LBTH Local Plan Evidence Base - Strategic Transport Assessment

STRATEGY DEVELOPMENT

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Contents

Tables and Figures

1 Introduction

CONTEXT

1.1 JMP Consultants Ltd (JMP) has been commissioned by the London Borough of Tower Hamlets (LBTH) to undertake a Strategic Transport Assessment to support the emerging new Local Plan. Given the anticipated level of growth in the borough, the assessment is integral element to the preparation of the new Local Plan, setting out the requirements for transport planning over the next 15 years.

Tower Hamlets

1.2 The London Borough of Tower Hamlets (the Borough) is an inner east London borough located directly to the east of the City of London. It also boarders the London Boroughs of Hackney (to the north), Newham (to the east), as well as the Royal Borough of Greenwich, and the London Boroughs of Lewisham and Southwark to the south of the River Thames. The Borough has a highly diverse population and employment base, creating a diverse and multi-dimensional area.

1.3 At Canary Wharf, the Borough hosts the world headquarters of many global financial businesses, employing some of the highest paid workers in London. In direct contrast, the Borough has the second highest unemployment rate in London and also suffers from some of the highest rates of long term illness and premature death. Such diversity results in many very positive opportunities but inequalities, and polarisation, can also arise across different communities.

1.4 The Borough has historically experienced continued population change and has been the focus of continued regeneration in the Isle of Dogs since the 1980s. The London Plan (2015) identifies a number of opportunity areas within the area - namely City Fringe/Tech City, Isle of Dogs & South Poplar, and Lower Lea Valley (including part of the Olympic Legacy area and the Poplar Riverside Housing Zone). These areas present an opportunity to optimise the supply of available land to enable the development of homes, jobs and required infrastructure.

1.5 Tower Hamlets is expected to contribute a minimum of 39,310 new homes, approximately 10 per cent of the London housing target, by 2025. This represents one of the biggest challenges facing the Borough in terms of its Local Plan. Preliminary work has been undertaken to identify potential opportunities to deliver both this target, as well as additional growth up to 2036. At present the Local Plan is expected to support up to 54,000 residential units to be delivered across the Borough by 2036. This could equate to an increase in population by around 120,000 or over 40% growth from 2015. Alongside the housing growth, the GLA have projected between 70,000 to 165,000 additional jobs will be created within the Borough by 2036. This will represent between 44% and 58% growth in employment.

1.6 It is essential that the Borough plans effectively for these significant population and employment changes, and transport policy and infrastructure will be a crucial part of this planning process.

Transport

1.7 The Borough has seen significant public transport infrastructure investment in recent decades, including the Docklands Light Railway, extension of the Jubilee Line at Canary Wharf and the East London Line (London Overground). There is also the legacy of the London Docklands Development Corporation's major highway interventions in the 1980s and 90s, such as the Limehouse Link and Aspen Way. More recently, expenditure by the Borough and Transport for London has focused on bus lanes and improvements in infrastructure and the environment for cyclists and pedestrians. However some of the main roads still form major barriers to movement around the Borough, most notably the Aspen Way.

1.8 The London Overground, London Underground, Network Rail, DLR and around 30 bus routes provide an extensive range of public transport access options and capacity. Even with this current network, the projected housing and employment will place increasing pressure upon services. The delivery of Crossrail will go some way to relieving some of the pressure and provide enhanced strategic connections within and across the Borough; however, there are also areas of the Borough that are less well-served by public transport, particularly towards the east of the Borough.

1.9 Similarly, whilst the highway network within the Borough offers significant highway provision, including the A11, A12, and A13 trunk roads, existing levels of congestion mean that this network is also likely to come under increased pressure as a result of the development projections. Promoting and supporting sustainable modes to manage the level of private car use is likely to be a key requirement of the Local Plan process, particularly through mixed-use development and car-free development.

1.10 Related to this are a range of challenges across the Borough relating to overnight on-street parking pressures. Whilst all of the Borough is covered by Controlled Parking Zone restrictions, the majority of restrictions are not operational after 18:30 and the scale of residential and non-residential demand creates significant constraints upon the finite supply of parking. These pressures are likely to increase within the context of the forecast population growth unless appropriately managed.

LOCAL PLAN PROCESS

1.11 Local Plans are at the heart of the planning system. The National Planning Policy Framework (NPPF) requires Local Plans to be "justified, effective, consistent with national policy and positively prepared to deliver sustainable development that meets local needs and national priorities" (Planning Practice Guidance, paragraph 001, ref 12-001-20140306). The Borough is in the process of developing a Local Plan to cover a 15 year period.

Sustainable Transport

1.12 Within the context of transport, the NPPF identifies the important role that transport polices have in facilitating sustainable development as well as wider sustainability and health objectives. In developing a Local Plan, the Borough should therefore consider solutions which support reductions in greenhouse gas emissions and reduce congestion, including reducing the need to travel, or providing individuals with the option to travel sustainably.

1.13 Whilst the Plan should identify viable infrastructure necessary to support development, it should similarly ensure that patterns of development are adopted that facilitate the use of sustainable modes.

Parking

1.14 The NPPF particularly recognises the role of parking and parking standards in establishing travel behaviours and so when considering local parking standards for residential and non-residential development the Plan should take into account:

- The accessibility of the development;
- The type, mix and use of development;
- The availability of and opportunities for public transport;
- Local car ownership levels; and
- An overall need to reduce the use of high-emission vehicles

1.15 The NPPF also requires the Borough to seek to improve the quality of parking in town centres so that it is convenient, safe and secure, including appropriate provision for motorcycles. They should set appropriate parking charges that do not undermine the vitality of town centres. Parking enforcement should be proportionate.

STUDY AIMS

1.16 The ultimate objectives of this transport strategy are twofold:

- to analyse the current and committed provision of transport and determine its capacity to support the projected number of new homes and jobs in the borough; and
- to identify the necessary mitigation measures that are required to support the boroughs growth, which can be delivered as part of the planning process or strategic transport interventions

1.17 In order to achieve these objectives a formal process of data gathering, analysis, stakeholder engagement, and strategy development are required and have been undertaken.

STAGES OF THE STUDY

1.18 The study incorporates four main stages of work, as follows:

- **Stage 1 – Data**: an initial assessment of the available data sources to establish an evidence base which can be used to assess current and future transport and land use trends;
- **Stage 2 – Baseline**: a review of current levels of transport provision, accessibility, demand for travel and congestion/constraints to provide an underlying baseline assessment of access and movement across the Borough. This is then supplemented by an assessment of committed transport investment that will benefit the Borough;
- **Stage 3 – Future Year**: a forecast of future year changes in the demand for travel to establish the ability of the current (and committed) transport provision to serve the future requirements of the Borough; and
- **Stage 4 – Mitigation**: the identification of potential mitigation measures required to address identified current and future year issues and constraints

1.19 Each element will combine to provide both an overall Transport Evidence Base, as well as a clear strategy for enhancement, to support the Local Plan process.

1.20 A '***Baseline Report***'[1] has already been produced that focuses upon the first three stages of the study, collating the evidence base and presenting a baseline and future year assessment of issues and opportunities for transport.

THIS REPORT

1.21 This report focuses upon the fourth stage of the study, identifying the potential mitigation measures required to address the identified issues and opportunities and the development of the themes for the strategy.

1.22 This report cross-references the data collated, modelling work undertaken, and key challenges and opportunities identified from the baseline assessment and so the two documents should be considered in unison. This report takes the key challenges and opportunities forward and seeks to identify mitigation measures to provide effective solutions to transport and movement issues over the 15 year lifetime of the Local Plan.

[1] LBTH Local Plan Evidence Base – Strategic Transport Assessment – Baseline Report

Report Structure

1.23 The content of this report is structured as follows:

- **Section 2: Issues, Opportunities and Objectives** – presents a summary of the issues, opportunities and objectives identified within the Baseline Report.
- **Section 3: Strategy Development** – establishes the overarching framework for the strategy and sub-strategy elements
- **Section 4: Active Travel and Travel Demand Management** – examines processes to build upon the existing Green Grid and Cycling Strategy work within the borough and integrate with Travel Demand Management so as to encourage active travel
- **Section 5: Public Transport & Waterways** – presents an overview of rail & bus, as well as canal & river-related measures
- **Section 6: Highways, Parking & Freight** – presents an overview highways, parking and freight measures
- **Section 7: Intelligent Mobility** – sets out a discussion of the concepts of Intelligent Mobility and Mobility as a Service that could be developed and applied with Tower Hamlets
- **Section 8: Strategic Impact Assessment** – presents the results of additional public transport and highway modelling to evaluate the strategic impact of potential mitigation measures
- **Section 9**: **Option Appraisal** – considers individual and collections of mitigation measures against a series of appraisal criteria, incorporating the strategy objectives and a series of deliverability measures
- **Section 10: Prioritised Package of Measures** – the final section considers the best performing measures and collates them together into an integrated package of measures for delivery through the transport strategy, including an outline programme for delivery.

2 Issues, Opportunities and Objectives

INTRODUCTION

2.1 The '***Baseline Report***' for this study sets out a review of key policy, land-use, transport infrastructure & operations, transport capacity, and accessibility issues and opportunities. It gathers together the Evidence Base relating to overarching policy context and requirements, as well as the underlying patterns of travel demand and behaviour across the borough, both now and as predicted in the future.

2.2 The evidence base was utilised to generate a range of issues and opportunities relating to transport and movement within and across the Borough of Tower Hamlets.

Evaluation Matrix

2.3 An evaluation matrix was generated within the '***Baseline Report***' that summarised all of the individual issues and opportunities within the context of individual modes as well as to spatial areas. The matrix also identified ways in which the strategy will need to respond to each of the issues raised.

Overarching Themes

2.4 Across the policies, challenges and opportunities assessed within the '***Baseline Report***' evaluation matrix, a set of common themes were identified. These were summarised into 15 key themes that provide the underlying basis for the requirements of the draft transport strategy:

- **Encouraging travel by sustainable modes**;
- **Discouraging private car ownership** and/or the level of private cars use;
- Continuing to **manage and improve air quality** through measures to reduce vehicle emissions;
- **Promote active travel** to provide health, air quality and congestion benefits;
- **Enhance the capacity and quality of public transport provision** in particular for access to Opportunity Areas;
- **Reduce the barriers to movement**, including river crossings and walking & cycling permeability;
- **Improve the resilience of the transport network** to incidents to ensure it is reliable and efficient;
- Recognise the **challenges and opportunities related to substantial housing and employment growth**, particularly within Opportunity Areas, and ensure integrated planning of land use and transport;
- Recognise the **different socio-economic and land-use characteristics of each 'character place'** within the borough and ensure that transport is inclusive and accessible for all needs;
- Recognising the **requirement to work across borough boundaries** to manage growth across the sub region;
- **Enhance road safety and personal security**;
- **Manage areas with high demand for on-street parking provision**;
- **Manage and/or consolidate freight movements**, making use of alternative modes of transport and new technologies;
- **Manage the developing role of taxis**; and
- **Promote the use of waterways**.

2.5 Across the common themes there is an emphasis upon promoting a clear hierarchy of transport provision in order to promote active and sustainable travel and encourage mode shift away from private car trips. The baseline analysis identified challenges with air quality and congestion on the highway network, along with the health and lifestyle benefits from promoting active travel. The transport strategy will, therefore, need to focus upon the needs of pedestrians and cyclists, followed by public transport users, above motorised means of travel.

2.6 Whilst there will be a wide range of mechanisms for promoting this hierarchy of travel choices, many of which may vary depending upon the individual circumstances of Opportunity Areas and 'character places', the ultimate aims of the approach will be to development effective and efficient transport provision that supports growth in a safe, inclusive, healthy and environmentally-friendly travel.

THE STRATEGY OBJECTIVES

2.7 Having identified the key issues and opportunities these were then translated into a series of objectives against which to develop, and subsequently appraise, the schemes and measures that will form the basis of the final transport strategy.

Transport Strategy Objectives

2.8 A total of ten transport strategy objectives were identified that best encompass the combined aims of the strategy:

TSO1 Promote active and sustainable travel choices for all

TSO2 Reduce the environmental and well-being impacts of transport, in particular in relation to vehicle emissions and road safety

TSO3 Support and promote the current cultural and land-use characteristics of individual 'character places' within the three defined Opportunity Areas and central area, and reduce inequalities across the borough

TSO4 Maximise, and continue to develop, public transport capacity and connections, including Crossrail, to all Opportunity Areas to support the focused growth within these areas

TSO5 Minimise the impact of residential and employment development across the borough, in terms of reducing car ownership, on and off-street parking demand, and deliveries & servicing levels

TSO6 Provide a level of resilience within the transport network to ensure efficient and reliable access

TSO7 Reduce physical and social barriers to travel through infrastructure enhancements and information provision

TSO8 Create a safe, secure and pleasant streetscape environment to create an enhanced environment for walking & cycling to promote healthy living

TSO9 Maximise the use of waterways within the borough through enhanced access and improved provision, for both people and freight

TS10 Understand, and maximise, the use of new technologies in influencing travel behaviour and managing the movement of people and freight

2.9 These ten objectives will form the basis against which the emerging mitigation measures, as well as the final packages of strategy measures, are appraised.

3 Strategy Development

INTRODUCTION

3.1 This section presents an overview of the process for developing the overall strategy, including an overarching framework.

STRATEGY FRAMEWORK

3.2 In order to provide a structure to the strategy development process an overarching framework has been developed. This has considered the strategy objectives and assessed the holistic range of policy and scheme measures that could be implemented to deliver against these objectives. This identified four main areas, with a series of sub-categories, as set out in Figure 3.1.

Figure 3.1 Strategy framework

(ITS = Intelligent Transport Systems; MaaS – Mobility as a Service)

Overarching Strategy

3.3 The overarching Transport Strategy will take a holistic overview of the integrated elements relating to the management of travel demand and the provision of infrastructure. In particular it will focus upon the socio-economic and land-use issues affecting each sub-area within the borough and the requirement for a focused strategy encompassing mode choice and demand management.

Sub-Strategy Elements

3.4 Four main sub-strategy elements have been identified:

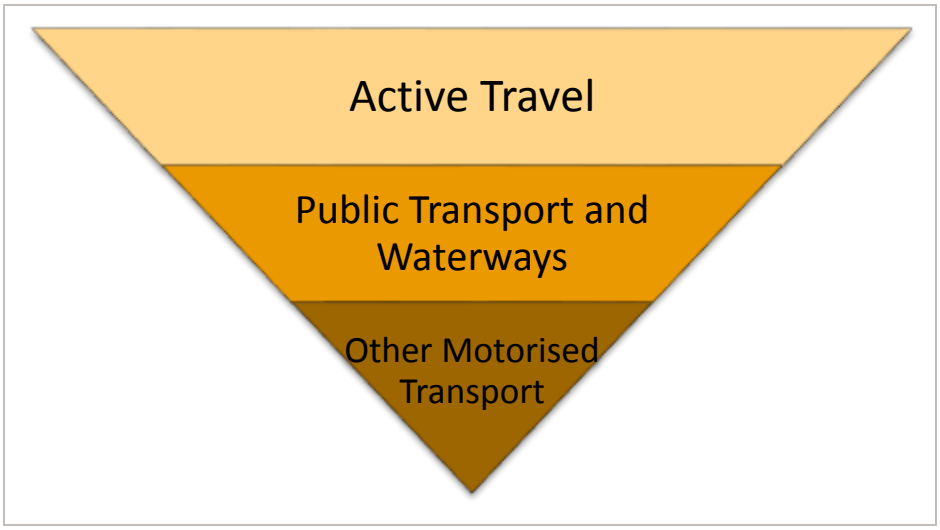
- Active Travel & Travel Demand Management
- Public Transport & River
- Highways, Parking & Freight
- Intelligent Mobility

3.5 The fourth element, whilst covering the specific use of technology and travel behaviour methods to enhance and influence the way we travel, encompasses aspects of each of the three previous elements, and so in some ways if a cross-cutting theme.

3.6 Separate sub-strategies are developed for each of the four areas in the sections below, taking a more focused examination of the issues relating to individual modes, but ensuring an integrated approach across all of them.

3.7 The sequencing of the sub-strategies within the document is deliberate, reflecting the importance within the overall transport strategy of a hierarchal approach to transport provision. This has the promotion of active travel modes (walking & cycling) as the key underlying basis of the strategy, supported by public transport & waterways provision, and then other motorised transport. This basic transport hierarchy is summarised in Figure 3.2.

Figure 3.2 Transport Hierarchy



3.8 The Intelligent Mobility measures identified can be utilised to enhance all types of travel but will primarily reflect the aspiration to promote and encourage active travel and sustainable modes above the use of the private car.

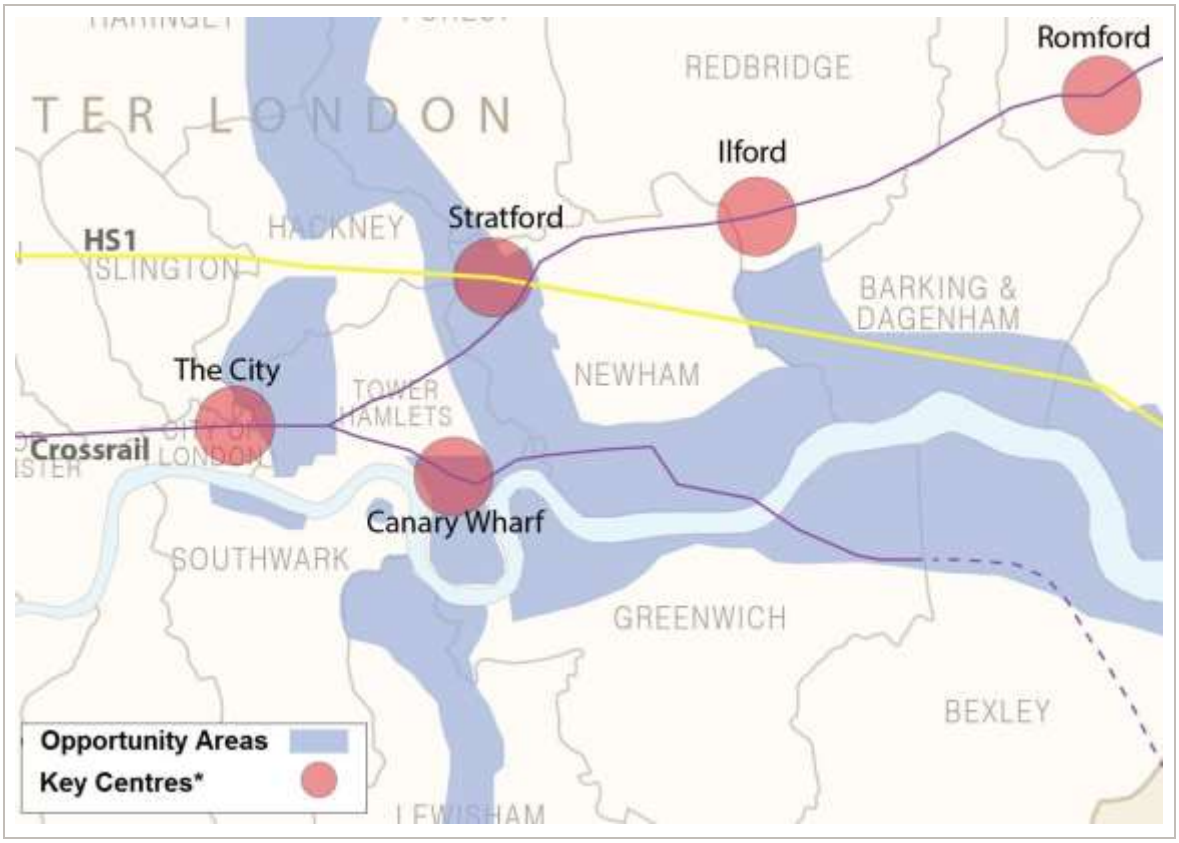
Spatial Elements

3.9 As with the structure of the '***Baseline Report***', the strategy framework considers a range of spatial requirements for the draft Transport Strategy. This includes the following three spatial tiers:

- East and South East London SubRegion
- Tower Hamlets
- Opportunity Areas within Tower Hamlets

3.10 The '***Baseline Report***' provides a detailed assessment of each spatial area. It highlights the large number of designated Opportunity Areas across the East London Sub Region that are outlined for significant development growth. These are presented in **Figure 3.3** to provide spatial context for this report.

Figure 3.3 East London Sub Region Opportunity Areas



Mayor of London Website

** Key Centre is a collective term to include Metropolitan Town Centres, Major Centre, and International Centre*

3.11 The '***Baseline Report***' also considers in detail the three Opportunity Areas within Tower Hamlets, these being the City Fringe/Tech City (including Whitechapel); the Isle of Dogs and South Poplar; and the Lower Lea Valley (including part of the Olympic Legacy area and the Poplar Riverside Housing Zone). It also considers the Olympics Spatial Planning Area, which overlaps much of the Lower Lea Valley area.

3.12 These areas present an opportunity to optimise the supply of available land to enable the development of homes, jobs and required infrastructure for all Tower Hamlets communities.

3.13 **Figure 3.4** presents these areas alongside the ward boundaries for the Borough.

Figure 3.4 Key Opportunity Areas

3.14 For planning purposes, the remaining area within the centre of the borough is referred to as the 'Central Area' throughout this document.

3.15 Within the identified Opportunity Areas, as well as the Central Areas, there are also a series of '***character places***' that are identified within the Local Plan process. These are presented within **Figure 3.5**.

Figure 3.5 'Character Places' in Tower Hamlets

3.16 The '***character places***' are important within the local context of the borough as the '***Baseline Report***' identified a range of socio-economic characteristics, as well as historical connections.

3.17 The draft transport strategy seeks to consider the requirements for transport and movement at each spatial tier and so this is a key part of the structure of the strategy framework.

Growth Scenarios

3.18 In assessing the future year requirements for transport provision, two growth scenarios have been considered, reflecting the discussions presented within the .Baseline Report'.

3.19 The first scenario represents TfLs current Reference Case set out within the London Transportation Studies Model for 2031. This uses employment and population projections developed by the GLA for the London Plan.

3.20 A second 'High Growth' scenario has also been considered that incorporates the latest GLA employment forecasts for Tower Hamlets, which are significantly higher than current London Plan projections.

DEVELOPING MITIGATION MEASURES

3.21 The '***Baseline Report***' identifies a series of challenges and opportunities for transport and movement, related to both current demands, as well as future year scenarios with the high levels of growth associated with the emerging Local Plan housing and GLA employment forecasts.

3.22 Each individual sub-strategy elements considers potential mitigation measures to target the challenges and opportunities and to deliver against the ten identified transport strategy objectives. The mitigation measures are summarised at the end of each sub-strategy section.

3.23 For those mitigation measures that can be modelled using the strategic public transport (Railplan) and highway (CLoHAM) models used within the baseline analysis, a series of future year Mitigation Model Tests have been undertaken and are presented within Section 8.

4 Active Travel & Travel Demand Management

INTRODUCTION

4.1 The Baseline Report has demonstrated both a strong level of support for encouraging active travel as a means of promoting healthy living across the borough but also the underlying requirement to ensure as many trips are undertaken by sustainable modes, such as walking and cycling, so as to reduce congestion and overcrowding and improve local air quality. Whilst this is already considered to be a necessary requirement, it will become even more so with the projected level of growth in housing and employment across the borough. Without a strong and well supported active travel strategy with, associated travel demand measures, the growth outlined within the Local Plan cannot be delivered in a sustainable manner.

4.2 Active travel modes also form an important intermediary function as part of the public transport network, including river services. Ensuring appropriate connections to and from rail stations and river piers is also of critical importance in promoting sustainable travel.

CONTEXT

4.3 A cycling revolution has been growing in London in recent years. The number of people choosing to cycle is rapidly increasing and the Cycle Hire Scheme, the Cycle Superhighways and radical new design standards means that cycle infrastructure is being built in London to meet the needs of cyclists.

4.4 In Tower Hamlets, the Borough published their cycling strategy 'Tower Hamlets – A Cycling Borough' in 2016. The borough has been at the forefront in promoting cycling as a mainstream transport mode. The cycling strategy sets out a plan for developing cycle infrastructure which this transport strategy supports and builds on.

4.5 Promoting active travel (walking and cycling) is also a key component of the boroughs health and wellbeing strategy 'Towards a Healthier Tower Hamlets'. Some of the key evidence presented shows that amongst the Tower Hamlets population:

- 13% of children aged 4-5 are obese (7th highest in the country) and 1 in 4 children aged 10-11 are obese, amongst the highest in the country
- 68% do not meet recommended levels of physical activity (compared to 66% nationally) with significantly lower levels in more deprived parts of the borough and in older people

4.6 Encouraging active travel can be a key initiative in promoting a healthier lifestyle across the borough. One specific initiative is the 'Green Grid Strategy' which seeks to "*sustain and create across the borough a network of high quality well-connected open spaces to promote bio-diversity and healthy, active lifestyles*". This is not simply about creating routes between locations but ensuring the urban environment is of a sufficient quality to encourage outdoor activities.

4.7 The evidence collated from these previous studies is clear that the need to create the right environment and reduce barriers to movement are critical (infrastructure provision), as well as the need to influence travel choice to promote health and reduce emissions (travel demand management measures).

BOROUGH-WIDE INFRASTRUCTURE PROVISION

4.8 Improving the cycle and walking network are key elements to encourage more active travel.

4.9 Tower Hamlet's transport links, both road and rail, are dominated by east/west movement and cycle movement is also predominantly east/ west. The borough has two cycle superhighways along this axis in close proximity - CS2 (along the A11) and CS3 (Cable Street). These two routes cater for 60% of all cyclists entering or leaving central London to/from Tower Hamlets.

4.10 The borough's cycling strategy has considered a range of options for enhancing the cycling network and the map presented in **Figure 4.1** below shows plans for future cycle infrastructure.

Figure 4.1 Tower Hamlets Proposed Future Cycle Network

Source: Tower Hamlets – A Cycling Borough

4.11 The infrastructure measures identied can be summarised as follows:

- Cycle Superhighways (CSH) – monitoring and making improvements to CS2 and CS3 to ensure sufficient capacity and safety provision.
- Existing route upgrades – upgrades to existing signed cycle network on the borough roads to achieve a good or better level of service.
- Quietways – implement the boroughs first quietway across the borough from Hackney Wick to Liverpool Street and develop subsequent routes, including along the Regents Canal alignment.
- New cycle routes – develop and implement a denser network of cycle routes so that all areas in the borough are accessible.

4.12 All of these elements will deliver enhanced connectivity and encourage greater cycling, which is a core objective of the transport strategy to support the Local Plan.

4.13 Building on the previously proposed cycling infrastructure, the Local Plan Transport Strategy will develop an approach that has an equal emphasis on walking (building on the Green Grid Strategy) as well as cycling. A comprehensive set of borough-wide active travel infrastructure measures are proposed:

- Links to the Cycle Superhighway and in particular, prioritisation of cycle and walking provision in the Opportunity Areas;
- Ensure that the current London Cycle Network and other signed cycle routes are upgraded to the latest's London Cycle Design Standards (LCDS) in particular, enhancing the connectivity to the north and south of the borough. It is also important that legible mapping is implemented on the current cycle network to encourage new cyclists (TH Cycling Strategy, 2016).
- Ensure safer cycling is developed across all wards using a systematic approach provided by the Cycle Level of Service (CLoS) assessment.
- Ensure sufficient off-street cycle parking is made available as part of developments, including on privately rented sites and social housing, to remove any barriers to the uptake of cycling.
- Application of 'filtered permeability' concept to identify and implement simple measures to allow safer cycling in many one way streets. It will also aim to discourage car use in the area improving the local air quality (TH Cycling Strategy, 2016).
- Support the development of Quietway 6 Phase 1 (Mile End to Barkingside) and aspire to work with local organisations to reduce any network gaps (TH Cycling Strategy, 2016).
- Use the planning process to ensure sufficient active travel infrastructure is provided through developer funding.

BOROUGH-WIDE TRAVEL DEMAND MANAGEMENT (TDM)

4.14 TDM is a targeted communication campaign to manage both the overall level of demand for travel, as well as mode choice. TDM traditionally uses the '4R Principle' of 'Reduce', 'Remode', 'Retime', 'Reroute' to encourage the following:

- Reduce:
  - Forego number of journeys
  - Car Share
  - Flexible working
- Remode:
  - Use alternative means of travel e.g. cycle, walk, public transport, car share.
- Retime:
  - Travel at a different time of day to avoid congestion.
- Reroute:
  - Travel a different route to avoid congestion

4.15 Within Tower Hamlets such a campaign would need to be capable of targeting a range of different audiences, such as residents and commuters, with these groups then being further broken down into audiences, such as young, elderly and BMEs.

4.16 Tower Hamlets already encourages walking and cycling through a range of travel demand management measures:

- Delivering training in schools to encourage students to cycle by equipping them with the necessary confidence, skills and safety training;

- Delivering free adult cycle confidence training for anyone who lives, works or studies in the borough. Promote cycling amongst disabled people and traditionally harder to reach groups such as BME women.

4.17 The level of forecast growth in Tower Hamlets makes TDM a key principle in supporting the delivery of the Local Plan. The level of infrastructure provision required to meet forecast growth is simply not achievable and the management of demand across modes will be critical to ensure the infrastructure that is available is used efficiently.

4.18 Borough-wide TDM measures will include:

- Child and adult cycle training
- Use the travel planning process to promote active travel to new residents, new businesses and new employees to the borough
- Promote local community health walks to existing and new communities by identifying a Health Lead within each community
- Work with the Metropolitan Police Cycle Task Force and the borough's Safer Transport Team to help reduce cycle theft. Run awareness campaigns for cyclists to increase their perception safety, encouraging cycling.

CITY FRINGE/TECH CITY OPPORTUNITY AREA

4.19 The focus of the City Fringe Opportunity Area (CFOA) is to recognise and build upon its historical qualities, whilst maximising it's locality on the edge of the City to maximise future commercial opportunities.

4.20 Key travel characteristics of the wards either wholly, or partially, within the CFOA identified from ONS (2011) are:

- 7% cycle to work in **St Katherine's and Wapping** and 6% cycle to work in **Shadwell**. There is therefore significant potential to increase cycling in these wards.
- 31% travel by foot to work in **St Katherine's and Wapping**; however only 19% travel by foot in Shadwell.
- 46% of the wards population in **St Katherine's and Wapping** own one or two vehicles and 37% own one or two vehicles in **Shadwell**.
- Cycling is more popular in **Whitechapel, Spitalfields & Banglatown and St Dunstan's & Stepney Green** due to the current infrastructure (CSH and on-road cycle network). However, the increase in population and housing will put more pressure on the CSHs and other cycling routes located in these wards. CS2 and CS3 already suffer from overcrowding during peak hours.
- **Whitechapel, Spitalfields and Banglatown** has the lowest percentage of car travel within the borough.
- 8% travel to work by bike in **Bethnal Green South** and 16% travel to work by bike in **Bethnal Green North**.

4.21 Section 3 of the Baseline Report has identified six 'Character Places' within the City Fringe/Tech City area these are; **Shoreditch, Spitalfields, Aldgate, Whitechapel, Shadwell, Tower of London and St Katherine Docks**. Recognising and supporting these 'Character Places', giving particular focus to their historic qualities, will be an important element of the active travel measures to encourage active travel through focusing on movement and place.

Infrastructure Provision in the City Fringe/Tech City

4.22 A summary of key infrastructure measures across the CFOA is presented below.

Infrastructure Measures across the Opportunity Area

A network of well-maintained neighbourhood cycle routes will be an important measures to maximise the development of a 'safe neighbourhood' and to increase the uptake of cycling.

Partnership working with local cycling groups to audit and implement cycling parking in residential areas to encourage cycling.

Review and assess the current cycle parking offered on new developments, in particular with social housing. This will remove any barriers to cycle storage making it easier for residents to store their bike safely and conveniently.

Key Infrastructure Solutions

4.23 Specific infrastructure initiatives include:

- **St Katharine's and Wapping** and **Shadwell** would benefit from more Cycle Hire docking stations to benefit commuters and residents. This will make cycling more accessible and easy for all reducing any barriers of access. Docking stations should be located in close proximity to central places of movement (i.e. stations and parks) to encourage short cycling trips.
- **Shadwell** has a poor street network that affects the number of walking trips. To support the development of the 'Character Places' a grid network of street connections will improve access for pedestrians.
- Ensure active travel infrastructure improves connectivity to the **Tower of London.**
- A review of the existing open spaces will be assessed in line with the 'Green Grid' initiative to further enhance walking within the area. The open spaces located near the station and the canal will be assessed to provide a cohesive pedestrian and cycle link around **St Katharine's and Wapping** creating desired pedestrian routes. In addition, this strategy supports the development of new publicly accessible open spaces. This includes enhancing and developing existing verges along Vaughan Way into communities and gardens/public open spaces to encourage the 'plug and play' initiative (TH Green Grid Strategy, 2010).
- The **Whitechapel** Vision sets out a range of spatial strategies for enhancing movement across the area. This includes the creation of 'gateways' into the core centre and outside the new Crossrail station as well as streetscape enhancements and greater permeability of the area to promote greater pedestrian and cycling connectivity.
- Ensure a secure cycle hub is located near the current and new stations (Crossrail) in **Whitechapel** reducing any barriers to movement within the ward. The hub will provide secure cycle parking and may also be with combined with other cycling facilities such as a repair shop and local cycle training advice (TH Cycling Strategy, 2016).
- In **Bethnal Green South** and **Bethnal Green**, recognise the importance of route upgrades and supports the upgrade of the on-road cycle network on Vallance Road (TH Cycling Strategy, 2016).
- Within **Bethnal Green South** and **Bethnal Green** there are many publicly open spaces (i.e. local churches and parks). Safety and security improvements will make these spaces more accessible, including the thinning of vegetation from important lines of sight, relocation of seating areas and new/improved lighting (TH Green Grid Strategy, 2010).

- Support the development of Area Framework 1 located in **Weavers** (TH Green Grid Strategy, 2010), by improving the pedestrian access to existing and new green spaces (TH Green Grid Strategy, 2010).

Travel Demand Management in the City Fringe/Tech City

4.24 A summary of key TDM measures across the CFOA is presented below.

TDM across the Opportunity Area

Engage with older people by promoting healthy activities, such as walking.

Building on the Tower Hamlets Health and Wellbeing objectives promote healthy eating, physical activities and healthy spaces through local networks within the community which is essential for spreading health messages and motivating changes in lifestyle amongst the elderly.

Key TDM Solutions

4.25 Other specific TDM initiatives to be delivered as part of a TDM strategy include:

- There is a large Bangladeshi community present in wards: **Whitechapel, Spitalfields & Banglatown and St Dunstan's & Stepney Green.** This community can be reluctant to take-up cycling and this Strategy supports the continuation of work with schools to promote the 'Bike It' and 'Bikeability' programme offered by the Tower Hamlets Cycling Strategy (TH Cycling Strategy, 2016). Other engagement channels should also be explored e.g. community centres, faith sites and GP surgeries to promote active travel to adults.
- In **Whitechapel**, currently, 29% of the wards population in Year 6 suffer from obesity and 17% of adults are obese (Public Health England, 2013). It is important that adequate physical activity is undertaken to reduce child obesity and illness. By targeting this audience it will improve the health and quality of the individuals. Cycle training will be offered to all students, irrespective of their ability, and pool bikes made available to those who can't afford a bike to make cycling accessible to all.
- According to Public Health England 43% of pensioners in **St Katherine's and Wapping** live alone and 43% of households within **Whitechapel** are overcrowded (Public Health England, 2013). Health is often affected by environmental and social factors, including social interaction. Active travel should be promoted in areas of health deprivation through health walks that encourage friendship.
- The close proximity of **Weavers** to the City of London provide the opportunity to market sustainable travel choices to promote walking trips.

ISLE OF DOGS AND SOUTH POPLAR OPPORTUNITY AREA

4.26 This Opportunity Area is focussed upon the existing and future employment opportunities within and around Canary Wharf as well as planning for the development of significant residential growth. The London Plan currently outlines growth for this area in terms of an additional 10,000 homes and 110,000 jobs; however, some aspirations for growth are even higher.

4.27 Key travel characteristics from ONS (2011) (based upon the previous ward boundaries of Millwall and Balkwall and Cubitt Town) are:

- 49% travel to work by the Underground, Metro, Light Rail and Tram in **Millwall** (ONS, 2011). **Millwall** suffers from poor connectivity and accessibility to cycling routes with only 3% travelling by bike to work in 2011 (ONS, 2011). 20% travel to work by foot in **Millwall** (ONS, 2011).
- Similarly to **Millwall** cycling levels are low in **Blackwall and Cubitt Town** with only 3% using the bike to travel to work (ONS, 2011).

4.28 Section 3 of the Baseline Report has identified four 'Character Places' within the Isle of Dogs area. These are: **Blackwall, Canary Wharf, Millwall and Cubitt Town.** It is recognised that these 'Character Places' give particular focus to the need to accommodate growth whilst ensuring good connectivity to, and within, the island is maintained.

Infrastructure Provision in the Isle of Dogs and South Poplar

4.29 A summary of key infrastructure measures across the IoDOA is presented below.

Infrastructure Measures across the Opportunity Area

Develop residential access to waterways, towns and employment by improving and managing the current capacity of existing infrastructure.

Improve the urban realm by creating more attractive places and spaces around central ward hubs (i.e. Cross Harbour Town Centre) to increase pedestrian activity around the Isle of Dogs.

Increased provision of cycle parking (particularly around stations) and cycle docking stations (particularly in residential areas).

Deliver greater cycle access on the DLR during off peak hours (TH Cycling Strategy, 2016).

Key Infrastructure Solutions

4.30 Specific infrastructure initiatives include:

- Create a better environment for active travel between South Poplar and Canary Wharf including Aspen Way Footbridge enhancement, Preston's Roundabout, and the Poplar Decking Scheme.
- Improve north-south connectivity across Canary Wharf through new South Dock crossing.
- Cycling access and connectivity is low in **Blackwall and Cubitt Town** Increased investment in cycle and walking connections area required, including enhancement to the Blue Bridge.
- New link across Millwall Inner Dock
- Access improvements to Glengall Bridge
- Replacement of Westferry Road pedestrian bridge with at-grade crossing

- **Millwall** requires better connectivity to the cycling network to encourage cycling. This will be achieved by a Cycle Level of Service assessment (CLoS).
- The development of the waterways is vital to encourage and increase active travel. **Millwall** is bounded by the River Thames which restricts movement for active travel. The development of the new Thames Crossing between Canary Wharf and Rotherhithe has the potential to increase walking and cycling (TH Cycling Strategy, 2016).
- Within **Blackwall and Cubitt Town** there is some provision made for Cycle Hire docking stations but opportunity for more to be provided. More docking stations on residential streets will create a well-connected ward encouraging residents to cycle more.
- **Blackwall and Cubitt Town** suffers from a poor urban realm. Revitalising the Crossharbour town centre will provide greater connectivity on surrounding streets (TH Green Grid Strategy, 2010).

Travel Demand Management in Isle of Dogs and South Poplar

4.31 A summary of key TDM measures across the IoDOA is presented below.

TDM Measures across the Opportunity Area

Engage with local businesses and promoting sustainable travel events. Provide information about national travel events such as walk to work week and cycle to work day to encourage commuters to try an alternative mode of transport.

Promote the Cycle Hire bike membership and cycle to work scheme to local businesses.

Promote the cost savings offered by the cycle to work scheme to encourage people to cycle.

Engage with local businesses to reduce their business travel by offering sustainable travel advice.

Working with developers to ensure that new residents have information available about active travel. This can be enforced through travel plans.

Key TDM Solutions

4.32 Other specific TDM initiatives to be delivered as part of a TDM strategy include:

- **Millwall** has a high employment rate with 78% 'economically active' (ONS, 2011). It is important to recognise the different demographics in each ward to ensure TDM measures are tailored to meet different opportunities.
- Currently, 20% of the children in reception year in **Millwall** suffer from excess weight (Public Health England, 2013). Building on the objectives stated in the Tower Hamlets Health and Wellbeing Strategy, a programme of communications with families of pupils starting school can promote active travel. This should include altering parents' perception of safety by providing local information about safe walking and cycling routes to schools to encourage more active travel.
- 42% of the children in year 6 in **Blackwall and Cubitt Town** suffer from excess weight which is almost 10% significantly worse than England (Public Health England, 2013). Intensive communications to Year 6 pupils prior to their transition to secondary school can encourage active travel.
- 48% of population in **Blackwall and Cubitt Town** is Black and Minority Ethnic (BME) (Public Health England, 2013). Building on the TH Health and Wellbeing Strategy, marketing active travel

to local faith sites can encourage the uptake of cycling and walking. This will be engaged by local talks about health and promotion of localised active travel events.

- Work with neighbouring boroughs (Greenwich) to ensure the Greenwich Foot tunnel is managed well for both walking and cycling. This will encourage cyclists and walkers to re-plan their trips maximising the capacity of the tunnel. Build upon the real time monitoring system in place at the Foot Tunnels to provide information to Isle of Dogs residents and employees using the tunnel of when they can travel either by bike or walking.

LOWER LEA VALLEY OPPORTUNITY AREA

4.33 The Lower Lea Valley Opportunity Area covers three London Boroughs: Tower Hamlets, Hackney and Newham. The Olympic Legacy has been a catalyst for attracting development opportunities and investment. The Poplar Riverside Housing Zone alone is estimated to deliver 9,000 new homes over the next 10 years.

4.34 Key travel characteristics of the wards within the area from ONS (2011) are:

- **Bromley-by-Bow (Bromley North & Bromley South)** is bounded by a car dominated environment due to the current road layout. 5% travel to work by bike and 17% travel by car.
- Walking and cycling levels are low in **East India and Lansbury**. The ward lacks cycling infrastructure making cycling limited to all.

4.35 Section 3 of the Baseline Report has identified five 'Character Places' within the Lower Lea Valley area. These are: **Fish Island, Bow, Bromley-by-Bow, Poplar Riverside and Leamouth.** It is recognised that within these 'Character Places' there is significant potential for transformational change with the creation of new communities and links across to similar developments in Newham. Taking the opportunity to reduce barriers to movement in this Opportunity Area will be key to the area's development.

Infrastructure Provision in the Lower Lea Valley Opportunity Area

4.36 A summary of key infrastructure measures across the LLVOA is presented below.

Infrastructure Measures across the Opportunity Area

Delivery of the Leaway connecting East India Dock Basin / Royal Docks to the Queen Elizabeth Olympic Park.

In line with the Green Grid and Cycling Strategy it is important that the quality of pedestrian and cycle routes are improved by enhancing existing spaces and routes.

The need for more available Cycle Hire docking stations is essential for cycling growth.

Key Infrastructure Solutions

4.37 Specific infrastructure initiatives include:

- The delivery of a range of new or upgraded crossing facilities across **Fish Island**, including the Old Ford Road bridge over the A12, Wick Lane A12 underpass enhancement, Wallis Road to Cadogan Terrace footpath upgrade, Monier Road link, H16 bridge link, Hertford Canal crossings.
- Support the development of the **Fish Island** 'Character Place' by encouraging new developments to have sustainable measures such as cycle parking and facilities to encourage cycling.

- Delivery of the 'Bow Vision', including removal of the Bow Flyover and replacement with at-grade crossing facilities and additional crossing at 5-Bells.
- Develop the cycling and walking network in **Bow East**. Enhance the Canal and Riverside path towards the east of the ward by cleaning and clearing towing paths to create a better environment.
- Improve the quality of the local urban environment by providing more lighting and 'greening' to the current parks within **Mile End East**.
- Maximising cycling infrastructure by working with the development of the 'leisure loop' in **Bromley-By-Bow (Bromley North & Bromley South)** The 'leisure loop' is a 16 mile off road cycle network providing access to River Lea Valley, Islington and Camden, Olympic Park and Tower Bridge (TH Cycling Strategy, 2016). This will improve the wards accessibility to other safe cycling routes, particularly the CSH, encouraging more people to cycle.
- Ensure existing leisure walks (Lea Valley Walk) within **Bromley-By-Bow (Bromley North & Bromley South)** are safe and attractive encouraging more people to walk.
- Provide new or upgraded connections from **Bromley-By-Bow** via the enhancement of Hancock Road and Sugar Loaf Lane bridge.
- Deliver additional crossing facilities around **Leamouth**, including: Cody Dock, Trinity Buoy Wharf bridge, Hercules Bridge (Orchard Place to Limmo Peninsula), upgrade East India Dock bridge, and enhance City Peninsula Bridge

Travel Demand Management in the Lower Lea Valley

4.38 A summary of key TDM measures across the LLVOA is presented below.

TDM Measures across the Opportunity Area

Recognises the role of the community and how TDM measures need to target both existing and new communities to encourage take-up of active travel lifestyles

Develop and connect existing and new communities to the local open space through promotion of current cycling routes by distributing local cycle maps in the current parks.

Key to promoting active travel to new residents will be to work with developers to ensure that new residents have information available about active travel. This can be enforced through travel plans.

Key TDM Solutions

4.39 Other specific TDM initiatives to be delivered as part of a TDM strategy include:

- **Bromley-by-Bow (Bromley South & Bromley North)** has a high percentage (70%) of Black and Minority Ethic (BME). To target this group, the Strategy would use interventions at faith sites. To further encourage walking amongst the BME population the Strategy will market existing leisure routes to faith sites. The Strategy will seek to enhance community cohesion by offering only 'women' leisure activities to Muslim women to encourage walking.
- Health within the ward is an issue. 39% of the wards children suffer from excess weight and 25% of adults are obese (Public Health England, 2013). Research has shown that less active people are more prone to cardiovascular diseases costing more for the NHS. The Strategy aims to target both these groups by effective communication and education. The Strategy will work with local schools and hospitals to promote an active lifestyle to reduce the health risk mentioned above.

- Market and promote cycling as a 'leisure sport' by providing information on the Olympic Velodrome to encourage cycling in **Bow East.** This will inform local residents about the off-road cycle tracks in the Velodrome and how easy the access is from the borough.
- Identify local cycling groups to encourage peer to peer engagement to increase the level of cycling in **Mile End East**. This will remove barriers to cycling as new cyclists will feel safer with experienced cyclists.
- Deprivation in **East India and Lansbury** is high with 60% living in social housing (ONS, 2011). In line with the NPPF (p.10, 2012). Working with the Poplar Riverside housing development will ensure active travel modes are well-connected between sites.

'CENTRAL' TOWER HAMLETS

4.40 It is important to recognise the wards that are not covered in the three Opportunity Areas. As stated in the 'Baseline Report', the Central Area of the borough offers significant potential to increase active travel, not least because they enable east/west and north/south travel across the Borough between Opportunity Areas.

4.41 Key travel characteristics from ONS (2011) include:

- Only 5% cycle to work in **Limehouse**. There is a potential to increase cycling in this ward by identifying areas of potential development. Walking levels are fairly moderate with 17% walking to work.
- 16% use a car in **St Dunstan's and Stepney Green** to travel to work. This Strategy seeks to identify areas where short car trips can be made into more sustainable trips.
- 9% cycle to work in **Mile End and Globe Town**.
- 43% use the underground, metro, light rail and tram to travel to work in **Bow West**. This reflects a high reliance on public transport.

4.42 Section 3 of the Baseline Report has identified nine 'Character Places' that are part of the Central Area. These are; **Bethnal Green, Globe Town, Victoria Park, Mile End, Bow Common, Poplar, Stepney, Limehouse and Wapping.** There is primarily a residential and community focus to the development of the Central Area, with connections to green spaces and waterways a key feature.

Infrastructure Provision in the Central Area of Tower Hamlets

4.43 A summary of key infrastructure measures across the Central Area is presented below.

Infrastructure Measures across the Opportunity Area

Connect the surrounding green spaces and waterways to the Central Area.

Removal of barriers to east/west and north/south movement and barriers to accessing the Cycle Superhighways.

Key Infrastructure Solutions

4.44 Specific infrastructure initiatives include:

- Enhance the cycling infrastructure in support of Quietway 6 (phase 1) (TH Cycling Strategy, 2016).
- Improving the existing walking routes in **Limehouse** (Lea Valley Walk) to enhance the current conditions and signage. The route goes through seven of the 'Character Places' within the borough and this Strategy seeks to maximise its current capacity.
- Recognising the historic setting around **Wapping** and the need for improved cycle infrastructure to further encourage the uptake of cycling.
- **Bow West** benefits from the traditional green spaces offered by Victoria Park. Bow's 'Character Place' can be showcased by maintaining and improving the existing green spaces and encouraging active travel to these green spaces.
- Development of the future cycle network in **Mile End and Globe Town**, including new access points and routes proposed by the TH Cycling Strategy (2016).
- Development of potential new crossings on **Mile End Road** to improve safety. Additionally, identify 'home zone' environments with shared surface streets to increase pedestrian priority. Measures include the widening of pavements to improve access and safety alongside drop kerbs and decluttering (TH Green Grid Strategy, 2010).
- Improve the areas located near Southern Grove Lodge in **Mile End**. Measures include the development of the footfall area by improving the pavement surfaces, amount of green space available and access to local amenities.

Travel Demand Management in the Central Area

4.45 A summary of key TDM measures across the Central Area is presented below.

TDM Measures across the Opportunity Area

Develop and market new legible mapping to encourage new cyclists. This will provide easy and safe navigation for all.

Promote the TH Cycling Strategy concept of 'Cycling for All'. Work with local schools to promote the 'Bike It' and 'Bikeability' programme to ensure cycle training, pool bikes and training for parents is available. This will reduce any barriers for the uptake of cycling as training will be provided. The programmes will also provide maintenance courses which is a great cost incentive to reduce bike repairs.

Promote and market guided bike rides. We will work with the Tower Hamlets Cycling Club to offer guided rides around the borough. Each ride 'level' will be dependent on the individual's competence of cycling.

Key TDM Solutions

4.46 Other specific TDM initiatives to be delivered as part of a TDM strategy include:

- Targeting local parks i.e. Victoria Park and Mile End Park to promote Santander Cycle rides. This will inform and encourage new cyclists of the cycling facilities available in the local area.
- Utilise current parks in **Mile End and Globe Town** and **Bow West** by promoting BMX rides and cycle training. Encouraging casual cycling by the use of leisure activities to break down the barriers of cycling.
- Recognises the role played by the local cycle groups and work with them to identify current problems and further promote cycling.
- Work with local schools across the Central Area to ensure schools are implementing walking as part of their school travel plans. These routes aim to promote safer, more environmentally friendly and healthier ways for children to get to and from school.
- Work with local health campaigners in **St Katherine's and Wapping** to develop a series of walking and cycling campaigns to get more people walking and cycling for health, wellbeing and fun.
- Work with new developments **(Limehouse)** to ensure they are providing direct, convenient and safe routes through the site to other amenities to encourage shorter walking trips.

SUMMARY

4.47 The Active Travel and TDM measures have been developed in line with the National, Regional and Local planning policies to facilitate and promote the benefits of active travel. Across the borough there are currently a range different levels of walking and cycling and so a need for targeted measures by individual wards and 'Character Places' is important.

4.48 There is a recognised need for a denser cycling network across the borough to increase the permeability of cycling. Alongside this many urban areas within the borough require enhancements to create a safer urban realm.

4.49 Health is a key issue across the borough and in some wards obesity levels are high. It is important that this is being prioritised and addressed to improve the borough's health for the future.

4.50 Tables 4.1 and 4.2 provides a summary of the potential measures identified for active travel for the whole borough and individual Opportunity Areas, respectively.

Table 4.1 Summary of Potential Borough-wide Active Travel Measures

Infrastructure	Travel Demand Management
• Links to the Cycle Superhighway and in particular, prioritisation of cycle and walking provision in the Opportunity Areas • Support the implementation of the current London Cycling Design Standards and implement Cycling Level of Service (CLoS) assessment to ensure safer cycling and enhance connectivity, in particular including junction improvements • Ensure enhancements in streetscape and connectivity within and between 'Character Places' applying appropriate design standards that prioritise walking and cycling connectivity and safety, including reducing unnecessary street furniture. • Ensure there is sufficient levels of legible mapping • Ensure sufficient off-street cycle parking is made available as part of developments, including on privately rented sites and social housing, to remove any barriers to the uptake of cycling. • Review current access and provision for 'filtered permeability' • Support the development of Quietway 6 Phase 1 and work with local organisations to reduce cycle network gaps • Use the planning process to ensure sufficient active travel infrastructure is provided through developer funding	• Use the travel planning process to promote active travel to new residents, new businesses and new employees • Offer child and adult cycle training • Promote local community health walks to existing and new communities • Work with the Metropolitan Police Cycle Task Force and the borough's Safer Transport Team to help reduce cycle theft. Run awareness campaigns for cyclists to increase their perception safety, encouraging cycling

Table 4.2 Summary of Potential Individual Opportunity Area Active Travel Measures

Opportunity Area	Ward / Area	Infrastructure	Travel Demand Management
City Fringe	St Katherine's and Wapping	• Development of more Cycle Hire docking stations • Develop open spaces near the canal and station to create desirable pedestrian access • Improve connectivity to the Tower of London.	• Promote active travel through areas of deprivation
	Shadwell	• Development of more Cycle Hire docking stations • Enhance street connections	• Build on community health initiatives and themes such as healthy eating etc. to promote key health messages and active travel
	Whitechapel	• Deliver enhanced streetscape and 'gateways' as part of Whitechapel Vision • Ensure a cycle hub is located near current and new stations	• Work with schools to promote the 'BikeIt' and 'Bikeability' Programme • Seek to engage with other channels to promote active travel • Offer cycle training to children and parents to overcome present obesity issues • Offer pool bikes • Promote active travel through areas of deprivation
	Spitalfields and Banglatown	• Ensure cycle routes are well maintained • Implement additional cycle parking	• Work with schools to promote the 'BikeIt' and 'Bikeability' Programme • Seek to engage with other channels to promote active travel
	St Dunstan's and Stepney Green	• Ensure cycle routes are well maintained • Implement additional cycle parking	• Work with schools to promote the 'BikeIt' and 'Bikeability' Programme • Seek to engage with other channels to promote active travel
	Bethnal Green (North and South)	• Support the development of route upgrades (Vallance Road) • Improve publicly accessible open spaces	• Build on community health initiatives and themes such as healthy eating etc. to promote key health messages and active travel
	Weavers	• Enhance pedestrian access to existing and new green spaces	• Market sustainable travel choices due to the close proximity to the City of London

Opportunity Area	Ward / Area	Infrastructure	Travel Demand Management
Isle of Dogs and South Poplar	Poplar	• Create a better environment for active travel between South Poplar and Canary Wharf including Aspen Way Footbridge enhancement, Preston's Roundabout, and the Poplar Decking Scheme	• Better connect the riverside alongside the neighbourhood centres to increase walking and cycling
	Canary Wharf	• Improve north-south connectivity across Canary Wharf through new South Dock crossing • Replacement of Westferry Road pedestrian bridge with at-grade crossing • The development of the new Thames Crossing between Canary Wharf and Rotherhithe has the potential to increase walking and cycling	• Better connect the riverside alongside the neighbourhood centres to increase walking and cycling
	Island Gardens	• Undertake a CLoS assessment to enhance connectivity • Support the 'greening of streets' to enhance the visual quality of the area • Support the development of the Thames Crossing	• Pilot some intensive communications to families of pupils starting school to promote travel behaviour awareness
	Blackwall and Cubitt Town	• New link across Milllwall Inner Dock • Access improvements to Glengall Bridge • Investment in cycling infrastructure, including enhancement to the Blue Bridge • Implement more Cycle Hire docking stations on residential streets • Revitalise the Crossharbour town centre and enhance the connectivity on surrounding streets	• Communicate active travel to Year 6 pupils to target their transition into secondary school • Ensure the Greenwich Foot tunnel is being utilised to its full capacity • Better connect the riverside alongside the neighbourhood centres to increase walking and cycling
Lower Lea Valley	Bromley-by-Bow	• Support the development of the 'leisure loop' • Ensure that existing leisure walks are safe and attractive • Provide new or upgraded connections from Bromley-By-Bow via the enhancement of Hancock Road and Sugar Loaf Lane bridge	• Engage with local faith sites to encourage walking and cycling • Work with local schools and hospitals to promote an active lifestyle
	East India and Lansbury	• Development of more Cycle Hire docking stations	• Work with the Poplar Riverside housing development to ensure active travel is well connected between sites
	Bow East	• Enhance the canal and riverside path towards the east of the ward	• Market and promote cycling as a 'leisure sport'

Opportunity Area	Ward / Area	Infrastructure	Travel Demand Management
		• The delivery of a range of new or upgraded crossing facilities across Fish Island, including the Old Ford Road bridge over the A12, Wick Lane A12 underpass enhancement, Wallis Road to Cadogan Terrace footpath upgrade, Monier Road link, H16 bridge link, Hertford Canal crossings • Support the development of the Fish Island 'Character Place' by encouraging new developments to have sustainable measures such as cycle parking and facilities to encourage cycling. • Delivery of the 'Bow Vision', including removal of the Bow Flyover and replacement with at-grade crossing facilities and additional crossing at 5-Bells	
	Mile End East	• Improve the quality of the urban environment by providing more lighting and 'greening' to the current parks	• Identify local cycling groups to encourage peer to peer engagement
	Leamouth	• Deliver additional crossing facilities around Leamouth, including: Cody Dock, Trinity Buoy Wharf bridge, Hercules Bridge (Orchard Place to Limmo Peninsula), upgrade East India Dock bridge, and enhance City Peninsula Bridge	
Central Area	Limehouse	• Improve the existing walking routes by enhancing the current path conditions and signage	• Run awareness campaigns to increase the levels of perception of safety • Work with new developments to ensure they are providing direct, convenient and safe routes through the site and to other amenities
	St Dunstan's and Stepney Green	• Introduce greater permeability by calling for more street audits	• Work with local schools to ensure they are implementing walking as part of their school travel plan
	Mile End and Globe Town	• Develop cycle network • Support the development of new crossings and identification of 'home zone' environments • Enhance streetscape and open spaces around Southern Grove Lodge	• Target local parks to promote Santander Cycle rides • Utilise current parks by promoting BMX rides and cycle training to encourage casual cycling

Opportunity Area	Ward / Area	Infrastructure	Travel Demand Management
	Bow West	• Enhance the cycling infrastructure in support of Quietway 6 (phase 1) • Maintain and improve the existing green spaces	• Target local parks to promote Santander Cycle rides • Utilise current parks by promoting BMX rides and cycle training to encourage casual cycling

5 Public Transport & Waterways

INTRODUCTION

5.1 Public transport provision is already the dominant mode of transport within the borough accounting for 60% of journey to work trips. The role of rail and buses will continue to be particularly important in transporting high volumes of people across the borough and the level of housing and employment grows. The 'Baseline Report' highlighted the additional pressures that will be placed upon the public transport network as a result of the projected housing and employment growth, in particular within the 'High Growth' scenario with substantial additional employment growth within the Isle of Dogs and City Fringe Opportunity Areas. To meet this demand in a sustainable manner will required significant investment in public transport provision over and above the upcoming delivery of Crossrail and Jubilee and Central Line enhancements.

5.2 In contrast to other public transport, the use of the waterways within the borough remains more limited. Opportunities exist to enhance and promote the use of these links, for both passengers and freight, to maximise their use and provide alternative options for travel, in particularly to and from boroughs to the south of the Thames.

PUBLIC TRANSPORT

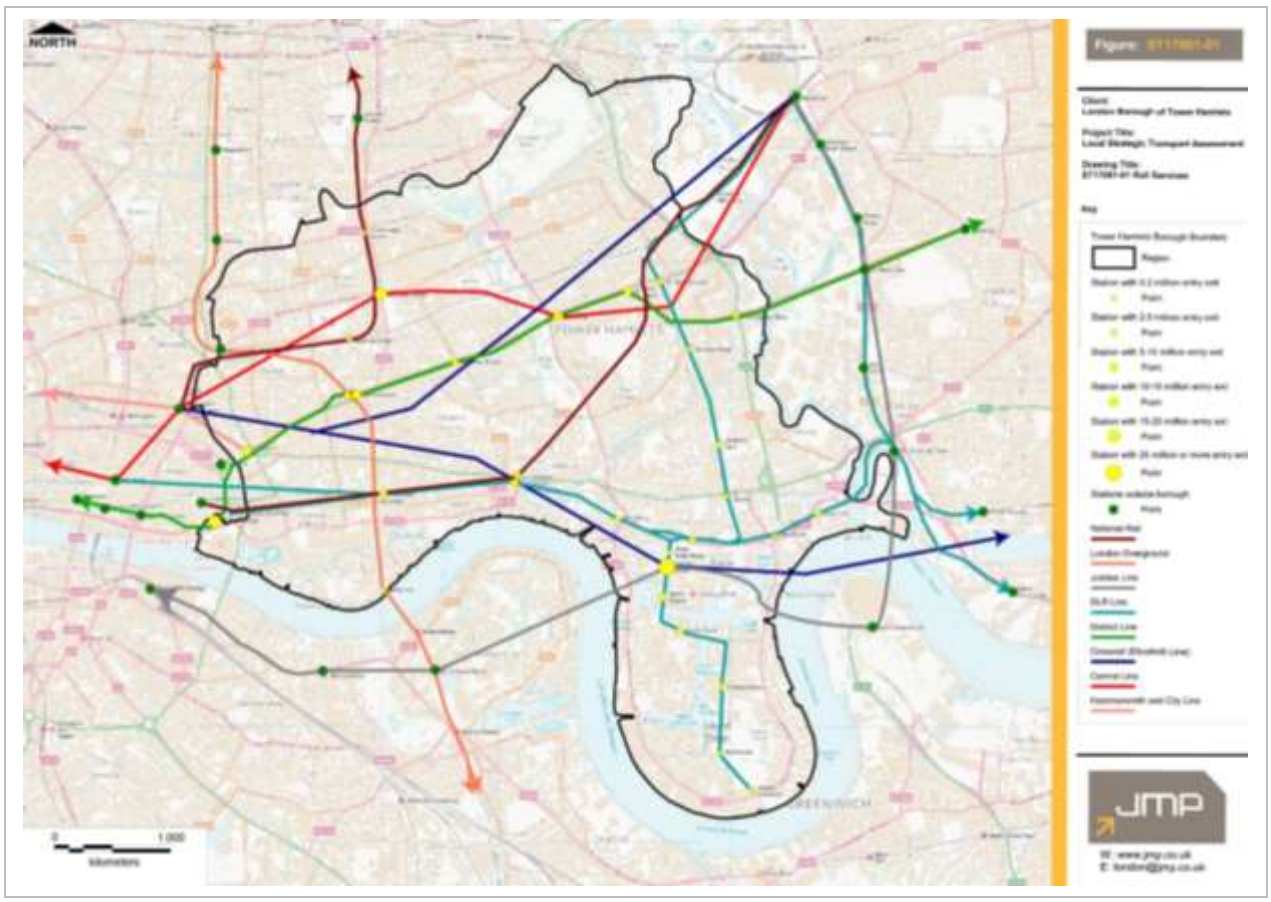
Rail Provision

5.3 There are a wide range of existing rail options within the borough encompassing:

- London Underground (Jubilee, Central, District lines);
- Docklands Light Railway;
- London Overground (East London Line, Lea Valley Line); and
- National Rail (C2C)

5.4 In addition, the upcoming completion of Crossrail (Elizabeth Line) will also provide significant additional capacity in the future. **Figure 5.1** provides a summary of this provision.

Figure 5.1 Current and Committed Rail Network Provision



5.5 Despite this high level of provision, and the opportunities provided by Crossrail, the baseline analysis work identified that there will remain some considerable capacity constraints in the future, particularly under a 'High Growth' scenario.

5.6 The analysis indicated that the Central and Jubilee Lines will be particularly affected, despite increases in service frequencies to 33 trains per hour. The National Rail C2C services will also be heavily constrained, and even Crossrail service become crowded, particularly under the 'High Growth' scenario that has substantial additional employment within the City Fringe and Isle of Dogs Opportunity Areas.

5.7 Most opportunities for enhancing rail provision (beyond Crossrail) are restricted to track capacity (generally linked to signalling) and the capacity of train carriages. The future year reference case for 2031 already has a range of upgrades to Underground rail services. There are, however, some additional opportunities for increasing capacity further on these lines than already planned.

5.8 For the DLR and Crossrail, there are considered to be some potential opportunities to increase capacity through increased frequency of services or through new, or longer, rolling stock with increased passenger capacity. This includes:

- North Route Double Tracking to will allow service frequency along the north route to increase from 15tph to 22tph and 30tph, respectively
- New Train for Docklands
- Provision of a new turnback facility at Poplar to allow increased service frequency between Poplar and Beckton
- Isle of Dogs services up to 30tph

- Possible improvements to turnback facilities at Bank to allow at least 30tph service
- Potential to extend DLR service beyond Bank

5.9 In addition, a number of DLR station enhancement plans have been proposed for Crossharbour, Limehouse, Poplar, Island Gardens, Shadwell (including interchange with the London Overground), Lewisham(to integrate DLR better with devolved and "metroised" Southeastern services, and Bakerloo line) and Tower Gateway. These will all enhance capacity of the stations and/or improve accessibility and connectivity to surrounding developments. More generally public realm enhancements are proposed across the whole DLR network to improve the quality of access to stations.

5.10 Not all DLR services within the 2031 Reference Case are 3-car services, with Lewisham to Stratford and Woolwich Arsenal to Stratford International only 2-car only. There is, therefore, the potential to increase upgrade these DLR services to 3-car trains. Alongside this, enhanced signalling could potentially provide for higher frequencies of services across all of the DLR routes of between 30 and 36tph.

5.11 All Crossrail stations have been built to accommodate 10 car trains but the initial specification is for 9-car trains and so there is the potential to increase to 10-car trains in the future. Upon opening there will be 12tph operating on each of the eastern branches to Canary Wharf and Stratford. There is considered to be the potential to add extra peak hour services on both branches to/from Paddington, as the core Central London sections signalling and communications systems has been designed to permit 30 trains an hour. There may be a range of options as to how to distribute these services across both branch lines.

5.12 There are also long-term proposals for further enhancements to the Jubilee Line to increase capacity beyond the 33tph currently planned. This could include new services or new rolling stock.

5.13 These proposed changes to the rail network are, obviously, not within direct control of the borough and are dependent upon wider network planning by TfL. As a package of mitigation measures, however, they are considered to be critical to the sustainable delivery of housing and employment growth, particularly within the City Fringe and Isle of Dogs.

Bus Capacity

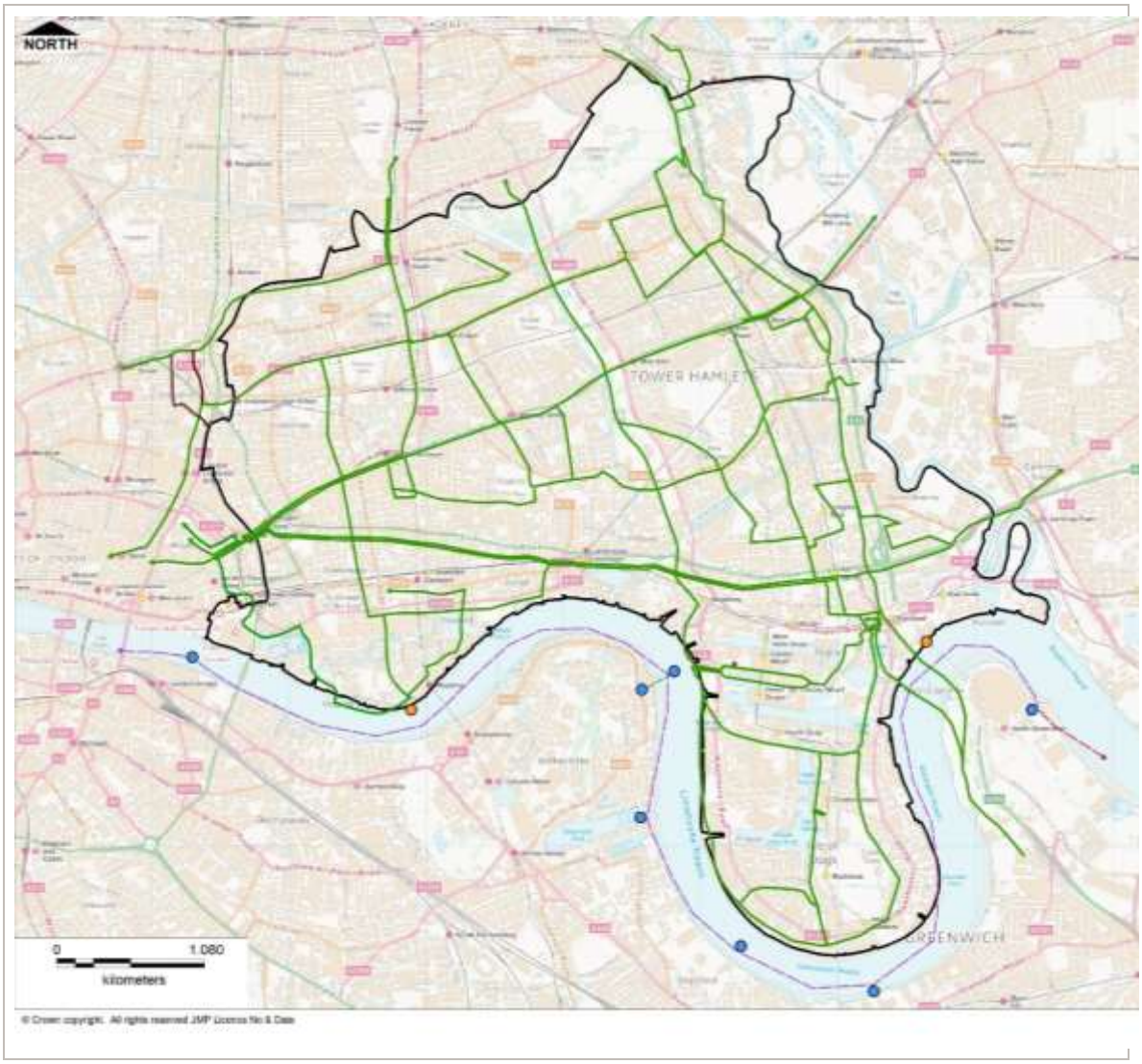
5.14 The borough is currently relatively well served by a comprehensive and relatively stable network of bus services. The services consist of an external network across the borough, alongside a series of routes into the Opportunity Areas: City Fringe, Isle of Dogs, and Lower Lea Valley.

5.15 Quality of service metrics indicate that the borough's bus network performs similarly to networks for other Inner London Boroughs, albeit that average bus speeds are relatively low and waiting times for passengers over 25% higher on average than the scheduled wait times.

5.16 The role of buses as part of the wider public transport network is considered very important, not just in terms of the volume of passengers carried but also the type of market served. Buses provide a more flexible service to enable penetration within residential and employment areas, as well as to directly serve important public service institutions, such as hospitals and education facilities.

5.17 **Figure 5.2** provides an overview of the bus network.

Figure 5.2 Bus Network and Piers



5.18 The baseline analysis identified as series of routes, including the A13 Commercial Road, A1206, Westferry Road and A1208 Hackney Road which overcrowding on buses is already significant. This is forecast to deteriorate further by 2031, but significantly so in the 'High Growth' scenario where constraints with rail capacity result in higher demand for bus services across the borough. It was also noted, however, that the opportunities to increase services along some of the main corridors (e.g. A11, A13) is actually relatively limited due to constraints on road space and bus stop facilities along the routes.

5.19 In terms of providing additional capacity the South Tower Hamlets Bus Review (TfL, 2014) identified a number of schemes to address increasing demand in the borough, including:

- The swapping of routes D3 and 277 in the Isle of Dogs;
- Diverting route D6 to provide a direct link between the east side of Canary Wharf and the east side of the Isle of Dogs; and
- Extending route 330 along Westferry Road

5.20 The outputs from 'Baseline Report' suggest that a continual enhancement programme will be required in order to ensure that bus capacity continues to meet increasing demand as the population and jobs

increase across the borough. In addition, increasing bus priority measures will likewise be required to ensure the network operates efficiently.

5.21 Measure to increase bus capacity will include:

- Bus service frequency enhancements
- Vehicle capacity enhancements (e.g. large capacity buses)
- New services

5.22 Measures to prioritise bus movements across the highway network will include:

- Bus lanes
- Bus gates or bus only routes
- Bus priority measures at junctions
- Kerbside controls to remove or limit obstructions

5.23 The process for identifying service frequency enhancements, new services, or increases in vehicle capacities, along with bus priority measures will need to be undertaken through detailed analysis of development over time and will be led by TfL Buses. Furthermore, enhancements to the bus network will need to complement additional rail service provision to provide a comprehensive public transport network to meet the needs of all borough residents and workers. It is recognised that the delivery of Crossrail will provide significant additional public transport capacity between Whitechapel and Canary Wharf that provides an opportunity to re-optimise bus service provision and utilise the highway network capacity for alternative bus provision.

5.24 As the projected growth in housing and employment is delivered, even with additional rail capacity enhancements, the 'Baseline Report' has provided evidence that bus provision will need to play a major role in: north-south connectivity to the Isle of Dogs, and around the Isle of Dogs, as well as connections to development areas within the Lower Lea Valley, and local connections across the heart of the borough.

Bus Layover

5.25 One specific bus scheme is the redevelopment of the bus terminus at Crossharbour, as part of wider development proposals to enhance the provision and operation. This forms part of a wider requirement in the future to ensure that sufficient bus layover facilities are developed to permit the efficient operation of the bus network as it develops over time. The 'Baseline Report' has already identified some excess wait times across the borough as a result of bus service delays and so it will be important to ensure that this does not worsen as a result of insufficient layover facilities to adequately regulate services. This is, again, a process that will be led by TfL buses; however, it is imperative that its importance is recognised within the Local Plan process in terms of land availability.

Coach Provision

5.26 A range of coach services also operate within the borough, both for tourism and commuting purposes. Commuter services provides connections from outside of London to locations, such Canary Wharf, Aldgate and London Victoria. Tourist coaches also operate within the borough taking passengers to attractions such as the Tower of London. The 'Baseline Report' indicated the potential to enhance the coach market through the development of a coach stop locations. This could include the potential development of a Coach Hub to coordinate and integrate services, if suitable location could be identified. One option for this may be within the Isle of Dogs Opportunity Area, as part of wider proposals for increased public transport provision, although the reliability of highway access to the Isle would be an important consideration. This proposal would again need to be developed as part of an on-going assessment of the growth of the coach market.

WATERWAYS

Introduction

5.27 The promotion of and investment in river travel in Tower Hamlets is identified within local and regional level policy. Tower Hamlets' LIP 2 aims to improve interchange connections between river services and other modes of public transport to improve accessibility and the attractiveness of travelling via river. The LIP supports the development of river crossings to reduce overcrowding and to improve access to all users, particularly in the Isle of Dogs area. Similarly, the Borough's Cycling Strategy supports the development of river crossings by ensuring that development enhances capacity for cyclists. This section sets out the potential ways in which river travel can be promoted and expanded within the Borough, in terms of both east to west movements and north to south movements.

Existing Services

5.28 Tower Hamlets is currently served by three River Bus services, which can be accessed at three piers within the Borough:

- **RB1**: Embankment – Canary Wharf – Greenwich – Woolwich;
- **RB4**: Doubletree Docklands Nelson Dock Pier – Canary Wharf; and
- **RB5**: North Greenwich – Woolwich Arsenal.

5.29 Cross river connectivity for all modes (vehicular, pedestrian and cycle) is provided by the Woolwich Ferry, which connects North Woolwich in Newham on the northern side of the Thames with Woolwich in Greenwich. Other services aimed at tourists and leisure travel are provided from St Katherine's Pier, located at the western end of the Borough. The connection from Tower Pier to London Bridge City Pier also provide another river crossing.

5.30 Alongside the important role it plays in the movement of people, the River Thames plays an equally important role in the movement of goods and freight to and from the Borough.

5.31 A range of issues have been identified within the 'Baseline Report' in relation to river service including the comparative journey times to other public transport modes. There is also a range in the level of connectivity currently facilitated between river services and other modes of public transport that serve the borough. Whilst most piers are well connected to walking and cycling through signage and cycling infrastructure, including a new Cycle Hire Docking Station at Canary Wharf, there remain opportunities to enhance this connectivity further to improve ease of usage.

5.32 Of the three piers within the Borough, the Canary Wharf pier is well utilised, with an average weekday entry and exit count of over 22,000 (September 2015). However, the Masthouse Terrace pier, located at the southern end of the Isle of Dogs (approximately 500m from Island Gardens DLR station), receiving less than 15% of these levels of footfall.

5.33 There are also problems concerning lack of resilience in terms of north-south river connectivity when issues occur with the Woolwich Ferry.

Access to the Waterways / Public Transport Connectivity

5.34 In promoting travel by river, it is important that reliable and good quality connectivity is provided to other transport modes for journey continuation. Enhanced interchange connections should be provided at the three existing piers in the borough to promote use for all types of travel. This should cater for all modes of travel, including pedestrian, bicycle, local bus and, where appropriate, rail travel (London Overground, DLR, London Underground).

5.35 Potential for larger Cycle Hire docking stations to be provided at the three existing piers, as well as secured and cover cycle parking for other cyclists.

New Piers

5.36 Outline proposals for the development of two new piers at Wapping and Canary Wharf East are currently under consideration. The provision of new piers and the resultant enhanced connectivity through access to river services can help to act as a catalyst for new development, helping to provide an economic business case for investment in such infrastructure.

5.37 The construction of a pier at Canary Wharf East in Spring 2017 and the introduction of River Bus services at this location would provide river accessibility to new areas of residential and employment growth within the Lower Lea Valley Opportunity Area.

5.38 It is important to ensure that good quality interchange and connections are provided with other public transport services. The proposed location at Wapping could be integrated to connect with existing London Overground services from Wapping Station and local bus services (routes 100 and D3) which run on Wapping High Street. The existing landscape means that integration between river services at Blackwall and local bus services may be harder, and careful consideration will need to be given to this. However, as residential development is brought forward in this area, potential changes to bus routing may help with this. Connectivity with Docklands Light Railway services from either East India or Blackwall stations are possible.

5.39 It is important that the integration of these new piers into the routes of existing River Bus services is considered in the context of the impact on existing journey times.

Promotion of River Travel

5.40 The development of campaigns to promote of travel by river for all journey purposes can highlight the potential benefits compared to travelling by alternative modes. As an example, it may be quicker to make a journey from the south of the Isle of Dogs to the City of London via a westbound River Bus service from Masthouse Terrace pier to Tower Pier than to use DLR services from Island Gardens to Tower Gateway or Bank. Encouraging greater use of river travel for cross-Thames trips would ease the pressure on existing rail services, such as the Jubilee Line.

North-South River Connectivity

5.41 The potential to provide an additional north to south shuttle service across the River Thames at a relative high frequency that connects the proposed Canary Wharf East pier to North Greenwich West would complement existing east-west River Bus services on Route RB1, and may help to relieve congestion, overcrowding and wait times on DLR services at Island Gardens, Mudchute and Crossharbour stations, particularly during network peak periods. It is important that any additional river services provided can be easily connected with other modes of public transport to encourage use.

5.42 A key barrier identified for pedestrian and cycle travel in the borough is the lack of cross-river travel options. Only a single crossing point in the form of the Greenwich Foot Tunnel provides dedicated provision, although cycling is currently prohibited through the tunnel, with cyclists required to dismount and walk their bicycles.

5.43 For the most part the foot tunnel is well used by pedestrians; however, there are certain periods in the day where cycling may be feasible. The Royal Borough of Greenwich manages the tunnel and is planning to trial a real time IT system that permits cycling when pedestrian usage of the tunnel is low

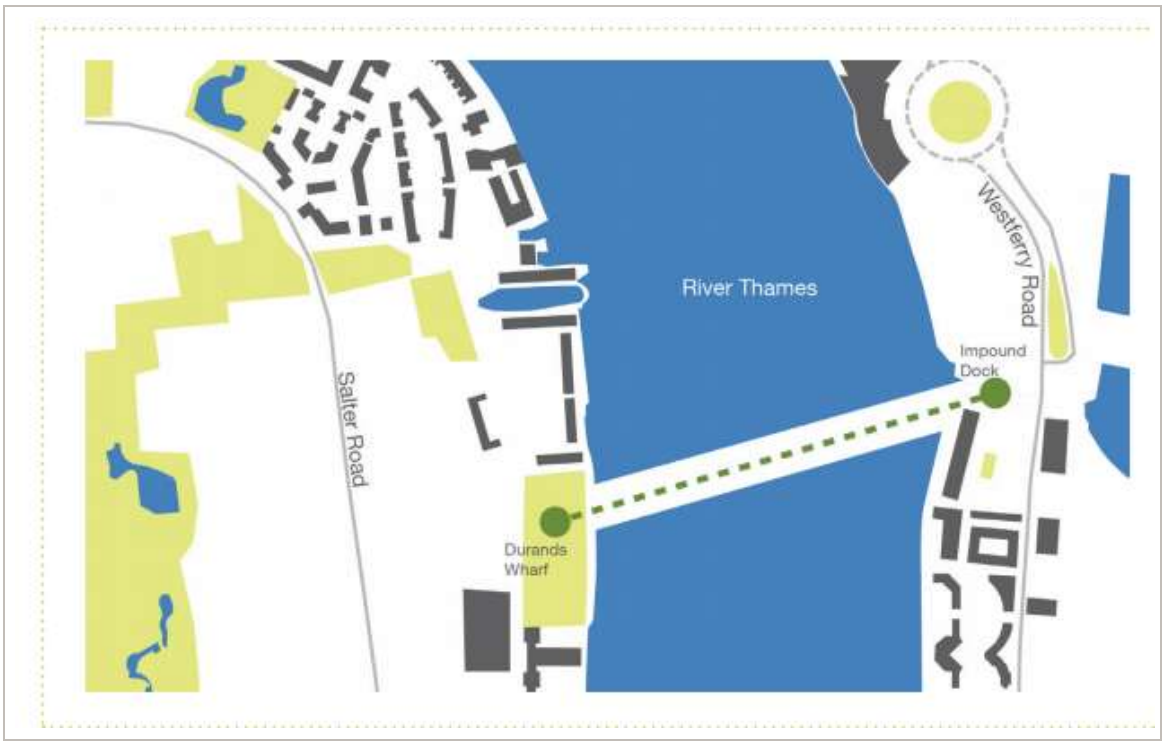
5.44 The construction of a new car-free walking and cycling crossing across the Thames (between the Isle of Dogs (Canary Wharf) and Rotherhithe) would help to reduce the severance created by the Thames

between residential developments in the south and the high density employment area of Canary Wharf and the Isle of Dogs.

5.45 A feasibility study undertaken by Sustrans (March 2016) found that the provision of a new river crossing between these two locations would facilitate 13,000 daily commutes across the river. Such a crossing could help to promote walking and cycling as a feasible mode of travel for cross-river trips, reducing the number of trips made by public transport (particularly London Underground services on the Jubilee line) or made by car.

5.46 A crossing between the two locations would significantly reduce pedestrian and cycle journey times from the Borough to the south side of the Thames, and could help provide economic savings of up to £10 million annually (Sustrans, March 2016). A plan showing Sustrans' proposed crossing location is shown in **Figure 5.3** below.

Figure 5.3 Sustrans Proposed Crossing Location



Sustrans, March 2016

SUMMARY

5.47 Table 5.1 provides a summary of the potential measures identified for public transport and waterways.

Table 5.1 Summary of Potential Public Transport and Waterways Measures

Spatial Areas	Public Transport and Waterways Measures
Borough-wide	• Enhanced Crossrail (Elizabeth Line) frequencies • Longer Crossrail (Elizabeth Line) Trains • Enhanced DLR frequencies (Turnback facility at Poplar, Turnback facility at Bank, long-term 30tph to 36tph enhancements) • New Train for Docklands • DLR Station Public Realm Enhancements • Extension of DLR beyond Bank • Increased bus frequencies • Improved bus infrastructure (bus priority and layover facilities) to enhance reliability of services • Enhanced interchange between public transport, Cycle Hire, and river services • Enhanced connectivity to the River and Waterways (*cross-reference with 'Active Travel' section*)
City Fringe	• Tower Gateway DLR Station Enhancement • New pier at Wapping
Isle of Dogs and South Poplar	• Enhanced DLR services to Isle of Dogs (30tph) • Enhanced DLR Stations (Poplar, Crossharbour, Island Gardens) • Crossharbour Bus Terminus upgrade • Development of a Coach facilities (including potential Coach Hub) • New pier at Canary Wharf East Increased frequency of River Bus services • Rotherhithe – Canary Wharf West Crossing • Canary Wharf East to North Greenwich Crossing
Lower Lea Valley	• DLR North Route Double Tracking
Central Area	• DLR North Route Double Tracking • Limehouse DLR Station Upgrade • Shadwell Interchange Enhancement

6 Highways, Parking & Freight

OVERVIEW

6.1 The highway network across Tower Hamlets is an integral aspect of transport provision within the borough, providing both strategic connections, as well as local access. It serves both private car trips, but also encompasses a primary role for the movement of goods. The 'Baseline Report' has identified existing challenges with congestion and air quality and the need to ensure mitigation measures are introduced to not only improve current conditions, but ensure that future projected growth in housing and employment can be sustainably delivered.

6.2 The provision of parking is correlated to private car use within the borough and is one of a number of influencing factor in the levels of car ownership and car usage. Parking is provided off-street within private developments or public car parks, but is also managed on-street on borough roads.

6.3 The 'Baseline Report' has identified a changing market for freight deliveries and servicing that reflects changes in technology and lifestyles. The management of freight servicing and deliveries within high density development is a key challenge to facilitate projected growth in the borough.

6.4 All three elements combined to influence the level of traffic, congestion and emissions across the highway network within the borough. Providing an integrated strategy for managing these elements will be an important component of the overall transport strategy to support the Local Plan.

HIGHWAYS

6.5 The key themes that relate specifically to future highway provision are the resilience of the network to incidents and disruption, as well as air quality.

Infrastructure provision

6.6 With the exception of potential river crossings, the opportunities for large-scale highway infrastructure measures are limited across the sub-region, both in policy terms, as well as physical delivery.

6.7 The Silvertown Tunnel crossing is a well-developed scheme that will be subject to examination in public towards the end of the year. Given its status, it is not currently included within the TfL modelling reference case, although is clearly a strong aspiration for delivery TfL.

6.8 Access to the Isle of Dogs is a key challenge that has been identified and a series of preliminary schemes have been identied in relation to East India Dock Road, West India Dock Road, Preston's Road, Westferry Road and Hertsmere Road, including enhancements to junction operations between these roads, such as Preston's Roundabout. Hertsmere Road potentially offers an additional access route to the south of Aspen Way; however, it is understood that this link is under multiple private ownership that will complicate any potential to upgrade this as an access route.

6.9 The 2031 highway modelling work within the 'Baseline Report' forecast significant congestions in other parts of the network including:

- the area to the south of Victoria Park around Old Ford Road and Roman Road on routes leading to and from the A12 and around Bow
- the area around Queen Mary's University of London (Hartford Road, White Horse Lane, Globe Lane)
- the area around Bow Common (Bow Common Lane / St Paul's Way , Upper North Street)

6.10 These areas of localised congestion could be relieved through junction capacity enhancement and local network management.

Network management

6.11 With only a limited range of opportunities to significantly enhance network capacity through infrastructure provision, the effective management of the existing highway network becomes essential. There are a range of network management tools available for physical measures, through to information and technology.

6.12 Physical interventions can include measures such as banned turns and restrictions to access to reduce conflicts of traffic movements. These would need to be considered at a localised level with local junction or micro-simulation modelling to test the implications of proposed changes.

6.13 Technology can play a major role in the management of traffic. There are four primary, and inter-connected, elements that can be applied:

- Network Monitoring – real-time monitoring of traffic movements, congestion and emissions to permit 'live' evaluation of performance
- Communications – communicate information to highway user
- Traffic Network Control – real-time control of traffic signals to mitigate against poor traffic conditions
- Data Management – processing information

6.14 These elements are discussed further within the section on ***Intelligent Mobility***.

Demand management

6.15 In addition to management of the use of the network, measures can implemented that seek to manage overall levels of demand for highway trips. These measures can be categorised into three board approach to dis-incentivise car travel, to incentivise alternative modes of travel, or to manage overall level of demand for travel.

6.16 Measure to encourage the latter two approaches have been set out in the previous sections on ***Active Travel*** and **Public Transport**, as well as in the subsequent section on ***Intelligent Mobility***. Approaches to disincentive car travel tend to focus upon increasing the relative cost of travel by car. In many cases, these cost relate directly to national policies, taxes and tariffs and so are out-with the influence of the borough or partners, such as TfL. Parking policy can have some influence over car ownership levels, and hence car trips, and is disused further in the section below.

6.17 Other policy interventions relate to variant form of road charging. The existence of the Central London Congestion Charging Zone has set a precedent for road charging within London and with the City Fringe Opportunity Area potentially expanding the core of the city eastwards one option for consideration would be to extend the zone. Access onto the Isle of Dogs could also, theoretically, be controlled via a charging cordon. Whilst there is no evidence to support the delivery of these measures currently, depending upon the ultimate density of development within the City Fringe and Isle of Dogs Opportunity Areas, they may become an options for consideration towards the end of the Local Plan period.

PARKING

6.18 Management of parking provision, both on and off street, can have an important influence over the level of private car ownership and the role of private car. The central location of the borough, alongside good public transport provision, create ideal conditions for minimising the role of private car trips to all but essential trips.

6.19 The Active Travel Strategy section has already highlighted the potential to encourage more short-distance trips to be undertaken by non-motorised rather than motorised modes. Whilst most of the 'active travel' measures can be considered to be 'carrots' to encourage sustainable travel, it is also important to ensure there are sufficient disincentives placed upon motorised travel so that individuals make informed choices between modes.

6.20 Parking management can provide an important tool in controlling the level of private car usage. The Borough has two main approaches to controlling parking provision, either through the parking standards that apply to new developments and through on-street parking controls.

Parking standards

6.21 The current parking standards employed by the Borough vary from those set out within the London Plan. A full review was conducted as part of the 'Baseline Report' and demonstrates that the parking standards on residential and retail are more restrictive than the London Plan.

6.22 In terms of residential standards, the degree to which they are more restrictive is linked to the Public Transport Accessibility Level (PTAL) of where a development takes place. The London Plan standards are also linked to whether the development occurs within a 'suburban', 'urban', or 'central' location, and so absolute difference will vary considerably with locations.

6.23 In terms of retail, the Tower Hamlets standards do not provide for any additional parking provision. The London Plan encourages on-street parking rather than the creation of additional off-street but acknowledges the requirement to support local retail centres with appropriate car parking provision, albeit that this tends to be more within the context of Outer London boroughs.

6.24 To maintain the current parking standards, or adopt other standards that diverge from the London Plan, the borough is required to provide robust justification for departing from the standards. In many cases, the Mayor of London's Office is primarily concerned about either inappropriately high levels of car parking provision that encourages private car trips, or the potential impact of off-street parking restrictions upon creating on-street parking pressures.

6.25 In the case of Tower Hamlets, the former issue does not apply as the standards are more restrictive, and the latter is also of limited concern given that the whole of the borough is covered by controlled parking zones (CPZs) and residents of new developments are not permitted to obtain a permit. Having restrictive off-street parking standards cannot, therefore, result in increased pressures for on-street car parking during the operation of the CPZs. The baseline on-street parking data analysis also indicated limited concern in regard to overnight parking from non-permit holders across the borough.

6.26 Any concerns relating to the Tower Hamlets parking standards will, therefore, relate to whether or not they are considered to be too restrictive; however, the London Plan is quite clear in its support for encouraging sustainable travel, in particular in areas with high PTAL levels. Furthermore, the GLAs aspiration for high levels of housing and employment growth within the Opportunity Areas within both Tower Hamlets, as well as the East of London as a whole, have been demonstrated within the 'Baseline Report' to create significant pressures upon parts of the transport network, and specifically, the highway network. In order to avoid significant congestion in egressing and accessing these Opportunity Areas it will be imperative to encourage alternative means of travel than private car trips. Restricting car parking provision will have an important role to play in this process, as well as providing for the alternative means of travel.

6.27 It is also important to recognise that there will be significant improvement to public transport provision for two of the three Opportunity Areas (City Fringe and Isle of Dogs) through the delivery of Crossrail and committed upgrades to Underground services. Alongside this, there are further measures to improve public transport set out within this document, as well as the strong focus upon encouraging active travel and intelligent mobility, and so the opportunities to travel by modes other than private car will be plentiful.

6.28 The evidence base projecting the impact of future growth upon highway congestion and air quality by 2031, particularly under the 'High Growth' scenario, supports a further change in residential parking standards to reduce the impact of future housing and employment growth upon the operation of the highway network. The revised standards are set out in Table 6.1.

Table 6.1 Tower Hamlets Revised Residential Car Parking Standards

PTAL Level of Location	Less than Three Bedroom Unit	Three Bedroom Plus Unit	Other Parking
PTAL 5-6	0	0	No additional provision for visitor parking, which will be on-street pay and display, or by qualifying for resident visitor temporary permits. Developers will be encouraged to provide on-site car club bays where appropriate in place of individual car parking spaces
PTAL 3-4	0.2	0.35	
PTAL 1-2	0.5	1	

6.29 The adoption of these parking standards retains the link with PTAL ensuring that more restrictive standards are only adopted where public transport accessibility is high. It also ensures the borough has a similar policy approach, and in some cases less restrictive, than other Inner London Boroughs, including Hackney, Islington and Camden.

6.30 The car-free standards will only currently apply within the western part of the City Fringe Opportunity Area, along the Central Line and Lee Valley rail Line corridors, parts of Limehouse, and at the centre of Canary Wharf.

On-street parking management

6.31 As described in the section above and within the 'Baseline Report', the whole of the borough is covered by on-street Controlled Parking Zones (CPZs). This restricts parking to permit holders or to pay and display parking.

6.32 The analysis of on-street parking data indicates that the CPZs appear to work well during the standard operating hours of the day, with parking occupancy levels rarely exceeding 75% of capacity across the borough. As would be expected, there are higher pressures for overnight parking and residents return from work, with an overall borough occupancy rates of 81% and some of the zones, particularly to the west of the borough, exceeding capacity with vehicles parking on single yellow lines. In only a single zone (Zone A6 around Spitalfield) was this high occupancy linked to non-permit parking; however, this was considered to be as much to do with demand from the night time economy than demand from residents without permits parking overnight.

6.33 Some high levels of parking at weekends were also identified, generally along the western side of the borough along the border with the City of London. Part of this demand was identified as coming from Tower Hamlets permit holders from different mini-zones or full zones. The current permit restrictions allow permit holders from any mini-zone to park within any part of their wider zone (e.g. Mini-Zone A1 can park throughout the whole of Zone A), and any permit holder can park for up to 3 hours in a different zone (e.g. Zone A within Zone B).

6.34 Allowing permit holders from each mini-zone to park anywhere within the main zone is considered to have some merit in providing flexibility for residents and relieving parking pressures in smaller mini-zones, or zones with a higher ratio of housing density to on-street parking provision. It is, however, also likely to encourage higher uptake of additional permits per household and so it is important to ensure that that higher cost of additional permits is a sufficient deterrent to discourage multiple car ownership. At present, the Census data indicates a low percentage of households with two or more vehicles (5% compared to a

London average of 18%); however, if it were to become an issue in the future then consideration could be given to stronger measures to discourage multi-car ownership.

6.35 The purpose of allowing permit holders to park anywhere across the borough for up to three hours was introduced to encourage local retail activity within the borough. As pressures on the highway network there would seem to be less merit in this policy and it is recommended the strategy recommends that this condition is phased out over time.

Car Clubs

6.36 Linked to the provision of on-street parking, the management of car ownership, and encouraging mode shift, the role of car clubs in the borough will be important in the future. Whilst there are already schemes operating within the borough they are not specifically integrated with wider transport policy. The multitude of operators, whilst providing theoretical competition, may also dilute the impact of individual clubs, given that it restricts the ability to obtain cars across the borough.

6.37 There are also a range of new car club models being introduced that provide greater flexibility with cars not tied to individual parking bays, rather they can be picked up and dropped off at different locations, with a mapping app used to identify where car are parked.

6.38 Whilst the borough cannot directly influence the provision of car clubs, it can work with operators to enhance the service provision, encourage greater integration, and support innovation amongst operators.

FREIGHT

Overview

6.39 The London Borough of Tower Hamlets has some of the largest development sites in London. The area is home to a diverse range of industrial / commercial activities with key transport connections for freight movements by river, road and rail.

6.40 The **Mayor of London's Air Quality Strategy** tackles the reduction in emissions from freight vehicles by promoting Delivery and Servicing Plans and freight consolidation facilities.

6.41 **The London Freight Plan** highlights the planned growth of London will lead to a 15% increase in demand for freight and servicing by 2025. The London Freight Plan therefore aims to coordinate the role of freight in London`s growth.

6.42 The Vision for sustainable freight distribution in London is for;

> *…the safe, reliable and efficient movement of freight and servicing trips to, from, within and, where appropriate, through London to support London's economy, in balance with the needs of other transport users, the environment and Londoners' quality of life'.*

6.42.1 Sustainable freight distribution is defined as the balanced management and control of the economic, social and environmental issues affecting freight that:

- Complies with or exceeds environmental standards, regulations or targets aimed at reducing emissions of climate change gases, improving air quality and minimising impacts from accidents, spillages or wastes.
- Ensures freight is run efficiently, reducing unnecessary journeys, minimises journey distances and maximises loads with effective planning.
- Complies with labour, transport and human rights standards and regulations ensuring that employees and communities affected by freight can function in a healthy and safe environment.

- Minimises the negative impacts of freight activities on local communities.

6.43 The **East and South East London Transport Options Study** recognises the role of freight and states that more capacity is needed on transport systems to address freight demand. The study also calls for further work on freight and suggests that alternative routes that reduce rail freight traffic through London would have wider benefits across much of the London Overground network. It should be noted that the desire to reduce rail freight is in conflict with the Local Plan and national policy

6.44 The **LIP 2** aspires to work with other stakeholders to examine the potential increase of the Thames and canals (Blue Ribbon Network) for freight services. The LIP states that it will seek to maximise the safety, reliability and efficiency of freight movement by water, rail, electric vehicles and cycle deliveries.

6.45 The **Local Plan** seeks to promote the sustainable transportation of freight (including waste). The policy states that this will be achieved through promoting and maximising the movement of freight by water and rail to take the load off the strategic road network and safeguarding the following identified wharfs for cargo handling and to enable the future transportation of waste through water freight.

6.46 The development of an overarching freight strategy could encompass a range of potential focussed measures:

Freight Access and Movement

6.47 Key delivery routes across the borough include the A11 and A13, which form part of the TLRN. Due to the borough's location, it is subject to a large amount of freight movements that pass through the borough rather than movements undertaking activity directly within the borough.

6.48 There has been an increase in delivery vehicles identified on the road network resulting from traditional servicing, coupled with the rise in popularity of online shopping for home deliveries of groceries and goods. Issues do not stem solely from traditional servicing activity, but from home grocery / Amazon-style deliveries, not just "traditional" servicing activity.

6.49 This negatively impacts the area by adding additional vehicles onto the highway network and resulting in congestion. Congested areas are predominantly located near Preston Road roundabout, Blackwell Tunnel and entrances to the Isle of Dogs. Constraints around the Ilse of Dogs result from there being only two access points to the Isle at present. The large amount of development and construction work taking place both currently, and potentially even more so in the future, means periodical road closures are required, reducing access to just one location.

6.50 Noise and air pollution is a particular issue associated with freight and construction vehicles and in the long run will negatively affect health and wellbeing.

6.51 The Lorry Control Scheme current controls the movement of heavy goods vehicles over 18 tonnes maximum gross weight at night and at weekends across the capital. The restrictions help minimise noise pollution in residential areas during unsocial hours through restricted use of these roads.

6.52 The times of the restrictions and charges are as follows:

- Monday to Friday: 9pm - 7am (including 9pm Friday night to 7am Saturday morning).
- Saturday: 1pm - 7am Monday morning
- Normal restrictions apply during public and bank holidays

6.53 Beyond these controls, freight movements are relatively unrestricted across the borough, and specifically within the town centres and 'character places'. This can have a negative impact upon the local environment and urban sense of place. Whilst deliveries to local retailers and businesses need to be maintained, there are options to minimise the impact through access restrictions at certain times of day or to specific areas.

6.54 Despite the presence of a number of waterways throughout the borough there is limited use of this method of transporting goods. There is a general lack of freight loading facilities, whilst those that are available are not utilised fully.

6.55 A range of potential freight measures can be considered, alongside more general highway measures, to manage the movement of freight with and across the borough. These are set out in the sections below.

Provision for On-site Deliveries

6.56 As the level of freight serving and deliver increases, the provision made within developments for where these deliveries occur is critical. At present it is recognised that many developments across the borough have limited on-site servicing facilities, requiring kerbside deliveries. This can be the cause of obstructions, to both pedestrians, as well as other road users, in particular cyclists. It can also crate conflicts with conflicting demands for kerbside space. Since both the level of deliveries and the number of developments are anticipated to continue to grow, these type of ad hoc deliver arrangements will begin to have a more significant impact upon the operation of the local highway network.

6.57 A stronger requirement for the provision of on-site servicing within the planning process will be important to minimise disruption to other road users.

Delivery and servicing plans

6.58 A key initiative that can be considered for Tower Hamlets is to develop and implement a number of Delivery and Servicing Plans (DSP's). DSP's form part of Transport for London's (TfL) London Freight Plan and are being promoted as a way of managing delivery and servicing activity at sites across London.

6.59 A DSP aims to make sure that freight vehicle activity to and from the building is working effectively for all stakeholders. Deliveries can be proactively managed to reduce the number of delivery and servicing trips and identify and promote areas where safe and legal loading can take place. DSPs seek to improve the safety, efficiency and reliability of deliveries to and from sites by using a suite of tools and techniques that suit that business.

6.60 Working with building management and tenants a DSP seeks to tackle the issues identified and provide benefits for all stakeholders. The process for developing a DSP includes:

- Understanding the current situation by gathering data on all the delivery and servicing trips to and from the building and reviewing tenant's business operations to understand how they work in terms of procurement, ordering and their supply chain.
- Analysing the collected data to produce a detailed profile of the delivery and servicing activity and start identifying opportunities for change.
- Considering a wide range of tools and techniques including measures that cover managing deliveries and reviewing supply chain operations and procurement practises. Short, medium and long term measures are then identified that reflect the characteristics of the tenants and their delivery and servicing requirements.
- Monitoring through collecting delivery and servicing data would then allow any reduction in vehicle trips to be identified.

6.61 A number of key activities for the DSP's have been provisionally identified including:

- Understanding through detailed surveying and analysis, the number and type of delivery and servicing trips received across potential sites in Tower Hamlets.
- Identifying opportunities to reduce delivery and servicing trips through working with tenants to promote measures such as collaborative ordering of goods and services and allocating storage space to allow bulk ordering of consumables such as stationary.
- Investigating on-site delivery handling and storage to improve turnaround time for deliveries.

- Investigating more efficient operation of the loading bay and capacity to accommodate more vehicles when loading and unloading (to include swept path analysis).

6.62 DSPs consist of a range of tools, actions and interventions aimed at reducing and re-timing deliveries, redefining building operations and ensuring procurement activities account for vehicle movement and emissions.

6.63 DSPs should be required as part of planning applications.

Construction Logistic Plans

6.64 The construction phase of developments in Tower Hamlets are likely to have significant impacts on the transport network. The construction impacts of developments can vary in significance, but for those large developments that may take many months or years to construct, the construction phase can be as significant as the operational phase.

6.65 Construction Logistics Plans (CLP) provides a framework for proving the Transport Assessment (TA) has fully considered the freight implications of the construction phase of a development. Scope for the use of more sustainable modes for the transportation of construction materials (e.g. by rail or water) should be considered from the outset of the TA and incorporated into the CLP where feasible.

6.66 A CLP provides the framework for understanding and managing construction vehicle activity into and out of proposed developments. A full assessment of the construction phase should be included, detailing the levels of construction traffic generated along with the routes the traffic will use and any significant traffic management that may operate in order to construct the development. Particular attention should be paid to the need to identify routes for construction vehicles that avoid sensitive routes in the borough.

6.67 CLPs should be required as part of planning applications.

Out-of-hour/Overnight delivery schedules

6.67.1 Businesses or other substantial traffic generators should be encouraged to introduce out of hours deliveries. The main impact would be to lower volumes of daytime goods vehicle traffic in Tower Hamlets leading to less congestion on the local and wider road network. It could also result in reduced journey times for goods vehicle drivers by avoiding day time stop-start traffic, particularly at peak times, which will reduce air pollutant and green-house gas emissions. To allow deliveries during unsocial hours, delivery vehicles will need to operate to strict noise limits.

Delivery booking systems

6.68 Delivery vehicle movements to and from a site can have a negative impact upon nearby neighbours, local businesses, pedestrians and other road users. These movements can potentially affect traffic flow and congestion within a localised area, local parking availability road safety and can generally cause inconvenience if not managed efficiently.

6.69 The use of online delivery booking systems can help to reduce the impact of servicing activity associated with a development, particularly those comprising large scale employment or residential areas. Such system help to ensure that deliveries are equally distributed across the week and across delivery hours, helping to avoid arrivals and departures during standard network peak hours and other sensitive time periods (such as school drop-off and pick-up times if a site is located in close proximity to a school).

6.70 Under a booking system, deliveries are not accepted outside of their designated time-slot, and such deliveries are asked to re-book. Online booking systems provide numerous benefits, including:

- Facilitating bookings to be made via mobile smart phones;
- Bookings can be made in real time, providing information on what delivery slots are available and when;

- Supervisors can check contractor operations remotely;
- Specific site information and delivery instructions are made available to delivery companies;
- Provides facilities for centralised control of bookings;
- Prevents double bookings and multiple delivery vehicles arriving at a site at once;
- Facilitates deliveries to be timed to occur at quieter times of the day; and
- Can be used to record vehicle emissions

Operator recognition schemes

6.71 The Freight Operators Recognition Scheme (FORS) is an industry-led membership scheme that aims to transform freight delivery in London. TfL has developed the FORS to help road freight operators become safer, more efficient and more environmentally-friendly. The aim of the scheme is to drive up standards in London and share best practise amongst freight operators. Freight industries in Tower Hamlets should be aware of the benefits of the scheme as well as what is on offer for those that apply to the scheme.

6.71.1 FORS will benefit operators who want to:

- Improve road safety;
- Reduce the incidence of fines and other charges;
- Reduce fuel emissions and enhance fuel efficiency;
- Gain greater industry intelligence and networking opportunities;
- Stand out from the crowd.

6.72 FORS offers best practice toolkits and advice, which include:

- FORS performance management system - demonstrates safety and efficiency improvements and progress through the FORS accreditation levels
- Penalty Charge Notice toolkit - monitor, manage and reduce the number of penalties your business receives
- Fuel use tracker - record and track fuel usage, monitor miles per gallon, CO2 and efficiency improvements
- Cycle safety toolkit - minimise the risk of collisions between your vehicles and vulnerable road users
- Congestion toolkits - improve delivery plans and reduce the amount of time spent in traffic
- Collision reporting and investigation tool - capture, investigate, analyse and reduce collision

6.73 Tower Hamlets should support FORS and promote it to relevant businesses within the borough.

Local consolidation centres with low emissions vehicles

6.74 Freight Consolidation Centres are distribution centres, situated close to a town centre, shopping centre, delivery hubs or construction sites, at which loads are consolidated and from which a lower number of consolidated loads are delivered to the target area. The most common objective is to reduce congestion, and vehicle emissions within the area that the consolidation centre serves. Other objectives can include:

- *Reduce conflicts between delivery vehicles and other road users, including pedestrians;*
- *Improve the delivery service provided to retailers;*
- *Reduce costs to retailers, both in terms of transport and staff; and*
- *Contribute to reduction in traffic pollution and vehicle emissions, and improve air quality.*

6.75 It is recognised that the implementation of consolidation centres is not straightforward in terms of up-front funding, on-going financing, as well as management to ensure that it meets the desired objectives. This

includes the specifics of load consolidation to ensure that appropriate vehicles are used for final deliveries. At this stage, no specific sites have been identified, and it is likely that any options will need to be developed alongside a major private sector development.

6.76 Neighbouring Borough of Newham is home to the London Construction Consolidation Centre (LCCC). Construction goods, excluding steel frames, aggregates and major plant, are delivered to the LCCC in relative bulk. From there, materials are called-off by the various trade contractors and formed into work packs for immediate use on site, following a just-in-time approach.

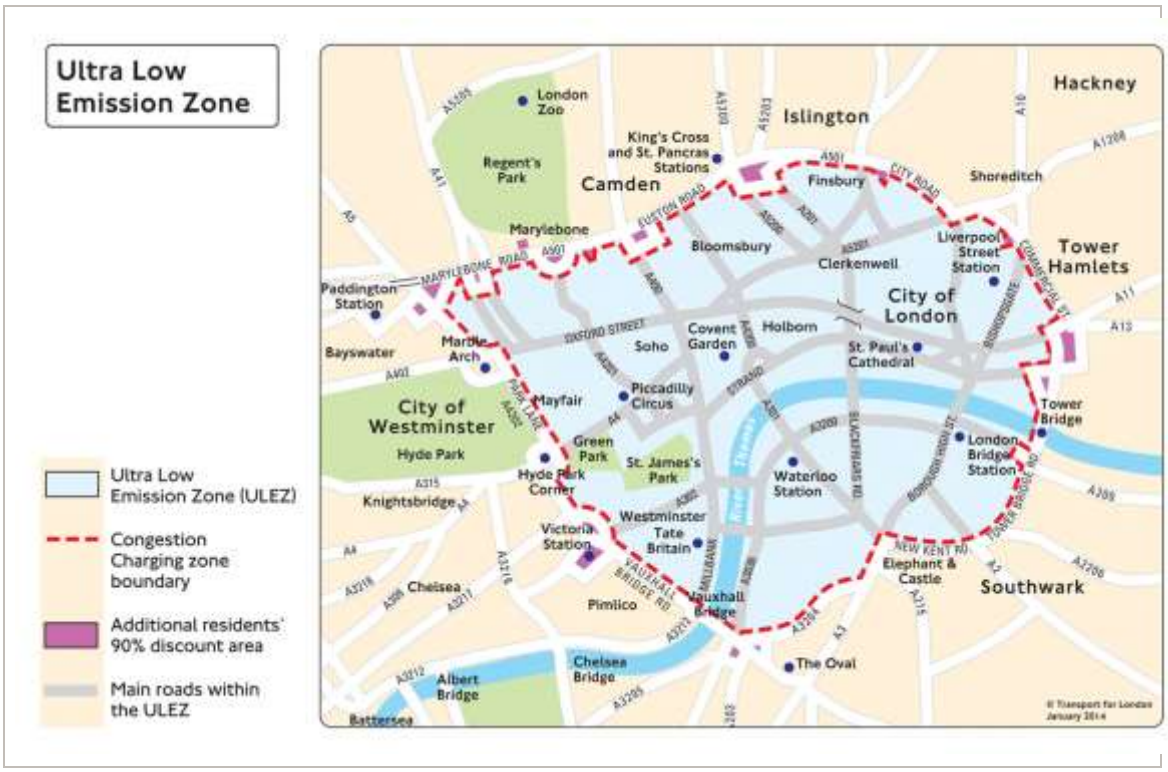
6.77 Given the scale of development planned across Tower Hamlets, but specifically within the Opportunity Areas, consolidation during the construction phase is likely to be extremely beneficial in managing freight movements. The location of the Opportunity Areas close to Central London and with good access to the Transport for London Road Network means this should be a practical approach. This could be achieved through the use of the LCCC.

Ultra-low emissions zone

6.78 From September 2020, all cars, motorcycles, vans, minibuses, buses, coaches and heavy goods vehicles (HGVs) will need to meet specific exhaust emission standards (ULEZ standards), or pay a daily charge, when travelling in central London.

6.79 The Ultra Low Emission Zone (ULEZ) will operate 24 hours a day, 7 days a week within the same area as the current Congestion Charging Zone (CCZ), as shown in Figure 6.1. The ULEZ standards are in addition to the Congestion Charge and the Low Emission Zone requirements. There will be no barriers or toll booths. ANPR cameras will read vehicle number plates as they enter the ULEZ zone.

Figure 6.1 Central London Ultra Low Emission Zone



6.80 The ULEZ is on the western border of the borough of Tower Hamlets and, although doesn't immediately effect the borough, many freight vehicles travelling through the zone and into the borough are likely to engender benefits within Tower Hamlets through lower emissions.

6.81 With the intensification of development within the City Fringe Opportunity Area on the edge of the ULEZ there may be merit for considering extending the zone to cover this area within Tower Hamlets, although consideration would need to be given to how this might affect strategic movements around the boundary of the current zone.

6.82 Consideration in the longer term might also be given to a ULEZ encompassing the northern part of the Isle of Dogs and Poplar to tackle emissions along the A13 and A1261.

'Click and Collect' services

6.83 The growth of e-commerce has led to the development of new delivery services by companies such as Collect+ and Doddle. These services consolidate deliveries from e-tailers to a single location with collections from the customer (see locations below in **Figure 6.2**).

6.84 A growing number of retailers are offering Click & Collect services within their stores or car parks because it encourages consumers to order online and visit their stores to collect their deliveries. This practice reduces retailers e-fulfilment costs as their customers get their item delivered to the end destination by collecting and transporting their purchases. The benefit to customers of this arrangement includes more flexibility and security; Click & Collect services also reduce the number of delivery vehicles on the road as items are sent in bulk to collection points. However, this may also result in an increased number of consumer vehicle trips as not all trips are carried out by environmentally friendly forms of transport.

Figure 6.3 Click and Collect Services in Tower Hamlets

Freight Quality Partnership (FQP)

6.85 Engagement with businesses and stakeholders in Tower Hamlets is essential when it comes to developing and implementing effective freight measures at the local level. Businesses will need to 'buy-in' to the improvement measures planned and it will be important to have some organisations take ownership and

lead individual actions. One way of engendering this approach is through a Freight Quality Partnership (FQP).

6.86 An FQP is a partnership between the freight industry, local government, local businesses, the local community, environmental groups and others with an interest in freight. FQPs aim to develop an understanding of freight transport issues and problems, and then, to promote constructive solutions for both freight operators and localities. Across London there are sub-regional FQPs – the most relevant for Tower Hamlets being the Thames Gateway FQP, of which the Borough has already been actively involved.

6.87 The development of local FQPs is also considered to be an important measure to address local issues. In particular the Opportunity Areas of the Isle of Dogs and City Fringe/Techn City will have the density of business and employment to warrant consideration of such a scheme. As has been identified throughout the study, access to the Isle of Dogs is of a particularly concern and so a FQP could be particularly successful to manage freight movements to and from the isle.

6.88 To establish a FQP a set of 'Terms of Reference' and a programme of work is required, comprising measures to tackle local freight issues using local knowledge of local partners. The FQP should meet regularly (at least quarterly, more frequently initially for set-up) and oversee a portfolio of activities to help raise visibility of the importance of better freight movement and management locally.

6.89 Types of measures that could be promoted by a FQPs within the Isle of Dogs and City Fringe include:

- ***Fleet Recognition Scheme***
  - An FQP programme of work could promote the uptake of FORS (discussed above). This would engage and recruit business members running their own fleets and provide them with credit and visibility for what they currently do and to then support them with a road map of improvement measures. This is a strong and potentially effective measure to help the Borough work with local businesses for the longer term, proactively supporting local fleet efficiency and environmental performance.
- ***Driver Training – Van and HGV SAFED***
  - This would involve Borough-subsidised training, delivered through an approved training school for local businesses running vans and HGVs. SAFED is designed to enhance driver awareness of safe and fuel efficient driving techniques, which would improve local air quality and safety in the area. It is a key intervention recommended to enhance driver skills, helping to reduce fuel consumption and operating costs, thereby linking in to the Fleet Recognition Scheme initiative above.
- ***Corporate Social Responsibility and Neighbourly Co-operation***
  - Building on work that an FQP undertakes, businesses should engage with schools and local communities to set out their CSR policies. This engagement may also lead to work placements for local students and residents as well as visits by local schools and community groups to show how the industry works and how goods move.

SUMMARY

6.90 Table 6.1 provides a summary of the potential measures identified for highways, parking and freight.

Table 6.2 Summary of Potential Highways, Parking and Freight Measures

Spatial Areas	Highways, Parking and Freight Measures
Borough-wide	• Network Management Measures (*cross-reference with 'Intelligent Mobility' section*) • Demand Management Measures (*cross-reference with 'Active Travel', 'Public Transport', and 'Intelligent Mobility' section*) • Revised parking standards • Alterations to conditions for on-street parking permits • Promotion and partnership working with car clubs • Freight management measures ➢ Planning requirements for provision of on-site delivery ➢ Delivery and servicing plans ➢ Construction Logistic Plans ➢ Out-of-hour/Overnight delivery schedules ➢ Delivery booking systems ➢ Operator recognition schemes ➢ Local consolidation centres, with low emissions vehicles ➢ 'Click and Collect' services
City Fringe	• Freight Quality Partnership • Extension of Central London Ultra-low emissions zone
Isle of Dogs and South Poplar	• Highway access to Isle of Dogs (Preston's Roundabout, Hertsmere Road) • Freight Quality Partnership • Ultra-low emissions zone at northern end of Isle of Dogs / poplar to tackle air quality
Lower Lea Valley	• Silvertown Tunnel
Central Area	• Local highway network enhancement to area south of Victoria Park

7 Intelligent Mobility

INTRODUCTION

7.1 Intelligent Mobility was developed as a new way of thinking about the ways in which data and technology can be used to connect people and places across all modes of transport. Intelligent Mobility and the related Mobility as a Service (MaaS) have become bywords for a major shift in the transport industry, embodying a change that will have wide reaching effects. As noted by Transport Systems Catapult:

> "*Encompassing everything from autonomous vehicles to seamless journey systems and multi-modal modelling software, Intelligent Mobility uses emerging technologies to enable the smarter, greener and more efficient movement of people and goods around the world*."

7.2 Intelligent Mobility cuts across multiple traditional sectors and considers wider societal issues such as population growth, an ageing population, climate change and public health. It feeds off the Internet of Things (IoT), collecting large datasets together into one place and translates them into user centred systems that maximise the efficiency of transport budgets, using both current and new infrastructure.

7.3 It is noted that there are no straightforward solutions that mitigate against the issues of congestion (for all modes) and the unreliability of journey times during network peak periods, with limited opportunities to further increase capacity. Across the United Kingdom, increasing emphasis is now being placed on the management of transport networks through the use of telemetry, and Intelligent Mobility provides both the data and tools for Active Traffic Management – the new corner stone policy for many local authorities and highway network providers.

7.4 Active Multi-Modal Management has four inter-connected elements:

- Network Monitoring
- Communications
- Traffic Network Control
- Data Management

7.5 An additional outcome is MaaS, developing mobility platforms that help make sustainable travel the natural choice for people.

7.6 Intelligent Mobility has the potential to help resolve, ameliorate and mitigate against a number of the identified transportation issues within Tower Hamlets without the need for large scale, economic intensive infrastructure projects or increases in network capacity. This chapter of the report sets out the ways in which Intelligent Mobility can play a role in ensuring the sustainability of the transport network in Tower Hamlets, particularly when considering the anticipated housing and employment growth in upcoming years that will place increasing pressures on all modes of the borough's transport network.

7.7 As previously stated, a hierarchical approach has been taken in the development of this Transport Strategy that places the greatest levels of priority on active travel (walking and cycling) as such, this chapter presents a range of Intelligent Mobility measures that can be implemented within the borough, some of which have previously been trialled, for each of these hierarchical levels. Particular consideration is given to the role Intelligent Mobility can play in the three key Opportunity Areas and identified district centres.

INTELLIGENT MOBILITY VISION

7.8 The overarching aim of Intelligent Mobility and MaaS is to look comprehensively at an area (namely Tower Hamlets), including arterial / strategic roads, adjacent streets, parking, travel demand, trip generation, etc., and consider all opportunities to move people and goods in the most efficient and safest way possible. The vision is for a total system to be managed as an integrated and cohesive whole. This requires a package of measures that work together towards the following aims:

- Reduce congestion and improve mobility, travel-time reliability, safety, and system efficiency along key corridors and gateways;
- Make better use of existing capacity across all transport modes (car, bus, train, tube, bicycle and pedestrian) to increase the efficient and safe throughput of people, vehicles and goods with minimal new infrastructure;
- Improve the availability and quality of data on travel conditions in key corridors and hotspots with low resilience to better understand corridor behaviour and improve performance;
- Bring together key stakeholders to create an environment for mutual cooperation, including sharing knowledge, developing working pilots, and researching and resolving key issues;
- Provide corridor users with timely, accurate information that allows them to make informed choices about when, how, and by what route to travel;
- Equip borough officers with the information and tools necessary to make real-time decisions and quickly improve the flow of users of all transport modes along key corridors; and
- Foster positive, collaborative, ongoing corridor management practices.

IM - ACTIVE TRAVEL (WALKING AND CYCLING)

Cycle Junction Priority

7.9 Use of new technology that allocates additional green time at signals to cyclists, depending on real-time demand and usage.

7.10 In June 2015, TfL trialled two types of new technology that detected the number of cyclists travelling along Cycle Superhighway 3 on Cable Street, enabling signal timings to be adjusted to give extra green time during peak times when cycle flows are at their highest.

7.11 Two types of technology can be used for such purposes:

- Radar based technology; and
- Thermal based technology, which detects the heat of riders as they pass a detection zone.

7.12 Such technologies allows the timings of signals to reflect demand on a second-by-second basis, and allows greater priority to be given to users of active travel ahead of vehicular road users. If such technology is proven to be successful, there is potential for it to be implemented across key cycle routes and corridors borough wide, particularly along the two Cycle Superhighways that travel through the borough.

Pedestrian SCOOT

7.13 Wider implementation of Pedestrian Split Cycle Offset Optimisation Technique (SCOOT) across the borough could improve pedestrian flow in areas where pedestrian footfall is highest. Similar to vehicular SCOOT, Pedestrian SCOOT makes use of video camera technology to automatically detect how many pedestrians are waiting at crossings, and automatically adjusts signal timings to reflect real-time demand.

7.14 Such technology could help to overcome issues at areas of existing conflict between pedestrians and other road users, such as outside Whitechapel Station (issues of which are likely to be compounded following the opening of Crossrail), at the junction of Mile End Road (A11) and Burdett Road, which is a key pedestrian link between Mile End London Underground Station and Queen Mary University of London, and areas surrounding Canary Wharf and the Isle of Dogs with high pedestrian flows.

7.15 As with the cycle signal timing technology detailed above, Pedestrian SCOOT provides a greater level of priority to active travel users ahead of vehicular travel, and fits in with the aspired hierarchical approach to travel within Tower Hamlets.

Intelligent Lighting

7.16 Energy efficient lighting systems that trigger the provision of lighting on certain links when cyclists (or pedestrians) enter a detection zone provide additional security and can help to promote active travel.

7.17 Such infrastructure could be applied in areas with lower levels of cycling infrastructure where lower perceived levels of safety exist, such as sections of the Isle of Dogs or the Lower Lee Valley as housing transformations rapidly alter the existing urban environment. Investing in such public realm improvements can help turn public spaces into public places where people feel safe.

7.18 On the recently upgraded Cycle Superhighway 2 that runs along the A11 from Aldgate at the western end of the borough to Bow in the east, cycle sensor technologies have the potential to help improve journey reliability and cycle flow at key junctions along the A11 including:

- With Burdett Road, to the west of Mile End London Underground Station;
- With Globe Road (B120), immediately to the east of Stepney Green London Underground Station; and
- Sidney Street (A107), outside Whitechapel Station and the Royal London Hospital, particularly following the likely increase in pedestrian and cyclist activity following the opening of Crossrail at Whitechapel Station.

Walking and Cycling Wayfinding 'Apps'

7.19 Tools such as City Mapper offers A to B journey planning incorporating real time information for all modes of transport in London including: underground, rail, bus, cycling, walking and taxi. The application uses open data from Transport for London as well as geolocation to provide users with accurate journey times straight to their smart phone. CityMapper is independent from transport operators but relies on the data notify it users of the services available, compare routes, prices and alert about delays. CityMapper is an example of using open data from multiple sources to provide better linked-up transport solutions.

7.20 The data generated by such Wayfinding applications is a powerful tool for planners providing a rich seem of data on planned and undertaken trips, other such tools include walkit.com the urban walking route planner. Liaising with the developers of such Apps to access their data, can provide a clear evidence base for schemes to improve well used routes and indeed identify less well used routes which could be improved and promoted.

7.21 In a similar way to walking, the data generated in relation to cycling provides information on different routes available, based on both the availability of cycle infrastructure / routes recommended for use by cyclists, but also real time information on key metrics that influence cycle use, such as traffic congestion, roadworks impacting upon cycle lanes, and real-time air pollution information.

7.22 Such Apps and technology can also contribute to road safety improvements. In June 2016 Hövding, with the London Cycle Campaigns backing launched the 'Give a Beep' campaign to help make London a cycle-friendly city. Cyclists can press there 'Flic' button when they feel unsafe or nervous and the 'beep' they generate is mapped alongside sending an email to the London Mayor, asking him to make London safe

and enjoyable for cycling. Accessing and reviewing the maps and data will provide hotspots such a dangerous junctions which can then be acted upon by the borough.

Social Media

7.23 Social media tools can also be used to provide user feedback on the network, for example motorists can log details about pot holes, which can then be logged into asset management tools and cyclists and pedestrians can pinpoint areas where they have concerns and mitigating actions can be planned. Mobile phone data can also be used to map the movement and place interaction of individuals, particularly linked to stations as Gateways.

7.24 The Borough could harness social media to provide real-time information on particular transport issues, suggesting alternative routes where feasible (similar to TfL's social media usage at present).

Cycle Hire Scheme Availability

7.25 The Cycle Hire application, sets out real-time availability of both Santander Cycles bicycles and docking stations. Uptake and use of the applications is useful particularly at key transport interchanges where cycle parking demand is likely to be highest, such as Canary Wharf and Whitechapel. Working with TfL, the borough can then identify demand and manage this with the provision of additional cycles and additional temporary stations if it is deemed appropriate during e.g. events or indeed the provision of additional permanent docking stations.

Bike Share Scheme with Smart Cycle Locks

7.26 Developing bike share schemes can often have a high set up cost due to the level of on-street infrastructure required to facilitate the bike docking. Obtaining planning permission and electricity supply are also barriers to traditional bike sharing schemes. Increasingly bike share schemes are looking to use technology such as Smart Cycle Locks to reduce the reliance on infrastructure.

7.27 The technology uses a smart phone to locate, release and pay to unlock the Smart Cycle Lock to give access to the bike. Users can select bikes in their chosen location from their phones and then release the bike by pressing a button on their phone and the lock simultaneously. Smart locks can either be used with a uniform fleet of bikes similarly to public bike share or alternatively, with a mix of pool bikes and users' own bikes.

7.28 When the rider has completed their journey the rider simply parks the bike and uses their phone to lock the bike and log completion of the journey. With the technology contained within the bike this allows for increased flexibility compared to traditional bike sharing schemes. Smart Cycle locks enable users to access a range of bikes without the worry of taking a lock or finding a docking station unlike traditional bike hire schemes.

Gamification

7.29 Gamification is a useful tool in behaviour change, gamification applies game oriented approaches such as scoring or leaderboards to non-game contexts such as travel planning.

7.30 The gamification aspect is used to transform simple, everyday tasks to encourage active travel behaviours such as walking and cycling, it gives new purpose and incentivises those everyday task to make it challenging and fun. Such tools could be employed in Tower Hamlets to encourage and reward Active Travel behaviour.

Augmented Reality (AR)

7.31 AR presents a new platform for the general public to engage with the built and natural environment, encouraging users to interact with their journey; the streets and infrastructure within the borough become

part of the virtual environment. AR applications can overlay your local park, street and even your local bus stop with extra visuals or information that can enhance or transform them. You could take a walk through your local park whilst viewing what it looked like in the past, or point your device at a road sign to receive an instant translation, such AR based applications will be of particular interest in the tourist hotspots of the borough.

IM - PUBLIC TRANSPORT / WATERWAYS

Real-time Congestion Information

7.32 Development of a smart phone app that allows users to gain real-time information on current levels of overcrowding / potential wait times at public transport stations, interchanges and on particular services, and provides recommendations on alternative travel routes that may provide both a quicker and more comfortable journey. The implementation of such technology and provision of this information would be of particular use at stations and on routes that experience high levels of overcrowding during peak periods, such as Bethnal Green station (and access to the Central Line), and on northbound DLR services from stations at the southern end of the Isle of Dogs.

7.33 Such an application could be tied in to the promotion of active travel as an alternative mode (for example providing information on the walk or cycle time to a destination, and the closest Santander Cycles docking station), and of Thames Clipper and other river services – particularly for users of the DLR from the southern end of the Isle of Dogs.

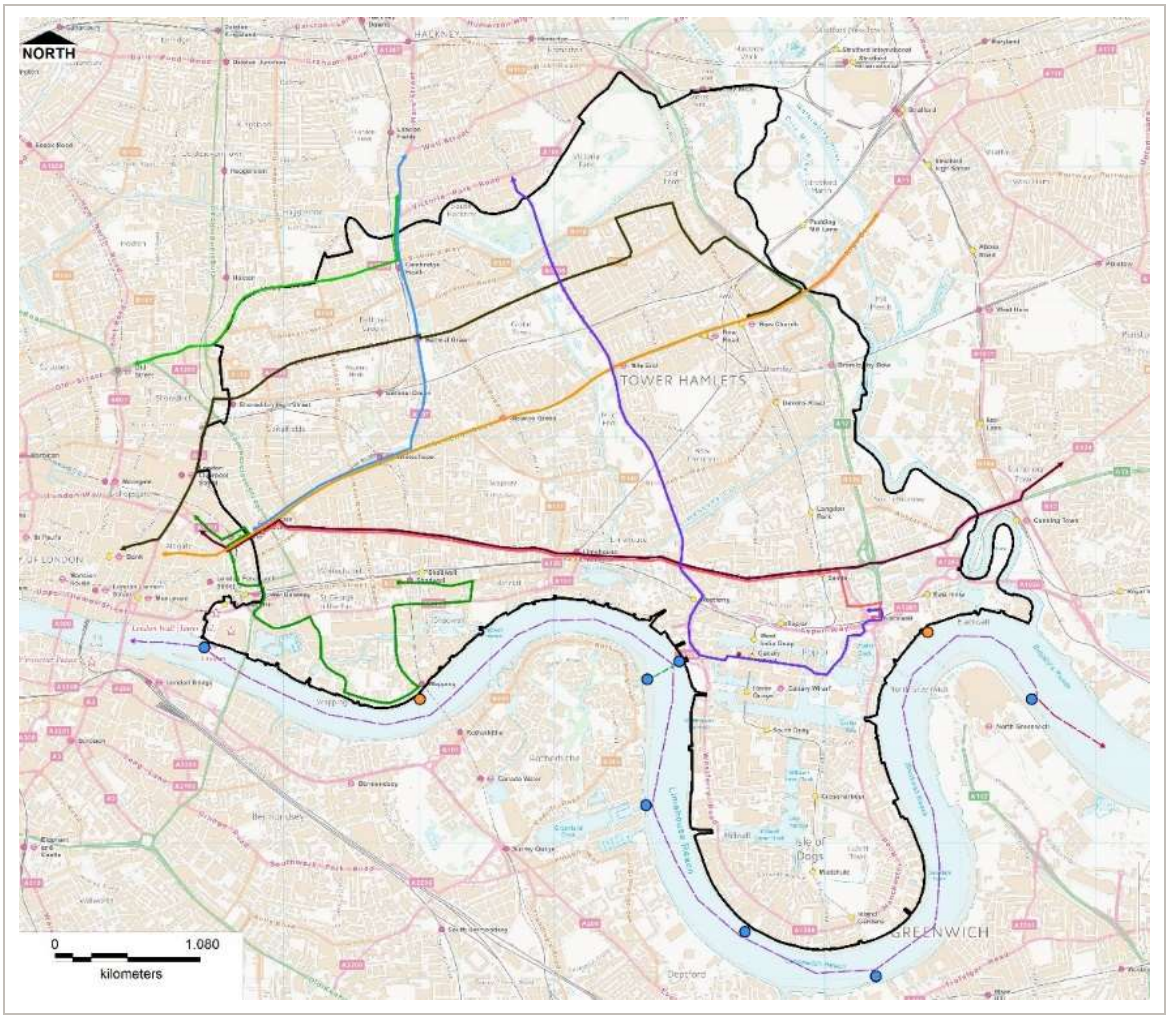
Bus Priority

7.34 Technology systems such as SCOOT can also be used to give priority to buses in peak periods; however, it is noted that bus priority detection systems need to be upgraded to ensure that all bus transponders trigger bus priority at traffic signals. Linking real time issues into the system can also be used to manage knock on effects, for example if it is known a train will be delayed and a high percentage of those users will undertake a further leg by bus, relevant services could be regulated or additional services brought in to provide a smooth end to end journey.

7.35 Additional bus priority measures at junctions could be linked with additional roadspace provision for buses in terms of bus lanes and bus only roads, stronger kerbside controls and the provision of more standing in key locations, as discussed within Section 5 of the report.

7.36 Bus priority systems at traffic signals and key junctions could be implemented on key bus corridors within Tower Hamlets as a means of improving the reliability of journey times. Such corridors are shown in **Figure 7.1** below.

Figure 7.1 Primary Bus Corridors with Tower Hamlets



7.37 One example is on the A11, a key east to west bus corridor served by the 25, 205 and 254 bus routes.

Payment

7.38 Contactless payment has been around for a few years on bank cards and smart cards in transport, in London the oyster card has provided users with a singular payment option with integrated ticketing systems combining trains, underground, bus and river services.

7.39 But now mobile companies are incorporating contactless payment technologies on smartphones. Apple Pay was launched in July 2015, in partnership with various businesses as well as TfL. Users are able to use their iPhones instead of the Oyster card on buses and trains.

7.40 Google and Samsung have recently announced similar technologies to compete with the market. Google will not provide a centralised app like Apple, but a platform for third parties to use the capabilities with the likes of Barclaycard already taking up this option.

7.41 The future of mobility lies in a multi modal dynamic solution combining a journey from A to B through seamless integration of different forms of transport and with one single 'digital ticket' and the rise of contactless payment can be seen as a further step towards this.

IM - HIGHWAYS, PARKING AND FREIGHT

7.42 As in the majority of urban areas, both within London and further afield, Tower Hamlets suffers from increasing traffic congestion. Ameliorating the resultant increases in delay and journey times is an important priority for the borough, alongside minimising any disruptions caused by incidents and events, both of which can be achieved through maximising the efficiency of the highway network.

7.43 Issues of congestion and network resilience are of primary concern in the vicinity of the Isle of Dogs Opportunity Area due to the lack of vehicular access options that connect the Isle of Dogs with the rest of the borough. Intelligent Mobility technologies can help to provide a soft approach to minimising traffic congestion and improving vehicle flows across the borough, ameliorating existing issues of network resilience.

SCOOT

7.44 The traffic adaptive urban traffic control (UTC) system SCOOT (Split, Cycle and Offset Optimisation Technique) has been developed to help authorities manage and control traffic on their networks. In London the introduction of SCOOT has proven to reduce delays by up to 12 per cent at each junction where it has been installed. As of May 2016, almost 4,000 sites were using this technology across London. By 2018, more than three-quarters of London's 6,000 junctions will be upgraded with SCOOT, helping to manage and reduce congestion.

7.45 This wider role out will allow dynamic management of London's road network from TfL's 24/7 traffic control centre, ensuring junctions and routes are managed effectively in real-time. This will mean when any issues occur TfL can model the knock on effects and take immediate mitigating action with the phasing of traffic lights which can be changed quickly by staff at the control centre and provision of advice about alternative routes to avoid backup of vehicles on the surrounding network, improve traffic flows and cut delays through e.g. roadwork areas.

Weather Dependent Signal Timing

7.46 Weather Dependent Signal Timing are signal timings that are influenced by the weather. The phasing of these signals varies depending on the real-time weather information. For example, in wet weather conditions, a greater length of green time is given to cyclists. Such technology is currently implemented in the Netherlands and could be trialled within the borough cycling network.

Dynamic Pricing for On-Street Parking

7.47 With dynamic pricing for on street usage the prices vary real-time based on the demand. The areas with the highest parking demand having higher per hour charges. Similarly, time periods with greatest parking demands have higher pricing. The technology makes use of sensors within on-street parking bays to ascertain real-time usage, this could be applied across CPZ mini-zones within the borough, or at a smaller scale.

7.48 The dynamic model helps to promote a shift in travel patterns both in terms of routes / location and time periods, and reduces parking demand in areas with high stress, potentially resulting in improvements to traffic congestion, and potentially encouraging travel by other modes with pricing to discourage private car use.

7.49 Dynamic pricing for parking is currently implemented in Los Angeles.

Digital Road Signs

7.50 A new generation of digital road signs are currently being rolled out on the Transport for London Road Network (TLRN). These signs will provide road users with real-time information on journeys using major routes into London.

7.51 There is potential for technologies such as advance variable message signs to be employed across the borough to improve driver navigation when traffic congestion and other issues arise. One example of where such signs could potentially be utilised is on Aspen Way, at periods when the Blue Bridge is closed, or roadworks restrict access on one route to the Isle of Dogs. Such signs would warn drivers to divert and change route, and make use of the provision of real-time information to better manage the network.

Autonomous Vehicles

7.52 In a future scenario that considers connected and eventually autonomous vehicles, consideration should also be given towards Vehicle to Infrastructure (V2I) communications, allowing a wireless exchange of critical safety and operational data between vehicles and roadway infrastructure. This exchange will in theory reduce, mitigate, or prevent crash scenarios.

Freight Management

7.53 Interest in and the recognition of the role of Intelligent Mobility in the freight sector is also growing; Intelligent Mobility is helping to drive innovation in the freight sector as operators and local authorities look to achieve better efficiency and reduce the impact of freight activity on the transport network. It is being increasingly recognised that Intelligent Mobility also has potential to help revolutionise the freight industry, in terms of economic savings, emission reduction and reducing the number of freight vehicles travelling on the highway network.

7.54 The current growth in the Intelligent Mobility sector is resulting in a growth in the number of opportunities through which freight activity and operations can be improved. These include:

- Shutl, a service which offers the opportunity to buy and sell empty space on freight vehicles;
- Picknpass, a smart phone application that “hires” people moving from one location to another as part of their daily routine (such as their commute) to deliver goods to business and private customers located on their route; and
- CycleEye, a road user safety technology which uses sensors to identify cyclists in potentially dangerous proximity to larger freight vehicles, improving cyclist safety.

Last Mile Solutions (Cargo bikes)

7.55 Transporting goods via freight rail networks and container ships is often the most efficient and cost-effective manner of shipping. However, when goods arrive at a station, depot or port, they must then be transported to their final destination.

7.56 This last leg of the supply chain is often less efficient, comprising up to 28% of the total cost to move goods. This has become known as the `last mile problem`. The last mile problem can also include the challenge of making deliveries in urban areas where retail stores, restaurants, and other merchants in a central business district often contribute to congestion and safety problems.

7.57 Cargo-bikes can act as an effective solution to last mile deliveries; cargo-bikes are able to carry payloads of up to 250kg. They are particularly effective in compact and congested towns and cities, as well as being emission-free. Cargobikes can also be adapted to use electric-assist technology for further vehicle power. Tower Hamlets currently offer a free trial of cargo bikes to businesses as part of the Zero Low Emissions Network.

Automated Deliveries

7.58 Rapid technological advances have facilitated the development of autonomous deliveries, whether that be via drones or grounded self-driving delivery robots. The use of such technology can help to reduce the economic cost of goods delivery, and reduce the number of delivery vehicles travelling on the local highway network.

7.59 Earlier this year, trials of self-driving delivery robots were undertaken within the neighbouring borough of Greenwich, following discussions between Starship Technologies and Greenwich Council. A fleet of six wheeled autonomous robots have been used for the last mile delivery of items such as groceries within a localised area. The robots travel without human input (although are monitored by human controllers, who can control the robots if required) and generate zero carbon emissions.

7.60 Within Tower Hamlets, autonomous delivery robots could be beneficial in reducing the impact of servicing activity in large scale residential and mixed-use developments, or areas where highway network constraints mean it is difficult for regular servicing vehicles to reach a final destination. In particular, their usage could help fulfil the ambition of car-free developments, particularly in areas with low highway network resilience, such as the Isle of Dogs.

IM – OVERARCHING (BUILDING A SMART CHOICE ARCHITECTURE)

Data Management & Systems Development

7.61 Combined data from smart card ticketing, mobile phone usage, parking and permits, V2I communication and vehicle to Vehicle (V2V) communication will provide rich layers of data, informing when and how people move around during both normal and abnormal periods, e.g. major events. In addition a further layer can be added to encompass feelings and thoughts, sentiment mapping of social media e.g. Twitter can be used to provide heat maps of problems alerting controllers of any major or common issues.

7.62 All of this data will require a clear data management strategy. There should be interoperability between datasets, with standardisation of systems and service architecture, a Tower Hamlets Transport Data Hub could be established to manage this process. The data itself should be handled securely and anonymised before it is used; where feasible the anonymised data should be made open source allowing developers access and providing a platform for innovation.

7.63 To accelerate developments in intelligent mobility, hackathons' can enable experts to meet together such as analysts, software engineers and marketers to come up with innovation ideas. The City Fringe (Tech City) Opportunity Area in Tower Hamlets is emerging as one of London's most significant areas for economic growth, containing considerable opportunities for new and emerging sectors of the economy due to the expertise in the area.

7.64 Stakeholders as part of the City Fringe could draw on previous hackathon experiences to deliver intelligent mobility interventions to improve transport experiences within the borough.

Active multi-modal management strategy

7.65 Development of an active multi-modal management strategy which aims to help the public improve the timing, mode choice and routing of their journeys. Feeding off the details in the section above it will have the following components:

- VMS signs;
- LED Message boards at key hubs to publicise expected corridor journey times and the benefit of delaying your journey;
- PT deployment options, to cover peak requirements;

- Monitoring social media feeds to identify major and common issues;
- Communication strategy to feedback to users;
- A platform for users to feedback on the network; and
- A data management strategy.

Mobility as a Service (MaaS)

7.66 Building a smart multi-modal choice architecture is linked to wider lifestyle choices, framed around the end to end journey; MaaS delivers the platform by which the choices can made.

MaaS is a relatively new concept within transport planning bringing together all modes of travel and encompassing different transport operators within a single mobility platform, accessing multiple applications. MaaS recognises the increasing influence of mobile data, real-time information, and associated Apps on the way people make decisions about travel and presents integrated end to end purchase options, with fees linked to not only the journey you take but also your experience of the service you receive; in addition MaaS will provide / sell added value services off the back of your mobility, with both transport (and non-transport) organisations using your mobility as an interaction point to promote additional services.

7.67 A basic example is when an individual searches for the best way to travel from point A to point B then they are offered the opportunity to buy their ticket for the whole journey, e.g. paying for their car parking, train journey and hire bike.

7.68 The ultimate goal of MaaS is that residents / employees subscribe to an area-wide service that allows easy access to public transport, car sharing, taxis and bike sharing through a universal payment system accessed through an app on smartphones. To attract subscribers the mobility service will have to be reliable, cost-effective and easy to use, it will present mobility packages covering weekly, monthly, annual and pay as you go option.

7.69 Personal user profiles will be built up over time allowing the system to automatically plan for – in real time – and mitigate against planned and unplanned disruption; sending you notifications of changes to your journey. Influence Travel Behaviour Campaigns will be segmented to users, providing a greater propensity for behaviour change with targeted incentives.

7.70 Such planning will improve accessibility for all segments of society, providing a two way flow of communication which also benefits the Operators and the Local Authority. By analysing the data, providers of mobility services can predict usage and maintain the necessary supply of bikes, cars and public transport to meet demand in specific locations allowing optimisation of capacity in the network.

7.71 MaaS will emerge over time and increase as people appreciate the benefits. The greater the number of subscribers the more comprehensive and valuable is the information collected. The information will drive service improvement that in turn attracts more people.

7.72 MaaS could transform towns and cities. Streets will have less traffic making them pedestrian friendly and making cycle lanes more possible. Air quality improves because traffic congestion has reduced. The streets are no longer lined with parked cars and local authorities no longer spend so much money to maintain and build infrastructure for cars and is able to invest in cycle lanes, paths and parks with pedestrian walkways.

Kate - an early adopter of MaaS
It is 2018...
Kate is a doctor who works at the Royal London Hospital and lives in a new residential development in Crossharbour. She has downloaded the Docklands Mobility App. It is 6.30am on Monday morning and Kate is going to work – it is raining. The mobility app on her phone (through which Kate has specified her parameters for timing), suggests Kate should catch a DLR service at 7.30am before interchanging with a bus (25 or 205) at Bow Church to complete her journey. On the bus, Kate taps her phone on the sensor to pay for her ticket via Apple Pay. At the end of her shift the weather is forecast to be dry and so the app suggests bike share for her commute home. She clicks yes on her phone and a bike is automatically reserved for her at the hospital (on Whitechapel Road). At the end of her workday, Kate cycles home on dedicated cycle lanes and drops the bike at the bike share hub nearest her home. At the weekend, Kate travels by car to Enfield to visit friends. VMS signs on the approaches to Aspen Way at the exit of the Isle of Dogs provide travel information about current traffic congestion and advise her of the route she should take.
It is 2025...
Kate is now a consultant at Royal London Hospital. She has subscribed to the Docklands Mobility app. She pays a subscription fee that gives her access to all modes of shared transport in Tower Hamlets and therefore she has calculated that the convenience means she no longer needs to own a car, resulting in saved money associated with owning a residents parking permit. Kate travels to work based on the advice provided by the app on her phone – this can vary depending on her shift, the weather or any incidents in the area, She does not incur additional costs because her travel is included in her subscription fee and GPS on her phone tracks how she is travelling so that real-time data is collected of her travel around the borough (and Greater London in general). At the weekend Kate travels to Lower Lea Valley to see her friends. The car share feature on her mobility app notifies her that two others are travelling from nearby areas of the Isle of Dogs to Lower Lea Valley. The fee for the car share is automatically split among the three subscribers. The app chooses a route for them and directs them to available parking spaces when they arrive at their final destination.

SUMMARY

Table 7.1 provides a summary of the potential measures identified for intelligent mobility, encompassing active travel, public transport and waterways, and highways, parking and freight measures, as well as more generic requirements for a supporting system architecture to implement the broader measures.

Table 7.1 Summary Potential Intelligent Mobility Measures

Transport Mode / Area	Intelligent Mobility Measure
Active Travel	• Cycle Junction Priority • Pedestrian SCOOT • Intelligent Lighting • Walking and Cycling Wayfinding App • Social Media • Cycle Hire Availability • Cycle Sharing with Smart Cycle Locks • Gamification • Augmented Reality
Public Transport and Waterways	• Real-time Congestion Information • Bus Priority • Payment
Highways, Parking, and Freight	• SCOOT • Weather Dependent Signal Timing • Dynamic Pricing for On-Street Parking • Digital Road Signs • Autonomous Vehicles • Freight Management • Last Mile Solutions (Cargo bikes) • Automated Deliveries
Building A Smart Choice Architecture	• Data management and systems development • Active multi-modal management strategy • Mobility as a Service (MaaS)

8 Strategic Impact Assessment

INTRODUCTION

8.1 This section provides a strategic assessment of a range of measures identified within the preceeding chapters that can be evaluated within the strategic public transport (Railplan) and highway (CLoHAM) modelling tools. The aim is to identify the scale of potential impacts from this range interventions on the operation of the strategic highway network under the two growth scenarios and to ascertain whether further mitigation measures are required.

8.2 Many of the mitigation measures identified cannot be directly appraised within the modelling tools and so, as such, the results do not represent a definitive assessment of the full range of strategy measures, rather they provide insight into the impact of select schemes and public transport networks.

PUBLIC TRANSPORT CAPACITY ASSESSMENT

Mitigation Tests

8.3 Two future year 2031 mitigation tests were development to assess the potential impact of a range of proposed measures upon rail and bus capacity. These mitigation tests were designed to evaluate indicated levels of public transport enhancement, rather than specific schemes, so as to provide strategic insight into the scale of potential mitigation measures that will be required to support the projected Local Plan growth.

8.4 **Table 8.1** provides an overview of the test specifications.

Table 8.1 Mitigation Test Specification (2031)

		Mitigation Test 1	Mitigation Test 2
Crossrail	Paddington to Abbey Wood / Shenfield	10-car trains	13tph / 10-car trains
DLR	Stratford Int. to Woolwich Arsenal	3-car trains	3-car trains
	Stratford to Canary Wharf / Lewisham	3-car trains	20tph / 3-car trains
	Bank to Canary Wharf / Lewisham	-	20tph
Buses	All bus route	15% increase in frequency	25% increase in frequency
	D7 (Mile End to Poplar)	<as above>	24bph
	339 (Leytonstone Station to Shadwell)	<as above>	24bph
	115 (East Ham to Aldgate)	<as above>	24bph

Rail Capacity Assessment

8.5 In order to provide the context for the tests, **Figures 8.2** and **8.3** replicate the outputs from the '**Baseline Report'** showing the AM and PM Peak rail flows under the 'High Growth' scenario in 2031.

Figure 8.1 AM Peak Rail Flows (High Growth Scenario, 2031)

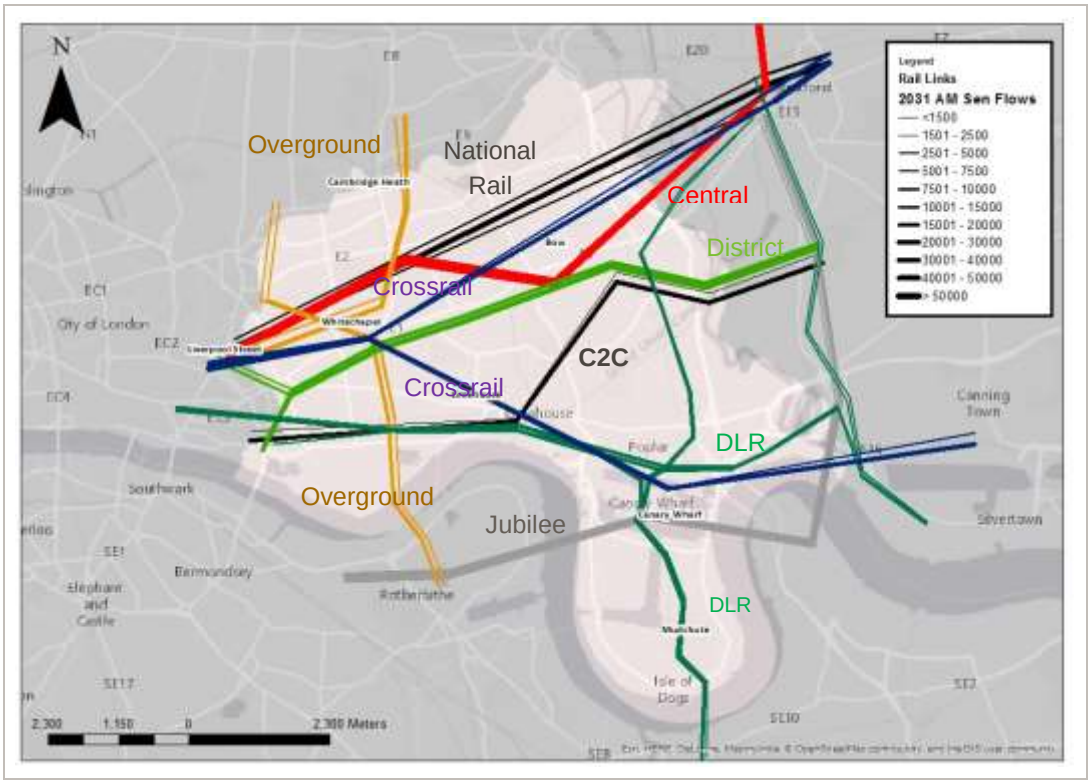
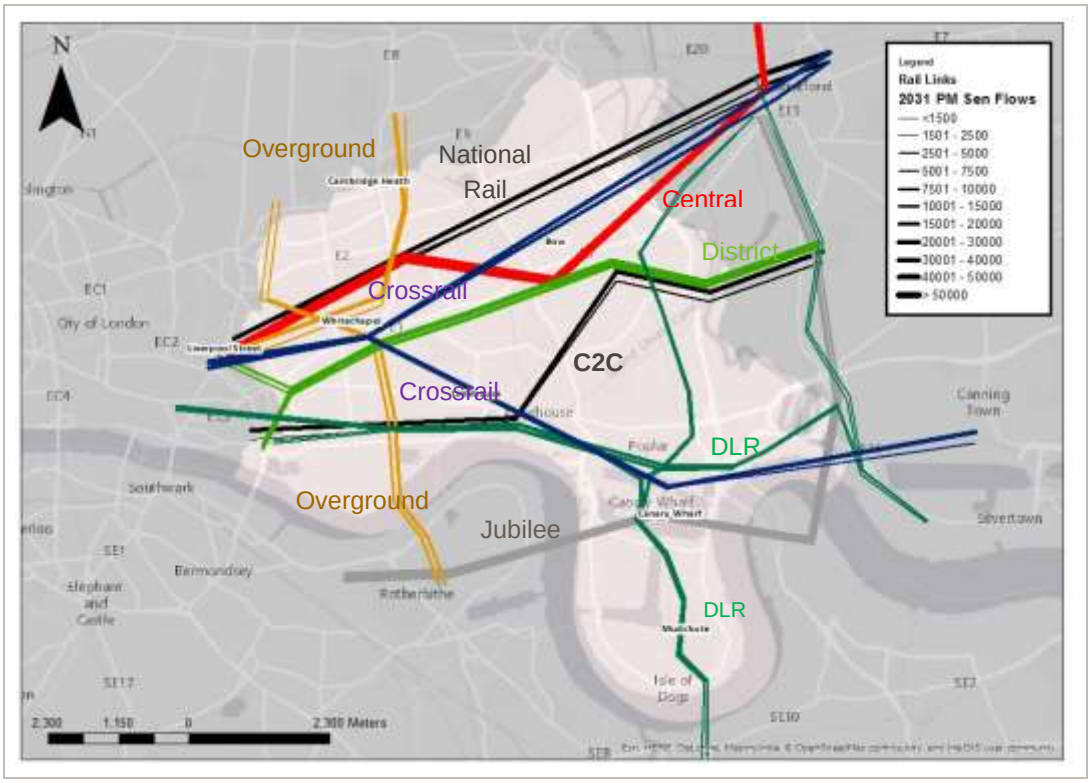


Figure 8.2 PM Peak Rail Flows (High Growth Scenario, 2031)



Railplan

8.6 **Figure 8.4** replicates the outputs from the '**Baseline Report'** showing the AM Peak rail passenger volumes over link capacities under the 'High Growth' scenario in 2031. **Figure 8.5** then presents the same output from the Mitigation Test 1.

Figure 8.3 AM Peak Rail Passenger Volume over Link Capacity (High Growth Scenario, 2031)

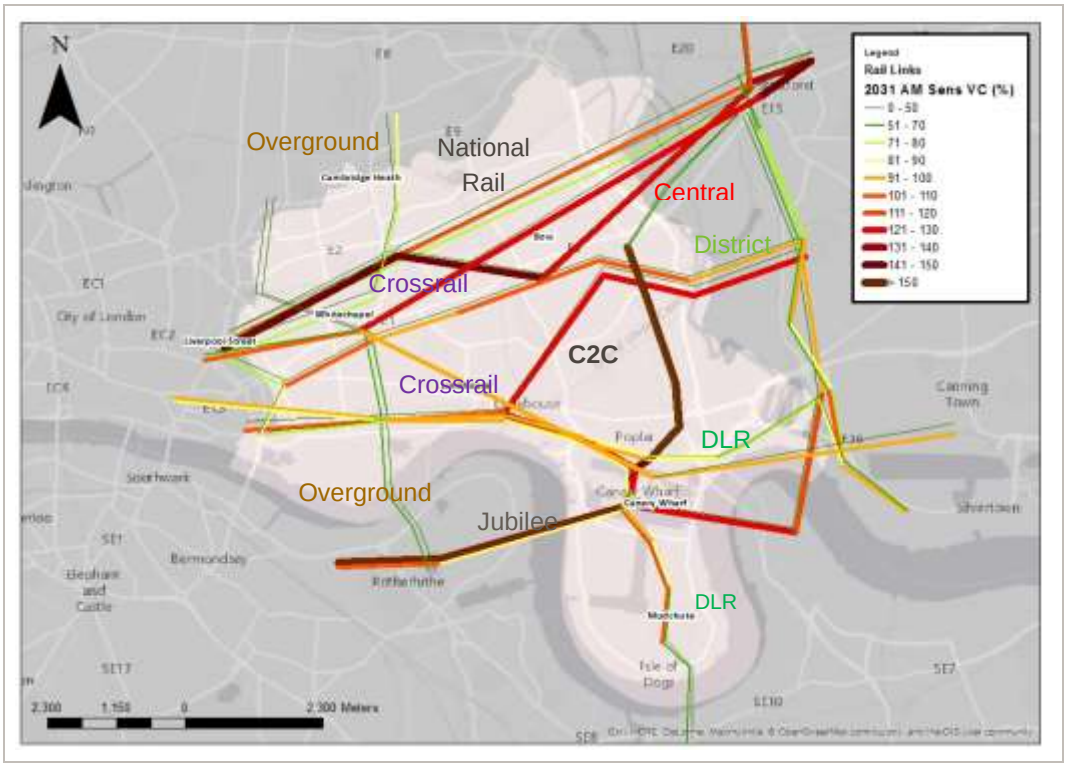
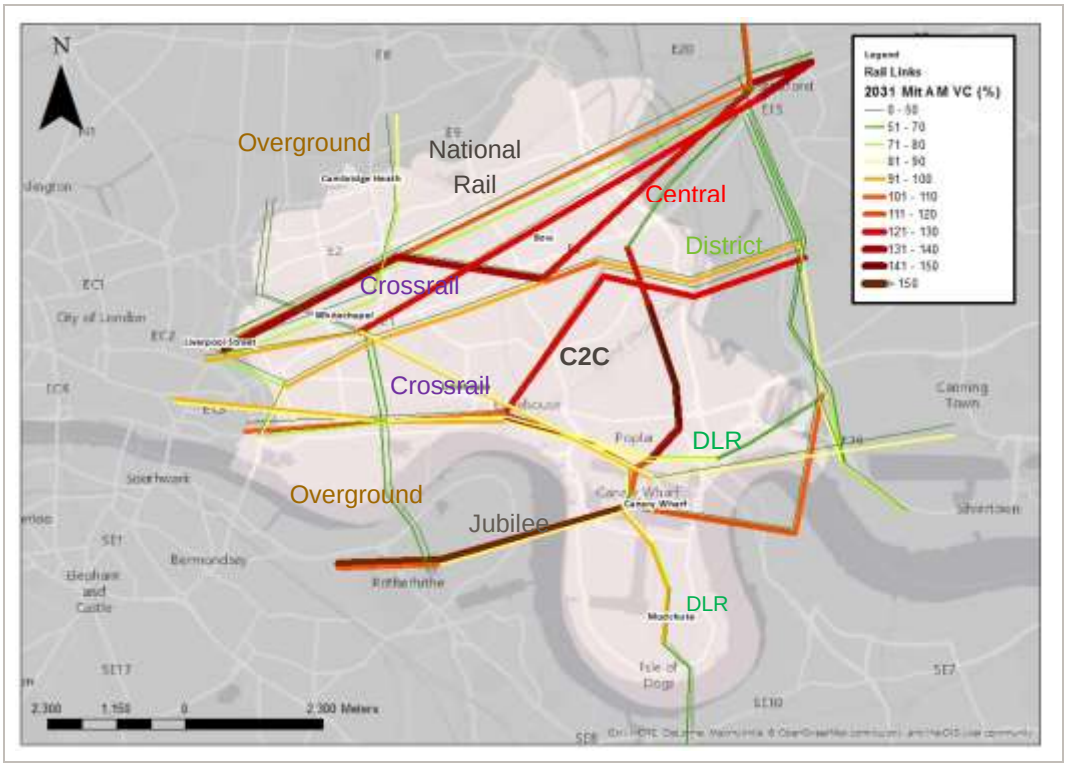


Figure 8.4 AM Peak Rail Passenger Volume over Link Capacity (Mitigation Test 1, 2031)



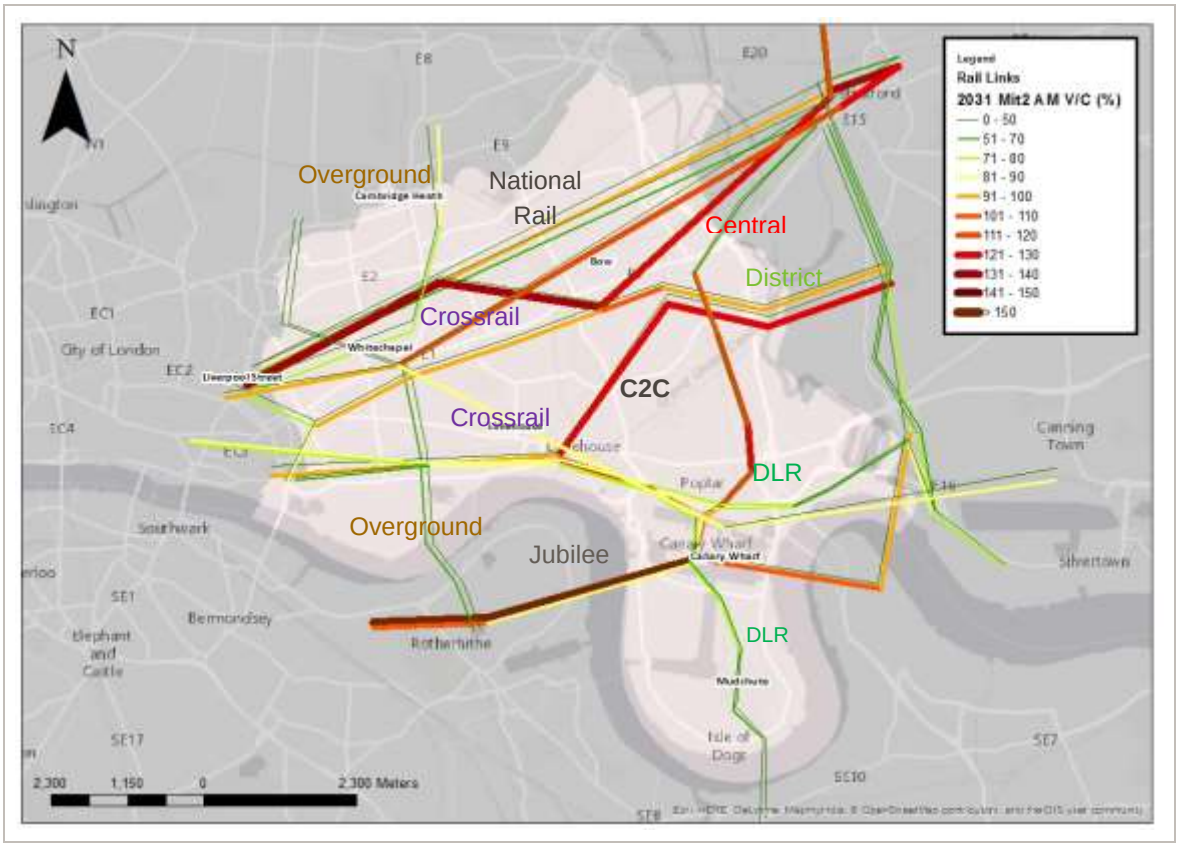
Railplan

8.7 The outputs from the Mitigation Test 1 for the AM Peak indicate the following:

- Central Line
  - Westbound services remain over-capacity
- National Rail (C2C)
  - The main capacity issue in the High Growth scenario is for inbound Fenchurch St services which are at 123% capacity on the approach to Limehouse. The mitigation measures demonstrate no real impact
- Overground
  - No capacity issues on East London Line or Enfield branch
- District / Hammersmith & City Line
  - Services are running at or just above capacity travelling westbound. There is little change with the additional mitigation measures
- Jubilee Line
  - Canada Water to Canary Wharf operates at 167% capacity in the High Growth scenario. The mitigation has no significant impact (165%)
  - North Greenwich to Canary Wharf operates a 123% capacity in the High Growth scenario. The mitigation result in a small reduction (116%)
- Crossrail
  - Both Crossrail branches are running at close to capacity in the High Growth test and there are small increases as a result of additional development
- DLR
  - Bow Church branch is put under significant stress as a result of additional development in the High Growth scenario. This is only marginally addressed by 2 to 3 car upgrade for all services
  - The constraints on the Stratford International to Canning Town is addressed by 2 to 3 car upgrade

8.8 **Figure 8.6** presents the same output from the Mitigation Test 2 in the AM Peak.

Figure 8.5 AM Peak Rail Passenger Volume over Link Capacity (Mitigation Test 2, 2031)



Railplan

8.9 The outputs from the Mitigation Test 2 for the AM Peak indicate the following:

- Central Line
  - Westbound services remain over-capacity with minimal impact of mitigation measures
- National Rail
  - Inbound Fenchurch St services are still over-capacity
  - Crowding is reduced between Stratford and Liverpool St.
- Overground
  - No real impact from extra mitigation
- District / Hammersmith & City Line
  - No real impact from extra mitigation
- Jubilee Line
  - Canada Water/North Greenwich to Canary Wharf is still over-capacity with only a small decrease in V/C from extra mitigation
- Crossrail
  - Extra capacity on both branches provides only a small reduction in overcrowding. The benefits are only small as the increased capacity is attracting more demand to Crossrail services
- DLR
  - Bow Church branch is still over-capacity between Bow Church and Canary Wharf although this is now under 150%.
  - Services between Bank-Canary Wharf/Poplar are now no longer running at over-capacity

8.10 **Figure 8.7** replicates the outputs from the '**Baseline Report'** showing the PM Peak rail passenger volumes over link capacities under the 'High Growth' scenario in 2031. **Figure 8.8** then presents the same output from the Mitigation Test 1.

Figure 8.6 PM Peak Rail Passenger Volume over Link Capacity (High Growth Scenario, 2031)

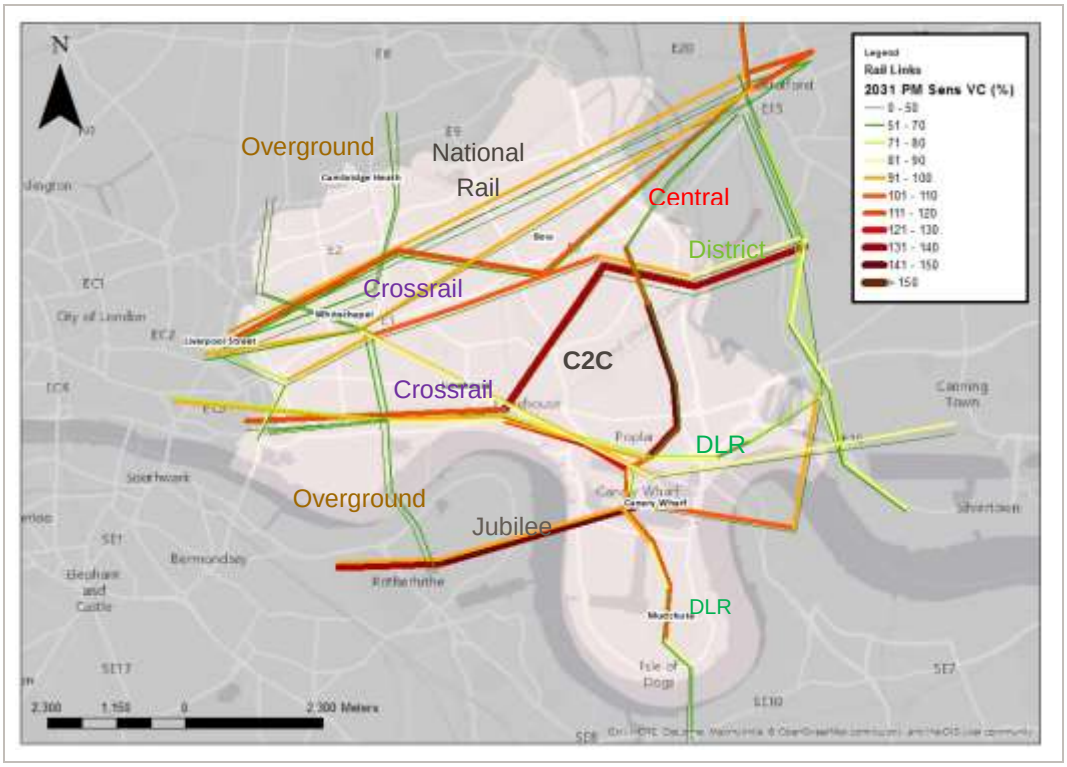
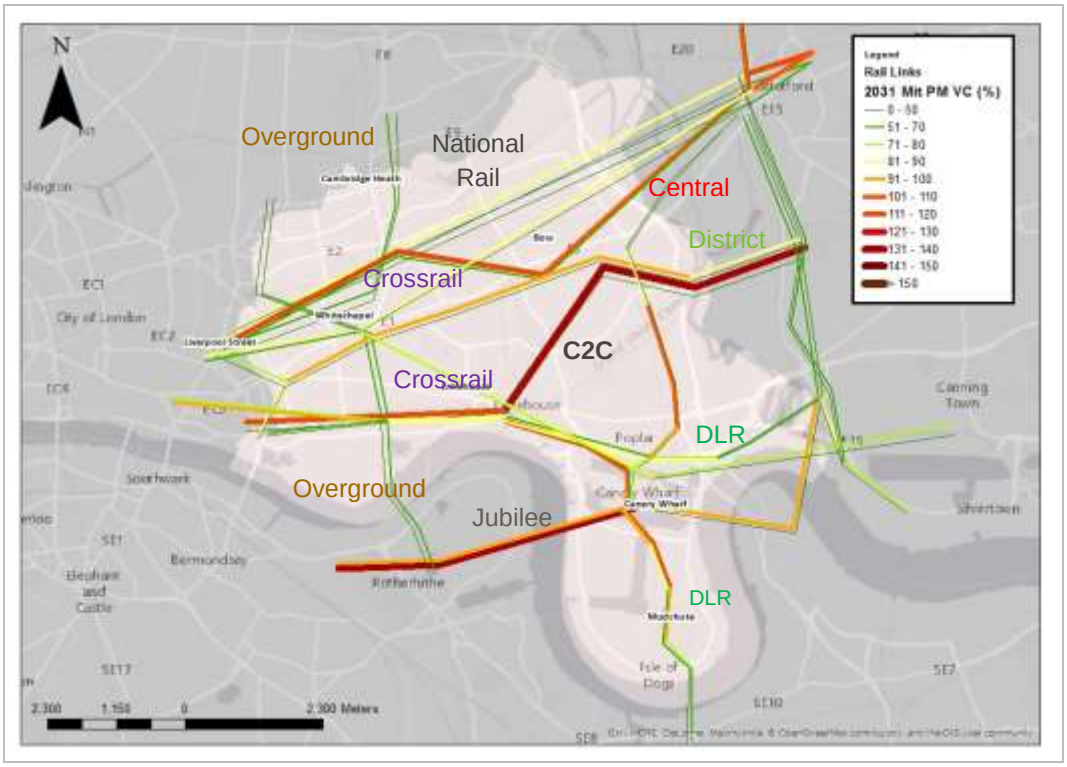


Figure 8.7 PM Peak Rail Passenger Volume over Link Capacity (Mitigation Test 1, 2031)



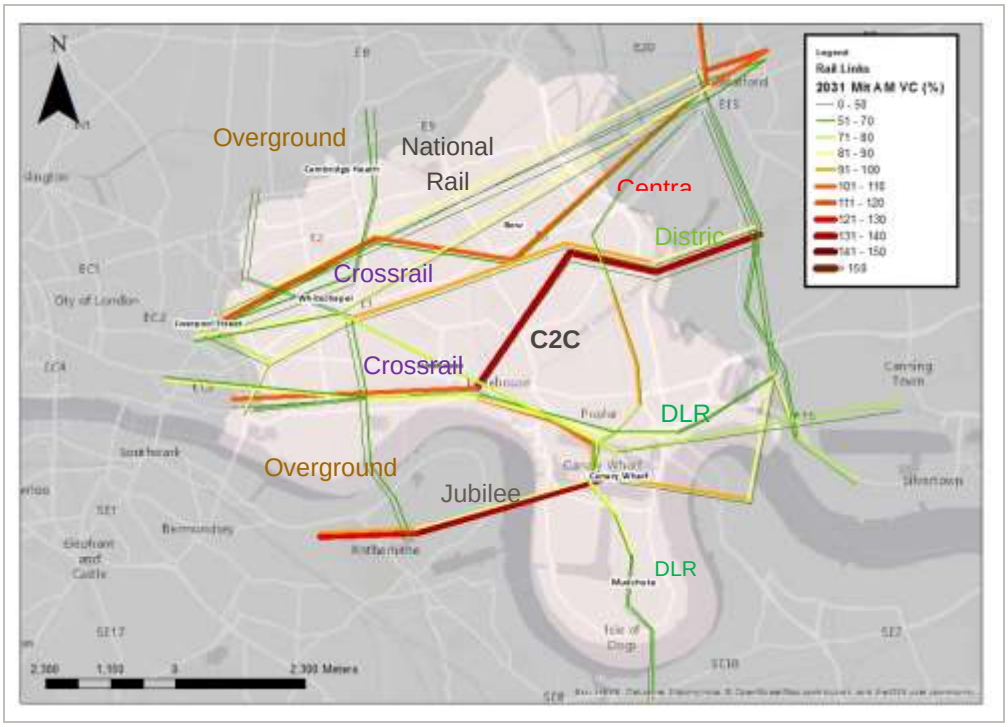
Railplan

8.11 The outputs from the Mitigation Test 1 for the PM peak indicate the following:

- Central Line
  - Eastbound services are over-capacity with minimal enhancement from the mitigation
- National Rail
  - The main capacity issue in the High Growth scenario is for outbound Fenchurch St services which are leaving Fenchurch St at full capacity. The additional mitigation has no significant impact
- Overground
  - No capacity issues on East London Line or Enfield branch
- District / Hammersmith & City Line
  - Services are running at or just above capacity travelling eastbound. There is little change resulting from the mitigation measures
- Jubilee Line
  - Canary Wharf to Canada Wharf becomes increasingly over-crowded with additional development as do services from Canary Wharf to North Greenwich. This mitigation has no real impact.
- Crossrail
  - Both Crossrail branches are running at close to capacity in the High Growth scenario and there are small increases as a result of additional development. The upgrade to 10-car train capacities ensures that all services running through Tower Hamlets are at under 100% capacity
- DLR
  - Bow Church branch is put under significant stress as a result of additional development. The upgrade so that all services are 3-car ensures this branch is not running significantly over-capacity

8.12 **Figure 8.9** presents the same output from the Mitigation Test 2 in the PM Peak.

Figure 8.8 PM Peak Rail Passenger Volume over Link Capacity (Mitigation Test 2, 2031)



Railplan

8.13 The outputs from the Mitigation Test 2 for the PM peak indicate the following:

- Central Line
  - Extra mitigation has small reduction in overcrowding but eastbound services still running at slightly over-capacity
- National Rail
  - Outbound Fenchurch St services are still over-capacity
- Overground
  - No real impact from extra mitigation
- District / Hammersmith & City Line
  - No real impact from extra mitigation
- Jubilee Line
  - Canada Water/North Greenwich to Canary Wharf is still over-capacity with only a small decrease in overcrowding from extra mitigation
- Crossrail
  - Extra capacity on both branches provides limited reductions in overcrowding. The increased capacity is matched by increases in demand
- DLR
  - Bow Church branch is now well below full capacity
  - Services between Bank-Canary Wharf/Poplar are now no longer running at above capacity

Summary

8.14 Overall the analysis indicates that the mitigation measure provide some specific improvement but that significant capacity constraints are still predicted to remain across parts of the rail network under the 'High Growth' scenario. This indicates that a larger scale package of public transport mitigation measures is required to support the delivery of the projected Local Plan growth.

BUS CAPACITY ASSESSMENT

8.15 In order to provide the context for the tests, **Figures 8.10** and **8.11** replicate the outputs from the '**Baseline Report'** showing the AM and PM Peak bus flows under the 'High Growth' scenario in 2031

Figure 8.9 AM Peak Bus Flows (High Growth Scenario, 2031)

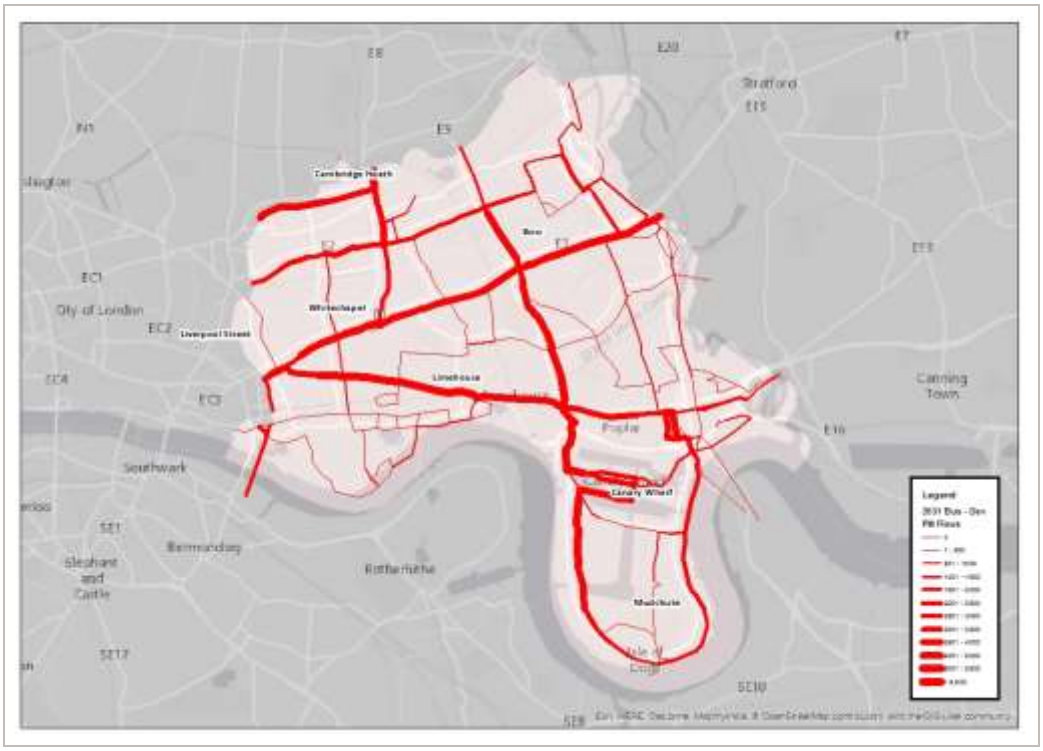
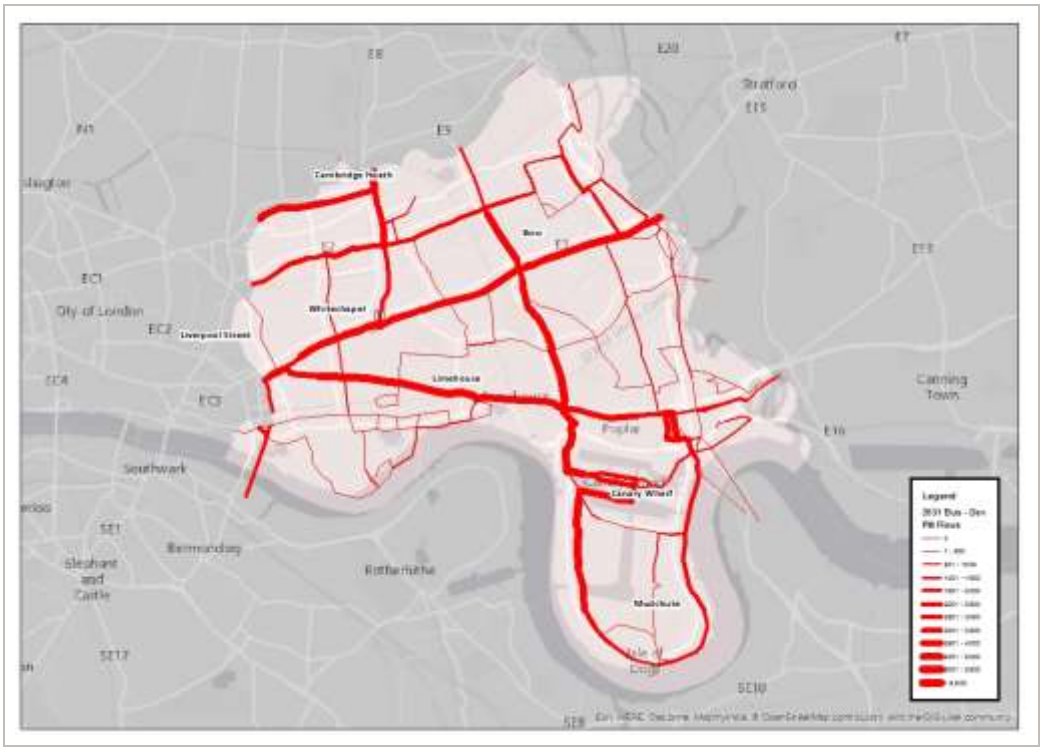


Figure 8.10 PM Peak Bus Flows (High Growth Scenario, 2031)



Railplan

8.16 **Figure 8.12** replicates the outputs from the '**Baseline Report'** showing the AM Peak bus patronage over service capacities under the 'High Growth' scenario in 2031. **Figure 8.13** then presents the same output from the Mitigation Test 1.

8.17 The bands representing parts of the network that are close to, or over capacity are as follows:

↗	Close to capacity	(91% to 100%)
↗	Over-capacity	(101% to 110%)
		(111% to 120%)
		(121% to 130%)
		(131% to 140%)
		(141% to 150%)
		(over 150%)

Figure 8.11 AM Peak Bus Patronage over Service Capacities (High Growth Scenario, 2031)

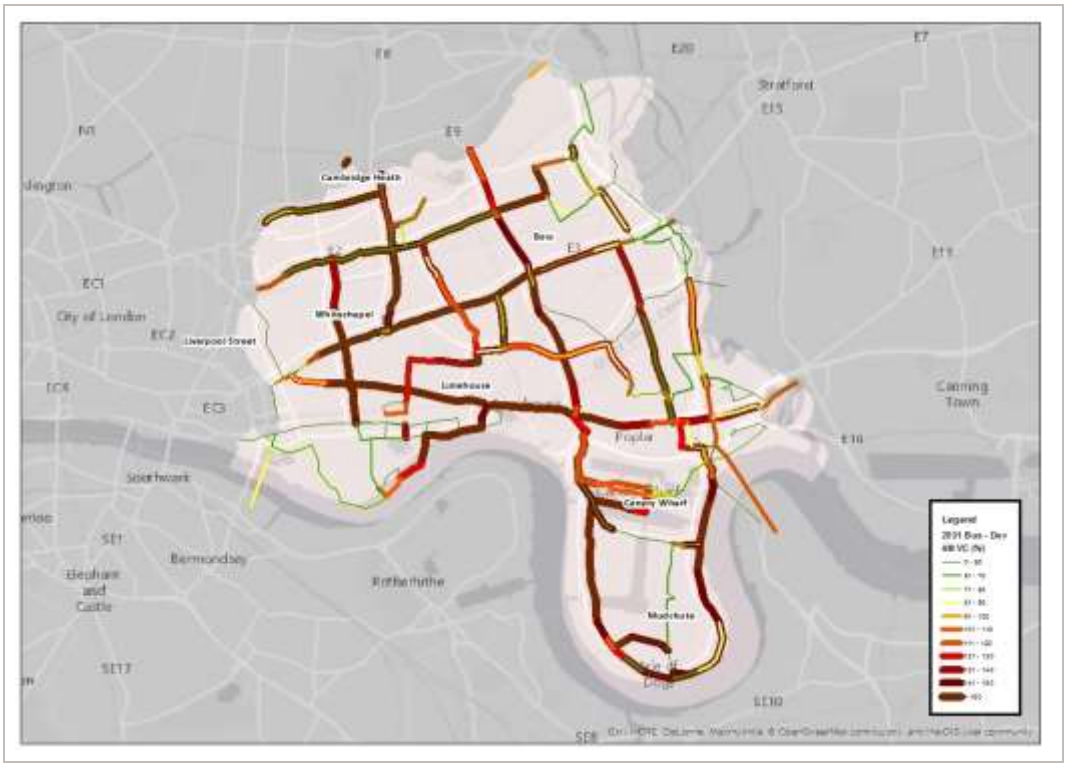
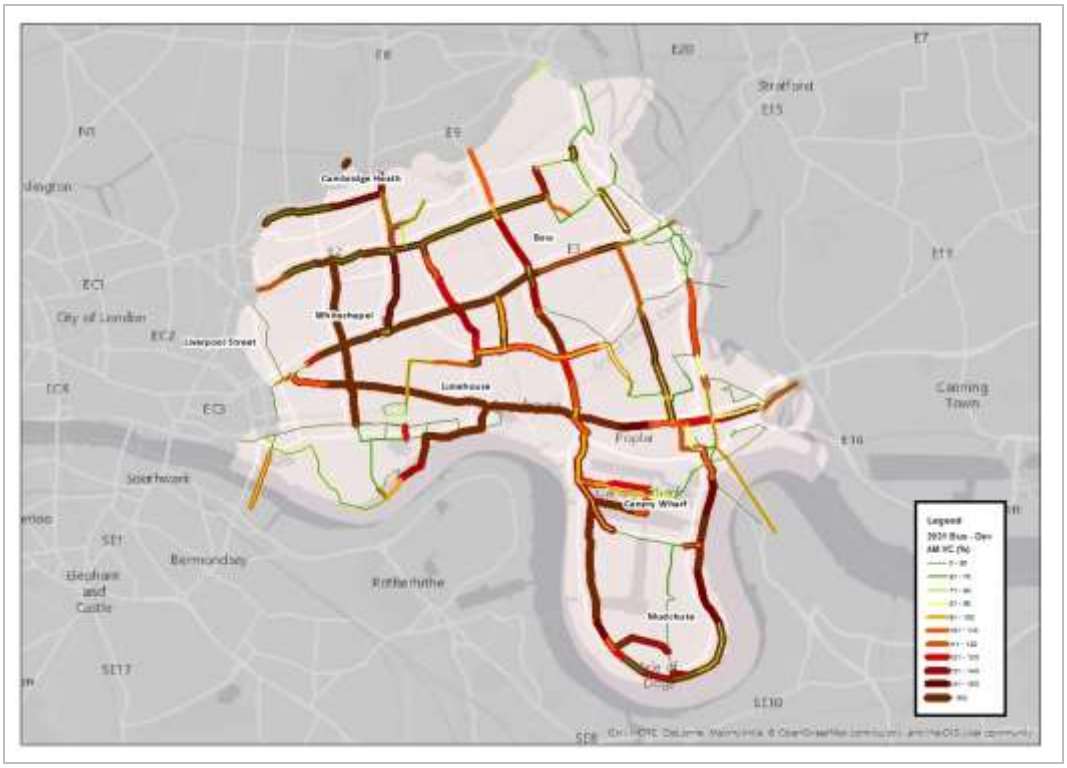


Figure 8.12 AM Peak Bus Patronage over Service Capacities (Mitigation Test 1, 2031)



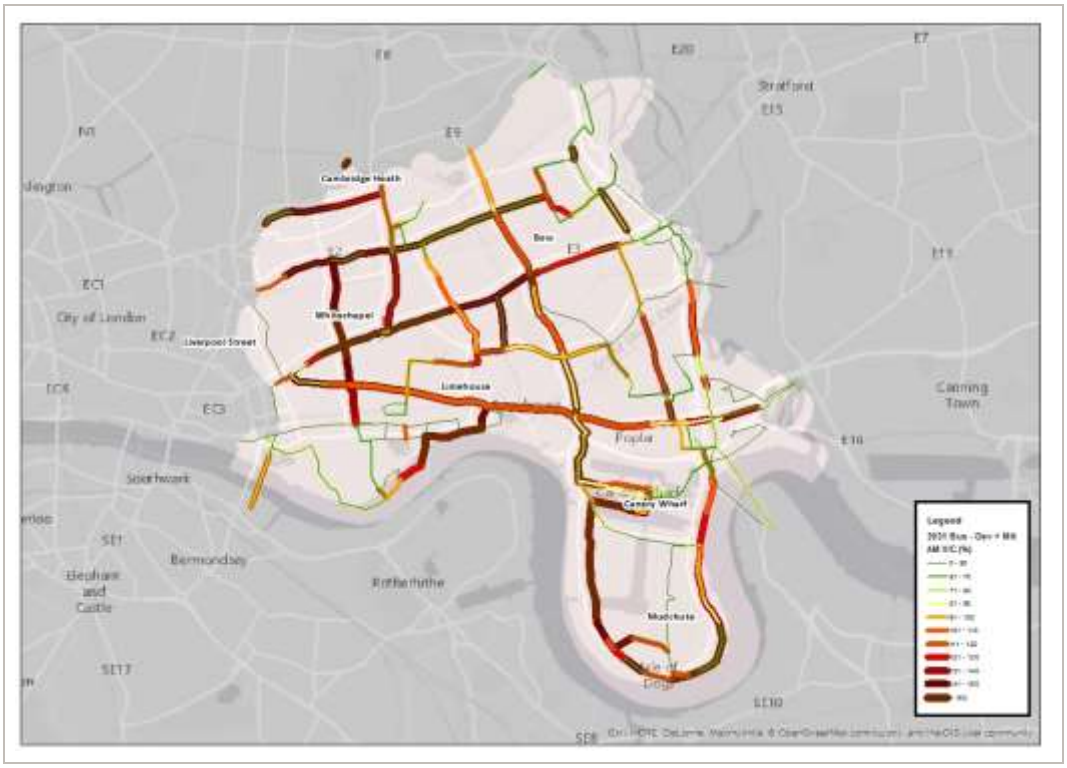
Railplan

8.18 Some capacity constraint reductions are observed as a result of the mitigation measures from the 2031 High Growth scenario but a number of key corridors remain overcrowded:

- Mile End Road
  - Becomes close to full capacity as a result of additional development (84%). Increased frequency has little impact in reducing this as effectively more demand is attracted to bus services along this corridor.
- Burdett Road
  - Over capacity (123%) in the Ref Case which is made considerable worse by additional development (222%). The 25% increase in frequency provides a small improvement but services are still running considerably over-capacity (200%)
- Commercial Road
  - At capacity (108%) in the Ref Case but sees demand flows double as a result of additional development. Increased frequency provides some relief but services still over-crowded as reduced wait-time attracts more passengers.
- Westferry Road
  - Westside is at over 200% capacity in the Ref Case so the mitigation, although providing extra capacity, provides little crowding relief.
  - Eastside becomes significantly overcrowded as a result of additional development (191%) and mitigation is only able to reduce this to 176%

8.19 **Figure 8.14** presents the same output from the Mitigation Test 2 for the AM peak.

Figure 8.13 AM Peak Bus Patronage over Service Capacities (Mitigation Test 2, 2031)



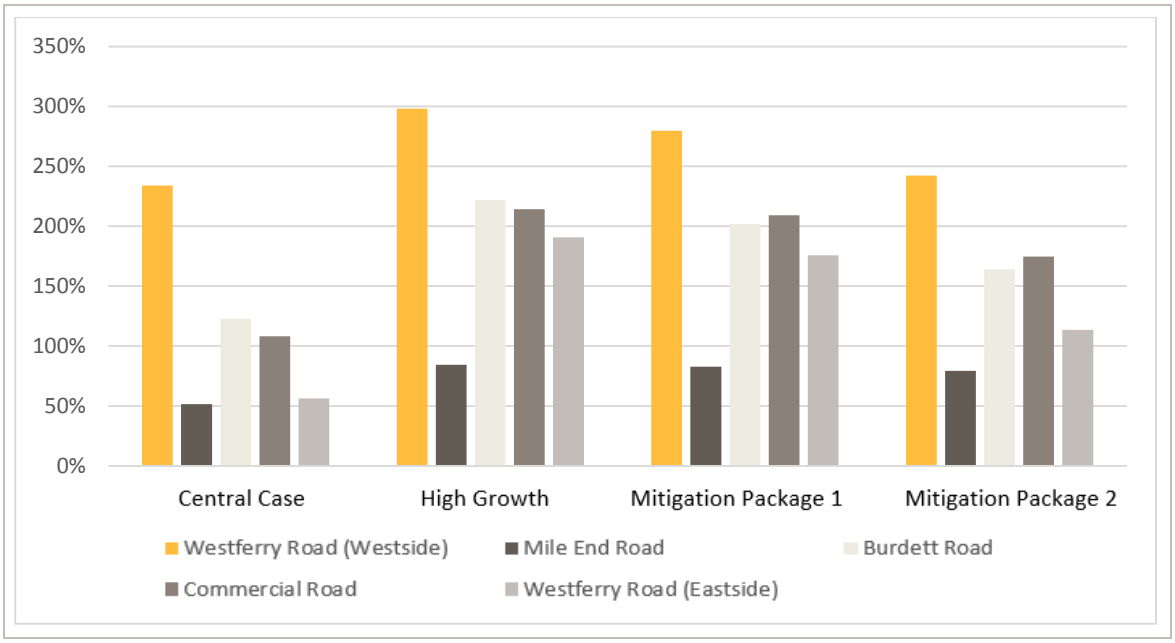
Railplan

8.20 Larger improvements are predicted under the Mitigation Scenario 2, although a number of links remain significantly overcrowded:

- Mile End Road
  - V/C ratio is now under 80% on this road
- Burdett Road
  - Crowding is reduced for Northbound trips as improved frequency for the D7 provides some relief
- Commercial Road
  - Capacity is increased significantly thanks to 2.5 minute frequency of 115 bus service. However this has made services more attractive increasing demand and V/C ratio remains above Ref Case levels
- Westferry Road
  - Westside: frequency improvements (especially on D7) have lowered V/C ratio but services on this link are still significantly overcrowded
  - Eastside: Small improvement to crowding as increased capacity is matched by increase in demand

8.21 Figure 8.15 provides a summary of the bus capacity constraints on selected routes in the AM Peak.

Figure 8.14 AM Peak Bus Patronage over Service Capacities on Selected Corridors (2031)



Railplan

8.22 **Figure 8.16** replicates the outputs from the '**Baseline Report'** showing the PM Peak bus patronage over service capacities under the 'High Growth' scenario in 2031. **Figure 8.17** then presents the same output from the Mitigation Test 1.

Figure 8.15 PM Peak Bus Patronage over Service Capacities (High Growth Scenario, 2031)

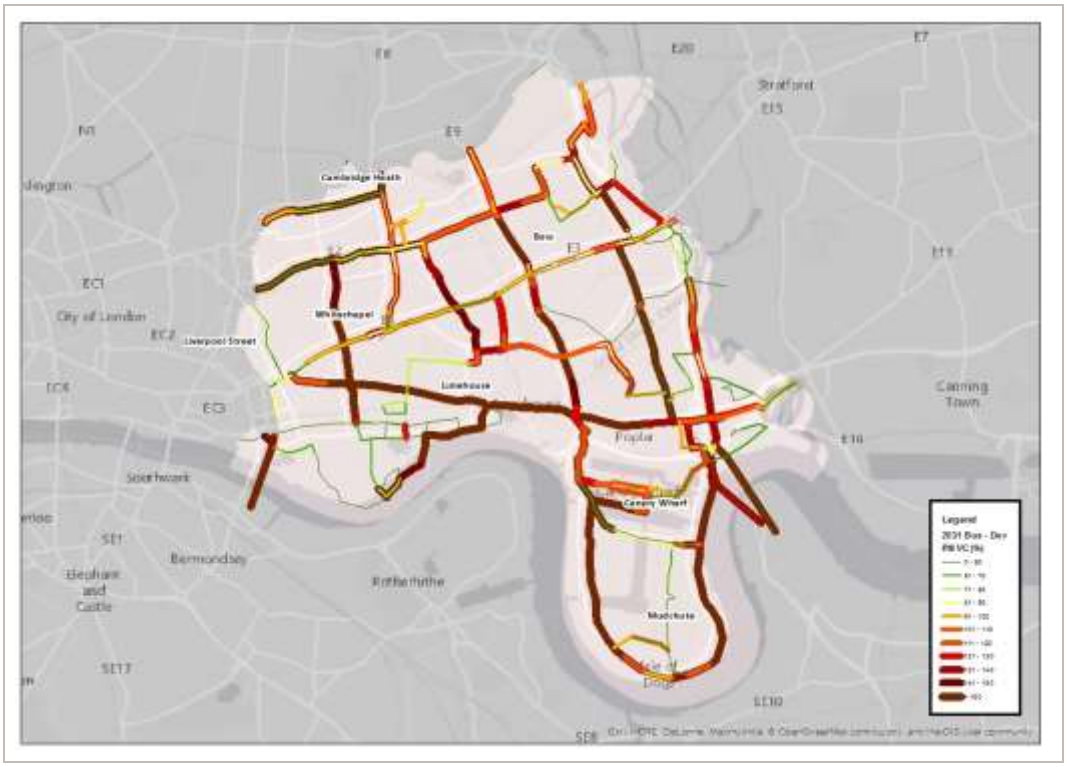
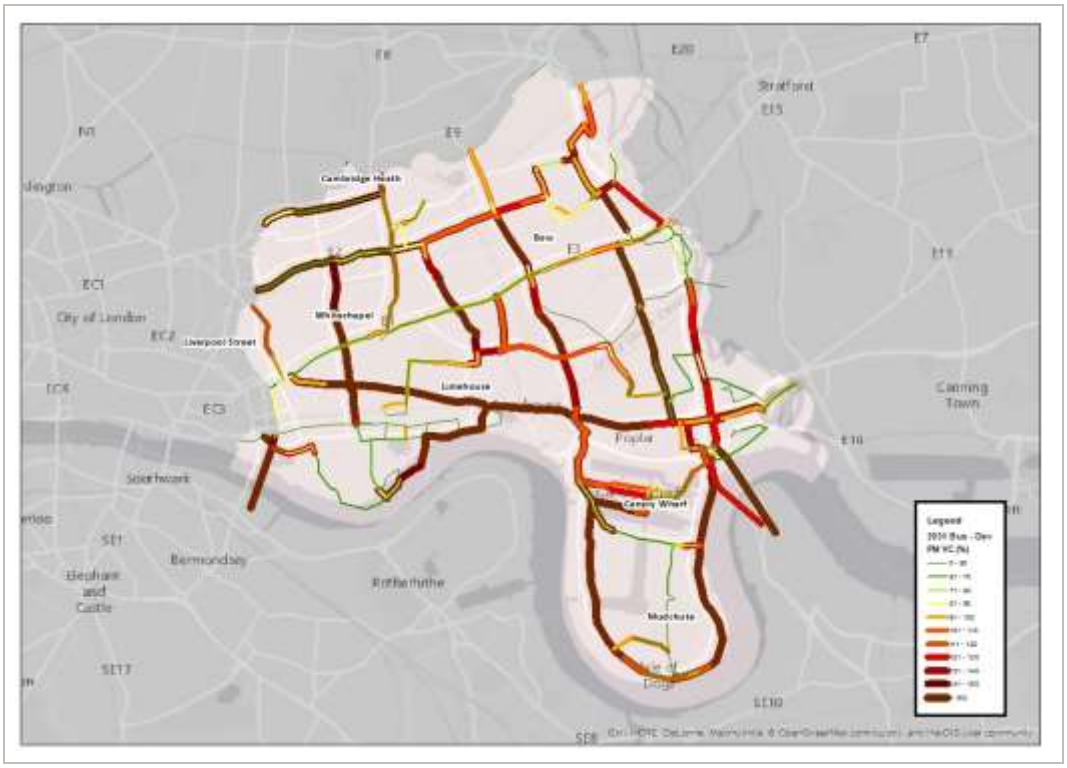


Figure 8.16 PM Peak Bus Patronage over Service Capacities (Mitigation Test 1, 2031)



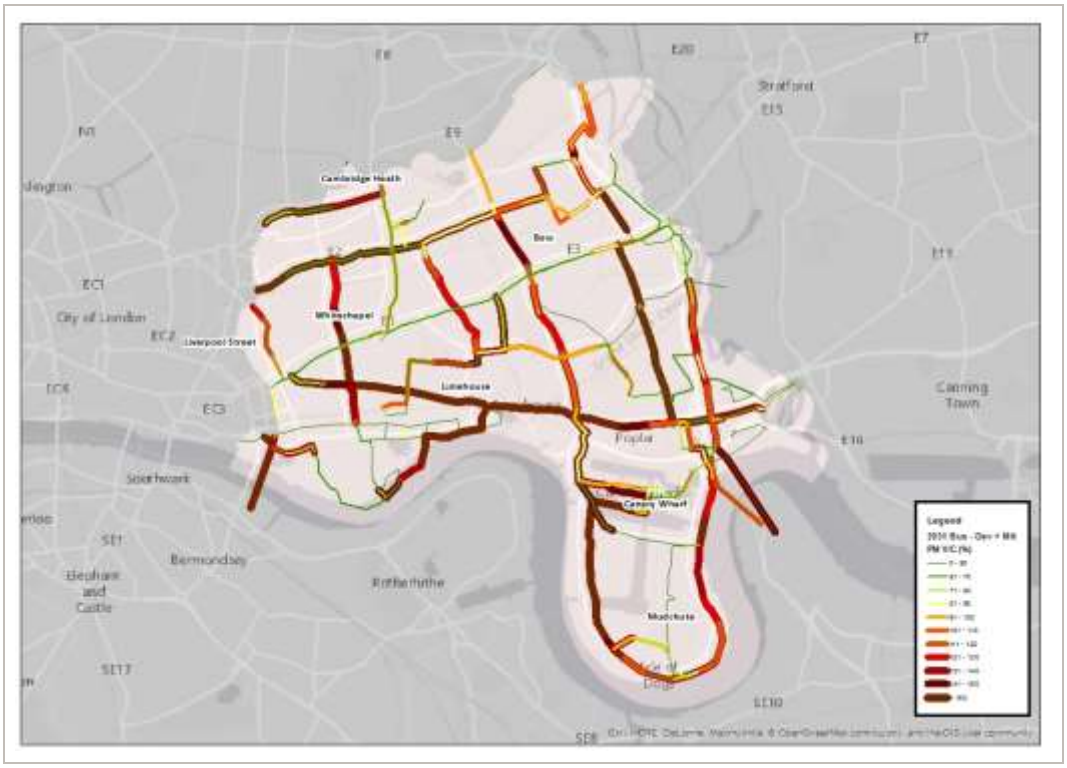
Railplan

8.23 Some capacity constraint reductions result from the mitigation from the 2031 High Growth scenario but a number of key corridors remain overcrowded:

- Mile End Road
  - Services are at 58% capacity in either direction in the Ref Case whilst extra demand from the additional development leaves services running at full capacity (96%). Increased bus frequencies reduces this to 85%.
- Commercial Road
  - Services are over-capacity (123%) in the Ref Case which is then worsened by additional development (240%). Extra bus services provides little relief (232%) as demand increases
- Westferry Road
  - Westside: Bus services on this link are well over-capacity in the Ref Case which worsened in additional development test. Extra services is able to provide only a small amount of capacity relief
  - Eastside: Services are at 79% capacity on this link in the Ref Case but rise to 209% after additional demand is provided.
- Blackwall Tunnel
  - NB and SB are over-capacity in the PM peak in the Ref Case. V/C ratio rises to 131% and 162% (NB/SB) with additional development whilst increased frequencies reduces V/C ratios back to Ref Case levels

8.24 **Figure 8.18** presents the same output from the Mitigation Test 2 for the AM peak.

Figure 8.17 PM Peak Bus Patronage over Service Capacities (Mitigation Test 2, 2031)



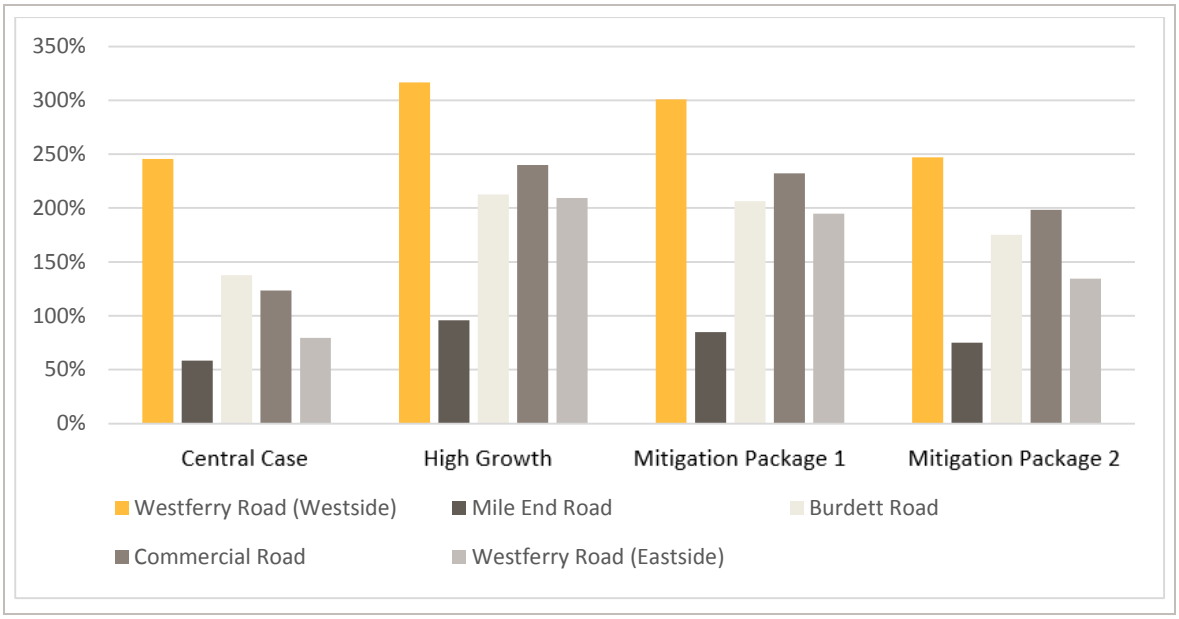
Railplan

8.25 Links that are over-capacity within the High Growth 2031 Scenario are reduced but still significant capacity issues are predicted to occur within parts of the borough

- Mile End Road
  - Further increases in bus frequencies reduces V/C ratio from 85% to 75%
- Commercial Road
  - Remains significantly over-crowded as services improvements simple serve to increase demand
- Westferry Road
  - Westside: This test increases capacity on the link by 67% but demand also increases by approximately 40% therefore only a small reduction in V/C is provided
  - Eastside: Services are still over-capacity but increased frequency has reduced capacity issue significantly
- Blackwall Tunnel
  - The 35% frequency increase in this test brings V/C ratios to below Ref Case levels

8.26 Figure 8.19 provides a summary of the bus capacity constraints on selected routes in the PM Peak.

Figure 8.18 PM Peak Bus Patronage over Service Capacities on Selected Corridors (2031)



Railplan

Summary

8.27 Overall the analysis indicates that signification capacity constraints are still predicted to remain across the bus network under the 'High Growth' scenario, even with additional mitigation package.

8.28 A higher level of bus capacity, through higher frequency services, larger vehicles, or additional routes, is required, alongside additional rail capacity in order to sustainably delivery the project housing and employment growth.

HIGHWAY CAPACITY ASSESSMENT

Mitigation Measures

8.29 A single mitigation test has been undertaken for the highway network. This has included the following mitigation measures that were not already included within the 2031 TfL Reference Case

- Silvertown Tunnel
- Hertsmere Road Capacity Increase
- South of Victoria Park junction improvements
- Synthesized Origin – Destination matrix adjustment for modal shift to Active Travel – 25% reduction in trips under 4km with an origin or destination within the borough

Impact Assessment

8.30 In order to provide the context for the tests, **Figures 8.20** and **8.21** replicate the outputs from the '**Baseline Report'** showing the AM and PM Peak vehicle flows under the 'High Growth' scenario in 2031

8.31 The relative colours represent different estimated standardised traffic flows (PCU), as set out within the key.

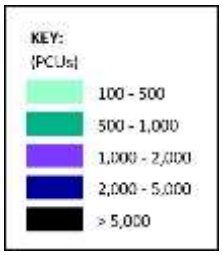
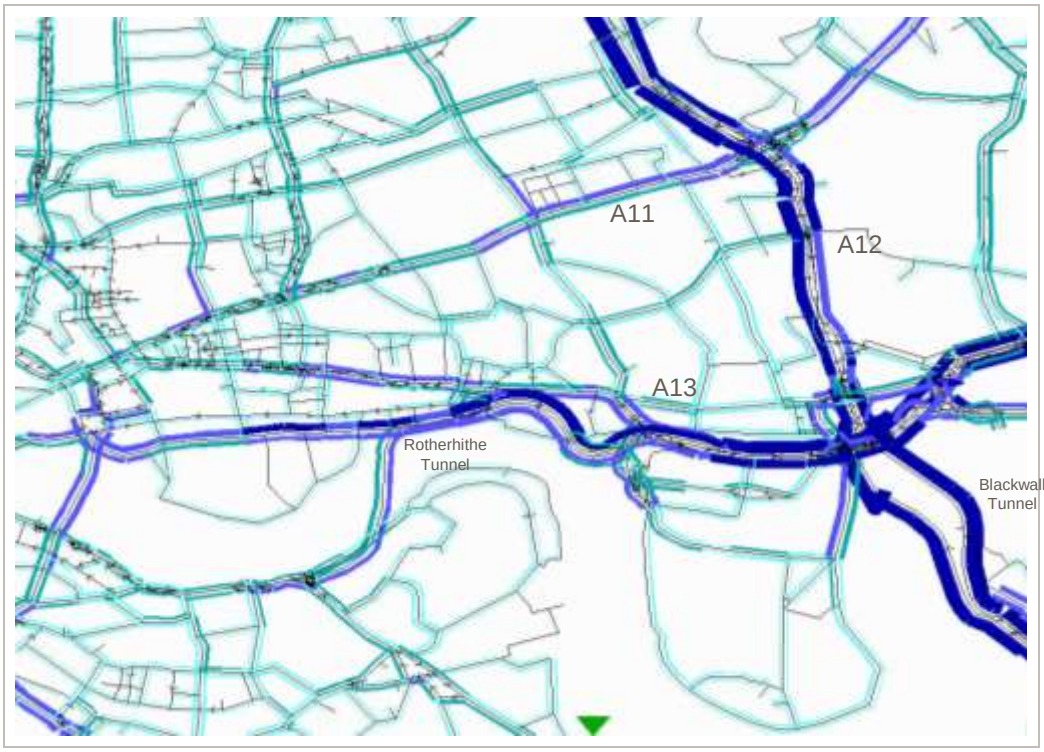


Figure 8.19 AM Peak Vehicle Flows (High Growth Scenario, 2031)

CLoHAM

Figure 8.20 PM Peak Vehicle Flows (High Growth Scenario, 2031)



CLoHAM

8.32 **Figure 8.22** replicates the outputs from the '**Baseline Report'** showing the AM Peak delays under the 'High Growth' scenario in 2031. These present the forecast level of delay (in seconds) on each highway link within the model and can be interpreted as follows:

- Dark cyan = Minor link delay (between 30 seconds and 1 minute)
- Purple = Some link delay (between 1 minute and 2 minutes)
- Dark blue = Significant link delay (between 2 minutes and 5 minutes)
- Black = High level of link delay (greater than 5 minutes)

8.33 **Figure 8.23** then presents the change in forecast highway delays in the AM Peak resulting from the mitigation measures.

Figure 8.21 AM Peak Highway Delays (High Growth Scenario, 2031)

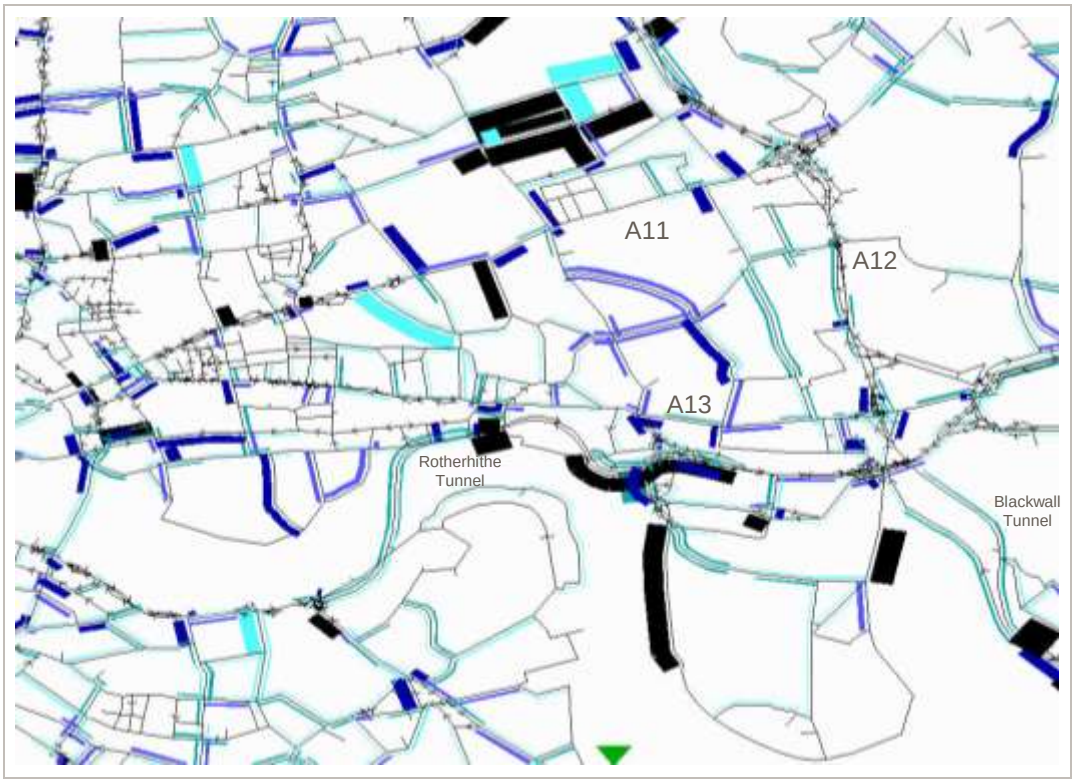
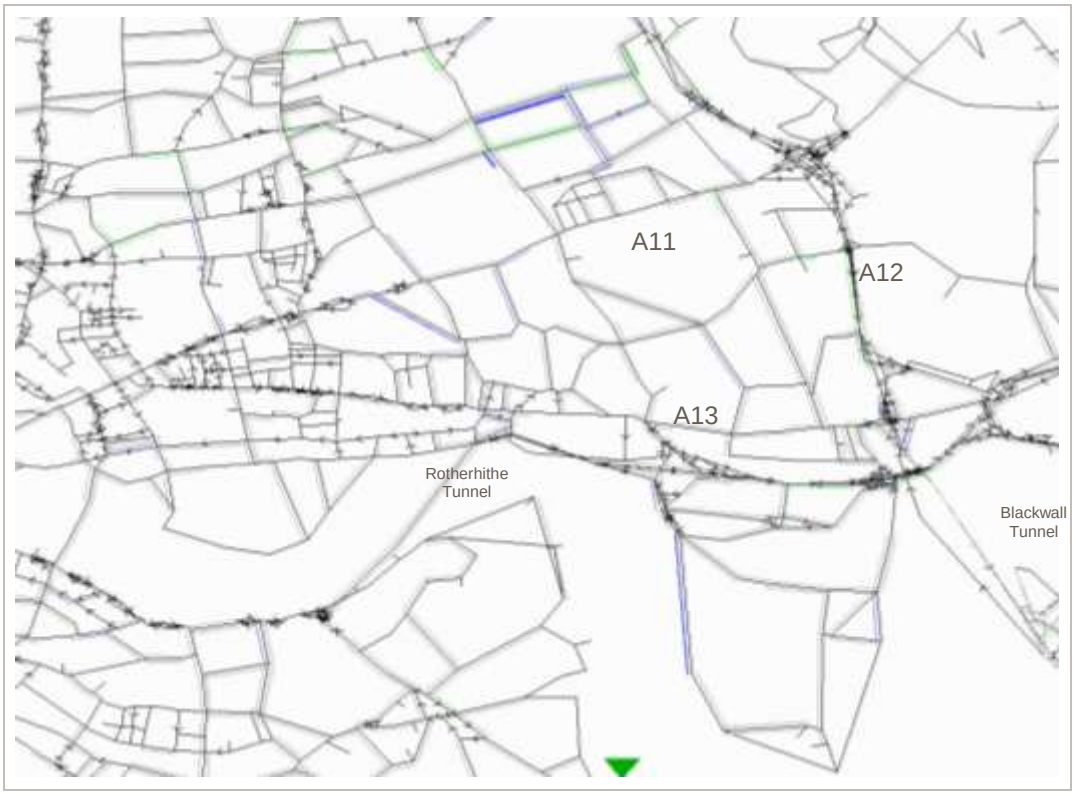


Figure 8.22 AM Peak Change in Highway Delays (Mitigation vs High Growth Scenario, 2031)



CLoHAM

8.34 The model outputs indicate that the measure provide some benefits to delays along the A12 and A1261, as well as access from the Isle of Dogs on Westferry Road. The local network measures to the south of Victoria Park also provide benefits.

8.35 Generally, however, there are no significant reductions in highway delays from the package of mitigation measures.

8.36 **Figure 8.24** replicates the outputs from the '**Baseline Report'** showing the PM Peak delays under the 'High Growth' scenario in 2031.

8.37 **Figure 8.25** then presents the change in forecast highway delays in the PM Peak resulting from the mitigation measures.

Figure 8.23 PM Peak Highway Delays (High Growth Scenario, 2031)

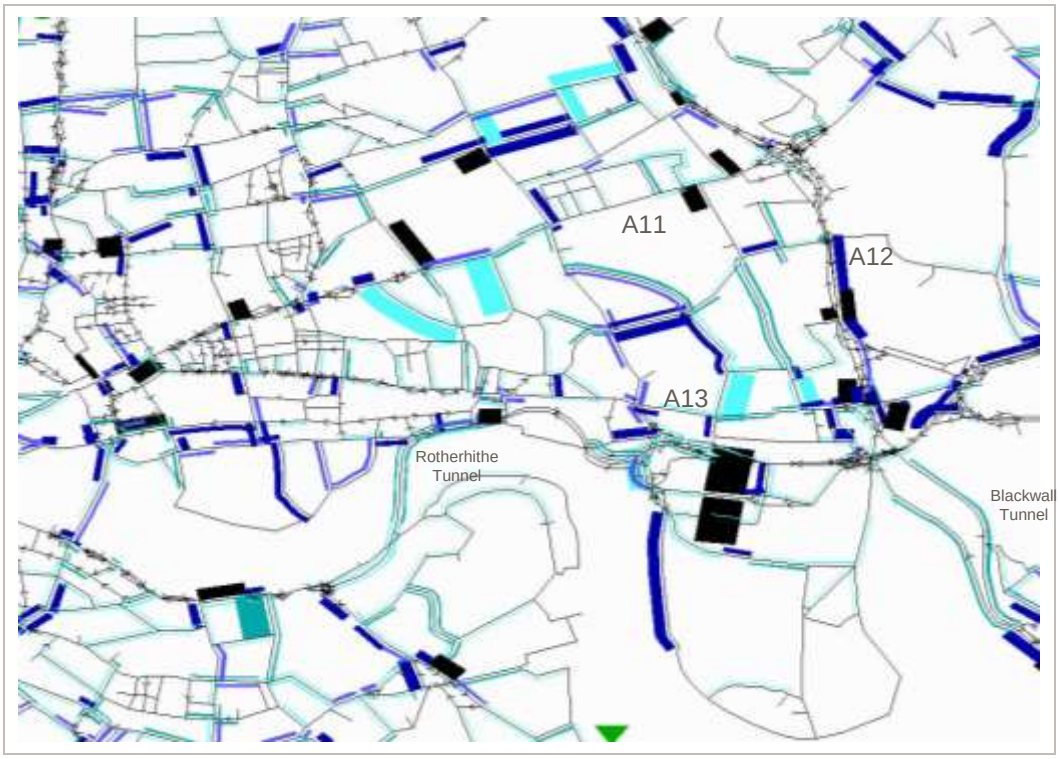
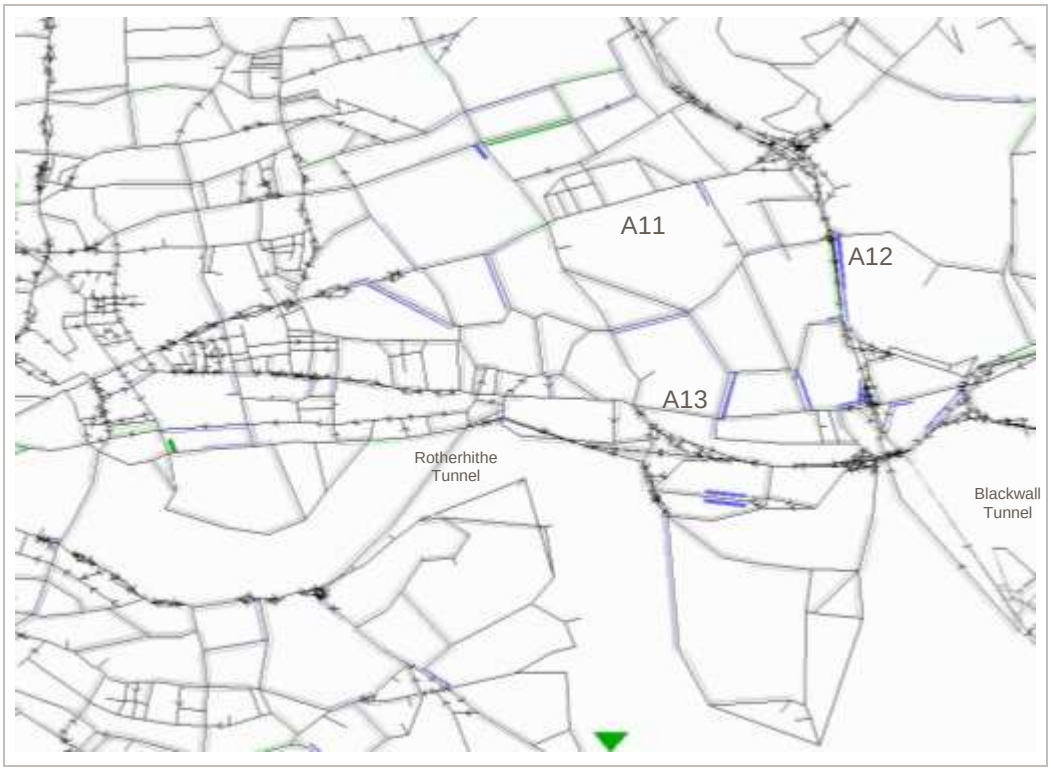


Figure 8.24 PM Peak Change in Highway Delays (Mitigation vs High Growth Scenario, 2031)



CLoHAM

8.38 The model outputs present a similar picture to the AM peak, with some specific reductions in delay but overall network wide impacts relatively low.

Summary

8.39 The strategic impact assessment of highway mitigation measures has indicated that some of the proposed measures have a positive impact upon specific network congestion.

8.40 Under the 'High Growth' scenario the extent of additional highway trips is still forecast to have significant impact on the performance of the network and so this reiterates the importance of both travel demand measures and public transport capacity enhancements to be able to sustainably deliver the project growth in housing and employment.

IMPACT ASSESSMENT CONCLUSIONS

8.41 The impact assessments indicate that the package of mitigation measures tested are forecast to have a positive impacts upon the operational performance of the public transport and highway networks.

8.42 Under the 'High Growth' scenario a range of overcrowding and congestion were still forecast to remain at a range of points across the network in 2031. This provides clear evidence of the requirement for larger scale package of measures to be delivered over time to match the full projected scale of development opportunities that may come forward. This includes both additional public transport capacity as well as measures to encourage active travel and minimise private car trips across the borough.

9 Option Appraisal

INTRODUCTION

9.1 The outcomes of the Strategic Impact Assessment in Section 8 have reiterated the requirement for substantial increase in sustainable transport provision across the borough to enable the projected Local Plan population and employment growth to be delivered.

9.2 To establish those measures that will deliver the most benefits and when they will deliver these benefits, and to prioritise investment, a high-level option appraisal process has been undertaken.

APPRAISAL FRAMEWORK

9.3 The option appraisal process has applied a PESTLE-type approach utilising the following set of criteria to evaluate the performance of each individual type of scheme measures:

- ‘Political’ acceptability of a scheme and its fit with local, regional, and national policy
- ‘Economic’ implications of the scheme, in terms of the breadth and scale of benefits generated against the magnitude of investment costs
- ‘Sociological’ impacts of the scheme, in terms of equity and distribution of benefits
- ‘Technological’ implications in terms of innovation and robustness
- ‘Legal’ issues surrounding implementation; and
- ‘Environmental’ impacts of the schemes.

9.4 In addition, consideration is given to wider ‘**Deliverability**’ criteria, in terms of finance, funding, project governance, and delivery timescales, in order to inform both how deliverable a scheme will be within the life-time of the Local Plan and where the responsibilities lie for delivery.

9.5 A scoring system has been established for each of the criteria, and are set out below. A 5-point scale has been applied to the ‘Political’, ‘Economic’, ‘Sociological’, and ‘Environmental’ criteria, reflecting the range of benefits that can be derived.

9.6 A more simplistic 3-point scale has been applied to the ‘Technological’ and ‘Legal’ criteria.

‘Political’ Criteria

9.7 A 5-point scoring system is applied for the ‘political’ criteria and is set out within Table 9.1.

Table 9.1 Scoring Matrix – ‘Political’ Criteria

Criteria	Positive		Neutral	Negative	
	+2	+1	0	-1	-2
Political	Strong political good will and support	Political good will and support	Neutral stance or conflicting views	Some degree of representation against scheme, or political anti-sentiment	Clear representative groups against scheme, political anti-sentiment

'Economic' Criteria

9.8 A 5-point scoring system is applied for the 'economic' criteria and is set out within Table 9.2.

9.9 In terms of the assessment of benefits, this has considered standard measures of economic benefit from transport, in terms of reduced travel times and improved reliability and quality of service, but focuses particularly upon the ability of individual measures to deliver against the following strategy objectives:

TSO1 Promote active and sustainable travel choices for all

TSO3 Support and promote the current cultural and land-use characteristics of individual 'character places' within the three defined Opportunity Areas and central area, and reduce inequalities across the borough

TSO4 Maximise, and continue to develop, public transport capacity and connections, including Crossrail, to all Opportunity Areas to support the focused growth within these areas

TSO5 Minimise the impact of residential and employment development across the borough, in terms of reducing car ownership, on and off-street parking demand, and deliveries & servicing levels

TSO6 Provide a level of resilience within the transport network to ensure efficient and reliable access

TSO9 Maximise the use of waterways within the borough through enhanced access and improved provision, for both people and freight

Table 9.2 Scoring Matrix – 'Economic' Criteria

Criteria	Positive		Neutral	Negative	
	+2	+1	0	-1	-2
Economic	Anticipated high positive ratio between the scheme costs and benefits	Anticipated positive ratio between the scheme costs and benefits	Net cost neutral, e.g. high cost – high benefit, low cost – low benefit	Potential negative ratio between the scheme costs and benefits	Expensive to install or maintain with anticipated low returns

'Sociological' Criteria

9.10 A 5-point scoring system is applied for the 'sociological' criteria and is set out within Table 9.3.

9.11 In terms of the assessment of benefits, this has considered standard measures of social benefits from transport, in terms of enhanced accessibility to areas of higher social deprivation, but focuses particularly upon the ability of individual measures to deliver against the following strategy objectives:

TSO2 Reduce the environmental and well-being impacts of transport, in particular in relation to vehicle emissions and road safety

TSO3 Support and promote the current cultural and land-use characteristics of individual 'character places' within the three defined Opportunity Areas and central area, and reduce inequalities across the borough

TSO7 Reduce physical and social barriers to travel through infrastructure enhancements and information provision

Table 9.3 Scoring Matrix – 'Sociological' Criteria

Criteria	Positive		Neutral	Negative	
	+2	+1	0	-1	-2
Sociological	High expectation to reduce social exclusion by reducing severance, or promoting accessibility, for disadvantaged groups	Potential to reduce social exclusion by reducing severance, or promoting accessibility, for disadvantaged groups	No impact upon social groups or positive and negative impacts	Potential to further reinforces social exclusion	Expected to reinforce social exclusion

'Environmental' Criteria

9.12 A 5-point scoring system is applied for the 'environmental' criteria and is set out within Table 9.6.

9.13 In terms of the assessment of benefits, this has considered standard measures of environmental benefits from transport, in terms of pollution and quality of the urban realm, but focuses particularly upon the ability of individual measures to deliver against the following strategy objectives:

TSO2 Reduce the environmental and well-being impacts of transport, in particular in relation to vehicle emissions and road safety

TSO3 Support and promote the current cultural and land-use characteristics of individual 'character places' within the three defined Opportunity Areas and central area, and reduce inequalities across the borough

TSO8 Create a safe, secure and pleasant streetscape environment to create an enhanced environment for walking & cycling to promote healthy living

Table 9.4 Scoring Matrix – 'Environmental Criteria

Criteria	Positive		Neutral	Negative	
	+2	+1	0	-1	-2
Environmental	Significantly enhances the built environment reduces noise, or improves air quality	Enhances the built environment reduces noise, or improves air quality	Neutral or positive and negative impacts	Potential to have a minor negative impact upon the environment	Expected to have a notable negative impact upon the environment

'Technological' Criteria

9.14 A 3-point scoring system is applied for the 'technological' criteria and is set out within Table 9.4. This considers the use of technology within each measure and whether it represents new innovation or whether technology proposed may either be unproven or our-of date.

9.15 The appraisal considers the ability of individual measures to deliver against the following strategy objective:

TS10 Understand, and maximise, the use of new technologies in influencing travel behaviour and managing the movement of people and freight

Table 9.5 Scoring Matrix – 'Technological' Criteria

Criteria	Positive +1	Neutral 0	Negative -1
Technological	Innovative and deliverable solution	Standard technology	Unproven technology or out-dated technology

'Legal' Criteria

9.16 A 3-point scoring system is applied for the 'legal' criteria and is set out within Table 9.5. This considers any legal requirements around the delivery of measures that may impact upon deliverability of the scheme.

Table 9.6 Scoring Matrix – 'Legal' Criteria

Criteria	Positive +1	Neutral 0	Negative -1
Legal	No legal powers or statutory processes required to deliver	Requires some form of legal approval or statutory process (e.g. traffic management order)	Public inquiry required, consent orders rejected, compulsory purchase orders may be required

'Deliverability' Criteria

9.17 The assessment of 'deliverability' considers the general issues of finance, funding, project governance, and delivery timescales and provides an assessment of whether a scheme is:

i. Deliverable within the timeframe of the Local Plan
ii. Deliverable beyond the timeframe of the Local Plan
iii. Undeliverable

9.18 For those schemes that are deliverable within the timeframe of the Local Plan and assessment of when they could be delivered is provided:

- Immediate / short-term: 0 to 2 years
- Short to medium-term: 2 to 5 years
- Medium to long-term: 5 to 10 year
- Long-term: 10 to 15 year

9.19 It also considers where the responsibilities for delivery lie, in terms of:

- Deliverable by LBTH as part of the Local Plan process
- Deliverable by LBTH but as a wider operational strategy outside of the Local Plan
- Deliverable by a third-party organisation

SCHEME ASSESSMENT

9.20 The individual list of scheme mitigation measures identified within each of the four sub-strategy areas have each been appraised against the appraisal framework criteria. Some measures represent specific outlines schemes, others collective groups of scheme or concepts that could be deployed across the borough in line with growth. The following number of measures have been identified within each category:

- Active Travel and Travel Demand Management 36 measures
- Public Transport and Waterways 28 measures

- Highways, Parking and Freight 20 measures
- Intelligent Mobility 24 measures

9.21 Each individual measure has been assessed against the individual criteria in isolation. The cumulative rankings are then considered so as to bracket schemes into high and low performing groups to assist the overall scheme prioritisation process.

OUTPUTS

9.22 The results of the option appraisal analysis are presented within **Appendix X** and provide the detail of the scoring applied to each scheme mitigation measure.

9.23 A total of 29 scheme were identified as 'high-scoring' schemes that should form the underlying basis of the package of transport mitigation measures. These schemes breakdown as follows:

- Infrastructure 9 measures
- Development management 2 measures
- Development management / Operational Strategies 6 measures
- Service provision 5 measures
- Operational strategies 7 measures

9.24 A further 44 scheme scored well and form part of the wider package of transport strategy measures; but may have a lower implementation priority.

9.25 A further 23 measures were identified as third-tier schemes that, whilst potentially offering significant benefits, may be more challenging to implement. Alternatively, they may be considered to offer lower impact.

9.26 Only 10 schemes were considered likely to perform insufficiently well, or have insufficient information at this time, to not warrant a definitive recommendation at this time.

10 Prioritised Action Plan

INTRODUCTION

10.1 This section sets out the prioritised Action Plan for the delivery of transport enhancements throughout the life-time of the new Local Plan.

OVERVIEW

10.2 The evidence base and strategic assessment of the impact of measures has identied a requirement for significant investment in public transport and active travel to facilitate sustainable delivery of the projected housing and employment growth, particularly under the 'High Growth' scenario. This will take the form of both infrastructure investment and enhanced service provision, but will also require wider operational strategies to promote and encourage sustainable travel.

10.3 The effective management of the highway network will also be required to alleviate specific area of congestion and provide greater resilience to traffic incidents, with a particular focus on the reliable movement of bus services. The network management measures must also tackle the challenge of improving local air quality. These improvements can, again, be partly delivered by targeted infrastructure provision and development management measures but will also require some operational strategies, such as the management of kerbside parking, waiting and loading.

10.4 A summary of the prioritised package of measures is presented within the Table 10.1. This classifies the mitigation measures within four categories:

- Infrastructure
- Development Management
- Service Provision
- Operational Strategy

10.5 It also sets out the 'Lead' or responsible organisation(s) for deliver, whether the measures has the opportunity to be delivered directly through the Local Plan process, the priority of the measures and the timescale for potential delivery.

Table 10.1 Prioritised Package of Mitigation Measures

Category	Mode	Scheme-type	Lead Organisation(s)	Delivery through Local Plan Process	Priority *(1st / 2nd / 3rh Tier)*	Timescale
Infrastructure	Walking & Cycling	South Poplar / Isle of Dogs (Poplar Decking Scheme, Aspen Way, Preston's Roundabout, South Dock, Blue Bridge)	LBTH / TfL	Y	1st / 2nd / 3rd Tier	2018 to 2026
		Fish Island (Old Ford Road bridge over A12, Wick Lane A12 underpass, Walis Road to Cadogon Terrace, Monier Road link, H16 Bridge Link, Hertford Canal crossings)	LBTH / TfL / LLDC	Y	2nd / 3rd Tier	by 2021
		Bow Roundabout (removal of flyover, surface crossings, 5-bells pedestrian crossing)	TfL	N	1st Tier	by 2021
		Bromley-by-Bow (Hancock Road, Sugar House Lane Bridge)	LBTH / LLDC	Y	2nd Tier	by 2021
		Leamouth Bridges (Cody Dock, Trinity Buoy Wharf bridge, Hercules bridge: Orchard Place to Limmo Peninsula)	LBTH/LBN	Y	1st Tier	by 2021
		Isle of Dogs South (Millwall Inner Dock, Glengall Bridge, Westferry Road bridge)	LBTH	Y	2nd / 3rd Tier	2018 to 2023
		Leaway	LBTH/LBN/LLDC	Y	1st Tier	by 2021
		Pedestrian connections (to Tower of London, to canals/river, to public transport provision, between 'Character Places')	LBTH	Y	2nd Tier	by 2021
		Cycle connections (Royal Docks, Canning Town, to/from CSH, to/from Thames Path)	LBTH	Y	2nd Tier	by 2021
		Signage and orientation (legible mapping)	LBTH	Y	1st Tier	by 2021
		Cycle parking – public provision	LBTH	Y	1st Tier	by 2021
		Cycle Hire expansion	TfL / LBTH	Y	2nd Tier	by 2021
	Rail	Delivery of Crossrail	TfL	-	Committed	2018/19

Category	Mode	Scheme-type	Lead Organisation(s)	Delivery through Local Plan Process	Priority *(1st / 2nd / 3rh Tier)*	Timescale
		Underground upgrade (Jubilee and Central Line – 33tph)	TfL	N	1st Tier	2019
		DLR north route double-tracking	TfL	N	1st Tier	by 2021
		DLR Limehouse station upgrade	TfL	Y	1st Tier	by 2021
		DLR stations public realm enhancements	LBTH / TfL	Y	2nd Tier	continual
		Upgrade DLR Crossharbour Station	TfL	Y	2nd Tier	2021-2026
		Shadwell interchange enhancement	LBTH / TfL	Y	2nd Tier	2021-2026
		Tower Gateway Interchange enhancement	LBTH / TfL	Y	3rd Tier	post-2026
	Buses	Bus priority measures (bus only route, bus lanes)	LBTH / TfL	Y	2nd Tier	continual
		Crossharbour bus terminus upgrade	LBTH / TfL	Y	2nd Tier	by 2021
		Bus layover facilities	LBTH / TfL	Y	3rd Tier	2021-2026
		Enhanced coach facilities	LBTH / TfL	Y	3rd Tier	2021-2026
	River services	New piers (Canary Wharf East, Wapping)	LBTH / TfL	Y	2nd Tier	by 2021
		New crossing between Rotherhithe and Canary Wharf West	LBTH / TfL	Y	2nd Tier	by 2021
		Enhance connectivity to river services	LBTH	Y	2nd Tier	by 2021
	Highways	Silvertown Tunnel	TfL	-	2nd Tier	2021-2026
		Connections to Isle of Dogs (Hertsmere Road, Westferry Road, Preston's Road)	LBTH	Y	2nd Tier	by 2021
		Connections to A12 (Roman Road / Old Ford Road)	LBTH	Y	3rd Tier	2021-2026
		Junction capacities around Queen Mary's University of London (Hartford Road, White Horse Lane, Globe Lane)	LBTH	Y	3rd Tier	2021-2026
		Junction capacities around Bow Common (Bow Common Lane / St Paul's Way , Upper North Street)	LBTH	Y	3rd Tier	2021-2026

Category	Mode	Scheme-type	Lead Organisation(s)	Delivery through Local Plan Process	Priority *(1st / 2nd / 3rh Tier)*	Timescale
		East-West vehicular underpass at Tower Hill	TfL	Y	3rd Tier	2021-2026
Development management	Parking	Car Parking Standards	LBTH	Y	1st Tier	continual
		Cycle parking	LBTH	Y	1st Tier	by 2021
	Freight	Freight Management (Planning conditions for the provision for on-site delivery, Delivery and servicing plans, Construction management plans, Out-of-hours/overnight deliveries, Delivery booking systems, Operator recognition schemes, Freight quality partnerships)	LBTH	Y	2nd Tier	continual
	Travel planning	Residential and Employee travel plans	LBTH	Y	1st Tier	continual
Service Provision	Rail	Crossrail increased frequency - Docklands to Central London (15tph to 18tph); Stratford to Central London (15tph)	TfL	N	1st Tier	2021-2026
		Longer Crossrail trains (10-car)	TfL	N	2nd Tier	2021-2026
		Further upgrades to Jubilee Line (increased services, new rolling stock)	TfL	N	3rd Tier	post-2026
		New Train for Docklands	TfL	N	1st Tier	2021-2026
		Stratford - Lewisham services (3-car)	TfL	N	2nd Tier	2021-2026
		Isle of Dogs services (30tph)	TfL	N	3rd Tier	2021-2026
	Bus	Bus service provision enhancements	TfL	N	1st Tier	continual

Category	Mode	Scheme-type	Lead Organisation(s)	Delivery through Local Plan Process	Priority *(1st / 2nd / 3rh Tier)*	Timescale
	River	New river connections (Rotherhithe to Canary Wharf West, Canary Wharf East to North Greenwich)	TfL	N	2nd Tier	by 2021
Operational Strategies	All Modes	Intelligent Mobility Strategy	LBTH / TfL	N	1st / 2nd / 3rd Tier	continual
	Active travel	Active Travel & Travel Demand Management Programmes (cycle training, 'Bike It' and 'Bikeability', Health walks, promotion of active travel for health, engagement with schools, faith groups, car club promotion)	LBTH	N	1st Tier	continual
	Street design and safety	Design principles (street layout and design, 'filtered permeability, Cycle Level of Service assessments, Lighting provision and 'greening' of streets)	LBTH	N	1st / 2nd Tier	continual
	Highways	Network Management Plans	LBTH / TfL	N	1st Tier	continual
	Parking	On-street car park management (permit policy)	LBTH	N	2nd Tier	continual
	Freight	Freight Strategy	LBTH	N	3rd Tier	continual