Table 25.

Table 25 - Option B4 Assessment- Extending the District line

Criteria	Impact	Summary of Performance
Accessibility	Low	Low benefit to the OKR as extension would not run the length of the corridor, likely dissecting the OA north-south. Branched services would constrain capacity and frequency, limiting impact on public transport accessibility levels.
Connectivity	Low	Poor onward connectivity to rest of network as District line is not radial - does not cut through city or West end linking lines in those areas. Line serves along north side of Thames, so has limited impact in delivering direct access through central London.
Active Travel	Medium	Encourages walking and cycling to stations due to frequent turn-up-and-go services for onward Tube travel.
Operational Capacity	Medium	Branching would reduce the available capacity on the rest of the service and un-do the benefits currently being delivered by the Sub-surface lines upgrade.
Crowding	Medium	A branched extension would exacerbate crowding on a line already crowded in the peak periods
Capacity to support new growth in the OA	Low	The District line is not forecast to have adequate capacity to support the OA growth due to the limited train service frequency that could operate on the branch.
Operations	Low	Generally, creating a spur and operating junctions between branches is more challenging operationally
PT Reliability	Low	Only serves a small part of the OA. This limits the benefits from PT reliability. The branch and junctions would make service recovery from disruptions more challenging.
Highway Reliability	Low	Extension alignment does not encourage the maximum mode shift from bus. Some reliance on buses as a PT mode remains. Impact on highway usage reduced relative other options due to lower rail service frequency and capacity that can be achieved.
PT journey times	Low	Quicker option to current bus option. Constrained service frequency and capacity would provide less journey time improvement compared to other options and possible crowding

Criteria	Impact	Summary of Performance
		could impact on overall journey times due to delays and having to wait for next train.
Highway journey times	Low	Proposed alignment of option would provide less journey time improvement on the highway network. Passengers could still depend on buses, contributing to congestion

## 7.17. Option B5 – Extending the Victoria line

7.17.1. This assessment also considered a branched extension off the Victoria line at Vauxhall to serve the OA. A summary of the scoring for the assessment framework is shown in Table 26. It should be noted that an extension of the Victoria line was also considered and ruled out during optioneering for what is now the Northern line extension to Battersea.

Table 26- Option B5 Assessment- Extending the Victoria line

Criteria	Impact	Summary of Performance
Accessibility	Medium	Runs along the OKR alignment. Branched services would constrain capacity and frequency, impacting PTAL benefits.
Connectivity	Medium	Direct connections in central London although route slightly circuitous via Vauxhall making connections longer relative to other options.
Active Travel	Medium	Encourages walking and cycling to station due to frequent turn-up-and-go Tube services.
Operational Capacity	High	Branching would reduce the available capacity on the rest of the service to Brixton and branching could un-do the benefits of the Victoria line upgrade and world class capacity upgrade currently in implementation that is set to achieve 36 tph frequency due to the simple end-to-end operations the line currently possesses.
Crowding	High	A branched extension would exacerbate crowding on a line already crowded in the peak periods and with heavy demand from its terminus at Brixton.
Capacity to support new growth	Low	The Victoria line is not forecast to have adequate capacity to support the OA growth
Operations	Low	Generally, creating a spur and operating junctions between



Criteria	Impact	Summary of Performance
		branches is more challenging operationally
PT Reliability	Medium	Provides a more reliable PT service to the OKR. The branch and junctions would make service recovery from disruptions more challenging.
Highway Reliability	Medium	Could reduce pressure on bus services and reduce demand for private vehicle trips freeing up capacity and improving traffic flow. Impact on highway usage reduced relative other options due to lower rail service frequency and capacity that can be achieved.
PT journey times	Low	Whilst positive for the OA, it is likely that the loss of services to Brixton and the potential reduction in core frequency on the line due to the need for junction working to serve the southern branches would yield a net negative impact on overall public transport journey times.
Highway journey times	Medium	Related to Highway Reliability - reduced use of road-based modes would reduce congestion and improve traffic flow, improving journey times.

## 7.18. Option B6 – Extending the Waterloo & City line

7.18.1. This assessment also considered a branched extension off the Waterloo & City line from its current terminus at Waterloo to serve the OA. A summary of the scoring for the assessment framework is shown in Table 27.

Table 27 - Option B6 Assessment- Extending the Waterloo & City line

Criteria	Impact	Summary of Performance
Accessibility	Medium	Runs along the OKR alignment. Branched services would constrain capacity and frequency, impacting PTAL.
Connectivity	Low	Poor onward connectivity - not providing direct services north of river. Have to interchange at Waterloo.
Active Travel	Medium	Encourages walking and cycling to station due to frequent turn-up-and-go Tube services.
Operational Capacity	Medium	Branching would reduce the available capacity on the rest of the service and un-do the benefits of the planned line upgrade.
Crowding	High	A branched extension would exacerbate crowding on a relatively short line already crowded - in the peak periods

Criteria	Impact	Summary of Performance
Capacity to support new growth	High	Operates a reduced service out of peak periods. This would be inadequate to support the OA growth
Operations	Low	Generally, creating a spur and operating junctions between branches is more challenging operationally
PT Reliability	Medium	Provides a more reliable PT service to the OKR. The branch and junctions would make service recovery from disruptions more challenging.
Highway Reliability	Medium	Could reduce pressure on bus services and reduce demand for private vehicle trips freeing up capacity and improving traffic flow. Impact on highway usage reduced relative other options due to lower rail service frequency and capacity that can be achieved.
PT journey times	Low	Waterloo and City line very heavily used – the worsened journey times for existing users due to longer wait for train from Waterloo to Bank likely to outweigh the fast journey times for passenger in OKR OA.
Highway journey times	Medium	Related to Highway Reliability - reduced use of road-based modes would reduce congestion and improve traffic flow, improving journey times.

## 7.19. Summary of London Underground interventions

- 7.19.1. The options considered for Tube-based interventions have been assessed across a number of criteria – the summary results are in Table 28. The better performing option recommended to be taken forward to the next stage of the assessment is the extension to the Bakerloo line from Elephant & Castle.
- 7.19.2. Overall, this option is preferred as it provides a direct connection into Central London and is forecasted to have some spare capacity in sections of its zone I route. The extension does not require branching, which would otherwise impact negatively on the level of service for the remainder of the line.

Table 28 - Summary results of assessment for London Underground interventions

Criteria	Option B1 Extending Bakerloo line	Option B2 Extending Northern line	Option B3 Extending Jubilee line	Option B4 Extending District line	Option B5 Extending Victoria line	Option B6 Extending Waterloo & City line
Accessibility	High	Low	Low	Low	Medium	Medium
Connectivity	High	Medium	Medium	Low	Medium	Low
Active Travel	Medium	Medium	Medium	Medium	Medium	Medium
Operational Capacity	High	Medium	High	Medium	High	Medium
Crowding	Low	High	High	Medium	High	High
Capacity to support new growth	High	Low	Medium	Low	Low	High
Operations	High	Low	Low	Low	Low	Low
PT Reliability	High	Medium	Low	Low	Medium	Medium
Highway Reliability	Medium	Medium	Low	Low	Medium	Medium
PT journey times	High	Low	Low	Low	Low	Low
Highway journey times	Medium	Medium	Low	Low	Medium	Medium

## 7.20. Option C - Surface-based interventions

7.20.1. The assessment has also considered a number of surface-based interventions at a high-level for the Opportunity Area. The surface options considered for serving the OA are summarized in Table 29.

Table 29 – Surface-based interventions assessed

Surface-based Interventions
Bus service frequency increases on the Old Kent Road
Bus priority schemes on the Old Kent Road
An express bus/shuttle service for the Old Kent Road
Improve cycling facilities e.g. creating segregated cycle lanes, cycle hire etc.
Road widening schemes on the Old Kent Road

## 7.21. Option C1 – Bus service frequency increases

7.21.1. The Old Kent Road has a large number of existing bus routes along its length, which provide a very high number of buses per hour in total. Each route itself that operates typically ranges between 4 to 10 buses per hour. This option considers increasing the service frequency of the existing routes serving the Old Kent Road. This would be most practically achieved by focusing on those currently with the lowest frequencies.

7.21.2. A summary of the scoring for the assessment framework is shown in Table 30.

Table 30 – Option C1 Assessment – Bus service increases

Criteria	Impact	Summary of Performance
Accessibility	Medium	Improves the service frequency and journey times for buses. Improves PTAL. Step-free form of transport.
Connectivity	Neutral	Assuming frequency increases to existing routes, connectivity improvement is neutral as no new destinations served.
Active Travel	Low	Encourages primarily walking to bus stops.
Operational Capacity	Medium	Can provide relatively high additional capacity, subject to capacity of highway and bus stops and stands.
Crowding	Medium	Currently main public transport mode in OKR OA and heavily used. Additional capacity would provide relatively high crowding benefits.
Capacity to support new growth	Low	Given significant levels of bus services operate in the OKR OA already, low likelihood that bus service increases will provide sufficient capacity to support the new growth planned or affect viability of development sites.
Operations	High	Extensive operational infrastructure already exists in the OKR OA, making operations relatively straightforward.
PT Reliability	Low	Owing to the volume of bus services already operating on the OKR, there is a risk of increased congestion in bus services along the highway causing impedence and waiting at bus stops.
Highway Reliability	Low	Related to PT Reliability criterion – this public transport option interacts with general highway traffic and so the risk above similarly applies.
PT journey times	Low	High frequency services would reduce wait times for particular routes and so lower overall journey times.

Criteria	Impact	Summary of Performance
Highway journey times	Low	Associated with Highway Reliability criterion, risk of higher journey times for general road users due to increased bus operations.

## 7.22. Option C2 – Bus priority schemes

7.22.1. The Old Kent Road currently has some bus priority schemes in place. This option considers further proposals to extend the scheme to improve the movement of buses along the corridor.

7.22.2. A summary of the scoring for the assessment framework is shown in Table 31.

Table 31 – Option C2 Assessment – Bus priority schemes

Criteria	Impact	Summary of Performance
Accessibility	Neutral	This option has no clear direct impact on the frequency of services although it may have potential to enable some new or varied routes depending on the viability and cost of those. Overall the option has little impact on accessibility to the OA.
Connectivity	Neutral	The intervention will not have significant impact on the increase the connectivity of the bus network, unless it enables further routes and services to operate over current levels.
Active Travel	Medium	Encourages walking and cycling to bus stop
Operational Capacity	Neutral	Option does not directly impact on capacity.
Crowding	Medium	Crowding benefits are linked to journey time improvements resulting from quicker bus services on the Old Kent Road
Capacity to support new growth	Low	Bus priority does not directly impact on capacity. However it provides opportunity to increase capacity but would not be adequate to support the OA growth.
Operations	Medium	Operationally easy to deliver.
PT Reliability	Medium	The scheme would improve travel times, particularly during peak periods. Provides a more reliable PT service to the OKR corridor.
Highway	Low	Negative impact on highway usage relative to other options due

Criteria	Impact	Summary of Performance
Reliability		to reduced available capacity.
PT journey times	Medium	Bus priority schemes would improve bus journey times
Highway journey times	Low	Option reduces the capacity available to other highway traffic which would negatively impact on journey times. Depending on the extent of the bus priority measures implemented, the impact could be greater.

### 7.23. Option C3 – Bus shuttle service

7.23.1. A bus shuttle service was also considered as a primary transport intervention for the Old Kent Road. The service would provide a non-stop service from one end of the Old Kent Road to the other and could consist of around 6 to 8 buses per hour initially. The service would operate concurrently with bus services operating on this stretch of road.

7.23.2. A summary of the scoring for the assessment framework is shown in Table 32.

Table 32 – Option C3 Assessment – Bus shuttle service

Criteria	Impact	Summary of Performance
Accessibility	Low	Restrictions on service access locations/pick-up points reduce accessibility, particularly if provision of shuttle requires existing capacity from stopping services.
Connectivity	Low	Intervention is limited to the Old Kent Road. Would require interchange with other bus or rail services for onward connectivity, but connectivity between points served would improve as connections more direct.
Active Travel	Low	Due to distance between pick up points, users may have to travel by bus.
Operational Capacity	Low	A shuttle service provides added bus capacity on the Old Kent Road although the absolute increase is likely to be relatively low (e.g. 10 bph shuttle service provides capacity of circa 700 people per hour from point to point).
Crowding	Low	A shuttle service will fail to serve the new development areas dispersed across the OKR OA, leading to greater dependency on the bus services remaining that do stop locally.

Criteria	Impact	Summary of Performance
Capacity to support new growth	Low	Provides new bus capacity. Additional capacity would not be adequate to support growth in the Opportunity Area.
Operations	Medium	Operationally easy to deliver, simply requiring reduced stopping along the Old Kent Road.
PT Reliability	Low	Shuttle service would use bus lanes and any priority schemes on the Old Kent Road. This would impact negatively on public transport reliability, particularly at peak times.
Highway Reliability	Low	This option would take up capacity on stretches of the Old Kent Road with no bus priority, impacting on highway reliability
PT journey times	Low	Negatively impacts on bus journey times. The benefits of the shuttle service are negated by the lack of additional road capacity to improve journey times.
Highway journey times	Low	Option adds traffic to the highway and therefore could have a potential impact on highway journey times for general traffic. Potential for shift from private vehicles to bus but capacity and volumes unlikely to have significant impact on general traffic levels given road traffic is very high and also many trips are regional and not isolated to the OA.

## 7.24. Option C4 – Improving cycling provision on the Old Kent Road

7.24.1. This option considers a package of measures to improve and further promote cycling within the Opportunity Area. These measures include the extension of the Cycle Hire scheme and superhighways; provision of more cycle infrastructure and the introduction of segregated cycle ways. The precise implementation of the improved infrastructure would be subject to detailed design and would provide the opportunity to potentially remove any potential the negative effects against criteria and maximise the positive impacts.

7.24.2. A summary of the scoring for the assessment framework is shown in Table 33.

Table 33 – Option C4 Assessment – Improving cycling provision

Criteria	Impact	Summary of Performance
Accessibility	Low	It is not accessible for everyone – limited to people able to cycle, or cycle a distance so that the overall journey time is still reasonable. It is also related to the speed at which the user

Criteria	Impact	Summary of Performance
		cycles. However overall providing better cycling facilities will help increase the accessibility of the OA for the many people that can or do cycle.
Connectivity	Low	If trips are not local, journeys made by cycling would require an interchange(s) with other modes for many users, although improved facilities would support commuting flows that are already observed on the OKR.
Active Travel	High	Encourages walking and cycling, generating significant health benefits.
Operational Capacity	Medium	Provides high net additional capacity if well designed alongside other general traffic user requirements.
Crowding	Low	This option is likely to increase wait times at stops due to slower moving buses. At some stops, some passengers may not be able to access the service due to crowding, particularly at peak times.
Capacity to support new growth	Low	Additional capacity would enable more trips to be made safely and efficiently by cycling in the OKR OA, helping to support growth in travel demand from new development. Potentially could reduce capacity of highway for other traffic, but scale of OKR suggests risk is low.
Operations	High	Operationally simple once well designed facilities have been delivered.
PT Reliability	Low	Bus reliability on the Old Kent Road could deteriorate as a result of reduced capacity if road space reallocated.
Highway Reliability	Low	Highway reliability could be negatively impacted with some capacity being lost to cater for cycle infrastructure and lanes, although journey times and their reliability for cyclists would significantly improve.
PT journey times	Low	Could negatively impact on bus journey times if shared facilities e.g. bus lanes. Buses could experience increased stop-start conditions to accommodate cyclists.
Highway journey times	Low	Reallocation of road space for cycling infrastructure results in increased journey times for highway traffic. Journey times would be affected by an increase in cyclists on the network, although journey times for cyclists could fall significantly.



## 7.25. Option C5 – Road widening

7.25.1. This intervention considered widening the Old Kent Road to increase capacity to support the growth from the Opportunity Area development. A summary of the scoring for the assessment framework is shown in Table 34.

Table 34 - Option C5 Assessment- Road widening

Criteria	Impact	Summary of Performance
Accessibility	Medium	This option has no direct impact on service frequency levels of public transport. However, it negatively affects physical accessibility. Wider roads act as a physical barrier and are more difficult to cross.
Connectivity	Neutral	No significant impact on connectivity.
Active Travel	Medium	The available width for walking would be reduced or significantly minimized to accommodate road widening. Traffic speeds are notably higher on wider roads, which could discourage cycling on safety grounds.
Operational Capacity	Neutral	No significant impact on operational capacity
Crowding	Low	This option would result in crowding at bus stops. Passengers waiting to board services would need to share a reduced space with other pedestrians.
Capacity to support new growth	Low	Although this option increases the net capacity, this would not be adequate as a standalone intervention to support new growth. Also, induced demand would take up some of this added capacity. To widen the road would potential require removal of existing development or available land for future development, and hence may actually reduce the development capacity of the OA.
Operations	High	Would be challenging to deliver a consistent lane width across the Old Kent Road stretch. There are sections of the Old Kent Road without adequate pavement width to enable widening and/or maintain a reasonable pavement width.
PT Reliability	Low	Bus reliability could improve slightly if road widening provides the scope for adding in further bus-dedicated infrastructure such as inset bus bays, bus lanes and priority measures at junctions.
Highway Reliability	Low	Journey time reliability could improve with added capacity. However this could be low due to induced demand.

Criteria	Impact	Summary of Performance
PT journey times	Low	Bus journey times could be positively impacted due to potential for more dedicated infrastructure. However there is a risk that bus boarding and alighting times could increase if pavement widths are reduced leading to crowding at bus stops and deterioration in orderly queuing.
Highway journey times	Low	Traffic speeds would improve due to an increase in available capacity.

## 7.26. Summary of surface-based interventions

- 7.26.1. The options for surface-based interventions have been assessed on a similar basis to the rail and Tube based interventions. The summary of the performance of each option relative to another is provided in Table 35. The best performing option recommended to be taken forward to the next stage of the assessment is the implementation of bus service improvements consisting of frequency increases and potential priority measures. However, the option of improving cycling facilities also scores well and therefore has also been tested in the next stage of assessment.
- 7.26.2. Overall, these options are relatively easy to deliver and operate. They provide connectivity and accessibility benefits and improves journey times and reliability for public transport.

Table 35 - Summary results of assessment for surface-based interventions

Criteria	C1. Bus service increases	C2. Bus priority	C3. Bus shuttle service	C4. Cycling provision	C5. Road widening
Accessibility	Medium	Neutral	Low	Low	Medium
Connectivity	Neutral	Neutral	Low	Low	Neutral
Active Travel	Low	Medium	Low	High	Medium
Operational Capacity	Medium	Neutral	Low	Medium	Neutral
Crowding	Medium	Medium	Low	Low	Low
Capacity to support new growth	Low	Low	Low	Low	Low
Operations	High	Medium	Medium	High	High
PT Reliability	Low	Medium	Low	Low	Low
Highway Reliability	Low	Low	Low	Low	Low
PT journey times	Low	Medium	Low	Low	Low
Highway journey times	Low	Low	Medium	Low	Low

## 7.27. Summary of surface-based interventions

7.27.1. To summarise, based on the initial assessment of the wide range of surface, rail and Underground options assessed, the following proposals have been taken forward for further testing:

- A new Overground station
- A Bakerloo line extension
- Bus service improvements
- Improved cycling facilities

## **8. Transport interventions tested**

### **8.1. Preferred options tested and results**

- 8.1.1. This section details the outcome of an assessment of the preferred options identified from the sifting process described in section 7. The impacts of the options are covered based upon their potential contribution towards each transport objective set out in chapter 3. Clear conclusions can be made at this stage about what the priorities should be for the transport network proposals and how these proposals need to develop in order to ensure they can best support future development.

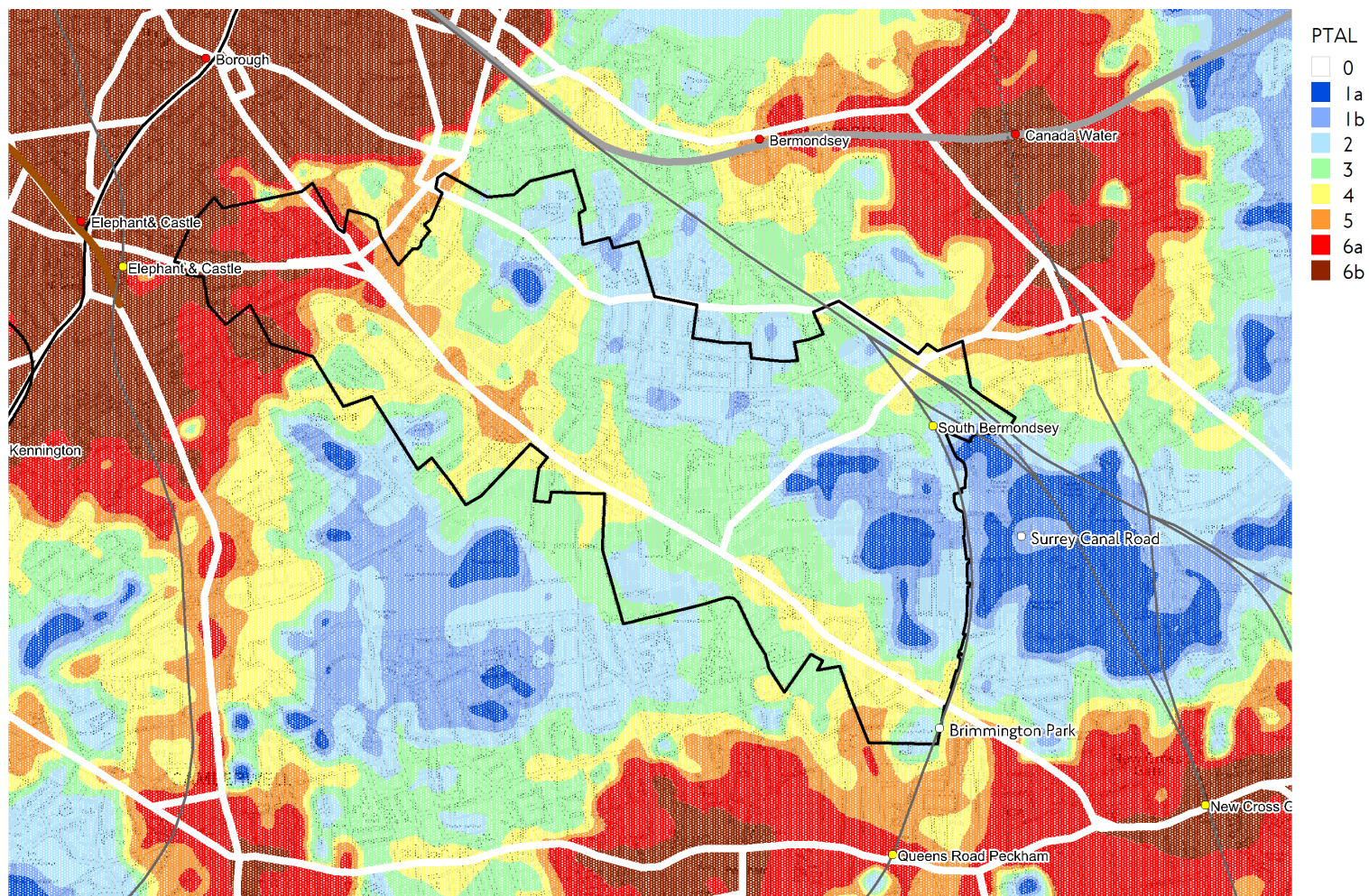
### **8.2. Improvements to bus services and frequencies**

- 8.2.1. An increase in bus services on the Old Kent Road has been tested; with a service increase of four buses per hour (bph) assumed compared to current service levels. This level of service enhancement is based on the long term TfL modelled assumptions about the rate of bus supply growth across London as a whole.
- 8.2.2. There is a practical limit to the number of buses that can feasibly operate along the Old Kent Road given the capacity of bus stops and the need to keep other traffic moving. Therefore, the development of bus service provision must be linked to changes to the highway network and bus infrastructure in order to facilitate future services. This Transport Study has sought to identify whether assumed increases in bus services is, in principal, sufficient to meet the AAP vision. The outcomes are detailed below.

### ***Impact on Public Transport Accessibility Levels***

- 8.2.3. The implementation of additional bus services increases PTAL levels close to the Old Kent Road. As can be seen in Figure 29, compared to the level of PTALs in 2011 based on the current public transport network in the Old Kent Road, additional bus services increase PTALs close to the road corridor primarily in the north west section as this is the section of the A2 route where the three main bus corridors merge to provide the highest total frequencies – 73 buses per hour. In some places this pushes PTAL in to the banding of 4 and above which is where higher density development is really considered based on planning policy in London.
- 8.2.4. The very large frequency and range of routes serving the Old Kent Road means however that under the PTAL calculation approach, adding additional bus services to these routes will yield only marginal returns on PTAL. Furthermore, the acceptable walk distance to bus services in PTAL is lower than other options such as rail, at 640 m. Therefore unless the bus network expands substantially onto existing and new local roads across the OA, the PTAL enhancement will be localised to the A2 Old Kent Road itself.
- 8.2.5. Improvements to the bus network offer the prospect of enabling initial phases of the development proposed in the Old Kent Road, focused in these areas where bus services can increase PTALs into these higher levels of 4 and above and where there is also a shorter route to central London’s denser public transport network.
- 8.2.6. Bus network improvements are not, however, able to support (or justify in planning policy terms) the more widespread densification envisaged in the AAP or the scale of development envisioned (at least 20,000 additional homes and 5,000 additional jobs). The implications of seeking to expand buses network capacity and coverage significantly would undermine some of the objectives for the area in terms of character and design, especially given how extensive the bus network already is along the A2 Old Kent Road.

Figure 29 - PTALs in the Old Kent Road with bus service increases by 2031



**Old Kent Road - Opportunity Area**

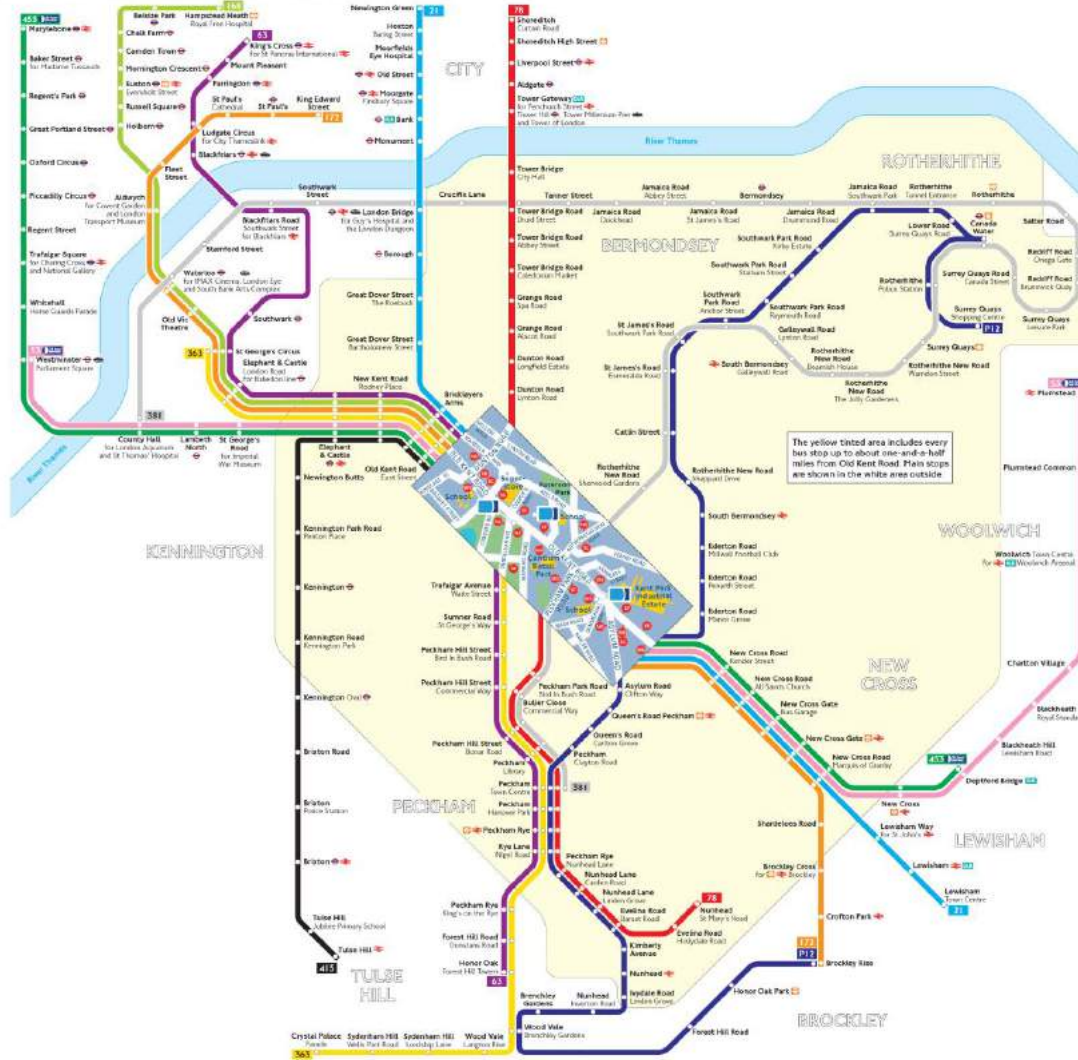
Public Transport Accessibility Levels (PTALs): 2031 Low Growth scenario no BLE (OK220A321)

### *Impact on Connectivity to and from the Old Kent Road*

- 8.2.7. There is limited potential for bus services to make significant improvements given that the area is already dependent on a large number of varied routes. The Old Kent Road already has frequent bus connections, as shown in Figure 30 towards locations such as:
- Central London locations including Waterloo, Westminster, Oxford Circus, Marylebone, Holborn, Bank, Old Street, Tower Bridge
  - Other locations in Southwark including Peckham, Bermondsey, Canada Water, Rotherhithe, Elephant and Castle, Nunhead
  - Locations in neighbouring Boroughs in south London such as New Cross, Lewisham, Brixton, Charlton, Woolwich, Kennington.
- 8.2.8. Increasing services on these routes will help to shorten wait times and have a slight impact on total journey time to these destinations, however highway congestion and the number of bus stops along routes will make journeys to West End and the City locations such as Old Street or Marylebone too long to appear attractive for a majority of passengers.
- 8.2.9. These shortcomings are demonstrated by the current observed and forecast patterns of use of the bus network. The current and future forecasts show that the bus network provides an excellent form of local connectivity to other modes of travel for faster travel over longer distances such as Rail and Underground. For example, over 30% of journeys ending in the OKR OA on northbound bus network have started at New Cross Gate station. Looking outwards from the OA, of the passengers that have travelled on the bus network northbound through the OA just under 50% then alight at Elephant and Castle for interchange to the Underground or Thameslink services.
- 8.2.10. It is for these reasons that in the medium and high growth scenarios, both of which assume a Bakerloo line extension from Elephant and Castle to Lewisham via the Old Kent Road and New Cross Gate, bus network patronage in the OA is forecast to fall by 30% and 24% compared to the 2031 base condition (i.e. with no development in the Old Kent Road).

Figure 30 - Old Kent Road Bus service connectivity

Buses from Old Kent Road



Route finder

Day buses including 24-hour services

Bus route	Towards	Bus stops
21	Lewisham	10 11 12 13 14
53	Newington Green	15 16 17 18 19 20
63	Plumstead	21 22 23 24 25 26
78	Whitehall	27 28 29 30 31 32
168	Honor Oak	33 34 35 36 37 38
172	King's Cross	39 40 41 42 43 44
363	Nunhead	45 46 47 48 49 50
381	Shoreditch	51 52 53 54 55 56
415	Hampsted Heath	57 58 59 60 61 62
453	Brockley Rise	63 64 65 66 67 68
P12	St Paul's	69 70 71 72 73 74
	Crystal Palace	75 76 77 78 79 80
	Elephant & Castle	81 82 83 84 85 86
	County Hall	87 88 89 90 91 92
	Peckham	93 94 95 96 97 98
	Tulse Hill	99 100 101 102 103 104
	Deptford	105 106 107 108 109 110
	Marylebone	111 112 113 114 115 116
	Brockley Rise	117 118 119 120 121 122
	Surrey Quays	123 124 125 126 127 128

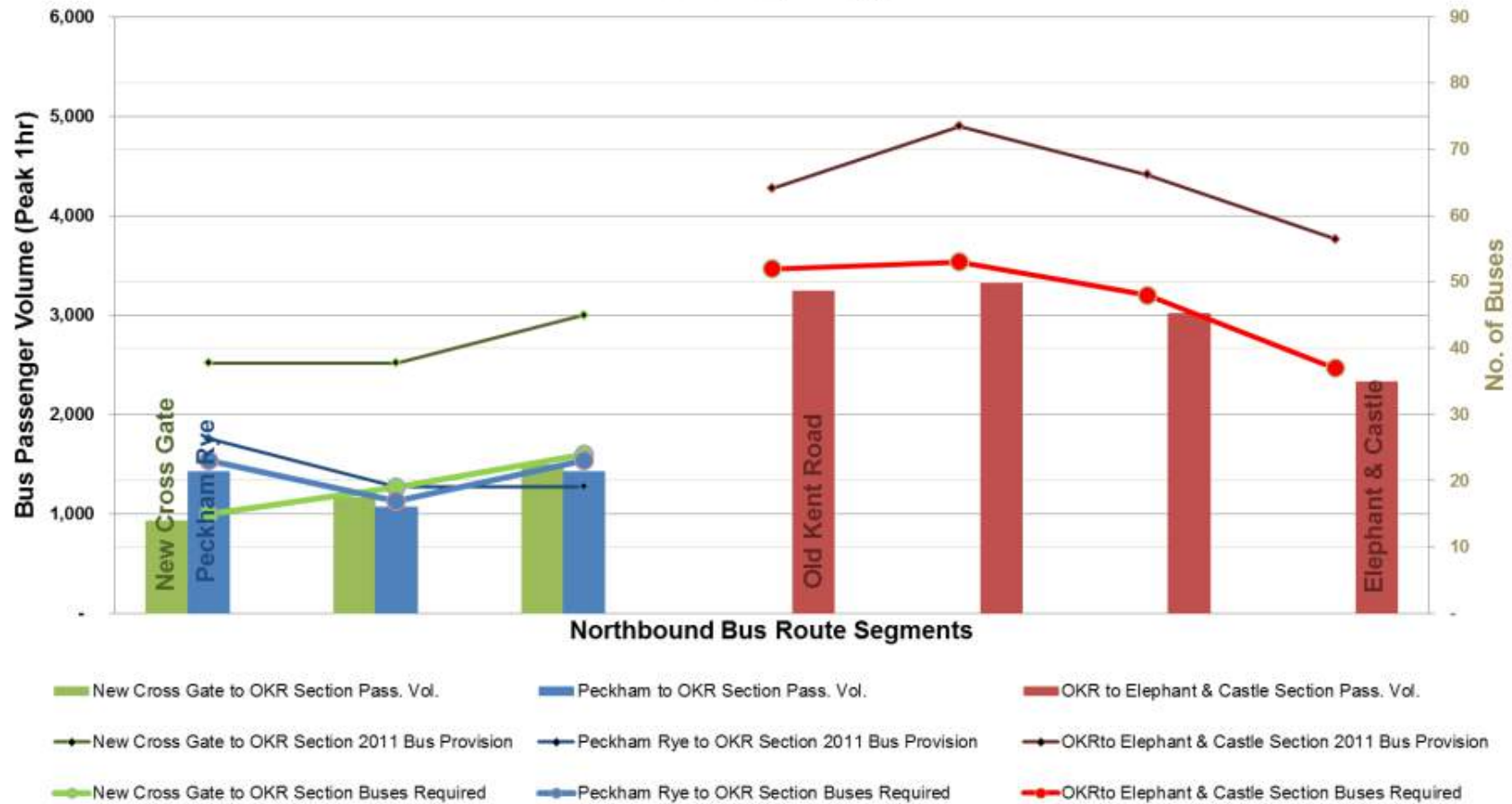
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Information correct from March 2015



8.2.11. These forecast falls in patronage indicate that an opportunity exists to improve the local connectivity within the OA by diverting some bus routes to provide links from the north and south of the development areas into the new town centre, commercial development clusters and potential Underground stations on the Old Kent Road. As Figure 31 shows, there could be broadly an under utilisation of bus capacity of between 10 to 20 buses per hour. There is therefore potential to utilise this capacity via diverting routings within the OKR OA, whilst maintaining final origins and destinations of the bus route to ensure it serves the demand in other parts of London.

Figure 31 - Bus network service capacity and utilisation in High growth scenario

**OK224 - High Development with BLE - Key Bus Corridor Passenger Volumes with 2011 Bus Provision versus Buses Required (based on 63 seat Double Decker capacity)**



***Impact on maintaining an acceptable level of performance on the highway and public transport networks.***

- 8.2.12. In the low growth scenario, the bus network and its services are fundamental to ensuring that the additional passenger journeys generated by development can be accommodated without a significant increase in private motorised travel.
- 8.2.13. The bus network's comprehensive connections along the Old Kent Road and to destinations beyond the OA boundary means that the network alone achieves a mode share of 52% of the total journeys (public, walk, cycle and private motorised). This means an increase in trips on the bus network of 4,956 with an impact on flows on the busiest sections of the bus network on the Old Kent Road of up to 1,200 in the peak hour. As Figure 32 shows, this means in some locations, capacity could reach a shortfall of up to approximately 20 additional buses per hour. The corresponding impact on highways performance however is that accommodating a large proportion of the Low growth scenario trips on the bus network could help minimise forecast increases in junction delays, as shown in Figure 33.

Figure 32 - Bus network service capacity and utilisation in Low growth scenario

**OK220 - Low Development no BLE - Key Bus Corridor Passenger Volumes with 2011 Bus Provision versus Buses Required (based on 63 seat Double Decker capacity)**

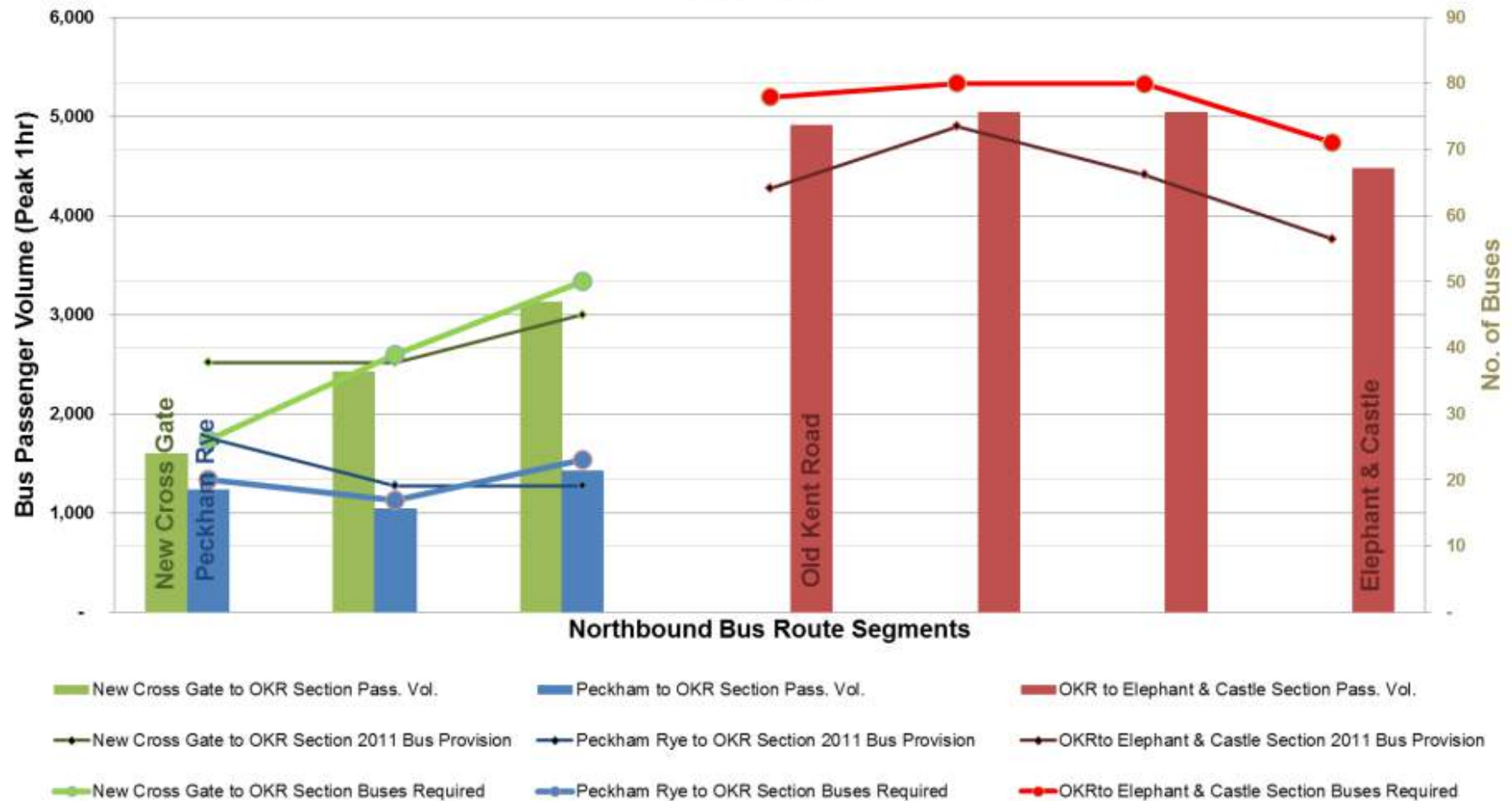


Figure 33 - Change in Junction delay in Low growth scenario with planned bus service increases



- 8.2.14. The feasibility of implementing additional bus services of this volume in addition to an already assumed level of 73 bph needs to be developed further, although initial indications are that further bus service frequency enhancements would be feasible based on current forecast highways conditions.
- 8.2.15. In order to support this, bus priority measures are also recommended. These measures include amended junction design, signal phases and increased bus lane provision. In some locations it may also be beneficial to add capacity to bus stops to enable a greater volume of buses from across routes serving the Old Kent Road to stop simultaneously and prevent buses waiting in the highway for space at stops to emerge. As Figure 34 shows, there is currently a fragmentation of bus priority along the Old Kent Road corridor meaning gains in one section can be undermined by losses in areas dominated by general traffic.
- 8.2.16. TfL recommends the development of bus priority measures as part of the transport mitigations for accommodating initial development equivalent up to the low growth scenario. This will help with delivery of bus service frequency improvements until such time that the other recommended interventions in this study are delivered and reduce the burden on the bus network. Beyond the low growth scenario, the implementation of bus priority measures will provide longer term journey time improvements and ensure the bus network is as attractive as possible to complement other options and maximise public transport mode share in the high growth scenario.
- 8.2.17. The development of bus priority measures should be undertaken simultaneous to the development of the required road space for delivery of improved cycling facilities such as greater protection for cyclists as detailed in the next section. This will help reduce the risk of either one having negative impacts on the other.

Figure 34 - Bus Priority infrastructure currently in place along Old Kent Road (A2)

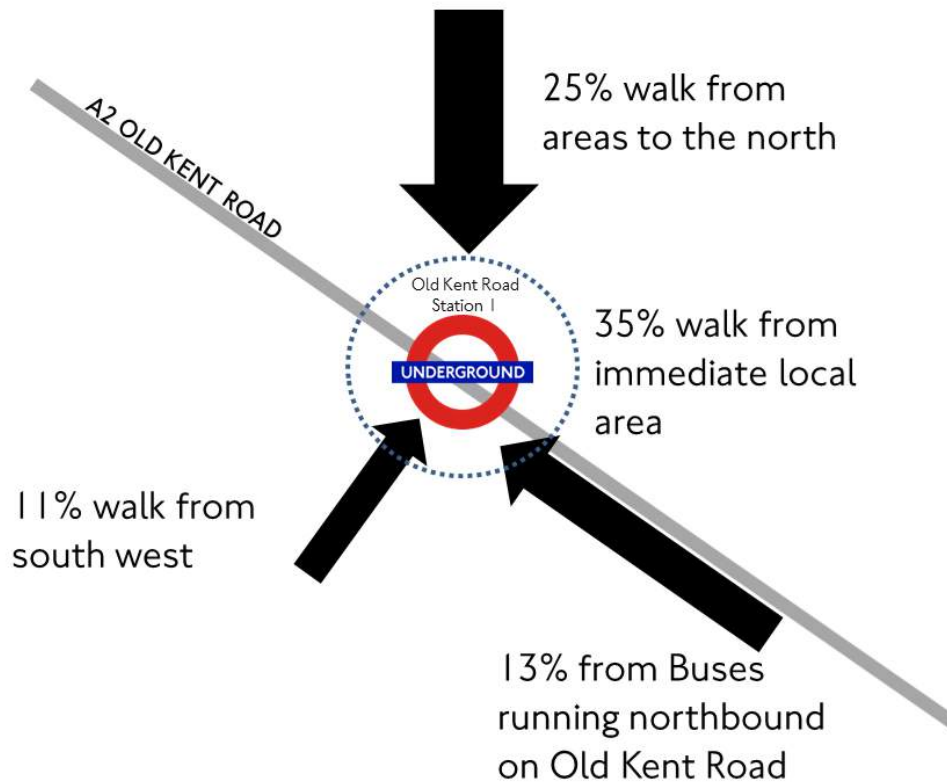


***Enable travel by sustainable modes and behavioural change that can cater for growth over the AAP horizon of 2036 and beyond.***

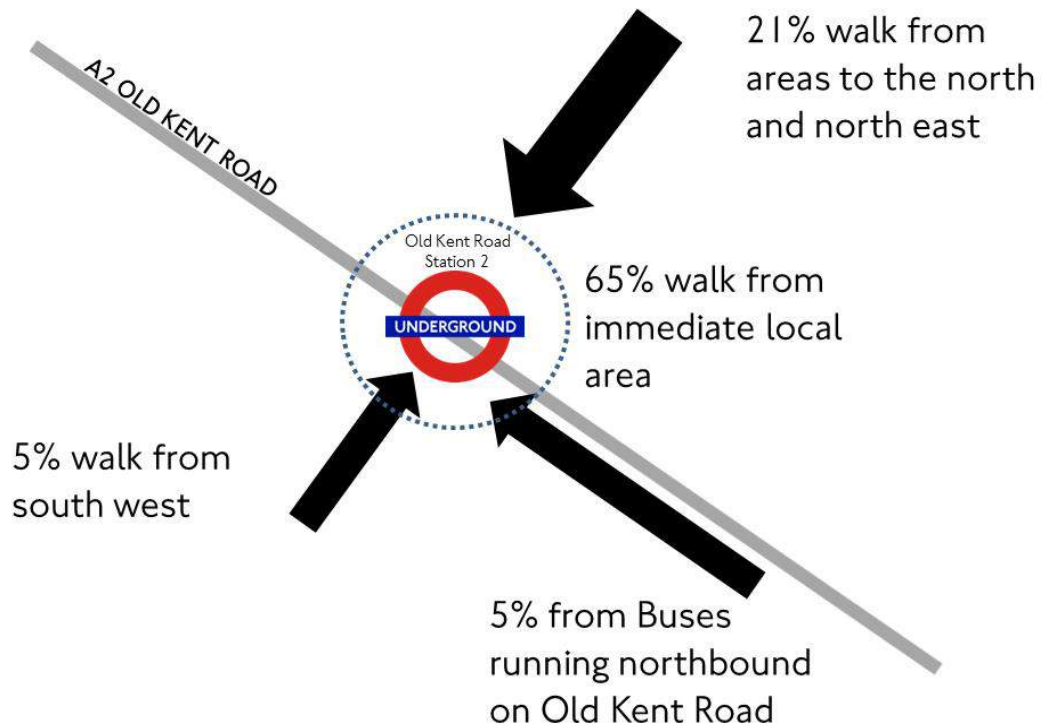
- 8.2.18. As detailed in the previous sections, the work undertaken has shown that the bus network has an essential role in helping to accommodate growth in the area.
- 8.2.19. In the high growth scenario with a Bakerloo line extension the bus network still contributes a 23% share of total travel – equivalent to one in five trips in the OA. Furthermore, as has been shown in Figure 35, following a Tube extension the bus network is forecast to provide a significant opportunity to help further improve local links across the OA to Underground stations, helping to maximise total public transport mode share, whilst also offering a source of future capacity for any further development that could take place beyond the horizon of the AAP.
- 8.2.20. TfL recommends that the AAP planning policies ensure that development of the Underground extension proposals and also the operable bus network are developed in unison. Doing so will also help to ensure that development sites that delivered support the integration of the Bus and Tube network to ease access to them and maximise their impact on sustainable travel. Figure 35 shows the current forecast access mode to the potential Old Kent Road stations in the Old Kent Road. It is clear from these that the bus network is forecast to be an important part of the way in which passengers access Tube services from across the OA. Maximising the ease and directness of connections will help to ensure that as many trips as possible are made by sustainable modes such as public transport.



Figure 35 - Mode of access and share of trips to board the Underground at the proposed Old Kent Road station 1 in the north west of the OA



Mode of access and share of trips to board the Underground at the proposed Old Kent Road station 2 in the north west of the OA



*Achieve value for money from investment in the option*

- 8.2.21. To understand the full value for money case of the proposed bus priority measures and bus service increases, further design development will be required to more accurately establish the cost and the journey time impacts on bus users and other road users.
- 8.2.22. Additional bus services are in general, up to a certain point, relatively low cost due to some spare capacity that exists in the infrastructure along the Old Kent Road. Furthermore, the bus services implemented can be optimised to address the passenger demand generated by the development, and hence increase fare incomes to help offset their operating costs.
- 8.2.23. Without additional bus priority, congestion on the public transport and the highways network would increase and therefore the crowding relief from the addition of capacity alone is likely to make the investment positive value for money due to the generalised cost savings. It is therefore recommended that the value for money case is developed to optimise the required bus service and priority measures to accommodate initial development in the OA. Furthermore, these bus service improvements should be funded through planning obligations.

### **8.3. Improvements to the A2 Old Kent Road for cyclists**

- 8.3.1. The long list assessment results, described in section 5 demonstrated a preferred option for a two-way segregated cycle lane for achieving an increase in cycling. It is important to recognise that the highway changes along its length as sections widen and narrow due to junction requirements and the actual space available due to the built environment along the highway periphery changes. The option would therefore need to be designed further in response to the changing context and constraints along the A2 Old Kent Road. This would help ensure that increasing protection for cyclists on the highway is not at the cost of an unacceptably high impact of other road users including public transport such as Buses.
- 8.3.2. Implementing improved cycling facilities to improve protection for cyclists could also provide the opportunity for improved bus priority due to the need to undertake works along the highway. The intervention is therefore modelled on the basis of road space reallocation towards cyclists and buses in order to provide a broad estimation of the contribution these interventions can make towards supporting increased transport demand from future development.

#### ***Impact on Public Transport Accessibility Levels***

- 8.3.3. Cycling is not currently part of the PTAL measure (which currently uses walking distance threshold for accessing public transport). Cycling has become the preferred option though for an increasing number of people in London for both access public transport and for making their whole journey be it for commuting and business travel or leisure and recreation. As a result it is a vital part of achieving more sustainable travel in the OA and for London more widely.
- 8.3.4. Cycling as a single intervention does not enable high density housing or unlock development sites that are currently unviable. The benefits from an improved cycling network are worthwhile and therefore should be considered as complimentary, rather than as a competing measure, to a broader package of public transport measures that can improve PTAL.

#### ***Impact on Connectivity to and from the Old Kent Road***

- 8.3.5. Improving cycling infrastructure along the Old Kent Road provides the opportunity to improve connections into the wider cycle network already delivered or being implemented in this part of London. For example, the TfL North-South Cycle Superhighway that runs through to Blackfriars, Farringdon and Kings Cross could become easier to use for residents and workers in the Old Kent Road is their ability to cycle to it via the A2 Old Kent Road to Elephant and Castle where it begins.

8.3.6. Improved cycle facilities along the A2 Old Kent Road would utilise the advantageous nature of the highway’s straight and direct orientation and route for commuting and leisure journeys into and out of central London. Improved facilities would also complement the proposed Waterloo to Greenwich Quietway through to the north of the A2 Old Kent Road – running from the Bricklayers Arms area through to Surrey Canal Road and intersect with it where it is proposed to be extended through Burgess Park towards Peckham and onwards to Kennington and Honor Oak Park. As well as longer cycling journeys, local journeys involving stretches along the A2 Old Kent Road would be similarly improved.

***Impact on maintaining an acceptable level of performance on the highway and public transport networks***

8.3.7. The impact of an option of a segregated cycle lane on highways performance has been tested. Figure 36 and Figure 37 show the impact of the intervention for the two growth scenarios.

Figure 36 - Forecast change in road performance in OA plus 1 km buffer in Low growth scenario due to Segregated Cycle Lane

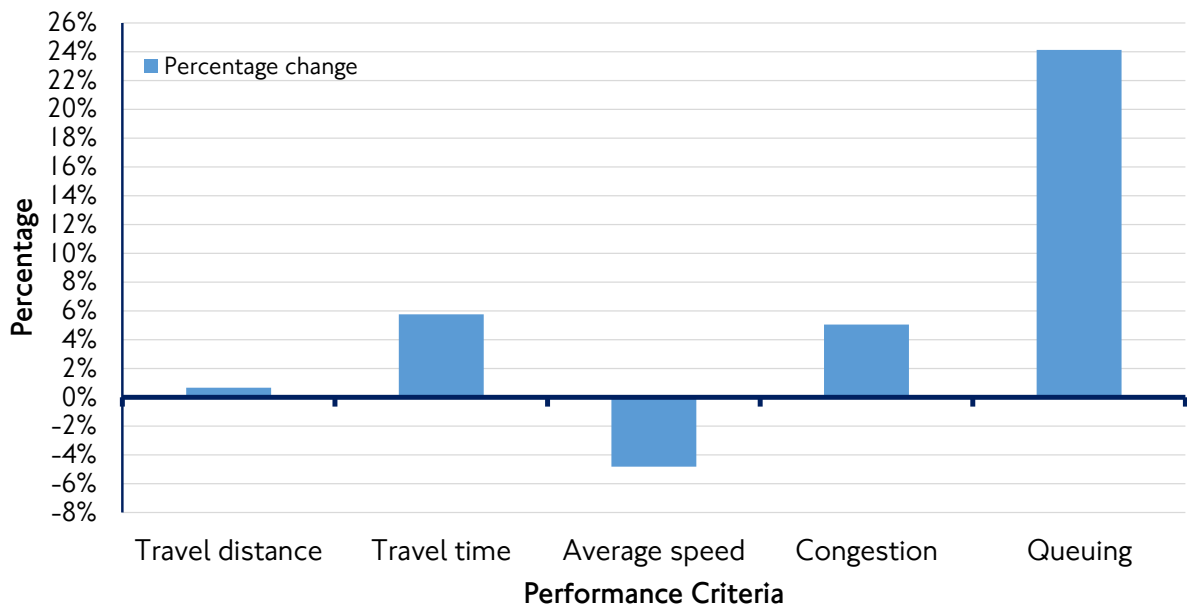
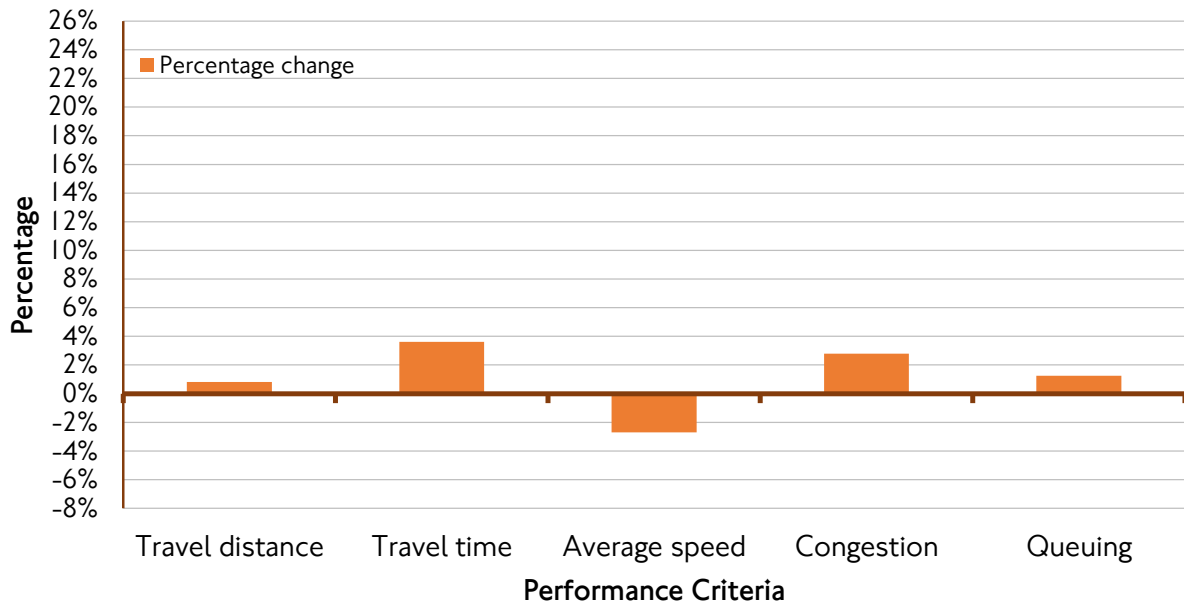


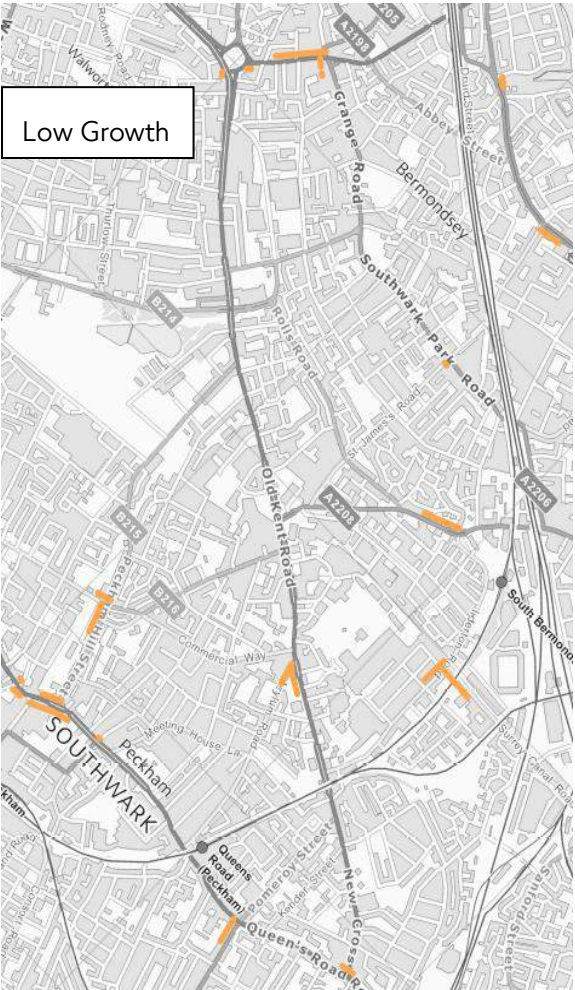
Figure 37 - Forecast change in road performance in OA plus 1 km buffer in High growth scenario due to Segregated Cycle Lane



- 8.3.8. As Figure 36 and Figure 37 show, the implementation of a segregated cycle lane with bus lane modifications could have a negative impact on highways travel times by between 3% to 6%. In addition, the cycle highway could increase congestion levels from between 2% to 5% and reduce average speeds also between 2% to 5%. These slight negative impacts are common, with similar observed impacts from road space reallocation to implement the comprehensive network of cycle super highways across London. The outputs demonstrate that the precise approach (e.g. segregated cycle lane or not, one-way or two-way, shared with buses etc) to providing improved facilities for cyclists will require further design development and appraisal in order to reduce the negative impacts on wider traffic as far as possible.
- 8.3.9. The key measure is whether the highway network can continue to operate with the intervention in place; the reallocation of the road space to cycling has a strong case for supporting the AAP vision and wider policy objectives and requirements of sustainable travel.
- 8.3.10. Figure 38 shows the level of queuing at junctions in the low and high growth scenarios. They indicate that total queuing at the end of the modelled time period is at a scale that does not undermine operations of the Old Kent Road. Furthermore, there is little change in these conditions between low to high growth (note the high growth scenario includes the impact of mode shift to a potential Bakerloo line extension), indicating that the intervention does not stop traffic from flowing in the high growth scenario.
- 8.3.11. It is important to note further that at this early stage of design for the proposed intervention, the full details of the impact on road space and the optimisation of

junction workings has yet to be completed. As part of future design development, TfL will work with the LBS (Highways Authority for non-TLRN routes in the study area) towards minimising the impact on road user journey times.

Figure 38 - Change in junction delay between low growth without Bakerloo line extension and high growth with Bakerloo line extension



***Enable travel by sustainable modes and behavioural change that can cater for growth over the AAP horizon of 2036 and beyond.***

- 8.3.12. The proposed intervention makes a significant contribution to enabling journeys by sustainable modes. The segregated cycle lane will help ensure that new and existing residents and workers can have the confidence to use the infrastructure for their travel and local journeys. The infrastructure will also be designed to provide better access and interchange with other public transport services, by ensuring there is suitable cycle parking at local rail stations and key trip generators and attractors such as commercial centres for shopping and leisure. The intervention can therefore also help to increase the propensity for use of sustainable modes beyond cycling, such as rail and bus services.
- 8.3.13. Furthermore, improvements to cycling facilities; greater protection for cyclists along the A2 highway; more local cycling routes such as the proposed Quietway and well-designed streets on the local roads off of the A2 Old Kent Road will provide significant capacity for a high volume of cycling trips. This will enable the Opportunity Area to accommodate further growth in cycling driven by growth beyond the time frame of the AAP (2036), or from surrounding areas that grow and generate trips through the OKR OA.
- 8.3.14. Cycling also has high benefits in terms of reducing the impact of new trips from the development towards air pollution and London's contribution towards climate change through greenhouse gas emissions.
- 8.3.15. In addition to the reduction in air pollution from encouraging local cycling trips rather than motor vehicles, cycling itself produces significant health benefits for the user, helping to improve quality of life through health and fitness and generate wider benefits therefore to society. Ensuring new developments deliver effective travel plans that increase awareness of the facilities and routes for cycling will also be important in increasing cycling in the OA.

***Achieve value for money from investment in the option***

- 8.3.16. Increasing the level of cycling in the OA will have a significant impact on the quality of life and health of residents and workers in the OA and for those people in London more widely that benefit from the infrastructure for journeys through the Old Kent Road. These health benefits carry a high value in terms of the social benefit and are likely to offset the relatively low cost of the intervention. The disbenefit to private motorised and goods vehicles will need assessing but mitigations may be available through changes to junction operations on the Old Kent Road and how road space is managed for general motorised traffic.



## 8.4. Bakerloo line extension

- 8.4.1. An extension to the Old Kent Road and beyond to New Cross Gate and Lewisham has been tested following the selection of this preferred route by TfL in December 2015. Figure 39 shows the route proposal. The Transport Study has assumed a service of 25.78 tph for AM 3 hour period – equivalent to a peak hour service of 27 tph with 25 tph in each hour either side of the peak hour. The assumed duration of journeys to Old Kent Road 1 from Elephant and Castle is 2 minutes, and the assumed duration of journeys to Old Kent Road 2 from Old Kent Road 1 a further 2 minutes. Journeys beyond the OA from Old Kent Road 2 to New Cross Gate and Lewisham takes an additional 2.53 minutes and 2.91 minutes respectively.

Figure 39 - Map of proposed Bakerloo line extension to Lewisham via Old Kent Road and New Cross Gate



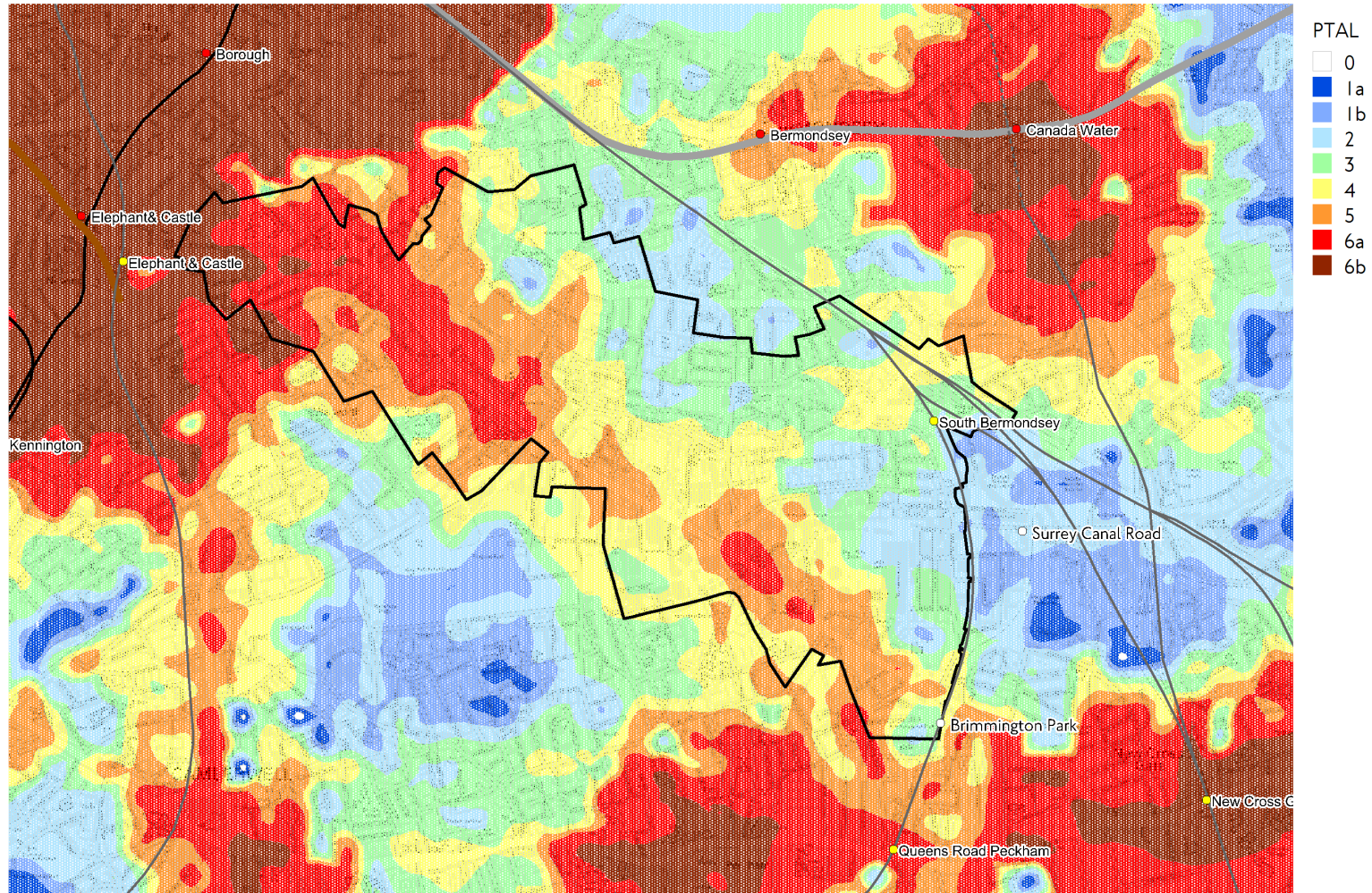
- 8.4.2. The analysis demonstrates that the extension proposal can make a strong contribution towards the objectives for the Old Kent Road, and is the only viable transport option that provides the support to enable the medium and high development scenarios.

### *Impact on Public Transport Accessibility Levels*

- 8.4.3. The impact of the extension on PTALs has been calculated. The PTAL measure is driven primarily by the proximity, frequency and variety of public transport routes provided by each type of public transport from the start point of a journey.

- 8.4.4. The Bakerloo line would provide high frequency rail services into central London, with stations integrated into the new master-planned area of the Old Kent Road so as to ensure speed of access by walking, cycling and buses. The two stations proposed along the Old Kent Road provide alternative options for access to the Tube, helping to further reduce access times depending on which direction journeys are travelling in (towards central London or towards Lewisham).
- 8.4.5. As shown in Figure 40, an extension of the Bakerloo line generates wide spread areas of very high PTALs of 5 to 6a in the north part of the OA where the area would benefit from a Tube station and the wider selection of bus routes operating towards Elephant and Castle and London Bridge. Towards the southern end of the OA, only this option delivers significant sized areas with PTALs over 5 due to the provision of a second station in the OA.

Figure 40 - Impact of Bakerloo line extension on PTALs in the OKR OA



**Old Kent Road - Opportunity Area**

Public Transport Accessibility Levels (PTALs): 2031 High Growth scenario with BLE (OK224A323)

8.4.6. Overall the extension brings large swathes of the OA into PTAL 4 or above. This is important given the OA has the potential to support thousands of new homes – their impact and justification in planning terms will be made more sustainable where they are built with high levels of access to public transport. Further detailed development of these sites in terms of their local masterplans and the walking, cycling and local bus networks means there is also scope to bring large parts of the remaining areas into higher PTAL ratings.

***Impact on Connectivity to and from the Old Kent Road***

8.4.7. As covered in the section on PTALs, the extension would make the largest contribution to enabling access to public transport for the majority of current and new residents and jobs in the OA. The wider impact of the improved public transport connections provided by the proposed extension is itself significant and demonstrates the ability for the intervention to make a significant contribution to the second transport objective.

8.4.8. A connection to the proposed extension substantially improves connectivity to surrounding areas and central London. For example, the proposed extension route brings residents and workers in the OA within shorter travel times of the East London Line on the London Overground – London’s strategic orbital rail network as well as more direct access to the wider Tube network. Combined with the proposed extension terminus at Lewisham and the interchange to the wider National Rail network, the OKR OA would benefit from improved connectivity to other strategic locations and network improvements across London that would provide a complement to opportunities and services based in central London:

- Improved connectivity to metropolitan and major town centres such as Lewisham, Croydon, Catford, Clapham, Dalston and Bexleyheath.
- Improved connectivity to other major growth and regeneration areas such as Old Oak Common, Paddington and Waterloo Opportunity Areas.
- Improved access to future planned network enhancements such as High Speed 2, Crossrail 2 and the Northern line extension to Battersea and Nine Elms.
- Journey time reductions of at least 5 minutes for 400,000 people to London’s CAZ – the core of London’s jobs market and leisure / entertainment industries. Figure 4I shows the connectivity improvements to Paddington as an example location in the CAZ.

8.4.9. The increased number of jobs forecast in the AAP vision will make the OA a destination for many more people. The impact of the extension on enabling travel to the Old Kent Road area is stark – with 4.3 million people within London experiencing a travel time reduction to Old Kent Road of at least 5 minutes. Figure 41 and Figure 42 show the widespread distribution of the connectivity improvements to Old Kent Road.

Figure 41 - Journey time reductions to Old Kent Road from a Bakerloo line extension

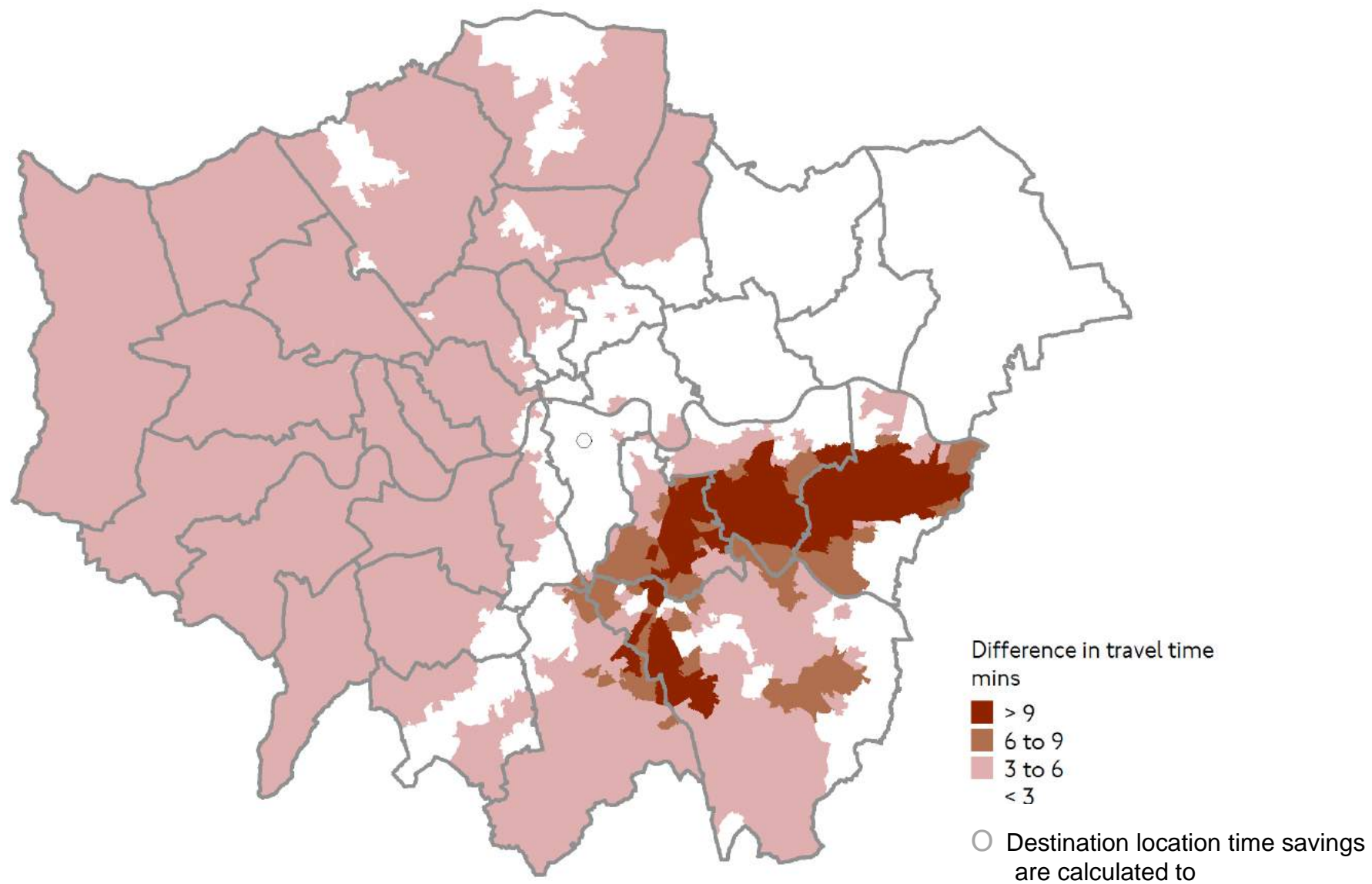
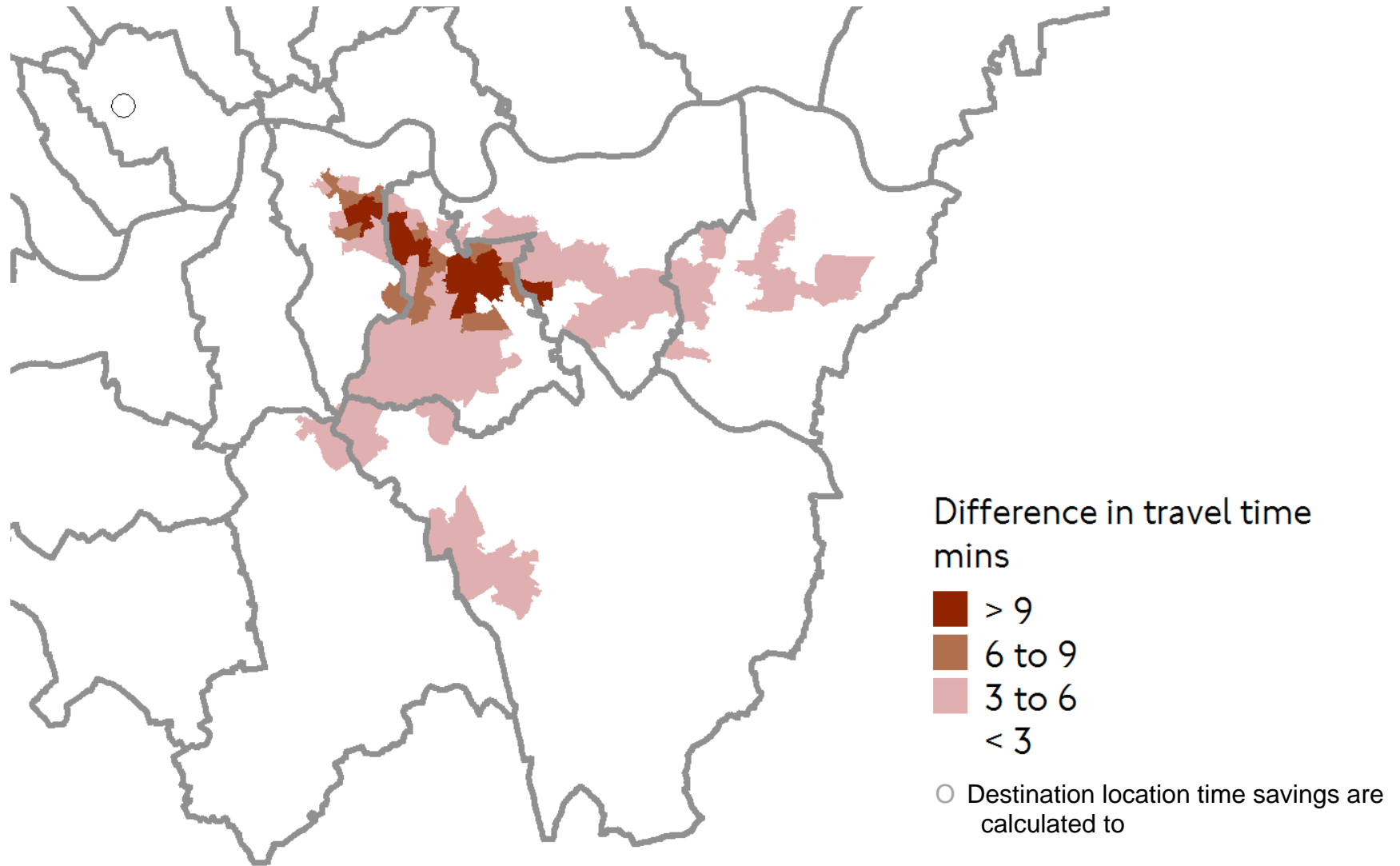


Figure 42 - Journey time reductions to Central London (Paddington) from a Bakerloo line extension



***Impact on maintaining an acceptable level of performance on the highway and public transport networks.***

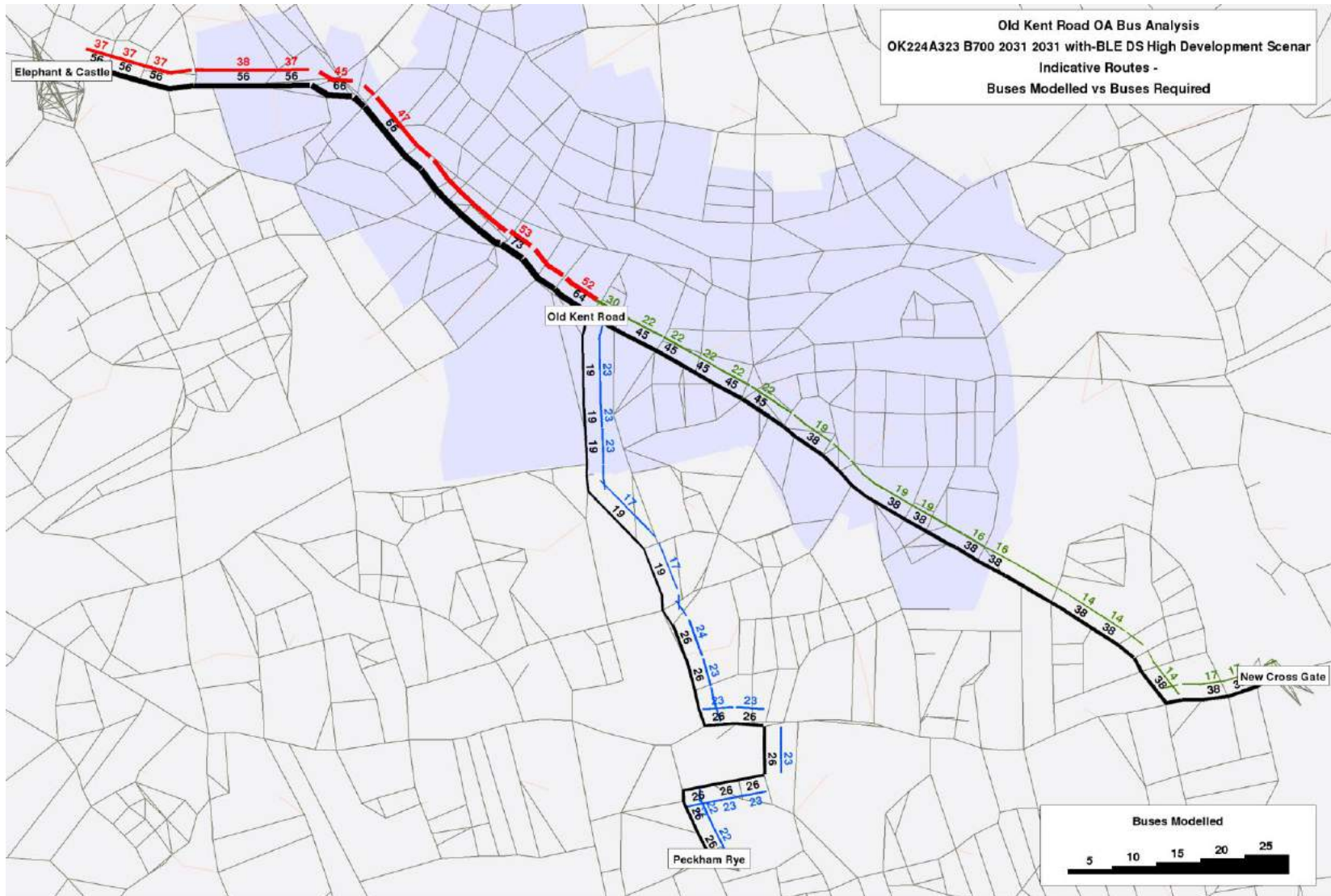
- 8.4.10. The proposed Bakerloo line extension has a range of impacts across the public transport and highway networks. These impacts broadly enable the demand generated from the proposed new homes and workers in the OA to be met in a sustainable fashion that will not undermine the AAP vision.
- 8.4.11. The PTAL impact of the Bakerloo line extension means it is the only viable option that can provide the necessary compliance with current planning policy for areas to densify to the extent that the medium to high growth homes scenarios of circa 17k to 23k homes can be delivered and therefore at least the 20,000 homes that the AAP is aiming for.
- 8.4.12. The assessment for the high growth scenario focused on whether the proposed extension can accommodate the demand from the development in the high growth scenario by enabling the public transport and highways network to maintain acceptable levels of performance.
- 8.4.13. The forecasts for the extension indicate that on the bus network a significant reduction in pressure from new demand could occur. The extension route, by paralleling the bus network to Old Kent Road would lead to falls in bus patronage that leave the network along the Old Kent Road with spare capacity.
- 8.4.14. On the section between New Cross Gate and Old Kent Road peak hour volumes fall from an average of around 2,000 trips to around 1,000 trips. This decrease in volume reduces the seated capacity load factor from between 0.70 (70% of seats taken) and 1.45 (45% more people than seats) in the Low scenario, to between 0.35 and 0.75 in the Medium and High scenarios.
- 8.4.15. The Peckham Rye to Old Kent Road bus corridor patronage is forecast to be less impacted by the introduction of the Bakerloo line extension. In fact part of this section becomes busier with the introduction of BLE as more passengers from Peckham use the bus to access the new Bakerloo Line stations. This increases the load factor from around 0.90 to around 1.00, though upon joining the main Old Kent Road trunk this figure is at 1.20 across all tests suggesting it may warrant service increases under any growth scenario.
- 8.4.16. The Old Kent Road to Elephant & Castle section of the bus network is significantly alleviated with the introduction of the Tube extension, despite much higher development levels in this part of the OA. Load factors reduce to less than 1.00, where as in the Low Scenario the minimum load factor is 1.10.
- 8.4.17. In summary, as Figure 43 shows, the extension can reduce pressure on the bus network such that approximately 20%, and in some places up to 50% more services



are operating than demand for seats requires. This means that broadly across each bus there is some spare capacity and so lower crowding and more comfort for passengers compared to the shortfall forecast in the low growth scenario without the proposed Bakerloo line extension.

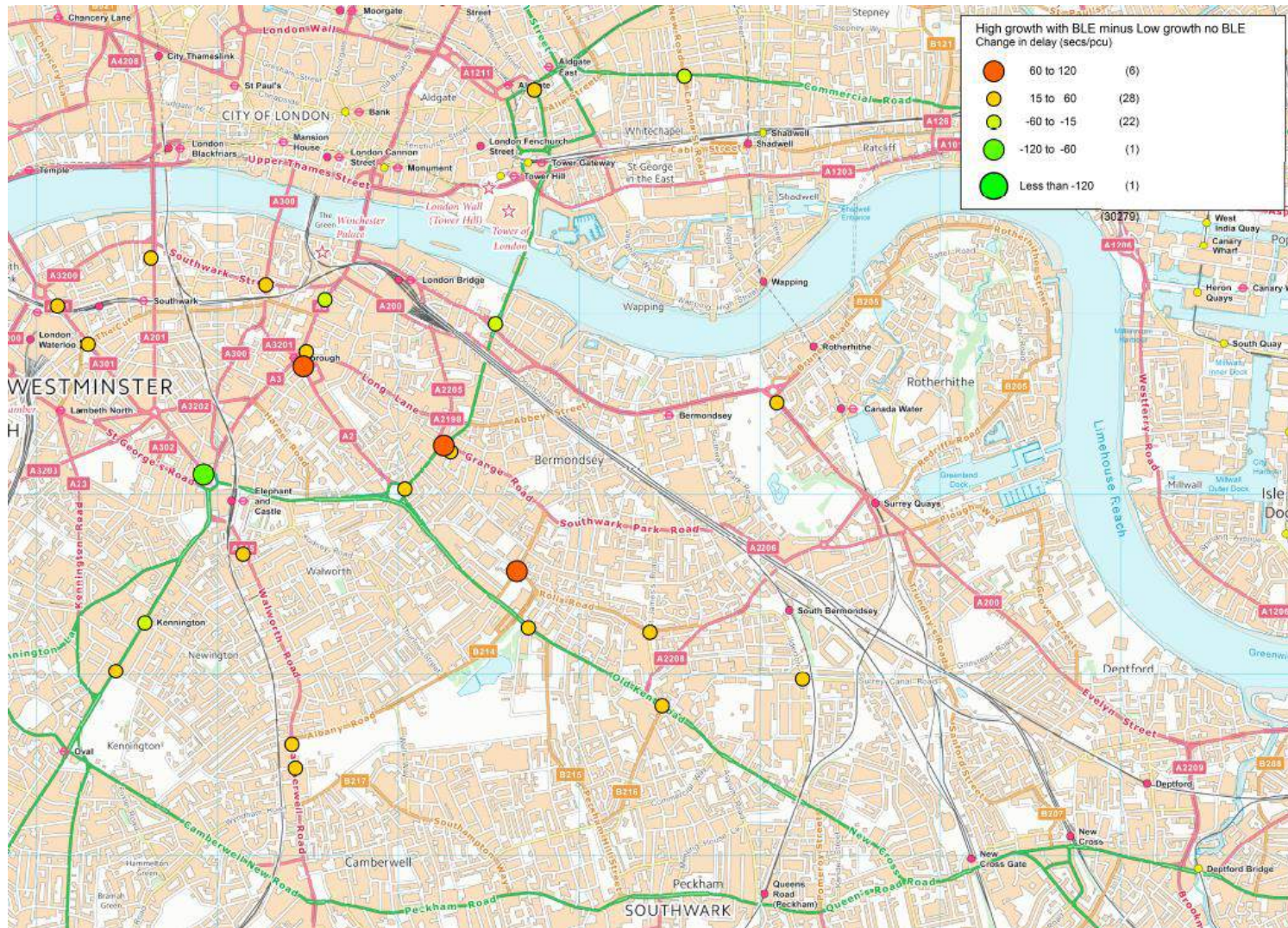
- 8.4.18. Given the performance of the bus network in the low growth scenario, the network would clearly lack capacity in the high growth scenario without a Bakerloo line extension. Given the extension further mitigates some of the demand impacts on the bus network beyond those measures tested for the low growth scenario, it can be concluded that an extension is essential for ensuring the bus network can continue to operate with acceptable levels of performance in the long term through the Old Kent Road as higher levels of development are delivered.
- 8.4.19. The impact of the extension on the bus network also introduces an opportunity to achieve more effective routing of buses through the OA (whilst maintaining their overall origin and destination on their wider route across London) such that they provide complementary rather than duplicative public transport to the Tube. This could help to increase the current forecast share of access by bus to the proposed Old Kent Road tube stations of 14% and 6% of total boarders at the northern and southern proposed stations respectively. Adjusting bus routings may also offer the opportunity to support growth more widely in that the OKR OA, such as in adjacent OAs like Canada Water.
- 8.4.20. The large change from bus usage to Tube usage between the low and high growth scenarios due to the introduction of the Bakerloo line extension is an indication of the substantial capacity and faster journeys the extension would provide. However, it is important that any impact of the Tube extension is itself sustainable for the line and wider Tube network.

Figure 43 - Bus services required in high growth scenario with Bakerloo line extension



- 8.4.21. On the highways network, the proposed Bakerloo line extension helps to significantly reduce the impact of growth in the area.
- 8.4.22. TfL's mode split forecasts from the LTS model have demonstrated that the extension is forecast to act as a key driver of behavioural change away from private vehicles and towards public transport – it is forecast to increase public transport's mode share from 61% to 68% for the overall OA between the low growth and high growth scenarios. Compared to the base 2031 scenario, this is an increase from 57% and compared to 2011 modelled levels (equivalent to current day) is a large rise from 50%. Therefore over the long term, compared to current day levels the extension, as part of the wider improvements delivered through the OA increases the forecast share of total public transport trips from 2 in every four people to 3 in every four people.
- 8.4.23. Split down to specific directions of travel between the OA and other locations around it, the extension has an even higher impact in some areas. For example, as Figure 24 shows, for travel to the OA from the south east direction (New Cross Gate), the public transport mode share increases from 67% to 94% – a 27% increase from the low growth without Bakerloo line extension to the high growth with Bakerloo line extension scenario.
- 8.4.24. Between the Low growth and high growth scenarios, the extension keeps changes in highways performance relatively low – for example, total PCU-kilometres rise only 1.9%. Due to these impacts, as Figure 44 shows, the extension significantly lowers the extent of potential further deterioration on the road network. Junction delays are forecast to worsen marginally at only three locations on the Old Kent Road across the OA – at junctions of Peckham Park Road, Glengall Road and the junction with Tower Bridge Road at Bricklayers Arms.
- 8.4.25. At some locations, there are improvements – notably at Elephant and Castle due to the extension providing a frequent and fast connection to Elephant and Castle and into the west end from locations as far as Lewisham. Therefore, despite an increase of 14,847 homes and 6,678 jobs in the high growth scenario compared to the low growth scenario, the inclusion of the Bakerloo line extension option leads to tolerable impacts on the amount of road-based vehicles movements in the OA.

Figure 44 - Change in Junction Delay between Low growth and High growth scenarios



- 8.4.26. These changes are marginal and to assess whether the road network continues to operate within an acceptable level of performance, their impact on junction queuing and road user journey time has been assessed.
- 8.4.27. The impact of the extension is a reduced impact of growth due to the large number of trips to and from the OA that can be made by non-motorised modes. There is negligible change in queuing at junctions between the without and with Bakerloo line extension scenarios. Both scenarios also include the improvements to cycling facilities, bus priority and service increases on the A2 Old Kent Road, as described in section 8.3 (and see Figure 38 for queuing plots in that section).
- 8.4.28. The forecast usage of the Bakerloo line in the low growth scenario – i.e. the existing line that terminates at Elephant and Castle – demonstrates that the line has significant capacity, with a maximum utilisation of 55% of the service, between Charing Cross to Piccadilly Circus. This is significant under-utilisation of what will be an upgraded rail line as part of the TfL New Tube for London programme.
- 8.4.29. In the high growth scenario, utilisation significantly increases. The result is that between the Old Kent Road to Embankment, the line operates at close or just exceeding its capacity. This is a common feature of well-utilised Tube lines on the London network, however it does suggest that the service level on the line could warrant an increased frequency. Increasing the extension train service frequency would also enable passengers to utilise the line in more comfort and support growth in the longer term beyond the AAP horizon of 2036. In addition, the line would have greater spare capacity north of Waterloo, helping to ensure that the northbound Northern, Bakerloo and Jubilee lines can all effectively help share the high arrival demand at Waterloo for northbound travel.
- 8.4.30. Additional analysis has looked at the impact of demand interchanging onto other parts of the Tube network. The extension from Elephant and Castle removes the need for passengers to travel by bus from the Old Kent Road to Elephant and Castle Northern line station for access to services on the City branch. Instead, it is forecast that demand will access the Northern line from the Bakerloo line services that operate through the interchange.
- 8.4.31. TfL has assessed the interchange demand impacts and identified where additional station capacity works would be required. TfL has concluded that additional capacity will be required at Elephant and Castle station, to provide greater capacity for movements between the Northern and Bakerloo lines and for passengers that will enter / exit one line by using the other line's designated ticket hall (e.g. a passenger enters through the ticket hall that best serves the Northern line, but travels down to the Bakerloo line platforms via the Northern line platforms and interchange link). Initial assessment by TfL demonstrates that the capacity works required at the station are feasible to deliver. TfL is further developing the proposals as part of the line extension project and will determine at what point following implementation of a

Bakerloo line extension, demand would require the additional capacity to be in place at Elephant and Castle station.

- 8.4.32. The OA development and the demand it generates has been shown to have a relatively low impact on the wider Tube network in terms of service crowding levels. The assumed 2031 Tube network includes upgrades to the Piccadilly, Jubilee, Northern, District and Circle, and Waterloo and City lines – providing increased capacity and faster journeys. Whilst many lines remain busy following their upgrades, as Figure 45 shows, the dispersal of Bakerloo line extension traffic into the wider Tube network means that no line is forecast to see a level of increase in usage that significantly worsens wider passenger journeys.
- 8.4.33. Furthermore, there is additional capacity that will be delivered to sections of the network, such as the New Tube for London and the delivery of Crossrail 2, (neither of which are assumed in the modelling as NTfL on the Northern line falls slightly beyond 2031 and Crossrail 2 is not confirmed until it passes Hybrid Bill stage and funding is committed). This would provide further capacity and relief to future users of lines such as the Northern and Bakerloo line.
- 8.4.34. The extended Bakerloo line helps provide wider relief to the rail network on the peripheries of the OA. Figure 46 demonstrates that the extension is forecast to provide slight reductions in crowding on the East London line and south London line through Peckham and on routes from Lewisham in to Charing Cross. These impacts make the general wider rail network better placed to accommodate growth over the long term by providing further capacity and options for trips to and from the OA and its surrounds.

Figure 45 - Change in crowding on the London Underground due to high growth scenario with BLE

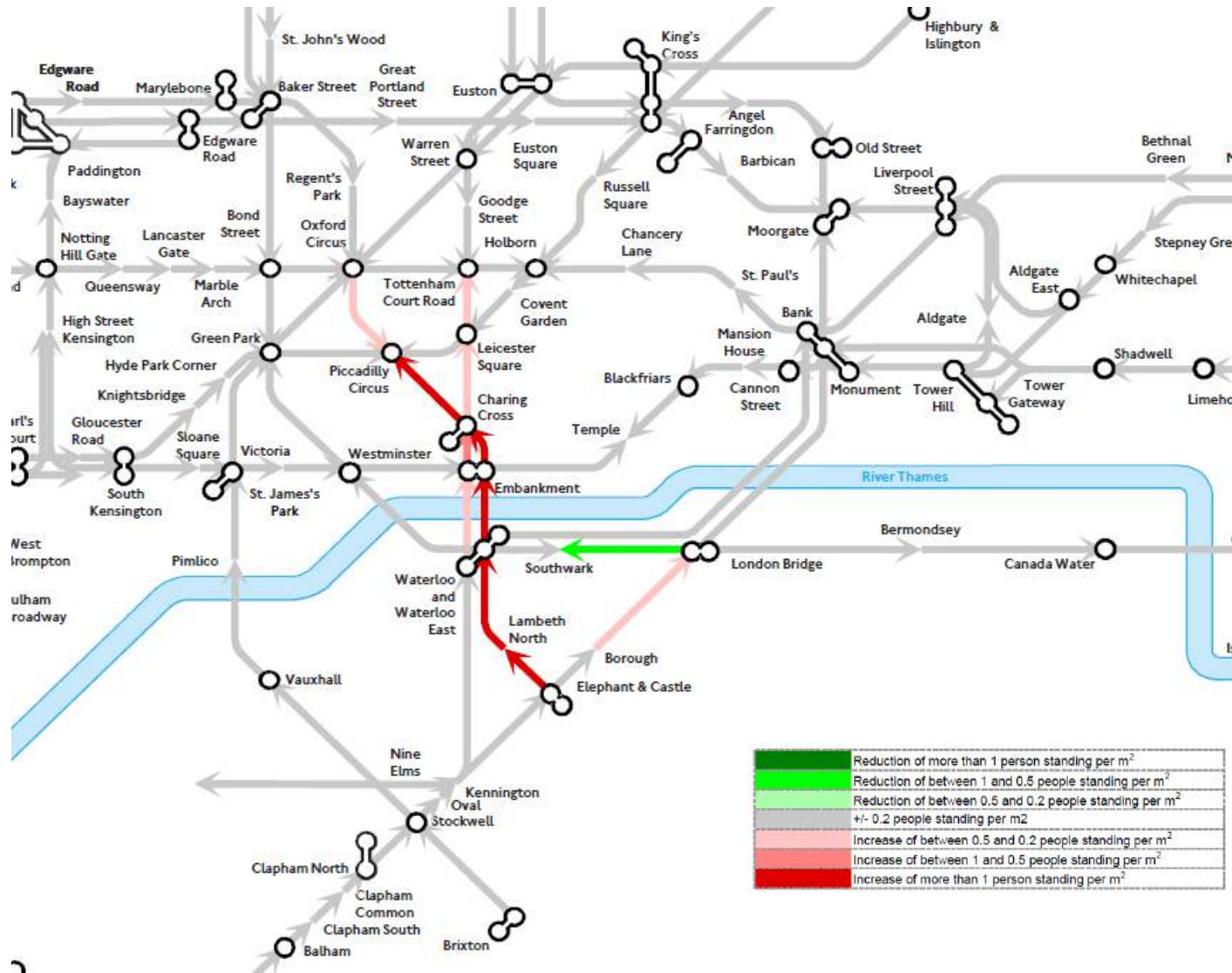
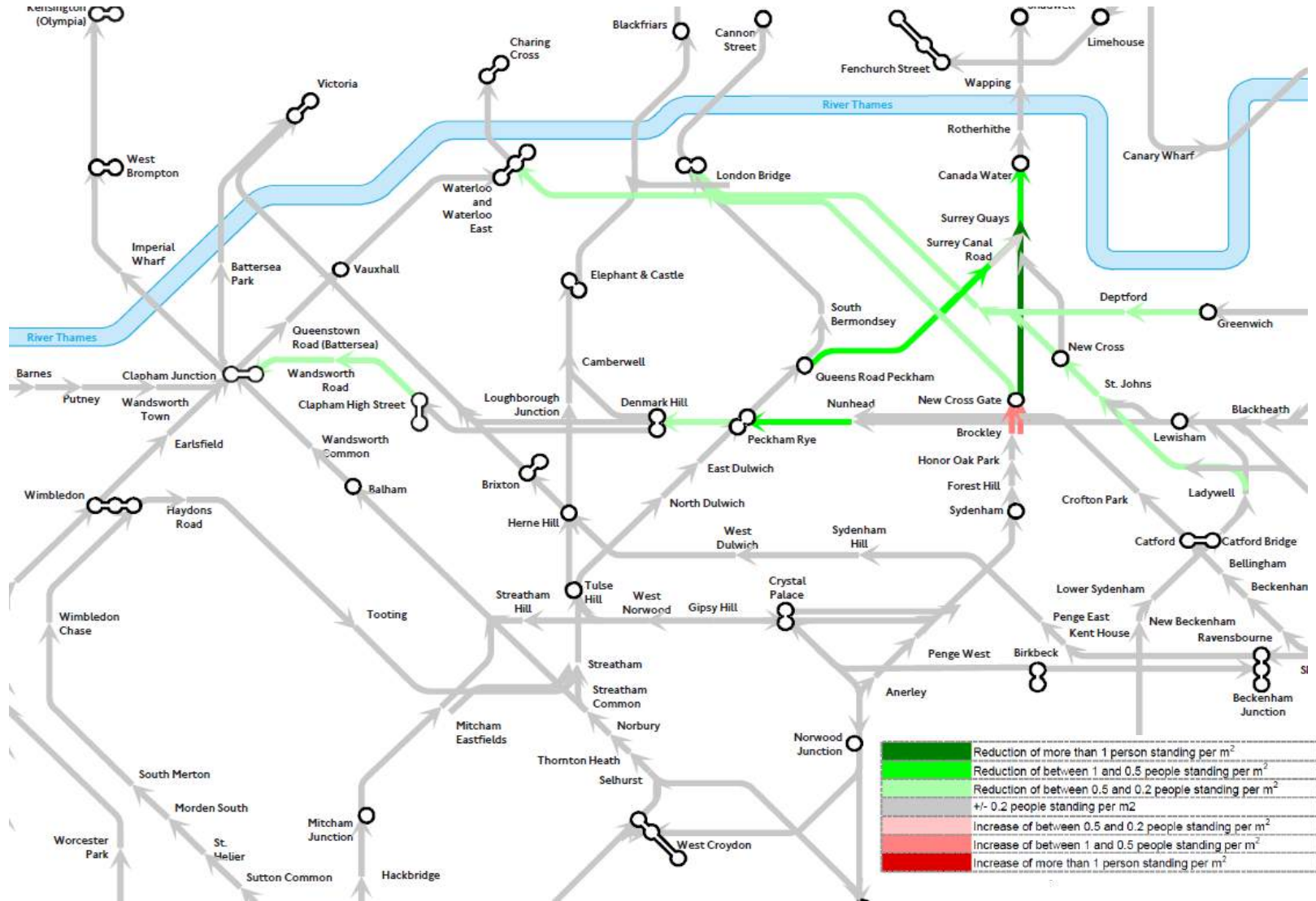


Figure 46 - Change in crowding on the Rail network due to high growth scenario with BLE





***Enable travel by sustainable modes and behavioural change that can cater for growth over the AAP horizon to 2036 and beyond.***

- 8.4.35. The Bakerloo line extension proposal would provide a sustainable mode of travel for demand in the OA. For electric powered rail, only relatively low levels of patronage per train are required to make it significantly more environmentally sustainable than road-based petrol/diesel modes.
- 8.4.36. The forecast patronage figures for the Bakerloo line extension show high levels of demand on the line, with over 11,000 passengers expected to board the line in the OA during a weekday morning three hour period. The proposed Tube extension therefore would provide a very low carbon option for many of the transport trips generated by the new development.
- 8.4.37. Following a planned signalling and rolling stock upgrade of the Bakerloo line by 2030 (reflected in all 2031 model forecasts), the current assumption is that the line will operate with an average of 25.78 tph over the three hour morning peak period, equivalent to a peak hour service of 27 tph with 25 tph in the hour either side. This is based on the existing line operation to its terminus at Elephant and Castle and the levels of demand that generates.
- 8.4.38. The extension would however drive the case for further train services and, due to the upgrade, it would be feasible to deliver at least 33 tph, and potentially more – equivalent to an additional 5,700 passengers in the peak hour and up to 17,000 more passengers each three hour morning period – a 26% increase compared to the modelled services on the extension. This would ensure it is a sustainable solution for meeting long term growth in the OA. It is also important to recognise that higher train service frequencies would also further increase PTAL levels beyond those shown in Figure 40.
- 8.4.39. This forecast behavioural change has a further significant impact on the wider quality of life for existing and new workers and residents in the OA. Using public transport increases the amount people walk or cycle as they travel to and from stations compared to door to door car-based travel. The World Health Organisation has established a Health Economic Assessment Tool that enables monetisation of the health benefits of active travel. Although not applied in this Transport Study, the tool forecasts that increases in physical activity have a positive economic outcome due to the health improvements generated. The extension proposal would therefore generate behaviour change that delivers its own economic benefits due to improving health.

### ***Reduce severance within the OA***

- 8.4.40. An extension can help reduce severance in the OA. If stations are located on the A2 Old Kent Road itself, good design could facilitate reduced severance by ensuring that station entrances are located close to pedestrian crossing points, bus stops and provide cycle parking. Stations could also be designed to provide direct access to the ticket hall from both sides of the road, as is common in many parts of London. Detailed work has not yet been undertaken on the capacity of pedestrian facilities such as pavements and crossings and the impact of the forecast number of passengers entering and exiting the proposed Tube stations. Once station locations are fixed following public consultation on the options, it will be clearer how passenger volumes and their desire lines would best be catered for through the design of the proposed stations and their surrounding pedestrian, cycling and bus facilities.
- 8.4.41. An extension will also provide a significantly faster connection between the western and southern areas, helping to provide a quick and regular journey option for travel between the residential areas and commercial and employment clusters at each end of the OA which can reach up to 2 km apart – particularly helpful for trips by mobility restricted passengers that are unable to travel far using active modes such as walking and cycling.

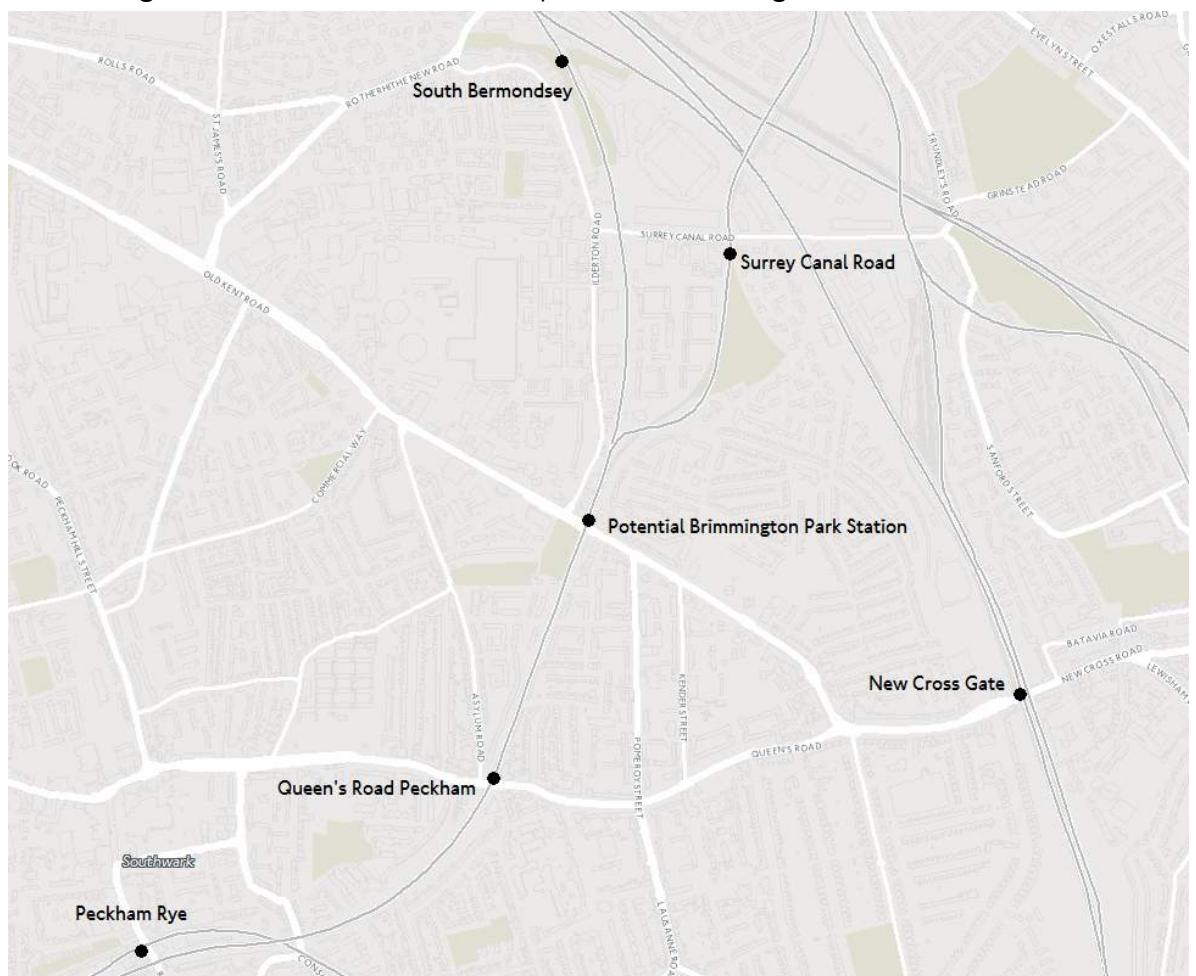
### ***Achieve value for money from investment in the option***

- 8.4.42. The Bakerloo line extension proposal has been appraised by TfL to assess the scale of benefits generated by the costs of the scheme. The proposal is forecast to be a high value for money scheme. The proposal, by enabling the higher growth scenarios and therefore the AAP vision to be delivered, increases the wider economic benefits generated by enabling a larger resident population to locate in close commuting distance of London's high value producing sectors. The proposal also has a net beneficial impact for public transport journeys, with the overall improvement on reducing public transport crowding in the Old Kent Road and for journeys to and from New Cross Gate and Lewisham interchange offsetting the slight deterioration in highways journey times for private and goods vehicles due to the additional generated traffic from the development the extension enables.
- 8.4.43. As TfL develops the proposals for the Bakerloo line extension, more detailed design work will seek to optimise access to the new stations to ensure journeys are improved as far as possible within the OA and on the rest of the extension route.

## 8.5. Brimington Park Overground Station

- 8.5.1. A potential new station on the London Overground and Southern National Rail line in London Bridge has been tested to assess whether it is a necessary transport intervention to enable the proposed OA development to take place.
- 8.5.2. The potential new station is assumed to be within walk distance of the intersection of the rail line with the Old Kent Road – the location shown in Figure 47 is for indicative purposes only. The precise location is not known as no further design work has been undertaken (however the scheme is assumed to be feasible with other examples, such as Surrey Canal Road to the north expected to have been delivered by 2031).

Figure 47 - Assumed location of potential Brimington Park station

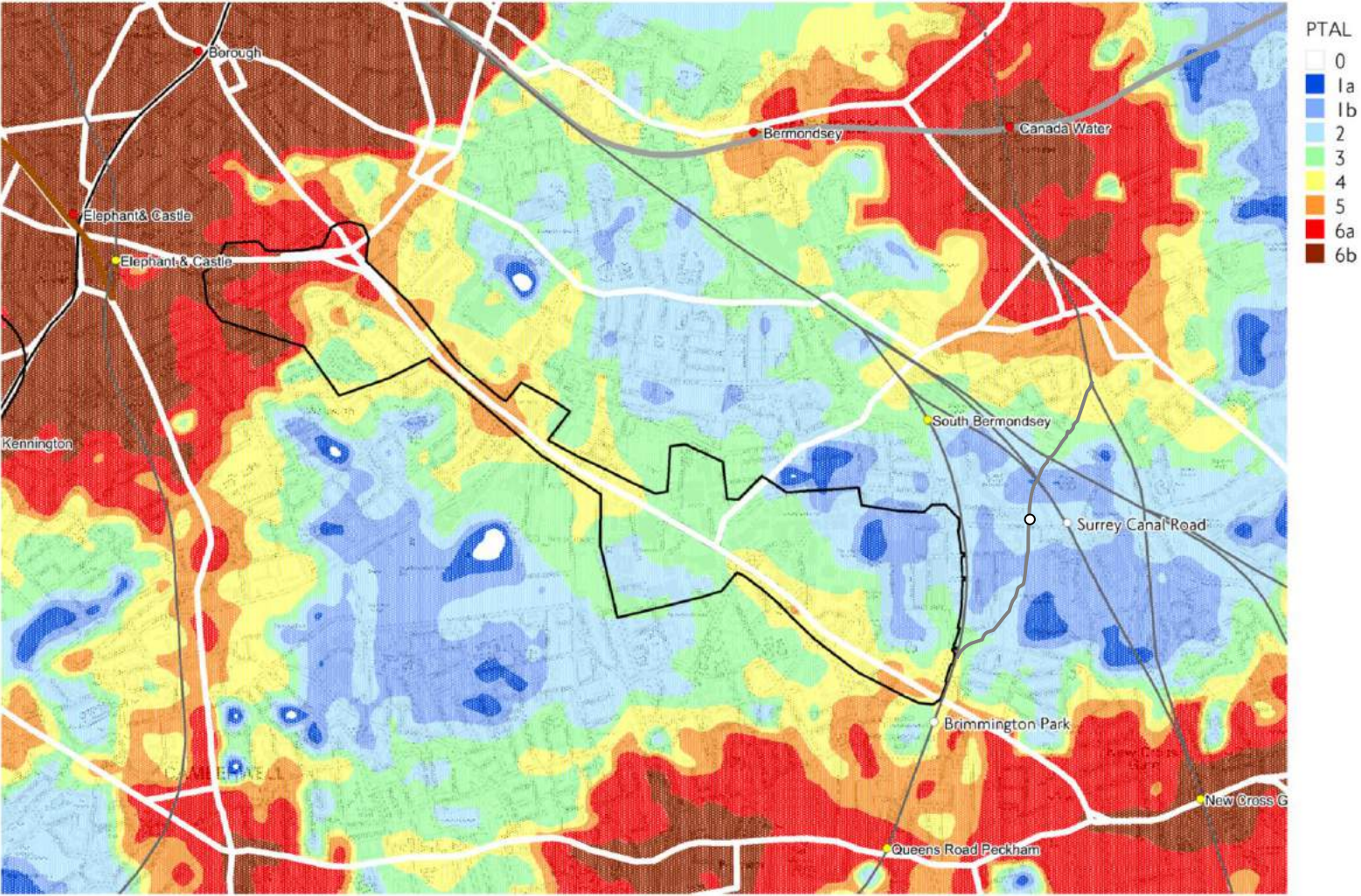


- 8.5.3. The assumed service level at the station matches that of the existing Queen's Road Peckham station to the south – with all London Overground and Southern services stopping at the station. This is assumed to add two minutes to the journey time of services in each direction between Queen's Road Peckham and Surrey Canal Road.

### *Impact on Public Transport Accessibility Levels*

- 8.5.4. The impact of a potential station at Brimington Park on PTALs is shown in Figure 48. The impact of the station is forecast to be low, with much of the OA remaining at PTALs below 4 and no part of the OA in the southern area in PTAL reaching 6a or 6b. The potential Overground station service frequencies are significantly below those of the bus network or those delivered by a Bakerloo line extension.
- 8.5.5. Compared to both the bus network and the Bakerloo line extension, the proposed Overground station has a low spatial coverage, with the option unable to provide multiple new access points to a high capacity regular public transport service across the OA. The South London line borders the OA and therefore any new station on the line will still be significant distances (up to 2.5 km) from the core and northern parts of the OA, limiting the access benefits it can provide.
- 8.5.6. The relatively poor coverage of the potential station is further indicated by the patronage forecast for it and the distribution of those passenger origins.
- 8.5.7. It is clear that the scale of change in PTALs from the potential station as a standalone intervention is insufficient to enable the densities required to deliver the medium or high growth scenarios in the OA. It is also therefore unlikely that adding the proposed scheme into a package of interventions, such as Bus service increases and a Tube extension would be worthwhile from the perspective of increasing PTALs.

Figure 48 - Impact on Public Transport Accessibility Levels of Brimington Park London Overground & National Rail Station



### ***Impact on Connectivity to and from the Old Kent Road***

- 8.5.8. The potential station at Brimington Park would provide some connectivity benefits to the OA - particularly for northbound travel to London Bridge and the City fringe and on to Dalston for passengers starting journeys in the southern part of the OA.
- 8.5.9. For travel to the south, the London Overground services call at Queen's Road Peckham, Peckham Rye and Denmark Hill before onwards travel to Clapham Junction on the Overground. The National Rail services provide links to other areas of south London such as Streatham, Dulwich and Wimbledon.
- 8.5.10. For some of these locations, access to them is already well served by the bus network (such as Peckham) or, for passengers in the northern part of the OA, via Thameslink from Elephant and Castle. Overall, the southern end of the OA would experience an improvement in connectivity, however due to the large size of the OA, the Overground station is insufficient in its coverage to provide widespread connectivity benefits. As with the BLE proposal, the journey time connectivity impacts were assessed but show negligible change. Overall the highest journey time impact of the proposal for some locations is around 1 to 2 minutes; however some parts of London would see a slower journey due to the Overground services stopping more often.

### ***Impact on maintaining an acceptable level of performance on the highway and public transport networks***

- 8.5.11. The potential station at Brimington Park has been tested in TfL's Railplan model. The results show a relatively small change on bus network flows of approximately 200 fewer passengers in the peak hour. This is the forecast result in both a low growth without Bakerloo line extension scenario and also the high growth with Bakerloo line extension scenario.
- 8.5.12. Analysis of the origin of Brimington Park station boarders and the impact on London Overground line loads shows that the station is having little impact on crowding levels on the Overground line. This is due to a large portion of the station users having transferred from boarding at Queen's Road Peckham and Surrey Canal Road. As a result the total volume on the Overground line on the busiest northbound approach in the AM peak period to Surrey Canal Road station is almost the same between the without and with Brimington Park scenarios (a forecast of 967 compared to 963), as shown in Figure 49.

Figure 49 - London Overground line volumes in Low growth scenario without and with Brimmington Park station

**Without Brimmington Park Station**

London Overground						
<i>Seated Capacity Load Factor</i>	Queens Road	1.43	Surrey Canal	1.82	Surrey Quays	3.28
<i>Total Capacity Load Factor</i>	Peckham	0.37	Road	0.47		0.85
<i>Total Volume</i>		963		1,228		8,831

**With Brimmington Park Station**

London Overground								
<i>Seated Capacity Load Factor</i>	Queens Road	1.15	Brimmington	1.44	Surrey Canal	1.8	Surrey Quays	3.28
<i>Total Capacity Load Factor</i>	Peckham	0.3	Park	0.37	Road	0.47		0.85
<i>Total Volume</i>		771		967		1,213		8,833

- 8.5.13. The small impact on bus patronage levels means that the potential station does not provide a solution that can relieve crowding and congestion on the busy bus network in the OA such that the bus network together with a potential intervention could support the total levels of new housing and employment the AAP aims for. A test of all the public transport interventions together – bus service increases, a potential Brimmington Park Overground station and a Bakerloo line extension shows that the extension remains the most impactful intervention that generates the largest relief to the bus network.
- 8.5.14. Brimmington Park station’s impacts on the overall ability of the rail network to accommodate demand are shown in Figure 50 and Figure 51. The plots demonstrate that the station in both scenarios has little impact on crowding levels on the network. This is to be expected given the option does not add new capacity to the public transport network and given that the line feeds into the East London Line over the river to the City fringe and is relatively close to London Bridge on the Southern network. As a result, in the busiest directions the station would provide only short-lived improvements in conditions for Southern national rail passengers, or add demand to the busy central section of the London Overground network.
- 8.5.15. The Overground station’s limited impact on Rail and Underground conditions and the inability to serve a substantial part of the OA suggests there is little case for it forming part of a package of interventions for the Old Kent Road. With the Bakerloo line extension providing interchange to the Overground and frequent Southeastern services to London Bridge at New Cross Gate, many of the connectivity advantages to central London of the potential station at Brimmington Park would still be accrued were the Bakerloo line extension implemented.
- 8.5.16. It should be noted however, that the station’s potential location would mean it could also serve the western part of the neighbouring New Cross-Lewisham-Catford OA. Therefore the option may have a greater case should it be determined that additional development could come forward in this part of London.

Figure 50 - Impact of a new station at Brimmington Park Station Rail and Underground Network crowding in Low growth scenario

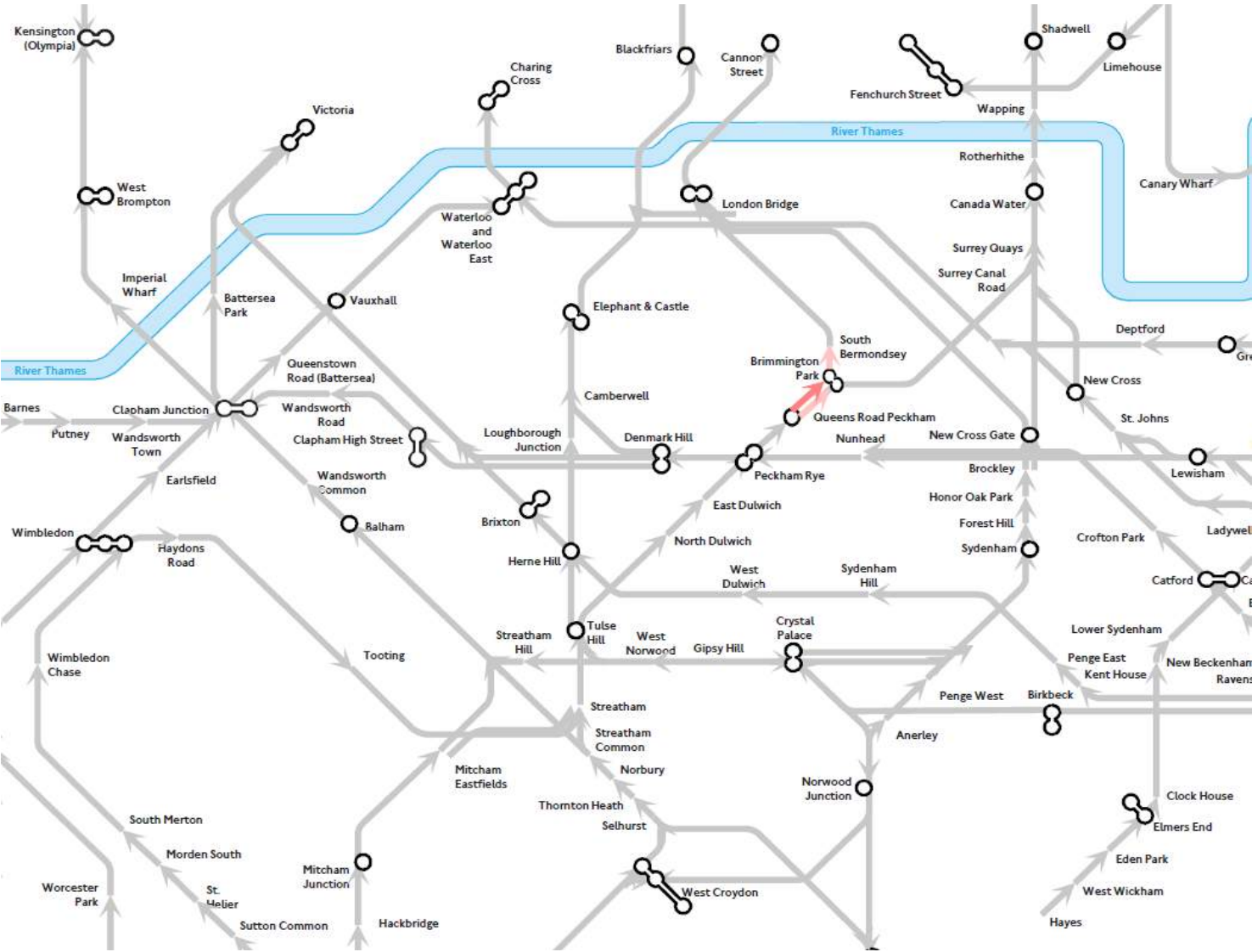
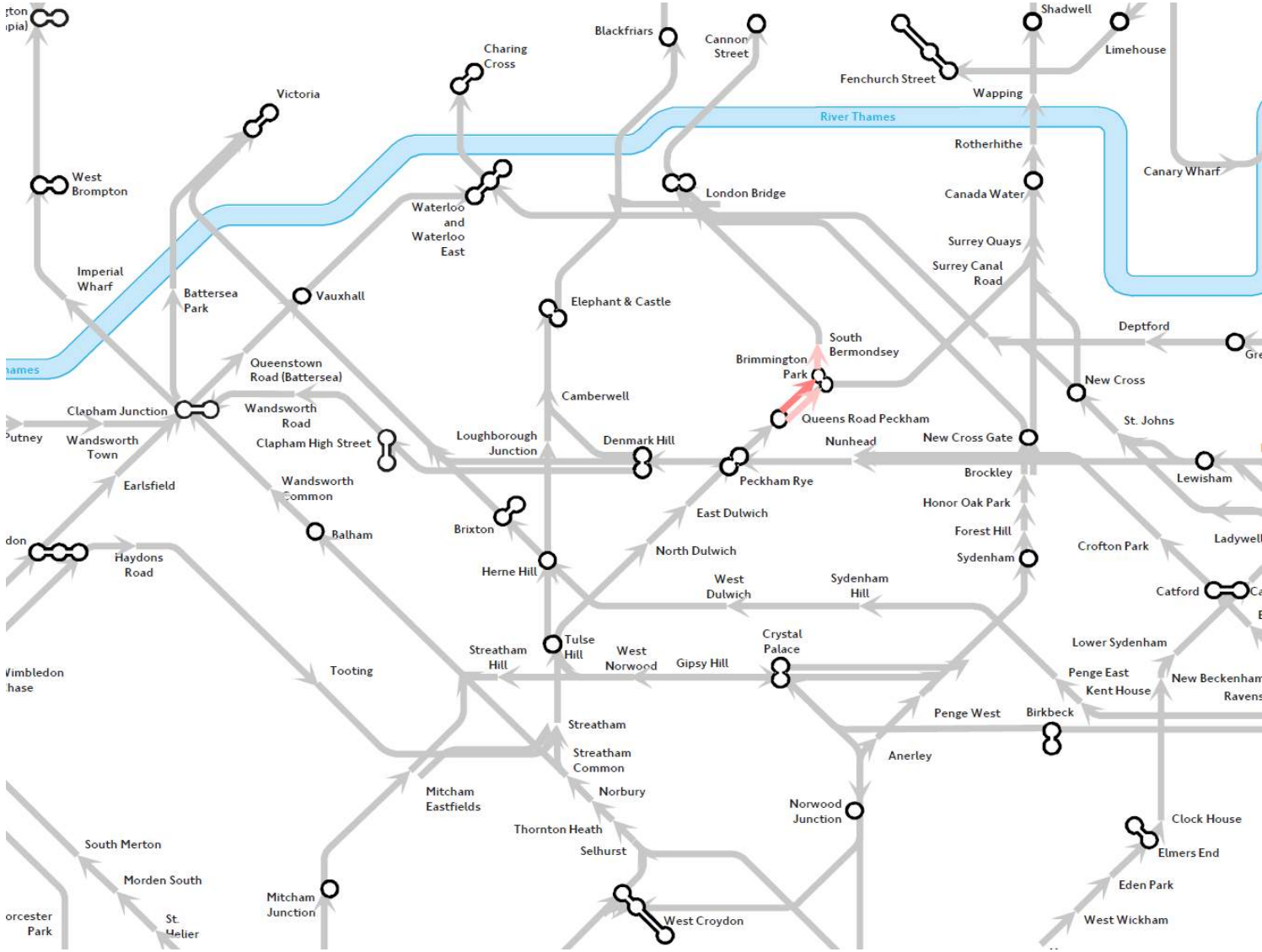




Figure 51 - Impact of a new station at Brimmington Park Station Rail and Underground Network crowding in High growth scenario



- 8.5.17. More detailed investigation into the impact of the option on the existing Overground line has been undertaken. This is in the context of an existing legal commitment for TfL to deliver a new station at Surrey Canal Road subject to fulfilment of s106 developer obligations to pay the full cost of the works. This new station along with South Bermondsey will serve the north eastern part of the OA in Lewisham and Southwark. It is currently anticipated that developer funding will be made available to enable the station to open in the next 2 to 3 years, although this has yet to be confirmed.
- 8.5.18. High level operational assessment in a software programme called Railsys (designed for technical and operational planning of railways) has been carried out in order to model 18 tph through the core on the East London Line (which is currently being introduced) and accommodating an additional stop at Brimington Park on the Old Kent Road as well as allowing for the new station on Surrey Canal Road. The modelling has indicated that it is not possible to accommodate the addition of a stop at Brimington Park as well as an 18 tph London Overground timetable and a new station at Surrey Canal Road without impacting severely on journey reliability.
- 8.5.19. Assessment of the potential for a new station north of OKR on just the National Rail service and located between Queens Road Peckham and South Bermondsey stations has also been undertaken. This station would serve the eastern end of the OA. Investigations indicate that for operational and service reasons a new station would not be a viable option, for similar reasons to the constraints for the Overground and National Rail station at Brimington Park.
- 8.5.20. The considered intervention on this part of the rail network would therefore pose a significant risk to maintaining acceptable performance levels on a key part of London's public transport network.

***Enable travel by sustainable modes and behavioural change that can cater for growth over the AAP horizon of 2036 and beyond.***

- 8.5.21. As described for the Bakerloo line extension – rail modes of travel are highly efficient and produce lower levels of negative externalities such as Carbon emissions overall than private motor vehicle use. However, given the proposed Brimington Park station is not forecast to result in a large number of new users of the Overground and therefore little shift from other modes of travel, the intervention overall would have a relatively low impact on sustainable travel and in enabling the levels of growth forecast over the AAP period and beyond to be accommodated.
- 8.5.22. The proposed station at Brimington Park has a relatively low potential in absolute terms to see further increases in train services through it. A potential signalling upgrade in the long term on the East London Line could enable increased services, whereby a further two trains per hour could operate on the London Overground through the station. The trains on the London Overground may also be lengthened

beyond five-cars, providing more standing and seating capacity. Taking these potential improvements together there is 80% further capacity, equivalent to 4,000 passengers per AM peak period, that could operate through the station in the future, though the increment is relatively low in absolute terms compared to that which could be provided on the Bakerloo line extension (17,000 additional passengers in the AM peak period). The costs of delivery of train lengthening and service increases are significant – hundreds of millions of pounds due to the scale of intervention needed across the Overground line.

#### ***Reduce severance within the OA***

- 8.5.23. Due to the location of the potential station and the route of the line that the station would lie on, the option would provide little opportunity to reduce severance. Any improvement would be limited to the way in which the station is designed – namely if the best site for the station is directly above the A2 Old Kent Road on the rail viaduct, in which case it is viable to integrate into the vertical accesses to the high level platforms on the viaduct a non-paid side road crossing if additional pedestrian crossings at the busy junction with Ilderton Road are less desirable.

#### ***Achieve value for money from investment in the option***

- 8.5.24. An Overground extension station is likely to cost in the region of £40m. The passenger journey time forecasts for the impact of the station show that the intervention is expected to generate a net worsening in passenger journeys as the station fails to attract new demand from the OA due to its peripheral position relative to the main development areas. Furthermore, the main patronage forecast to use the station is largely due to former users of Queen's Road Peckham switching to a more local station and hence benefiting only from a marginal change in access time to the rail service they already take.
- 8.5.25. Given these impacts of the potential station from a value for money perspective, and the other shortcomings concerning impacting public transport use; PTALs and supporting long term sustainable growth in development and travel demand; and the risks the option poses to maintaining acceptable levels of performance on the East London line, it is not recommended that this option be progressed any further.

### **8.6. Recommendations**

- 8.6.1. It is clear from the Transport Study assessment of the preferred options that the following package of interventions should be progressed further on the basis that they are suitable in planning terms to ensure that the transport demand generated from the AAP's preferred scenario of 20,000 homes and 5,000 jobs (which is broadly equivalent to the high growth scenario tested) can be accommodated in a sustainable way, which provides value for money.

- Bus frequency increases of circa 10 to 20 buses per hour prior to delivery of the Bakerloo line extension
- Bus priority and improved cycling facilities along the A2 Old Kent Road to improve protection for cyclists, parking and potential hire facilities, designed in tandem to optimise highways design and minimise the deterioration in highways performance for other road users
- A Bakerloo line extension through the Old Kent Road to provide the significant new capacity and increase in PTAL required to make the AAP vision's scale and density of development acceptable in planning terms.

8.6.2. Some of the interventions will also generate substantial benefit for wider travel in London and provide longer term capability to meet growth beyond the AAP horizon of 2036.

## 9. Study conclusion

- 9.1.1. The Old Kent Road's existing and future planned transport network has some strengths and weaknesses. The key strength is the regularity and diversity of destinations served by the current and future planned bus network. This is owing to the fact that the OA has primarily been characterised in modern times by its arterial function linking town centres within south east London, and the capacity of the road itself for road based travel between central London and south east London into Kent.
- 9.1.2. The key weakness however is that the route is an arterial road for a significant volume of through vehicle trips, whilst the existing land uses also generate their own local private vehicle and goods vehicle trips to serve the industrial and large scale retail stores. The result is that highways conditions deteriorate the reliability of the bus service and lengthen the overall journey times.
- 9.1.3. The analysis undertaken of the existing conditions of the transport network in the OA and the impacts of the potential development growth provides clear conclusions.
- 9.1.4. The assessment of the highest development scenario provides a clear end-state set of requirements for transport network improvements which, if undertaken, should enable the OA to be developed in a sustainable way to support London's economic growth through job creation and new housing. The improvements will support the AAP vision and also ensure they are sustainable for supporting growth beyond the AAP planned levels of development.
- 9.1.5. The transport mitigations required and their core reason are set out in Table 36.

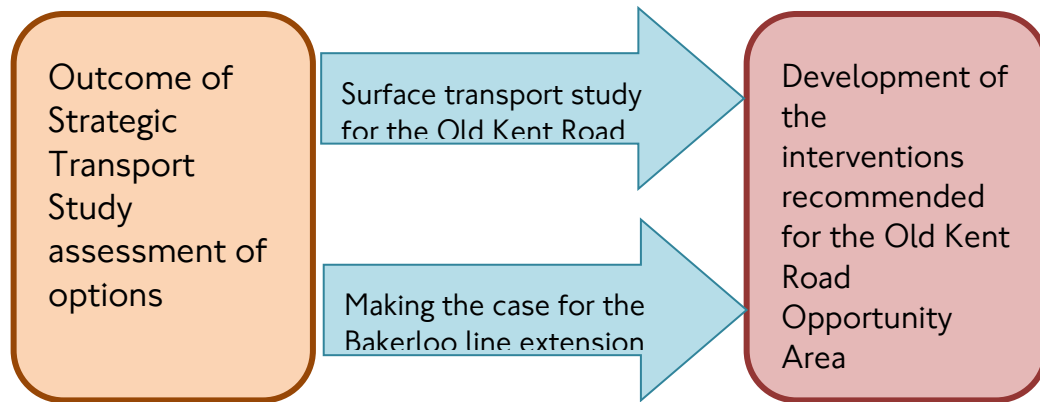
Table 36 - Summary of transport interventions recommended for OKR OA to support high growth scenario

Recommended Intervention	Reason
Bus service improvements	<ul style="list-style-type: none"> <li>• to provide a greater range of services to improve access between development areas and the wider public transport network;</li> <li>• increase priority measures along the A2 and to support increase in public mode share, and provide reliable and quicker journeys;</li> <li>• increase capacity to reduce congestion and crowding on the busiest parts of routes in the OA.</li> </ul>
Bakerloo line extension	<ul style="list-style-type: none"> <li>• to provide a step change in PTALs to enable densification;</li> <li>• provide a significant uplift in capacity;</li> <li>• reduce journey times within and to / from the area to wider London;</li> <li>• drive mode shift to public transport to maintain acceptable levels of highways performance.</li> </ul>
Cycling infrastructure including increased protection, increased parking facilities and potential cycle hire facilities	<ul style="list-style-type: none"> <li>• to provide improved safety for cycling trips;</li> <li>• to encourage uptake of cycling to improve health;</li> <li>• to reduce road congestion and public transport pressures by increasing the number of cycling trips;</li> <li>• to improve local access to the wider public transport network and integration into the network of cycle hire stations into central London.</li> </ul>
An urban environment fit for walking, cycling and ease of access to public transport by applying consistent design principles (e.g. <i>Better Streets Delivered</i> , 2013; <i>Station Public Realm Design Guidance</i> , 2015)	<ul style="list-style-type: none"> <li>• to provide improved safety and reduced collisions involving pedestrians or cyclists</li> <li>• to improve health by enabling final trip stages to be made by active modes</li> <li>• to ensure the Old Kent Road maintains its strategic movement function but improves its place function towards a designation of High Road or City Hub / Boulevard function on the TfL Road Hierarchy.</li> <li>• to create an environment that is safe, healthier, greener and more liveable</li> <li>• to breathe new life into the street through a careful mix of new uses and centres</li> <li>• to help enliven the route and create points of interest whilst establishing minimum footway widths to ensure a high level of pedestrian comfort</li> <li>• to help people navigate the area and provide information on walk times to local destination through implementation of wayfinding and signage such as the Legible London system.</li> </ul>

- 9.1.6. The forecasting of the traffic impacts of development up to the level aspired to by the AAP has demonstrated that it is not sustainable to rely on the current bus network and road function for accommodating the increased travel demand.
- 9.1.7. Over the long term, based on the transport objectives to achieve the AAP vision, it is clear that a significant amount of further public transport capacity and new options for travel is required that can connect the OA better into London as a whole. An improvement of this scale is required to enable the density and quantity of development the AAP aspires to deliver, and to ensure that public transport increases its mode share to avoid deteriorating conditions on the highway for motorised public and private transport and cycling. TfL's analysis demonstrates that a Bakerloo line extension is the preferred intervention to achieve these outcomes in the long term.
- 9.1.8. The bus network can provide shorter term support for the initial phases of development as analysis of the Low growth scenario has demonstrated. To enable this, a programme of improvements to how the Old Kent Road highway functions along with its improved urban realm and pedestrian environment will be developed. This will help to deliver bus priority, improved cycling facilities that increase protection and ease of cycling (e.g. parking at journey start and end points, cycle hire etc.), and optimised signal phases and turning movements at junctions to ensure traffic flow is kept to acceptable levels of performance. In addition, any proposal impacting the public realm should be responsive, robust and sustainable and bring forward a simple streetscape environment which forms the backdrop to daily life in the area.
- 9.1.9. TfL recommends that Southwark ensure the AAP planning policies support delivery of these improvements so that development that comes forward actively enables and facilitates these improvements through both good design and financially through s.106 and Community Infrastructure Levy receipts.
- 9.1.10. To support the application and collection of s.106 and Community Infrastructure Levy receipts, it is recommended that LBS, GLA and TfL work quickly towards the undertaking of a Development Infrastructure Funding Study (DIFS) in order to ensure that the right level of funds is available at the right time to bring transport improvements into operation.
- 9.1.11. The approach to progressing development of the recommended interventions is set out in Figure 52. The design and details of the interventions to surface transport and the TfL managed roads – principally the A2 Old Kent Road which is TLRN, is planned to be developed in a specific Surface Transport Study. The study will look at the principles for delivery of improving bus services and their priority on the highway, cycling facilities and the improvement in the place function of the A2 Old Kent Road.
- 9.1.12. Developing the design and details of these improvements will help maximise their contribution towards both the AAP vision whilst ensuring that TfL can continue to

meet its objectives as set by the Mayor of London. The work will also develop the cost and phasing of delivery of these improvements that can be more closely reflected in remaining development work on the draft AAP.

Figure 52 - Approach to progressing recommended transport improvements for the OKR OA

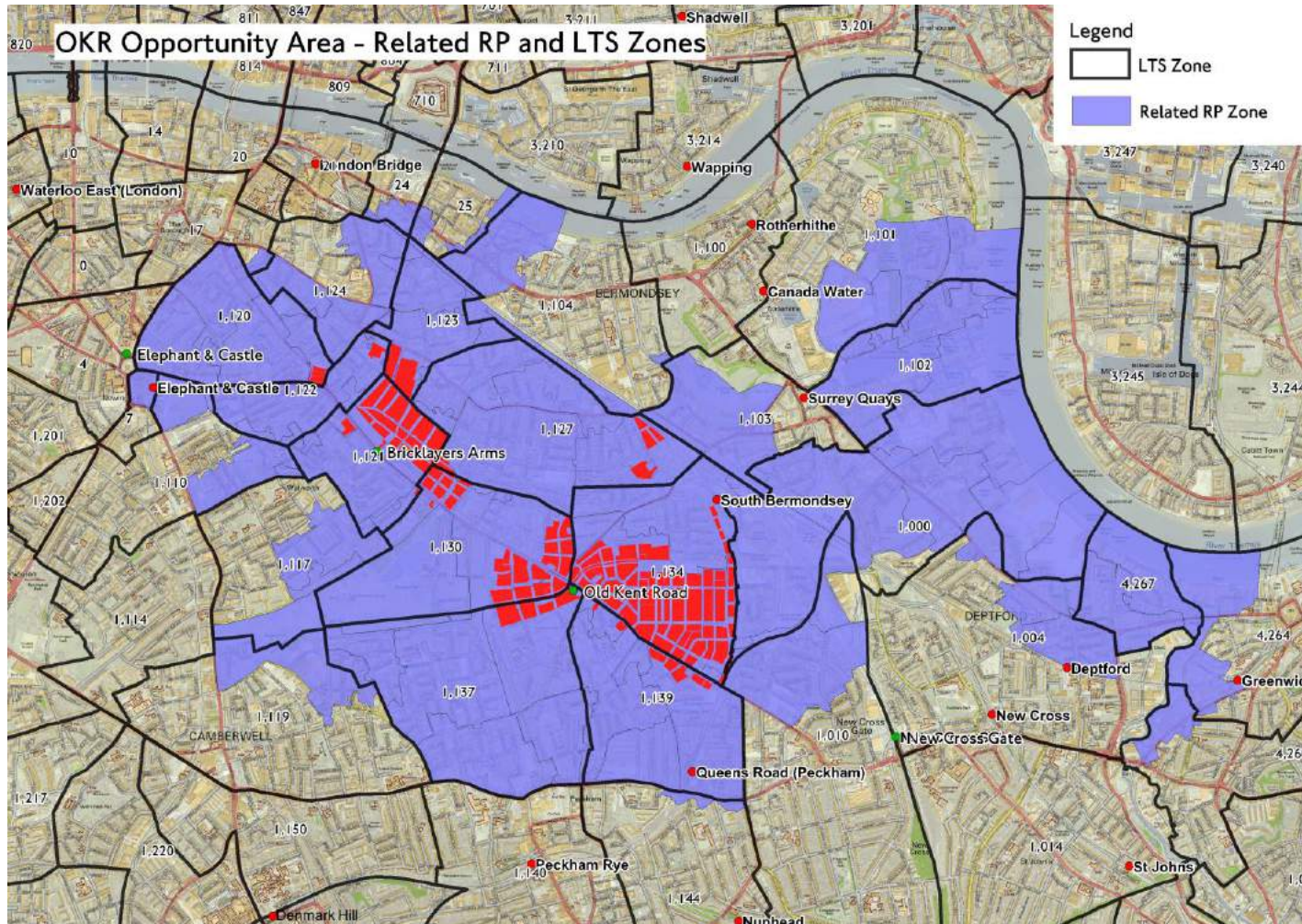


9.1.13. Alongside the work on the surface interventions, TfL will continue to make the case and develop the proposals for the Bakerloo line extension, including the route through the OKR OA, and also to the remaining destinations proposed – New Cross Gate and Lewisham. Doing so will help provide greater details about the extension can be designed to help deliver on the AAP vision. The work will also provide greater detail on the site-specific impacts which can be reflected in the development of the AAP and other local plans and policies under development elsewhere on the extension route.



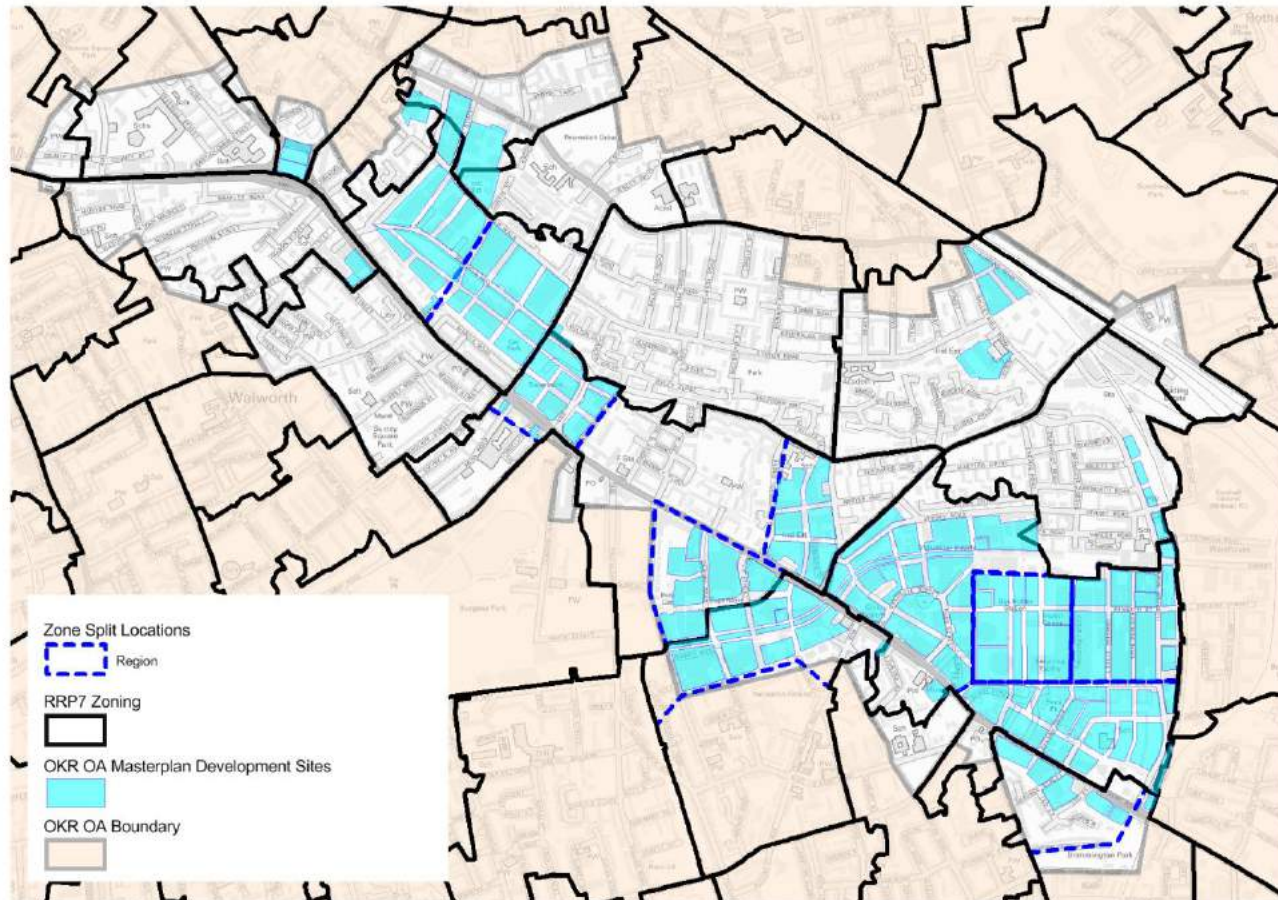
## Appendix A

This image displayed the LTS zones relative to the main development areas in the OA. Many of the zones cover areas beyond the OA boundary.



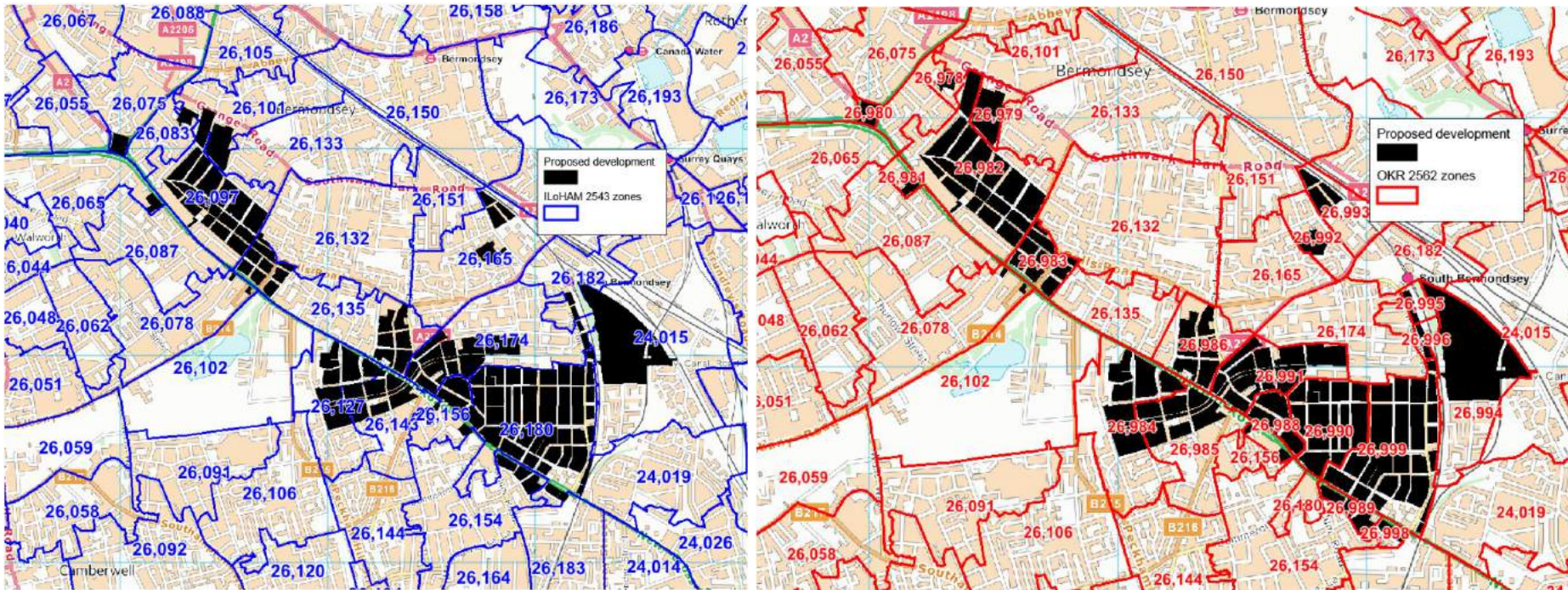
## Appendix B

This image displays the Railplan zones and their disaggregation (shown by blue dashed boundaries) to create a finer zoning system to represent the key areas in the OA. This allows forecasts of assigned trips to and from these zones to be analysed such that they are representative of the new development areas within the OA itself, and not a reflection of wider changes outside the OA that the AAP does not apply to.

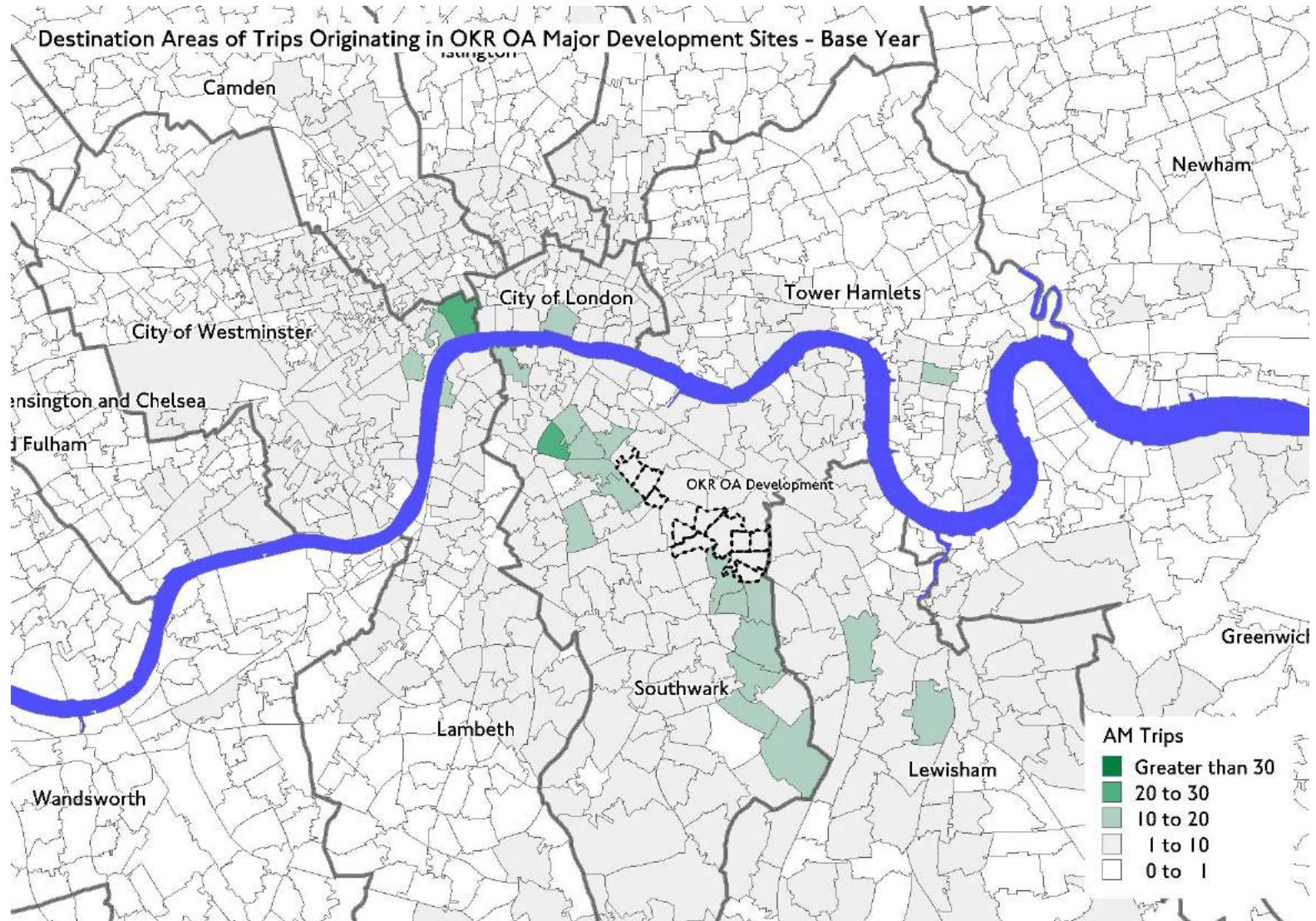


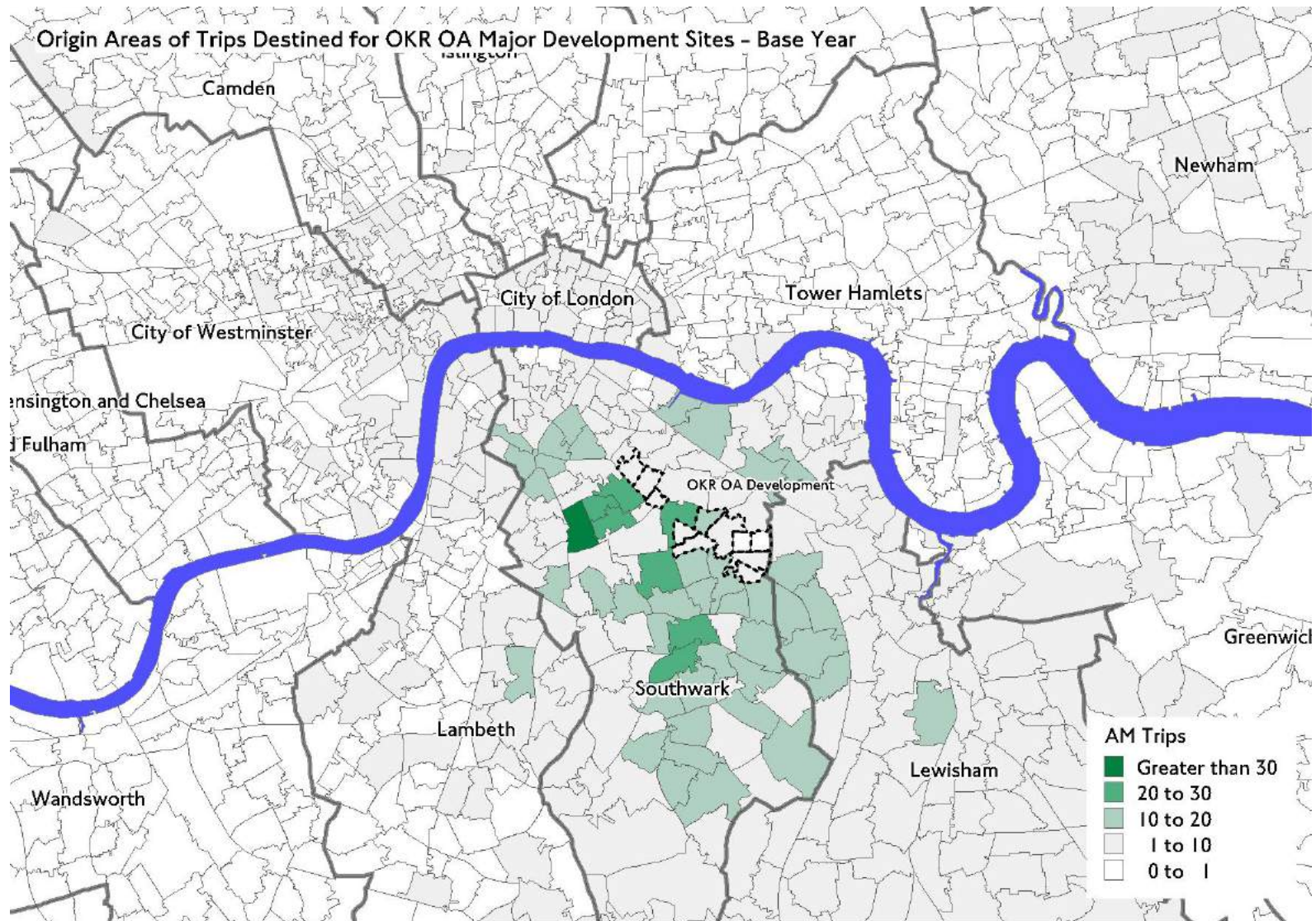
## Appendix C

These images display the ILoHAM zones and their disaggregation (shown by the changes between the blue zones plot to the red zones plot) to create a finer zoning system to represent the key areas in the OA. This allows forecasts of assigned trips to and from these zones to be analysed such that they are representative of the new development areas within the OA itself, and not a reflection of wider changes outside the OA that the AAP does not apply to.

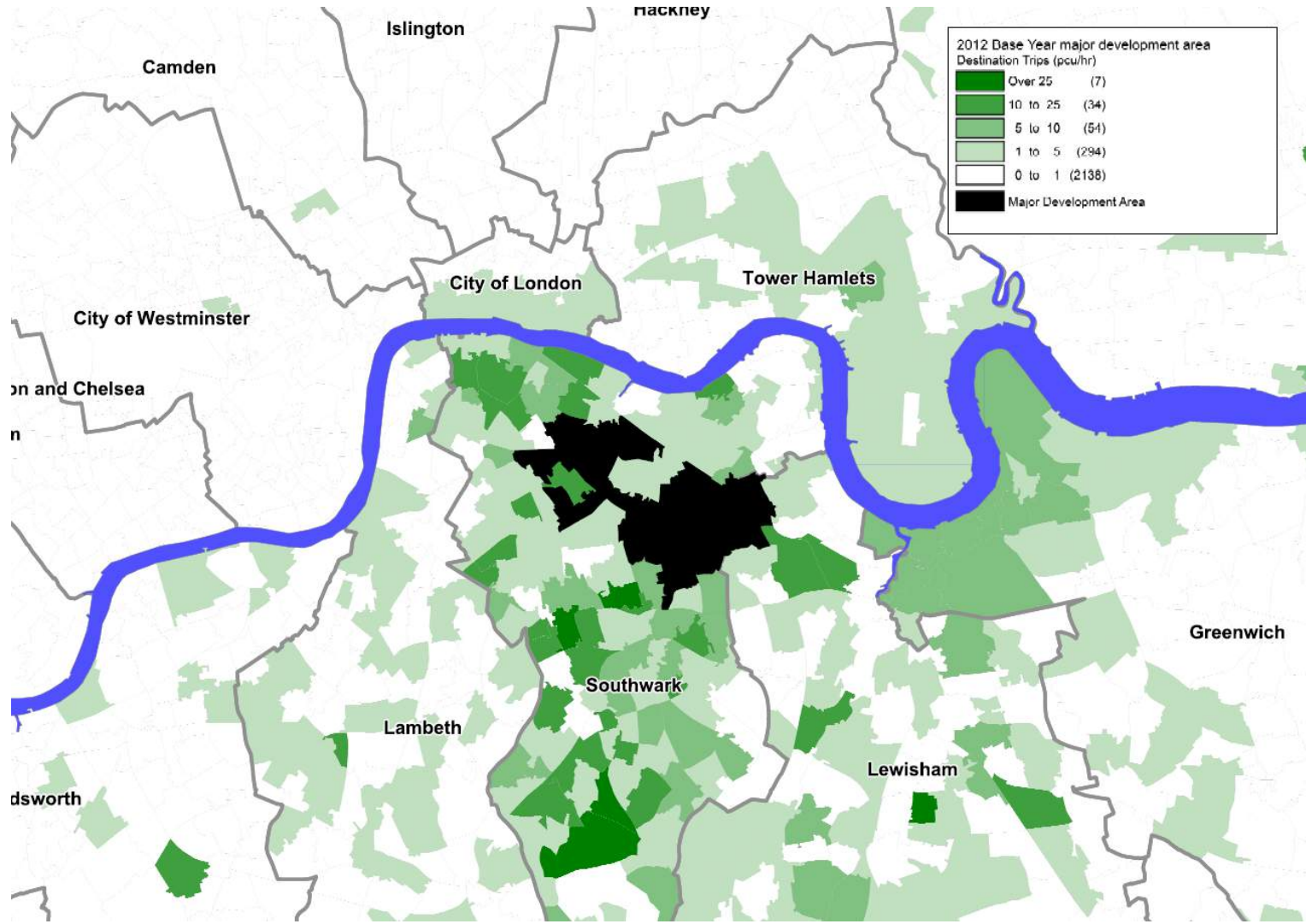


## Appendix D

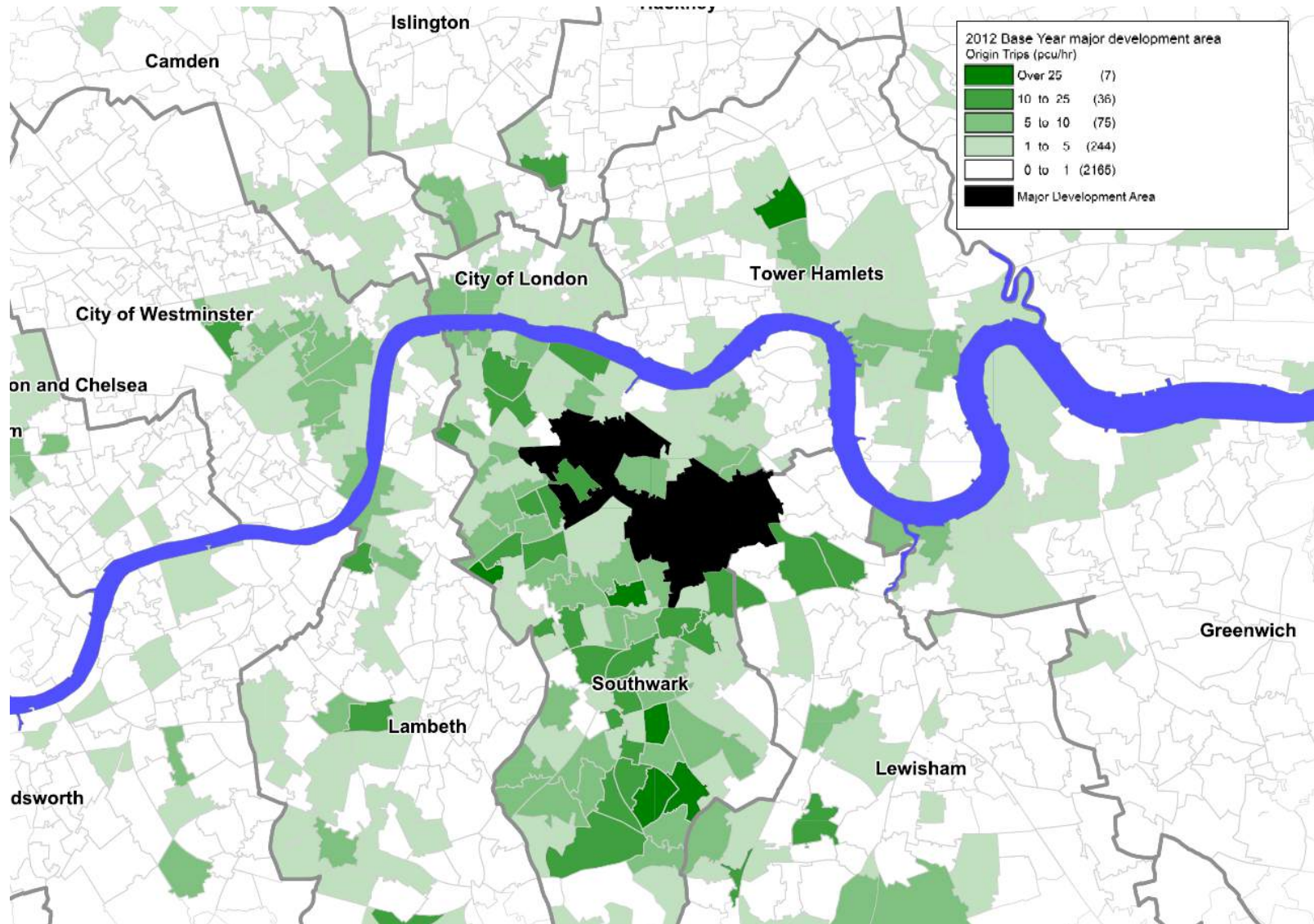


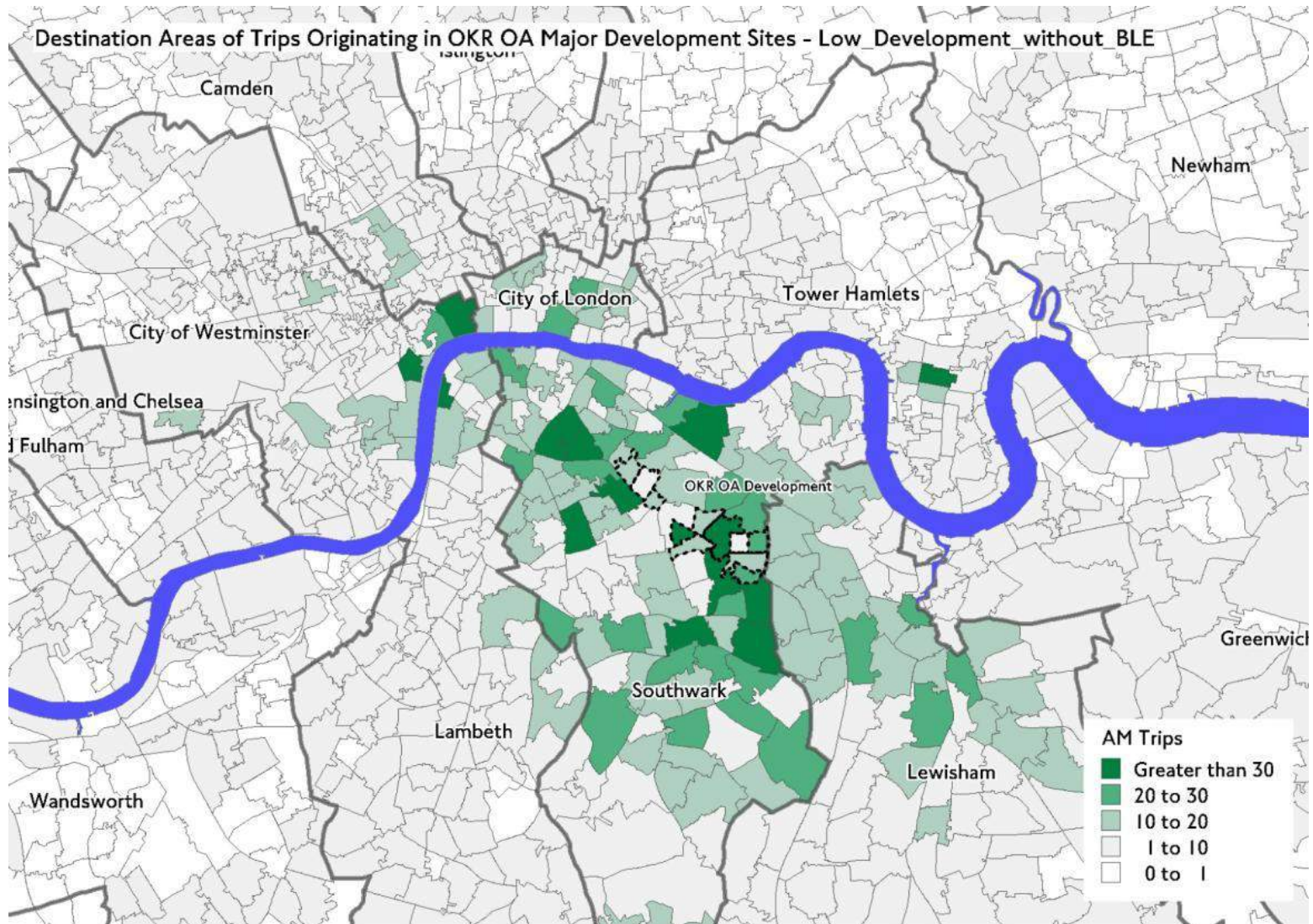


Distribution of highways trips (PCUs) destinations originating from OKR OA

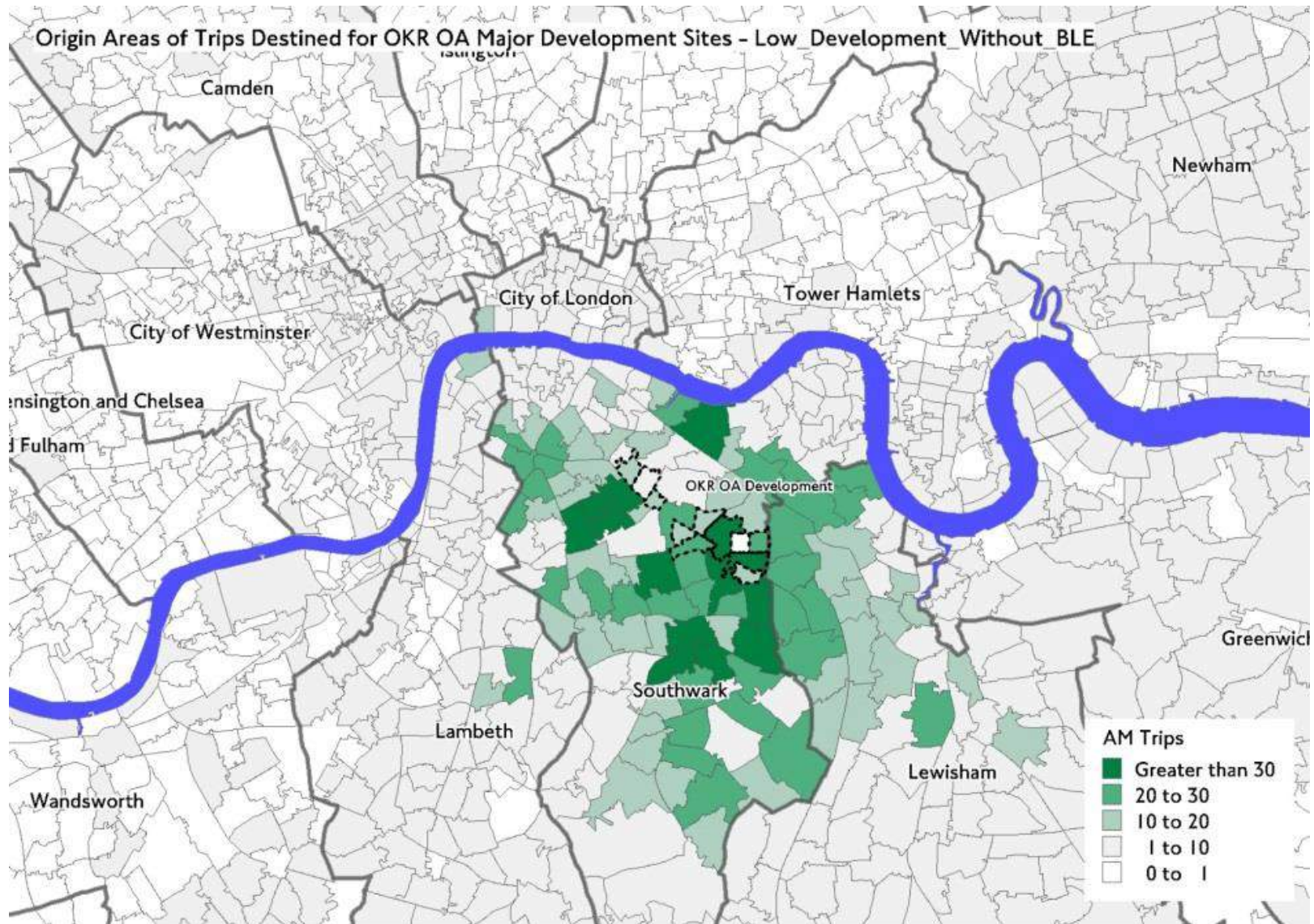


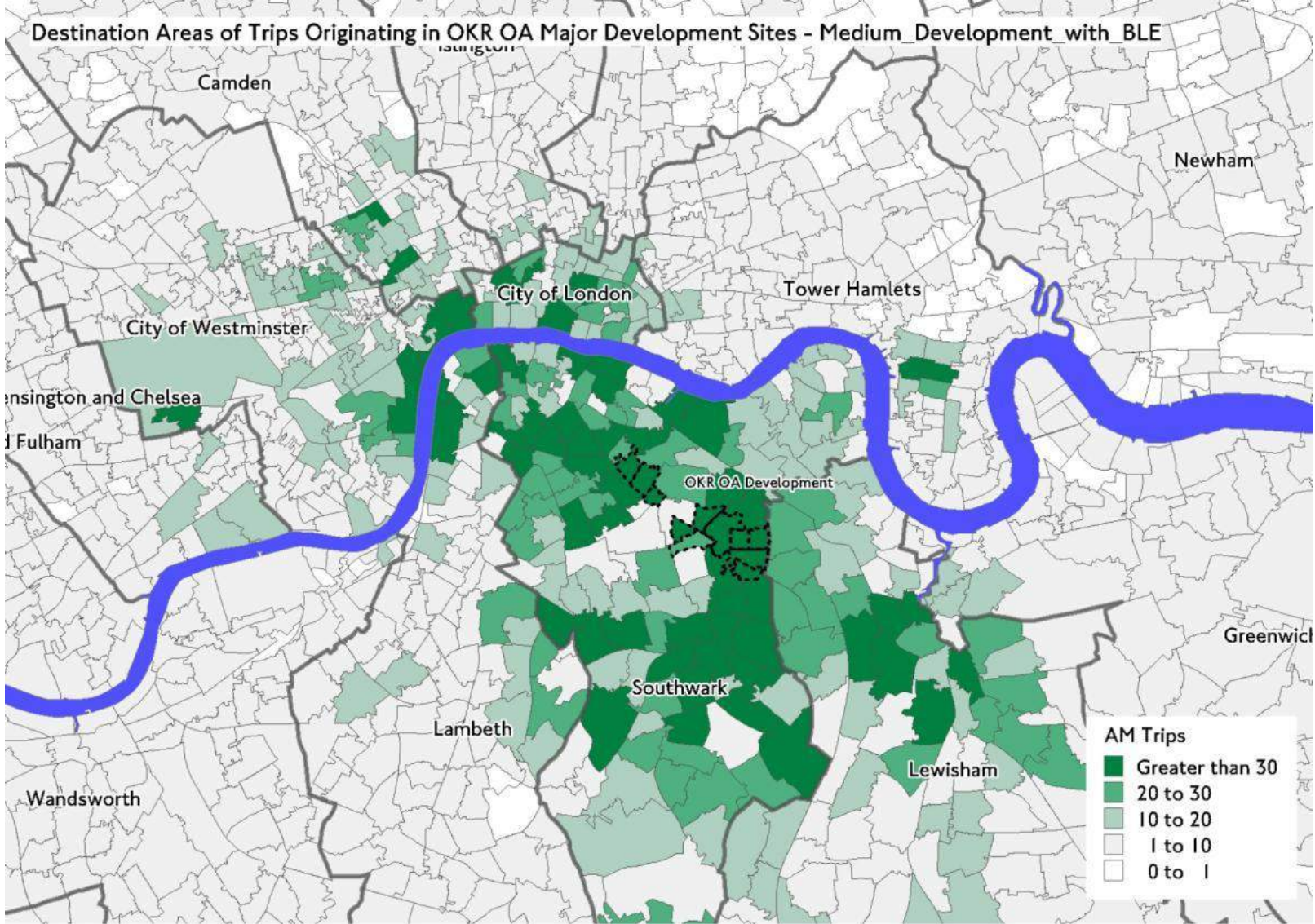
Distribution of highways trips (PCUs) trip origins attracted to the OKR OA

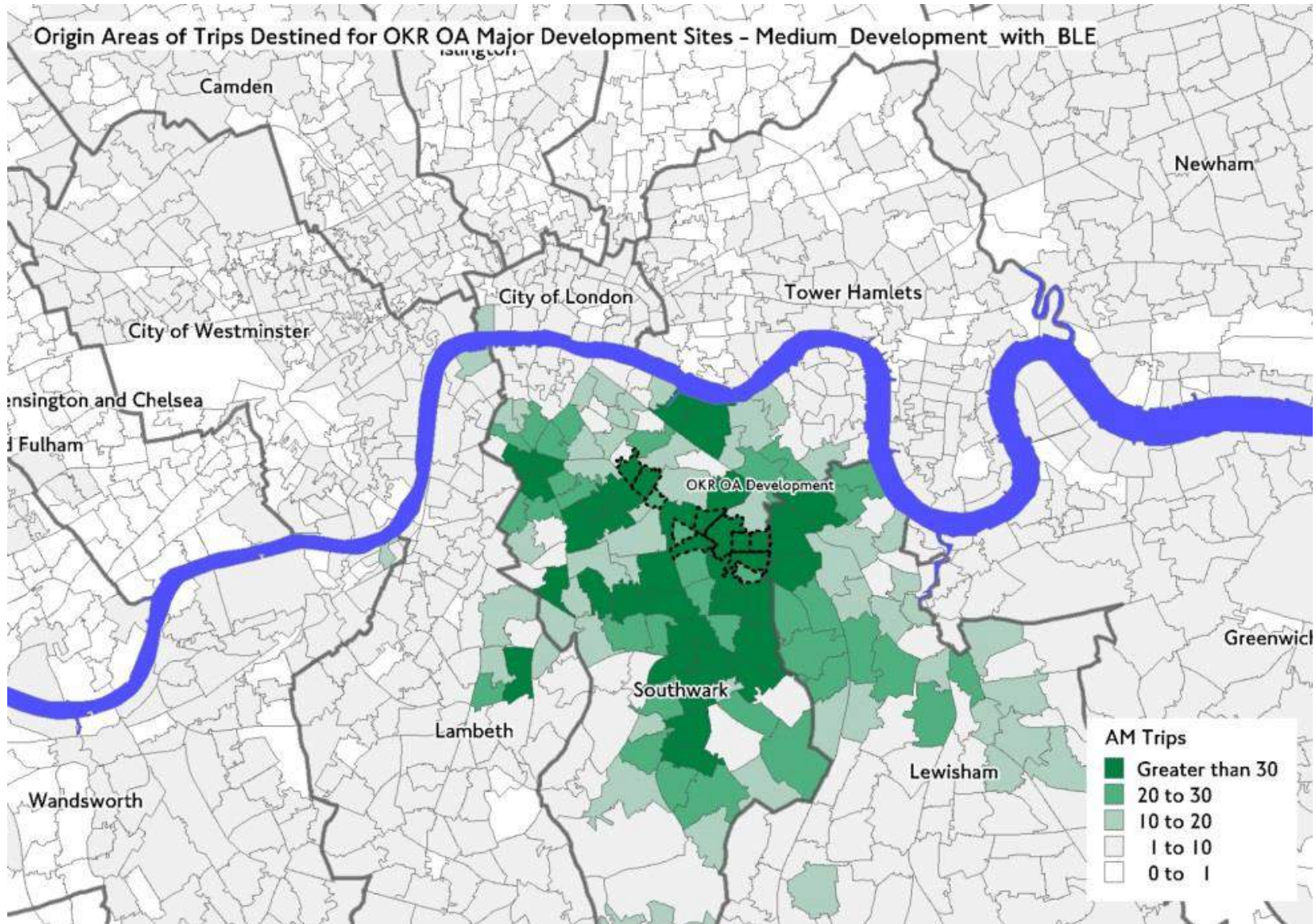


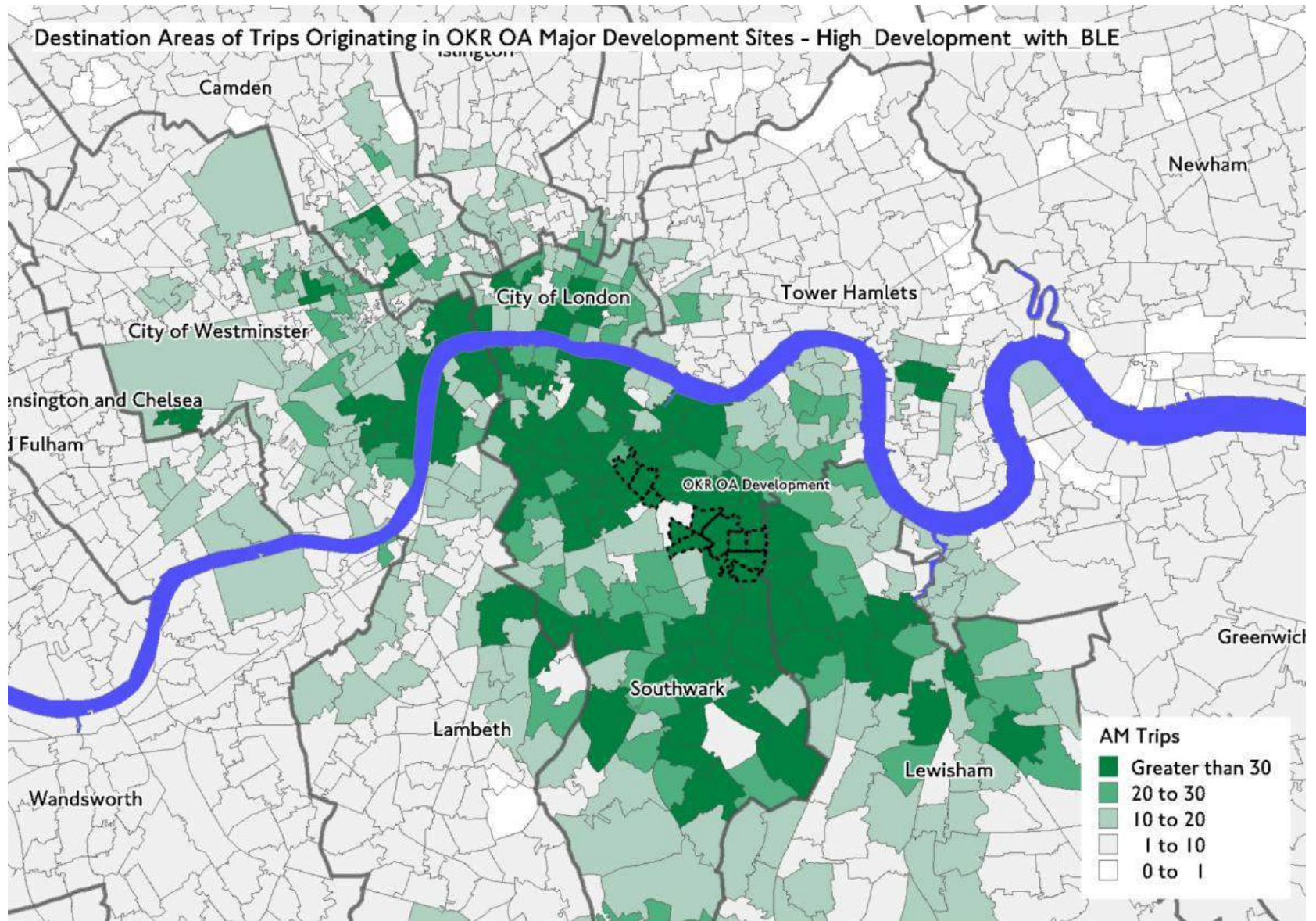


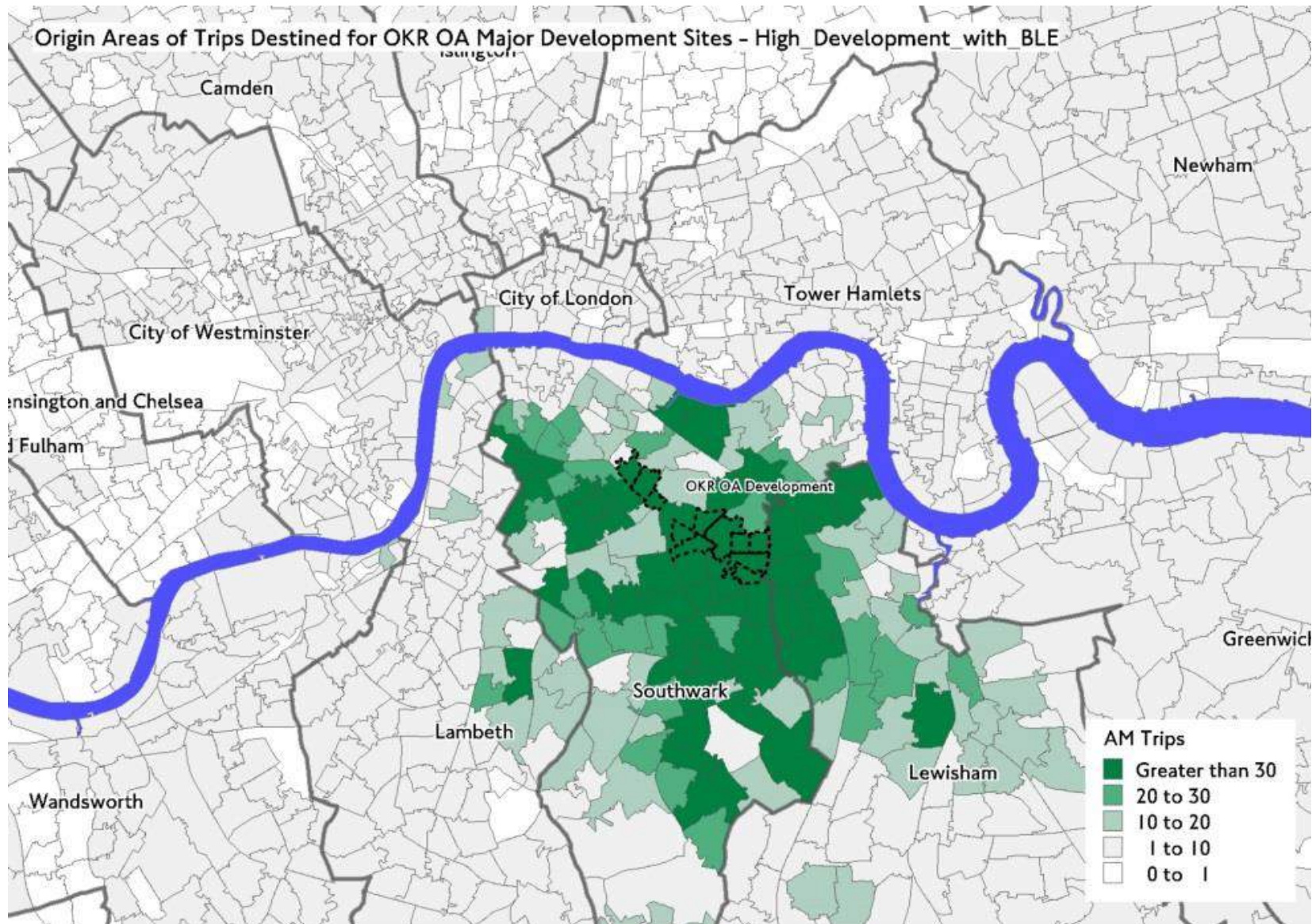






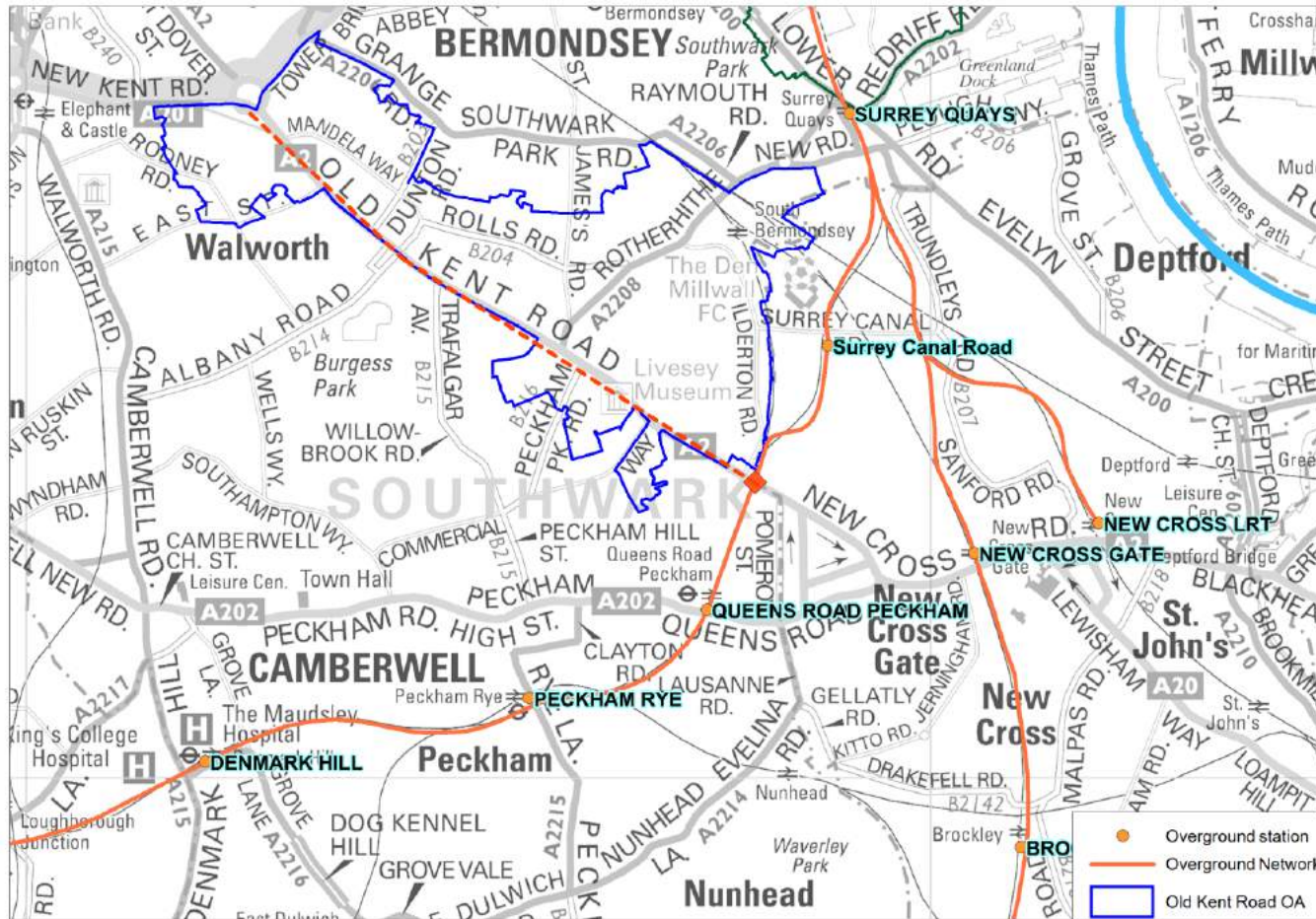




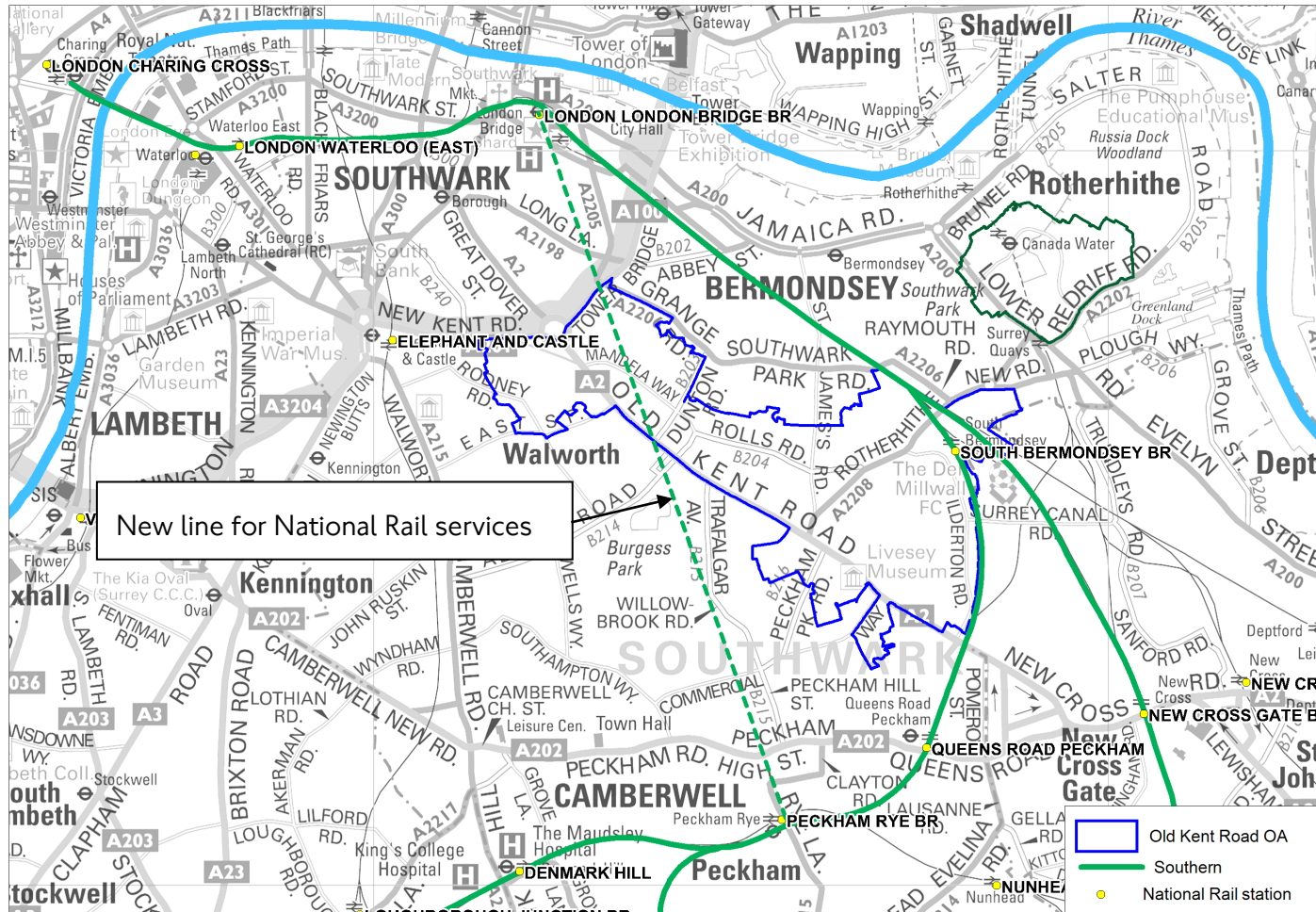


## Appendix E

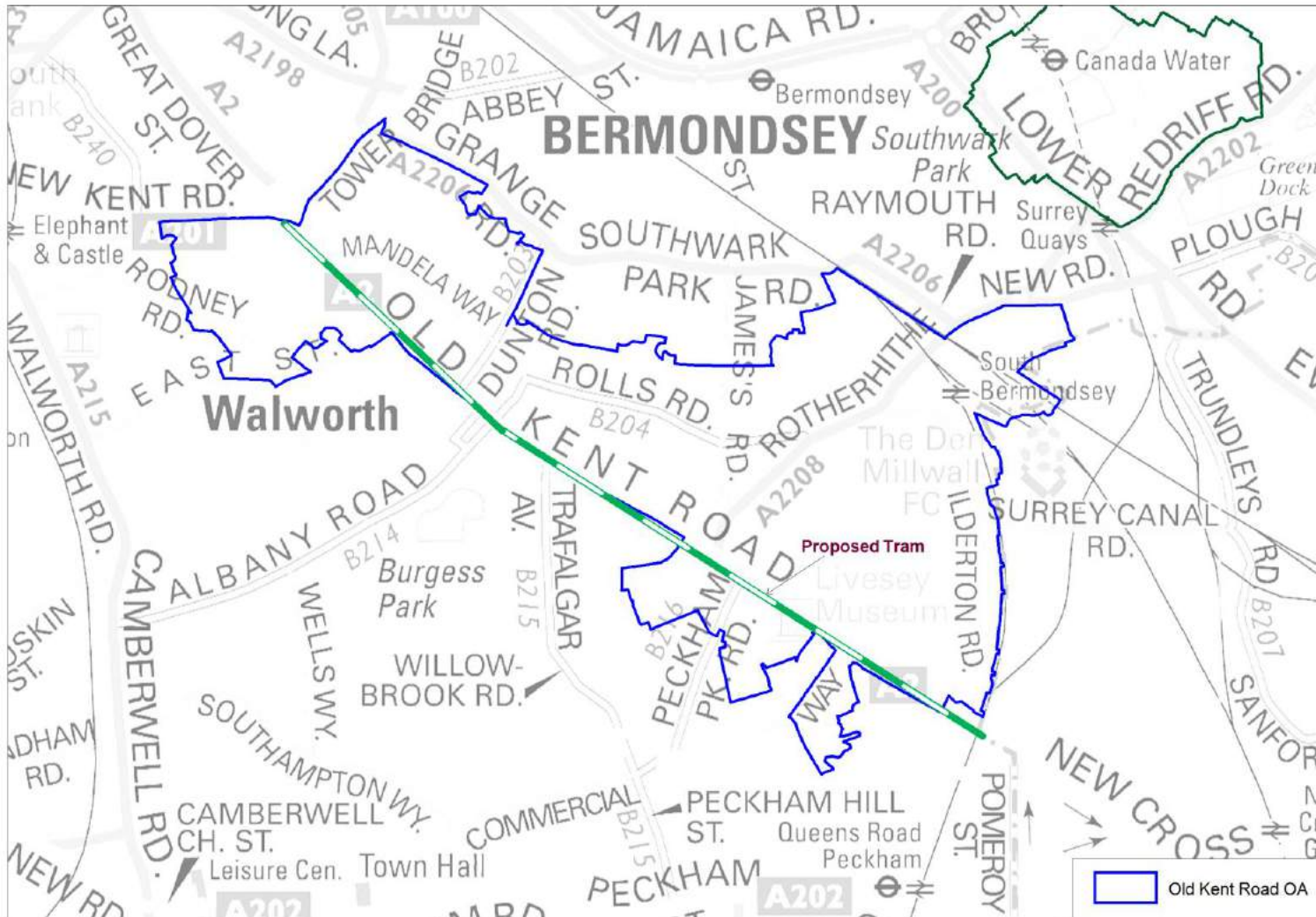
Map of Option A1 – Extend the Overground network from between Queen’s Road Peckham and Surrey Canal Road, into the OA (Alignment shown is indicative and not to scale)



Map of Option A2 – Extend National Rail Southern services on a new line through OA (Alignment is indicative and not to scale)

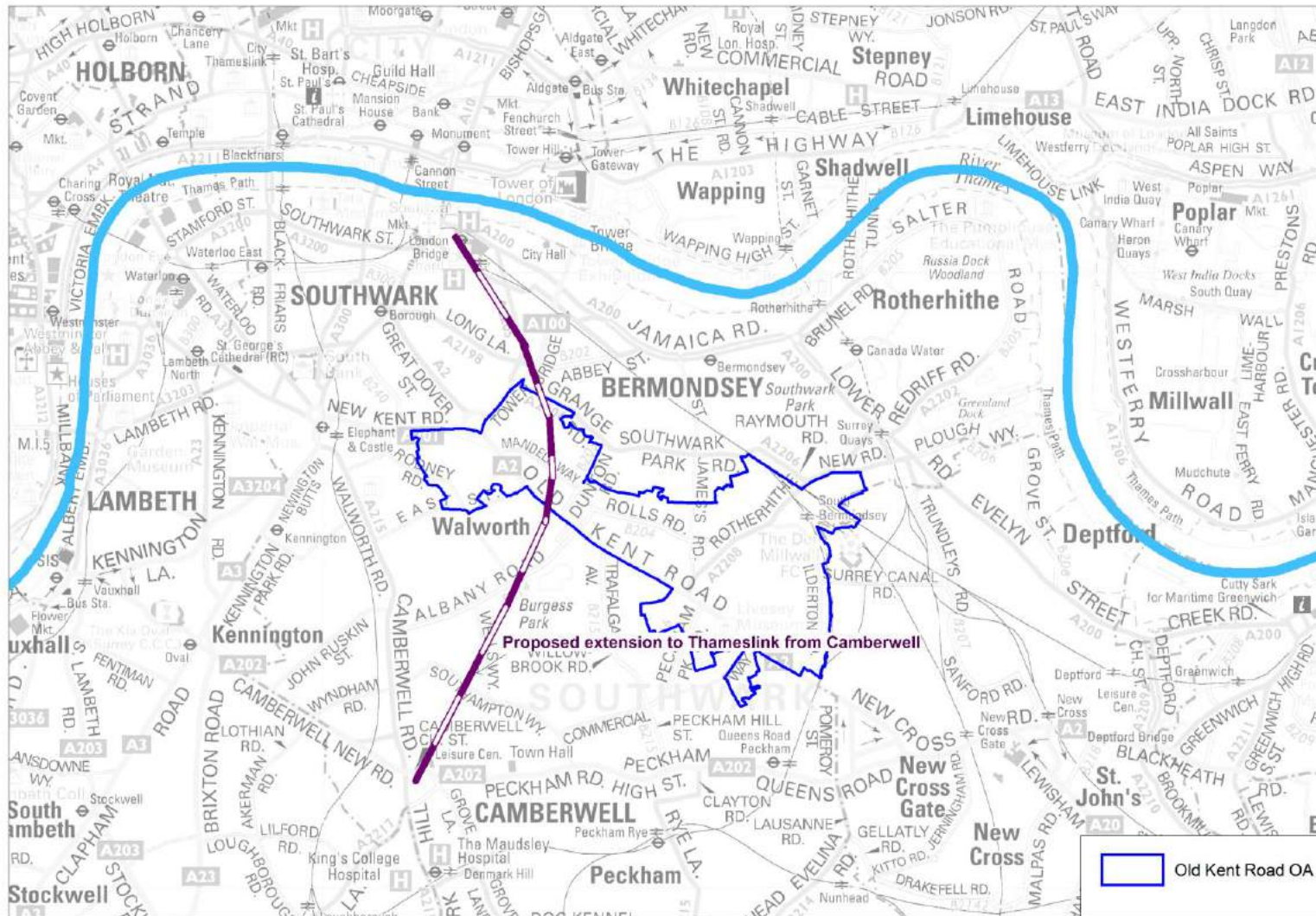


Map of Option A3 – A new Tram along the Old Kent Road (Alignment is indicative and not to scale)

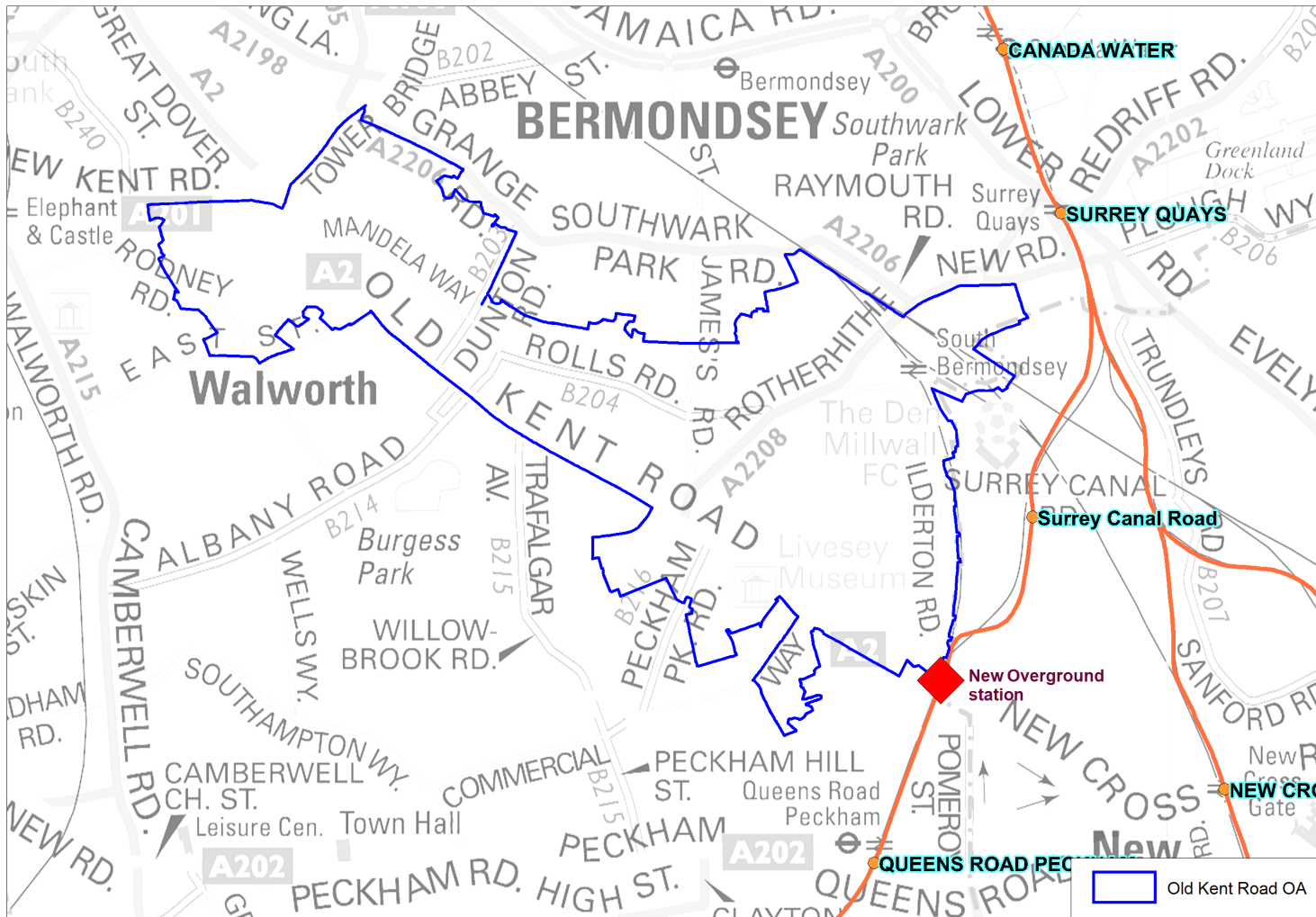




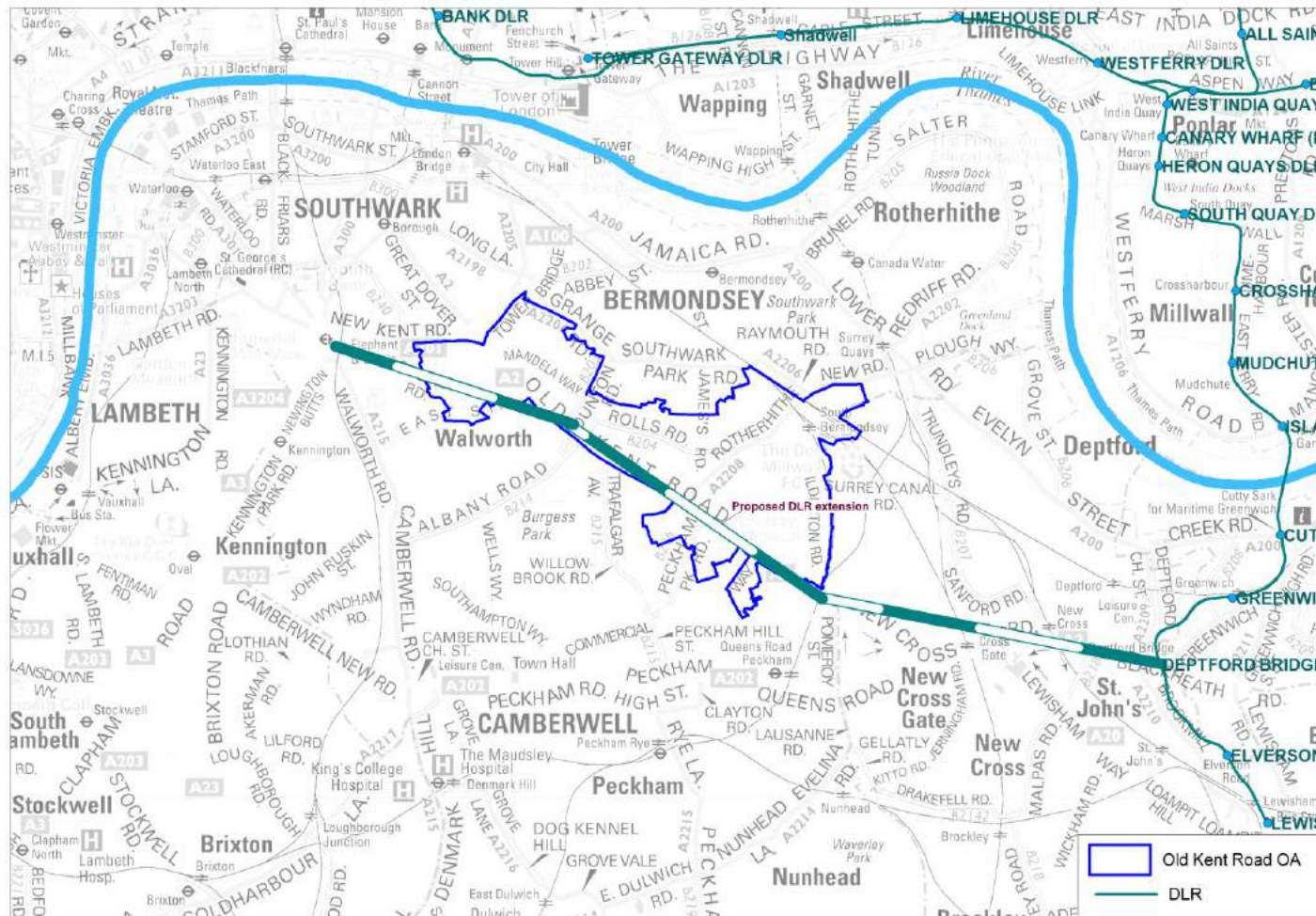
# Map of Option A4 – Extend Thameslink services on a new line from Camberwell area



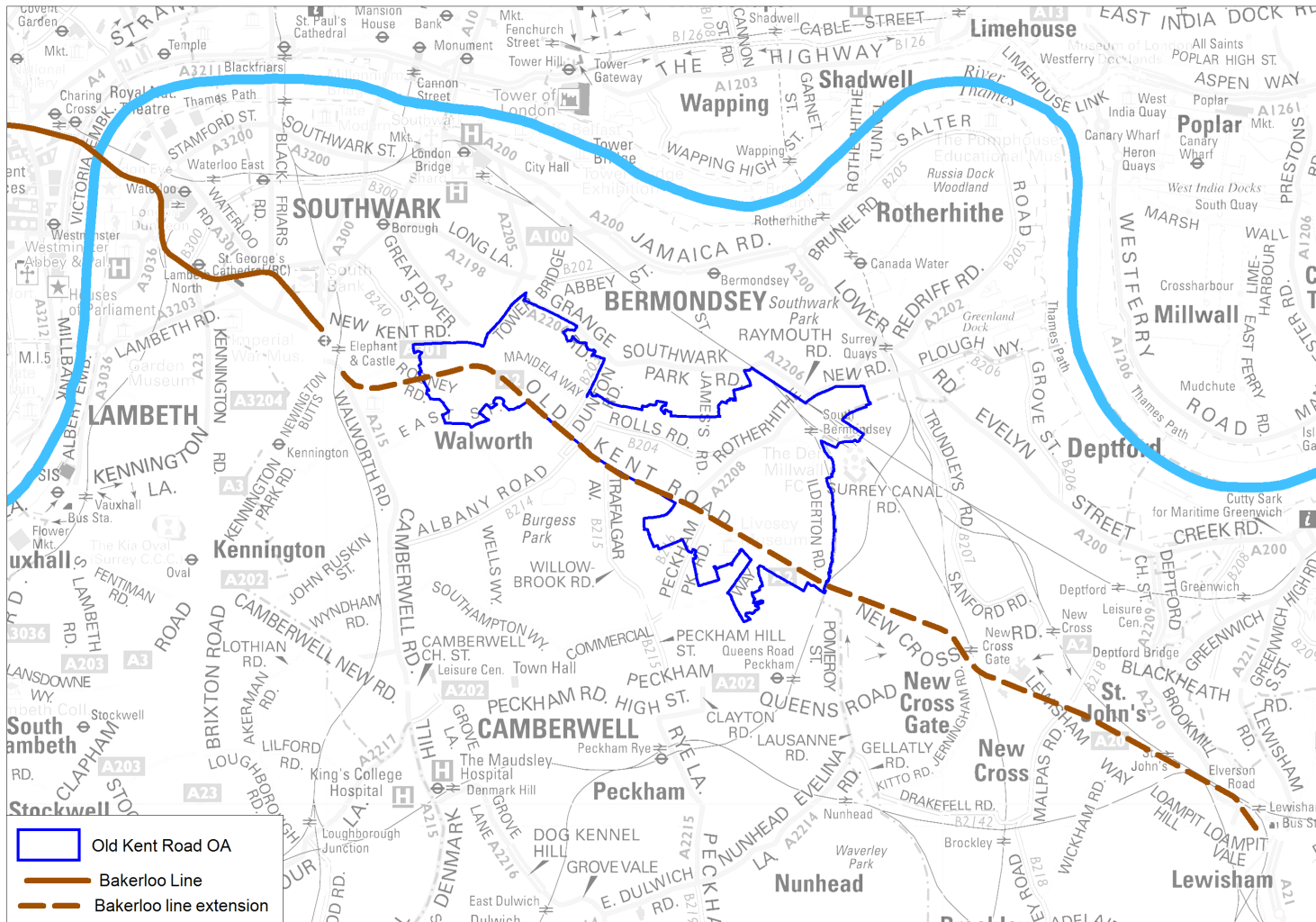
Map of Option A5 – New Overground Station in the OA (Alignment is indicative and not to scale)



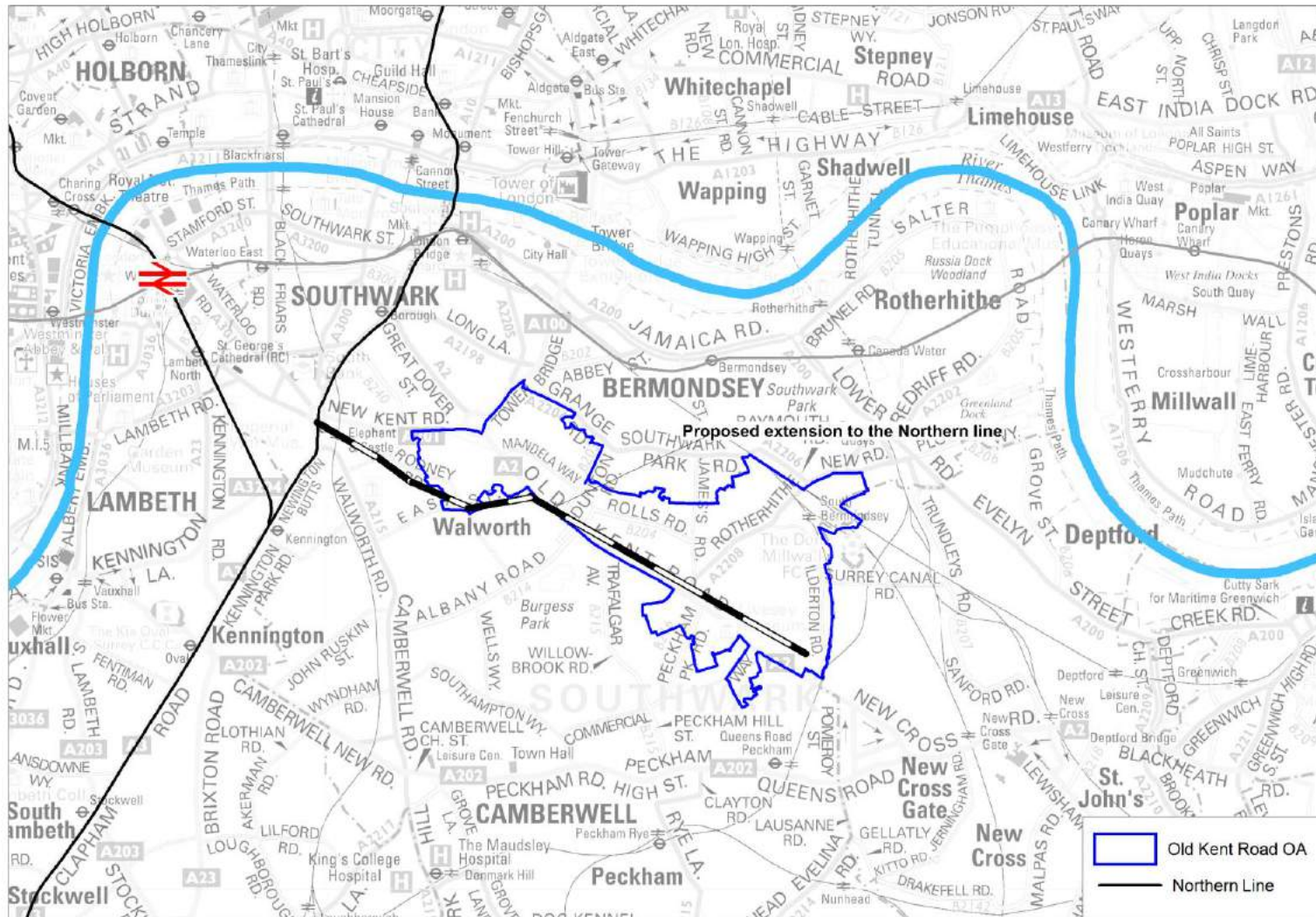
Map of Option A6 – Extending DLR services on a new line from Deptford area (Alignment is indicative and not to scale)



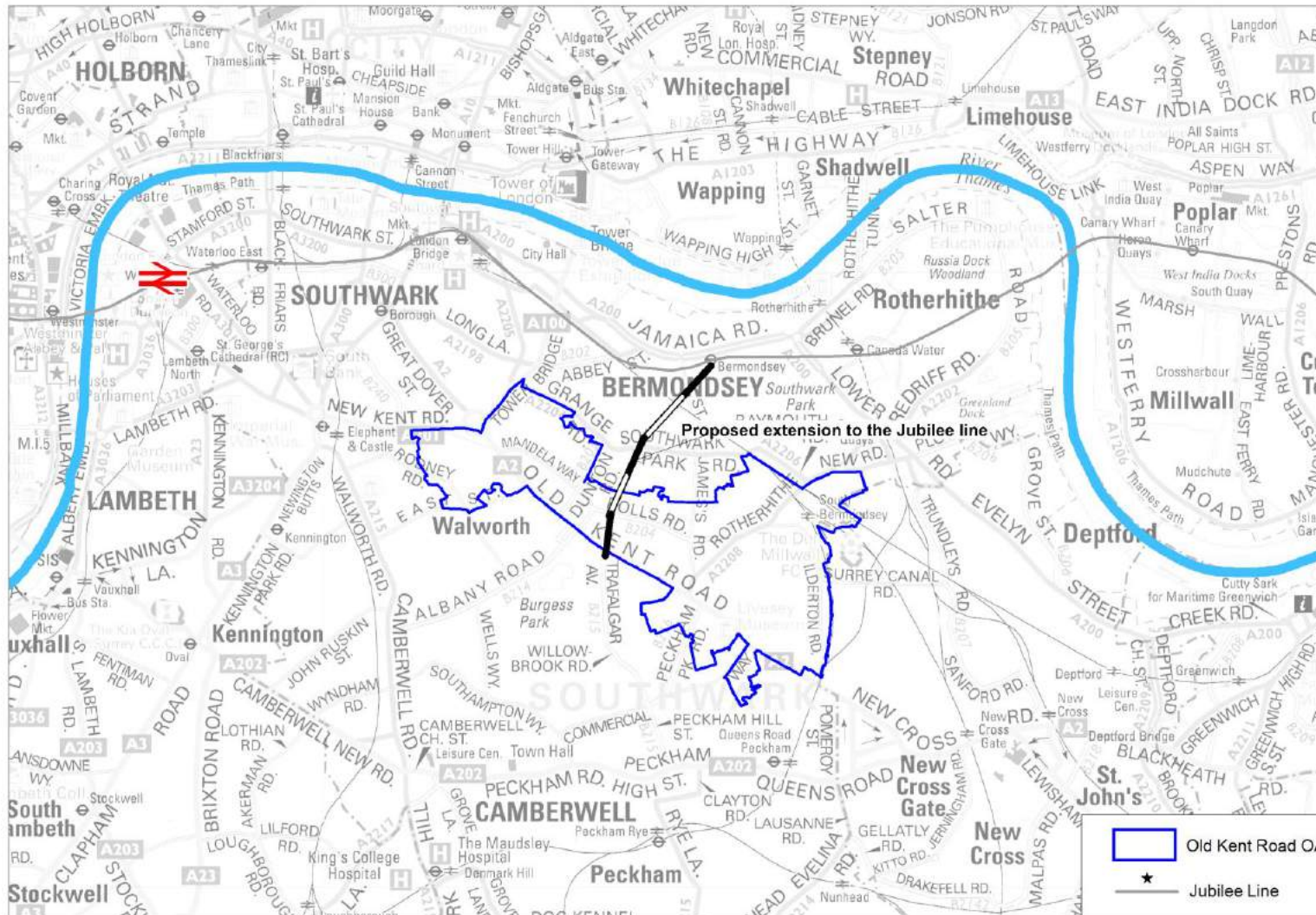
Map of Option B1 – Extend Bakerloo line from Elephant and Castle through OA (Alignment is indicative and not to scale)



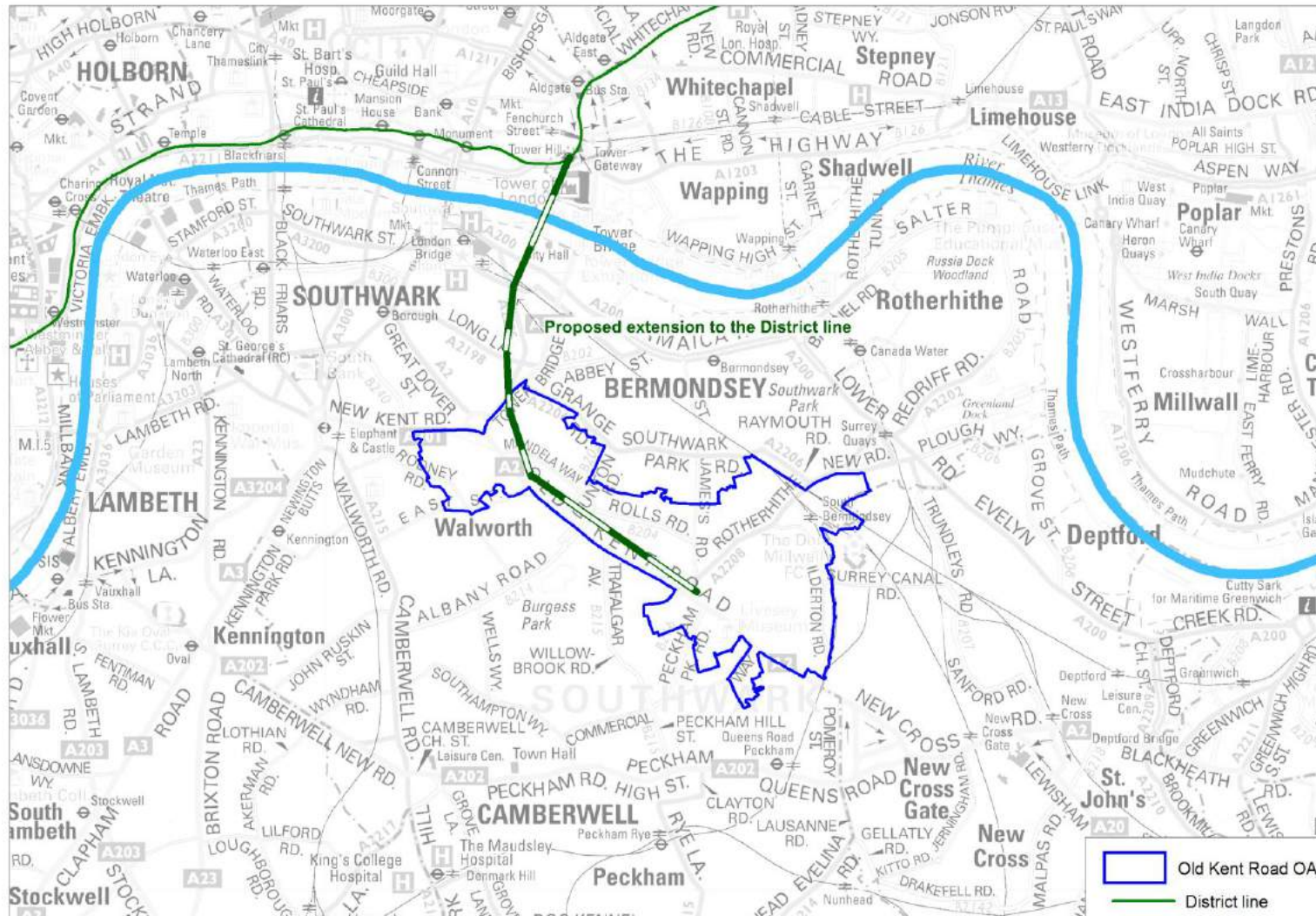
Map of Option B2 – Extend Northern line from Elephant and Castle through OA (Alignment is indicative and not to scale)



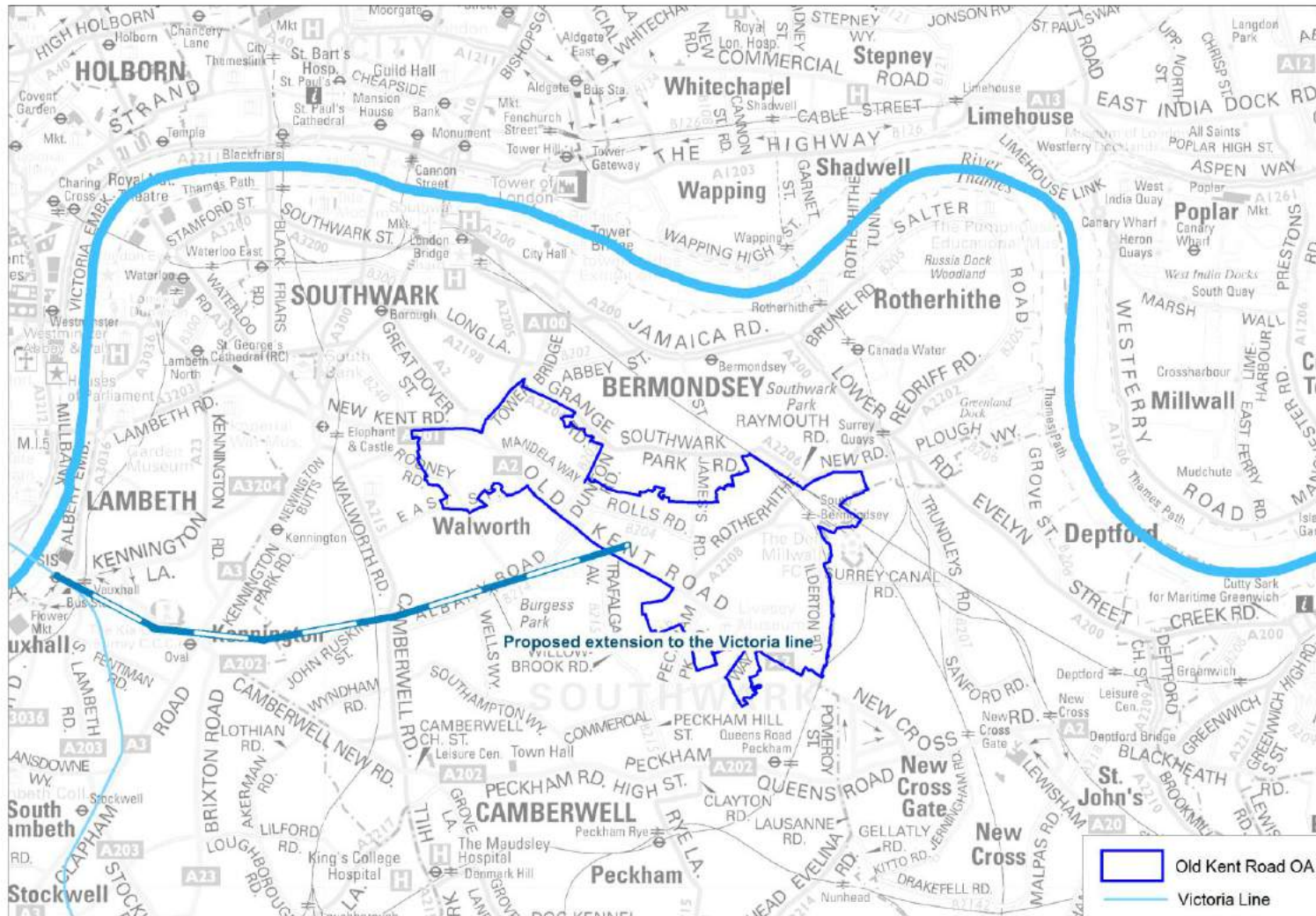
Map of Option B3 – Extend Jubilee line from near Bermondsey through OA (Alignment is indicative and not to scale)



Map of Option B4 – Extend Jubilee line from near Bermondsey through OA (Alignment is indicative and not to scale)



Map of Option B5 – Extend Victoria line from near Vauxhall through OA (Alignment is indicative and not to scale)





Map of Option B6 – Extend Waterloo line from Waterloo through OA (Alignment is indicative and not to scale)

