

Lewisham Borough Council

# Lewisham Borough Wide Transport Study

August 2010

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Final Report

TRANSPORT  
TRAFFIC  
DEVELOPMENT  
PLANNING  
URBAN DESIGN  
ECONOMICS  
MARKET RESEARCH

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# Lewisham Borough Wide Transport Study

## Final Report

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## Non-Technical Summary

### Background

Colin Buchanan (CB) has undertaken a Borough-wide Transport Study on behalf of London Borough of Lewisham (LBL). The overriding purpose of the Study is to inform the preparation of the Council's Core Strategy for the period 2010 to 2026, by informing the strategic development options for the Borough and preparation of supporting transport policies. It also provides a strategic framework to guide investment in transport infrastructure on a borough-wide and site-specific basis.

The study assesses the combined impact on the highway and public transport networks in the borough of various proposed developments, under two broadly defined growth options, both of which focus upon larger housing and mixed-use development in key areas of the borough:

- Option 1: the more comprehensive option, with potential to deliver up to 17,525 new homes focussed on
  - Catford town centre
  - Lewisham town centre
  - Key development sites within Deptford and New Cross, including Convoys Wharf
  - Six sites in the north of the Borough which are proposed to be designated as Mixed Use Employment sites.
- Option 2 excludes the Mixed Use Employment sites and has the potential to deliver up to an additional 14,550 new homes.

### Model results

Modelling was used to assess the impact of these options on the highway and public transport networks. The overall conclusion is that the highway network, including committed improvements, is able to cope with the levels of growth tested in Option 1, as well as the less intensive Option 2. There are local instances of congestion and delays which occur in 2026, however the impacts are not so severe as to prevent the highway network from operating. Option 1, with the highest traffic volumes has five junctions which exceed capacity, but it is anticipated that these can be improved.

To ensure that congestion and delay on the highways network is avoided, a target of 11% shift from car to non-car modes is suggested. This is considered appropriate for Lewisham, and achievable through a combination of travel planning and other supporting infrastructure measures. Sensitivity tests show that such a modal shift significantly reduces the highways impacts.

The public transport modelling indicates that overall the public transport network, including committed improvements, is sufficient to cope with the levels of growth considered in Options 1 and 2. Planned rail capacity and service improvements will facilitate growth in rail patronage. Overcrowding on trains will continue, however the levels at which overcrowding occurs will be reduced significantly across all routes to less than present levels. The Docklands Light Railway will see growth in use during the period of the study, the associated capacity increases mean that it will not be placed under strain from this growth. As more people take advantage of the improved rail and DLR services, the number of people using bus services decreases in general across the Borough. The exceptions to this are Catford South, Downham, Whitefoot and Evelyn wards, where some bus growth is forecast.

Sensitivity tests of an 11% modal shift away from car to public transport shows that the public transport network satisfactorily copes with additional demand.

In essence, whilst the modelling identifies some local problems to be resolved, these are not insurmountable, nor do they suggest that the growth agenda being pursued by the borough requires revision.



## Identified measures

The report sets out a number of recommendations for infrastructure and other supporting measures. These measures are intended to complement and reinforce recommendations set out in the Deptford New Cross Transport Infrastructure Study, and the Lewisham Town Centre Transport Study. Measures include:

- Highways improvements;
- Rail station improvement works, including accessibility enhancements;
- Improvements to walking and cycling routes to stations;
- Bus priority measures;
- Bus stop upgrades;
- Borough-wide bus route review;
- Exploration of bus fare arrangements to encourage bus usage;
- Additional Cycle Superhighways;
- Other cycle improvements to local roads;
- Extension of Central London cycle hire scheme;
- Secure bicycle parking facilities at key locations;
- Strategic walking route provision;
- Improvement of quality of local pedestrian environments;
- Integrated wayfinding strategy;
- Optimised traffic signals to facilitate pedestrian and cycle movement;
- Improved pedestrian crossings near key trip attractors such as schools and stations;
- Restrictions on parking (car-free or very low provision) in all new developments;
- Extensive travel planning measures for all new developments;
- Travel planning initiatives for existing residents and businesses;
- Measures to encourage peak spreading of travel – such as changing school opening hours, encouraging flexible working hours;
- Measures to raise awareness of public transport;
- Measures to raise profile of cycle and walking;
- Measures to improve parking control – removing CPZ gaps, extending hours of operation.

# 1 Introduction and Programme

## 1.1 Introduction

1.1.1 Colin Buchanan (CB) has been commissioned by the London Borough of Lewisham (LBL) to undertake a Borough-wide Transport Study. This is aimed at assessing the combined impact on the highway and public transport networks in the borough of various proposed developments.

1.1.2 The overriding purpose of the Study is to inform the preparation of the Council's Core Strategy for the period 2010 to 2026. It will inform the strategic development options for the Borough and preparation of supporting transport policies. It will also provide a strategic framework to guide investment in transport infrastructure on an area-wide and site-specific basis.

1.1.3 The objective of the Study is to produce an integrated multi-modal strategy to support two broadly defined growth options. These growth options are defined in more detail in Chapter 4. At the same time, the Study assesses the need to address existing strategic transport deficiencies by way of:

- A thorough review of existing information and studies;
- Identification of information gaps and addressing these;
- Assessing the travel demand implications of the two growth scenarios;
- Assessing how the travel demand implications fit with TfL/GLA policy directions;
- Identifying transport measures needed to support the growth scenarios.

## 1.2 Scope and structure of the report

1.2.1 This is a final draft report summarising the study in entirety. Following this chapter, this report is set out as follows:

- Chapter 2 sets out data requested and used for this study.
- Chapter 3 highlights key policy documents that form the context and background to this study.
- Chapter 4 explains the two development options being considered, and lists specific transport improvements that are relevant to these options.
- Chapter 5 identifies the scope for achieving modal shift.
- Chapter 6 explains the highway model, the assumptions within it, and presents the base and future year forecasts.
- Chapter 7 explains the public transport model, the assumptions within it, and presents the base and future year forecasts.
- Chapter 8 identifies measures by which the impacts on both highway and public transport networks can be mitigated.
- Chapter 9 sets out key conclusions.

## 2 Data

### 2.1 Data sources

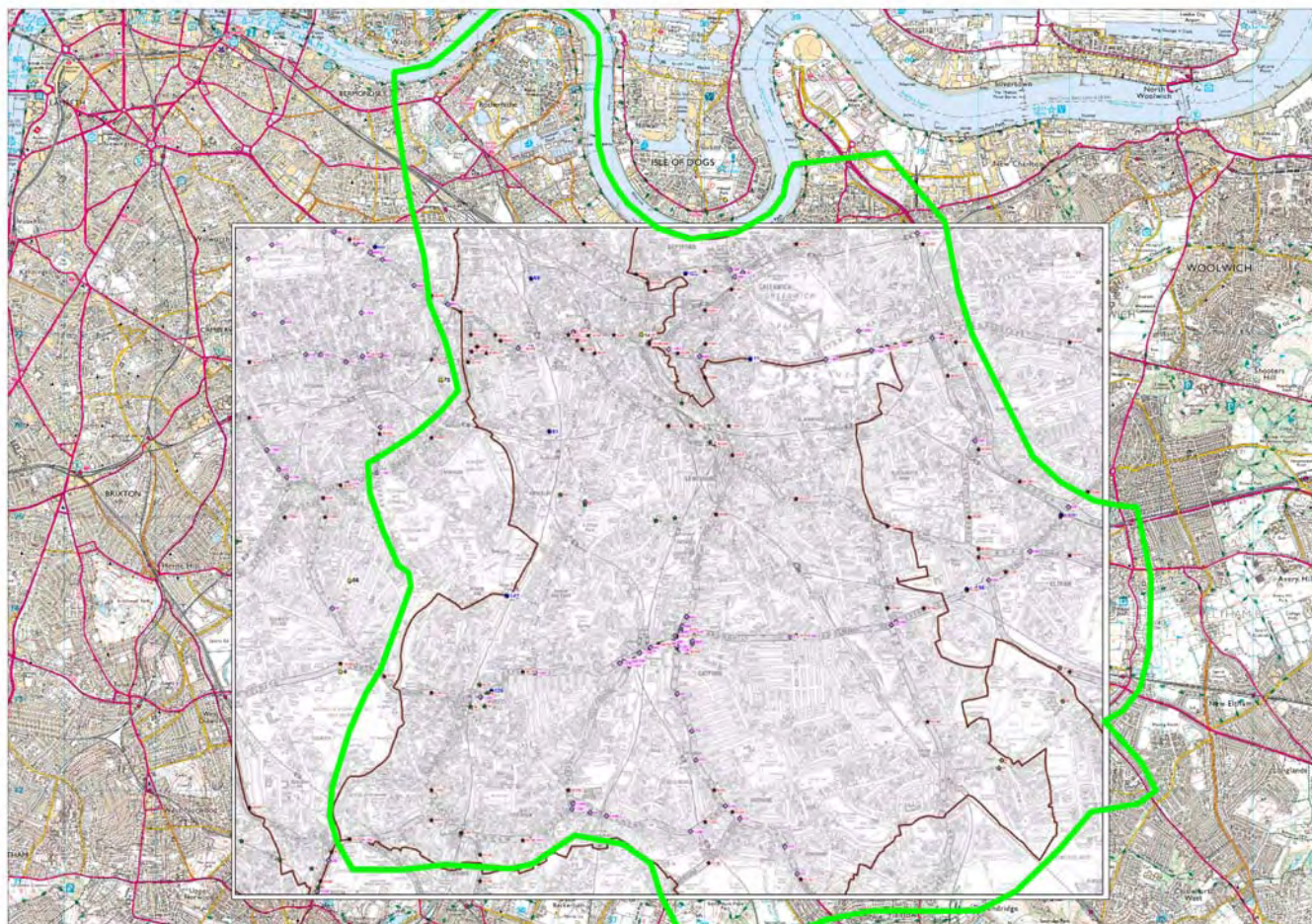
- 2.1.1 For the purposes of this study no new primary data has been collected, for example through traffic or public transport surveys. The study assimilates extensive data held by stakeholders; the key sources of which are LBL and Transport for London (TfL).
- 2.1.2 In order to minimise costs and timescales, the study has used two existing, separate, TfL models, which cover the study area. Both of these models are fixed matrix models, which means that they do not reflect changes in mode shift that will occur, for example, when travellers adjust to worsening congestion/slower travel speeds and choose to travel by public transport, bicycle or on foot. Nevertheless, they are considered to be sufficiently robust to test the implications of the proposed growth scenarios.
- 2.1.3 Firstly, in terms of highways, we have used the latest version of TfL's SATURN based TGX highway model of London. This model has been cordoned off to the study area (Lewisham borough) and calibrated and validated within the modelled area using the most recently available traffic counts across a number of screenlines located in Lewisham wards. Figure 2.1 shows the location of traffic count sites and the cordon boundary.
- 2.1.4 The study has only considered the weekday AM peak hour as this is the period during which the highway and public transport networks are most intensively used. Volumes during the AM peak period tend to be most concentrated within the peak hour, whereas during the PM peak period there is more of a spread across the peak three hours. This means that the AM peak hour demonstrates the highest level of highway and public transport usage and therefore provides the best picture of potential congestion and demand.
- 2.1.5 The highway model provides flows on a link by link basis, and should be seen as a high level tool, with emphasis placed on flow changes across screenlines and cordons in and around LB Lewisham. The highway model provides guidance on re-routing arising from any the impact of development schemes and policies implemented.
- 2.1.6 Secondly, for assessing public transport impacts, we have made use of the TfL Railplan model, taking line loading estimates for the base year and 2026 to develop a spreadsheet-based model for rail, LUL/ DLR and bus networks. This model enables similar analyses to those performed on the TGX highway model, to enable the capacity implications of the growth scenarios to be assessed.

### 2.2 Data received

- 2.2.1 CB have used the following data/information:
- TfL Highway model – TGX2007;
  - TfL Railplan model and link capacities;
  - Highway scheme details:
    - Catford gyratory – TRANSYT – base year
    - Kender Street Triangle - TRANSYT – base and future year
    - Lewisham Gateway 'Low H' - TRANSYT
    - Loampit Vale – TRANSYT
  - Housing projections 2010 to 2025 LB Lewisham, by ward (August 2009);
  - DfT and TfL (manual and ATC) traffic counts for key highway links and screenlines (TfL Road Network Performance & Research). The highway count data from TfL is based on key screenlines across the borough - count sites are shown in Figure 2.1.

- Background documents:
  - London Plan: Consolidated with alterations since 2004 (2008)
  - London Plan: Spatial Development Strategy for Greater London (Consultation draft replacement plan, 2009)
  - Mayor's Transport Strategy (2001, revised 2004)
  - Mayor's Transport Strategy (Public draft for consultation, 2009)
  - Adopted Unitary Development Plan (2004)
  - Local Development Framework Issues and Options Paper: Employment Land (2005)
  - Local Development Framework Issues and Options Paper: Transport & Parking (2005)
  - People, Places and Spaces: Preferred Options Report for the Spatial (Core) Strategy (2007)
  - Lewisham Council: Lewisham Development Policies and Site Allocations Preferred Options Report (2007)
  - Strategic Housing Market Assessment (2007)
  - Local Implementation Plan (2007)
  - People, Prosperity, Place: Lewisham Regeneration Strategy 2008 – 2020 (2008)
  - Deptford New Cross Transport Infrastructure Study (2008)
  - Lewisham Town Centre Transport Study (2009)

**Figure 2.1: TfL/ DfT traffic count sites / Lewisham cordon area**



## 3 Policy background

### 3.1 Overview

3.1.1 Key policy documents and other reports of direct relevance to this study have been reviewed. A brief summary of each is provided below.

### 3.2 London Plan: Consolidated with alterations since 2004 (2008)

3.2.1 The Consolidated London Plan 2008 seeks to accommodate substantial growth in London's economy and population whilst creating a more open and equitable society and preserving and improving London's heritage and environment. Key points in the London Plan that bear on this study include:

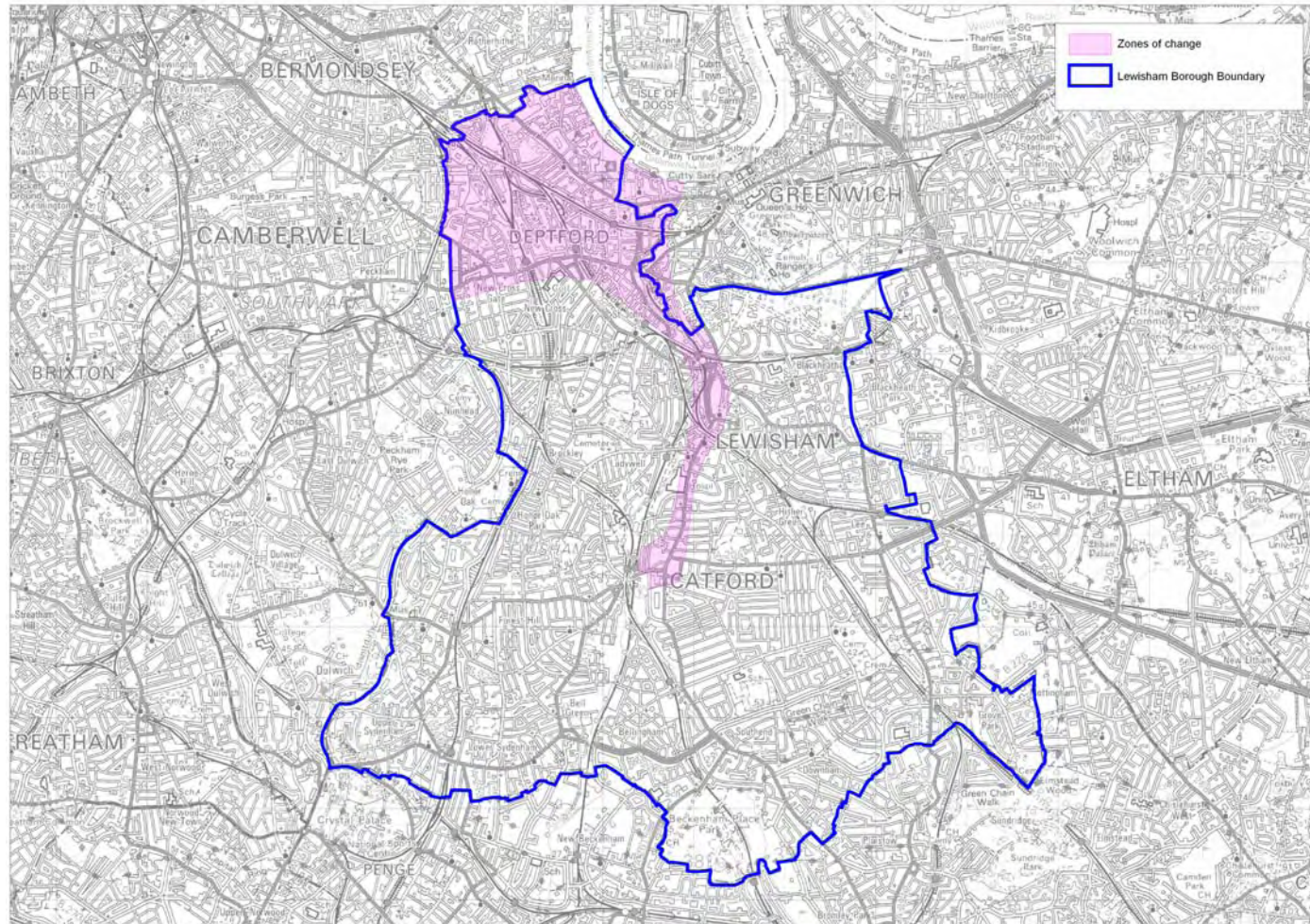
- The Lewisham area is part of the South East London sub-region, which in turn includes part of the Thames Gateway region and is a national priority regeneration area.
- The London Plan states that Sub-Regional Development Frameworks should explore the potential of centres such as Lewisham to provide accessible and more sustainable alternative attractions to regional shopping centres outside London and to increase housing and viable employment capacity.
- Lewisham-Catford-New Cross is identified as an Opportunity Area with potential to accommodate an additional 3,500 jobs and 6,000 homes by 2026. These locations are highlighted in Figure 3.1.
- Lewisham is identified as a major town centre.
- There is considerable scope for further intensification in central Lewisham. This is associated with the relatively good public transport accessibility and redevelopment capacity in Catford, New Cross and in particular Lewisham town centre, where strategically important regeneration is already underway.
- Over the period of the London Plan, TfL will expand capacity on the Docklands Light Railway (DLR), with three-car trains from Bank to Lewisham planned for introduction during 2010.

### 3.3 London Plan: Spatial Development Strategy for Greater London (Consultation draft replacement plan, 2009)

3.3.1 The London Plan is intended to be the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years. Key points in the London Plan that bear on this study include:

- Lewisham-Catford-New Cross is identified as an Opportunity Area. Figure 3.1 highlights the three centres that form this Opportunity Area.
- A ten year target of 11,050 units is identified for housing provision within The Borough of Lewisham, with an annual provision of 1,105 units. Indicative employment capacity is estimated at 6,000.
- A cycle superhighway is proposed to be constructed between Lewisham and Victoria after 2010.
- Potential further DLR extensions are identified including Lewisham to Catford/Catford Bridge/Hither Green.

**Figure 3.1: Lewisham-Catford-New Cross areas**



### 3.4 Mayor's Transport Strategy (2001, revised 2004)

3.4.1 The Mayor's Transport Strategy is necessarily high level in its approach. Detailed planning and budgeting of measures put forward in the Strategy are developed in TfL's Business Plans, whilst boroughs' Local Implementation Plans (LIPs) set out how they will implement the Strategy at the local level. Key points to note from the Strategy that bear on this study include:

- 3.29 The Strategy promotes measures to:
  - Expand the bus network to improve local access to development and regeneration areas and, in conjunction with easier interchange, improve orbital access to town centres.
  - Promote development within town centres that helps achieve more sustainable transport patterns.
- 4D.4 Most DLR stations have very localised catchments with walking being the most important means of access. However, other means such as bus and cycle must also be taken into account. Some stations, particularly end-of-line stations, such as Lewisham, are important in providing access to and from the wider transport network via bus, Underground and National Rail.
- 4G.59 London's town centres are a focal point for everyday activities such as work, shopping and leisure. Town Centre streets frequently have to cater for a wide variety of competing functions, and cope with large volumes of through traffic alongside pedestrians. Reducing through traffic must be a priority, along with improving conditions for pedestrians and encouraging public transport and cycle travel to town centres.
- 4P.15 Lewisham is identified as a site for interchange improvements.

### 3.5 Mayor's Transport Strategy (Public draft for consultation, 2009)

3.5.1 The Mayor's Transport Strategy (MTS) is a statutory document, developed alongside the London Plan and Economic Development Strategy as part of a strategic policy framework to support and shape the economic and social development of London over the next 20 years. It sets out the Mayor's transport vision and describes how Transport for London (TfL) and its partners, including the London boroughs, will deliver that vision. Lewisham is identified as a strategic interchange, and a major centre in this document.

3.5.2 Specific proposals of relevance include:

- Proposal 14: Investigate the feasibility of providing extra capacity to assist orbital movement on the Overground network and will review potential benefits of extensions to the network of services.
- Proposal 15: Investigate the feasibility of further capacity and network expansion of the DLR including an extension to Dagenham Dock, as part of the housing proposals for Barking Riverside, and further network extensions, including options south of Lewisham, west of Bank and north of Stratford International.
- Proposal 22: Seek longer-term enhancements and extensions to the Underground network, including:
  - c) A potential southern extension to the Bakerloo line to Hayes via Peckham and Lewisham will be reviewed further to utilise spare line capacity, improve connectivity and journey times, while providing relief to congested National Rail approaches to central London from the south/southeast, subject to resources and the results of further study.
- Proposal 24: Improve bus passengers' journeys by measures, including:
  - b) Introducing measures such as bus priority at critical locations
  - c) Ensuring that the appropriate enforcement of bus priority is carried out



- d) Implement the Countdown 2 project to deliver expanded access to realtime information and develop further integration with digital communications to provide realtime bus information
- Proposal 30: The Mayor, through TfL, and working with the London boroughs and other stakeholders will introduce measures to smooth traffic flows to manage congestion and improve journey time reliability for all people and freight movements, and maximise the efficiency of the road system from a business and individual perspective by, for example:
  - a) Investment in intelligent traffic control systems and the infrastructure to support it
  - b) Allowing motorcycles and scooters to use TLRN bus lanes for a trial period and evaluating its impact
  - c) Upgrading, optimisation and rationalisation of equipment at signal controlled junctions
  - d) Working with the DfT to pilot and develop the concept of pedestrian countdown at traffic signals to optimise the amount of 'green time' for both pedestrians and road traffic
  - e) Implementing a targeted programme of road network improvements, potentially including junction upgrades, to improve traffic flow on the most congested sections and to improve conditions for all road users
  - f) Working with utility companies to reduce the impact of their street works on traffic congestion
- Proposal 34: Take a criteria-based approach to road schemes which would allow them to go ahead if there is an overall net benefit, taking into account the following factors:
  - a) The contribution to London's development/regeneration
  - b) The extent to which congestion is reduced
  - c) How net benefit to London's environment can be provided
  - d) How conditions for pedestrians, cyclists, public transport users, freight and local residents can be improved
  - e) How safety for all is improved
- Proposal 46: Prioritise improvements to strategic interchanges that will:
  - a) Provide opportunities for orbital public transport services
  - b) Provide interchange opportunities before arriving in central London, in order to reduce interchange capacity pressure at London's rail termini
  - c) Provide opportunities to accommodate population and employment growth, with developer contributions towards the interchange improvements sought in appropriate circumstances
- Proposal 51: Develop the Biking Borough scheme including measures such as cycle hubs and marketing initiatives to promote cycling.
- Proposal 52: Raise the profile of cycling using information and behavioural change measures, including smarter travel initiatives, and major events.
- Proposal 53: Deliver improvements to cycling infrastructure and training to support the cycling revolution, including:
  - a) The London Cycle Hire Scheme in 2010 in central London
  - b) Twelve Cycle Superhighways will be developed for commuters and others to cycle to central London, improving the capacity of the radial network
  - c) Cycle hire schemes and cycle superhighways introduced elsewhere, particularly in Outer London, if the initial schemes are successful and there is sufficient demand
  - e) Increased provision of secure bicycle parking facilities, particularly at stations, workplaces, schools, retail and leisure sites
  - f) Improving the permeability of the road network for cycling

- g) Delivering road enhancements to make cycling easier and safer, including managing car access to residential areas, through physical or design measures, to create pleasant and safer cycling environments
- Proposal 59: Improve the walking experience by enhancing the urban realm and taking focused action to ensure safe, comfortable and attractive walking conditions, including:
  - a) Development of the Key Walking Route approach
  - b) Providing direct, convenient pedestrian access (for example, with surface crossings) where appropriate
  - c) Street audits to identify pedestrian needs and guidance (such as pedestrian comfort levels)
  - d) Completing the seven Strategic Walking Network routes
  - f) Enhancing pavement space for pedestrians and removing guardrails and other obstacles
  - i) Supporting major projects such as high street revitalisation through good quality public realm designed to support regeneration of small businesses and encourage local shopping and activity
  - j) Improving access and safety between the station and surrounding areas for pedestrians (and cyclists) to encourage active and smarter travel
  - k) Encouraging the extension of a network of linked green spaces (ie a green grid approach) throughout London.

### 3.6 Lewisham Unitary Development Plan (2004)

3.6.1 The Lewisham Unitary Development Plan (UDP), adopted 2004, regulates development within the Borough. Key strategic objectives are:

- STR.OBJ 2: To support and promote sustainable patterns of development;
- STR.OBJ 5: To promote accessibility to everyday facilities for everyone; and
- STR.OBJ 6: To promote the integration of all forms of transport, but particularly public transport and land use planning.

3.6.2 The UDP considers the location of development (Policy TRN 1) to ensure that development proposals which generate a large volume of traffic/people movement must be located close to good public transport. Public transport access including access to employment and shopping areas is discussed in Policies TRN 4, 6 and 9. The cycle and walking section (Policies TRN 14-17) refers to the location of convenient cycle/walking routes with good linkages to public transport, schools and town centres.

3.6.3 Traffic management and traffic calming measures are specifically discussed in the traffic management Policy TRN 21 whilst the use of a road hierarchy for traffic management purposes is outlined in Policy TRN 18. Policy TRN 20 seeks to improve road safety and the scope for developers to make financial contributions to improvement measures.

3.6.4 The UDP also supports developments in rail transport as detailed in Policy TRN 11 New Rail Schemes, which “supports in principle all rail improvement schemes, subject to a clear balance of advantage to Lewisham residents and that the details show an acceptable impact on the local environment”. In particular the Council supports:

- East London Line Extension, due to open in 2010
- Thameslink 2000, due to open in 2012
- Extension of DLR to London City Airport, (which is now open)
- Orbital Routes, including Phase 2 of the East London Line, which is due to open in 2012
- Extension of the Croydon Tramlink to Lewisham (no longer proceeding).

### 3.7 LDF Issues and Options Paper: Employment Land (2005)

3.7.1 This discussion paper relates to the preparation by LBL of the Spatial (Core) Strategy and Development Policies and Site Allocations documents in the Local Development Framework. It concentrates on the planning issues surrounding employment land and the local economy, in relation to the following themes:

- Strategic Employment Locations (London Plan) – retention of sites
- Review of employment land for release and suitability for housing
- Provision of a variety of appropriately located sites
- Identification of vacant and under-used sites and allocation of appropriate alternative uses
- Demand, supply and location of office accommodation
- Emerging growth sectors and clusters of business uses
- Promotion of creative industries.

3.7.2 Key options considered in the paper of note include:

- E1: Maintain current Strategic Employment Location Boundaries (status quo)
- E2: Remove or add sites to Strategic Employment Locations
- DEA 1: Retain all the current Defined Employment Areas and refuse planning permission for changes of use away from business uses
- DEA 2: Remove protection for business/industrial uses in Defined Employment Areas
- DEA 3: Review appropriateness of retaining Defined Employment Areas based on a set of criteria, with a view to removing protection for business, industrial and commercial uses from a number of sites.
- DEA 4: Allow for 100% residential development in Defined Employment Areas
- DEA 5: Allow 'mixed use' commercial and residential with an element of affordable housing (suggest 50%) in Defined Employment Areas. Also consider community facilities such as schools, surgeries etc.
- OTH 1: Preserve all other employment sites in business/industrial use.
- OTH 2: Remove protection from other employment sites and allow redevelopment for mixed use commercial and housing or 100% housing.
- OTH 3: Assess applications for the redevelopment of other employment sites flexibly on the basis of criteria.
- OFF 1: Direct larger office development to the Major Town Centres of Lewisham and Catford. Small-scale developments will generally be acceptable in other locations (e.g. district town centres) and also ancillary to existing employment generating uses.

### 3.8 LDF Issues and Options Paper: Transport & Parking (2005)

3.8.1 This discussion paper relates to the preparation by LBL of the Spatial (Core) Strategy and the Development Policies & Site Allocations Development Plan Documents in the Local Development Framework (LDF). This paper explores issues and sets out options in relation to four themes:

- Location and accessibility of sustainable transport options
- Traffic management and road safety
- Parking control
- Promotion of Public Transport Improvements

3.8.2 Key options considered in the paper to note include:

- TR1: Allow higher density development only in places where good public transport is available and restrict development in places with poor public transport.
- TR4: Allow higher density development only in places where good public transport is available and restrict development in places with poor public transport.

- TR5: Require developers to contribute to public transport infrastructure where deficiencies are identified.
- TR6: Require developers only to meet the immediate transport improvements related to their development.
- TR7: Manage and distribute traffic in accordance with the road hierarchy established in the Unitary Development Plan.
- TR8: Introduce engineering, education and enforcement measures to improve road safety.
- TR12: Require specific cycle provision as part of all developments.
- TR13: Negotiate cycle provision on an individual basis
- TR14: Promote car-free residential development in areas with excellent public transport facilities.
- TR16: Extend the provision of controlled parking zones (CPZs).
- TR17: Require developers to contribute towards the implementation of CPZs.
- TR18: The Council will encourage the safeguarding of transport facilities through avoiding inappropriate development.
- TR19: The Council will support and promote public transport improvements.
- TR20: The Council will support rail and other transit improvement schemes that benefit local residents, subject to acceptable environmental impacts, in particular;
  - East London Line Extension Phase 2
  - Extension of DLR from Lewisham to Catford
  - DLR 3 Car Capacity Enhancement
  - Extension of the Croydon Tramlink to Lewisham
  - Extension of the Greenwich Waterfront Transit to Canada Water
  - Orbital Rail Route Improvements.

### 3.9 People, Places and Spaces: The Preferred Options for the Spatial (Core) Strategy (2007)

- 3.9.1 The Preferred Options report for Council's Spatial (Core) Strategy details where development should take place in the borough and the way this should be done. This is contained in a vision, objectives and spatial strategy. It also includes draft core policies which will apply across the borough.
- 3.9.2 The preferred approach the Council is considering adopting as set out in the report is a planned growth strategy, with an emphasis on mixed-use. This will seek to deliver new homes and jobs and the social facilities associated with a sustainable community. The Spatial (Core) Strategy is expected to be relevant over a 10-15 year period from adoption.
- 3.9.3 The Strategy sets out a Major Growth Corridor focussed on the Catford, Lewisham and North Lewisham (New Cross and Deptford) localities. These locations form the borough's main contribution to the Thames Gateway and are considered optimal locations for encouraging active change through significant regeneration and intensification of built development. This will involve substantial new housing, increased employment uses, mixed use development, retail and town centre uses, and the necessary social, economic and transport infrastructure required to support the existing and new communities.
- 3.9.4 The Strategy also identifies areas for moderate growth and intensification in the district town centres of Blackheath, Forest Hill, Sydenham, Downham and Lee Green. Established residential areas are identified as areas for managed change. Other deprived wards are identified as areas for local renewal.
- 3.9.5 The Strategy includes a Strategic Vision for movement in Deptford and New Cross.
- 3.9.6 The Strategy also seeks to:

- focus major trip generating uses in areas with good access to public transport (Core Policy 6)
- supported better public transport (Core Policy 23)
- adopt an integrated traffic management and car parking strategy (Core Policy 24) and
- provide, facilitate and encourage walking and cycling throughout the borough (Core Policy 25A and B).

### 3.10 Development Policies / Site Allocations Development Plan Preferred Options (2007)

3.10.1 The report provides the detailed planning policies and builds on the Council's vision, spatial strategy and core policies set out in the Spatial (Core) Strategy. At this stage the policies represent the Council's preferred approach it is considering adopting.

3.10.2 This report contains policies that will be used to assess planning applications for new development and change of use. It also contains policies for specific sites and designates certain land for a specific land use e.g. housing, employment etc. Draft policies related to transport and accessibility include:

- T1 Location of Development
- T2 Development and Accessibility
- T3 Travel Plans
- T4 Transport Infrastructure
- T5 Road Hierarchy
- T6 New Road Building and Improvements
- T7 Traffic Management
- T8 Freight
- T9 Home Zones
- T10 Car free residential development
- T11 Controlled Parking Zones
- T12 Car parking standards
- T13 Provision for cyclists
- T14 Motorcycle parking
- T15 Pedestrian routes and access
- T17 Transport interchanges

### 3.11 Strategic Housing Market Assessment (2007)

3.11.1 Opinion Research Services prepared a Strategic Housing Market Assessment on behalf of Lewisham Borough Council. This study identified a need for a net 6,777 dwellings to be provided over the 5-year period to 2012; equivalent to 1,345 per annum to sustain the existing supply/ demand imbalance.

### 3.12 Local Implementation Plan (2007)

3.12.1 The Local Implementation Plan (LIP) is a statutory plan to implement the London Mayor's Transport Strategy in each London borough. The LIP covers the period 2006-2011. Key points to note from the LIP include:

- LIP Policy 3A.5 Sydenham Subject to the availability of funding from TfL's 'Station Access' or similar funding programme, the Council proposes improving the quality of links to, and access within, Sydenham Station by making both small and larger scale changes.
- LIP Measure 3A.3 Sydenham Subject to available funding, consultation and safety audit, the Council proposes undertaking works at Sydenham High Street to –

- Create a greater sense of place
- Improve the environment for those shopping and waiting for buses
- Reduce the dominance of vehicles and vehicle related infrastructure
- Improve walking links to the high street
- Improve cycle movement and parking.
- LIP Policy 3A.7 Deptford. The Council proposes promoting the Deptford Links concept and will seek to take opportunities arising from development proposals in Deptford, to enhance the connectivity, convenience, conviviality, comfort and conspicuousness of pedestrian linkages within Deptford.
- LIP Scheme 3A.1 Deptford. The Council proposes working with TfL to include within the plan and programme of schemes to improve London's town centres, the redesigning of the A2 Deptford Broadway/Deptford Church Street junction to give far greater pedestrian priority and better access to Deptford Bridge DLR Station and neighbouring development sites.
- LIP Scheme 3A.2 New Cross Gate. The Council will support and encourage TfL to implement its outline proposals for returning the 'Kender Triangle' traffic gyratory to two-way traffic flow.
- LIP Scheme 3A.3 New Cross Gate. Subject to TfL undertaking the conversion of the 'Kender Triangle' to two-way traffic flow and the availability of funding, the Council proposes improving the public realm along those streets relieved of their strategic/TLRN role.
- LIP Policy 3A.9. Catford. The Council will encourage the London Mayor and TfL to implement their proposals for the A205 at Catford.
- LIP Scheme 3A.4 Catford. Subject to the provision of funding and TfL implementing its proposals for the A205, the Council proposes creating a new central public place within the space that would be left by the relocation of the A205.
- LIP Policy 3A.10 Catford. The Council proposes working with TfL, Network Rail, train operating companies and other partners to develop proposals and identify funding mechanisms to deliver access improvements to and between Catford and Catford Bridge Stations, allied with the redevelopment of the 'Dog Track' site and improvements to the A205 and town centre.
- LIP Policy 3A.11 Lewisham Gateway. The Council proposes continuing to work with TfL and its other 'Urban Renaissance in Lewisham' partners to deliver the Lewisham Gateway concept.

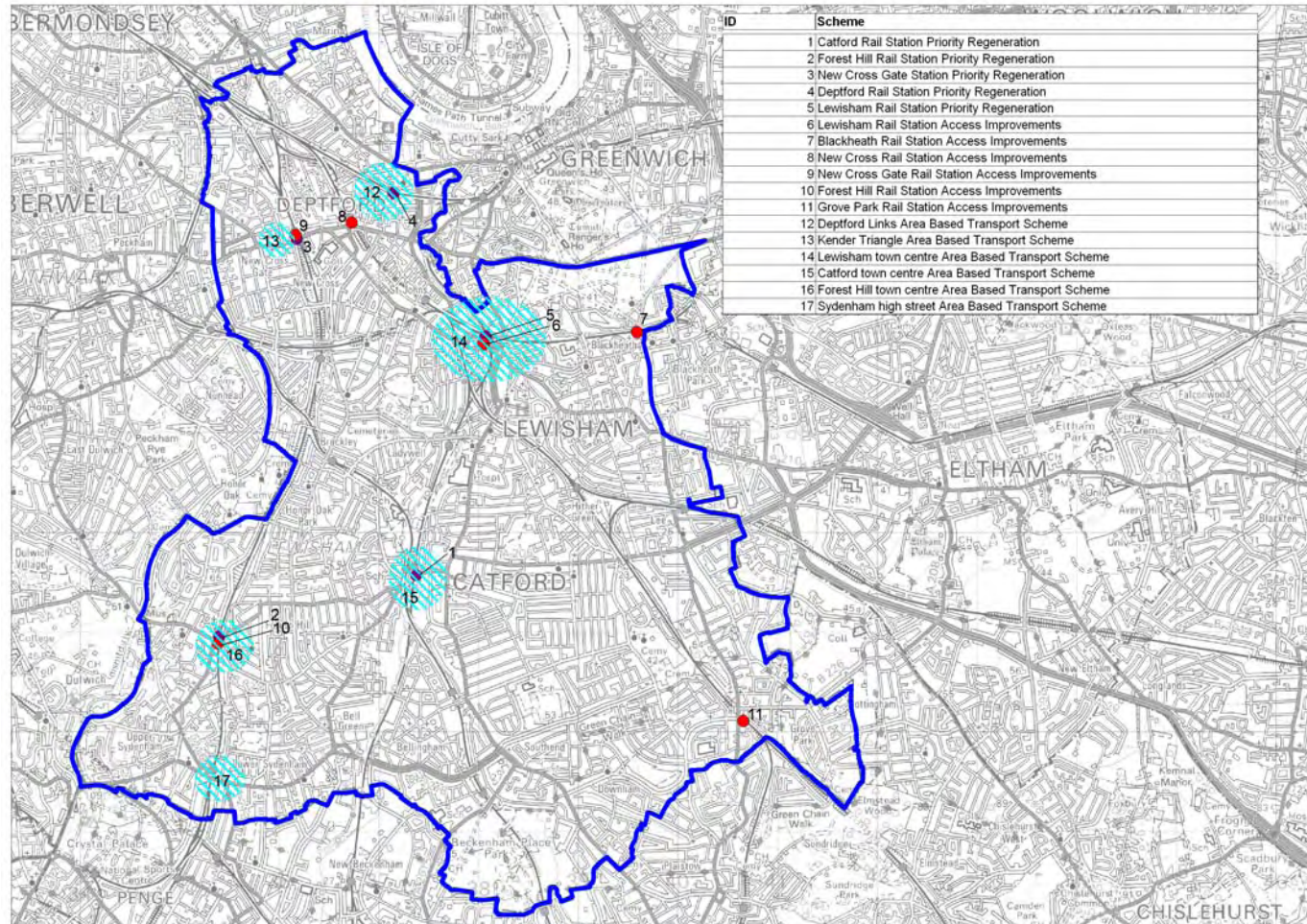
### 3.13 People, Prosperity, Place: Lewisham Regeneration Strategy (2008)

3.13.1 The Lewisham Regeneration Strategy 2008-2020 outlines key regeneration projects planned or underway within the borough. It sets out a vision for the future of the borough, and describes the projects and plans to deliver this vision. Key transport projects to be undertaken during this period include:

- Area-based transport schemes
- Station improvements

3.13.2 Figure 3.2 illustrates the key transport schemes and improvements summarised in the regeneration strategy.

**Figure 3.2: Lewisham Regeneration Strategy**



- 3.14 Deptford New Cross Transport Infrastructure Study (2008)
- 3.14.1 Urban Initiatives undertook a transport study for the area of Deptford and New Cross, bounded by the A2 (TLRN) through New Cross and Deptford, Deptford Creek and the borough boundaries with Greenwich and Southwark. The study was written in the context of the Deptford and New Cross Masterplan to help guide investment in transport and provide a co-ordinating strategic baseline for forthcoming development sites in the area.
- 3.14.2 The area is relatively poorly served by public transport, with a lack of east-west and north-south connections. Public transport is made less accessible by overcrowding to the extent that from Lewisham station, it is often not possible for passengers to board London-bound trains in the morning peak. Conditions for driving, cycling and bus use are also poor at times, with a congested network producing significant journey delays. Development-generated travel growth will add to this congestion.
- 3.14.3 The study assessed future travel demand and capacity of the public transport network, and set out a series of proposals to address identified issues. Key interventions proposed include:
- Introduce Lewisham Waterlink Transit. This could be an amended bus route 129. Calling at Lewisham Station, Greenwich Station, Convoys Wharf, Canada Water, Surrey Quays, Bermondsey, Elephant and Castle.
  - Target capacity increases on bus services 1, 47, 53, 177, 188, 199, 255, 381, 453, P12.
  - Add bus service 129 and provide improved local service access through new services or diverted existing services.
  - Area Based Schemes to improve station access.
  - East London Line Extension Phase 2 and construction of Surrey Canal Station.
  - Bakerloo Line Extension.
  - Local traffic management, including:
    - Restore two-way working of Surrey Quays Gyratory.
    - Identify suitable areas for application of 20mph schemes, HGV restrictions, danger reduction and rat-run removal.
    - Identify suitable zones for controlled parking and loading schemes.
  - Improve the TLRN by:
    - Restore two-way working on Kender Triangle gyratory
    - Restore two-way working on New Cross gyratory
    - Improve bus priority.
- 3.14.4 Some of the interventions listed above (e.g. two-way working on Kender Triangle gyratory) are taking place and have been included in the Borough Wide Transport Study; Chapter 4 provides more detail on these. The interventions and findings in the Deptford New Cross study have also informed the identification of measures, as set out in Chapter 8.
- 3.14.5 Further detailed modelling work has been undertaken by LB Southwark in relation to the restoration of two-way working at the Surrey Quays Gyratory as part of the Canada Water AAP. Further information on this is provided in Chapter 5.
- 3.15 Lewisham Town Centre Transport Study (2009)
- 3.15.1 The Lewisham Town Centre Area Action Plan Preferred Options Report sets out proposals to provide 4,100 additional dwellings and an additional 60,000 m<sup>2</sup> commercial floorspace in Lewisham Town Centre by 2016. This would be contained within 17 identified development sites.



- 3.15.2 Since its publication for public consultation in 2007, planning applications have been received for several of the key sites, all of which are proposing more intensive levels of development than outlined in the draft AAP.
- 3.15.3 Lewisham Borough Council wanted to be satisfied that the highway and public transport networks (with appropriate enhancements) will be able to cope with higher levels of development proposed in the Town Centre. This is particularly the case for the highway network, where the consented Lewisham Gateway proposals replace the Loampit Vale roundabout with a series of linked signal junctions with a slightly lower traffic throughput.
- 3.15.4 Taking into account committed transport improvements (including Lewisham Gateway), the study recommended further transport measures to support development in the town centre including:
- Travel planning initiatives for existing residents and businesses (e.g. Smarter Travel Sutton).
  - Measures to raise awareness of public transport (e.g. real-time information for train, DLR and bus services at key points throughout the town centre and possibly within the Shopping Centre).
  - Measures to assist bus operations – through acquisition of land on Loampit Vale and land on Lee High Road.
  - Measures to assist bus passengers - upgrade all bus stops to comply with TfL accessibility guidelines.
  - Measures to assist pedestrians - wider footways on Loampit Vale, connecting pedestrian routes to form a continuous network, improving quality of key pedestrian routes into town, improved crossings of major roads.
  - Measures to assist cyclists – additional cycle routes to form part of the wider area network (particularly to enhance connections to neighbouring Boroughs), improved crossings of major roads, additional town centre cycle parking.
  - Measures to improve parking control – removing gaps in the CPZ coverage, consideration of extending CPZs to cover the Saturday daytime period.
- 3.15.5 Whilst the focus of measures should be the Lewisham Town Centre area, it is important that Borough-wide planning and transport policies provide explicit reinforcement and support.
- 3.16 Core Strategy Options Report (2009)
- 3.16.1 The Core Strategy Options Report was released for public consultation in May 2009. This report built on the Preferred Options Report (May 2009) and responded to the need to provide further information on the options being considered by the Council for how the borough would accommodate additional growth up to 2026. This reflected further guidance from Government on the appropriate content and level of detail expected within the Lewisham Core Strategy.
- 3.16.2 Two reasonable and achievable development options for regeneration and growth were put forward for public consideration. These options form the basis of this transport study and details are provided in Chapter 4.

## 4 Development schedule

### 4.1 Strategic spatial options

4.1.1 LBL have defined two broad strategic spatial options for the period 2010 to 2026, both of which focus upon larger housing and mixed-use development in key areas of the borough.

#### ***Option 1***

4.1.2 Option 1 is the more comprehensive and has the potential to deliver up to 17,525 new homes focussed on:

- Catford town centre
- Lewisham town centre
- Key development sites within Deptford and New Cross, including Convoys Wharf
- Six sites in the north of the Borough which are proposed to be designated as Mixed Use Employment sites.

4.1.3 Figure 4.1 below shows the locations of anticipated future housing developments based on planning information received from LBL. A full schedule of the housing projections by development site is included at Appendix A.

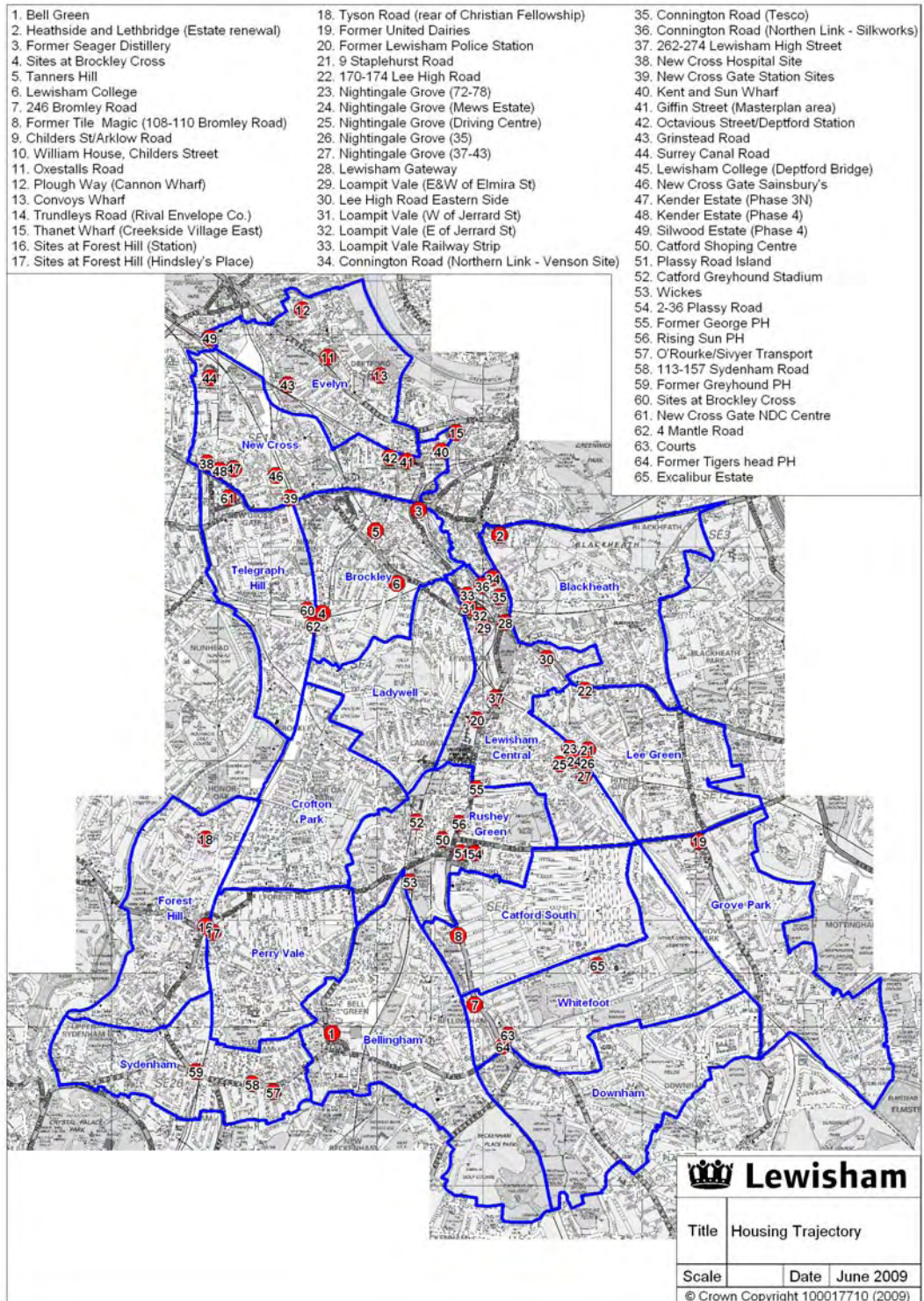
#### ***Option 2***

4.1.4 Option 2 excludes the Mixed Use Employment sites and has the potential to deliver up to an additional 14,550 new homes. The specific sites excluded from this model are:

- Surrey Canal Road
- Plough Way
- Oxestalls Road
- Childers St/Arklow Road
- Grinstead Road

4.1.5 For the purposes of this Study, the primary aim is to assess the impacts of the full development scenario (Option 1).

**Figure 4.1: Potential future housing locations**



## 4.2 Major development sites and transport improvements

### ***Major development sites***

4.2.2 There are a number of major development sites within the borough, which entail highways improvements under section 106 agreements.

#### Convoys Wharf

4.2.3 Convoys Wharf in Deptford (Evelyn ward) offers a major opportunity to regenerate part of the Borough to provide new jobs, homes and a better environment. An outline planning application was submitted by the developer in 2002 for redevelopment of the site. It includes approximately 450,000m<sup>2</sup> of floorspace with around 3,500 new homes (1,200 of which are affordable), 73,000m<sup>2</sup> of employment space plus major new cultural and creative facilities. The proposals also retain a working wharf to serve a waste recycling and remanufacturing facility on the site.

4.2.4 LBL worked with the relevant agencies and local groups to identify impacts of the development, and agreed measures with the developer to mitigate against these impacts. Consequently outline planning permission was granted in May 2005 subject to planning conditions and a section 106 agreement.

4.2.5 The application had to be referred to the Greater London Authority (GLA) for consideration by the Mayor of London. Meetings have been held between LBL officers and the GLA regarding outstanding matters identified by the GLA in respect of affordable housing, the safeguarded wharf and transport matters over the past two years. These discussions are continuing, and are now at final decision resolution.

4.2.6 The transport measures proposed as part of the development (as originally submitted in the planning application) include:

- Vehicle access from the northern end of New King Street (retained) and the junction of Grove Street and Leeway (new/re-opened)
- Secondary vehicle access from Watergate Street and Leeway
- River bus service
- Diversion of 199 bus route through the site
- Works to Evelyn Street/New King Street/ Watergate Street/Deptford High Street junction
- Works to Evelyn Street/Dragoon Road junction (including works to the Surrey Canal Bridge)
- Cycle route extension through the site
- Thames Path extension through the site
- Parking for 3,500 cars

4.2.7 The section 106 package includes:

- Road works to enable safe pedestrian, cycle and vehicle movements

#### Bell Green

4.2.8 The redevelopment of the former Bell Green Gas Works site in Lower Sydenham provides an opportunity to promote new homes as well as business and employment within Lewisham. Development of this site has been divided into three distinct development phases. Phase I land has already been fully developed to provide a Savacentre hypermarket (now trading as Sainsbury's). Phase II and III are the subject of planning applications by National Grid for the construction of five blocks ranging from 3 to

7 storeys, comprising 178 residential units (including 65 affordable housing) and 1,247sq.m of commercial floor space.

- 4.2.9 In 2005, the Council granted outline planning permission for redevelopment of Phase II and III land. The applications were then referred to the Mayor for London, who chose to allow LBL to determine the cases itself. The cases were then referred to the Government Office for London. Following a public inquiry in June 2006 the Secretary of State granted planning permission for the redevelopment proposals for the Bell Green Phase II and Phase III sites.
- 4.2.10 The planning permission required an appropriate section 106 agreement relating to:
- Provision of highway improvements to Bell Green (two lanes for southbound traffic and improvements to the Bell green Perry Rise junction);
  - Provision of a financial sum to fund the various off site highway improvements and other transport improvements;
  - To use existing section 106 funds (previously secured as part of the Bell Green proposals) to fund various off site highway improvements and transport provisions;
  - Provision of a Green Travel Plan;
- 4.2.11 The only major highway capacity improvement necessary as a result of the Phases II and III developments is widening the section of Bell Green adjacent to the Phase III development site, to allow a traffic flow of two lanes in both directions. In association with the works to widen Bell Green, it is also intended to improve queuing capacity in Perry Hill on the southbound approach to the Perry Hill/ Perry Rise/ Bell Green junction. 24hr waiting restrictions are proposed on the Eastern side of Perry Hill outside the Livesey Memorial Hall to ensure that a full two lanes are available to queuing southbound traffic.

#### Lewisham Gateway

- 4.2.12 The Lewisham Gateway site is located within Lewisham Town Centre. The redevelopment is to deliver a comprehensive mixed-use scheme comprising up to 100,000 sq m of retail, offices, hotel, residential, education, health and leisure with parking, servicing, associated infrastructure and improvements to the public transport interchange, as well as open space, rivers and water features.
- 4.2.13 Planning permission for the development was granted in May 2009.
- 4.2.14 The proposals will replace the existing Lewisham Northern Roundabout with a highway layout known as the Low H. This new layout creates the opportunity for major mixed-use development between the stations and the Town Centre, with an enhanced public realm and better pedestrian connectivity of the Gateway to Lewisham Town Centre and surrounding areas. It also significantly improves the interchange between bus and rail and offers operational benefits over the existing layout for buses in terms of priority, stop accessibility and stop capacity. The proposed highway layout has been modelled and found to retain a similar vehicular capacity to the existing highway network.

#### Loampit Vale

- 4.2.15 The Loampit Vale site is located within Lewisham Town Centre. A planning application was submitted in March 2009 for a comprehensive mixed use redevelopment of the land on the south side of Loampit Vale. This includes eight buildings ranging in height from five to 24 storeys including residential flats, a leisure centre replacement facilities for the existing London City Mission, shops, financial/professional services and business space, public and private open space.
- 4.2.16 The scheme contributes towards improving public transport access to the town centre by dedicating land on the Loampit Vale frontage to permit TfL to widen the carriageway on Loampit Vale to enhance conditions for buses, potentially through provision of an

eastbound bus lane. TfL are satisfied that sufficient land would be dedicated to facilitate the design of an effective scheme and are in the process of reviewing options. In addition, the applicant's proposals to contribute towards accessibility enhancements at bus stops on Loampit Vale and provide real-time public transport information would further assist use of public transport information.

- 4.2.17 The application received approval from Lewisham Council on 10 September 2009 subject to signing of the S106 agreement and referral to the Greater London Authority.

#### ***Other transport schemes***

- 4.2.18 There are also a number of stand-alone committed highways and public transport schemes which will benefit movement within Lewisham by 2026, as described below. Other schemes that will benefit Lewisham but do not have clear timetables yet are also described.

##### Kender Street Triangle

- 4.2.19 The Deptford New Cross Transport Infrastructure Study identified removing the one-way gyratory system and returning all roads back to two-way working around the Kender Street Triangle area as recommendation. This scheme is currently being implemented. New Cross Road and Queen's Road will become two-way, bus lanes will be extended and junctions altered. The internal roads of the Triangle area, Kender Street and Besson Street, will be re-designed as local roads to remove general through traffic. Footpaths will be widened and other traffic calming measures introduced to enhance the environment. Work on implementing the scheme commenced in 2009, and is anticipated for completion in 2010.

##### Lower Road (Surrey Quays Gyratory)

- 4.2.20 To inform the production of an Area Action Plan (AAP) for the Canada Water area, LB Southwark have prepared a multi-modal traffic model. This has been used to assess the impact of development in the area on transport infrastructure and to inform a transport strategy which enables the impact of growth to be managed.
- 4.2.21 To accommodate growth generated by developments at Canada Water a number of improvements to the highway network are proposed, the most important of which comprises the reintroduction of two-way traffic movements on Lower Road, in the Surrey Quays Gyratory. The principal benefits will be improved conditions for pedestrians and cyclists, including more direct and safer crossing points, an improved environment for shoppers on Lower Road and a traffic management scheme that enables more effective management of vehicle flows through the area.
- 4.2.22 LB Southwark anticipate that the highway works to Lower Road will be predominantly funded by developer contributions from major sites in the Canada Water area.

##### Catford Town Centre

- 4.2.23 LBL is seeking the regeneration of Catford Town Centre and the resolution of significant traffic issues. Major highway alterations have been proposed in order to facilitate significant developments in the town centre and improve sustainable access. The proposed alterations included the realignment of the A205 South Circular Road and widening Plassy Road to accommodate two-way working. This would enable the central part of Rushey Green to be converted to an on-street bus interchange and would provide additional public open space.

- 4.2.24 Since the commencement of the Lewisham Borough Wide Transport Study it has become apparent that the realignment of the A205 is not being progressed by TfL. The realignment remains a priority for LBL but it is unlikely that the scheme will be implemented during the period of the Core Strategy. This change in position took place following the completion of the modelling work for the study. As a result the realigned A205 had already been incorporated into the highway network for future year model runs. However the realignment proposals are primarily aimed at facilitating regeneration and environmental improvements; in terms of traffic impact they are effectively capacity-neutral and would not result in the redistribution of highways trips. In this regard CB do not believe the inclusion of these highways proposals in the modelling work significantly affects the conclusions drawn for the study by TfL.

#### East London Line

- 4.2.25 The East London Line is currently being extended both north and south to link it into the suburban rail network. It will include the following stations within LBL – New Cross, New Cross Gate, Brockley Cross, Honor Oak Park, Forest Hill and Sydenham. The first stage is scheduled for completion in 2010, and will see new Overground rail services running from Highbury & Islington via Dalston Junction to West Croydon and Crystal Palace. The second phase, would add on a western branch from Surrey Quays via Peckham Rye to Clapham Junction is planned for completion by 2012.
- 4.2.26 LBL are particularly concerned that the Phase 2 extension to Clapham Junction includes a station at Surrey Canal Road in order to serve planned housing development in Evelyn and New Cross Wards. LBL is currently in high level negotiations with TfL and the Department of Transport to secure funding for the construction of the Surrey Canal Station.

#### DLR capacity enhancements

- 4.2.27 Work has started on upgrading the DLR to enable it to handle 3/6-car train formations, which will increase peak period capacity by 25%. Three-car trains are expected to be running between Bank and Lewisham by early 2010.
- 4.2.28 Works have also just recently been completed to reconfigure Delta Junction north of Canary Wharf, allowing more trains to pass through this critical point and allowing service frequencies to be increased. A new Docklands Light Railway timetable came into use on 24 August 2009 and train frequencies for peak times have been increased between Lewisham and Bank and vice versa as a result of the construction.
- 4.2.29 The Mayor's draft Transport Strategy (2009) mentions the potential to explore the feasibility of further network expansion of the DLR south of Lewisham. It is unclear whether this would benefit Lewisham during the period under consideration.

#### High Speed Rail Link

- 4.2.30 Domestic services on the High Speed Rail Link between Kent and St Pancras will commence operation in late 2009. These services will have the effect of diverting existing passengers away from trains which currently travel through Lewisham from the North Kent Lines, thereby providing additional seating capacity for Lewisham residents.

#### Thameslink

- 4.2.31 As a result of the Thameslink upgrade works which are underway, train throughput at London Bridge station will be enhanced considerably, which will facilitate enhanced train service frequencies at Lewisham station. In addition, platform lengthening is proposed to enable 12-car trains on the most heavily-loaded services, further enhancing carrying capacity. These works are anticipated to be complete by 2012.

Crossrail

4.2.32 By 2017, Crossrail is anticipated to be operational. By providing a faster route to London from Woolwich and Abbey Wood, Crossrail is also expected to divert existing passengers away from the North Kent Lines and the Jubilee Line.

Bakerloo Line Extension

4.2.33 The Mayor's draft Transport Strategy proposes consideration of potential southern extension to the Bakerloo line to Hayes via Peckham and Lewisham in order to provide relief to congested National Rail approaches to central London from the south/southeast. No specific timetable is under consideration as yet but it is unlikely that such works would be completed during the period of this study.

***Development trip generation***

4.2.34 In order to understand the number of trips likely to be generated by future development in each ward we have undertaken an analysis of mode split and calculated trip rates by mode per ward.

4.2.35 Analysis of 2001 Census Journey to Work data shows that there is significant variation in mode share between wards. Table 4.1 summarises this information.

**Table 4.1: Split of work trips by principal mode (% , persons)**

| Ward             | LUL/DLR | Train | Bus, Minibus Or Coach | Car Driver | Other |
|------------------|---------|-------|-----------------------|------------|-------|
| Bellingham       | 6%      | 28%   | 16%                   | 36%        | 15%   |
| Blackheath       | 11%     | 45%   | 9%                    | 22%        | 12%   |
| Brockley         | 17%     | 30%   | 17%                   | 22%        | 14%   |
| Catford South    | 4%      | 29%   | 13%                   | 41%        | 13%   |
| Crofton Park     | 8%      | 35%   | 13%                   | 32%        | 13%   |
| Downham          | 3%      | 22%   | 17%                   | 43%        | 15%   |
| Evelyn           | 25%     | 13%   | 22%                   | 25%        | 16%   |
| Forest Hill      | 7%      | 34%   | 14%                   | 31%        | 13%   |
| Grove Park       | 3%      | 34%   | 11%                   | 40%        | 12%   |
| Ladywell         | 11%     | 35%   | 13%                   | 27%        | 14%   |
| Lee Green        | 6%      | 40%   | 10%                   | 31%        | 13%   |
| Lewisham Central | 12%     | 37%   | 13%                   | 24%        | 15%   |
| New Cross        | 20%     | 21%   | 23%                   | 22%        | 14%   |
| Perry Vale       | 6%      | 32%   | 13%                   | 35%        | 13%   |
| Rushey Green     | 7%      | 35%   | 16%                   | 27%        | 15%   |
| Sydenham         | 5%      | 33%   | 13%                   | 34%        | 14%   |
| Telegraph Hill   | 16%     | 26%   | 20%                   | 24%        | 14%   |
| Whitefoot        | 4%      | 25%   | 15%                   | 41%        | 14%   |

4.2.36 The following Inner London TRAVL sites were selected to generate average person trip rates to/from residential developments throughout Lewisham:

- Battersea Reach, York Road, Wandsworth
- Chelsea Bridge Wharf, Queenstown Road, Wandsworth
- Discovery Dock, Marsh Wall, Docklands
- Imperial Wharf, Townmead Road, Fulham
- Osier Crescent, Muswell Hill
- Putney Wharf, Putney



- Riverside West, Wandsworth
- St George Wharf, Vauxhall
- Stanley Close, Greenwich
- AC to list

4.2.37 Table 5.2 assigns the overall person trip rates to principal modes by ward, based upon the Census data.

**Table 4.2: AM Peak hour (0800-0900) trip rates by principal mode per residential unit\***

| Ward             | LUL/DLR |       | Train |       | Bus, Minibus Or Coach |       | Car Driver |       | Other |       | Total |       |
|------------------|---------|-------|-------|-------|-----------------------|-------|------------|-------|-------|-------|-------|-------|
|                  | In      | Out   | In    | Out   | In                    | Out   | In         | Out   | In    | Out   | In    | Out   |
| Bellingham       | 0.008   | 0.031 | 0.037 | 0.142 | 0.021                 | 0.081 | 0.048      | 0.185 | 0.020 | 0.076 | 0.135 | 0.515 |
| Blackheath       | 0.015   | 0.058 | 0.061 | 0.233 | 0.012                 | 0.045 | 0.030      | 0.115 | 0.017 | 0.064 | 0.135 | 0.515 |
| Brockley         | 0.023   | 0.089 | 0.040 | 0.155 | 0.023                 | 0.087 | 0.030      | 0.115 | 0.018 | 0.070 | 0.135 | 0.515 |
| Catford South    | 0.006   | 0.022 | 0.039 | 0.150 | 0.018                 | 0.068 | 0.055      | 0.211 | 0.017 | 0.065 | 0.135 | 0.515 |
| Crofton Park     | 0.010   | 0.039 | 0.047 | 0.179 | 0.017                 | 0.065 | 0.043      | 0.166 | 0.017 | 0.066 | 0.135 | 0.515 |
| Downham          | 0.004   | 0.014 | 0.029 | 0.113 | 0.023                 | 0.088 | 0.058      | 0.224 | 0.020 | 0.076 | 0.135 | 0.515 |
| Evelyn           | 0.034   | 0.129 | 0.017 | 0.067 | 0.030                 | 0.113 | 0.033      | 0.127 | 0.021 | 0.080 | 0.135 | 0.515 |
| Forest Hill      | 0.009   | 0.035 | 0.046 | 0.174 | 0.019                 | 0.074 | 0.042      | 0.162 | 0.018 | 0.069 | 0.135 | 0.515 |
| Grove Park       | 0.005   | 0.018 | 0.045 | 0.173 | 0.015                 | 0.058 | 0.054      | 0.205 | 0.016 | 0.061 | 0.135 | 0.515 |
| Ladywell         | 0.015   | 0.056 | 0.047 | 0.182 | 0.018                 | 0.069 | 0.036      | 0.139 | 0.018 | 0.070 | 0.135 | 0.515 |
| Lee Green        | 0.009   | 0.033 | 0.054 | 0.207 | 0.013                 | 0.051 | 0.041      | 0.157 | 0.017 | 0.067 | 0.135 | 0.515 |
| Lewisham Central | 0.016   | 0.061 | 0.050 | 0.190 | 0.017                 | 0.066 | 0.032      | 0.123 | 0.020 | 0.075 | 0.135 | 0.515 |
| New Cross        | 0.027   | 0.103 | 0.028 | 0.107 | 0.031                 | 0.119 | 0.030      | 0.115 | 0.019 | 0.072 | 0.135 | 0.515 |
| Perry Vale       | 0.008   | 0.032 | 0.044 | 0.166 | 0.018                 | 0.069 | 0.047      | 0.179 | 0.018 | 0.068 | 0.135 | 0.515 |
| Rushey Green     | 0.010   | 0.037 | 0.047 | 0.180 | 0.022                 | 0.083 | 0.037      | 0.140 | 0.020 | 0.075 | 0.135 | 0.515 |
| Sydenham         | 0.007   | 0.027 | 0.045 | 0.171 | 0.018                 | 0.069 | 0.046      | 0.176 | 0.019 | 0.073 | 0.135 | 0.515 |
| Telegraph Hill   | 0.021   | 0.082 | 0.035 | 0.133 | 0.028                 | 0.105 | 0.033      | 0.125 | 0.018 | 0.071 | 0.135 | 0.515 |
| Whitefoot        | 0.005   | 0.019 | 0.034 | 0.131 | 0.021                 | 0.079 | 0.056      | 0.213 | 0.019 | 0.072 | 0.135 | 0.515 |

\* Assumes no modal shift

4.2.38 The trip rates above have been used in conjunction with the housing trajectory and housing completions to account for additional trips generated through development. Both the TGX highway model and the Railplan public transport models include assumptions about background growth through development, so extra care has been taken to avoid double-counting of growth in applying the trip rates above. Further explanation of application of trip rates and growth is provided in Chapter 6 for the highway model, and Chapter 7 for the public transport model.

## 4.3 Summary

4.3.1 LBL have defined two broad strategic spatial options for the period 2010 to 2026, both of which focus upon larger housing and mixed-use development in key areas of the borough:

- Option 1 is the more comprehensive and has the potential to deliver up to 17,525 new homes focussed on:
  - Catford town centre
  - Lewisham town centre
  - Key development sites within Deptford and New Cross, including Convoys Wharf
  - Six sites in the north of the Borough which are proposed to be designated as Mixed Use Employment sites.

- Option 2 excludes the Mixed Use Employment sites and has the potential to deliver up to an additional 14,550 new homes. The specific sites excluded from this model are:
  - Surrey Canal Road
  - Plough Way
  - Oxestalls Road
  - Childers St/Arklow Road
  - Grinstead Road.

4.3.2 There are a number of major development sites within the borough, which entail highways improvements under section 106 agreements and will benefit Lewisham by 2026. Those considered in this study include:

  - Convoys Wharf
  - Bell Green
  - Lewisham Gateway
  - Loampit Vale

4.3.3 A number of stand-alone committed highways and public transport schemes which will benefit Lewisham by 2026 have also been considered, including:

  - Kender Street Triangle
  - East London Line
  - DLR capacity enhancements
  - High Speed Rail Link
  - Thameslink
  - Crossrail

4.3.4 The realignment of the A205 in Catford Town Centre has also been included, however it is now unlikely that this scheme will be progressed by 2026. This scheme is effectively capacity neutral in terms of traffic, so CB believe its inclusion does not affect the distribution of highways trips.

4.3.5 Analysis of 2001 Census Journey to Work data shows that there is significant variation in mode share between wards. This information has been used to calculate trip rates for each ward within Lewisham. These trip rates have been used in conjunction with the housing trajectory and housing completions to account for additional trips generated through development.

## 5 Modal shift through more sustainable measures

### 5.1 Potential for modal shift

- 5.1.1 The propensity for achieving modal shift away from the private car has been assessed with reference to the research report commissioned by the Department for Transport 'Smarter Choices: Changing the Way We Travel' (2004). This concluded that an intensive smarter choices programme over 10 years could cut car traffic significantly, with traffic volumes falling by an average of 11% on a national basis. It also noted that success in achieving this reduction will depend on some or all of such supportive policies as re-allocation of road capacity and other measures to improve public transport service levels, parking control, traffic calming, pedestrian improvements, cycle networks, speed regulation and enforcement.
- 5.1.2 An overall reduction of highway trips by 11% on current levels is considered achievable within Lewisham on the basis of Transport for London's current initiatives to achieve modal shift amongst existing and potential new residents through the comprehensive introduction of such measures as:
- Improved public transport provision
  - Improved provision for pedestrians and cyclists
  - Restrictive parking provision (preferably car free) in new developments
  - Further measures to control on-street parking, particularly by commuters
  - Workplace and school travel plans
  - Personalised travel planning
  - Public transport information and marketing
  - Travel awareness campaigns
  - Car clubs
  - Car sharing schemes
  - Teleworking
  - Teleconferencing
  - Encouraging home shopping.
- 5.1.3 A target reduction of 11% on current levels by 2025 is considered justified and appropriate for an inner London borough such as Lewisham, where there is a high level of public transport accessibility and a greater propensity for people to use non-car modes. To achieve this it will be necessary to have an integrated, borough-wide approach encompassing the measures listed above. Travel planning will be especially important in this regard, including travel plans for all new developments, as well as for workplaces and schools. Smarter Travel Sutton provides a useful comparator for successful travel planning. Some areas of the borough that have lower levels of public transport accessibility (for example Hither Green) may require more effort to reduce car use, and would benefit from a more focused approach to encouraging modal shift.
- 5.1.4 There are a number of existing initiatives and measures that will contribute to achieving a reduction in car usage. The Deptford and New Cross Study identifies a number of investment priorities that will help contribute to this reduction during the time period for the Core Strategy, including:
- Introduction of Greenwich Waterfront Transit.
  - Capacity increases on selected bus services.
  - Additional bus service (129) and provide improved local service access through new services or diverted existing services.
  - Area Based Schemes to improve station access.

- East London Line Extension Phase 2 and construction of Surrey Canal Station.
- Local traffic management, including:
  - Restoring two-way working of Surrey Quays Gyrotory.
  - Identifying suitable areas for application of 20mph schemes, HGV restrictions, danger reduction and rat-run removal.
  - Identifying suitable zones for controlled parking and loading schemes.
- Improving the TLRN by:
  - Restoring two-way working on Kender Triangle gyratory
  - Restoring two-way working on New Cross gyratory
  - Improving bus priority.

5.1.5 The Lewisham Town Centre Transport Study also identifies a number of recommendations to help facilitate modal shift. In particular:

- Pooling S106 funds to fund wider area objectives (e.g. wider physical measures, car club expansion programme etc.).
- Effective travel plans from new developments, including tariff-based cash funding to put towards fiscal incentive measures for new residents, and inclusion of innovative travel planning measures such as:
  - Built-in facilities for home-working.
  - Real time information displays in homes.
  - Concierge with storage (including cold storage) for receiving home-delivered shopping whilst people are at work.
  - Bike cupboards within flats to enable safe, hidden storage.
- Travel planning initiatives for existing residents and businesses.
- Measures to raise awareness of public transport (e.g. real-time information for train, DLR and bus services at key points throughout the town centre).
- Measures to assist bus operations – through acquisition of land on Loampit Vale and land on Lee High Road.
- Measures to assist bus passengers - upgrade all bus stops to comply with TfL accessibility guidelines.
- Measures to assist pedestrians - wider footways on Loampit Vale, connecting pedestrian routes to form a continuous network, improving quality of key pedestrian routes into town, improved crossings of major roads.
- Measures to assist cyclists – additional cycle routes to form part of the wider area network (particularly to enhance connections to neighbouring Boroughs), improved crossings of major roads, additional town centre cycle parking.
- Measures to improve parking control – removing gaps in the CPZ coverage, consideration of extending CPZs to cover the Saturday daytime period.

5.1.6 Chapter 8 identifies other borough wide measures and improvements in addition to these that could further contribute to a reduction of 11%.

## 5.2 Impact on highway network

5.2.1 The detailed impacts upon the highway network are considered in Chapter 6.

## 5.3 Impact on public transport network

5.3.1 The detailed impacts upon the public transport network are considered in Chapter 7.

## 6 Highway Model

### 6.1 Existing highway networks

6.1.1 The key existing strategic roads in the borough are as follows:

- A2
- A20
- A21
- A205

6.1.2 These are important to strategic as well as local traffic through the borough and the role they play in linking local networks to the wider regional and national links.

6.1.3 Figure 6.1 highlights these roads as well as proposed future highway improvements (see section 6.2 below).

### 6.2 Proposed highway network changes

6.2.1 Over the time period being examined in this study, a number of highways improvements have been assumed to take place:

- Lewisham Gateway
- Loampit Vale
- Kender Street Triangle
- Catford Gyratory
- Bell Green
- Evelyn Street (Convoys Wharf)

6.2.2 Figure 6.1 shows the location of these proposed future highway improvements. Note that these improvements apply to the both modelling options, 1 and 2.

6.2.3 LB Southwark are pursuing highways improvements on the basis of traffic modelling undertaken for the Canada Water and Rotherhithe area . The key proposal is the reintroduction of two-way traffic movements on the Lower Road (Surrey Quays) Gyratory. This would result in more effective management of vehicle flows through the area by the time all planned developments in the area are implemented (2024). Testing of the proposed Lower Road improvements had not been completed at the time the modelling work for the Lewisham Borough Wide study was undertaken; therefore this change to the highway network is not included here. However the results of the Rotherhithe Multi Modal Study Development Impact Report indicate that the scheme would help ameliorate traffic congestion in the Surrey Quays vicinity; this would therefore be of benefit to traffic movement through the northern areas of Lewisham.

6.2.4 With this in mind, three future-year highway scenarios have been modelled as follows, for the AM peak hour (0800-0900):

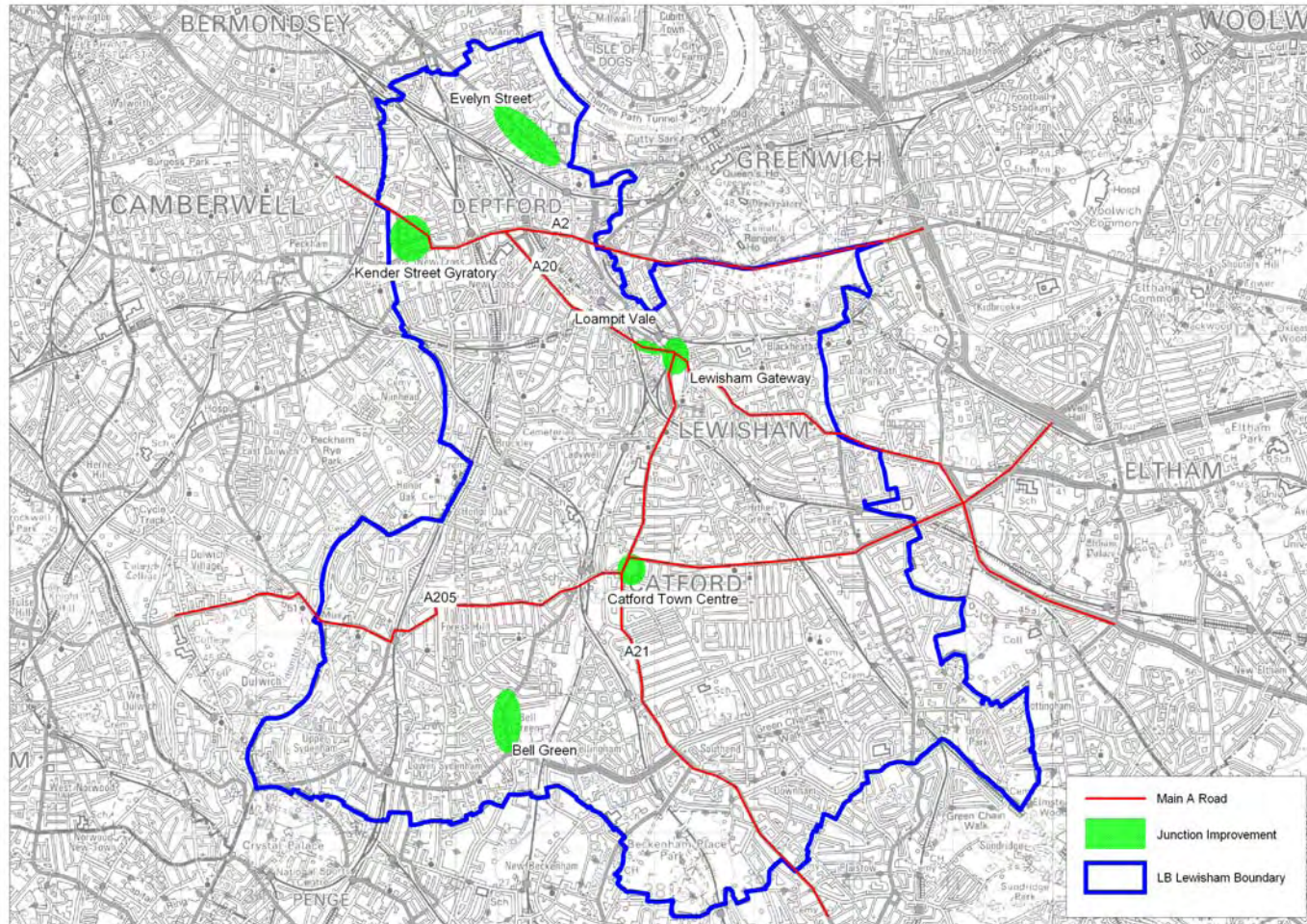
- 2010 assuming housing completions since 2007 plus implementation of the Lewisham Gateway<sup>1</sup> and Kender Street highways schemes.

<sup>1</sup> When the Lewisham Borough Wide Transport study was commenced it was assumed that the highways improvements associated with the scheme would be implemented by 2010. However as at time of writing it now appears that these improvements are likely to take place at a later date. The model results for the 2010 scenario therefore show some impacts on traffic flow associated with the Gateway highways arrangements; these are localised and do not impact on the wider highways network. This should be borne in mind when reviewing the results presented for the 2010 base year.

- 2025 Option 1 assuming implementation of all highways schemes (Lewisham Gateway, Loampit Vale, Kender Street, Catford Gyratory, Evelyn Street and Bell Green)
- 2025 Option 2 assuming implementation of all highways schemes.

- 6.2.5 Since the study was commissioned the Government Office for London (GoL) has advised that the end date for the Core Strategy is now 2026 rather than 2025. The modelling work had already been undertaken on the basis that the end date was 2025, as such all highways results are presented for 2025 rather than 2026. At first glance this would appear to be an underestimate of the future highways impacts, however the background growth included the model makes no allowance for the impacts of the recession on road traffic. The recession resulted in a fall in road traffic for the first time in 30 years (approximately 1% during 2009 nationally); as no allowance has been made for this it means that the 2025 results are likely to provide a reasonable approximation for 2026.
- 6.2.6 The highway improvement schemes included in the modelling are all local improvements focused on ameliorating traffic issues in their immediate vicinity without impacting on capacity. They are not intended to reassign strategic traffic, or displace trips onto other roads. Therefore if one or more of the highways improvement schemes listed above does not eventuate, it is unlikely that the wider network would be impacted as a result.
- 6.2.7 It should be noted that the highway models use fixed, as opposed to variable, matrices. This means that the models do not take into account any adjustment of travel behaviour that may occur when people switch to public transport, walking or cycling in response to increased levels of traffic congestion and delay. In order to examine the impact of such a shift in travel behaviour a separate sensitivity test has been undertaken to assess network performance in response to borough-wide travel planning initiatives (see sections 6.10 and 6.15).

Figure 6.1: Current and future highways infrastructure



## 6.3 Highway model

6.3.1 This section describes the key components of the model to be used in the analysis of borough-wide trip generation, distribution and assignment.

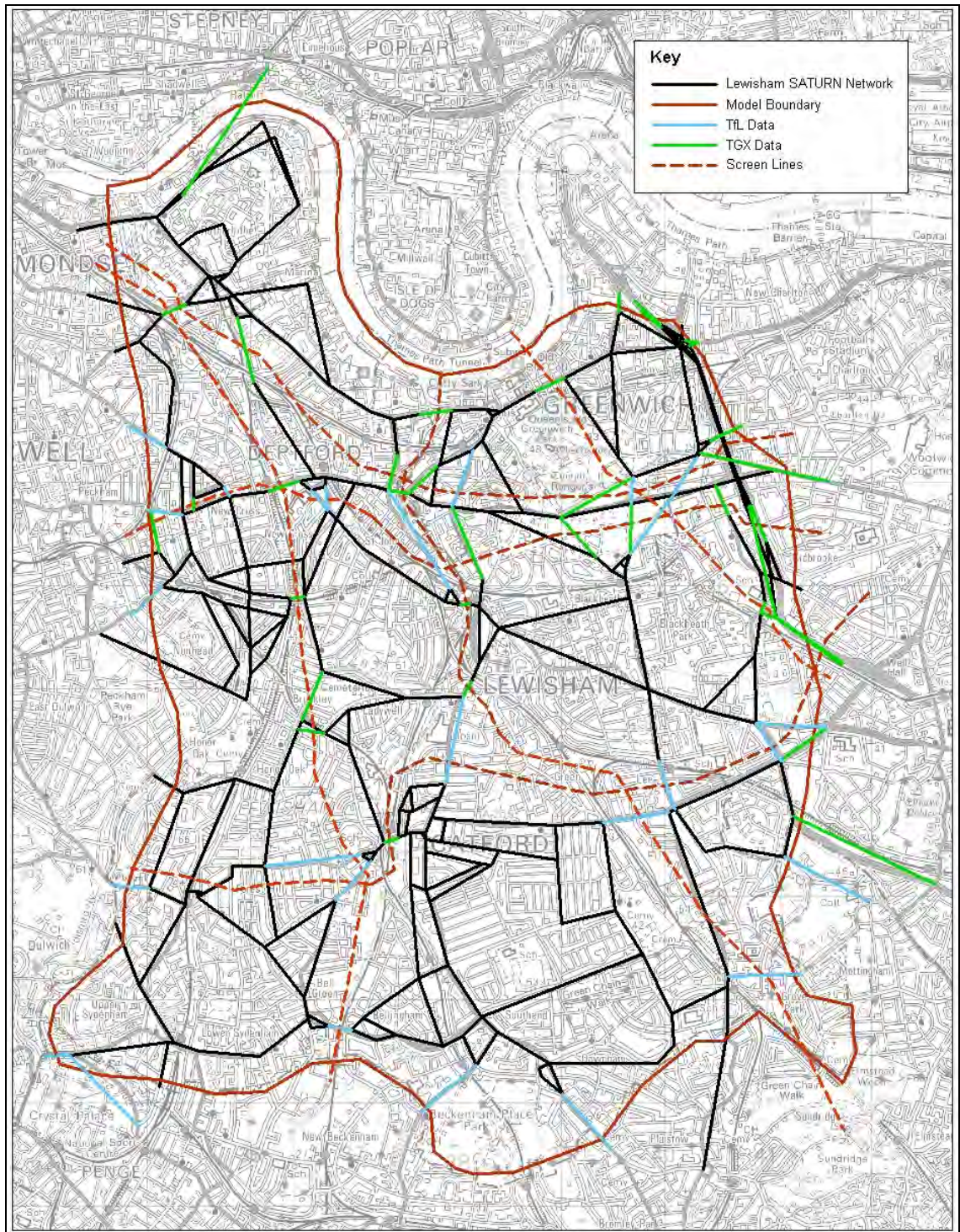
### ***Calibration of 2007 highway model***

6.3.2 As previously stated, CB have used the latest version of the TfL SATURN based highway model TGX 2007, for the AM peak hour (0800 – 0900).

6.3.3 Part of the TGX 2007 model has been cordoned to create the 2007 Lewisham model. The model study area is shown in Figure 6.2. The matrix was also cordoned from the TGX model and consists of three user classes: Cars, LV and HV.



**Figure 6.2: Data Used to Calibrate the 2007 Base Model**



6.3.4 The cordoned 2007 model network was checked against site observations using aerial photographs and mapping. As a result some network alterations were necessary. Parts of the network needed to be coded in greater detail in order for the future 2025 schemes to be modelled.

- 6.3.5 Calibration of the 2007 model was undertaken by comparing observed versus modelled values for trips passing the cordon and six screen lines within the study area; these are shown in Figure 6.2.
- 6.3.6 Data used for the calibration of the 2007 TGX model was supplemented by data provided by TfL; the location of the data used to calibrate and validate the model is also shown in Figure 6.2.

## 6.4 Model calibration and Validation

6.4.1 Model calibration is the process of adjusting and confirming values of various parameters in the base model by making use of observed data. Model validation is an assessment of the validity of a calibrated model by comparing results of the model output against independent data not used in the calibration process.

6.4.2 The assessment of model calibration centres on comparison of model output with observed flow data, be it link or turning counts, used in the matrix estimation process. Model validation extends to the comparison of independent count data as well as an assessment of the closeness of modelled and observed journey times.

6.4.3 The calibration and validation of modelled against observed flows is based on the two alternative analytic methods stipulated in Volume 12 of the DMRB:

- The GEH statistic
- Modelled over observed flows (% difference criteria)

6.4.4 The GEH statistic is a commonly used measure of the goodness of fit between modelled and observed flows. It is a form of the Chi-squared statistic that incorporates both relative and absolute errors between the two sets of data and is based on the following equation:

$$GEH = \frac{\sqrt{(M-C)^2}}{(M+C) / 2}$$

where: GEH is the GEH statistic  
M is the modelled flow, and  
C is the observed flow

6.4.5 A modelled against observed flow with a GEH value of less than 5 is deemed acceptable by the DMRB. This is the equivalent of a 95% confidence level. The second method divides modelled flows by observed flows and the resulting percentage is assessed against the criteria shown below in Table 6.1.

**Table 6.1: Calibration/Validation Criteria**

| Observed Flows (Vehicles Per Hour) | Criteria                        |
|------------------------------------|---------------------------------|
| 700 to 2700                        | Individual flows within 15%     |
| Below 700                          | Individual flows within 100 vph |
| Above 2700                         | Individual flows within 400 vph |

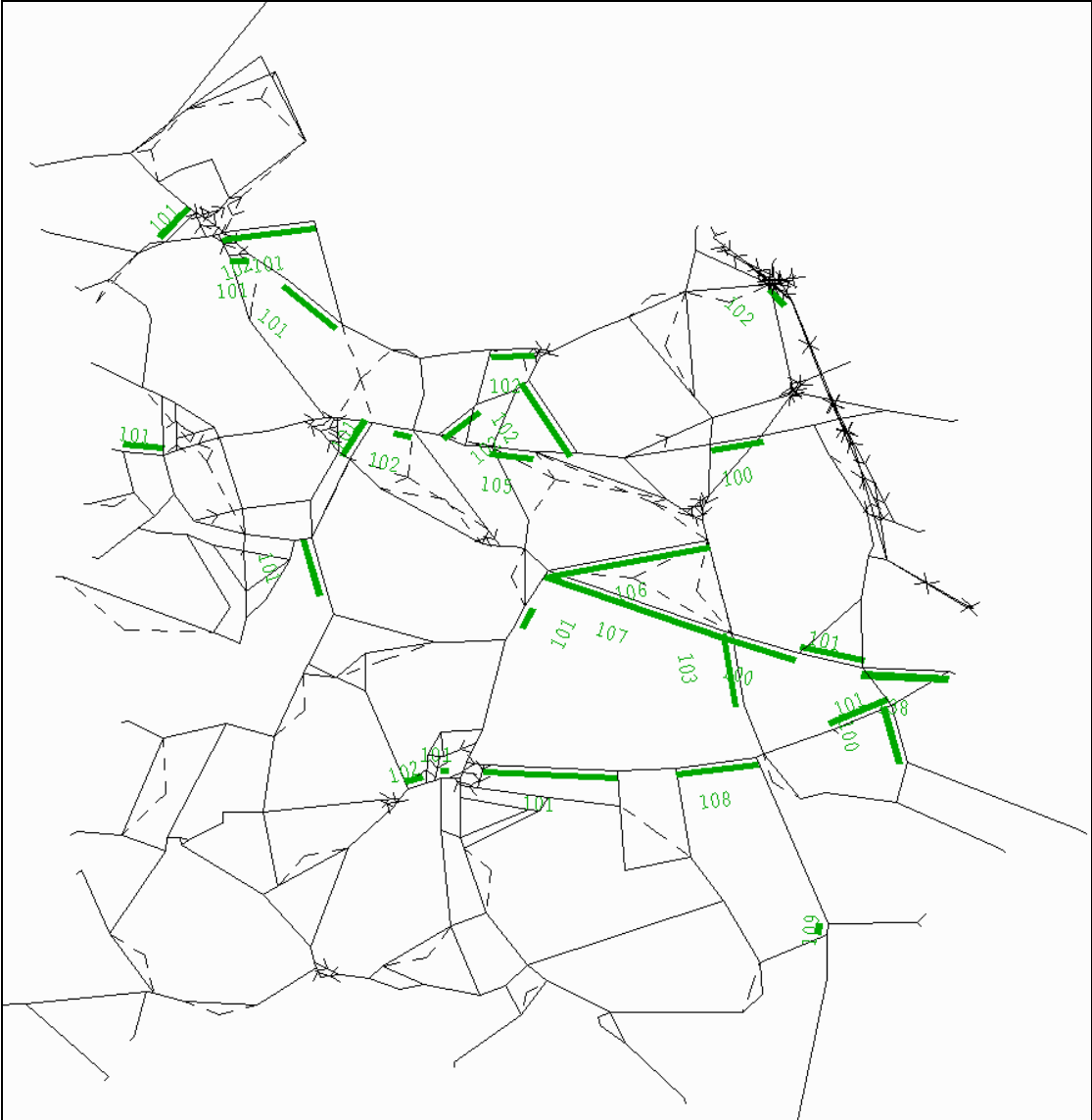
6.4.6 A matrix estimation process was undertaken in SATURN to assist with the calibration of the 2007 matrix. Table 6.2 shows the level of validation achieved for the base 2007 Lewisham model.

**Table 6.2: Calibration / Validation summary results of 2007 Lewisham Model**

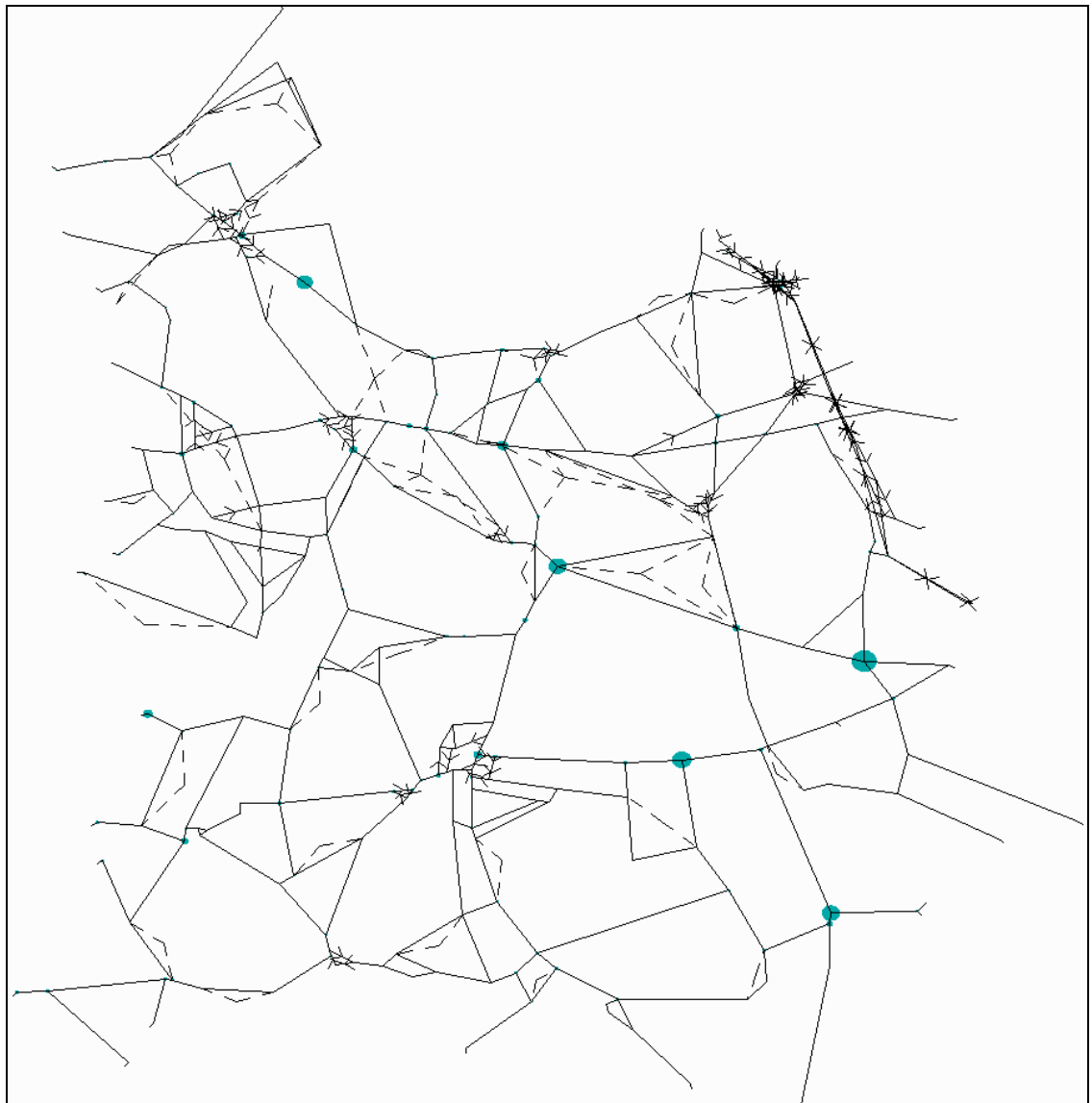
|                        |                    | % GEH Criteria | Observed Flows | Modelled Flows | % DIFF       | No of Counts | % Flow       |             | %GEH         |             |
|------------------------|--------------------|----------------|----------------|----------------|--------------|--------------|--------------|-------------|--------------|-------------|
|                        |                    |                |                |                |              |              | No of Passes | Flow %      | No of Passes | Flow %      |
| Screen Lines           | Screenline 1       | <5             | 7280           | 7148           | -1.8         | 19           | 17           | 89%         | 17           | 89%         |
|                        | Screenline 2       | <5             | 17990          | 18385          | 2.2          | 25           | 20           | 80%         | 20           | 80%         |
|                        | Screenline 3       | <5             | 14576          | 14492          | -0.6         | 16           | 14           | 88%         | 15           | 94%         |
|                        | Screenline 4       | <5             | 12280          | 12465          | 1.5          | 18           | 15           | 83%         | 15           | 83%         |
|                        | Screenline 5       | <5             | 12521          | 12547          | 0.2          | 14           | 13           | 93%         | 13           | 93%         |
|                        | Screenline 6       | <5             | 6400           | 6187           | -3.3         | 13           | 12           | 92%         | 11           | 85%         |
|                        | Average all Counts |                |                | <b>71047</b>   | <b>71224</b> | <b>0.2</b>   | <b>105</b>   | <b>91</b>   | <b>87%</b>   | <b>91</b>   |
| Cordons                | Outer Cordon       | <5             | 5633           | 5641           | 0.1          | 42           | 42           | 100%        | 42           | 100%        |
|                        | Average all Counts |                | <b>5633</b>    | <b>5641</b>    | <b>0.1</b>   | <b>42</b>    | <b>42</b>    | <b>100%</b> | <b>42</b>    | <b>100%</b> |
| Average all Study Area |                    |                |                |                |              | <b>147</b>   | <b>133</b>   | <b>90%</b>  | <b>133</b>   | <b>90%</b>  |

6.4.7 The ratio of volume of traffic over capacity (known as V/C, this is used to indicate how the capacity of the road is affected by the size of demand) for links where this ratio is greater than 1 is shown for the 2007 model in Figure 6.3, junction delays are shown in Figure 6.4.

**Figure 6.3: 2007 V/C greater than 100 (AM Peak hour)**



**Figure 6.4: 2007 Junction Delay (AM Peak hour)**



6.4.8 The 2007 model shows some congestion within the network, in particular in the westbound direction.

## 6.5 Planning assumptions

6.5.1 The TGX highway model derives most of its forecast year trip information from the most recent version of the London Transportation Studies model (LTS) - version B5.4. The LTS model covers the whole of London. LTS uses planning data from the London Plan.

### **Additional development trips**

- 6.5.2 TEMPRO<sup>2</sup> data was used to update the car matrix from the 2007 model run to 2010.
- 6.5.3 For the 2025 model run, the developments included in the housing trajectory supplied by LBL were factored by the corresponding trip rate by ward (see Chapter 4) to give the trips generated by future developments. This was then factored up by a further 2.9% to reach the TEMPRO factor for 2025. This was done in order to ensure the impact of future development was assessed in a robust manner.

## 6.6 2010 Lewisham Model

### **Network**

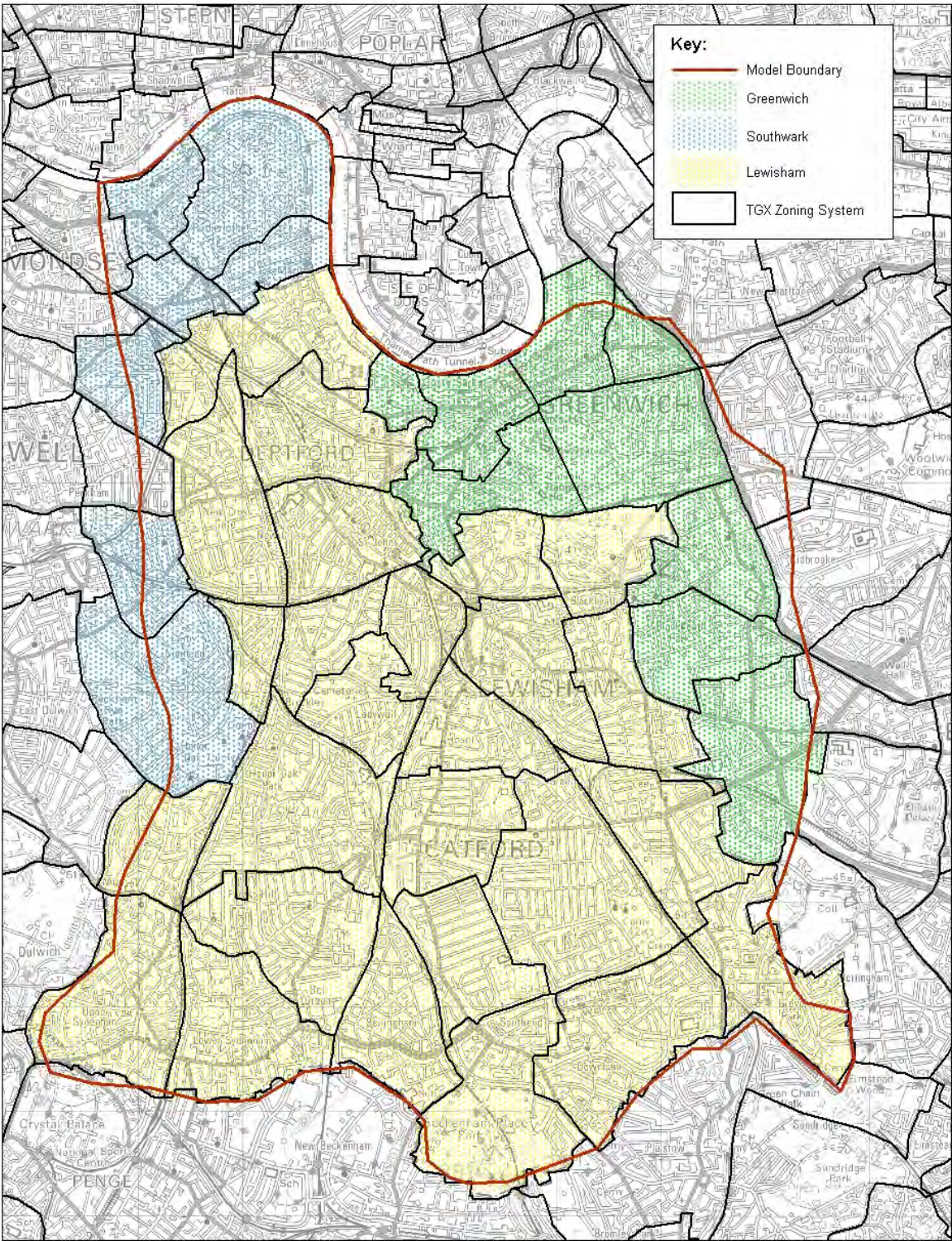
- 6.6.1 The 2010 base year network was created by updating the 2007 network with the following schemes:
1. Lewisham Gateway
  2. Kender Street Triangle
- 6.6.2 These schemes were coded into the SATURN network with the help of TRANSYT outputs and diagrams provided by LBL.
- 6.6.3 As noted earlier, it has become apparent at a late stage in the study that that the Lewisham Gateway highways scheme will not be implemented during 2010. The inclusion of the scheme in the 2010 base year network does have a localised impact on highways trips, as discussed below, however it does not distort the results overall.

### **Matrix**

- 6.6.4 The 2010 base year matrix was created using information from both TEMPRO and the TGX models (base and future).
- 6.6.5 TEMPRO data was used to update the car matrix from 2007 to 2010. The matrix was split into four sectors: Lewisham, Southwark, Greenwich and external, the areas are shown in Figure 6.5. Trip growth data was then extracted for each area from TEMPRO for the model year of 2007 and base year of 2010. For Lewisham, Southwark and Greenwich the trip growth factors came from a study area of the respective Local Authority, for external trips, the area used was London. The TEMPRO growth factors used for the car matrices are shown in Table 6.3.

<sup>2</sup> TEMPRO is the output of the Department for Transport's National Trip End Model (NTEM) that provides projections of growth over time for use in local and regional transport models. It presents projections of growth in planning data, car ownership, and resultant growth in trip-making by different modes of transport in a nationally-consistent way to allow consistency in testing transport proposals, and reducing risk of optimism bias.

Figure 6.5: TGX Zoning System



**Table 6.3: Car Trip Growth Factors – TEMPRO**

|             | Lewisham | Southwark | Greenwich | External |
|-------------|----------|-----------|-----------|----------|
| 2007 - 2010 | 103.7%   | 105.2%    | 106.0%    | 104.3%   |
| 2010 - 2025 | 112.1%   | 117.3%    | 113.7%    | 112.4%   |

6.6.6 TEMPRO does not give growth factors for LV and HV trips. In order to create these matrices the trip totals by area for LV and HV were output from the TGX 2007 and 2021 models. The growth factors used in these (by area) were then proportioned to give 2007 to 2010 factors, these growth values were then applied to the 2007 LV and HV matrices. The increase in number of LV and HV trips is shown in Table 6.4, the growth factors are shown in Table 6.5.

**Table 6.4: Increase in LV and HV Trips**

|                | Lewisham | Southwark | Greenwich | External |
|----------------|----------|-----------|-----------|----------|
| LV 2007 - 2010 | 20       | 8         | 20        | 103      |
| LV 2010 - 2025 | 101      | 45        | 110       | 583      |
| HV 2007 - 2010 | 13       | 3         | 2         | 35       |
| HV 2010 - 2025 | 64       | 14        | 11        | 189      |

**Table 6.5: Percentage Growth in LV and HV Trips**

|                | Lewisham | Southwark | Greenwich | External |
|----------------|----------|-----------|-----------|----------|
| LV 2007 - 2010 | 100.8%   | 103.4%    | 103.2%    | 104.3%   |
| LV 2010 - 2025 | 104.1%   | 118.4%    | 116.9%    | 123.2%   |
| HV 2007 - 2010 | 100.8%   | 102.0%    | 100.8%    | 102.5%   |
| HV 2010 - 2025 | 103.9%   | 110.1%    | 104.3%    | 113.1%   |

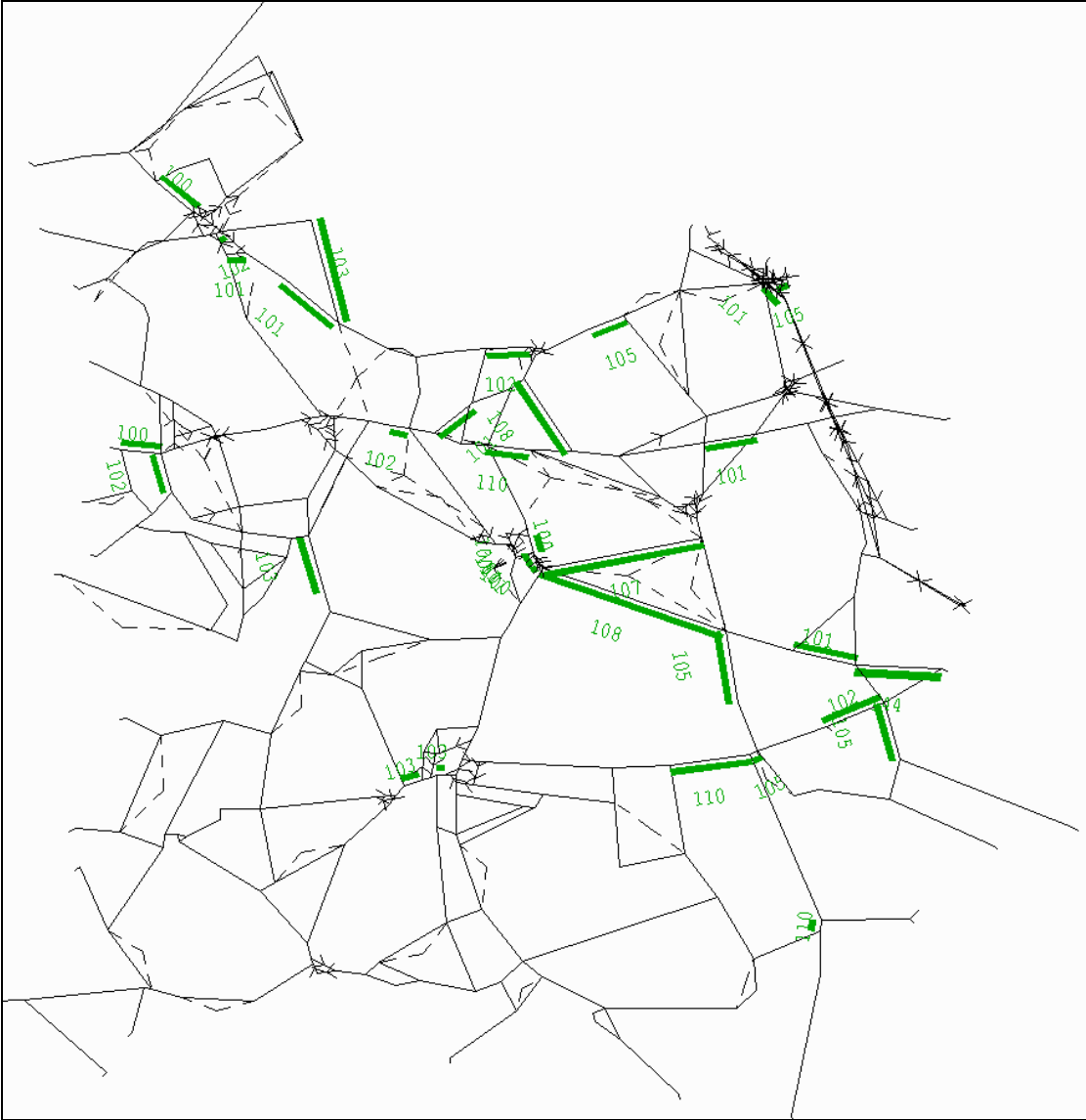
## 6.7 2010 highway forecasts

6.7.1 The ratio of volume of traffic over capacity (V/C) for links where this ratio is greater than 1 is shown for the 2010 model in Figure 6.6, junction delays are shown in Figure 6.7.

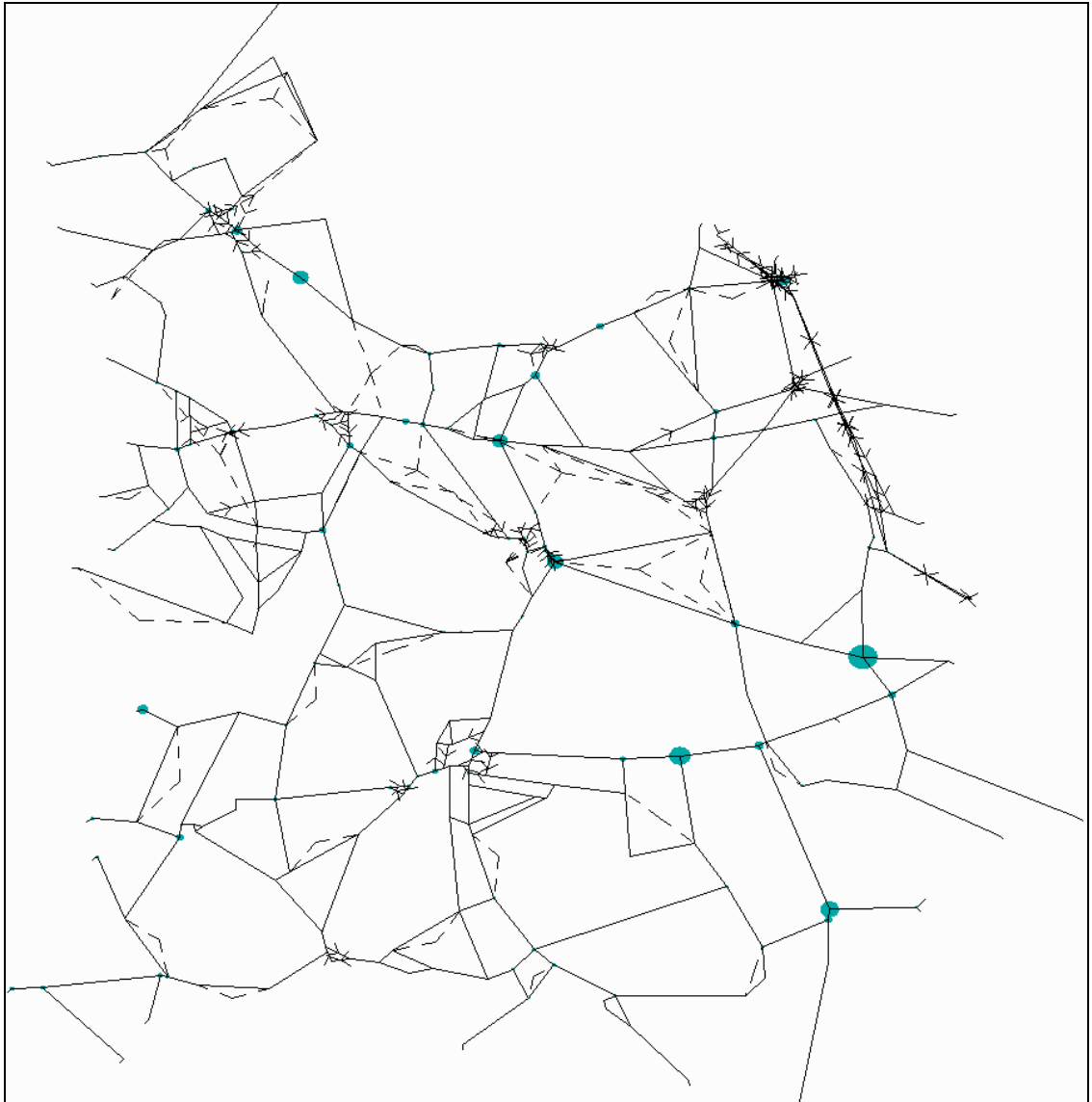
6.7.2 A few minor changes to signal timings were made within the 2010 network in order to obtain more realistic results.



**Figure 6.6: 2010 V/C greater than 100 (AM peak hour)**



**Figure 6.7: 2010 Junction Delay (AM peak hour)**



6.7.3 These figures show that the level of congestion increases in certain parts of LBL, in particularly in the westbound direction on the A20 to Lewisham 'Centre' and westbound on the A2. The increase in congestion can mainly be attributed to the growth in the matrix between 2007 and 2010, however in the area around Lewisham centre, the extra congestion is also created by the Lewisham Gateway scheme. As mentioned earlier the implementation of the Gateway scheme has now been delayed, so this localised impact is unlikely to occur during 2010.

## 6.8 2025 Lewisham Model

### **Network**

6.8.1 The 2010 network was updated to include the following schemes:

1. Catford Gyratory
2. Loampit Vale

6.8.2 The network is not detailed enough to model the minor changes made as part of the Bell Green schemes. Evelyn Street (Convoys Wharf) has also not been included as the modifications to junctions here, although not yet agreed, are understood by CB to be capacity neutral and are unlikely to result in any reassignment of traffic.

6.8.3 The changes to the network for the Catford Gyratory and Loampit Vale schemes were made with the aid of TRANSYT as well as scheme diagrams.

6.8.4 It should be noted that subsequent to updating the model network and completing the modelling work it has become apparent that the Catford Gyratory scheme is unlikely to be implemented during the study period. However the scheme is primarily to facilitate wider environmental improvements and is effectively capacity neutral in terms of traffic. It is not anticipated to result in the redistribution of highways trips over a wider area and therefore is felt to have no significant impact on the model results.

### **Matrix**

6.8.5 To create the 2025 car matrices, the developments shown in Appendix A were factored by the corresponding trip rate by ward (see Chapter 4) to give the development trips. These trips were assigned to the TGX zone in which the developments are planned, this matrix then underwent a Furnessing<sup>3</sup> process.

6.8.6 After Furnessing, the car matrix for Lewisham showed an 8.9% increase when compared to the 2010 matrix, this was then factored up by 2.9% to reach the TEMPRO factor, shown in Table 6.3 of 12.1%. The matrix areas outside of Lewisham were growthed using the TEMPRO data.

6.8.7 As well as trip data, TEMPRO also provides household data, as a check, the increase in the number of households for the period 2010 – 2025 was 15,414 which matches quite closely the 16,896 households which make up the development trips produced in this study.

6.8.8 TGX factors were used to create the LV and HV matrices; the same method was used as creating the 2010 LV and HV matrices. The increase in trips, and growth factors used are shown in Table 6.4 and Table 6.5.

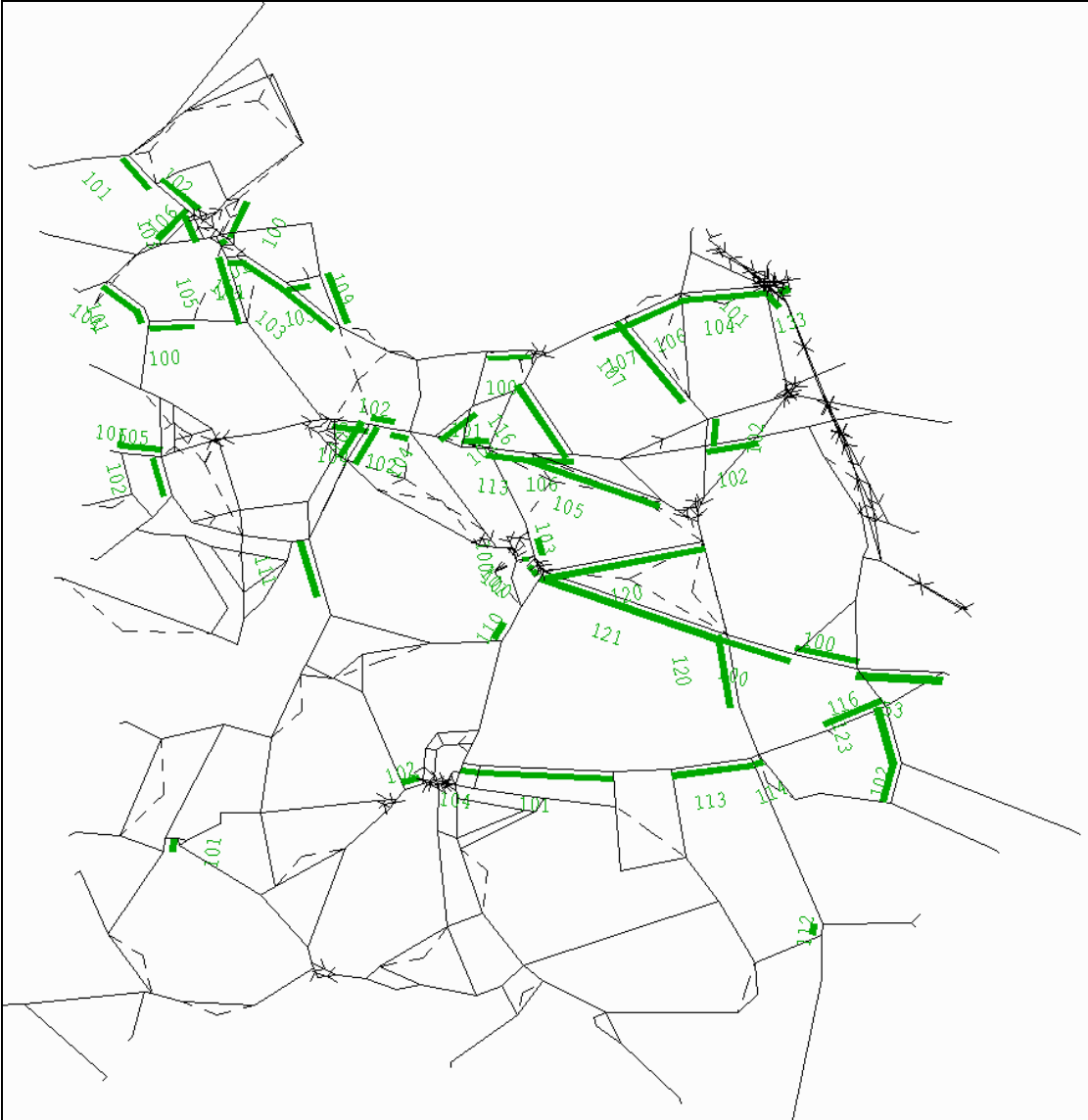
## 6.9 Highway impacts of Option 1 – 2025 no modal shift

6.9.1 The ratio of volume of traffic over capacity (V/C) for links where this ratio is greater than 1 is shown for the 2025 model in Figure 6.8, junction delays are shown in Figure 6.9.

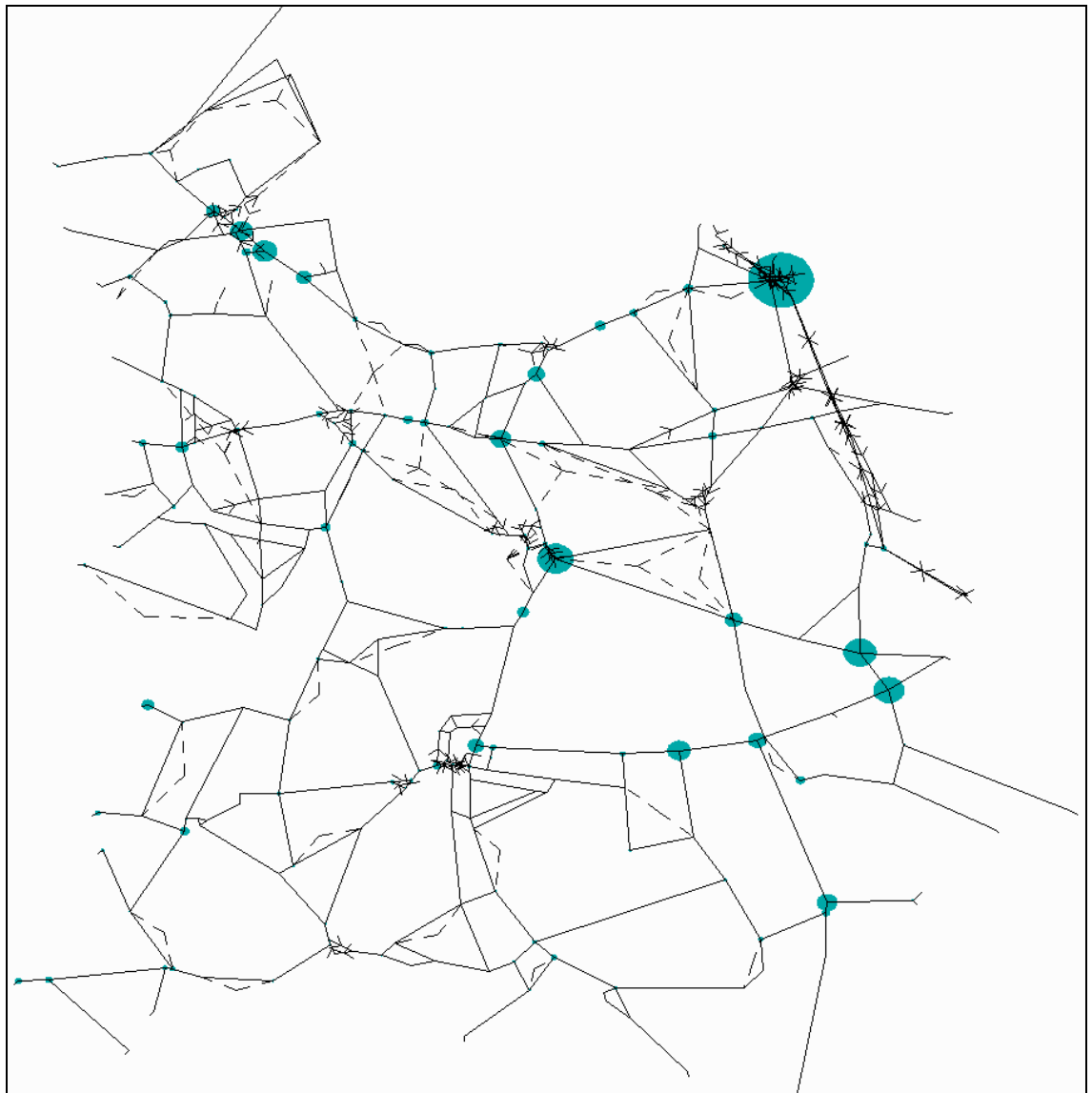
6.9.2 A few minor changes to signal timings were made within the 2025 network in order to obtain more realistic results.

<sup>3</sup> The addition of trips to the matrix as a result of new developments alters the pattern of trip distribution across zones. Furnessing is a process which aims to match the trip ends for origin and destination trips by separately and repeatedly factoring origin and destination trips until the matrix converges and the number of origin and destination trips are close (often within a few trips).

**Figure 6.8: 2025 V/C greater than 100 – Option 1 – no modal shift (AM peak hour)**



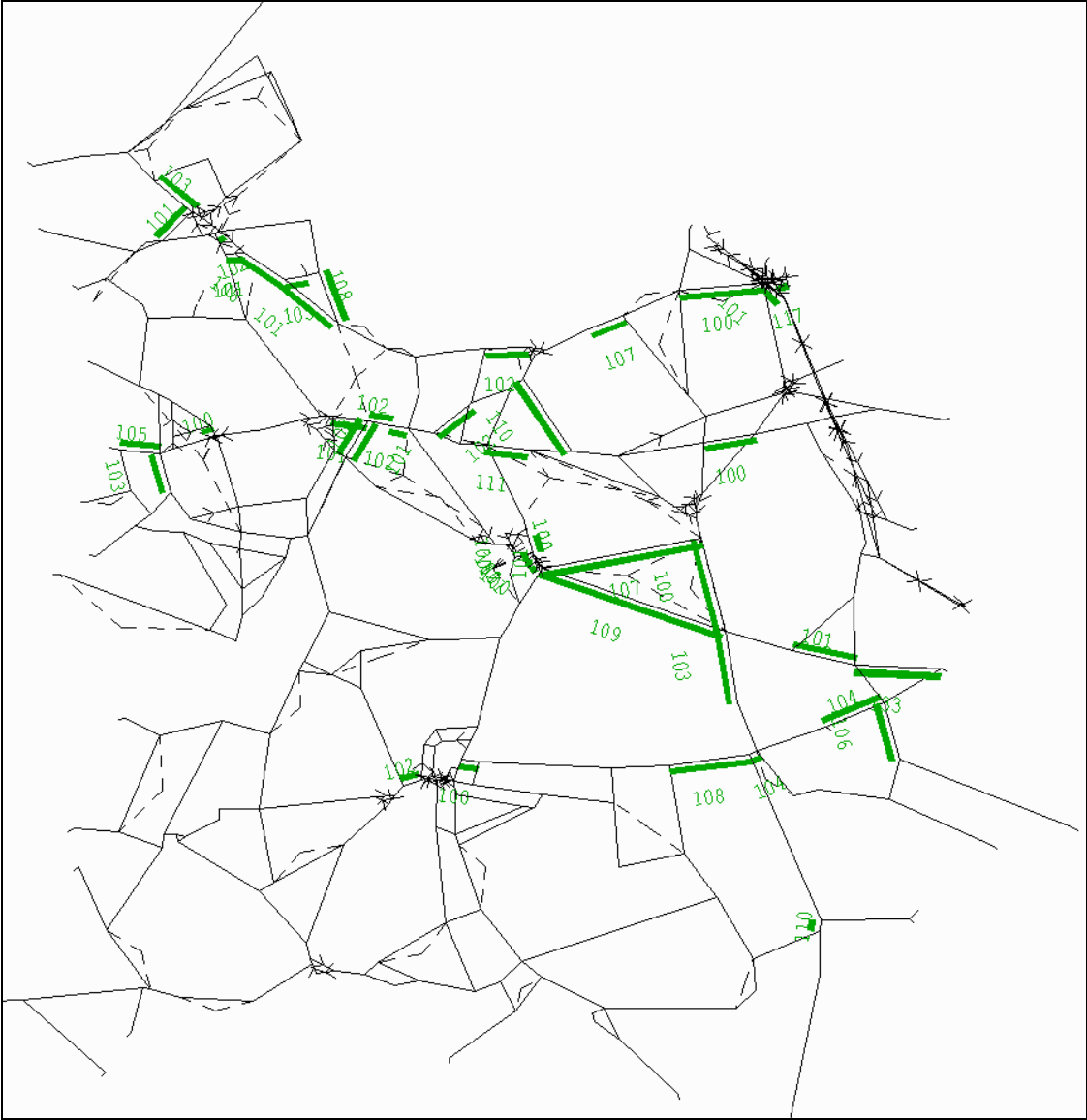
**Figure 6.9: 2025 Junction Delay – Option 1 – no modal shift (AM peak hour)**



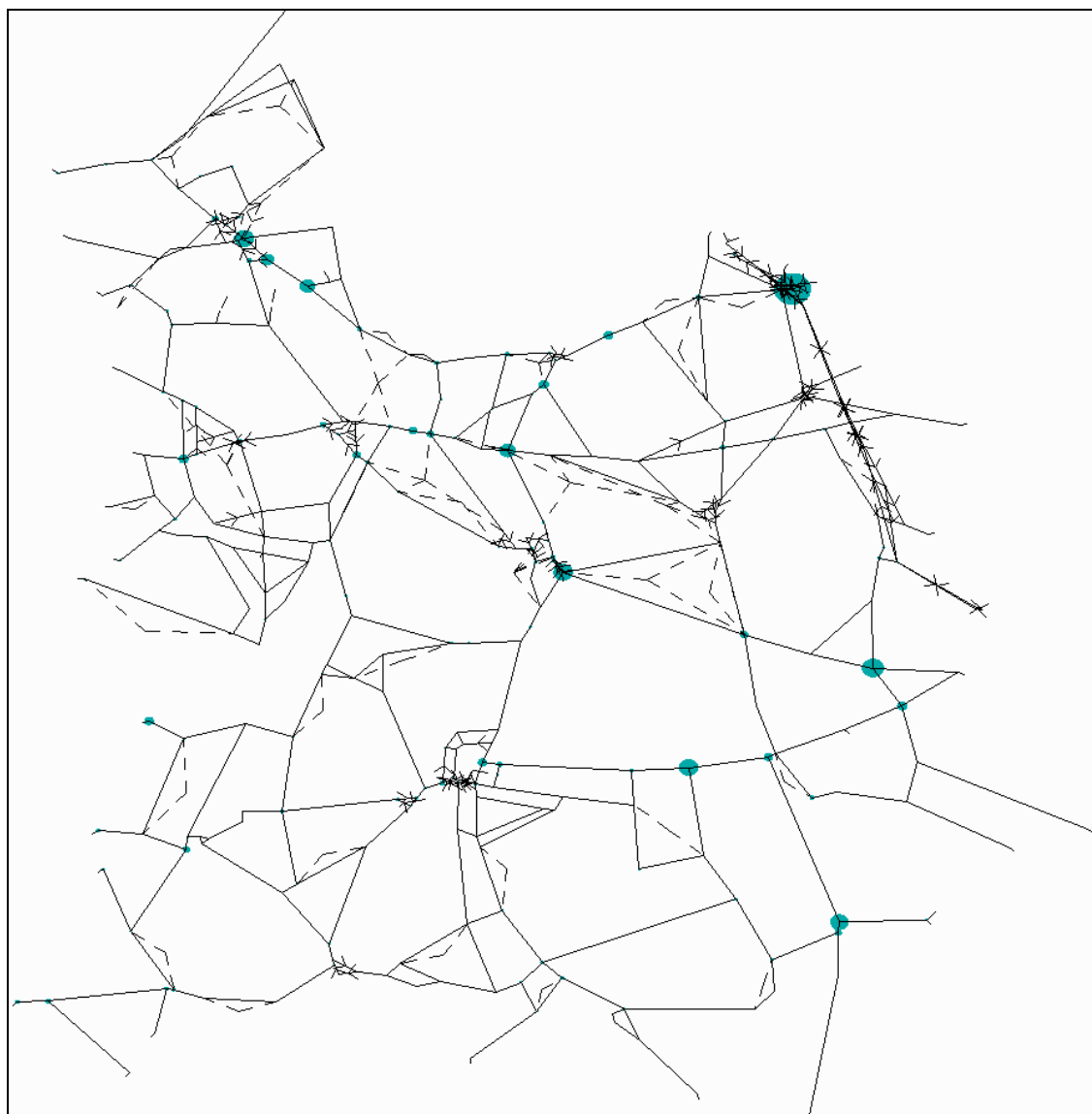
## 6.10 Highways Impacts of Option 1 – 2025 with modal shift

- 6.10.1 A sensitivity test was carried out whereby the whole 2025 car matrix was reduced by 11%. This is in line with the modal shift target for LBL as discussed in Chapter 6. An 11% reduction represents about 4,600 car trips.
- 6.10.2 This test has been carried out in order to assess the impact of changed travel behaviour occurring when people switch to public transport, walking or cycling in response to increased levels of traffic congestion and delay.
- 6.10.3 The ratio of volume of traffic over capacity (V/C) for links where this ratio is greater than 1 is shown for the 2025 Reduced Matrix (RM) model in Figure 6.10, junction delays are shown in Figure 6.11. There is a significant reduction in the numbers of links and junctions with V/C and junctions.

Figure 6.10: 2025 V/C greater than 100 – Option 1 with modal shift (AM peak hour)



**Figure 6.11: 2025 Junction Delay – Option 1 with modal shift (AM peak hour)**



## 6.11 Demand vs. Actual Flow – Option 1 no modal shift

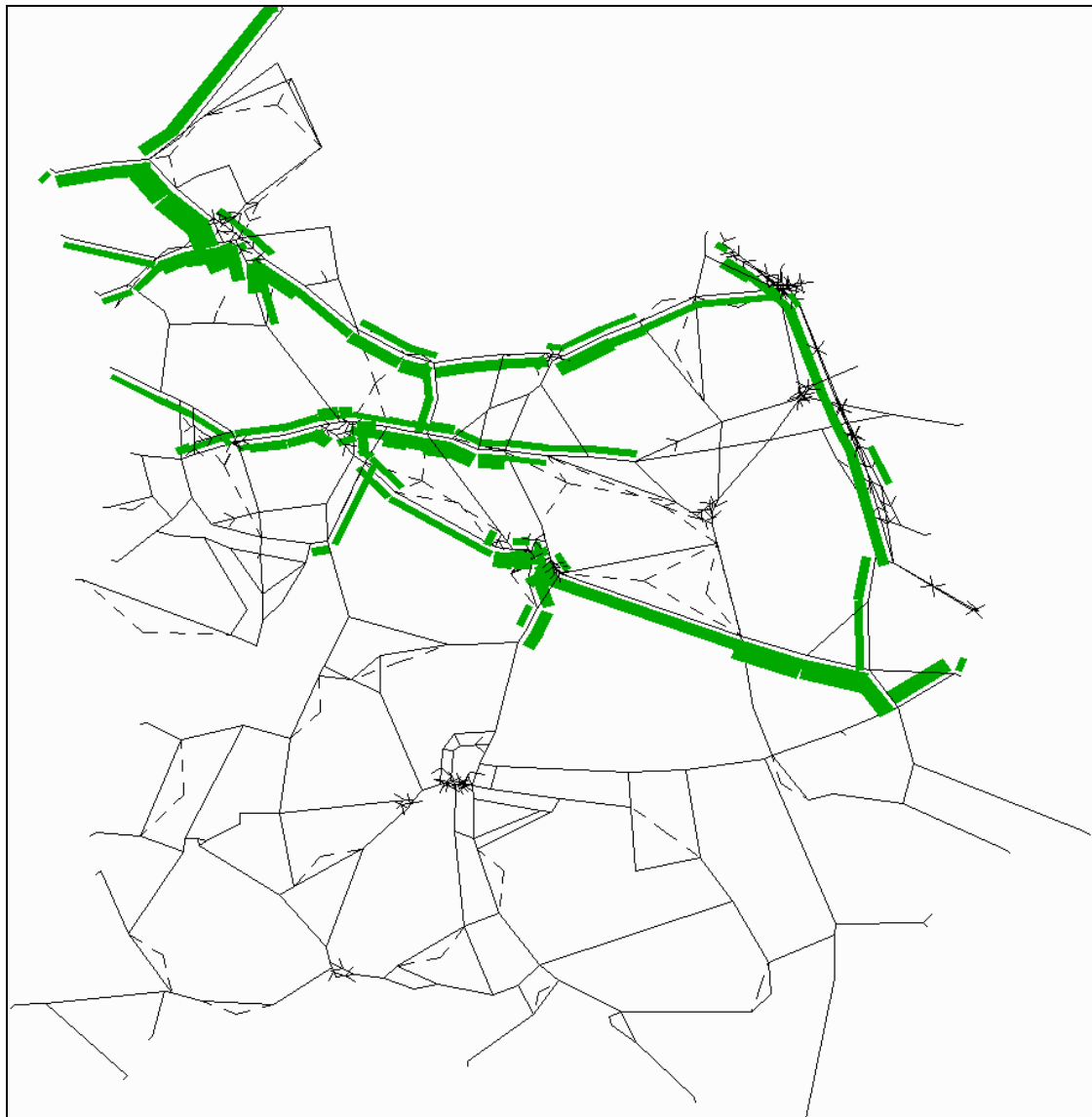
6.11.1 For all four models the demand flow and actual flow were recorded. The results are shown in Table 6.6.

**Table 6.6: Comparison of Demand and Actual Flows (AM Peak hour)**

| Model   | Demand | Actual | % Difference |
|---------|--------|--------|--------------|
| 2007    | 45,086 | 44,501 | -1.3%        |
| 2010    | 46,797 | 45,884 | -2.0%        |
| 2025    | 52,659 | 49,417 | -6.2%        |
| 2025 RM | 48,013 | 46,576 | -3.0%        |

- 6.11.2 A difference in demand versus actual flow of over 5% indicates that the network is over capacity, with many trips unable to access the network and complete the trip within the simulation time. The most affected model was that for 2025 where 6.2% of the matrix could not access the network. This is around 3,242 vehicles trips. The effect of this is that these trips would shift to outside of the peak hour, use alternative routes, or switch to alternative modes.
- 6.11.3 Below, Figure 6.12 shows the difference between the demand and actual flows for the 2025 model. It can be seen that the most affected areas are in the north of the borough.

**Figure 6.12: Comparison of Demand vs Flow 2025 – Option 1 – no modal shift**





## 6.12 Model Summary Statistics – Option 1 2025

6.12.1 Summary statistics from the four SATURN models are shown in Table 6.7; comparisons between certain models are shown in Table 6.8.

**Table 6.7: Model Summary Statistics – Option 1 (AM peak hour)**

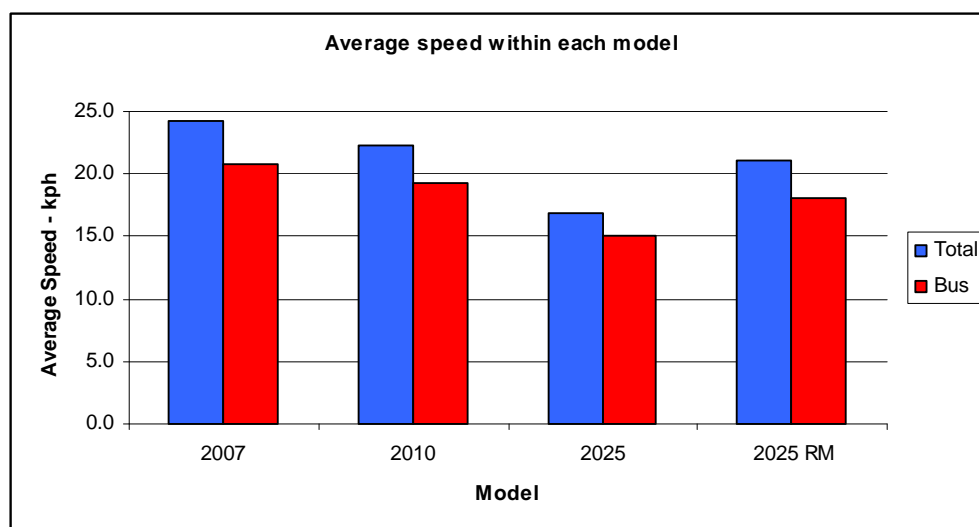
|              |                             | 2007        | 2010        | 2025        | 2025 RM     |
|--------------|-----------------------------|-------------|-------------|-------------|-------------|
| <b>Total</b> | Total Travel Time (PCU.Hrs) | 7,092       | 8,030       | 12,268      | 8,717       |
|              | Travel Distance (PCU.Km)    | 17,1630     | 17,9250     | 205,541     | 184,255     |
|              | Average Speed (Kph)         | <b>24.2</b> | <b>22.3</b> | <b>16.8</b> | <b>21.1</b> |
| <b>Bus</b>   | Total Travel Time (PCU.Hrs) | 180         | 200         | 256         | 215         |
|              | Travel Distance (PCU.Km)    | 3,743       | 3,861       | 3,862       | 38,62       |
|              | Average Speed (Kph)         | <b>20.8</b> | <b>19.3</b> | <b>15.1</b> | <b>18.0</b> |

**Table 6.8: Model Comparisons – Option 1 (AM peak hour)**

|              |                             | 2010 vs 2007 | 2025 vs 2010 | 2025 RM vs 2010 |
|--------------|-----------------------------|--------------|--------------|-----------------|
| <b>Total</b> | Total Travel Time (PCU.Hrs) | 13%          | 53%          | 9%              |
|              | Travel Distance (PCU.Km)    | 4%           | 15%          | 3%              |
|              | Average Speed (Kph)         | <b>-8%</b>   | <b>-25%</b>  | <b>-5%</b>      |
| <b>Bus</b>   | Total Travel Time (PCU.Hrs) | 11%          | 28%          | 7%              |
|              | Travel Distance (PCU.Km)    | 3%           | 0%           | 0%              |
|              | Average Speed (Kph)         | <b>-7%</b>   | <b>-22%</b>  | <b>-7%</b>      |

6.12.2 The results above show that average speed for total traffic is expected to decrease between 2010 and 2025 by 5.5kph, however with the expected modal shift, this drop in speed is reduced to 1.2kph. The impact of the growth in traffic expected between 2010 and 2025 on the average speed for total traffic and buses, as well as the effect of the modal shift is shown in Figure 6.13.

**Figure 6.13: Average Speed for Total Traffic and Buses – Option 1 (AM peak hour)**

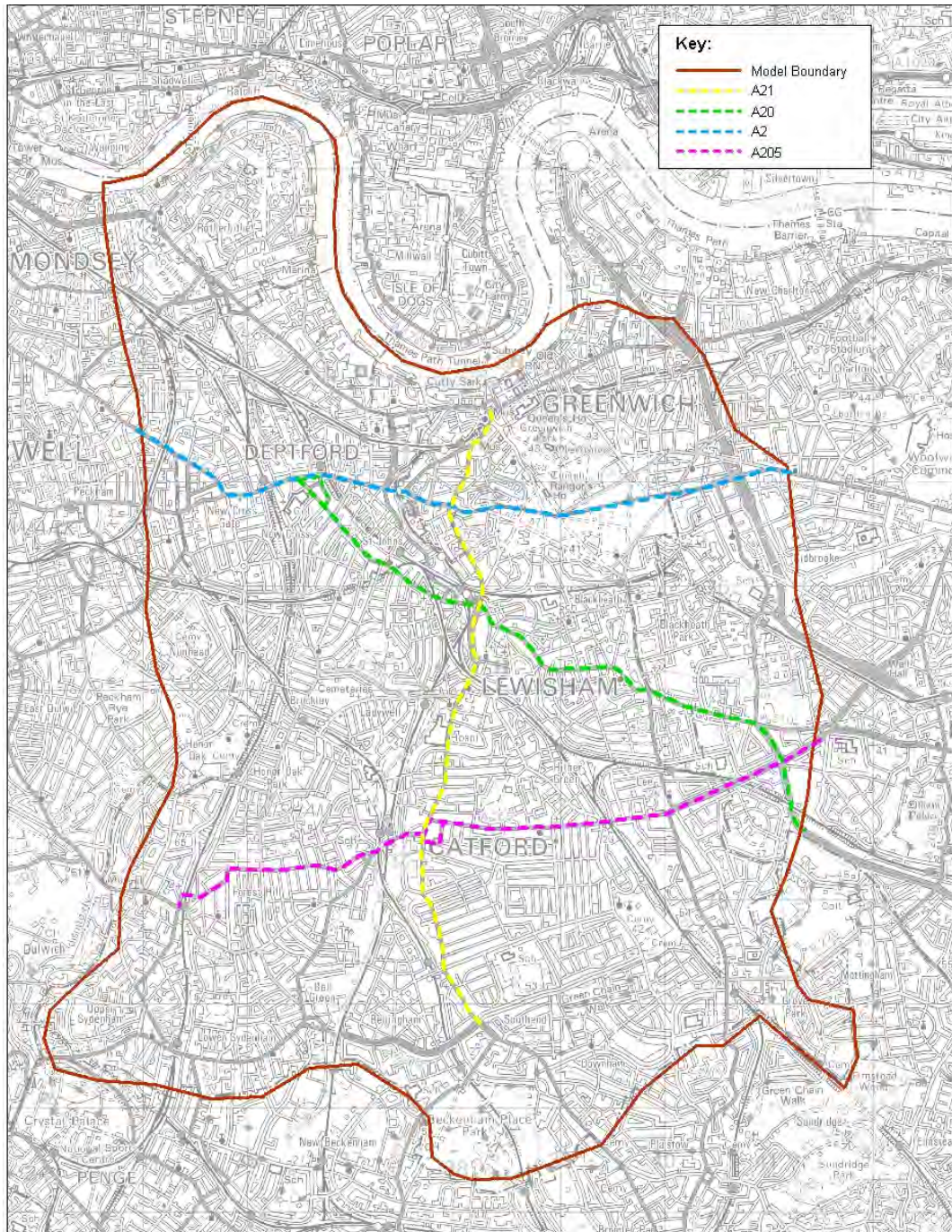


6.13 Impact on Journey Time along Strategic Roads – Option 1

6.13.1 An analysis was undertaken to output the journey times along strategic roads within the borough in order to further assess the impact of growth in traffic for future year schemes within LBL.

6.13.2 The routes analysed are shown below in Figure 6.14.

**Figure 6.14: Journey Time Routes**

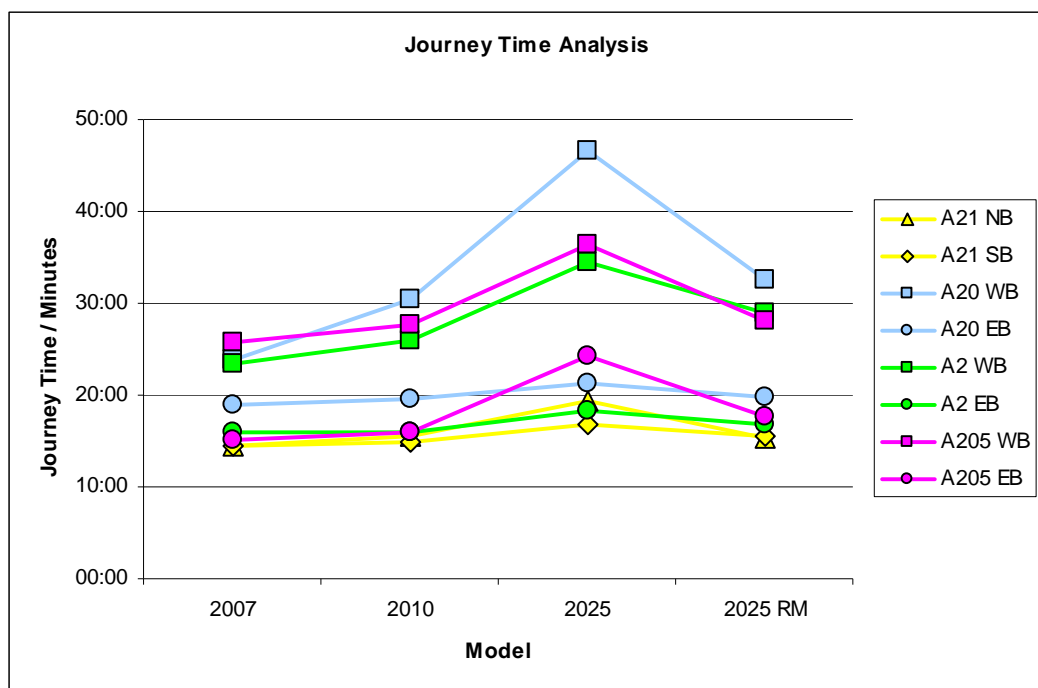


6.13.3 The results of the journey time analysis are shown in Table 6.9.

**Table 6.9: Journey Time Results (shown in minutes) – Option 1 (AM peak hour)**

| Road  | Direction | 2007     | 2010     | 2025     | 2025 RM  |
|-------|-----------|----------|----------|----------|----------|
| A21   | NB        | 14:27    | 15:30    | 19:18    | 15:24    |
|       | SB        | 14:29    | 14:58    | 16:54    | 15:28    |
| A20   | WB        | 23:50    | 30:31    | 46:31    | 32:39    |
|       | EB        | 19:02    | 19:30    | 21:13    | 19:50    |
| A2    | WB        | 23:22    | 25:56    | 34:33    | 28:51    |
|       | EB        | 15:59    | 15:56    | 18:19    | 16:51    |
| A205  | WB        | 25:42    | 27:36    | 36:27    | 28:10    |
|       | EB        | 15:09    | 16:01    | 24:14    | 17:34    |
| Total |           | 02:32:00 | 02:45:58 | 03:37:29 | 02:54:47 |

**Figure 6.15: Strategic Route Journey Time Comparisons – Option 1 (AM peak hour)**



6.13.4 The journey time analysis results for strategic routes in LBL show higher journey times are to be expected in the 2025 model compared to 2010. As expected, journey times are lower for the 2025 reduced matrix model when compared to the 2025 model, however the journey times do not quite reach the timings estimated using the 2010 model.

6.13.5 The journey time analysis undertaken also highlights longer journey times in the westbound direction for all models, compared to the eastbound direction. This is to be expected as modelling has only been undertaken for the AM peak hour, when the predominant traffic flow is generally westbound, towards central London. It is likely that the PM peak hour would show a reversal of this trend, with greater volumes of eastbound traffic, although the PM peak hour is less intensely trafficked than the AM peak hour.

6.13.6 Figure 6.16 illustrates the origins and destinations of highways trips by ward for Option 1, compared to the 2007 and 2010 base years. The most significant growth in origin traffic occurs in the Evelyn ward, although Lewisham Central has the highest number overall. The most significant growth in destination traffic also occurs in Evelyn, however Lewisham Central and Rushey Green still attract the highest numbers of trips.

**Figure 6.16: Origin and Destination Highway Trip Data – Option 1 (AM peak hour)**



6.14 Highway Impacts of Option 2 - 2025 – No Modal Shift

6.14.1 The highway network used for Option 2 was identical to Option 1. The trip matrices for Option 2 were the same as those for Option 1 with the exception of the car trips matrix, which was derived by excluding the following five development sites from the Option 1 car trip matrix:

1. Childers St / Arklow Road
2. Oxestalls Road
3. Plough Way
4. Grinstead Road
5. Surrey Canal Road

6.14.2 Table 6.10 shows total car trips (generated/attracted) which have been excluded from Option 2. The total car trips have reduced from 42,240 to 41,630 trips, a total reduction of 1.44%.

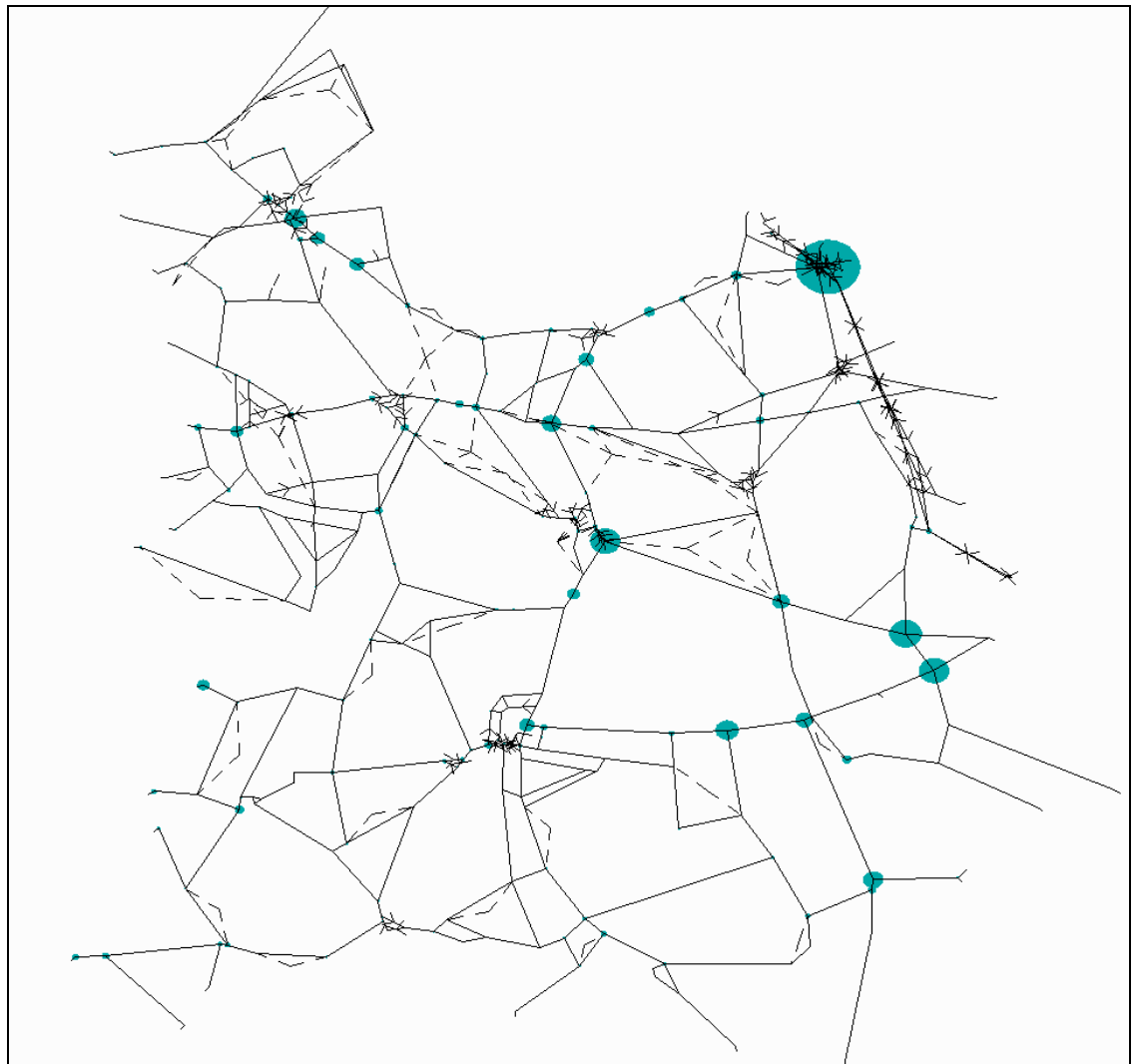
**Table 6.10: Car Trips from Development Sites Excluded from Option 2**

| Site         | Name                      | Ward      | Development Units | Car Trips Origin | Car Trips Destination |
|--------------|---------------------------|-----------|-------------------|------------------|-----------------------|
| 9            | Childers St/Arklow Road   | Evelyn    | 200               | 22               | 7                     |
| 11           | Oxestalls Road            | Evelyn    | 950               | 106              | 35                    |
| 12           | Plough Way (Cannon Wharf) | Evelyn    | 750               | 84               | 28                    |
| 43           | Grinstead Road            | New Cross | 160               | 16               | 5                     |
| 44           | Surrey Canal Road         | New Cross | 2,430             | 247              | 81                    |
| <b>Total</b> |                           |           | <b>4,490</b>      | <b>475</b>       | <b>156</b>            |

6.14.3 The ratio of volume of traffic over capacity (V/C) for links where this ratio is greater than 1 is shown for the 2025 model in Figure 6.17. Junction delays are shown in Figure 6.18.



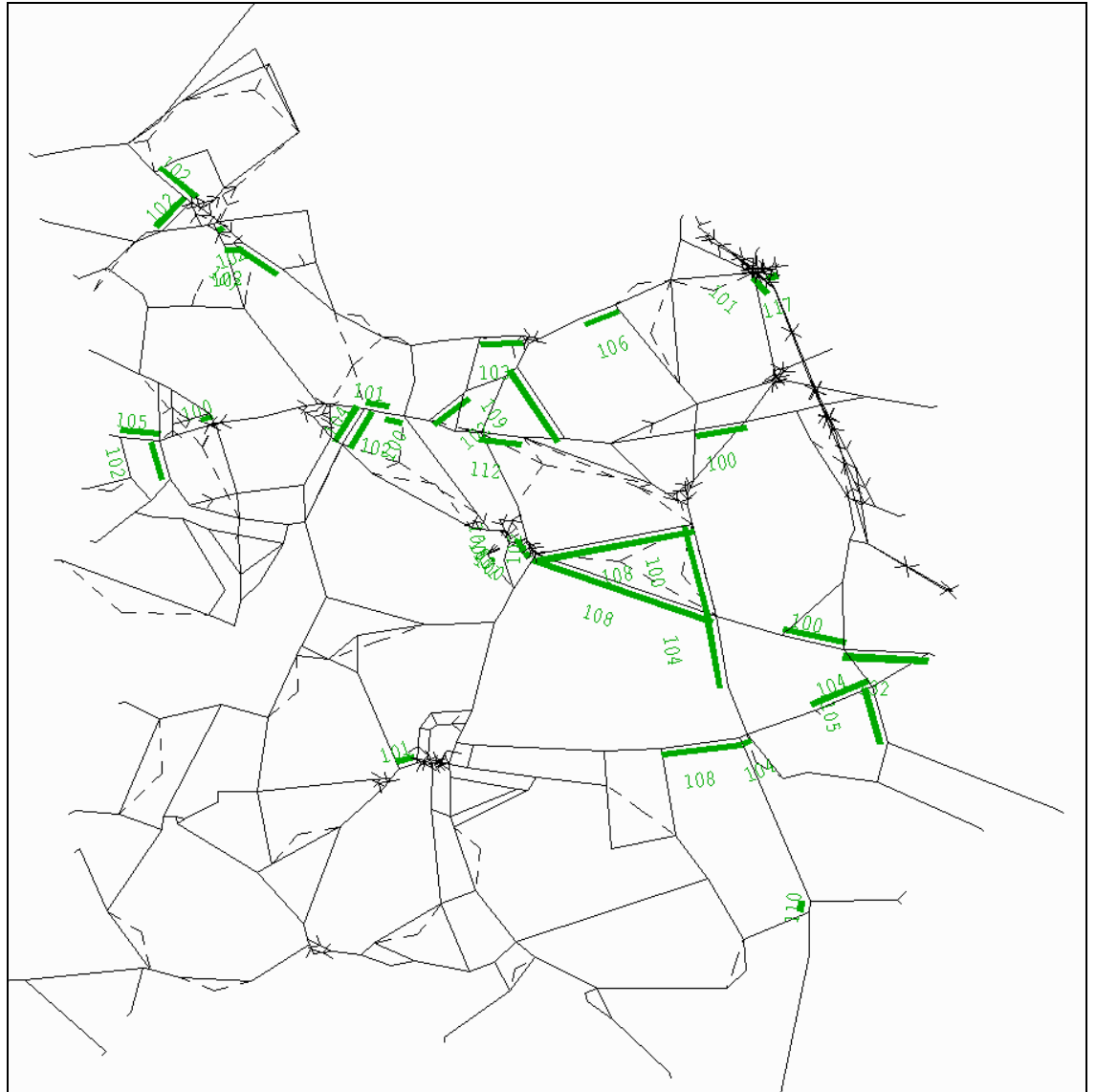
**Figure 6.18: 2025 Junction Delay – Option 2 no modal shift (AM peak hour)**



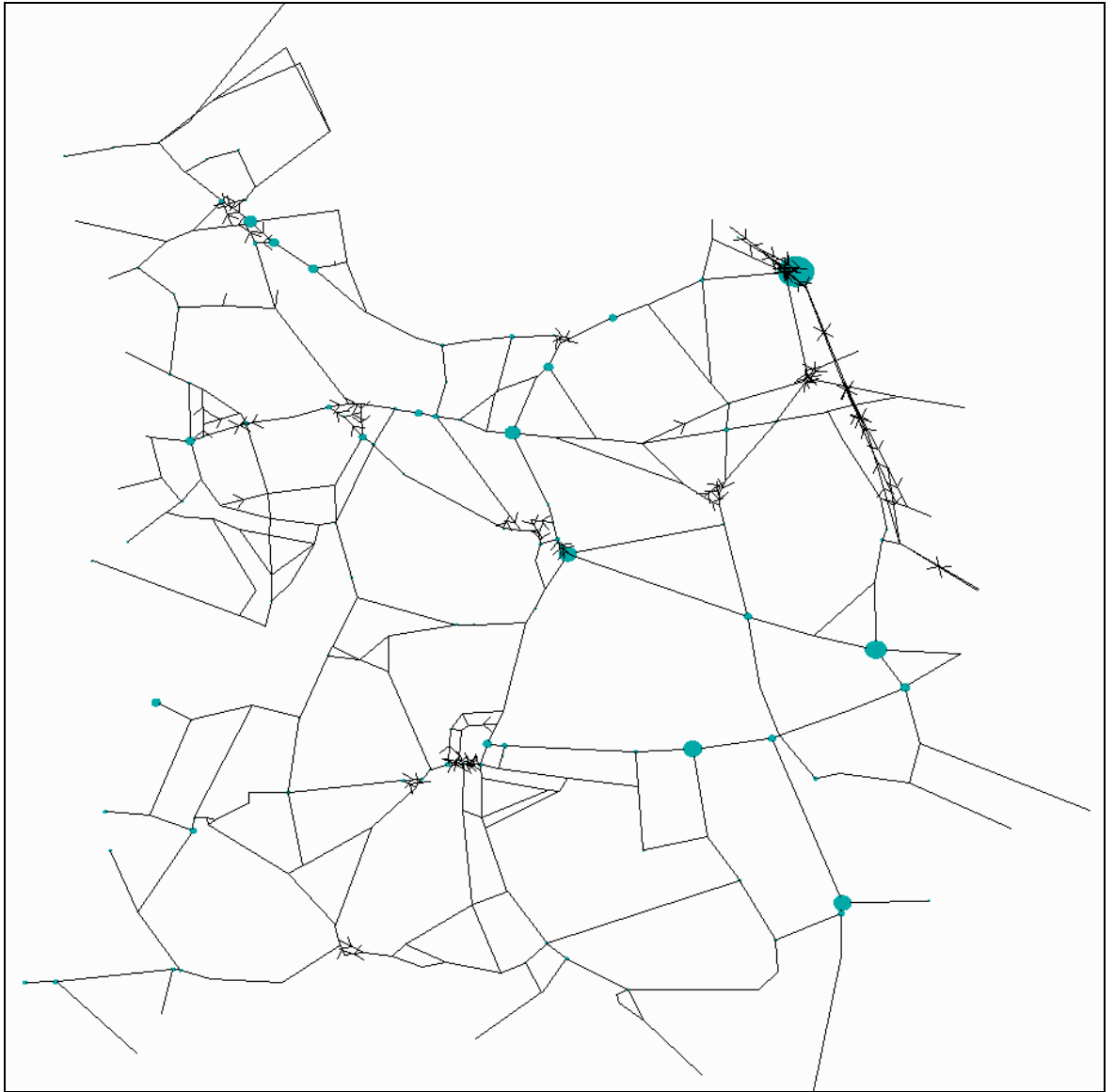
- 6.14.4 A separate figure showing the origin and destination highway trip data for Option 2 (similar to that shown in Figure 6.16 for Option 1) has not been created as the changes made to the matrices, as described at point 16.4.1 above, were not significant enough for an illustration to highlight the difference.
- 6.15 Highways Impacts of Option 2 – 2025 with Modal Shift
  - 6.15.1 As per Option 1, a sensitivity test was carried out for Option 2 whereby the whole 2025 car matrix was reduced by 11%. The reduction represents about 4,600 car trips.
  - 6.15.2 The ratio of volume of traffic over capacity (V/C) for links where this ratio is greater than 1 is shown for the 2025 Reduced Matrix (RM) model in Figure 6.19, junction delays are shown in Figure 6.20. These figures highlight that there is a significant reduction in the numbers of links and junctions that are over capacity.



**Figure 6.19: 2025 V/C greater than 100 – Option 2 –with modal shift (AM peak hour)**



**Figure 6.20: 2025 Junction Delay – Option 2 with modal shift (AM peak hour)**



## 6.16 Demand vs. Actual Flow – Option 2

6.16.1 For all the scenarios the demand flow and actual flow comparisons were tabulated as shown in Table 6.11.

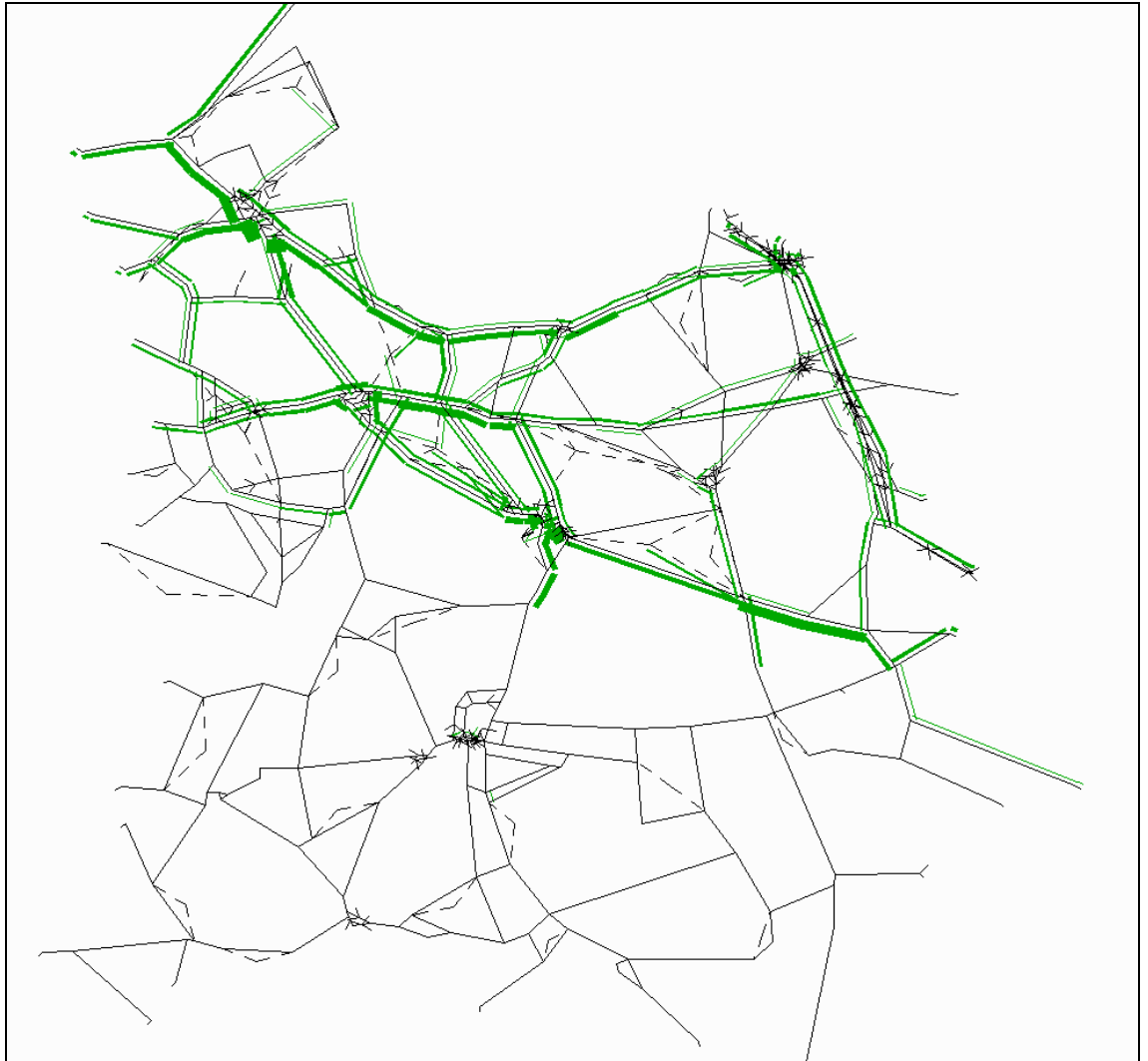
**Table 6.11: Comparison of Demand and Actual Flows (AM peak hour)**

| <b>Model</b>       | <b>Demand</b> | <b>Actual</b> | <b>% Difference</b> |
|--------------------|---------------|---------------|---------------------|
| 2007               | 45,086        | 44,501        | -1.3%               |
| 2010               | 46,797        | 45,884        | -2.0%               |
| 2025 (Option 1)    | 52,659        | 49,417        | -6.2%               |
| 2025 (Option 1) RM | 48,013        | 46,576        | -3.0%               |
| 2025 (Option 2)    | 52,049        | 49,179        | -5.5%               |
| 2025 (Option 2) RM | 47,463        | 46,223        | -2.6%               |

6.16.2 A difference in demand versus actual flow over 5% indicates that the network is over capacity. This is the case for both Option 1 and Option 2. Many trips are unable to access the network and complete the trip within the simulation period. The most affected model was the 2025 Option 1 where 6.2% of the matrix could not access the network. However, a significant reduction in differences was observed for the Option 2 with modal shift, where only 2.6% of trips could not access the network during the same time period, about 0.6% higher than the 2010 scenario.

6.16.3 Figure 6.21 shows the difference between the demand and actual flows for the 2025 Option 2 model with no modal shift. It can be seen that the most affected areas are in the north of the borough. However, Option 2 shows that the north west areas are much less congested compared to Option 1 (see section 6.11 and Figure 6.12) as a result of the exclusion of some development in the Evelyn and New Cross wards from the model.

**Figure 6.21: Comparison of Demand vs. Flow – Option 2 in 2025 – no modal shift**



## 6.17 Model Summary Statistics – Option 2

6.17.1 Summary statistics are shown in Table 6.12 for all vehicles as well as for bus. Comparisons between Option 1 and Option 2 and the 2010 model are shown in Table. The average speed for total traffic and buses for all scenarios modelled is shown in Figure 6.22.

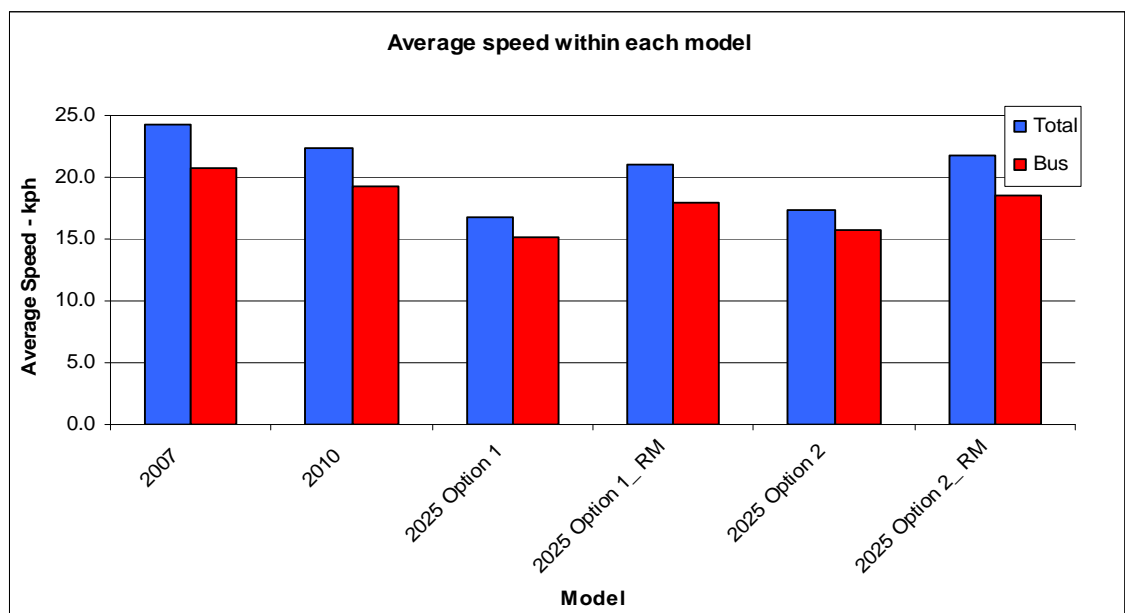
**Table 6.12: Model Summary Statistics – Option 1 & Option 2 (AM peak hour)**

|              |                             | 2007        | 2010        | 2025 Option 1 | 2025 Option 1 RM | 2025 Option 2 | 2025 Option 2 RM |
|--------------|-----------------------------|-------------|-------------|---------------|------------------|---------------|------------------|
| <b>Total</b> | Total Travel Time (PCU.Hrs) | 7,092       | 8,030       | 12,268        | 8,717            | 11,651        | 8,365            |
|              | Travel Distance (PCU.Km)    | 171,630     | 179,250     | 205,541       | 184,255          | 202,648       | 181,578          |
|              | Average Speed (Kph)         | <b>24.2</b> | <b>22.3</b> | <b>16.8</b>   | <b>21.1</b>      | <b>17.4</b>   | <b>21.7</b>      |
| <b>Bus</b>   | Total Travel Time (PCU.Hrs) | 180         | 200         | 256           | 215              | 246           | 209              |
|              | Travel Distance (PCU.Km)    | 3,743       | 3,861       | 3,862         | 3,862            | 3,862         | 3,862            |
|              | Average Speed (Kph)         | <b>20.8</b> | <b>19.3</b> | <b>15.1</b>   | <b>18.0</b>      | <b>15.8</b>   | <b>18.5</b>      |

**Table 6.13: Model Comparisons – Option 1 & Option 2 (AM peak hour)**

|              |                             | 2025 Option 1 Vs 2010 | 2025 Option 1 RM Vs 2010 | 2025 Option 2 Vs 2010 | 2025 Option 2 RM Vs 2010 |
|--------------|-----------------------------|-----------------------|--------------------------|-----------------------|--------------------------|
| <b>Total</b> | Total Travel Time (PCU.Hrs) | 53%                   | 9%                       | 45%                   | 4%                       |
|              | Travel Distance (PCU.Km)    | 15%                   | 3%                       | 13%                   | 1%                       |
|              | Average Speed (Kph)         | <b>-25%</b>           | <b>-5%</b>               | <b>-22%</b>           | <b>-3%</b>               |
| <b>Bus</b>   | Total Travel Time (PCU.Hrs) | 28%                   | 7%                       | 22%                   | 5%                       |
|              | Travel Distance (PCU.Km)    | 0%                    | 0%                       | 0%                    | 0%                       |
|              | Average Speed (Kph)         | <b>-22%</b>           | <b>-7%</b>               | <b>-18%</b>           | <b>-4%</b>               |

**Figure 6.22: Average Speed for Total Traffic and Buses (AM peak hour)**



6.17.2 The results above show in Option 2, the average speed for total traffic decreases by 4.9kph between 2010 and 2025, a decrease of 22%. However, with modal shift, this drop in speed is reduced to 0.6kph, about 3%. The average speed of total traffic and buses is greater for Option 2 compared to Option 1 by 3.6% and 4.6% respectively.

6.17.3 A similar pattern is derived for the sensitivity test (car matrix reduced by 11%) indicating considerably less congestion and delay for Option 2 compared to Option 1, with a significant improvement of average bus speed across study area of 18.5 kph. This equates approximately to the same average bus speed as in 2010.

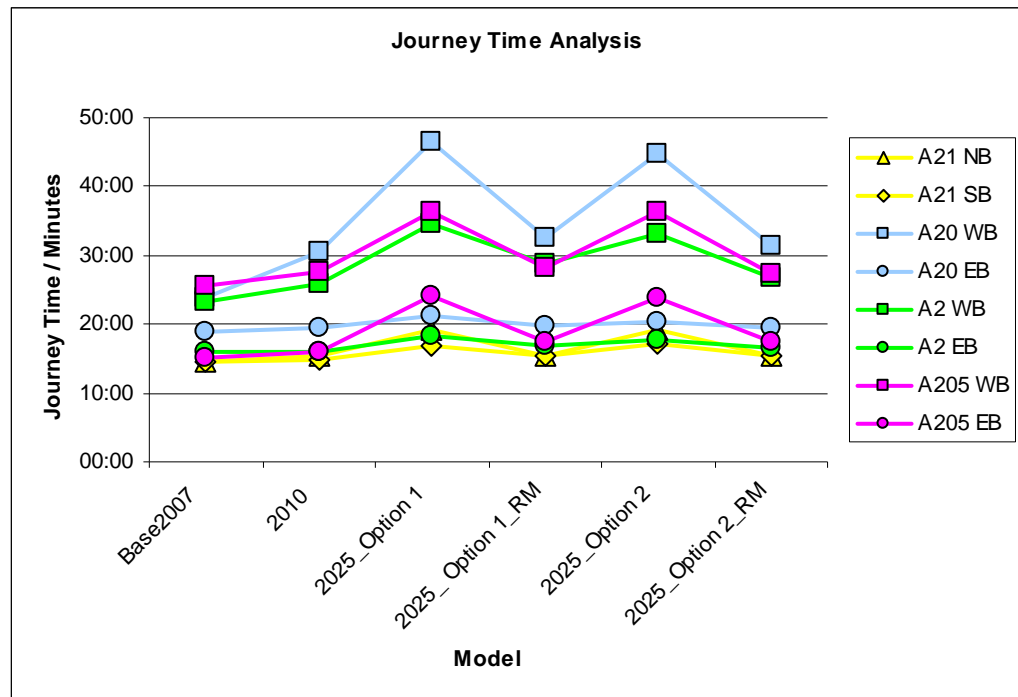
## 6.18 Impact on Journey Time along Strategic Roads – Option 2

6.18.1 The journey times along strategic roads are shown in Table 6.14 and Figure 6.23.

**Table 6.14: Journey Time Results (shown in minutes) – Option 1 & Option 2 (AM peak hour)**

| Road  | Direction | 2007     | 2010     | 2025 Option 1 | 2025 Option 1 RM | 2025 Option 2 | 2025 Option 2 RM |
|-------|-----------|----------|----------|---------------|------------------|---------------|------------------|
| A21   | NB        | 14:27    | 15:30    | 19:18         | 15:24            | 19:08         | 15:30            |
|       | SB        | 14:29    | 14:58    | 16:54         | 15:28            | 17:12         | 15:23            |
| A20   | WB        | 23:50    | 30:31    | 46:31         | 32:39            | 44:49         | 31:21            |
|       | EB        | 19:02    | 19:30    | 21:13         | 19:50            | 20:21         | 19:32            |
| A2    | WB        | 23:22    | 25:56    | 34:33         | 28:51            | 33:14         | 26:37            |
|       | EB        | 15:59    | 15:56    | 18:19         | 16:51            | 17:37         | 16:28            |
| A205  | WB        | 25:42    | 27:36    | 36:27         | 28:10            | 36:17         | 27:25            |
|       | EB        | 15:09    | 16:01    | 24:14         | 17:34            | 23:50         | 17:34            |
| Total |           | 02:32:00 | 02:45:58 | 03:37:29      | 02:54:47         | 03:32:28      | 02:49:50         |

**Figure 6.23: Strategic Route Journey Time Comparisons – Option 2 (AM Peak hour)**



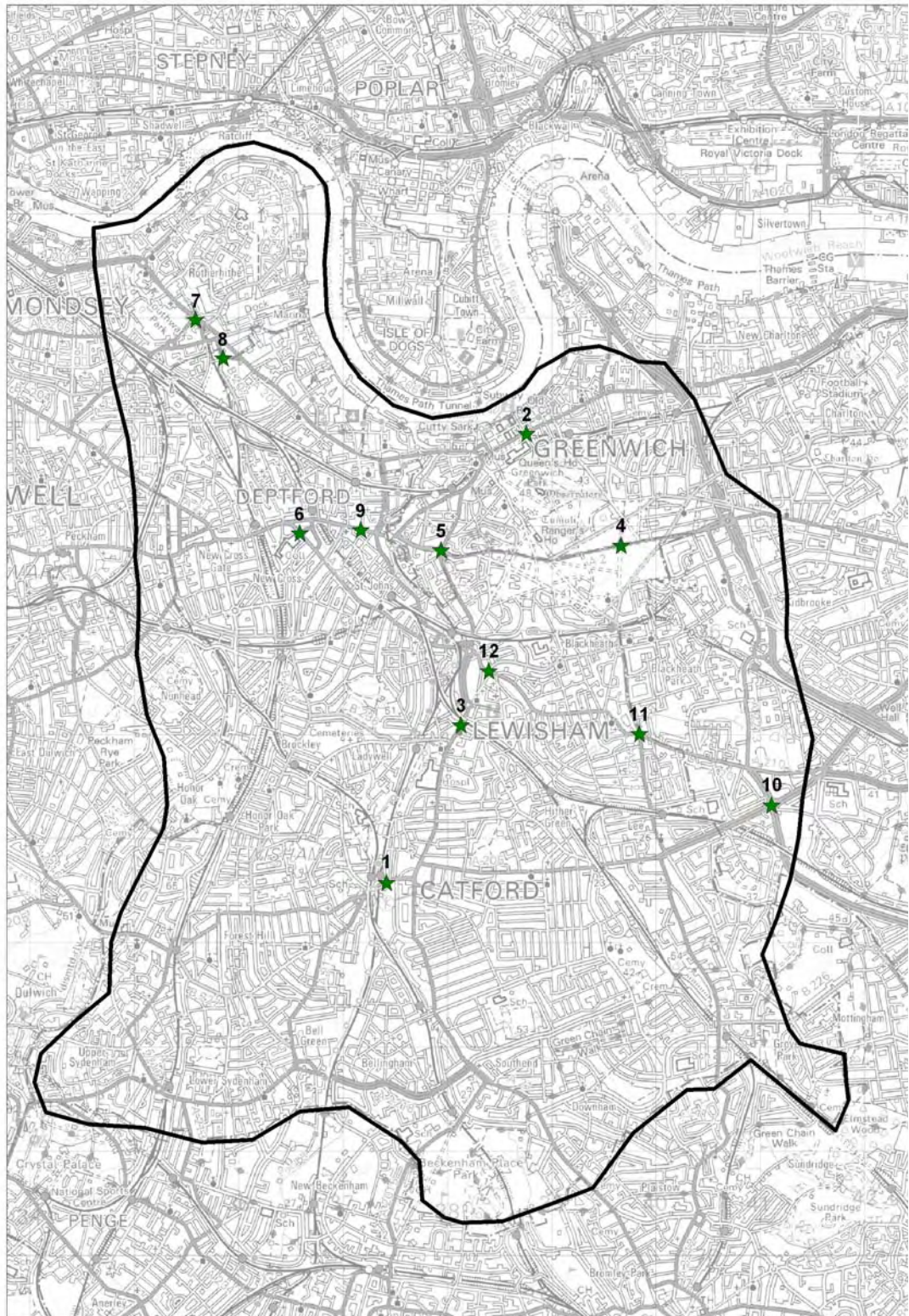
- 6.18.2 The journey time results for the strategic routes show that 2025 Option 2 journey times are higher than those observed for 2010 but, in general, lower than Option 1. Journey time results for both eastbound and westbound along the A20 are considerably less than those recorded from the Option 1 model, by 1 and 1.5 minutes respectively. Likewise, the A2 journey times show a reduction by 1 minute for westbound and 45 seconds for eastbound direction when comparing Option 2 to Option 1.
- 6.18.3 Analysis of the journey time results highlights that longer journey times are expected in the westbound direction for all models compared to the eastbound direction. As noted earlier this is to be expected as the predominant traffic flow in the AM peak hour is generally westbound, towards central London. Higher volumes of eastbound traffic would be expected in the PM peak hour, although overall traffic levels are likely to be lower than the AM peak hour.
- 6.18.4 The sensitivity test for Option 2 shows a significant improvement to all journey times, particularly on the A21 northbound, the A205 westbound, and the A20 and A2 in both directions.
- 6.19 Congestion Hot Spots
- 6.19.1 Table 6.15 identifies junctions which have a V/C ratio greater than or equal to 100% (highlighted in orange), and indicates the average delay incurred to all vehicles at these junctions for each scenario modelled. The locations of all junctions listed in the table are shown in Figure 6.24.
- 6.19.2 Junctions over 100% are effectively operating above their design capacity. This means that congestion and delays can occur within the AM peak hour. However these results are localised impacts and do not necessarily mean that traffic flows across the wider highways network are impeded. In the long term some remedial or improvement works may be required to improve capacity at some of these junctions.
- 6.19.3 In Option 1 three junctions in particular show a very high V/C: Lewisham High St / Whitburn Rd / Courthill Rd (V/C of 105); Lower Rd / Rotherhithe Old Rd / Hawkstone Rd (V/C of 104); and Lee High Road / Belmont Hill / Lewis Grove (V/C of 107).
- 6.19.4 The results also show that at several junctions there are large increases in delay when comparing 2025 Option 1 to 2010. The largest increases in average delay occur at the junctions of Westthorne Avenue / Sidcup Road and Lee High Road / Belmont Hill / Lewis Grove, with an increased delays of 4 minutes and 3.5 minutes respectively.
- 6.19.5 The V/C ratios for Option 2 are generally equal to or slightly lower than Option 1. This option shows significantly less delay at the junctions Lower Road / Rotherhithe Old Road / Hawkstone Road and Bush Road / Bestwood Street / Trundley's Road in the New Cross Ward when compared to Option 1. The Lee High Road / Belmont Hill / Lewis Grove junction shows a delay of almost 1 minute less in Option 2.
- 6.19.6 The highways model extends into neighbouring boroughs, with the result that one of the hotspots identified (Lower Rd / Rotherhithe Old Rd / Hawkstone Rd) is located across the borough boundary in Southwark. Improvements to this junction are currently being examined by LB Southwark as part of the Canada Water AAP and associated highways works.

**Table 6.15: V/C and Delays at Most Congested Junctions**

|   | Location                                      | Borough (Ward)              | 2010 |             | 2025 Option 1 |             | 2025 Option1 RM |             | 2025 Option 2 |             | 2025 Option 2 RM |             |
|---|---|-----------------------------|------|-------------|---------------|-------------|-----------------|-------------|---------------|-------------|------------------|-------------|
|   |   |                             | V/C  | Delay (sec) | V/C           | Delay (sec) | V/C             | Delay (sec) | V/C           | Delay (sec) | V/C              | Delay (sec) |
| 1 | Lewisham High St / Whitburn Rd / Courthill Rd | Lewisham (Lewisham Central) | 96   | 19          | 105           | 122         | 93              | 19          | 105           | 130         | 93               | 19          |
| 2 | Lower Rd / Rotherhithe Old Rd / Hawkstone Rd  | Southwark                   | 96   | 60          | 104           | 144         | 100             | 65          | 101           | 89          | 99               | 58          |
| 3 | Bush Road / Bestwood Street / Trundley's Road | Lewisham (Evelyn)           | 100  | 19          | 102           | 87          | 99              | 44          | 97            | 52          | 94               | 41          |
| 4 | New Cross Road / Tanner's Hill                | Lewisham (Brockley)         | 100  | 66          | 102           | 97          | 102             | 85          | 102           | 84          | 102              | 77          |
| 5 | Lee High Road / Belmont Hill / Lewis Grove    | Lewisham (Lewisham Central) | 101  | 169         | 107           | 383         | 100             | 201         | 106           | 328         | 100              | 183         |

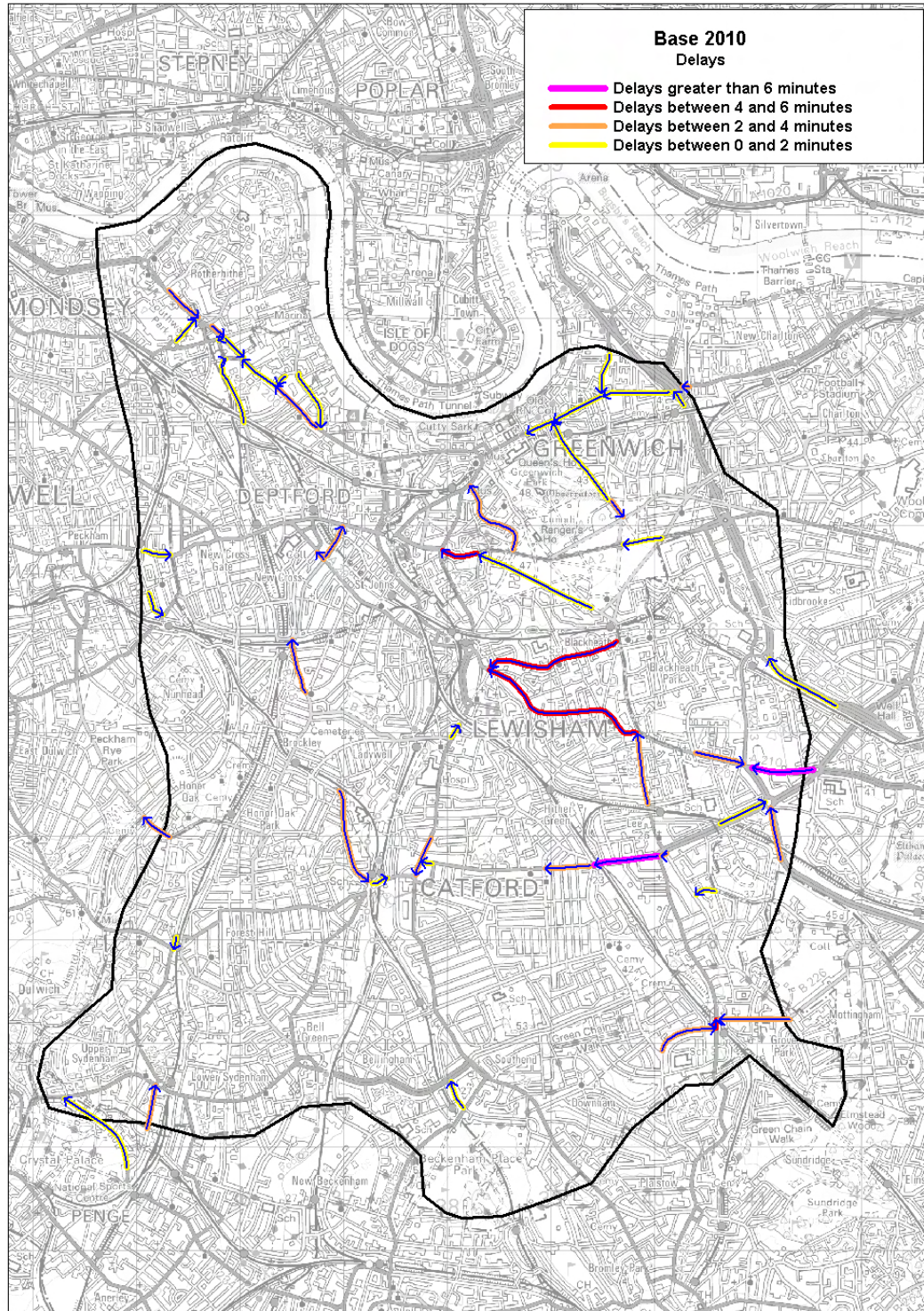


Figure 6.24: Location of Most Congested Junctions



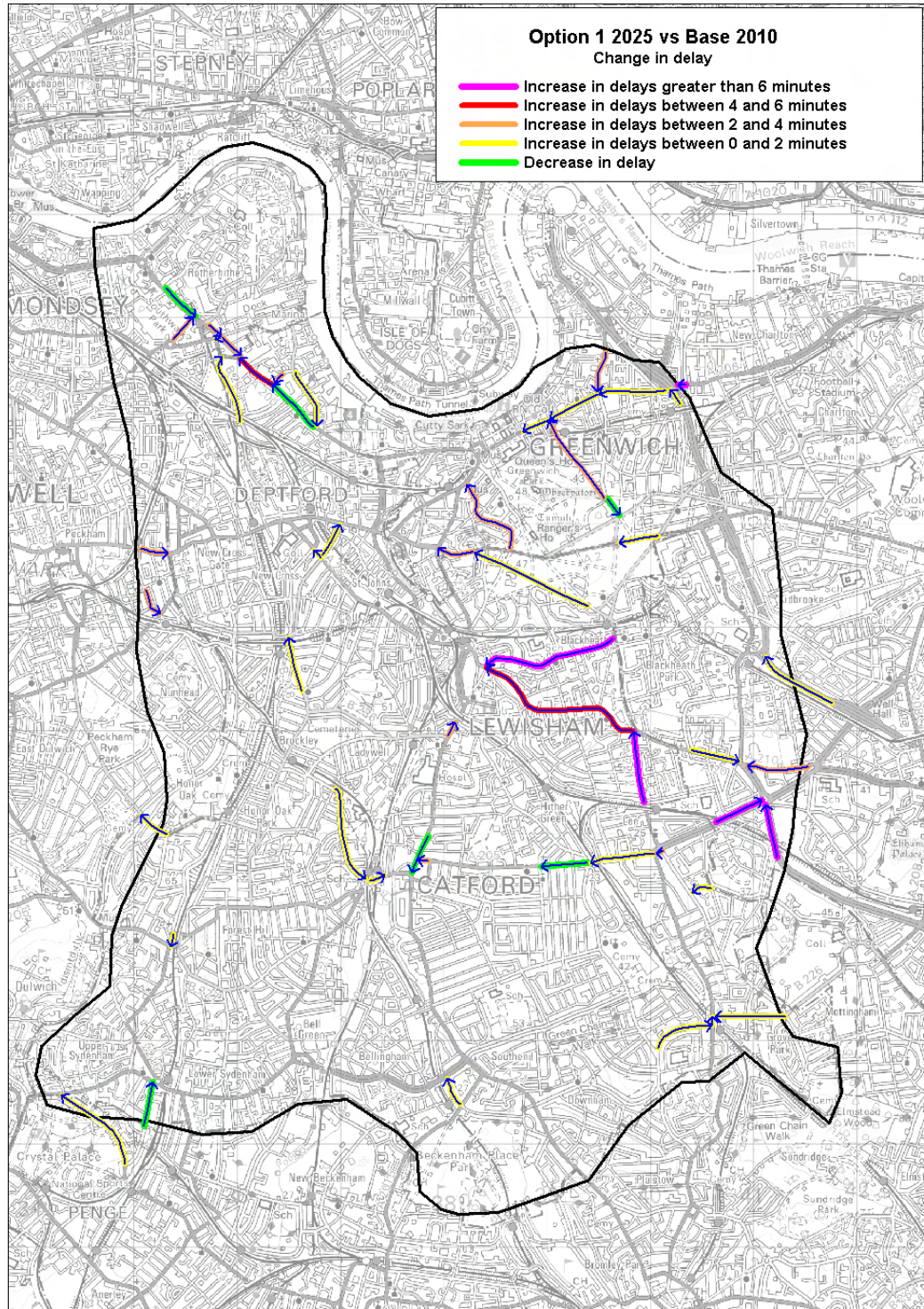
6.19.7 Figure 6.25 shows the links in the base 2010 model where delays are experienced and their average duration in minutes.

**Figure 6.25: Delays – Base 2010**



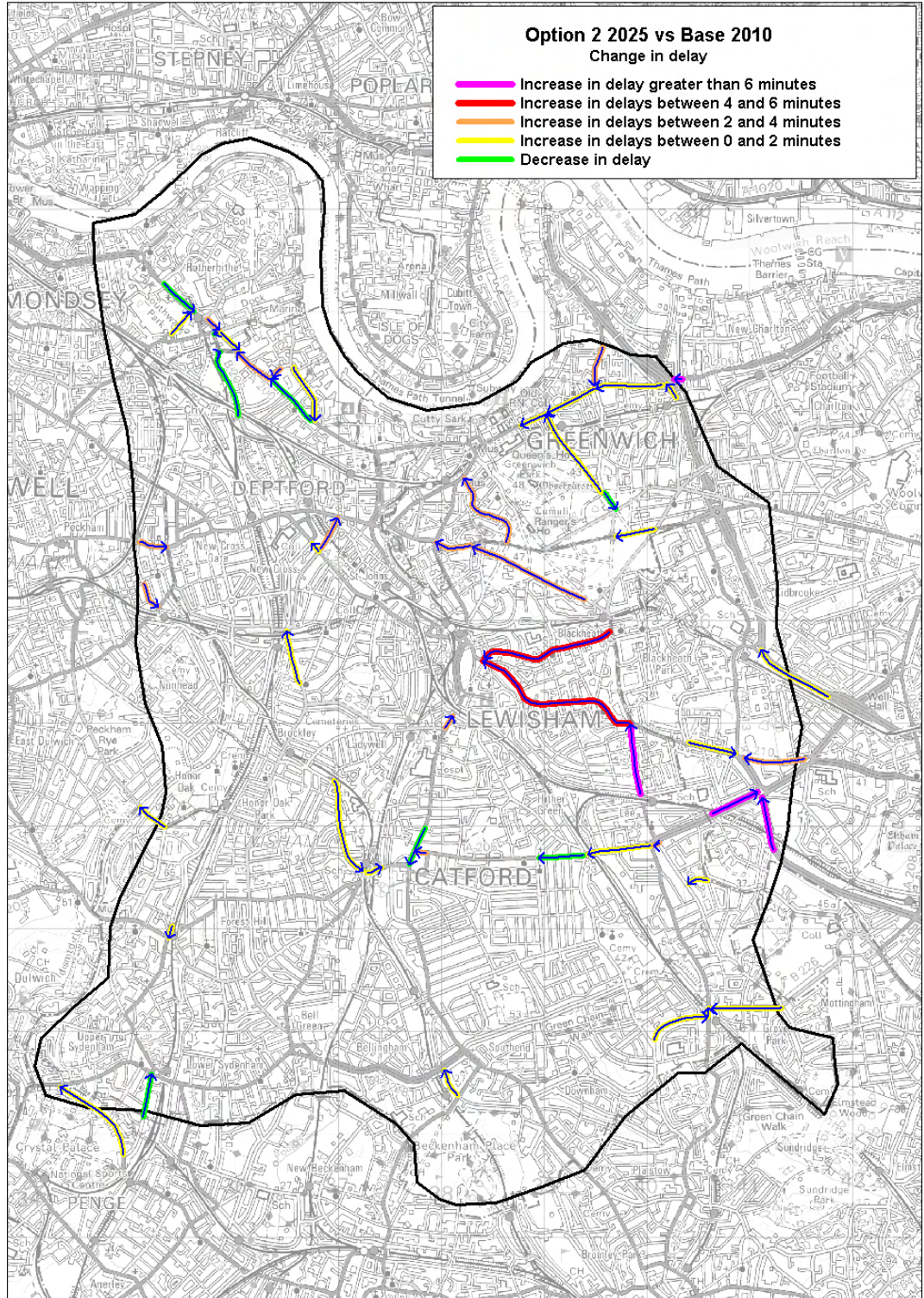
6.19.8 Figure 6.26 shows the comparison in delays on links between Option 1 2025 and the base 2010 models.

**Figure 6.26: Delays Option 1 2025 vs. Base 2010**



6.19.9 Figure 6.27 shows the comparison in delays on links between Option 2 2025 and the base 2010 models.

**Figure 6.27: Delays Option 2 2025 vs Base 2010**



- 6.19.10 Figure 6.25 to Figure 6.27 show the roads where the greatest delays within the network are incurred. Figure 6.25 shows that there are some significant delays, greater than 6 minutes, experienced in the base 2010 model. The links on which these delays occur are:
- St Mildred's Road (A205) westbound between junction with Baring Road / Burnt Ash Hill and Hither Green Lane / Verdant Lane.
  - Eltham Road (A210) westbound between junction with Westthorne Avenue and Kidbrooke Park Road / Sidcup Road.
- 6.19.11 Figure 6.26 shows significant increases in delays are expected for the 2025 Option 1 scenario. The increase in delays are predominantly seen in the locations where the greatest delays in the base 2010 model are observed. The links where most increase occurs are:
- Belmont Hill / Lee Terrace (B220) westbound between the junction with Lee High Road (A20) and Lee Road.
  - Burnt Ash Road / Burnt Ash Hill northbound between the junction with Westthorne Ave (A205) and Lee High Road / Eltham Road (A20).
- 6.19.12 As well as some increases in delays, there are a few roads which would experience a decrease in delay.
- 6.19.13 The change in delays between Option 2 2025 and the base 2010 model, shown in Figure 6.27, display a similar pattern to the change between Option 1 2025 and the base 2010. However, there are a few differences, where there are slightly less delays in Option 2 compared to Option 1 including:
- Belmont Hill / Lee Terrace (B220) westbound between the junction with Lee High Road (A20) and Lee Road.
  - Maze Hill northbound between the junction with Charlton Way (B210) and Trafalgar Road (A206).
  - Trundley's Road (B207) northbound between the junction with Surrey Canal Road and Bush Road / Bestwood Street.
  - Evelyn Street (A200) northbound between the junction with Oxestalls Road and Bestwood Street / Lower Road.
  - Lower Road (A200) southbound between the junction with Plough Way / Rotherhithe New Road and Bestwood Street.
- 6.19.14 There are also two links where delays increase slightly in Option 2 when compared with Option 1:
- Hare & Billet Road / Dartmouth Hill northbound between the junction with Grote's Place and Blackheath Hill (A2).
  - Florence Road northbound between the junction with Lewisham Way (A20) and New Cross Road (A2).
- 6.19.15 Clearly there will be a need to address the congestion and delays at the most severely affected junctions and roads. Consideration will need to be given to localised improvements at these locations, as well as borough-wide initiatives to encourage modal shift and reduce traffic levels. Such improvements will need to be considered with regard to other committed and potential public transport improvements. Further detail about improvements required is provided in Chapter 8.
- 6.20 Summary
- 6.20.1 The 2007 Lewisham model was calibrated to the standards required by the DMRB. This model shows some congestion, mainly for traffic moving westbound though the model network.

- 6.20.2 The 2010 model was created by updating the network with the schemes which are expected to be in place by 2010, as well as factoring the matrix up by the growth levels expected from 2007 to 2010. The 2010 model shows some congestion is expected around Lewisham town centre, as well as a slight drop in average speed across the borough.
- 6.20.3 The 2025 model was created by updating the network with the development schemes expected to be built between 2010 and 2025. The matrix was created using information regarding the known development sites, TEMPRO growth rates, as well as LV and HV data from the TGX models. The 2025 model shows more highways congestion than the 2010 model. This is a result of growth in traffic volumes as opposed to network changes affecting capacity. The average speed in the model within Lewisham decreases from 22.3kph to 16.8kph in Option 1.
- 6.20.4 A sensitivity test was carried out whereby the car trip matrix was reduced by 11% to simulate a target modal shift from car to non-car modes across LBL by 2026. Achieving this reduction results in much less congestion and delay when compared to the 2025 model, with average speeds being maintained at close to 2010 levels (21.1kph).
- 6.20.5 For all the model options there is more congestion in the north of the borough than in the south; this is highlighted by the demand vs. actual flow comparison. This is to be expected as most future development will take place in the north of the borough. As the model is an AM peak hour model, most congestion and delay is on traffic travelling in a westbound direction. It is anticipated that the PM peak would generally show the reverse of this trend.
- 6.20.6 In 2025, Option 2 shows less congestion than Option 1; the results show average traffic and bus speeds have increased by 3.6% and 4.6% respectively. A similar pattern was derived for the sensitivity test (car matrix reduced by 11%) indicating considerably less congestion and delay for Option 2 compared to Option 1, with a significant improvement of average bus speed across study area of 18.5 kph. This equates approximately to the same average bus speed as in 2010.
- 6.20.7 Journey time comparison shows improvements for both the A20 and A2 routes in Option 2 when compared to Option 1. The sensitivity test for Option 2 shows a significant improvement to all journey times, particularly on the A21 northbound, the A205 westbound, and the A20 and A2 in both directions.
- 6.20.8 The model results have been used to identify the junctions and links where delays and congestion are predicted to occur. The 2010 base model shows only three junctions operating with a V/C of 100 or more, resulting in some localised congestion and delay. By 2025, there are more junctions and links that experience congestion and delays, however there are also a few exceptions where decreases occur. Option 2, with less development, shows a correspondingly lower impact of delays than Option 1.
- 6.20.9 Overall the highway network, with committed improvements, is able to cope with the levels of growth tested in Option 1, as well as the less intensive Option 2. There are some instances of congestion and delays which occur in both, however the impacts are not so severe as to prevent the highway network from operating. Option 1, with the highest traffic volumes has five junctions which exceed capacity, and by levels which can be ameliorated with junction improvements. Furthermore the sensitivity tests show that the highways impacts can be ameliorated to a great extent by taking a proactive approach to encouraging modal shift away from the car.
- 6.20.10 The above results have directly informed the identification of a number of highways improvements to help maintain capacity at high traffic volumes. These are set out in Chapter 8.

## 7 Public transport model

### 7.1 Existing PT networks

7.1.1 The key existing Public Transport infrastructure in Lewisham consist of:

- 20 rail stations
- 3 DLR stations
- 2 LU stations, although these will become part of the London Overground network upon completion of the East London Line Extension project. Please note that in the Railplan data, the 'LUL' mode relates to the East London Line Extension.
- 42 bus routes.

7.1.2 Figure 7.1 summarises existing public transport infrastructure. This also highlights annual usage of the rail stations in the Borough.

### 7.2 Proposed PT network changes

7.2.1 Over the plan period, the Borough will benefit from a series of enhancements to public transport, including:

- Capacity enhancements to Network Rail services as part of the Thameslink proposals
- Reopening of the extended East London Line (London Overground), which will provide enhanced links to Croydon, Crystal Palace and Clapham Junction
- Capacity enhancements to the DLR
- The Lewisham Gateway proposals, which will provide a 40% capacity increase for buses in Lewisham Town Centre
- Domestic services on the High Speed Rail Link. Although this does not serve the Borough, it will divert passengers away from the North Kent Lines, providing additional seating capacity for Lewisham residents
- Crossrail. Although this does not serve the Borough, it will again divert passengers away from the North Kent Lines and the Jubilee Line.

7.2.2 It is also possible that Surrey Canal Road station will be constructed as part of Phase 2 of the Overground extension to Clapham Junction. LBL is currently in high level negotiations with TfL and the Department of Transport to secure funding for the construction of the station. Given that construction is not certain there is no timetable for this work to go ahead as yet.

7.2.3 In the longer term a potential southern extension of the Bakerloo line to Hayes via Peckham and Lewisham is being considered. This may not be achieved within the study period, but if pursued could provide relief to National Rail services.

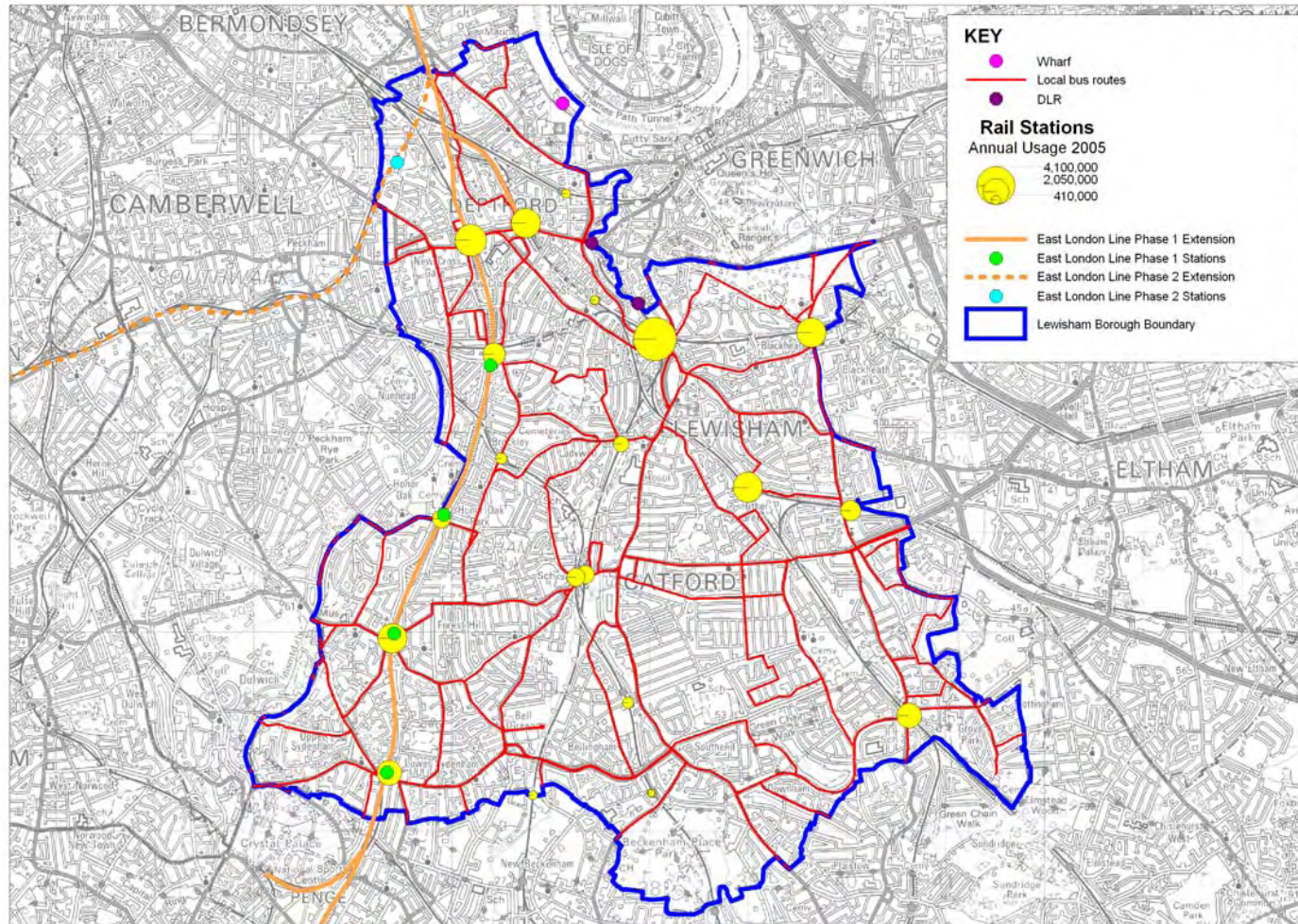
7.2.4 It is anticipated that the net effect of the capacity enhancements to the strategic transport infrastructure will be sufficient to accommodate the radial demand generated by either of the spatial options. Nevertheless, there is a need to consider what improvements can be made to orbital public transport, such as improving access to bus services.

7.2.5 Making use of Railplan data, the spreadsheet-based public transport model considers the following future scenarios for the AM peak hour (0800-0900):

- 2010 assuming housing completions since 2007
- 2025 Option 1
- 2025 Option 2

7.2.6 The sensitivity of the network performance to borough-wide travel planning initiatives is also assessed.

**Figure 7.1: Current and future public transport infrastructure**





## 7.3 Railplan model

- 7.3.1 In order to find how public transport use is expected to change during the study period, the TfL Railplan model has been used. Railplan is a multi-modal model based on the AM peak three hour period. The model predicts the total number of passengers travelling on National Rail, London Underground, Docklands Light Railway and bus services in the modelled years of 2006, 2016 and 2026.
- 7.3.2 The years to be tested in this study are a base year of 2010 and a future year of 2025. For the future year, the Railplan scenario of 2026 has been used. In order to estimate a base year of 2010, we have added the build up of trips from developments from 2006 to 2009, as well as predicted trips from anticipated developments constructed in 2010, to the base 2006 Railplan scenario to obtain ward figures. The additional trips between 2006 and 2010 are not significantly large and would make very little impact on individual link loads, so when analysing individual links, in most cases, the 2006 figures are used.
- 7.3.3 It should be noted that each Railplan model year output is based on a fixed matrix. This means that the models do not take into account any adjustment of travel behaviour that may occur when people switch to public transport, walking or cycling in response to increased levels of traffic congestion and delay. In order to examine the impact of such a shift in travel behaviour a separate sensitivity test has been undertaken to assess network performance in response to borough-wide travel planning initiatives (see sections 7.7 and 7.9).
- 7.3.4 The Railplan data has been presented in the form of links between nodes, with these nodes generally relating to stops or stations. In order to consolidate this data into wards, the links and nodes were mapped in GIS and then allocated to wards. Where a link runs along a ward boundary, the volume of passengers on each link is split between the relevant wards.
- 7.3.5 In order to break down the data from the peak three hours to the peak hour, the London Area Travel Survey (LATS) was used to calculate the proportion of peak hour trips to peak three hour trips for each mode of transport. These are shown below:
- London Underground/Docklands Light Railway – 45%
  - National Rail – 40%
  - Bus – 43%
- 7.3.6 Volume over capacity (V/C) figures are based on the full three hour AM peak period. This is due to Railplan providing three hour capacities as well as volumes. There are differing numbers of services running in each hour of the peak period, so simply dividing the capacity by three to find peak hour capacity, and applying the LATS proportion to find the peak hour volume would skew results. Therefore V/C results directly use the peak three hour period.
- 7.3.7 A map illustrating the nodes and links and their relation to the ward boundaries is included at Appendix C.

## 7.4 Planning assumptions

### ***Transport improvements***

- 7.4.1 The Railplan model takes into account the transport assumptions as described in Appendix C. The most relevant schemes impacting on the Lewisham area included in each model run are described below:

#### 2006 scenario

- NR: 2007 Timetable Update
- Rail, UG & DLR fares are 2.7% cf. 2001 (0% cf. 2006)
- Bus fares are -4.5% cf. 2001

#### 2026 scenario

- Integrated Kent Franchise (London Rail version) service pattern
- CTRL Domestic (in conjunction with Integrated Kent Franchise)
- North London Railway Service Level Commitment Phases 1 - 2 (East London Line/North London line / West London line except East London Line Extension Phase 3 to Clapham Junction)
- High Level Output Specification (HLOS) commitments, including additional 12-car trains on Southeastern services
- Crossrail 1 (Abbey Wood Scheme) 24 trains per hour in peak with 10 cars (Heathrow Connect removed) plus additional stop at Woolwich
- DLR Bank-Lewisham 3-car Upgrade
- DLR extension to Woolwich
- Rail, UG & DLR fares are 12% cf. 2001
- Rail fares are RPI+1 ~3.7% pa over 8 year period 2009/2010 to 2016/2017
- Rail fares RPI 2016-2026
- Bus fares are -2% cf. 2001

7.4.2 The Railplan model outputs provided do not include the impacts of opening the Surrey Canal Road Station or the Bakerloo line extension as these were not being considered at the time the model was run. As the primary benefits of Surrey Canal Road Station will be to improve local accessibility and the Bakerloo line extension will not be open during the plan period, the public transport models are considered to represent the impacts of the growth scenarios with sufficient robustness.

7.4.3 It should be noted that between the base 2006 Railplan model and the 2026 model, the East London Line transfers to being part of London Overground from London Underground. However, the Railplan data has the East London Line Extension links as being LUL, so all LUL growth figures in Lewisham refer to the East London Line.

#### ***Population and employment assumptions***

7.4.4 The Railplan population and planning assumptions are based on the London Plan. In 2026 the population of Lewisham is assumed to be 290,631, and employment is assumed to be 84,734.

#### ***Additional development trips***

7.4.5 To obtain ward level results, the 2006 model outputs have been factored up to the 2010 base year by adding in additional trips derived from the application of trip rates (as discussed in Chapter 4) to housing completion data for the years between 2007 and 2010. Detailed housing completions broken down by ward were not available for the years 2006/07, 2007/08 and 2008/09 at the time the modelling work was undertaken. To ensure trips from residential units completed during these years were taken into consideration in the model, trip rates by mode were applied to the total number of completed dwellings for each year, and apportioned across wards. The resulting total trips by mode per year are summarised in the table below.

**Table 7.1: Additional Public Transport Trips Generated by New Housing for Years to 2010 by Mode (AM peak hour)**

|               | 2006/7 | 2007/8 | 2008/9 | 2009/10 |
|---------------|--------|--------|--------|---------|
| National Rail | 83     | 168    | 73     | 77      |
| Bus           | 43     | 86     | 38     | 39      |
| LUL           | 57     | 115    | 50     | 53      |
| DLR           | 83     | 168    | 73     | 77      |
| Total         | 266    | 537    | 234    | 246     |

7.4.6 The 2026 future year outputs already include trips generated by growth as per the London Plan planning assumptions. Housing trajectory data supplied by LBL for the year 2025 gives a total figure that is over and above the London Plan allocation. It was important to ensure that we took account of the effect of this additional level of development, but did not double count between trip generation forecasts already in models. To account for this we have calculated additional trips generated using the ward trip rates (see Chapter 4), and apportioned these across the wards as per the anticipated level of additional development. This approach has been used to ensure a robust analysis of the likely impact on the future public transport network.

## 7.5 2010 PT model

7.5.1 The level of public transport use by ward in 2010, as derived from Railplan and including the additional development trips discussed above, is illustrated in Figure 7.2.

7.5.2 Figure 7.3 and Figure 7.4 illustrate the extent of crowding shown as V/C on rail services in Lewisham in the base year. The figures are based on the 2006 Railplan model, but the growth to 2010 per link is so small that it makes very little difference as to the level of V/C on each link.

**Figure 7.2: 2010 public transport use by ward (AM peak hour)**

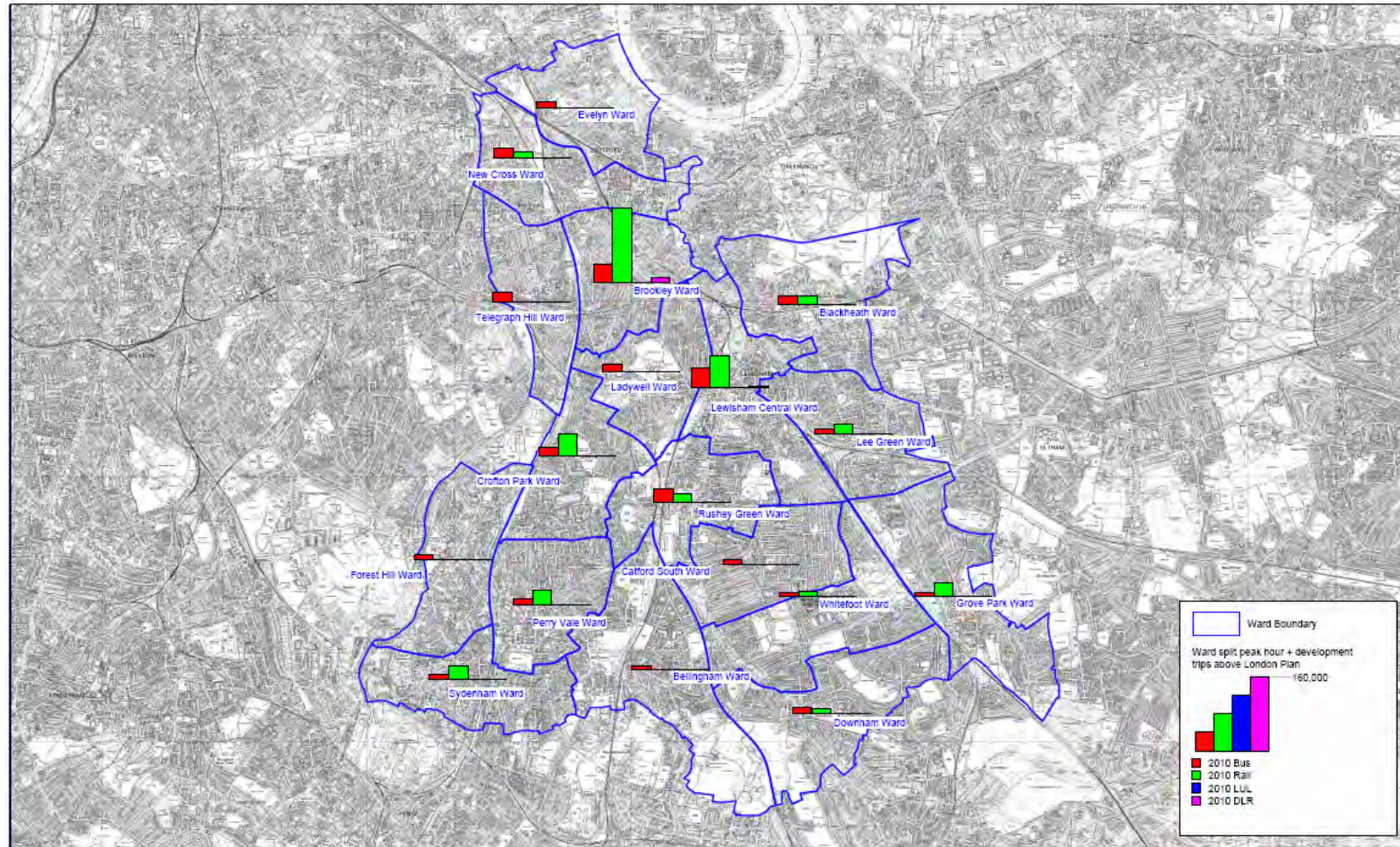


Figure 7.3: Rail V/C away from central London (2006 AM peak 3 hours)

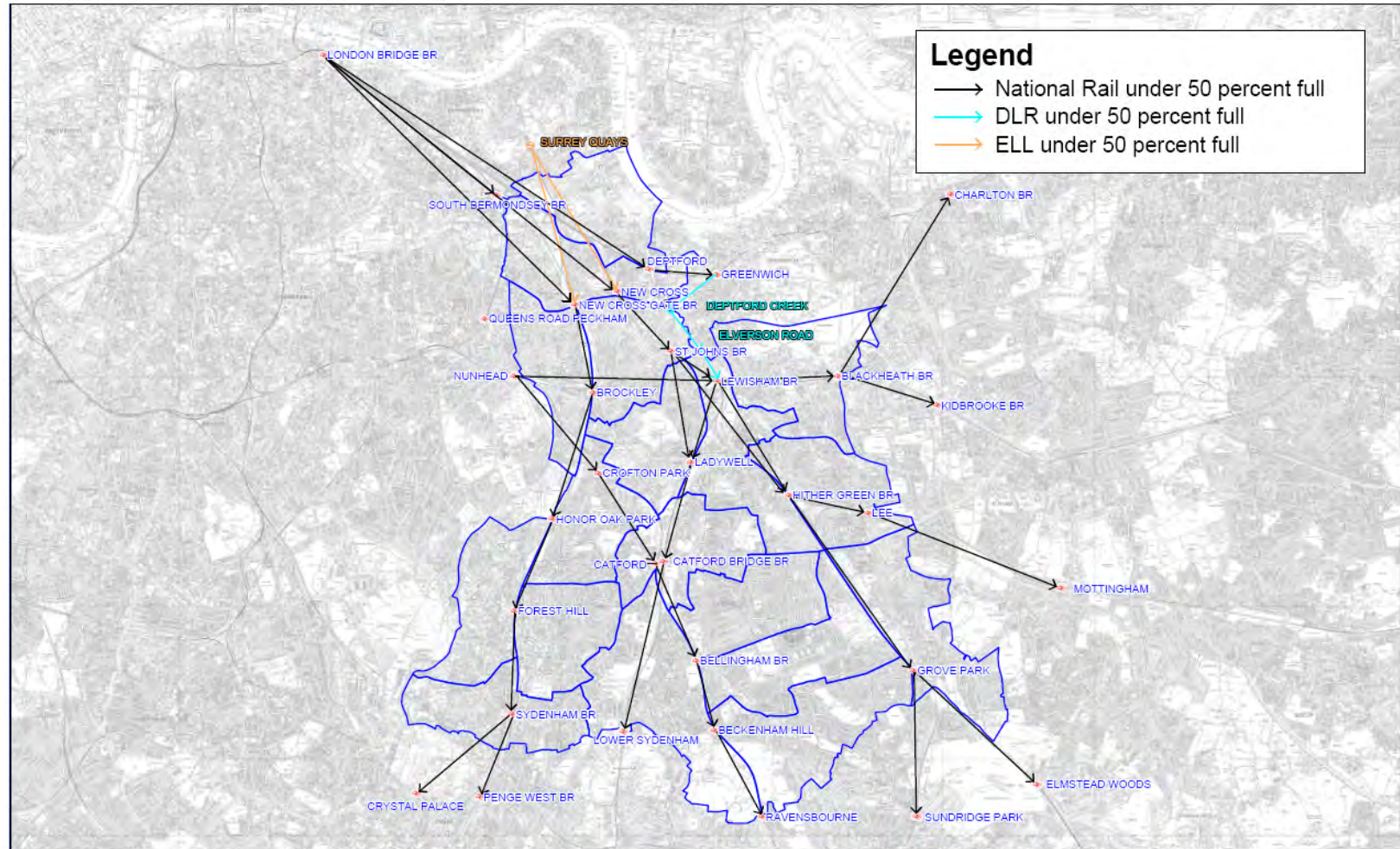
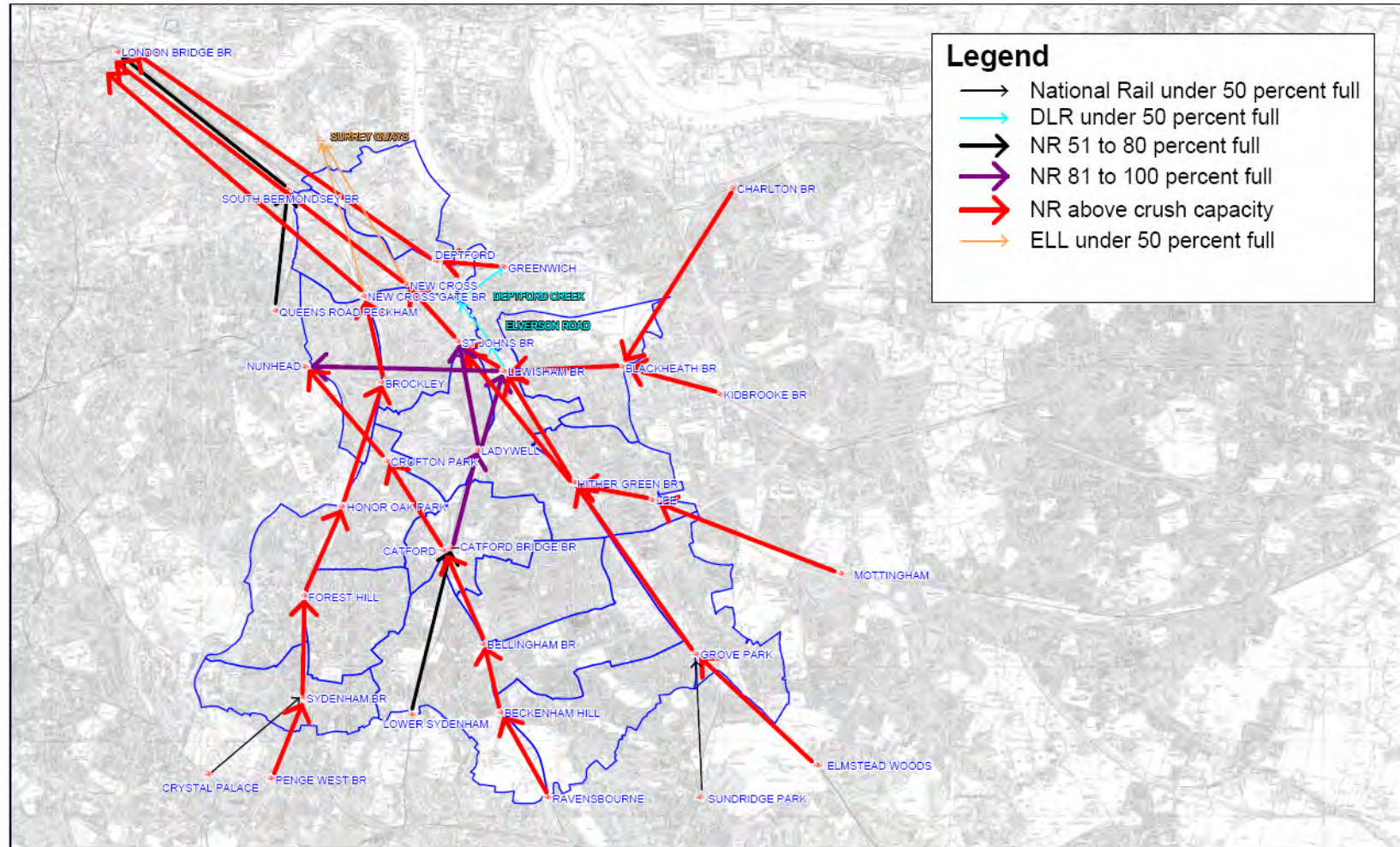


Figure 7.4: Rail V/C towards central London (2006 AM peak 3 hours)



7.5.3 The above figures show that on most routes through Lewisham towards London, trains are loaded beyond crush capacity limits in the morning peak. The only National Rail line operating below crush capacity is the line to Hayes (Kent), which has some spare capacity from Lower Sydenham up to Ladywell and Lewisham.

7.5.4 Services travelling away from London all have a large amount of spare capacity in the morning peak.

## 7.6 PT impacts of Option 1 – 2026 no modal shift

7.6.1 Table 7.2 shows the change in volume on public transport links by ward from 2010 to 2026. The figures include all links that have a node located within a ward or on a ward boundary. Where a link runs along a ward boundary, the volume on the link is split between the wards.

**Table 7.2: Public transport change by ward – Option 1 (AM peak hour)**

| Ward             | 2010 Bus | 2010 Rail | 2010 LUL & DLR | 2026 Bus | 2026 Rail | 2026 LUL & DLR | % change Bus | % change Rail | % change LUL & DLR |
|------------------|----------|-----------|----------------|----------|-----------|----------------|--------------|---------------|--------------------|
| Bellingham       | 5,783    | -         | -              | 5,368    | -         | -              | -7.2%        | -             | -                  |
| Blackheath       | 17,160   | 16,080    | -              | 16,331   | 15,667    | -              | -4.9%        | -2.6%         | -                  |
| Brockley         | 37,070   | 153,673   | 10,126         | 29,778   | 171,247   | 13,274         | -19.7%       | 11.4%         | 31.1%              |
| Catford South    | 10,925   | -         | -              | 11,165   | -         | -              | 2.2%         | -             | -                  |
| Crofton Park     | 15,903   | 46,613    | -              | 13,460   | 63,376    | -              | -15.4%       | 36%           | -                  |
| Downham          | 12,250   | 10,541    | -              | 12,456   | 5,201     | -              | 1.7%         | -49.3%        | -                  |
| Evelyn           | 10,799   | 661       | -              | 13,082   | 2,199     | -              | 21.1%        | 232.7%        | -                  |
| Forest Hill      | 10,748   | -         | -              | 9,617    | -         | -              | -11.5%       | -             | -                  |
| Grove Park       | 8,187    | 29,146    | -              | 7,847    | 31,732    | -              | -4.2%        | 8.9%          | -                  |
| Ladywell         | 14,166   | -         | -              | 11,536   | -         | -              | -18.6%       | -             | -                  |
| Lee Green        | 10,060   | 21,187    | -              | 9,491    | 23,575    | -              | -5.6%        | 11.3%         | -                  |
| Lewisham Central | 42,695   | 66,436    | 4,648          | 39,079   | 56,487    | 5,923          | -8.5%        | -15%          | 27.4%              |
| New Cross        | 19,819   | 14,281    | 1,727          | 17,837   | 12,880    | 6,515          | -10%         | -9.8%         | 277.2%             |
| Perry Vale       | 14,730   | 32,000    | -              | 12,434   | 50,839    | -              | -15.6%       | 58.9%         | -                  |
| Rushey Green     | 27,984   | 16,389    | -              | 26,040   | 12,180    | -              | -6.9%        | -25.7%        | -                  |
| Sydenham         | 9,099    | 29,086    | -              | 7,922    | 47,146    | -              | -12.9%       | 62.1%         | -                  |
| Telegraph Hill   | 22,345   | 555       | -              | 18,905   | 891       | -              | -15.4%       | 60.5%         | -                  |
| Whitefoot        | 7,740    | 10,601    | -              | 7,767    | 5,557     | -              | 0%           | -47.6%        | -                  |

7.6.2 The large increase to LUL in New Cross relates to the East London Line Extension. In Railplan this link is classified as an LUL link, although technically it will form part of the London Overground rail network.

7.6.3 The rail results for Evelyn, New Cross and Telegraph Hill wards are slightly unusual in that the Railplan node that represents a station is in one ward for one direction and a different ward for the other direction. In Evelyn, only the down (away from London) platform at Deptford station is within the ward. The up platform is in New Cross ward. The Telegraph Hill ward contains volumes for the Nunhead down platform only. The node for the up platform is outside the borough. The station node to ward allocation is given in Table 7.3.

7.6.4 More people are forecast to take advantage of the improved rail and DLR services, and so the number of people using the bus services decreases in general across the

Borough. The exceptions to this are Catford South, Downham, Whitefoot and Evelyn wards, where some bus growth is forecast.

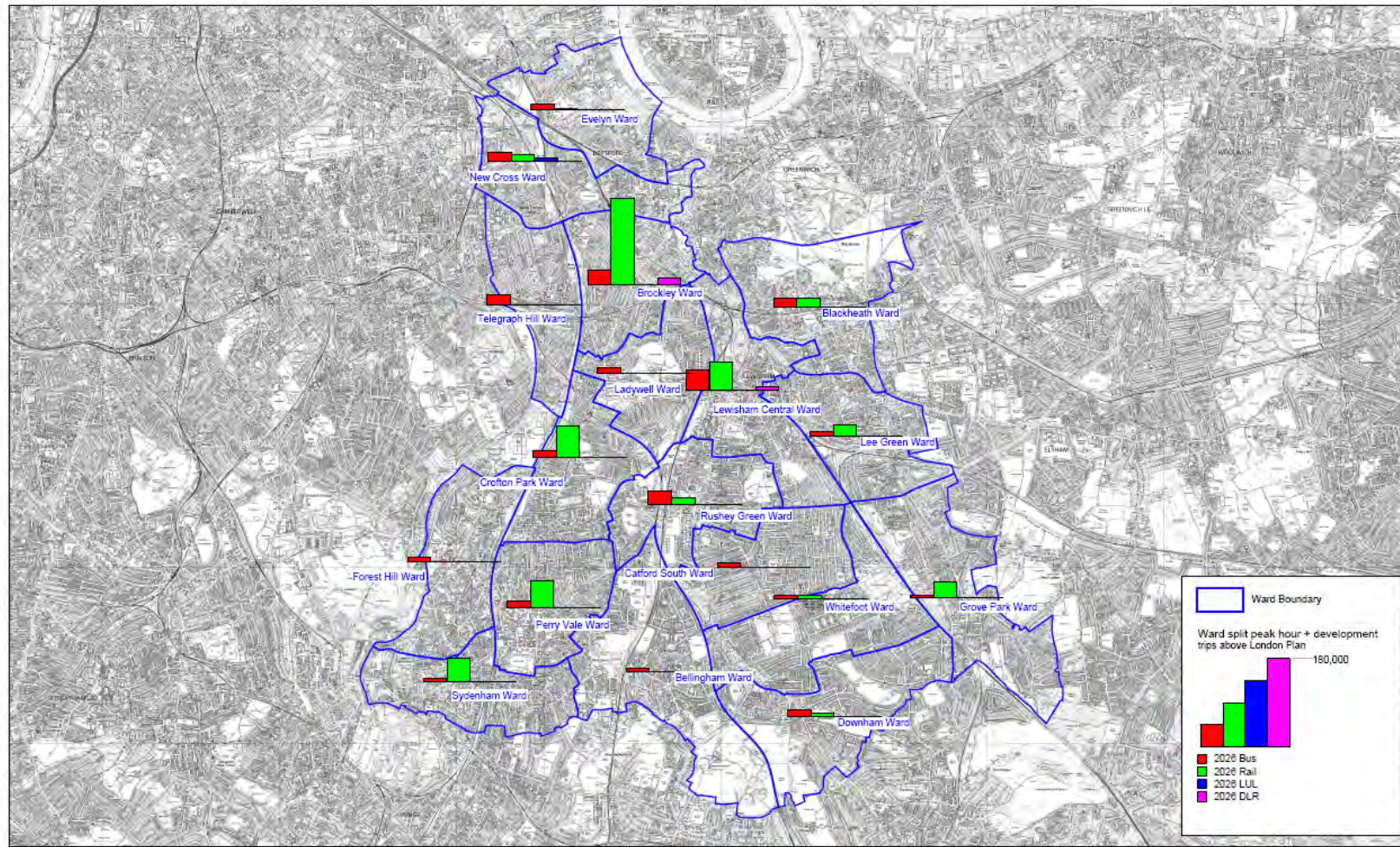
**Table 7.3: Station node to ward allocation**

| <b>Station</b>                 | <b>Ward containing Railplan node</b>           |
|--------------------------------|--|
| New Cross Gate (LUL)           | New Cross                                      |
| Brockley                       | Brockley                                       |
| Honor Oak Park                 | Crofton Park                                   |
| Forest Hill                    | Perry Vale                                     |
| Sydenham                       | Sydenham                                       |
| Crofton Park                   | Crofton Park                                   |
| Catford                        | Rushey Green                                   |
| Bellingham                     | Whitefoot                                      |
| Beckenham Hill                 | Downham  |
| New Cross (LUL)                | New Cross                                      |
| St Johns                       | Brockley                                       |
| Ladywell                       | Lewisham Central                               |
| Catford Bridge                 | Rushey Green                                   |
| Lewisham                       | Lewisham Central                               |
| Blackheath                     | Blackheath                                     |
| Deptford                       | Evelyn (down line), New Cross (up line) border |
| Hither Green                   | Lewisham Central, Lee Green border             |
| Lee                            | Lee Green                                      |
| Grove Park                     | Grove Park                                     |
| South Bermondsey               | New Cross                                      |
| New Cross (National Rail)      | Brockley                                       |
| New Cross Gate (National Rail) | Brockley                                       |
| Deptford Bridge (DLR)          | Brockley                                       |
| Nunhead                        | Telegraph Hill (down line)                     |
| Lewisham (DLR)                 | Lewisham Central                               |
| Elverson Road (DLR)            | Lewisham Central                               |

7.6.5 Public transport use by ward in 2026 under Option 1 is illustrated in Figure 7.5.



**Figure 7.5: 2026 public transport use by ward – Option 1 – no modal shift (AM peak hour)**



7.6.6 Comparing Figure 7.6 above with the results for 2010 (Figure 7.3) clearly highlights the scale of some of the changes in public transport use, particularly rail use. Numbers of rail trips can be seen to increase substantially in Brockley, Crofton Park, Perry Vale and Sydenham wards. The large in LUL trips in New Cross relates to the East London Line Extension.

7.6.7 Further analysis by each public transport mode is presented below.

### **Rail**

7.6.8 In terms of rail use, Table 7.4 shows the change in the number of up trips (towards London) and down trips over the study period. The figures are based on the 2006 Railplan model.

**Table 7.4: Borough-wide rail growth – Option 1 no modal shift (AM peak hour)**

| Direction | 2006    | 2026    |
|-----------|---------|---------|
| Up        | 286,626 | 303,026 |
| Down      | 31,279  | 55,192  |

7.6.9 Proportionally, there is a much greater growth in journeys heading away from London (66.5%), although there is still a 3.2% growth on journeys in the peak direction towards London.

7.6.10 To illustrate the changes on the busiest sections of railway line, Table 7.5 shows the rail links with the ten highest volumes of passengers in the 2006 Railplan scenario and how they change by 2026. The 2006 links are shown, as the 2010 figures are by ward and not by individual link. As mentioned earlier, the difference between 2006 and 2010 in numbers of passengers per link would be marginal. All the links shown are in the up (towards London) direction.

**Table 7.5: Change in busiest rail link loads (AM peak hour) – Option 1 no modal shift**

| Link   | 2006   | 2026   | Percentage change |
|--|--------|--------|-------------------|
| St John's – New Cross                          | 30,450 | 28,751 | -5.6%             |
| New Cross – London Bridge (Charing Cross line) | 16,754 | 18,286 | 9.1%              |
| Brockley – New Cross Gate                      | 15,744 | 19,620 | 24.6%             |
| Honor Oak Park – Brockley                      | 15,109 | 22,990 | 52.2%             |
| Forest Hill – Honor Oak Park                   | 14,810 | 22,550 | 52.3%             |
| New Cross – London Bridge (Cannon Street line) | 14,711 | 8,976  | -39%              |
| Grove Park – Hither Green                      | 14,179 | 13,996 | -1.3%             |
| New Cross Gate – London Bridge                 | 13,778 | 6,521  | -52.7%            |
| Elmstead Woods – Grove Park                    | 12,712 | 12,530 | -1.4%             |
| Sydenham – Forest Hill                         | 12,345 | 19,691 | 59.5%             |

7.6.11 There are some large increases in rail use on such links as Sydenham-Forest Hill-Honor Oak Park-Brockley as capacity increases and service improvements will encourage rail use. The large increase in use on this line is partly down do it forming part of the East London Line Extension route for services to Crystal Palace and West Croydon, and this will give a significant capacity increase; the South London Route Utilisation Study indicates that there will be 18 trains per hour in the peak direction running along this

section of track by 2015. New Cross and New Cross Gate have overall reductions on links towards London Bridge as people transfer to the East London Line extension.

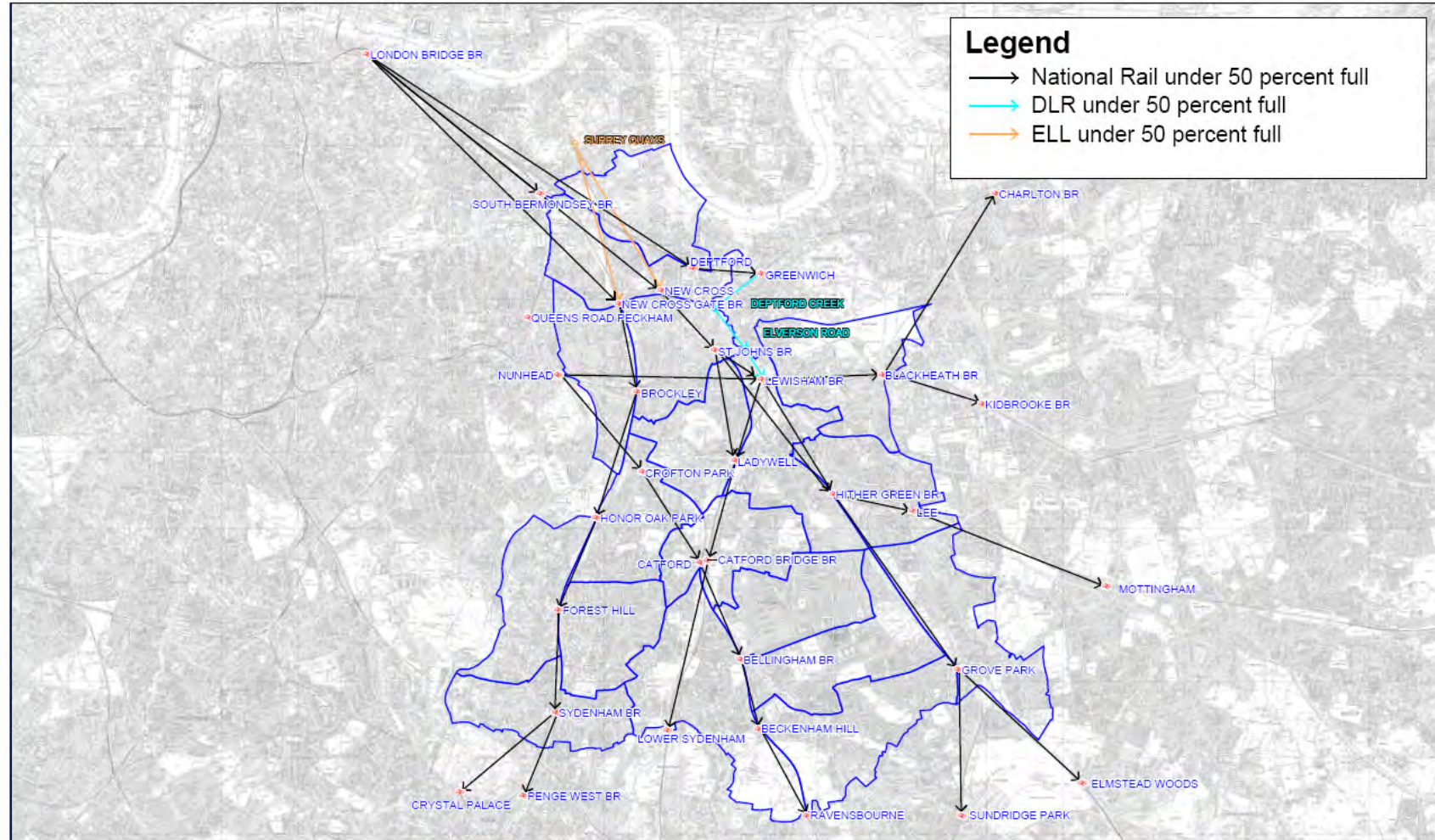
7.6.12 As was shown earlier, much of the rail network is currently under severe strain in Lewisham. However, there will be capacity increases coming into place through such measures as train lengthening schemes, and extra trains operating as a result of such schemes as the East London Line Extension. Figure 7.6 and Figure 7.7 show the extent of rail crowding in 2026 after these measures have come into place.

7.6.13 Many rail improvements are scheduled to come into operation in the period before 2016. Railplan outputs for 2016 were used in order to be able to examine in more detail the impact of capacity improvements compared to expected growth on the network over time. Railplan results for 2016 show a large impact, with significant V/C improvements being seen in that year. Between 2016 and 2026, the figures start to increase again. Table 7.6 shows the impact at stations in Lewisham in 2006, 2016 and 2026. The figures show the percentage of crush capacity on peak hour trains on departure from stations during the AM peak hour. All the figures are for the capacity of trains towards London. these clearly show that that crush capacity is still exceeded on many links, however it is exceeded by less than at present due to planned rail improvements.

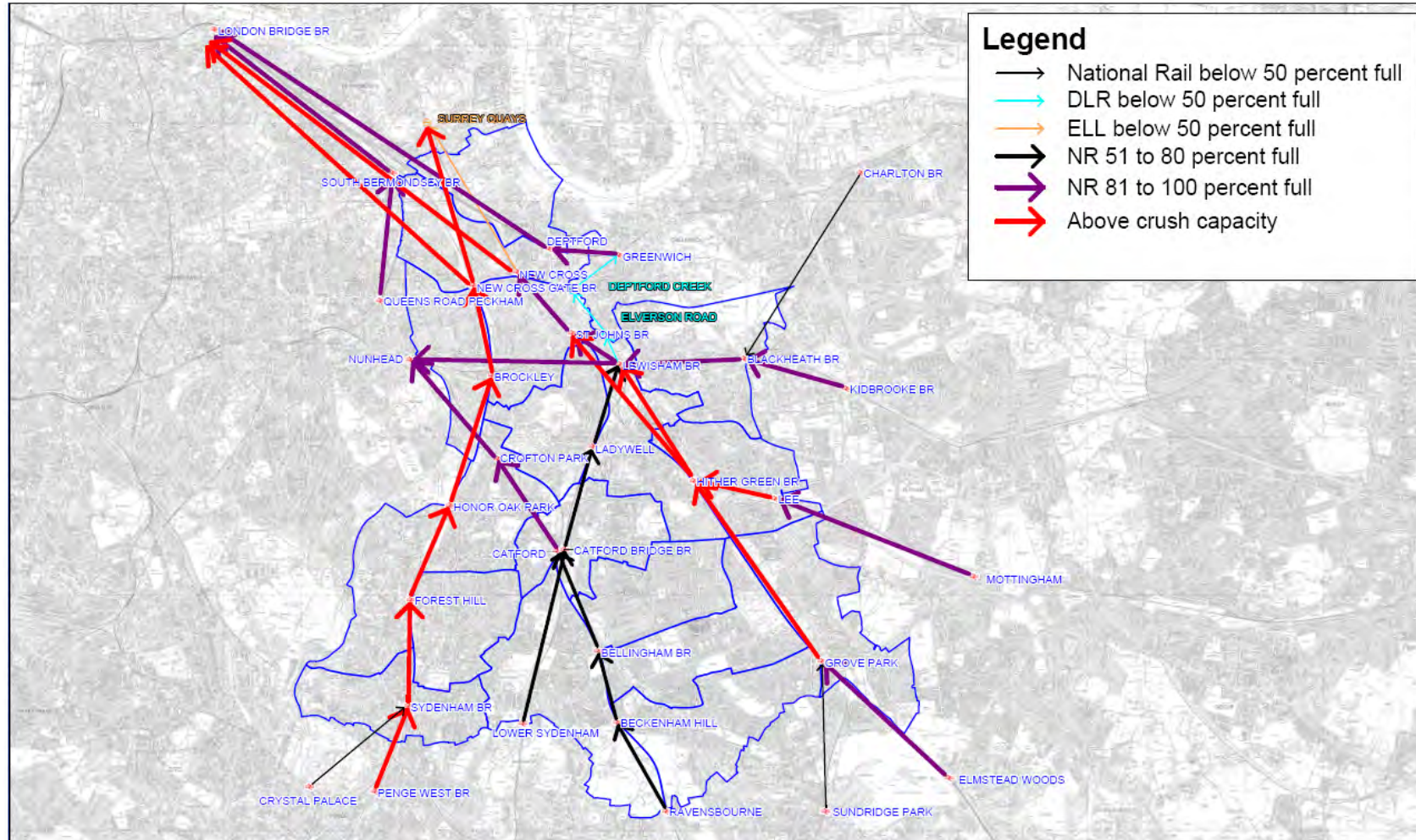
**Table 7.6: Proportion of crush capacity filled – towards London (AM peak 3 hours)**

| <b>Station</b> | <b>2006</b> | <b>2016</b> | <b>2026</b> |
|----------------|-------------|-------------|-------------|
| Brockley       | 159%        | 118%        | 125%        |
| New Cross Gate | 153%        | 116%        | 122%        |
| Honor Oak Park | 153%        | 124%        | 121%        |
| Forest Hill    | 150%        | 113%        | 118%        |
| Lee            | 131%        | 111%        | 118%        |
| Hither Green   | 125%        | 101%        | 108%        |
| New Cross      | 127%        | 98%         | 105%        |
| Grove Park     | 121%        | 97%         | 104%        |
| Sydenham       | 125%        | 98%         | 103%        |
| Crofton Park   | 133%        | 93%         | 100%        |
| St. John's     | 123%        | 91%         | 100%        |
| Blackheath     | 127%        | 76%         | 91%         |
| Deptford       | 134%        | 69%         | 88%         |
| Lewisham       | 122%        | 76%         | 88%         |
| Catford        | 132%        | 75%         | 82%         |
| Ladywell       | 92%         | 71%         | 80%         |
| Catford Bridge | 92%         | 66%         | 74%         |
| Lower Sydenham | 75%         | 62%         | 64%         |
| Beckenham Hill | 117%        | 58%         | 60%         |
| Bellingham     | 118%        | 52%         | 58%         |

**Figure 7.6: 2026 rail V/C away from central London (AM peak 3 hours)**



**Figure 7.7: 2026 rail V/C towards central London (AM peak 3 hours)**



- 7.6.14 Although certain routes continue to show demand exceeding crush capacities of trains in 2026, pressure is relieved on a number of routes. This is particularly noticeable on Thameslink route services from Sevenoaks via Beckenham Hill, Bellingham, Catford, Crofton Park and Nunhead, as the effects of the Thameslink Programme upgrade come into force, allowing up to 24 per trains to operate through the central section by 2015. The pressure on Lewisham station is relieved to some extent, although trains approaching it from Hither Green are still loaded above capacity. Brockley station will continue to have the highest V/C proportion, whilst services from New Cross and New Cross Gate towards London Bridge will remain overcrowded in 2026.
- 7.6.15 East London Line Extension services via New Cross Gate will be above capacity in 2026, although there is ample spare capacity for these services from New Cross. Services on the Docklands Light Railway in Lewisham have plenty of spare capacity in both directions in 2026.
- 7.6.16 Overall, the planned rail improvements help reduce the impact of overcrowding. Nevertheless, further measures to help ameliorate this beyond 2026 should be explored, such as extension of the Bakerloo line, and extension of the DLR network south of Lewisham.

### **Buses**

- 7.6.17 Table 7.7 shows the impacts on the busiest bus link loads from 2006 to 2026.

**Table 7.7: Change in busiest bus link loads – Option 1 no modal shift (AM peak hour)**

| <b>Link</b>   | <b>2006</b> | <b>2026</b> | <b>Percentage change</b> |
|---|-------------|-------------|--------------------------|
| Lewisham Way/Parkfield Road – New Cross Road/Lewisham Way | 2,219       | 1,570       | -29.3%                   |
| New Cross Road/Lewisham Way                               | 2,172       | 1,532       | -29.5%                   |
| New Cross Road  | 2,002       | 1,588       | -20.7%                   |
| Lewisham High Street – Lewis Grove                        | 1,913       | 1,706       | -10.8%                   |
| Lewisham High St/Molesworth St                            | 1,913       | 1,706       | -10.8%                   |
| Ladywell (Lewisham High Street) – Ladywell Baths          | 1,898       | 1,665       | -12.3%                   |
| Ladywell Baths - Lewisham High St/Molesworth St           | 1,803       | 1,594       | -11.5%                   |
| New Cross Road/Lewisham Way                               | 1,658       | 1,692       | 2.1%                     |
| New Cross Road – New Cross Road/Lewisham Way              | 1,634       | 1,662       | 1.7%                     |
| New Cross station – Amersham Road                         | 1,616       | 1,410       | -12.7%                   |

- 7.6.18 Bus use reduces in all wards except Catford South, Downham and Evelyn, with the only significant increase in bus use occurring in Evelyn. This increase in Evelyn is at least partly due to this ward having the greatest level of development in the Borough at sites such as Convoys Wharf. Decrease in bus use elsewhere is brought about as capacity improvements are made to rail services, enabling growth in rail trips at the expense of bus trips.

## 7.7 PT impacts of 2026 Option 1 with modal shift

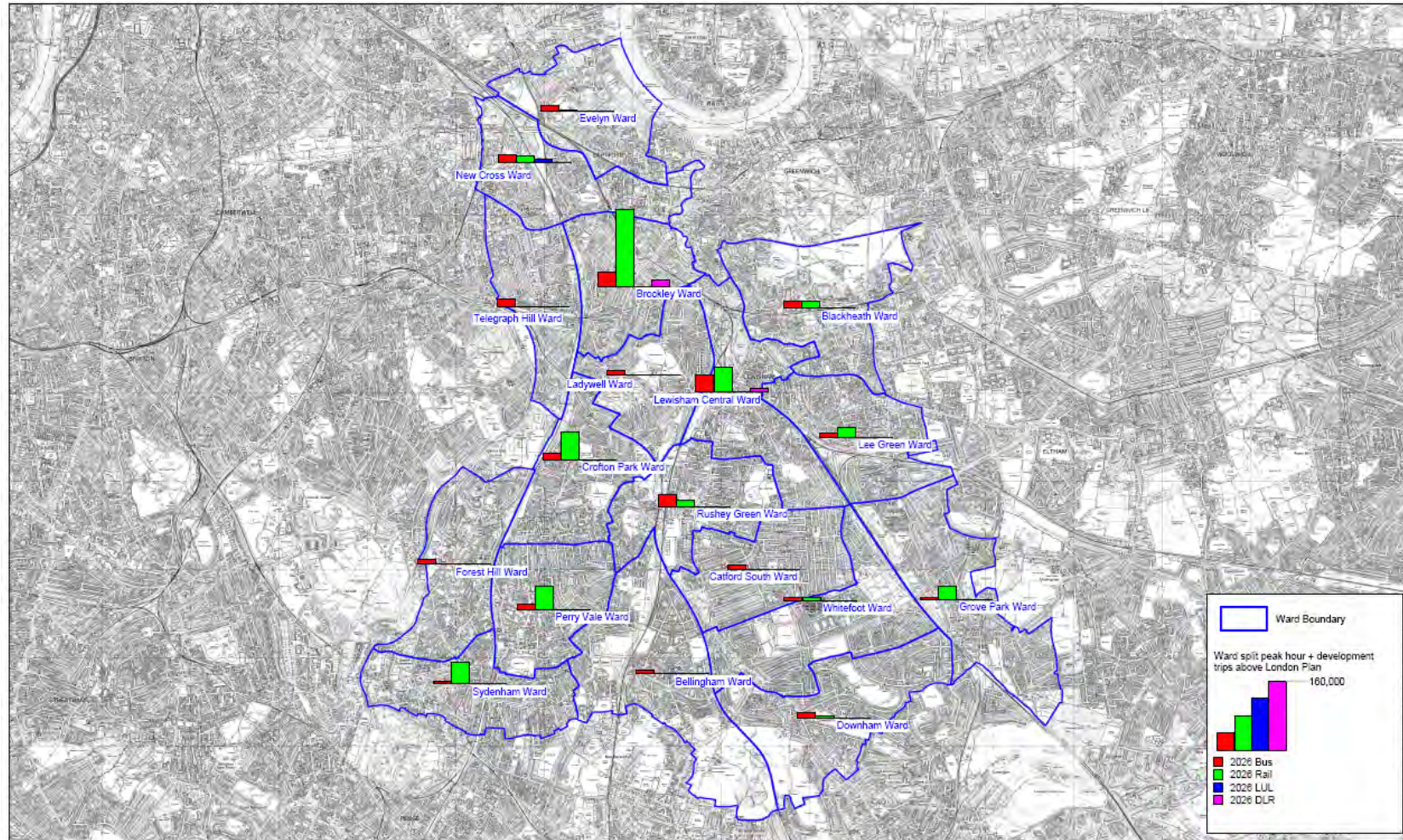
7.7.1 For this option, it was assumed that there would be a modal shift of 11% from highways onto other modes. For the purposes of this study, it was assumed that all of these trips would use public transport (rather than walking and cycling) as a robust 'worst case scenario' capacity test. The trips from the highway model were split in each ward on the basis of the public transport mode share in the 2026 Railplan model by ward.

7.7.2 Public transport use by ward in 2026 under this option is illustrated in Table 7.8 and Figure 7.8. The differences from the scenario with no modal shift are not significant, as they are spread across links/wards. In other words, the volume figure for each ward does not change significantly, so crudely breaking this down to each individual link would have very little impact on the comparison of V/C. This means that no V/C analysis is presented for this scenario.

**Table 7.8: Public transport change by ward – Option 1 with modal shift (AM peak hour)**

| Ward             | 2010 Bus | 2010 Rail | 2010 LUL & DLR | 2026 Bus | 2026 Rail | 2026 LUL & DLR | % change Bus | % change Rail | % change LUL & DLR |
|------------------|----------|-----------|----------------|----------|-----------|----------------|--------------|---------------|--------------------|
| Bellingham       | 5,783    | -         | -              | 5,570    | -         | -              | -3.7%        | -             | -                  |
| Blackheath       | 17,160   | 16,080    | -              | 16,449   | 15,780    | -              | -4.1%        | -1.9%         | -                  |
| Brockley         | 37,070   | 153,673   | 10,126         | 29,805   | 171,403   | 13,286         | -19.6%       | 11.5%         | 31.2%              |
| Catford South    | 10,925   | -         | -              | 11,361   | -         | -              | 4.0%         | -             | -                  |
| Crofton Park     | 15,903   | 46,613    | -              | 13,489   | 63,512    | -              | -15.2%       | 36.3%         | -                  |
| Downham          | 12,250   | 10,541    | -              | 12,540   | 5,236     | -              | 2.4%         | -50.3%        | -                  |
| Evelyn           | 10,799   | 661       | -              | 13,281   | 2,233     | -              | 23.0%        | 237.8%        | -                  |
| Forest Hill      | 10,748   | -         | -              | 9,758    | -         | -              | -9.2%        | -             | -                  |
| Grove Park       | 8,187    | 29,146    | -              | 7,868    | 31,815    | -              | -3.9%        | 9.2%          | -                  |
| Ladywell         | 14,166   | -         | -              | 11,734   | -         | -              | -17.2%       | -             | -                  |
| Lee Green        | 10,060   | 21,187    | -              | 9,552    | 23,726    | -              | -5%          | 12%           | -                  |
| Lewisham Central | 42,695   | 66,436    | 4,648          | 39,221   | 56,693    | 5,945          | -8.1%        | -14.7%        | 27.9%              |
| New Cross        | 19,819   | 14,281    | 1,727          | 17,920   | 12,940    | 6,545          | -9.6%        | -12.7%        | 279.0%             |
| Perry Vale       | 14,730   | 32,000    | -              | 12,460   | 50,946    | -              | -15.4%       | 59.2%         | -                  |
| Rushey Green     | 27,984   | 16,389    | -              | 26,244   | 12,275    | -              | -6.2%        | -25.1%        | -                  |
| Sydenham         | 9,099    | 29,086    | -              | 7,944    | 47,278    | -              | -12.7%       | 62.5%         | -                  |
| Telegraph Hill   | 22,345   | 555       | -              | 19,019   | 896       | -              | -14.9%       | 61.4%         | -                  |
| Whitefoot        | 7,740    | 10,601    | -              | 7,865    | 5,627     | -              | 1.6%         | -46.9%        | -                  |

**Figure 7.8: 2026 public transport use by ward – Option 1 with modal shift (AM peak hour)**





7.7.3 The above table and figure show very small changes on to the overall ward figures for public transport use in the 11% mode shift scenario. The greatest difference between the two scenarios is the 4% increase in bus use in Bellingham. There are 2% increases in bus use in Catford South, Evelyn and Ladywell. All other wards and all other modes have increases of 1% or less per ward from the no modal shift to the 11% modal shift scenario.

## 7.8 PT Impacts of Option 2 – 2026 no modal shift

7.8.1 Option 2 tests reduce the number of new residential units provided in the northern wards of the borough by 2026 by excluding five development sites. This reduces the total provision by 4,490 dwellings. The sites are:

1. Childers St / Arklow Road
2. Oxestalls Road
3. Plough Way
4. Grinstead Road
5. Surrey Canal Road

7.8.2 Table 6.10 shows total peak hour public transport trips (generated/attracted, for rail, LUL and bus combined) which have been excluded from Option 2. These have been calculated using the trip rates shown in Table 4.2.

**Table 7.9: Total Public Transport Trips from Development Sites Excluded from Option 2 (AM peak hour)**

| Name                      | Ward      | Development Units | PT Trips Destination | PT Trips Origin |
|---------------------------|-----------|-------------------|----------------------|-----------------|
| Childers St/Arklow Road   | Evelyn    | 200               | 18                   | 54              |
| Oxestalls Road            | Evelyn    | 950               | 85                   | 259             |
| Plough Way (Cannon Wharf) | Evelyn    | 750               | 67                   | 204             |
| Grinstead Road            | New Cross | 160               | 15                   | 46              |
| Surrey Canal Road         | New Cross | 2,430             | 231                  | 703             |
| <b>Total</b>              |           | <b>4,490</b>      | <b>416</b>           | <b>1,266</b>    |

7.8.3 Table 6.11 summarises the excluded trips by ward and mode of transport, separated into origin and destination.

**Table 7.10: Public Transport Trips by Mode from Development Sites Excluded from Option 2 (AM peak hour)**

| Mode         | Origin/Destination | Evelyn     | New Cross  | Total        |
|--------------|--------------------|------------|------------|--------------|
| Train        | Destination        | 37         | 80         | 117          |
| Train        | Origin             | 112        | 244        | 355          |
| Bus          | Destination        | 62         | 89         | 152          |
| Bus          | Origin             | 190        | 271        | 461          |
| LUL & DLR    | Destination        | 71         | 77         | 148          |
| LUL & DLR    | Origin             | 216        | 235        | 450          |
| <b>Total</b> | <b>Destination</b> | <b>170</b> | <b>246</b> | <b>416</b>   |
| <b>Total</b> | <b>Origin</b>      | <b>517</b> | <b>749</b> | <b>1,266</b> |

7.8.4 As would be expected, the analysis shows that excluding the selected development sites from the option reduces number of public transport trips in the selected wards. The reduction is 1,683 in total; 416 trips destined for the relevant wards, and 1,266 originating in them. Given the higher number of development units excluded from New Cross this shows the biggest reduction in trips.

7.8.5 Overall, the exclusion of the five sites reduces LUL trips services by 598, rail trips by 472, and bus trips by 613.

7.8.6 Option 2 has a relatively localised impact on public transport trips when compared with Option 1, only significantly reducing demand in the Evelyn and New Cross wards. Table 7.11 summarises the impact of trip reduction for the Evelyn and New Cross wards for both options.

**Table 7.11: Public transport change by ward – Option 1 and 2 comparison (AM peak hour)**

| Ward      | Option 1 Bus | Option 1 Rail | Option 1 LUL & DLR | Option 2 Bus | Option 2 Rail | Option 2 LUL & DLR | % difference Bus | % difference Rail | % difference LUL & DLR |
|-----------|--------------|---------------|--------------------|--------------|---------------|--------------------|------------------|-------------------|------------------------|
| Evelyn    | 13,082       | 2,199         | -                  | 12,830       | 2,051         | -                  | -1.93%           | -6.74%            | 0.00%                  |
| New Cross | 17,837       | 12,880        | 6,515              | 17,477       | 12,556        | 6,203              | -2.02%           | -2.51%            | -4.79%                 |

7.8.7 The above shows that the biggest impact Option 2 has when compared with Option 1 is to reduce the number of rail trips to/from Evelyn, and the number of LUL and DLR trips to/from New Cross.

7.8.8 Given the localised impact of Option 2, and the relatively small reduction in public transport trips, the impact on V/C is minimal. For this reason more detailed analysis of the impacts and preparation of V/C diagrams has not been undertaken. However it should be noted that the reduced demand in Option 2 does offer some limited benefit in terms of freeing up some rail and underground capacity.

## 7.9 PT Impacts of Option 2 – 2026 with modal shift

7.9.1 A modal shift of 11% from car to public transport trips to/from the two relevant wards under this option makes little difference from the scenario with no modal shift. The total number of trips that shift from car to public transport modes from development is very small (less than 50). This means that the volume figure for each ward does not change significantly, so no V/C analysis is presented for this scenario.

## 7.10 Summary of key issues

7.10.1 The various improvements in rail services within and close to Lewisham are expected to result in an increase of rail use across the borough by approximately 12-13% in the morning peak hour, with the greatest proportional increases occurring in journeys away from central London.

7.10.2 Whilst at present there is some severe overcrowding on rail services into London from the Borough of Lewisham, the capacity and service improvements that take place facilitate growth in patronage. Even with rail improvements, such as the train lengthening schemes across the Southeastern local network, large parts of the rail network in Lewisham will suffer from overcrowding in 2026. The Network Rail South London Route Utilisation Study confirms this conclusion, predicting that there will be significant standing north of Sydenham at peak times, and passengers in excess of capacity between London Bridge and St. Johns, South Bermondsey and Deptford by 2016. There will also be significant standing on trains at stations further out, such as Lewisham, Blackheath, Hither Green, Grove Park and Lee. However despite overcrowding continuing, the level at which overcrowding occurs will be reduced significantly across all routes to less than present levels.

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- 7.10.3 The East London Line Extension will attract significant growth in usage by 2026 compared to use of the East London Line as it was; the wider range of destinations offered will clearly have a positive impact in attracting patronage. Some of the biggest rail growth in the Borough occurs on the East London Line Extension route between Sydenham and New Cross Gate. Even with the increase in capacity over the route of the East London Line Extension, trains running on the line will continue to operate above crush capacity in 2026, although the proportion of V/C reduces between the base year model and 2026.
- 7.10.4 Whilst the Docklands Light Railway will see growth in use during the period of the study, the associated capacity increases mean that it will not be placed under strain from this growth.
- 7.10.5 Although crowding will be reduced through various planned rail enhancements, ongoing exploration of further measures to help ameliorate overcrowding should be explored. This could include extension of the Bakerloo line, and extension of the DLR network south of Lewisham.
- 7.10.6 As more people take advantage of the improved rail and DLR services, the number of people using the bus services decreases in general across the Borough. The exceptions to this are Catford South, Downham, Whitefoot and Evelyn wards, where some bus growth is forecast. Bus services will continue to provide important links across the Borough between areas that may not be connected by rail, and alternative routes to Central London when overcrowding or delays become an issue for passengers.
- 7.10.7 Option 2 has a relatively localised impact on public transport trips when compared with Option 1, only significantly reducing demand in the Evelyn and New Cross wards. Option 2 offers a relatively small reduction in public transport trips compared with Option 1, not enough to significantly affect V/C.

## 8 Identification of measures

### 8.1 Infrastructure

8.1.1 Locations where the need for possible infrastructure improvements have been identified and are detailed below.

#### **Highways**

8.1.2 Table 8.1 summarises the junctions within Lewisham which suffer most congestion in 2010 and in future year options, and which therefore may require remedial works or other improvements. Cells in the table are coloured red where the junction is over 100% saturated, orange where it is over 90% and white where it remains below 90% in that option.

8.1.3 Table 8.2 highlights junctions within the study area but outside of the Borough boundaries that may also require improvements in addition to improvements already committed (see Chapter 5).

**Table 8.1: Junctions Identified for Possible Improvement Based on V/C - Lewisham**

| Location                                      | Ward             | 2010   | 2025 Option 1 | 2025 Option 1 RM | 2025 Option 2 | 2025 Option 2 RM |
|---|------------------|--------|---------------|------------------|---------------|------------------|
| Lewisham High St / Whitburn Rd / Courthill Rd | Lewisham Central | Yellow | Red           | Yellow           | Red           | Yellow           |
| Bush Road / Bestwood Street / Trundle's Road  | Evelyn           | Red    | Red           | Yellow           | Yellow        | Yellow           |
| New Cross Road / Tanner's Hill                | Brockley         | Red    | Red           | Red              | Red           | Red              |
| Lee High Road / Belmont Hill / Lewis Grove    | Lewisham Central | Red    | Red           | Red              | Red           | Red              |

**Table 8.2: Junctions Identified for Possible Improvement Based on V/C – Other Boroughs**

| Location                                     | Borough   | 2010   | 2025 Option 1 | 2025 Option 1 RM | 2025 Option 2 | 2025 Option 2 RM |
|--|-----------|--------|---------------|------------------|---------------|------------------|
| Lower Rd / Rotherhithe Old Rd / Hawkstone Rd | Southwark | Yellow | Red           | Red              | Red           | Yellow           |

8.1.4 It should be noted that the improvements to the junction of Lower Rd / Rotherhithe Old Rd / Hawkstone Rd, located across the borough boundary in Southwark, are currently being examined by LB Southwark as part of the Canada Water AAP and associated highways works.

8.1.5 Roads which demonstrate traffic delays greater than six minutes and which may require improvement works are summarised by model year in Table 8.3 below. Table 8.4 shows roads in neighbouring boroughs that may also require improvement. Cells in the table are coloured red where the road reaches delays of greater that six minutes.

**Table 8.3: Roads Identified for Possible Improvements Based on Delays - Lewisham**

| Location  | 2010 | 2025 Option 1 | 2025 Option 2 |
|---|------|---------------|---------------|
| St Mildred's Rd (A205) WB (jtn Baring Rd / Burnt Ash Hill – jtn Hither Green Lane / Verdant Lane) |      |               |               |
| Belmont Hill / Lee Tce (B220) WB (jtn Lee High Rd (A20) – jtn Lee Road)                           |      |               |               |
| Burnt Ash Rd / Burnt Ash Hill NB (jtn Westthorne Ave (A205) – jtn Lee High Rd / Eltham Rd (A20).  |      |               |               |

8.1.6 In addition to the specific measures identified above, other locations should be identified for application of 20mph schemes, HGV restrictions, danger reduction and rat-run removal. Extensions to controlled parking and loading schemes should also be explored. Other local measures proposed in the Borough Spending Plan (2009) should also be taken forward.

**Public Transport**

8.1.7 The various improvements in rail services within and close to Lewisham will greatly benefit the borough and result in an increase of rail use across the borough by approximately 12-13% in the morning peak hour. Whilst there will still be overcrowding on some rail services, the capacity and service improvements that take place will mean that overcrowding will be reduced significantly across all routes to less than present levels.

8.1.8 Station enhancements will also benefit rail passengers. Deptford Station is already committed for re-provision with a completely new building built to LUL standards and fully accessible. The construction of a new station at Surrey Canal Road is also being considered as part of Phase II of the East London Line.

8.1.9 The Bakerloo line extension and southern extension of the DLR should be pursued as longer term ambitions.

8.1.10 Further station improvement works, particularly enhancing accessibility, should be pursued at other stations in Lewisham. Stations with platforms that are not fully accessible and are not presently committed for improvements under the Access for All programme include:

- Catford
- Bellingham
- St Johns
- Hither Green

8.1.11 Other stations that have accessible platforms may still require further upgrades to provide accessible ticket machines, ticket counters and other enhancements.

8.1.12 Walking and cycling routes to stations should be examined and key routes improved through Area Based Schemes. This should include resurfacing, provision of new crossings, wayfinding information, and improved lighting.

8.1.13 The modelling work shows that as more people take advantage of improved rail and DLR services, the number of people using the bus services decreases in general across the

Borough, with exceptions to this trend in Catford South, Downham, Whitefoot and Evelyn wards where some bus growth is forecast. Nevertheless, will be important to maintain a high standard of bus provision to guard against potential transfers to car trips. Indeed bus capacity increase in some areas should be pursued to help achieve the 11% modal shift target. The Deptford New Cross Transport Infrastructure Study identifies a number of specific routes where capacity should be improved (1, 47, 53, 177, 188, 199, 255, 381, 453, P12), plus new routes to be created/existing services diverted to better serve local areas.

- 8.1.14 The implementation of highways improvements at congestion hotspots (see Tables 8.1) will help to reduce delays to buses. The locations identified should also be examined in more detail to determine whether specific bus priority measures would encourage more efficient use of existing infrastructure and reduce delay. This could include bus lanes, and signal priority.
- 8.1.15 The introduction of the Lewisham Waterlink Transit (as per the Deptford New Cross Transport Infrastructure Study) should be pursued. This would be a bus service in Deptford and New Cross similar in concept to the Greenwich Waterfront Transit, with enhanced bus priority measures and limited stopping patterns. This would call at Lewisham Station, Greenwich Station, Convoys Wharf, Canada Water, Surrey Quays, Bermondsey, Elephant and Castle.
- 8.1.16 For major development sites bus-only routes could be created using bus gates (as is proposed at Convoys Wharf) or other means to ensure priority for buses.
- 8.1.17 Other measures at bus stops should be pursued to improve bus usage, including:
- Providing off-bus ticketing machines to speed up boarding.
  - Relocating bus stops where necessary to better relate to trip attractors and interchanges.
  - Upgrading bus stop waiting environments to meet current accessibility guidelines.
  - Providing bus boarders at stops.
  - Providing high quality waiting environments, with a consistent style of furniture and materials. This should include shelters, seats, bins, adequate lighting.
  - Improving the wider public realm around key bus stop locations to create safer more pleasant environments. This could include for example resurfacing, planting, lighting, public art. The flagship East London Transit project sets a good benchmark for this type of approach.
- 8.1.18 It would be useful to undertake a detailed review of all bus routes across the Borough to understand how services could be better provided. Such a review could be used to then discuss with TfL potential longer term bus routing changes. This would particularly useful should TfL choose to review the entire London bus network in the near future.
- 8.1.19 Changes to bus fare arrangements would also encourage bus usage. At present the Oyster card ticketing system charges a flat fare on boarding each bus. Fares could be adjusted so that, for example, the initial fare covers boarding other buses within a set time period, or offers a reduced fare for boarding a second bus, thereby encouraging bus to bus interchange. Clearly such measures would need to be discussed with TfL and considered in relation to the operation of London-wide Oyster ticketing system.
- 8.1.20 Other local measures set out in the Borough Spending Plan (2009) that improve public transport should also be taken forward.

### ***Walking and Cycling***

- 8.1.21 A cycle Superhighway is planned to be completed by October 2012 to connect Lewisham to Victoria via the A20 and A202. The possibility of additional Superhighways in the

Lewisham area should be explored for implementation following the first tranche (i.e. after 2015).

- 8.1.22 Other local road enhancements to make cycling easier and safer should be pursued. This could include provision of cycle routes (including lanes and/or signage), and managing car access to residential areas, through physical or design measures, to create pleasant and safer cycling environments
- 8.1.23 TfL's Cycle Hire scheme, to be launched during 2010, will be a public bicycle sharing scheme for short journeys in and around central London. The possibility of extending this scheme to include Lewisham should be explored, with particular focus on interchanges and major trip attractors.
- 8.1.24 Increased provision of secure bicycle parking facilities should be made, particularly at stations, workplaces, schools, retail and leisure sites
- 8.1.25 The implementation of strategic walking routes should be pursued. Waterlink Way is one such route.
- 8.1.26 The quality of the pedestrian environment should be enhanced by removing clutter and providing wide, high quality footways and paths, particularly in places of high pedestrian activity, around key trip attractors (particularly within walking catchment of stations), and local pedestrian connections.
- 8.1.27 Wherever possible traffic signals should be optimised to assist conditions for pedestrians and cyclists.
- 8.1.28 Direct, convenient pedestrian access (for example, with surface crossings) should be provided where appropriate, particularly near key trip attractors such as schools and stations.
- 8.1.29 Other local measures set out in the Borough Spending Plan (2009) that improve walking and cycling should also be taken forward.

## 8.2 Supporting measures

- 8.2.1 Further measures that are needed to support the effectiveness of transport infrastructure and development include:
  - Travel planning initiatives for existing residents and businesses (e.g. Smarter Travel Sutton).
  - Measures to encourage peak spreading of travel – such as changing school opening hours, encourage flexible working hours.
  - Measures to raise awareness of public transport (e.g. real-time information for train, DLR and bus services at key locations).
  - Measures to raise the profile of cycle and walking – smarter travel initiatives, provision of information, education and training, major events to increase awareness.
  - Measures to improve parking control – removing gaps in the CPZ coverage, consideration of extending CPZs to cover the Saturday daytime period.

## 8.3 Timescales for implementation

- 8.3.1 The table below sets out a broad timeframe for implementation of the measures discussed above. It includes references to measures set out in the Lewisham Town Centre Transport Study and in the Deptford New Cross Transport Study. This is divided into five year periods as per the periods for anticipated housing completion contained in the LB Lewisham Housing Trajectory 2009-2014 spreadsheet.

**Table 8.4: Time periods for implementation of measures**

|  | Short term<br>Yrs 1-5<br>(2010/11 -<br>2014/15) | Medium term<br>Yrs 6-10<br>(2015/16 –<br>2019/20) | Long term<br>Yrs 11-15<br>(2020/21 –<br>2024/25) |
|--|---|---|--|
| 1. Junction improvements:  |   |   |  |
| - Lewisham High St / Whitburn Rd / Courthill Rd                            |   | ✓   |  |
| - Bush Road / Bestwood Street / Trundley's Road                            | ✓   |   |  |
| - New Cross Road / Tanner's Hill   | ✓   |   |  |
| 2. Road link improvements:   |   |   |  |
| - St Mildred's Rd  | ✓   |   |  |
| - Belmont Hill / Lee Tce   |   | ✓   |  |
| - Burnt Ash Rd / Burnt Ash Hill  |   | ✓   |  |
| 3. Station accessibility improvements                                      |   |   | ✓  |
| 4. Walking/cycling routes to stations                                      |   | ✓   |  |
| 5. Bus priority measures at junctions and along links                      |   | ✓   |  |
| 6. Bus priority measures within major developments                         |   | ✓   | ✓  |
| 7. Bus stop quality/ accessibility improvements                            | ✓   |   |  |
| 8. Bus network review  |   | ✓   |  |
| 9. Bus ticketing changes   |   | ✓   |  |
| 10. Additional cycle superhighways   |   | ✓   |  |
| 11. Local cycle route enhancements/ additional cycle routes                | ✓   |   |  |
| 12. Traffic calming measures on residential streets                        | ✓   | ✓   |  |
| 13. Extension of cycle hire scheme   | ✓   |   |  |
| 14. Additional secure cycle parking  | ✓   |   |  |
| 15. Implementation of strategic walking routes                             |   | ✓   |  |
| 16. Pedestrian route quality improvements:                                 | ✓   | ✓   | ✓  |
| 17. Wayfinding signage installation  | ✓   |   |  |
| 18. Optimise traffic signals for pedestrians                               | ✓   |   |  |
| 19. Provide direct, at-grade pedestrian crossings at key attractors        | ✓   | ✓   |  |
| 20. Additional travel planning measures for existing residents/ businesses | ✓   |   |  |
| 21. Measures to encourage peak spreading                                   | ✓   | ✓   |  |
| 22. Measures to encourage awareness of public transport                    | ✓   |   |  |
| 23. Measures to raise awareness of walking and cycling                     | ✓   |   |  |
| 24. Extension of CPZ coverage and operating hours                          | ✓   |   |  |



## 9 Conclusions

- 9.1.1 This Borough-wide Transport Study has assessed the combined impact on the highway and public transport networks in the borough of various proposed developments. The overriding purpose of the Study is to inform the preparation of the Council's Core Strategy for the period 2010 to 2026. It will inform the strategic development options for the Borough and preparation of supporting transport policies. It will also provide a strategic framework to guide investment in transport infrastructure on an area-wide and site-specific basis, including identification of potential sources of funding.
- 9.1.2 Two broad strategic spatial options for the period 2010 to 2026 have been assessed, both of which focus upon larger housing and mixed-use development in key areas of the borough:
- Option 1: the more comprehensive option, with potential to deliver up to 17,525 new homes focussed on:
    - Catford town centre
    - Lewisham town centre
    - Key development sites within Deptford and New Cross, including Convoys Wharf
    - Six sites in the north of the Borough which are proposed to be designated as Mixed Use Employment sites.
  - Option 2 excludes the Mixed Use Employment sites and has the potential to deliver up to an additional 14,550 new homes. The specific sites excluded from this model are:
    - Surrey Canal Road
    - Plough Way
    - Oxestalls Road
    - Childers St/Arklow Road
    - Grinstead Road
- 9.1.3 Modelling was used to assess the impact of these options on the highway and public transport networks.

### **Highways**

- 9.1.4 Key conclusions from the AM peak hour highways model include:
- The 2010 model shows more congestion is expected around Lewisham town centre, as well as a slight drop in average speed across the borough.
  - The 2025 model shows much more highways congestion than the 2010 model. This is a result of growth in traffic volumes as opposed to network changes affecting capacity. The average speed in the model within Lewisham decreases from 22.3kph to 16.8kph in Option 1.
  - A sensitivity test was carried out whereby the car trip matrix was reduced by 11% to simulate a target modal shift from car to non-car modes. Achieving this reduction results in much less congestion and delay when compared to the 2025 model, with average speeds being maintained at close to 2010 levels (21.1kph).
  - For all the model options there is more congestion in the north of the borough than in the south; this is highlighted by the demand vs. actual flow comparison. This is to be expected as most future development will take place in the north of the borough. As the model is an AM peak hour model, most congestion and delay is on traffic travelling in a westbound direction. It is anticipated that the PM peak would generally show the reverse of this trend.
  - In 2025, Option 2 shows less congestion than Option 1; the results show average traffic and bus speeds have increased by 3.6% and 4.6% respectively.

- A similar pattern was derived for the Option 2 sensitivity test (car matrix reduced by 11%) indicating considerably less congestion and delay for Option 2 compared to Option 1, with a significant improvement of average bus speed across study area of 18.5 kph. This equates approximately to the same average bus speed as in 2010.
- Journey time comparison shows improvements for both the A20 and A2 routes in Option 2 when compared to Option 1. The sensitivity test for Option 2 shows a significant improvement to all journey times, particularly on the A21 northbound, the A205 westbound, and the A20 and A2 in both directions.
- Junctions and links where delays and congestion are predicted to occur have been identified. The 2010 base model shows three junctions operating with a V/C of 100 or more, resulting in congestion and delays. There are also two road links with delays of greater than six minutes.
- 2025 Options 1 and 2 both show there are more junctions and links that experience delays, and that there are increases in delay time, with a few exceptions where decreases occur. The impact of delays is less in Option 2 compared to Option 1.

9.1.5 Overall the highway network, including committed improvements, is able to cope with the levels of growth tested in Option 1, as well as the less intensive Option 2. There are local instances of congestion and delays which occur in 2026, however the impacts are not so severe as to prevent the highway network from operating. Option 1, with the highest traffic volumes has five junctions which exceed capacity, and by levels which can be ameliorated with junction improvements. Furthermore the sensitivity tests show that the highways impacts can be ameliorated to a great extent by taking a proactive approach to encouraging modal shift away from the car.

### **Public Transport**

- The various improvements in rail services within and close to Lewisham result in an increase of rail use across the borough by approximately 12-13% in the morning peak hour.
- Planned rail capacity and service improvements will facilitate growth in patronage. Overcrowding on trains will continue, however the levels at which overcrowding occurs will be reduced significantly across all routes to less than present levels.
- The East London Line Extension will attract significant growth in usage by 2026. Trains running on the line will continue to operate above crush capacity in 2026, although occupancy levels reduce between the base year model and 2026.
- Whilst the Docklands Light Railway will see growth in use during the period of the study, the associated capacity increases mean that it will not be placed under strain from this growth.
- As more people take advantage of the improved rail and DLR services, the number of people using the bus services decreases in general across the Borough. The exceptions to this are Catford South, Downham, Whitefoot and Evelyn wards, where some bus growth is forecast.
- Bus services will continue to provide important links across the Borough between areas that may not be connected by rail, and alternative routes to Central London when overcrowding or delays become an issue for passengers.
- Option 2 has a relatively localised impact on public transport trips when compared with Option 1, only affecting the Evelyn and New Cross wards. Option 2 offers a relatively small reduction in public transport trips compared with Option 1, not enough to significantly affect occupancy levels.

9.1.6 Overall the public transport network with committed improvements is sufficient to cope with the levels of growth considered in Options 1 and 2. There is still overcrowding on rail services, however it is at much reduced levels when compared to present levels. Improvements in rail services are predicted to attract some existing bus passengers, freeing up capacity on bus services for additional passengers. It is also able to

satisfactorily cope with increased demand generated by modal switch from highways trips. However given that there is still overcrowding predicted on selected routes, additional public transport enhancements should be pursued, such as the Bakerloo line extension and a southern extension of the DLR.

### ***Infrastructure and Other Measures***

- 9.1.7 The impacts of Option 1 and 2 are not expected to cause major problems for the transport networks bearing in mind planned and future improvements to the networks. In essence, whilst the modelling identifies some specific problems for resolution, these are not insurmountable, nor do they suggest that the growth agenda being pursued by the borough requires revision.
- 9.1.8 A significant proportion of growth in traffic and public transport use by 2026 is background growth, and not a direct result of additional development. However it will be important to ensure that measures to ameliorate growth in highways trips addresses both trips generated by new development as well as by existing uses. The highways demands of the additional development can be reduced by the promotion by LBL of car-free or low levels of car parking development, coupled with proactive travel planning measures.
- 9.1.9 A range of measures have been identified to ameliorate future highways and public transport issues and are detailed below. It includes references to measures set out in the Lewisham Town Centre Transport Study (see this separate study for other local suggestions specifically for the Lewisham Town Centre area):
- A number of junctions which exceed acceptable levels of congestion have been identified for remedial works or other improvements.
  - Roads which demonstrate traffic delays greater than six minutes and which may require improvement works are identified for improvement works.
  - Further rail station improvement works, particularly enhancing accessibility, should be pursued at stations in Lewisham where such works are not presently committed.
  - Further upgrades to ensure station facilities at all stations are accessible (ticket machines, ticket counters, phones etc.).
  - Walking and cycling routes to stations should be examined and key routes improved through resurfacing, provision of new crossings, wayfinding information, and improved lighting.
  - The implementation of highways improvements at congestion hotspots should consider specific bus priority measures to encourage reduce delay (e.g. bus lanes, and signal priority).
  - Bus-only routes should be considered for major development sites (e.g. using bus gates etc.).
  - All bus stops should be upgraded in terms of quality of information, facilities and the wider environment to ensure safer and more pleasant bus travel.
  - A review of all bus routes across the Borough should be considered to understand how services could be better provided.
  - Changes to bus fare arrangements to encourage bus usage, and particularly bus to bus interchange, should be discussed with TfL.
  - The possibility of additional Cycle Superhighways in the Lewisham area should be explored for implementation following the first tranche of planned routes.
  - Other local road enhancements to make cycling easier and safer should be pursued (e.g. provision of cycle routes including lanes and/or signage, managing car access to residential areas through physical traffic calming and other design measures).
  - Extending the Central London cycle hire scheme to include Lewisham, with particular focus on interchanges and major trip attractors.

- Provide additional secure bicycle parking facilities at key locations, particularly at stations, workplaces, schools, retail and leisure sites.
- The implementation of strategic walking routes such as Waterlink Way should be pursued.
- Enhancing the quality of local pedestrian environments by removing clutter and providing wide, high quality footways and paths, particularly in places of high pedestrian activity, around key trip attractors, and along local pedestrian connections.
- Provision of pedestrian wayfinding signage as part of an integrated wayfinding strategy.
- Wherever possible traffic signals should be optimised to facilitate pedestrian and cycle movement.
- Direct, convenient pedestrian access (for example, with surface crossings) should be provided where appropriate, particularly near key trip attractors such as schools and stations.

9.1.10 Further measures that are needed to support the effectiveness of transport infrastructure and development include

- New developments to be car-free or very low levels of parking, with accompanying robust parking restrictions and highly effective travel planning measures.
- Travel planning initiatives for existing residents and businesses (e.g. Smarter Travel Sutton).
- Measures to encourage peak spreading of travel – such as changing school opening hours, encourage flexible working hours.
- Measures to raise awareness of public transport (e.g. real-time information for train, DLR and bus services at key locations).
- Measures to raise profile of cycle and walking – smarter travel initiatives, provision of information, education and training, major events to increase awareness.
- Measures to improve parking control – removing gaps in the CPZ coverage, consideration of extending time periods of CPZs.

## Appendix A – Housing Trajectories

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| London Borough of Lewisham Housing Trajectory by Ward - August 2009 |       |      |   |             |          |             |         |                |       |       |       | FIVE YEAR SUPPLY 1-5 |       |       |       |                 | FIVE YEAR SUPPLY 6-10 |       |       |       |       | FIVE YEAR SUPPLY 11-15 |       |       |       |       | TOTAL |                 |       |      |   |
|---|-------|------|---|-------------|----------|-------------|---------|----------------|-------|-------|-------|----------------------|-------|-------|-------|-----------------|-----------------------|-------|-------|-------|-------|------------------------|-------|-------|-------|-------|-------|-----------------|-------|------|---|
| Ward  | Total | Site | Name  | Post Code   | App. No. | Approved    | Pre-App | Thames Gateway | TOTAL | 09/10 | 10/11 | 11/12                | 12/13 | 13/14 | 14/15 | Total 2010-2015 | 15/16                 | 16/17 | 17/18 | 18/19 | 19/20 | Total 2015-2020        | 20/21 | 21/22 | 22/23 | 23/24 | 24/25 | Total 2020-2025 | 17625 |      |   |
| Bellingham  | 156   | 1    | Bell Green                                      | SE26 4PY    | 03/54844 | Y           | N       | N              | 156   |       |       |                      |       | 78    | 78    | 156             |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 156   |      |   |
| Blackheath  | 629   | 2    | Heathside and Lettbridge (Estate renewal)       | SE10 8CP    | N        | N           | Y       | Y              | 629   |       |       | 83                   | 100   | 106   | 289   | 120             | 140                   | 80    |       |       |       | 340                    |       |       |       |       |       | 0               | 629   |      |   |
| Brookley  | 326   | 3    | Seager (former distillery)                      | SE8 4HT     | 08/09446 | Y           | Y       | Y              | 278   |       |       |                      |       | 150   | 128   | 278             |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 326   |      |   |
|   |       | 4    | Sites at Brookley Cross                         | SE4         | N        | Y           | N       | N              | 48    |       |       |                      | 24    | 24    | 48    |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 5    | Tanners Hill                                    | SE8 4QD     | 05/60705 | Y           | N       | N              | 0     | 42    |       |                      |       |       |       |                 | 0                     |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
| Catford South   | 32    | 7    | 248 Bromley Road                                | SE8 2SY     | 06/62062 | Y           | N       | N              | 30    | 50    |       |                      |       |       |       | 0               |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 32    |      |   |
|   |       | 8    | Former Tile Magic (108-110 Bromley Road)        | SE8 2UJ     | 08/09237 | Y           | N       | N              | 32    |       |       | 32                   |       |       |       |                 | 32                    |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
| Groffon Park  | 0     |      | No sites  |             |          |             |         | N              | 0     |       |       |                      |       |       |       | 0               |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
| Downham   | 0     |      | No sites  |             |          |             |         | N              | 0     |       |       |                      |       |       |       | 0               |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
| Evelyn  | 5803  | 9    | Arklow Road                                     | SE8 5JT     |          | N           | Y       | Y              | 200   |       |       |                      |       | 50    | 50    | 100             | 50                    | 50    |       |       |       | 100                    |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 10   | William House, Childers Street                  | SE8         | 07/66538 | Y           | Y       | Y              | 89    | 89    |       |                      |       |       |       |                 | 0                     |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
|   |       | 11   | Oxestalls Road                                  | SE8 3QQ     | N        | Y           | Y       | Y              | 950   |       |       |                      |       | 59    | 337   | 396             | 299                   | 285   |       |       |       |                        | 554   |       |       |       |       |                 | 0     | 0    |   |
|   |       | 12   | Plough Way (Cannon Wharf)                       | SE8 5DU     | N        | Y           | Y       | Y              | 750   |       |       |                      |       | 354   | 380   | 734             | 16                    |       |       |       |       |                        | 16    |       |       |       |       |                 | 0     | 0    |   |
|   |       | 13   | Convoys Wharf                                   | SE8 3AR     | 02/52633 | Y/N         | Y       | Y              | Y     | 3500  |       |                      |       |       |       |                 | 0                     | 350   | 350   | 350   | 350   | 350                    | 1750  | 350   | 350   | 350   | 350   | 350             | 350   | 1750 | 0 |
|   |       | 14   | Trundleys Road (Rival Envelope Co)              | SE8 5BD     | 04/57494 | Y           | Y       | Y              | 88    |       |       | 88                   |       |       |       |                 |                       | 0     |       |       |       |                        | 0     |       |       |       |       |                 |       | 0    | 0 |
| Forest Hill   | 169   | 15   | Tharset Wharf (Creekside Village East)          | SE8 3DA     | 06/63352 | N           | Y       | Y              | 226   |       |       |                      | 113   | 113   | 226   |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 16   | Sites at Forest Hill (Station)                  | SE23        | N        | Y           | N       | N              | 24    |       | 24    |                      |       |       |       |                 | 0                     |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 17   | Sites at Forest Hill (Hindesley's Place)        | SE23 2NF    | 06/62965 | Y           | N       | N              | 71    |       | 71    |                      |       |       |       |                 | 0                     |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
| Grove Park  | 44    | 18   | Tyson Road (Rear Christmas Fellowship)          | SE23 3SH    | 08/70207 | N (Refused) | N       | N              | 74    |       |       |                      | 74    | 74    | 74    |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 19   | Former United Dairies                           | SE12 0PP    |          | N           | Y       | N              | 44    |       |       |                      | 44    | 44    | 44    |                 |                       |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
| Ladywell  | 34    | 20   | Former Lewisham Police Station                  | SE13 7UR    | 07/66447 | Y           | Y       | Y              | 34    |       |       | 34                   |       |       |       | 34              |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 34    |      |   |
| Lee Green   | 57    | 21   | 9 Staplehurst Road                              | SE13 5NN    | 06/64094 | Y           | N       | N              | 57    |       |       |                      |       |       |       | 0               |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 22   | 170-174 Lee High Road                           | SE13 5PL    | 06/62705 | Y           | N       | N              | 0     | 35    | 57    |                      |       |       |       |                 | 0                     |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
| Lewisham Central  | 3184  | 23   | Nightingale Grove Hither Green (Nos. 72 to 78)  | SE13 6DZ    | 07/65777 | Y           | N       | N              | 12    |       |       | 36                   | 36    |       |       | 72              |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 24   | Nightingale Grove Hither Green (Mews Estate)    | SE13 6DZ    |          | N           | N       | N              | 30    |       |       |                      |       | 30    | 30    | 30              |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 25   | Nightingale Grove Hither Green (Driving Centre) | SE13 6DZ    |          | N           | N       | N              | 30    |       |       |                      |       | 30    | 30    | 30              |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 26   | Nightingale Grove Hither Green (No. 35)         | SE13 6HE    |          | N           | N       | N              | 35    |       |       |                      |       | 35    | 35    | 35              |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 27   | Nightingale Grove Hither Green (Nos. 37 to 43)  | SE13 6HE    |          | N           | N       | N              | 30    |       |       |                      |       | 30    | 30    | 30              |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 28   | Lewisham Gateway                                | SE13 5JW    | 06/62375 | Y           | Y       | Y              | 800   |       |       |                      |       |       | 267   | 267             | 267                   | 266   |       |       |       |                        | 533   |       |       |       |       |                 | 0     | 0    |   |
|   |       | 29   | Loampit Vale (E&W of Elmira)                    | SE13 7BH/UJ | 09/71246 | N           | Y       | Y              | 788   |       |       | 184                  | 227   |       |       | 196             | 607                   | 181   |       |       |       |                        | 181   |       |       |       |       |                 | 0     | 0    |   |
|   |       | 30   | Lee High Road Eastern Side                      | SE13 5PT    |          | N           | Y       | Y              | 53    |       | 53    |                      |       |       |       |                 | 53                    |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
|   |       | 31   | Loampit Vale (W of Jerrard)                     | SE13 7SH    | 07/65251 | Y           | Y       | Y              | 406   |       |       |                      | 200   | 100   | 106   | 406             |                       |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
|   |       | 32   | Loampit Vale (E of Jerrard)                     | SE13 7RZ    |          | Y           | Y       | Y              | 350   |       |       |                      |       |       |       |                 | 0                     | 100   | 100   | 100   | 50    |                        | 350   |       |       |       |       |                 | 0     | 0    |   |
| New Cross   | 4532  | 33   | Loampit Vale Railway Strip                      | SE13 7SD    |          | N           | Y       | Y              | 60    |       |       |                      | 60    | 60    | 60    |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 34   | Connington Road (Northern link - Venson site)   | SE13 7LJ    | 04/56013 | Y           | Y       | Y              | 160   |       |       |                      | 80    | 80    | 160   |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 36   | Connington Road (Northern link - Silkworks)     | SE13 7LJ    | 07/66783 | Y           | Y       | Y              | 330   | 330   |       |                      |       |       |       |                 | 0                     |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
|   |       | 37   | 262-274 Lee High Road                           | SE13 5PL    | 06/64190 | Y           | Y       | Y              | 40    |       |       | 40                   |       |       |       | 40              |                       |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
|   |       | 38   | New Cross Hospital Site                         | SE14 5ER    |          | N           | Y       | Y              | 40    |       |       | 20                   | 20    |       |       |                 | 40                    |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
|   |       | 39   | New Cross Gate Station Sites                    | SE14 5UQ    |          | N           | Y       | Y              | 285   |       |       |                      | 57    | 57    | 57    | 171             | 57                    | 57    |       |       |       |                        | 114   |       |       |       |       |                 | 0     | 0    |   |
|   |       | 40   | Kent and Sun Wharf                              | SE8 3DZ     |          | N           | Y       | Y              | 300   |       |       |                      |       |       |       | 0               | 100                   | 100   | 100   | 60    |       |                        | 360   | 0     |       |       |       |                 | 0     | 0    |   |
| Perry Vale  | 0     | 41   | Giffin Street (Masterplan area)                 | SE8 4RJ     |          | N           | Y       | Y              | 238   |       |       | 38                   | 100   | 100   | 238   |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 42   | Octavius Street/Deptford Station                | SE8 4LW     | 05/58693 | N           | Y       | Y              | 115   |       |       |                      |       |       |       | 115             |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 43   | Grinstead Road                                  | SE8 5JF     |          | N           | Y       | Y              | 160   |       |       |                      | 80    | 80    | 160   |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 44   | Surrey Canal Road (Millwall)                    | SE16 3LG    |          | N           | Y       | Y              | 2700  |       |       |                      |       |       |       | 0               | 270                   | 270   | 270   | 270   |       | 1080                   | 270   | 270   | 270   | 270   | 270   | 1350            | 0     |      |   |
|   |       | 46   | New Cross Gate Sainsbury's                      | SE14 5UL    |          | N           | Y       | Y              | 200   |       |       |                      |       |       | 100   | 100             | 100                   |       |       |       |       |                        | 100   |       |       |       |       |                 | 0     | 0    |   |
|   |       | 47   | Kender Estate (Estate renewal Phase 3N)         | SE14 5DY    |          | N           | Y       | Y              | 67    |       |       | 67                   |       |       |       |                 | 67                    |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
|   |       | 48   | Kender Estate (Estate renewal Phase 4)          | SE14 5DY    |          | N           | Y       | Y              | 200   |       |       |                      |       |       |       | 160             | 40                    |       |       |       |       |                        | 0     |       |       |       |       |                 | 0     | 0    |   |
| Rushey Green  | 1814  | 50   | Catford Shopping Centre                         | SE6 4BQ     |          | N           | Y       | Y              | 600   |       |       |                      |       |       |       | 0               | 120                   | 120   | 120   | 120   | 600   |                        |       |       |       |       | 0     | 0               |       |      |   |
| Sydenham  | 120   | 51   | Plessey Road Island                             | SE6 4RH     |          | N           | Y       | Y              | 500   |       |       |                      |       |       |       | 0               | 100                   | 100   | 100   | 100   | 100   | 500                    |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 52   | Catford Greyhound Stadium                       | SE6 4BP     | 07/67276 | Y           | Y       | Y              | 589   |       |       |                      | 200   | 200   | 400   | 189             |                       |       |       |       |       | 189                    |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 54   | 2-36 Plessey Road                               | SE6 2DE     | 08/68063 | Y           | Y       | Y              | 60    |       |       | 60                   |       |       | 60    |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 55   | Former George PH                                | SE6 4AS     | 08/69940 | Y           | Y       | Y              | 35    |       |       | 35                   |       |       | 35    |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 56   | Former Rising Sun PH                            | SE6 4HW     | 09/71262 | N           | Y       | Y              | 30    |       |       |                      | 30    |       |       | 30              |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
|   |       | 57   | O'Rourke/Silver Transport                       | SE26 5JZ    |          | N           | N       | N              | 25    |       |       |                      |       | 25    | 25    |                 |                       |       |       |       |       | 0                      |       |       |       |       |       | 0               | 0     |      |   |
| Telegraph Hill  | 245   | 58   | 113-157 Sydenham Road                           | SE26 5HJ    |          | N           | N       | N              | 48    |       |       |                      |       |       | 0     |                 |                       |       | 49    |       | 49    |                        |       |       |       |       | 0     | 0               |       |      |   |
|   |       | 59   | Former Greyhound PH                             | SE26 4QB    | 08/70396 | N           | Y       | N              | 42    |       |       |                      | 42    | 42    | 42    |                 |                       |       |       |       |       | 0                      |       |       |       |       | 0     | 0               |       |      |   |
|   |       | 60   | Sites at Brockley Cross                         | SE4         |          | N           | Y       | N              | 12    |       |       |                      |       | 24    | 24    | 48              | 24                    |       |       |       |       | 0                      |       |       |       |       | 0     | 0               |       |      |   |
| Whitefoot   | 380   | 61   | New Cross Gate NDC Centre                       | SE14 5AS    | 08/68448 | Y           | Y       | Y              | 175   |       |       |                      |       |       | 175   |                 |                       |       |       |       | 0     |                        |       |       |       |       | 0     | 0               |       |      |   |
|   |       | 62   | 4 Mantle Road (Mantle House)                    | SE4 2EX     | 07/64940 | Y           |         |                |       |       |       |                      |       |       |       |                 |                       |       |       |       |       |                        |       |       |       |       |       |                 |       |      |   |

## Appendix B – Model Validation Summary

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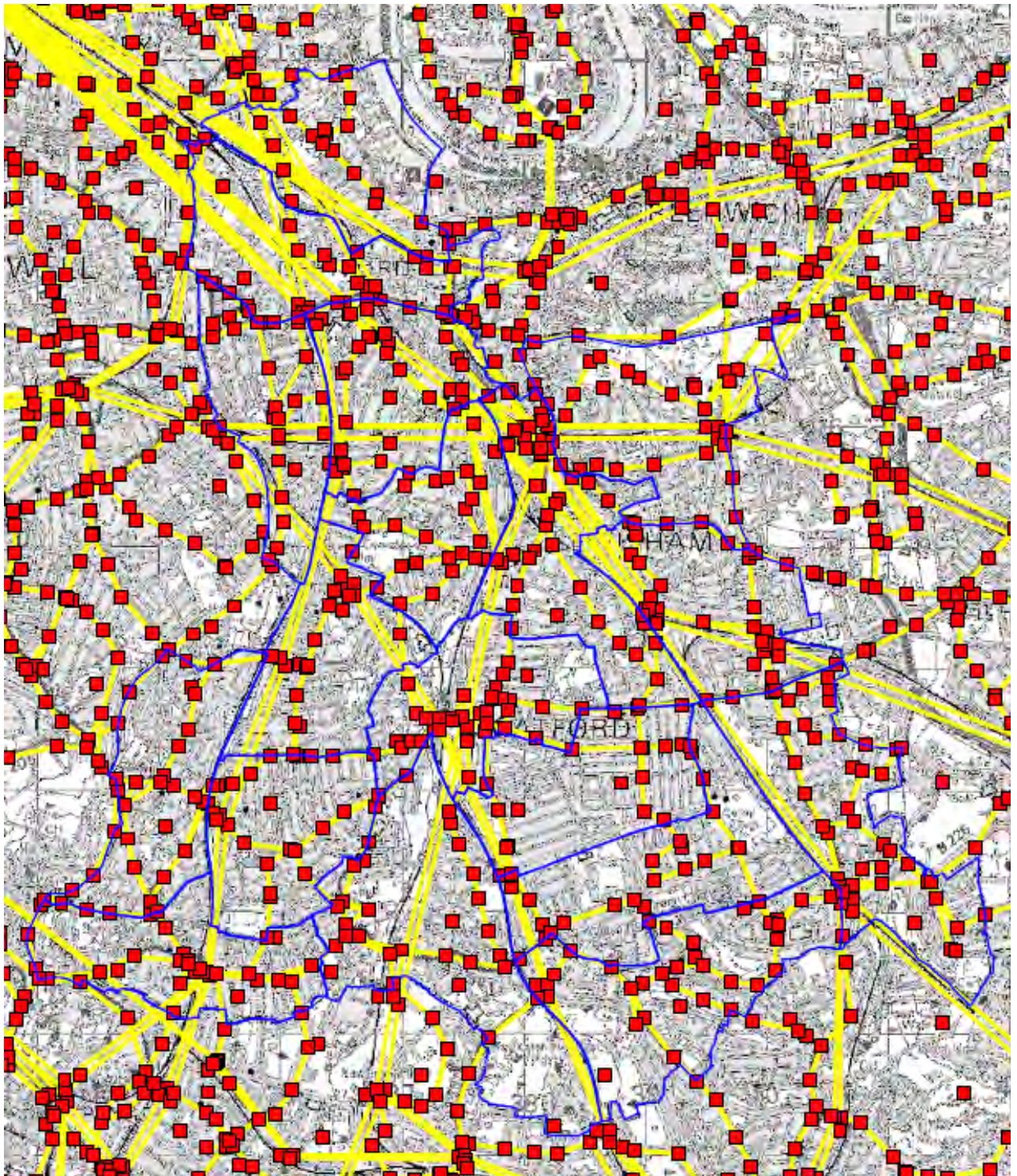
**Table B.1: Car Matrix Development – Future Years**

| Lewisham Zones | TGX-Trip Ends |              | Factored up 3.7% - TEMPRO |              | Development Trips |             | After Furnessing |              | Factored up - TEMPRO |              |
|----------------|---------------|--------------|---------------------------|--------------|-------------------|-------------|------------------|--------------|----------------------|--------------|
|                | 2007          |              | 2010                      |              | 2010 - 2025       |             | 2025             |              | 2025                 |              |
|                | Origin        | Destination  | Origin                    | Destination  | Origin            | Destination | Origin           | Destination  | Origin               | Destination  |
| 22             | 380           | 345          | 394                       | 358          | 877               | 288         | 1271             | 646          | 1309                 | 665          |
| 23             | 291           | 578          | 301                       | 599          | 107               | 35          | 409              | 634          | 421                  | 653          |
| 24             | 283           | 130          | 293                       | 135          | 0                 | 0           | 293              | 135          | 302                  | 139          |
| 25             | 336           | 385          | 349                       | 399          | 0                 | 0           | 350              | 399          | 360                  | 411          |
| 26             | 387           | 797          | 401                       | 826          | 33                | 11          | 435              | 837          | 447                  | 862          |
| 27             | 559           | 484          | 580                       | 501          | 120               | 39          | 700              | 541          | 721                  | 557          |
| 31             | 385           | 198          | 399                       | 205          | 81                | 27          | 481              | 232          | 495                  | 239          |
| 32             | 458           | 477          | 475                       | 495          | 174               | 57          | 649              | 552          | 668                  | 568          |
| 33             | 439           | 329          | 455                       | 341          | 0                 | 0           | 455              | 341          | 468                  | 351          |
| 34             | 822           | 696          | 853                       | 722          | 30                | 10          | 883              | 732          | 909                  | 753          |
| 35             | 899           | 1069         | 932                       | 1108         | 101               | 33          | 1033             | 1141         | 1063                 | 1175         |
| 36             | 238           | 252          | 246                       | 261          | 0                 | 0           | 246              | 261          | 254                  | 269          |
| 37             | 852           | 531          | 883                       | 551          | 0                 | 0           | 883              | 551          | 909                  | 567          |
| 1188           | 1341          | 486          | 1390                      | 504          | 73                | 24          | 1463             | 528          | 1506                 | 543          |
| 1189           | 354           | 214          | 367                       | 222          | 14                | 5           | 381              | 227          | 393                  | 234          |
| 1190           | 145           | 225          | 150                       | 234          | 0                 | 0           | 150              | 234          | 154                  | 241          |
| 1191           | 730           | 533          | 757                       | 553          | 0                 | 0           | 757              | 553          | 779                  | 569          |
| 1192           | 629           | 810          | 652                       | 840          | 42                | 14          | 694              | 853          | 714                  | 879          |
| 1193           | 631           | 220          | 655                       | 228          | 8                 | 3           | 663              | 231          | 682                  | 238          |
| 1194           | 310           | 459          | 321                       | 476          | 28                | 9           | 349              | 485          | 359                  | 499          |
| 1195           | 550           | 1549         | 570                       | 1606         | 152               | 50          | 722              | 1656         | 743                  | 1705         |
| 1196           | 241           | 174          | 250                       | 180          | 8                 | 3           | 258              | 183          | 265                  | 188          |
| 1197           | 280           | 384          | 290                       | 398          | 0                 | 0           | 290              | 398          | 299                  | 409          |
| 1200           | 776           | 399          | 805                       | 414          | 36                | 12          | 841              | 425          | 865                  | 438          |
| 1201           | 509           | 710          | 528                       | 736          | 12                | 4           | 540              | 740          | 556                  | 762          |
| 1202           | 593           | 769          | 614                       | 798          | 7                 | 2           | 621              | 800          | 639                  | 824          |
| <b>Total</b>   | <b>13416</b>  | <b>13203</b> | <b>13910</b>              | <b>13690</b> | <b>1902</b>       | <b>625</b>  | <b>15814</b>     | <b>14314</b> | <b>16280</b>         | <b>14736</b> |



## Appendix C – Railplan background and assumptions

**Figure C.1: Railplan links and nodes**



**Table C.1: Railplan transport assumptions**

|  | 2006 | 2016 | 2026 | Comments  |
|--|------|------|------|---|
| <b>Scheme/assumption summary</b>   |      |      |      |   |
| <b>NATIONAL RAIL</b>   |      |      |      |   |
| NR: 2007 Timetable Update  | ✓    | ✓    | ✓    |   |
| Heathrow Connect: London Paddington - Hayes & Harlington (refer to XR1)  | ✓    | x    | x    | Removed from 2017 in version 11 - replaced by Crossrail 1                           |
| Heathrow Express to Heathrow Terminal 5  | x    | ✓    | ✓    |   |
| Integrated Kent Franchise (London Rail version) service pattern  | x    | ✓    | ✓    |   |
| CTRL Domestic (in conjunction with Integrated Kent Franchise)  | x    | ✓    | ✓    |   |
| CTRL International (all to St. Pancras, none to Waterloo)  | x    | ✓    | ✓    |   |
| North London Railway Service Level Commitment Phases 1 - 2 (East London Line/North London line / West London line except ELLX Phase 3) | x    | ✓    | ✓    | Exclude ELL to Clapham Jn<br>Include WLL stops at Shepherds Bush and Imperial Wharf |
| HLOS Commitments   | x    | ✓    | ✓    |   |
| South West London (inner)  | x    | ✓    | ✓    |   |
| South West London (lengthened to 10 cars)  | x    | ✓    | ✓    |   |
| Southern (inners+ELL)  | x    | ✓    | ✓    |   |
| Southern (outers and Thameslink)   | x    | ✓    | ✓    |   |
| West Anglia stage 1 (increased 12 car services)  | x    | ✓    | ✓    |   |
| West Anglia (stage 2/2a)   | x    | ✓    | ✓    |   |
| South Eastern (additional 12 car trains)   | x    | ✓    | ✓    |   |
| Great Eastern Inner Upgrades   | x    | ✓    | ✓    |   |
| Great Eastern Outer Upgrades   | x    | ✓    | ✓    |   |
| c2c (incl Tilbury loop platforms extended to 12 cars)  | x    | ✓    | ✓    |   |
| London Midland (previously Silverlink County) increased to 12 car trains   | x    | ✓    | ✓    |   |
| Thameslink programme +GN adjustments (stage 1)   | x    | ✓    | ✓    |   |

|   | 2006 | 2016 | 2026 | Comments  |
|---|------|------|------|---|
| <b>Scheme/assumption summary</b>  |      |      |      |   |
| Thameslink Programme Phase 2 (London Rail Alternative 24tph)  | x    | ✓    | ✓    |   |
| Crossrail 1 (Abbey Wood Scheme) 24 train p/hour in peak with 10 cars (Heathrow Connect Removed) + Additional Stop at Woolwich     | x    | ✓    | ✓    |   |
| <b>UNDERGROUND</b>  |      |      |      |   |
| Full PPP Improvements to 2006 (upgrade to Jubilee)  | ✓    | ✓    | ✓    |   |
| Full PPP Upgrades to 2011 (W&C, Jubilee, Victoria, Northern)  | x    | ✓    | ✓    |   |
| Full PPP line upgrades on W&C, Jubilee, Victoria, Northern, Piccadilly, Sub Surface (District & Circle, Met, inc Extended Circle) | x    | ✓    | ✓    | Extended Circle previously called Pan-handle                              |
| H&C stops at Wood Lane (White City)   | x    | ✓    | ✓    | Added in version 11   |
| PPP Upgrade to Bakerloo Line (Post 2016 effects)  | x    | x    | ✓    |   |
| Piccadilly Line extension to Heathrow Terminal 5  | x    | ✓    | ✓    |   |
| Northern Line Phase 2 improvements  | x    | x    | x    | <b>Not</b> in version 11, previously known as further Partial Segregation |
| <b>DLR</b>  |      |      |      |   |
| DLR - 2006 Timetable  | ✓    | ✓    | ✓    |   |
| DLR Bank-Lewisham 3-car Upgrade   | x    | ✓    | ✓    | Not Stratford - Lewisham nor Tower Gateway-Beckton                        |
| DLR Poplar to Stratford 3-car upgrade   | x    | ✓    | ✓    |   |
| DLR extension to Woolwich   | x    | ✓    | ✓    | Not 3 car   |
| DLR Stratford International - Canning Town/NLL to Stratford Lea Valley & CTRL travelator  | x    | ✓    | ✓    |   |
| <b>BUS</b>  |      |      |      |   |
| Bus : 2006 Bus Allocation Timetable (29/10/05)  | ✓    | ✓    | ✓    |   |
| 2016/17 Bus frequency inc. cf. 2006 (8% all periods)  | x    | ✓    | ✓    | Amended in version 11   |
| Boarding alighting improvement cf 2001 (10%)  | ✓    | ✓    | ✓    |   |

|   | 2006 | 2016 | 2026 | Comments  |
|---|------|------|------|---|
| <b>Scheme/assumption summary</b>  |      |      |      |   |
| Development Area Buses - TG   | x    | ✓    | ✓    |   |
| <b>TRANSITS</b>   |      |      |      |   |
| East London Transit (Phase 1a only)+A60   | x    | ✓    | ✓    |   |
| East London Transit Phase 1b (Barking Rivership Loop)                           | x    | ✓    | ✓    |   |
| East London Transit Phase 2 - Gallions Reach to TGB                             | x    | x    | x    | Removed in version 11   |
| Greenwich Waterfront Transit (Bus scheme Abbey Wood-North Greenwich) Phase 1    | x    | ✓    | ✓    |   |
| Greenwich Waterfront Transit Phase 2a & b                                       | x    | x    | x    |   |
| Thames Gateway Bridge Transit Service   | x    | x    | x    | 2026 removed in version 11  |
| <b>HIGHWAY</b>  |      |      |      |   |
| £8 (at 2007 prices) CCZ Congestion Charging                                     | ✓    | ✓    | ✓    |   |
| £8 (at 2007 prices) WEZ Congestion Charging                                     | x    | x    | x    | WEZ removed in version 11 but current mitigation for WEZ, e.g. Extra highway capacity at the boundary to remain |
| Thames Gateway Bridge £1 Toll = (Car £1.26, LGV 1.71, OGV £2.75) at 2007 prices | x    | x    | x    | Removed in version 11   |
| Silvertown link (No Toll)   | x    | x    | x    |   |
| Highway capacity reductions (10% cf 2001 - 2006)                                | ✓    | ✓    | ✓    |   |
| Highway capacity reductions (2% cf 2006)  | x    | ✓    | ✓    | Changed from 8% in version 11   |
| <b>FARES</b>  |      |      |      |   |
| Rail, UG & DLR fares are 2.7% cf 2001 (0% cf 2006)                              | ✓    | x    | x    |   |
| Rail, UG & DLR fares are 12% cf 2001  | x    | ✓    | ✓    |   |
| Rail fares are RPI+1 ~3.7% pa over 8 year period 2009/2010 to 2016/2017         | x    | ✓    | x    | Added in version 11   |
| Rail fares RPI 2016 - 2026  | x    | x    | ✓    | Added in version 11   |
| Bus fares are -4.5% cf 2001   | ✓    | x    | x    |   |
| Bus fares are -2% cf 2001   | x    | ✓    | ✓    |   |