LBTH Local Plan Evidence Base - Strategic Transport Assessment

BASELINE REPORT

Report

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1 Introduction

CONTEXT

1.1 JMP Consultants Ltd (JMP) has been commissioned by the London Borough of Tower Hamlets to undertake the development of an Evidence Base and Strategic Transport Assessment to support the borough's emerging Local Plan. The assessment will be an integral element of the preparation of the new Local Plan, setting out the requirements for transport planning over the 15 year plan period from 2016/17 to 2031/32.

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.

1.6 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.

1.7 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

1.8 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.

1.9 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.

1.10 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.

1.11 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.

Health

1.12 The 2015 Health Profile for the borough produced by Public Health England provides an overview of the state of public health in comparison to the rest of England. The report documents the health of people in Tower Hamlets as compared with the average across England.

- Deprivation is higher than average and about 37.9% (19,800) children live in poverty. Life expectancy for men is lower than the England average.
- It identifies that life expectancy is 8.8 years lower for men and 3.9 years lower for women in the most deprived areas of Tower Hamlets than in the least deprived areas. Levels of adult obesity are better than the average for England but smoking-related deaths are worse. The number of people killed or seriously injured in road traffic accidents is worse than average.
- Amongst children, levels of obesity are worse than the UK average, although levels of teenage pregnancy and smoking are better
- The priorities for health in Tower Hamlets were identified as maternity and early years provision, healthy lives, long term conditions (cancer and integrated care), and mental health.

1.13 Within a transport context, the promotion of healthily living is a key area for focus, particularly in relation to childhood obesity and encouraging more active travel. Road safety is also an area for focus.

Environment

1.14 The borough has always had a strong focus on minimising the impact of travel upon the environment. The Tower Hamlets Sustainable Transport Strategy – Making Connections – towards a climate-friendly transport future (2008-2033) providing a clear vision for the development a transport system that is environmentally, climate and people friendly. This remains a clear priority moving forward, both from a London-wide policy requirements, as well as a local objective.

1.15 An Air Quality Management Area was established in 2000, with currently four monitoring stations established to provide continuous recorded of particulate emissions. The latest 2015 monitoring report confirmed that objectives for nitrogen dioxide levels continue to be exceeded at roadside and background locations, although sulphur dioxide and carbon monoxide objectives were met. This demonstrates a clear need for the borough to continue to focus upon air quality issues, with the minimisation of transport emissions being a key aspect of this approach.

LOCAL PLAN PROCESS

1.16 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).

1.17 The Borough is in the process of developing a Local Plan to cover a 15 year period from 2016/17 to 2031/32.

Sustainable Transport

1.18 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.

1.19 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

1.20 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

1.21 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

1.22 The ultimate objectives of this transport strategy are to:

- Assess the current transport accessibility and capacity demands by all modes;
- Identify the current funded transport infrastructure improvements that are already underway (including Crossrail line 1, walking and cycling and Underground, DLR, Overground, National Rail and bus capacity improvements);
- Assess the level of growth that can be accommodated on the current transport network, including funded transport infrastructure improvements that are already underway;
- Identify the cumulative impacts of existing and projected development on the current transport network and assess quality and capacity of the transport network and its ability to meet projected demand;
- Assess the implications of applying the London Plan's car parking standards, the boroughs existing car parking standards a preferred standard to sustainably manage vehicle trips.

- Consider the potential impact of growth areas and development proposals in adjoining boroughs on the transport network;
- Provide an evidence base for suitable short, medium and long term transport and highway mitigations which will ensure that the projected growth in the borough can be accommodated in a sustainable manner. The package should identify the opportunities for encouraging a shift to more sustainable transport modes; and
- Consider the viability and deliverability of required transport and highway interventions.

1.23 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

1.24 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 challenges

1.25 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.

TRANSPORT MODELLING TOOLS

1.26 With a strategic study of this nature it is useful to utilise transport modelling tools in order to provide insight into some of the key challenges concerning the movement of people and vehicles around the transport network. The daily volumes of movement across Tower Hamlets are of such a magnitude that it is impossible to quantify the range of interactions and impacts without sophisticated software tools.

1.27 Transport for London (TfL) has a suite of models available for the task of analysing strategic transport movements across London. These are described below, along with their intended application within this study.

London Transportation Studies (LTS) Model

1.28 The London Transportation Studies (LTS) model is a strategic multi-modal model for London and its surrounding area that is used to prepare forecasts of growth in total travel, change in travel patterns, and the transport mode chosen.

1.29 Whilst this model will not be directly utilised within this study, its interpretation of future changes in land-use form the basis of the other two models that will be utilised.

Highway Assignment Model (HAM)

1.30 There are five sub-regional SATURN based highway assignment models available in London, as well as recently developed variants to assess river crossings. The HAMs can be used for quantifying the impacts of demand changes on the highway network in the future, assessing large highway infrastructure schemes and assessing policy changes which are likely to have an impact on the highway network.

1.31 The HAM model is the primary tool that has been utilised to assess the underlying operation of the current highway network within Tower Hamlets, as well as the impact of future growth for development trips and changes in infrastructure provision. It also provides a tool with which to evaluate the impact of proposed highway mitigation measures.

1.32 At the outset of the study a detailed assessment of which of the HAM models should be utilised within the study was undertaken. The initial choice incorporated three options:

- ELHAM (East London HAM);
- CLoHAM (Central London HAM); and
- RXHAM (River Crossing HAM).

1.33 The RXHAM is a variant of the ELHAM model but expanded to consider the strategic impact of new river crossings across the Thames. It was concluded that it would offer no additional benefit over the ELHAM and that as a more up-to-date version of ELHAM has recently become available, this made it a more robust model.

1.34 The choice between ELHAM and CLoHAM considered the detailed modelled area encompassed by each model and an analysis of 2011 Census Journey to Work trips for Tower Hamlets to see how well represented they are in each model. Advice was also sought from the TfL HAM Modelling Team. It was concluded that the CLoHAM model would be the most appropriate model to use, as Tower Hamlets sits more centrally within the modelled area and represents the Journey To Work trips nearly as well as ELHAM. **Appendix A** provides a full summary of the process undertaken in choosing the preferred model.

1.35 It should be noted that modelling work undertaken previously within the Borough to support the London Plan, as well as work by TfL in the Isle of Dogs has been undertaken using ELHAM and, as such, outputs could differ; however, at the time the latest version of CLoHAM was not available and so we would anticipate this becoming the more standard model choice for the Borough in future.

Railplan Model

1.36 Railplan is an Emme based public transport assignment model for London and its surrounding area. It can be used for assessing the impacts of major public transport schemes throughout London, assessing policy changes, assessing the effects of major developments on public transport and for station modelling.

1.37 There is a single model for the whole of London that has been utilised within the study to assess the current and future operation of the public transport network within Tower Hamlets.

THIS REPORT

1.38 This report focuses upon the first three stages of the study, collating the evidence base and presenting a baseline and future year assessment of challenges and opportunities for enhancing transport.

Report Structure

1.39 The content of this report is structured as follows:

- **Section 2: Policy Review** – presents a summary of relevant policies that the study must reference including the National Planning Policy Framework, the London Plan, and the Mayor's Transport Strategy and, at a local level, other strategies and guidance;
- **Section 3: Development Review** – examines current land-use patterns across Tower Hamlets and projected growth, with consideration given to identified local centres and Opportunity Areas;
- **Section 4: Transport Infrastructure & Operations** – sets out the current level of transport provision by mode;
- **Section 5: Travel Patterns & Demand** – examines underlying travel patterns and levels of demand for transport;
- **Section 6: Accessibility** – assesses the different levels of accessibility across the borough by public transport, walking and cycling; and
- **Section 7: Issues & Opportunities** – provides and overall summary of the key challenges and opportunities for access and movement across Tower Hamlets that should form the basis for identifying key objectives for the Transport Strategy.

2 Policy Review

INTRODUCTION

2.1 This section summarises the key transport and highways policy themes from key policy documents which influence Tower Hamlets. This review will be used to inform the wider work on identifying the needs and objectives, and developing the content of the Strategic Transport Strategy. Existing 'Policy Themes' have been identified from a review of the following policy documents:

- Department for Transport Active Travel Strategy (2010);
- Department for Transport Manual for Streets 2 (2010);
- Department for Transport Strategic Framework for Road Safety (2011);
- Department for Transport White Paper (2011) – 'Creating Growth, Cutting Carbon';
- National Planning Policy Framework (NPPF) (2012);
- The Mayor's Transport Strategy (2010);
- The Mayor's Air Quality Strategy 'Clearing the Air' (2010)
- The Mayor's Olympic and Paralympic Transport Legacy Action Plan 'Leaving a Transport Legacy' (2012)
- The Mayor's Vision for Cycling in London (2013)
- Transport for London Roads Task Force (2014) –'The vision and direction for London's streets and roads:'
- Transport for London Roads Task Force (2015) – 'progress report'
- The London Plan with minor alterations (2015-2016);
- East and South East London Sub Regional Transport Plan (2014);
- East and South East London Transport Options Study (2016);
- London Borough of Tower Hamlets Core Strategy (2010);
- London Borough of Tower Hamlets Green Grid Strategy (2010);
- London Borough of Tower Hamlets LIP 2 (2011-2031);
- London Borough of Tower Hamlets Managing Development Document (2013) - 'Local Plan.'
- London Borough of Tower Hamlets Health and Wellbeing Strategy (2013-2016);
- London Borough of Tower Hamlets Partnership Community Plan (2015);
- London Borough of Tower Hamlets Cycling Strategy (2016).

2.2 The sections below set out a summary of the findings by policy theme.

KEY TRANSPORT AND HIGHWAY POLICY THEMES

Cycling

2.3 The **Active Travel Strategy** states that central government should lead from the front in Active Travel. The strategy aims to work with partners across central and local government to promote more cycling to people. Promotion strategies include cycle training, access to bikes at train stations, school travel plans, cycle to work scheme and working more with the third sector (DfT, 2010).

2.4 **Manual for Streets 2** aspires to encourage cycling by good street design and improvements in cycling infrastructure and street furniture. It recognises the importance of street networks, contexts and street types as well the implications it has on shared space (DfT, 2010).

2.5 The **Strategic Framework for Road Safety** aims to work with local agendas such as public health and sustainable travel to help remove barriers to increase cycling such as the use of a new indicator on the perception of road safety (DfT, 2011).

2.6 The **White Paper** recognises the importance of cycle training. (DfT p.87, 2011)

2.7 The **National Planning Policy Framework** aims to actively manage patterns of growth to make the fullest possible use of cycling, and focus significant development in locations which are or can be made more sustainable (NPPF p.6, 2012).

2.8 **The Mayor's Transport Strategy** aspires to improve cycling infrastructure throughout London and create a cycling revolution. To achieve this the strategy aims to improve cycle hire schemes, develop super highways, enhance links to the Queen Elizabeth Olympic Park, improve parking facilities and improve road enhancement and permeability to make cycling easier and safer and create pleasant and safer cycling environments.

2.9 The **Mayor** aspires to use his planning powers and work with the London boroughs to encourage cycling by supporting development that provides cycle parking to an appropriate standard and integrate the needs of cyclists into the design.

2.10 The **Mayor's Air Quality Strategy** proposes a comprehensive package of measures that, together with strong action at the national level, can help bring London's air quality up to EU targets and reduce Londoners' exposure to pollution. This is essential for improving the health and quality of life of Londoners. In terms of cycling, Londoners are encouraged to cycle rather than use the car for short journeys. Raising public awareness to encourage all Londoners to take action to reduce their emissions from travel choices is a key measure.

2.11 As an Olympic Borough, Tower Hamlets benefited from the transport infrastructure that was provided. **The Olympic and Paralympic Transport Legacy Action Plan** states that TfL will work with the boroughs to unlock the full potential of the cycling routes improved for the 2012 Games. This may include providing better signage and information, cycle parking and new cycling routes to link to the wider cycle network and town centres. TfL will also work with the boroughs to support cycling amongst London's population. This may include a programme of engagement with a wide range of community groups and individuals to encourage cycling and cycle training within schools that builds on the successes of Team GB and state of the art facilities in the VeloPark to inspire future generations to cycle.

2.12 The **Mayor's Vision for Cycling in London** aims to double cycling by 2023 by investing and improving cycle infrastructure. Plan include creating a tube network for the bike, creating and promoting safer streets for the bike, encouraging more people to travel by bike and creating better and greener spaces for everyone.

2.13 The **Roads Task Force** envisages transformation of the functions of roads and streets to enhance the environment for cycling. The **Taskforce** states that improved/new infrastructure to create better places for cycling is important to encourage the uptake of cycling (TfL, 2014).

2.14 **The London Plan** contains policies that promote cycling and the implementation of cycle-ways, hire schemes, docking stations and secure cycling parking facilities throughout London (Policy 6.9, p.259).

2.15 **The Sub Regional Transport Plan** supports cycling throughout the document by recognising areas of growth and regeneration to support the development of cycling.

2.16 The **London Borough of Tower Hamlets LIP 2** contains policies that improve the cycling environment, promotes safer cycling to all, recommends cycling considerations to meet the future demand, promotes cycling accessibility to all and seeks to maximise the behaviour change potential due to the London 2012 Games.

2.17 The Tower Hamlets **Local Plan** (i.e. the adopted **Core Strategy** and **Managing Development Document**) includes policy to ensure suitable provision for cyclists through more cycle parking and more cycle hire scheme docking stations.

2.18 The **Health and Wellbeing Strategy** supports the uptake of cycling and aims to encourage cycling through a range of projects and programmes by delivering training in schools to encourage students to cycle by equipping them with the necessary confidence, skills and safety training. Schemes are also in place to promote cycling amongst disabled people and traditionally harder to reach groups such as BME women.

2.19 The **Health and Wellbeing Strategy** supports the expansion of the Barclays Cycle Hire scheme and current cycle superhighways by installing more cycling parking throughout the borough.

2.20 The Tower Hamlets **Community Plan** promotes healthier lifestyles by supporting campaigns to encourage people to cycle more. The plan also supports investment and growth in cycling to make Tower Hamlets 'greener' and safer.

2.21 The **Cycling Strategy** envisages Tower Hamlets as a 'cycling borough' making it the easiest and safest place to cycle in London. Throughout the document the strategy seeks to manage and promote the health benefits of cycling, envisage and create a better cycling network by providing more cycling routes and infrastructure to meet the future demand growth in capacity, and encourage safer cycling to all by enforcing traffic regulations and providing training in schools.

2.22 Cycling for all is a key theme in the **Cycling Strategy**. The objectives aim to target all groups irrespective of their age and background. The strategy aims to promote bike safety, security and storage to ensure good practice is being met across all developments.

Summary

2.23 National, London and Borough policies recognise the importance of cycling in reducing road congestion and public transport overcrowding. Cycling also has a key role in managing future travel demand (due to population growth) and in improving health and air quality. The overarching aim is to increase cycling through improvements in cycle infrastructure, increased training and awareness raising. Key themes include; increasing cycling by making routes safer, more permeable, and developing pleasant cycling environments through the provision of cycle-ways, hire schemes, docking stations, secure cycle parking, and general urban realm enhancements.

Walking

2.24 The **Active Travel Strategy** states that it will work with other organisations to promote and market walking. The strategy aspires to work with local agreements to enhance and improve the urban realm to encourage physical activity (DfT, 2010).

2.25 The **Manual for Streets 2** (MfS2) aspires to encourage walking by designing streets, carriageways, junctions, crossings, accesses and street furniture to increase walking. It also recognises the importance of movement and place and the impact this has on local walking connections (DfT, 2010).

2.26 The **Strategic Framework for Road Safety** seeks to work with local agendas to increase the uptake of walking by improving the perception of safety (DfT, 2011).

2.27 The **National Planning Policy** aims to increase walking by promoting sustainable transport through large scale residential developments. The framework states that planning policies should promote a 'mix of uses' in order to provide opportunities to undertake day-to-day activities and where practical key facilities such as primary schools and local shops should be located within walking distance (NPPF p.10, 2012).

2.28 **The Mayor's Transport Strategy** aims to bring about a step change in the walking experience in London, make walking count and enhance the urban realm by taking focused action to ensure safe, comfortable and attractive walking conditions.

2.29 On walking, **The Mayor's Air Quality Strategy** encourages Londoners to walk rather than use the car for short journeys. Raising public awareness to encourage all Londoners to take action to reduce their emissions from travel choices is a key measure.

2.30 As an Olympic Borough, Tower Hamlets benefited from the transport infrastructure that was provided. **The Olympic and Paralympic Transport Legacy Action Plan** states that TfL will work with the boroughs to unlock the full potential of the walking routes improved for the 2012 Games. This may include providing better signage and information and new pedestrian routes to link to the wider pedestrian network and town centres. TfL will also work with the boroughs to support walking amongst London's population. This may include a programme of engagement with community groups and individuals to encourage walking.

2.31 The **Roads Task Force** recognises the importance of managing demand and it aspires to provide a new capacity for sustainable modes by reviewing the potential to create new walking facilities (TfL, 2014).

2.32 It is clear in the **London Plan** that walking is high on the agenda. Reducing traffic congestion and air pollution is a key theme running through the plan and getting people out of their cars and encouraging walking through well designed public realms is a key objective.

2.33 The **London Plan** aims to increase walking in London by emphasising the quality of the pedestrian and street environment and improving the public realm and streetscape for pedestrians. The plan states that local development plan documents should encourage a higher quality pedestrian and street environment, including the use of shared space principles, such as simplified streetscape, decluttering, and access for all (Policy 6.10, p.263).

2.34 **The Sub Regional Transport Plan** aims to tackle physical activity through sustainable transport approaches (PASTA), particularly mobility. The plan seeks to maintain pedestrian projects and enhance the popular Legible London wayfinding system.

2.35 The **Green Grid Strategy** seeks to promote walking by enhancing and developing a combination of spaces and routes around the borough to encourage people to walk. The strategy aims to create more attractive, safe and convenient spaces whist creating a greener environment to help tackle climate change.

2.36 The **London Borough of Tower Hamlets LIP 2** aims to increase walking by improving the urban realm whilst supporting the delivery of the **Green Grid Strategy**. It seeks to alter perceptions of safety by promoting walking through community led programmes. The **LIP 2** also supports the development of

mixed land uses, particularly in the Isle of Dogs area, to provide an integrated development with transport infrastructure.

2.37 The **Local Plan** seeks to promote walking by improving the public realm and creating streets, spaces and places which promote social interaction where people feel safe and comfortable.

2.38 The **Health and Wellbeing Strategy** aims to work alongside the **Green Grid Strategy** by sustaining and creating a network of high quality well-connected open spaces to promote bio-diversity and healthy active lifestyles to encourage walking. The strategy also includes implementing healthy walking programmes across the borough targeting all individuals.

2.39 The **Community Plan** supports other initiatives such as 'Play Streets' to make walking easier and a more attractive option for getting around the borough.

2.40 The **Cycling Strategy** aspires to create a safer neighbourhood to encourage walking.

Summary

2.41 National, London and Borough policies focus on the desire to encourage walking for short trips to promote health benefits as well as reduce highway and public transport congestion and improve air quality. Increasing walking is to be achieved through awareness raising as well as emphasis on the quality of pedestrian environment to ensure safe, comfortable and attractive walking conditions through high quality urban environments.

Buses / Coaches

2.42 The **Manual for Streets 2** recognises the importance of bus facilities and infrastructure. It advises that bus stops should be located within walkable neighbourhoods and they should be located in high quality places that are safe with easy access (DfT, 2010).

2.43 **The Mayor's Transport Strategy** aspires to regularly review the bus network to ensure it caters for growth in population and employment providing adequate capacity, reliable services, good coverage and good interchange with other modes.

2.44 **The Mayor's Air Quality Strategy** commits to cleaning up London's bus fleet so that all buses meet Euro IV emissions standards for both NOx and PM10 by 2015. A Euro IV bus emits roughly a third less NOx than a bus made in 2000 (Euro III).

2.45 The **London Plan** aims to work with Transport for London to implement London-wide improvements to the quality of bus services. The development of coach hubs is also supported in the **London Plan**, including the potential for alternative locations for coach station facilities to provide easier access to the coach network (Policy 6.8, p.259).

2.46 **The Sub Regional Transport Plan** aims to improve bus access and fleet technology to tackle climate change.

2.47 The **London Borough of Tower Hamlets LIP 2** aims to improve the reliability of bus services by reviewing areas where congestion issues are present as part of a corridor based solution. The **LIP 2** continues to work with TfL London Buses to ensure services are reliable and accessible to meet the future demand growth.

2.48 The **Local Plan** includes policies to support and improve bus connections to existing public transport interchanges and improve bus connections to and through the Isle of Dogs area.

Summary

2.49 National, London and Borough policies focus on improving the quality of bus services and ensuring good network connections and interchange with other public transport modes. In particular, future capacity needs to cater for growth in population and employment through improved frequencies and bus capacities. The role of coach travel (including the potential development of coach hubs) should be considered as part of a future plan for bus and coach travel. The concern about air quality in London requires a cleaning up of the bus fleet.

Private Cars/Taxis

2.50 The **Active Travel Strategy** aims to promote a car free environment by promoting and emphasising walking and cycling more (DfT, 2010).

2.51 **The Manual for Streets 2** recognises the importance of road design and how other users may be using the road. MfS2 states that when planning and designing highway networks the on-street parking and servicing provision should take into account the positive and negative effects of the car (DfT, 2010).

2.52 The **Strategic Framework for Road Safety** contains specific actions on road safety around education and target enforcement and sanctions (DfT, 2011).

2.53 **The Mayor's Transport Strategy** aspires to ensure fair and consistent enforcement of parking and loading regulations across London, together with more consistent regulations, clearer signage, and more advance information regarding parking availability. Additionally, working with other stakeholders the Mayor seeks to encourage implementation of pricing differentials based on vehicle emissions, including banded resident parking permits and other on and off-street parking charges, including incentives for electric vehicles.

2.54 **The Mayor's Air Quality Strategy** proposes cleaning up London's taxi and Private Hire Vehicle (PHV) fleet by introducing age limits to remove the older, more polluting vehicles from London's roads. The Mayor will also work with the industry to develop a taxi capable of zero tailpipe emissions by 2020. Larger vans and minibuses will be included in the Low Emission Zone (LEZ) from January 2012 and these vehicles will have to meet the Euro 3 standard for particulate matter to drive without charge in London. In addition, a new NOx standard for the LEZ will be introduced by 2015.

2.55 The **Mayors Vision for Cycling** emphasises the importance of a car free environment by promoting cycling.

2.56 The **Roads Task Force** supports the development of a car free environment by providing on-site car club bays, incentives and infrastructure (TfL, 2015).

2.57 The **London Plan** states that a balance should be struck between new development and preventing excessive car parking provision that can undermine cycling, walking and public transport use. Furthermore car-free developments should be promoted in areas with high levels of public transport accessibility (Policy 6.13, p.267).

2.58 The **London Borough of Tower Hamlets LIP 2** aims to promote a car free environment by developing shared use areas to reduce car dominance and promote sustainable travel. The **LIP 2** seeks to manage on-street parking and remove parking where necessary to create car free developments. Additionally, the **LIP 2** seeks to work with other stakeholders to implement more Personalised Travel Planning (PTP) to reduce unnecessary car trips.

2.59 The Tower Hamlets **Local Plan** promotes car-free developments which is one way in which the Council can manage demand and encourage more sustainable travel to achieve sustainable development objectives and tackle climate change.

2.60 The **Community Plan** recognises the threat cars impose on residential streets. The plan aspires to reduce the number of cars on the road to reduce speeding and improve safety.

2.61 **The Cycling Strategy** supports car free environments by promoting to local businesses the benefits that cycling schemes can bring. The strategy seeks to work with businesses during the scheme design to maximise the economic benefit (CS p.31, 2016).

Summary

2.62 National, London and Borough policies require the adoption of fair approaches to discourage the use of private car and car ownership to manage traffic flows, congestion, air quality and the urban realm. Key policy measures include; promoting car-free or low-car developments to minimise the impact of future development upon car trip generation, managing on-street parking and promoting the use of low or zero, carbon vehicles through incentives.

Freight

2.63 The **National Planning Policy** seeks to promote sustainable transportation of freight. It states that Local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure to support sustainable development, including large scale facilities such as rail freight interchanges (NPPF p.9, 2012).

2.64 **The Mayor's Transport Strategy** aspires to support the development of more rail freight terminals, support new sites for strategic rail freight interchange and support the development of National Rail routes that relieve London of freight without an origin or destination in the Capital. Additionally the strategy seeks to ensure that existing safeguarded wharves are fully utilised for waterborne freight (including waste), and will examine the potential to increase the use of the Thames and London's canal network for waterborne freight transport.

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

2.66 The **Mayors Vision for Cycling** supports the development of safer freight movement by encouraging drivers to have basic level accreditation**.**

2.67 The **Roads Task Force** aspires to manage freight for the future by emphasising the importance of communication to understand the needs of the industry. Voluntary trials are also encouraged to improve congestion, road safety and the environment (TfL, 2015).

2.68 The **London Plan** aims to improve freight distribution (including servicing and deliveries) and to promote movement of freight by rail and waterway. The **London Plan** states that development plan documents should promote sustainable freight transport by safeguarding existing sites and identifying new sites to enable the transfer of freight to rail and water. There is also support for identifying sites for consolidation centres and 'break bulk' facilities, as well as for safeguarding railheads for aggregate distribution (Policy 6.14 Freight, p.270).

2.69 **The Sub Regional Transport Plan** is committed to trialling new technologies to enhance the efficiency of freight operations.

2.70 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.

2.71 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.

2.72 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.

Summary

2.73 National, London and Borough policies require improvements to freight distribution capacity, including service and deliveries, and consideration of options for use of rail and waterways to transport freight. There is support for the development of consolidation centres to manage 'last mile' trips into dense urban areas.

River

2.74 The **Roads Task Force** is developing a package of new river crossings in East London. It aims to connect people, businesses and communities with each other and with jobs and services to help manage the impact of population growth in east London (TfL, 2015).

2.75 The **London Plan** aims to improve river capacity and accessibility where possible. It states that it will support the future development and regeneration priority areas and increase public transport capacity by providing new river crossings (Policy 6.4, p.249).

2.76 The **London Borough of Tower Hamlets LIP 2** aims to improve interchange connections between the River Pier and public transport stations to improve accessibility. 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.

2.77 **The Cycling Strategy** supports the development of river crossings by ensuring the development creates more capacity for cyclists.

Summary

2.78 London and Borough policies support the development of river crossings and services. The intention being to improve river capacity, connectivity, increase public transport capacity and accessibility as well as serving inter-modal connections.

Strategic Transport Capacity

2.79 The **White Paper** aims to tackle shared local and national network congestion by working with a small number of local enterprises towards agreeing a joint approach to the worst congestion hotspots in the major urban areas (DfT p.88, 2011).

2.80 **The Mayor's Transport Strategy** aims to work with Department for Transport, Defra and other government agencies, regional development agencies, Network Rail, train operating companies, London boroughs and other stakeholders, to develop London's transport system in order to accommodate sustainable population and employment growth. Furthermore, the Mayor will support sustainable capacity enhancements to inter-regional, national and international rail and coach services, high-speed rail hubs and the strategic road network serving London, and will improve accessibility and access to economic and social opportunities and services for all Londoners.

2.81 **The Mayor's Air Quality Strategy** encourages working with boroughs to implement targeted action plans at air quality priority locations. Measures will include: tackling vehicle idling, better traffic management to smooth traffic and deploying low emission buses in these areas.

2.82 The **Roads Task Force** recognises the pressure the strategic transport network is currently under. The Roads Task Force aspires to find alternative routes to increase the capacity on the underground (TfL, 2015).

2.83 The **London Plan** aims to improve all aspects of the public transport system to make it safe, secure and practicable. The **London Plan** states that boroughs should take the lead in exploring opportunities for development where appropriate transport accessibility and capacity exist. Furthermore, the plan states that improvements to London's road network will be limited to improving or extending existing capacity, or providing new links, to address clearly identified significant strategic or local needs (Policy 6.3, p.248).

2.84 It is clear in the **London Plan** that maintaining and responding to transport capacity is fundamental. Policy supports the need for a variety of schemes and improvements over the plan period to cope with the level of planned development and transport infrastructure that goes with it.

2.85 Improving accessibility to public transport and improving all aspects of public transport is a key focus in **London Plan** and local policy, as well as improving the links between the different modes of public transport that are available.

2.86 The **London Borough of Tower Hamlets LIP 2** aims to work with other stakeholders to ensure the capacity of the public transport network meets future growth.

2.87 The **Local Plan** indicates that developments that generate a high number of trips should be located in areas served well by public transport and that the developments should demonstrate how they integrate with the current transport network.

2.88 The Community Plan recognises the need to cater for future population growth and aspires to improve transport connections by using existing and new funding mechanisms.

Summary

2.89 National, London and Borough policies require improvements to public transport provision to make it safe, secure and practicable. Support will be given to improving the capacity of the sustainable transport networks and in particular, to ensure future demand is met. In London, limited improvements to the road network will be considered to address clear strategic or local needs. Boroughs should work with their neighbouring, TfL and GLA to tackle the strategic issues of network capacity constraints.

Crossrail

2.90 **The Mayor's Transport Strategy** aspires to maximise public transport connectivity and capacity benefits on the two main east-west and north-south corridors (incorporating the Crossrail and Thameslink projects respectively).

2.91 The **Mayor's Vision for Cycling** seeks to maximise the Crossrail development by investing in a Crossrail for the bike.

2.92 The **London Plan** aims to develop efficient and effective cross-boundary transport services and policies, including exploring the scope for high speed rail services. Contributions will be sought from developments likely to add or create congestion on London's rail network (Policy 6.5, p.253).

The **East and South East London Transport Options Study** recognises the future transport demand and states that the primary objective of Crossrail 2 should be to unlock growth in outer east London, Thurrock and Essex. It recognises the potential growth of Crossrail 2 due to the existing brownfield land

in the east however the extent to which an eastern branch can unlock development is heavily dependent on the adoption of flexible planning policy designation.

2.93 The **East and South East London Study** reflects the potential development and investment in Crossrail and aims to work with relevant authorities to tailor and alignment that optimises the balance between cost and development uplift.

2.94 The **London Borough of Tower Hamlets LIP 2** aspires to support the development and improvement of Crossrail by incorporating measures to better integrate the public realm with stations.

2.95 The **Local Plan** states that it intends to support growth of the Isle of Dogs by working in partnership to deliver Crossrail.

2.96 The **Community Plan** aims to continue to work with other strategies to harness the economic benefits of Crossrail.

2.97 The **Cycling Strategy** aims to maximise the development of Crossrail by ensuring a new Cycle Hub is included in the new Whitechapel Station as part of the Crossrail work.

Summary

2.98 The policy documents acknowledge that Crossrail will represent a major enhancement in public transport capacity that will permit inward investment. Tower Hamlets will see the significant benefit from Crossrail of improved and increased transport capacity. Maximising this benefit Borough-wide through public realm improvements and creating and improving inter-modal interchanges is supported.

Summary of Key Policy Requirements

2.99 **Table 2.1** provides a summary of the key policy requirements that will need to be considered as part of the development of a Transport Strategy for the London Borough of Tower Hamlets.

Table 2.1 Summary of Key Policy Requirements

Mode	Key Policy Requirements
Cycling	Promote cycling by making routes safer, more permeable, and a pleasant environment through the provision of cycle-ways, hire schemes, docking stations, secure cycle parking, general urban realm enhancements, and raising awareness. ***P1 – Promote cycling***
Walking	Increase walking through emphasis on the quality of pedestrian environment to ensure safe, comfortable and attractive walking conditions. ***P2 – Increase walking through high quality urban environment*** Raise awareness and encourage walking for short trips to promote health benefits, as well as reduce highway congestion and improve air quality. ***P3 – Encourage walking to reduce congestion and improve air quality***
Buses / Coaches	Improve the quality of bus services and ensure good network connections and interchange with other public transport modes. ***P4 – Improve quality of buses (including cleaning of the fleet) and ensure good connections and interchange*** Ensure future capacity caters for growth in population and employment through improved frequencies and bus capacities. ***P5 – Provide bus capacity to match future growth in demand*** Consider the role of coach travel including the potential development of coach hubs. ***P6 – Consider role of coach hubs***

Mode	Key Policy Requirements
Private Cars/Taxis	Adopt fair approaches to discouraging the use of private car and car ownership to manage traffic flows, congestion, and air quality. ***P7 – Develop fair approaches to discourage private car trips*** Promote car-free, or low-car, development to minimise the impact of future development upon car trip generation. ***P8 – Promote car-free or low-car development*** Apply fair approaches to manage on-street parking and loading restrictions, using price differentials and high quality information provision/signage. ***P9 –Manage on-street parking demand*** Promote the use of low, or zero, carbon vehicles, including incentives for electric car ownership. ***P10 – Promote low or zero carbon vehicles***
Freight	Improve freight distribution capacity, including service and deliveries, and consider options for use of rail and waterways. ***P11 – Expand options for freight distribution, deliveries and serving*** Support for the development of consolidation centres to manage 'last mile' trips into dense urban areas. ***P12 – Consider role for consolidation centres***
River	Improve river capacity and accessibility, including connections to other transport modes ***P13 - Support the development of river crossings and services***
Strategic Transport Capacity	Improve all aspect of public transport provision to make it safe, secure and practicable. ***P14 – Continue to enhance public transport provision*** Consider limited improvements to road network if needed to address clear strategic or local needs. ***P15 – Consider limited improvement to highway network where there is a strong supporting case*** Boroughs should work with their neighbouring, TfL and GLA to tackle the strategic issues of network capacity constraints. ***P16 – Work with neighbouring boroughs, TfL and GLA to address strategic issues***
Crossrail	Crossrail will represent a major enhancement in public transport capacity that will permit inward investment, development and jobs within Whitechapel and Canary Wharf areas. ***P17 – Maximising the capacity and potential created by Crossrail***

Future Policy Direction

2.100 During the course of compiling this document there has been a Mayoral election in London. The outcomes of the election are likely to mean some changes in policy direction. One of the key themes set out within Sadiq Khan's Mayor of London election manifesto is "*a modern and affordable transport network*". An overview of the key measures and initiatives that may have an impact in the borough are set out below, broken down by mode.

Walking & Cycling

2.101 The manifesto incorporates a plan to make cycling and walking safer and easier in the capital. Proposed measures and initiatives that concern walking and cycling include:

- Increase the proportion of TfL's budget spent on cycling;
- Continue the Cycle Superhighway Programme, focusing on segregated provision;
- Prioritise Quietways;
- Review the Safer Junction Programme;
- Delivery of more cycle parking and storage and parking; and
- Work to break down some of the city's physical barriers, including through providing support to the Rotherhithe to Canary Wharf cycle and pedestrian crossing;
- Establish safe walking routes;
- Reduce street and pavement clutter on the TLRN and encourage town centre urban realm improvement projects; and
- Encourage the roll out of 20mph zones by backing the '20's Plenty For Us' campaign.

Public Transport

2.102 Proposed measures and initiatives that concern public transport include:

- Attempt to make better use of existing public transport service capacity;
- Freeze TfL transport fares for four years;
- Introduce a one-hour bus 'Hopper' ticket;
- Push for TfL to take over responsibility for more commuter rail routes, building on the success of the London Overground;
- Oversee delivery of the Night Tube; and
- Ensure London's transport system is accessible to all users, including through ensuring new buses are designed with sufficient space for wheelchair users.

2.103 Whilst these pledges are yet to be imbedded in policy it is considered pertinent that the development of the Tower Hamlets transport strategy considers these issues.

3 Land-use and Development Review

OVERVIEW

3.1 This section considers existing spatial land uses, both within and surrounding the borough, and highlights the potential magnitude and spatial distribution of key development opportunities.

3.2 The section considers existing land-use interactions within three spatial tiers:

- East London Sub-region
- Tower Hamlets
- Opportunity Areas within Tower Hamlets

3.3 It is recognised that the substantial development proposed across the borough will have impacts on both the local demography, economy, and transport network, as well as strategic movements across the borough. In addition, within the wider context of the East of London, there are a range of other substantial development aspirations that will be intrinsically linked with strategic transport provision for Tower Hamlets.

3.4 The challenges arising from the proposed scale, and distribution of this development will be discussed here, along with opportunities to improve the transport network as a result of these developments.

EAST AND SOUTH EAST LONDON SUB-REGIONAL CONTEXT

Overview

3.5 Tower Hamlets is part of the East and South East London Sub Region, which is one of five London Sub regions identified by Transport for London (TfL). The East London Sub Region also includes the London Boroughs of Barking & Dagenham, Bexley, Greenwich, Hackney, Havering, Lewisham, Newham, Redbridge, and Waltham Forest.

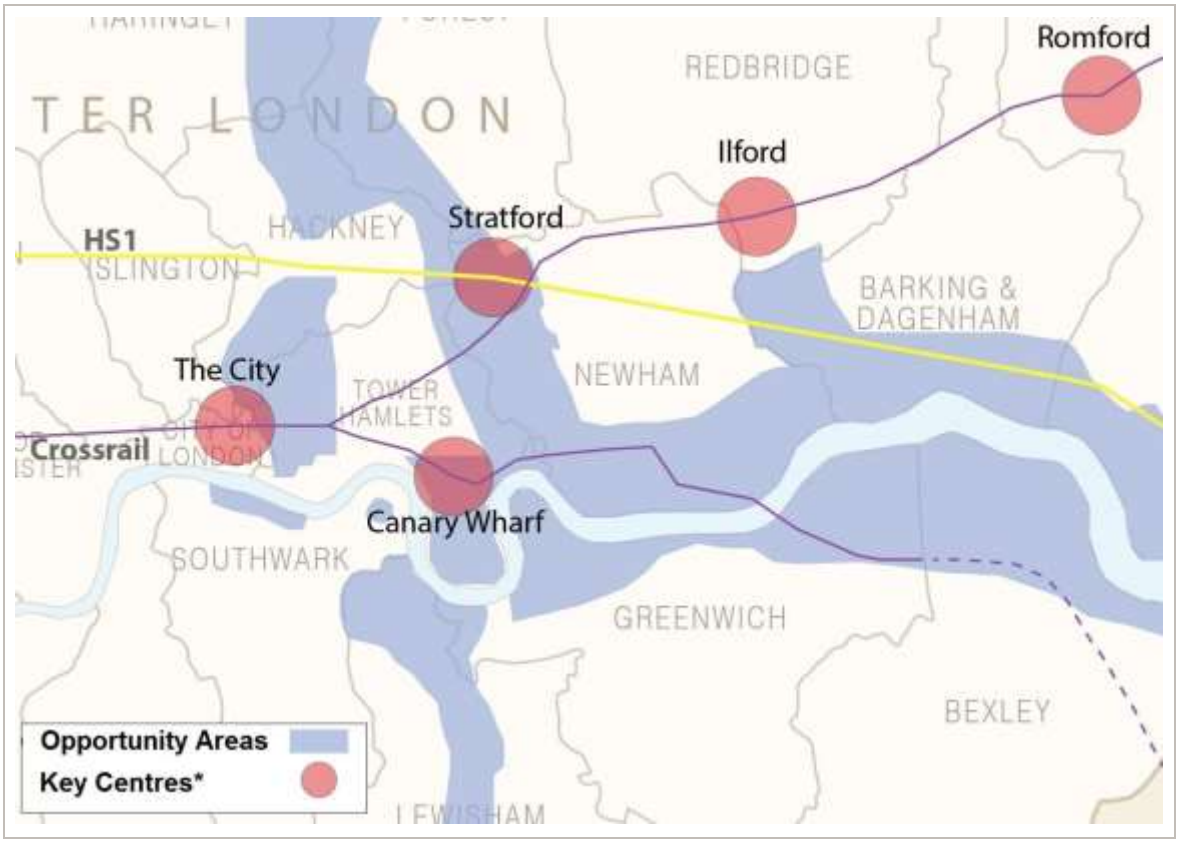
3.6 The area as a whole is characterised home to some of the most economically- and socially-deprived Londoners. In 2014, Hackney, Barking and Dagenham, Newham and Tower Hamlets were among the lowest-scoring Boroughs for the Index of Multiple Deprivation in London.

Sub Region Opportunity Areas

3.7 Across the East and South East London Sub Region a number of Opportunity Areas have been designated for significant development growth. These areas are major source of brownfield land which have significant capacity for development – such as housing or commercial use - and existing, or the potential to improve, public transport access.

3.8 There are 14 Opportunity Areas within the East London Sub Region and these are presented spatially within **Figure 3.1**. The majority are alongside the River Thames corridor (including the Isle of Dogs), as well as up the Lower Lea Valley (including Stratford).

Figure 3.1 East London Sub Region Opportunity Areas



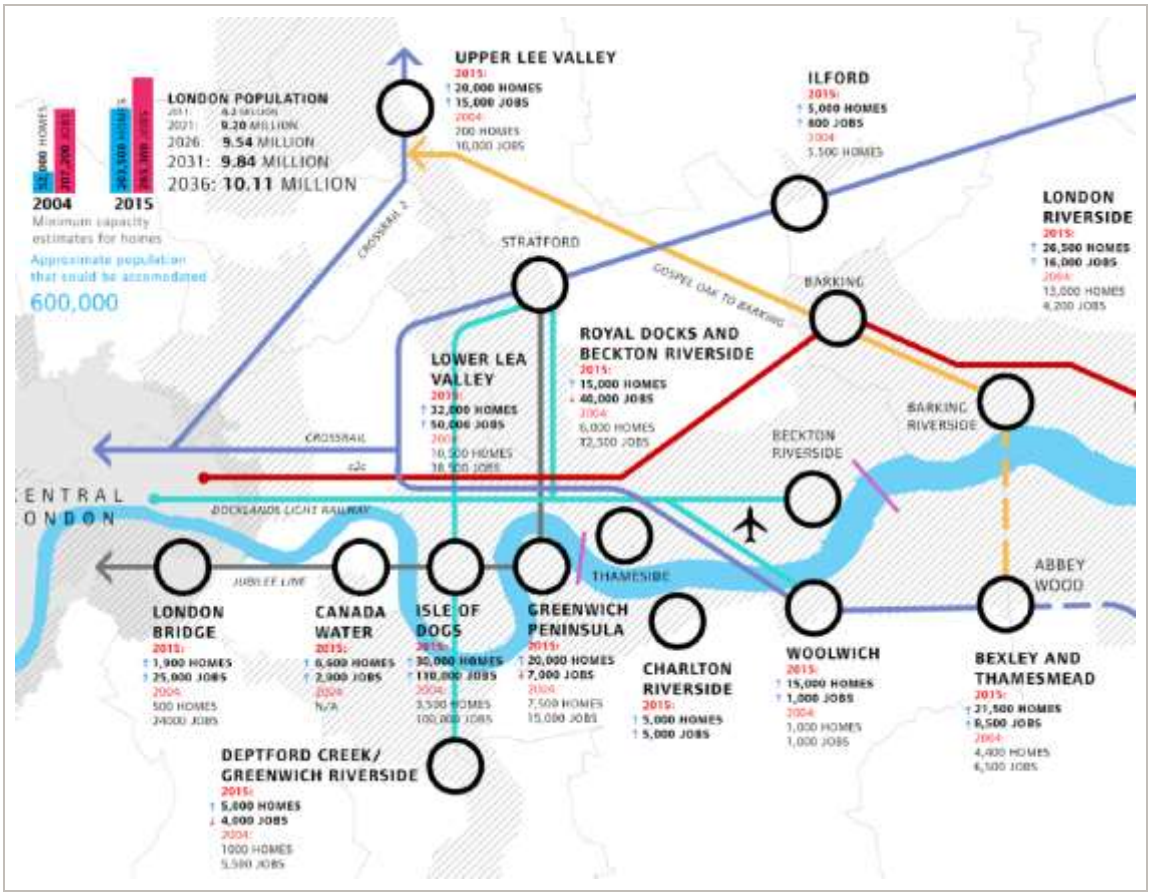
Mayor of London Website

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

3.9 Such is the focused extent of the development opportunities across the sub region that a City in the East project has been developed by the GLA, TfL and local boroughs to promote the development as an integrated process, rather than a series of individual sites, and to ensure that it becomes an integral part of the capital.

3.10 **Figure 3.2** presents an extract from the City in the East plan that shows the focus of development areas within the Opportunity Areas.

Figure 3.2 City in the East



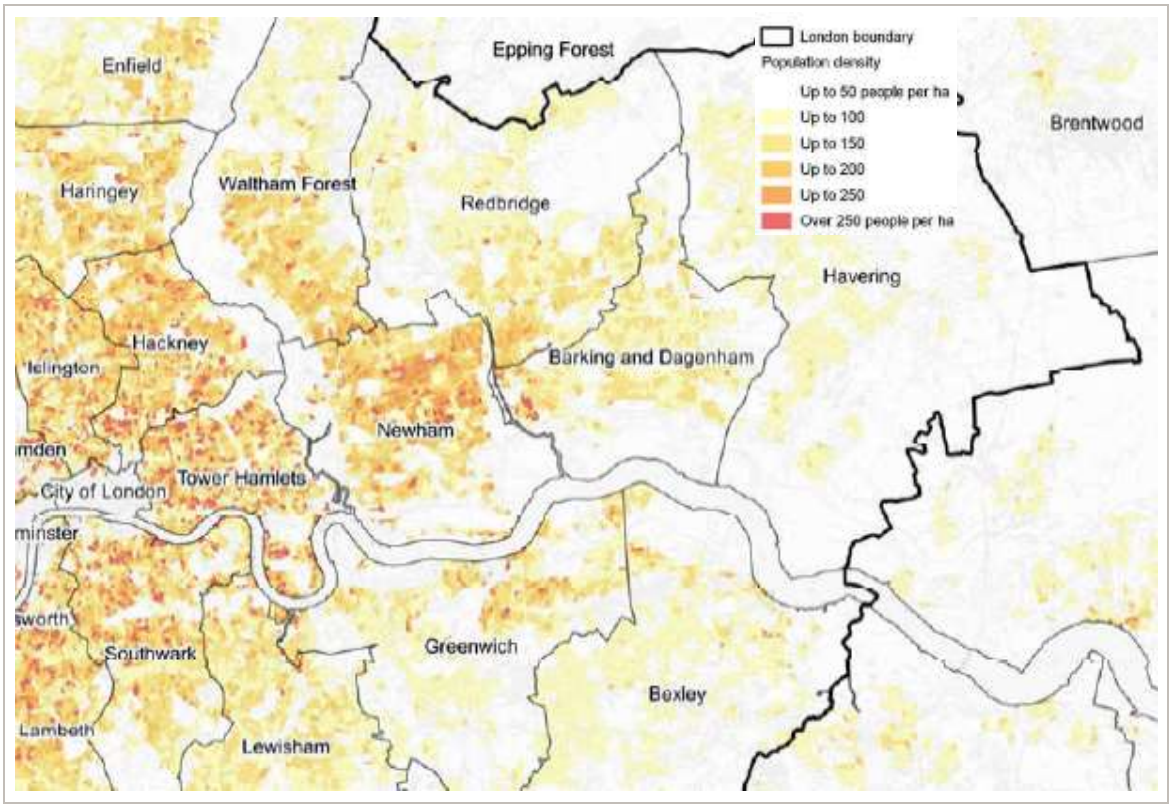
City in the East Brochure

Sub Region Population and Employment Growth

3.11 The London population is forecast by GLA to reach around 10 million by 2031. Over 40% of this growth is anticipated to take place in the Opportunity Areas in east and southeast London. Much of this development will be on brownfield sites, requiring significant densification. It is recognised that this will require significant enhancements to public transport provision, over and above committed enhancements (such as Crossrail) in order to accommodate the forecast growth.

3.12 **Figure 3.3** presents an assessment of current population density across the sub region. This clearly identifies the lower densities along the River Thames and the Lower Lea Valley, reflecting the designation of these areas a key opportunities for growth.

Figure 3.3 East London Population Density



Census 2011

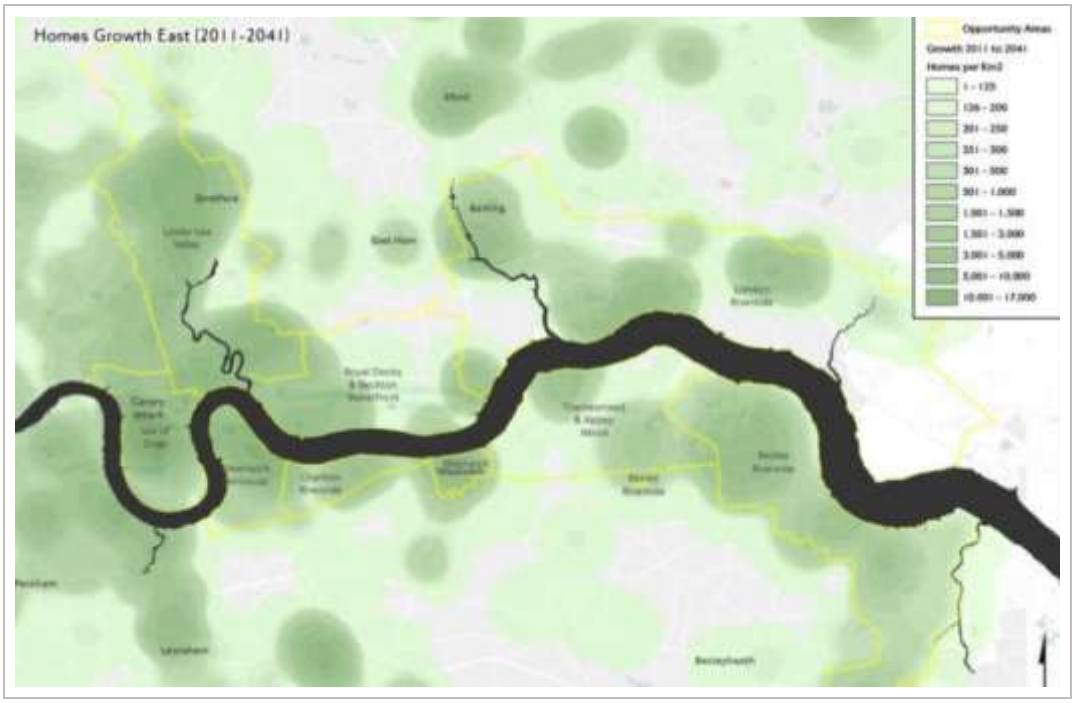
3.13 As part of a recent study of East and South East London Transport provision[1], a maximum growth scenario was assessed for the 2041 time horizon that reflects full build-out of all growth areas. This 'max Growth' scenario has a higher population and employment projection than the 2014 London Plan (FALP)

3.14 Under the 'max growth' scenario, between 2011 and 2041, the north eastern London boroughs (Tower Hamlets, Hackney, Redbridge, Barking and Dagenham and Havering) are forecast to grow by more than 600,000 people and 430,000 jobs. The south eastern London boroughs (Lewisham and Bexley) are forecast to grow by more than 250,000 people and 90,000 jobs.

3.15 **Figures 3.4 and 3.5** illustrate the change in population and employment between 2011 and 2041 under the "Max Growth" scenario.

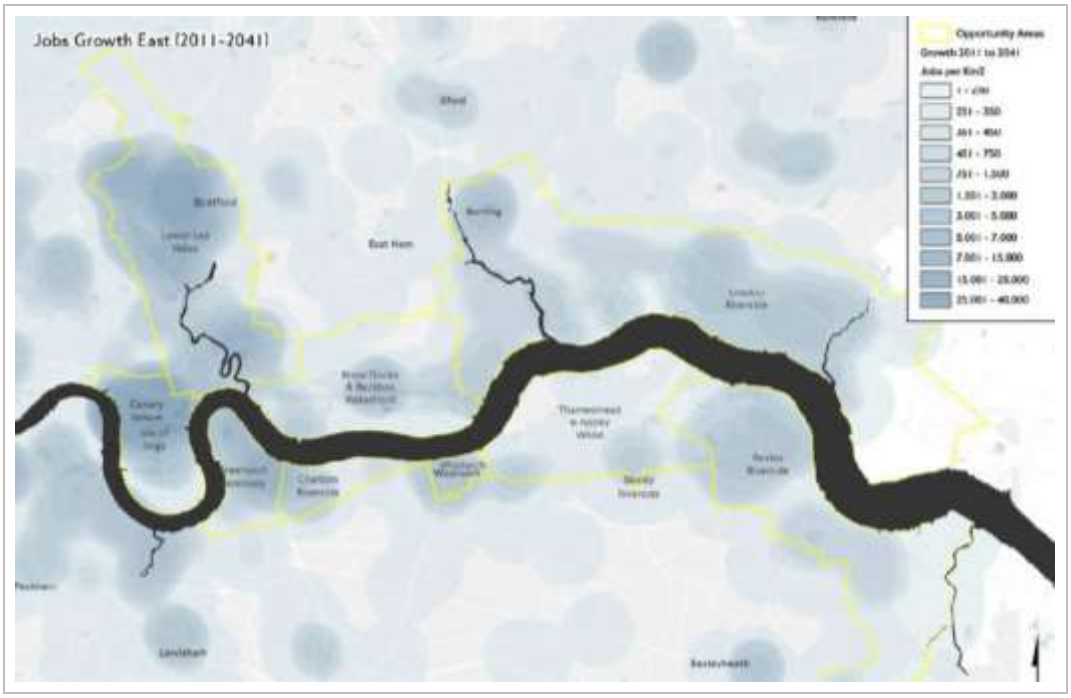
[1] East and South East London Transport Options Study (ELTOS), TfL

Figure 3.4 Project Growth in Housing in East London (2041 maximum development scenario)



TfL

Figure 3.5 Project Growth in Jobs in East London (2041 maximum development scenario)



TfL

3.16 Both Figures 3.4 and 3.5 show the anticipated level of growth in population and employment both within Tower Hamlets, as well as around all sides of the borough boundaries. This will clearly have significant implications upon demand for travel both within, to and from, and across the borough and it will be important to understand the impact this may have upon transport capacity utilisation and overcrowding on public transport provision.

3.17 The ELTOS study more generally discusses the issues of potential public transport overcrowding, in spite of additional capacity provided by Crossrail 1. The analysis demonstrates crowding is most severe on the Central line, Crossrail between Liverpool Street and Stratford, and on all routes to and from the Isle of Dogs (in particular the Jubilee Line) – all of which affect Tower Hamlets directly. Over 20% of all public transport passenger kilometres travelled across London are predicted to be under very crowded conditions (4 standing passengers per square metre or above).

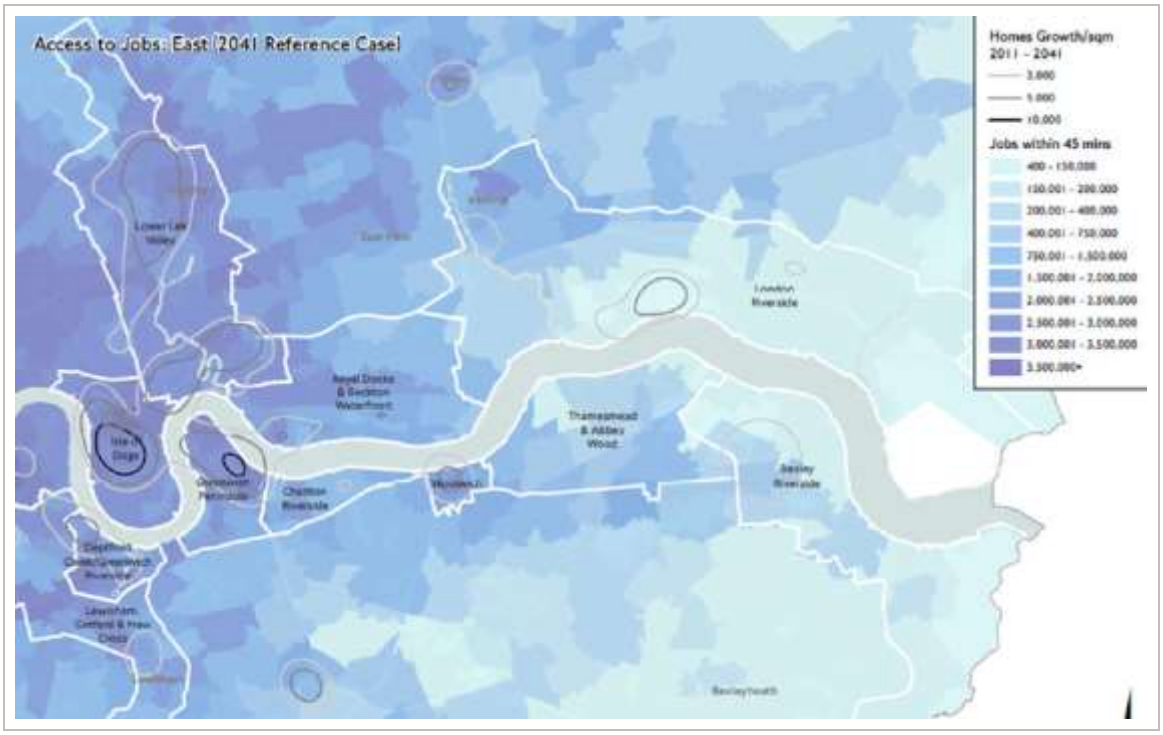
3.18 Nearly all stations on the Overground network are predicted to become under capacity stress (source: TfL Priority Stations Workstream), as well as C2C stations (including Limehouse), and some DLR stations (including Shadwell and Crossharbour).

3.19 This leads to the conclusion that under this 'max growth' scenario there will be an essential requirement for additional public transport capacity to support growth across the sub region, with crowding on the Central Line and all routes to/from the Isle of Dogs (including Crossrail) a key challenge.

Sub Region Access to Jobs

3.20 **Figure 3.6** presents further analysis from the ELTOS study that illustrates the implications for access to jobs by public transport from housing locations across the East London Sub Region, within a 2041 'max growth' scenario. This analysis includes committed transport schemes, such as Crossrail.

Figure 3.6 Access to jobs from housing in East London (2041 maximum development scenario)



TfL

3.21 The analysis demonstrates that access to jobs is comparably good across Tower Hamlets, in particular relative to the Opportunity Areas further east, with the majority of the borough predicted to have over 2.5 million jobs within 45 minutes travel distance.

3.22 Whilst this analysis doesn't take into account matching skills to jobs, it is a positive demonstration of the relatively high level of public transport accessibility across the borough.

Cross boundary opportunities

3.23 Tower Hamlets interfaces with the London Legacy Development Corporation (LLDC) (the planning authority for Fish Island and Bromley-by-Bow), the London Borough of Hackney, London Borough of Newham and the City of London will be an important feature of the Local Plan process and will incorporate overarching transport provision. These boroughs all have their own development opportunities, such as Stratford International, and London City Airport, which will impact upon Tower Hamlets, and will require good connectivity and accessibility to maximise the benefits.

TOWER HAMLETS

Overview

3.24 Tower Hamlets is an inner-city borough that shares immediate boundaries with the City of London and the London Boroughs of Newham and Hackney. The eastern side of the borough is bordered by the River Lea, and part of the borough is now in the planning authority remit of the London Legacy Development Corporation (LLDC). The River Thames flows along the south of the borough, which separates it from the Royal Borough of Greenwich and the London Boroughs of Lewisham and Southwark.

3.25 The borough is comprised of places with distinct and unique characteristics, from the major international business centres of Canary Wharf, to historic Whitechapel and vibrant Shoreditch. Alongside these places, there are major leisure attractions including Brick Lane, Spitalfields Market, the Tower of London and Victoria Park.

3.26 The Borough comprises a diverse mix of current land-uses, reflecting the historic usages of the area and the subsequent incremental development that has occurred since the 1980's as London's employment centre has expanded eastward.

Population

3.27 Tower Hamlets has experienced the fastest population growth in London over the last 10 years and continues to transition from its industrial heritage to become a more attractive place for living. The current population across the Borough is estimated to be around 280,000, with housing relatively well distributed across the 20 wards within the Borough.

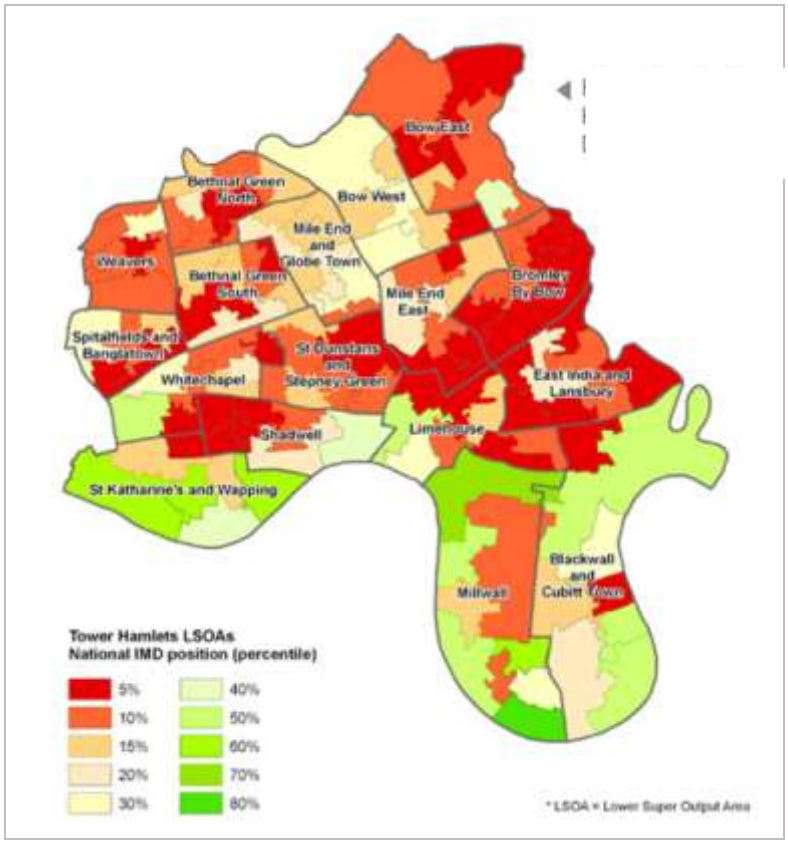
3.28 Despite already being one of the most densely populated boroughs in London (twice the London average), the population is will continue to grow substantially (discussed later in the chapter).

3.29 The borough has a relatively young working age population, with almost half of all residents in the borough (49 per cent) aged between 20 and 39[2]. According to the 2011 Census, 69 per cent of the borough's population are from a minority ethnic community. In the last decade international migration has shaped the profile of the borough's communities – 43 per cent of the borough's population were born outside of the UK.

3.30 The borough as a whole has high levels of deprivation. **Figure 3.7** provides a spatial representation of Index of Multiple Deprivation (IMD) data by Lower Super Output Area across Tower Hamlets.

[2] The Office for National Statistics published its mid-2014 population estimates on 25 June 2015. The mid-year estimates are the 'official' estimates of population for local authority areas

Figure 3.7 Indices of Multiple Deprivation by Tower Hamlet LSOA



LBTH LIP

3.31 Figure 3.7 indicates that a large number of LSOAs in Tower Hamlets are within the top 5% most deprived areas within the country as a whole, with a number of others within the top 10%. These are predominantly within the north half of the borough, in particular the northeast and northwest. Overall, 70% of the borough residents live in an area classified as within the most deprived quintile across the country as a whole.

3.32 In stark contrast the southern half of the borough has a number of areas with lower than national average levels of deprivation. This indicates significant variation across the borough and the importance of ensuring good transport provision across the north of the borough to help rebalance this deprivation.

Employment

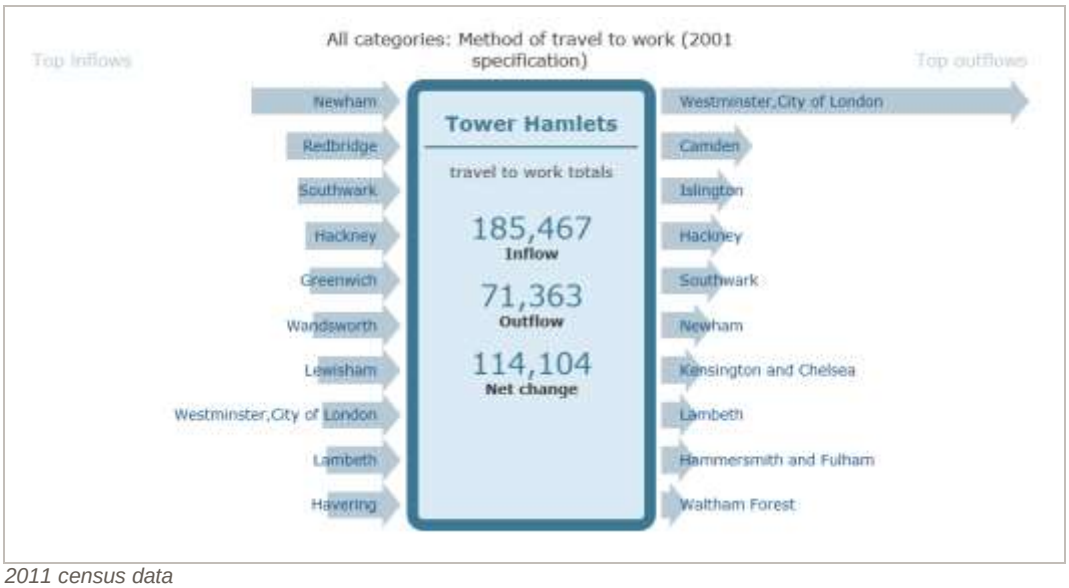
3.33 Tower Hamlets has a thriving economy with increasing employment rates and a diverse employment sector. Whilst the employment rate is below the London average, the economy is ranked as one of the most dynamic in the country. Some of the biggest international financial and business services companies are concentrated in Canary Wharf and the City Fringe. There are emerging new employment opportunities in Whitechapel, as part of the Whitechapel Vision regeneration project, and as part of the expansion of knowledge-based digital companies around 'Tech City' in Shoreditch. The majority of businesses registered in Tower Hamlets are microbusinesses employing less than 10 staff.

3.34 Current employment levels within the Borough are estimated to be around 288,000 jobs (source: GLA). Around 93% of these are jobs working for an employer, with the other 7% self-employed. The economy is being driven by the continued growth in financial and business services and by 2030 there are expected

to be a further 75,000 jobs in that sector[3]. The City Fringe/Whitechapel and Canary Wharf/Isle of Dogs area accounted for the majority of all employment in Tower Hamlets[4].

3.35 Census journey to work data provides an insight into the movement of people around and in/out of the borough for employment purposes. **Figure 3.8** presents the flow of journey to work trips in and out from the borough, with an overall net inflow of around 114,000 movements, incorporating 185,500 inflow movements from outside of the borough. This reiterates the importance of strategic public transport provision to serves the borough.

Figure 3.8 Journey to Work Data (in and out of Tower Hamlets) (2011)



2011 census data

3.36 Along 71,000 outflow trips, there are an additional 30,500 internal journey to work trips, giving a total of 101,500 trips originating within the borough. The dominant outward flow is to the City of London and Westminster, accounting for over 29,000 trips. **Table 3.1** provides a breakdown of internal borough journey to work movements between the four main designated areas within the borough.

Table 3.1 Internal Tower Hamlets Journey to Work Movements (2011)

Area	City Fringe	Central	Lower Lea Valley	Isle of Dogs	Total
City Fringe	13%	3%	1%	7%	**24%**
Central	9%	8%	2%	9%	**29%**
Lower Lea Valley	4%	4%	4%	6%	**18%**
Isle of Dogs	4%	2%	1%	22%	**29%**
Total	**30%**	**17%**	**9%**	**44%**	**100%**

2011 census data

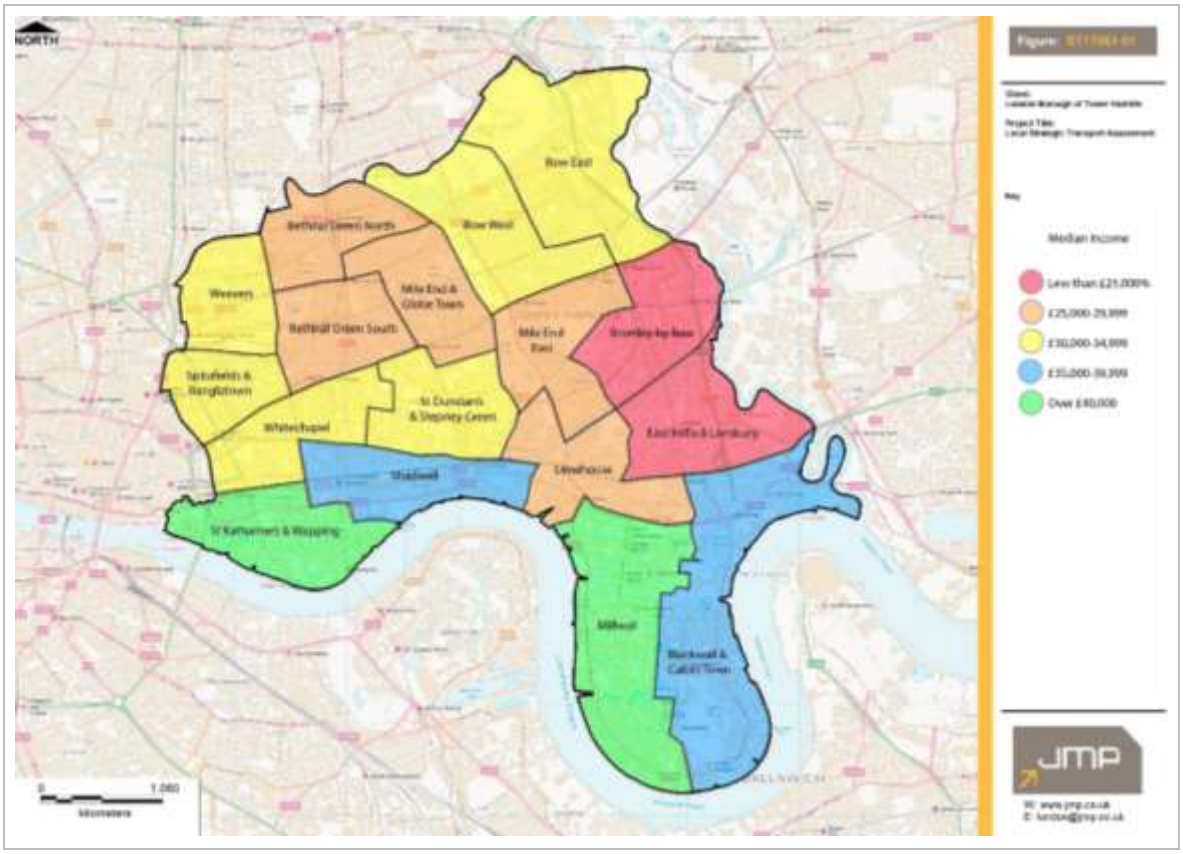
[3] Tower Hamlets Borough Profile (draft, 2015)

[4] Business registration and employment survey (BRES) data published by the Office for National Statistics (ONS).

3.37 Around 44% of trips (13,500) were to the Isle of Dogs, with 22% representing internal trips within that sub-area, indicating very short distance trips. Around 13% of trips are also internal to the City Fringe area. Overall, just over 14,000 trips are internal to each of the four sub areas. This is nearly 50% of all internal trips within the borough. This demonstrates the current potential for active travel modes and it will be important to encourage such short distance trips to work in future to minimise the pressures on transport provision.

3.38 Within the employment market there are significant differentials in income levels across residents within the borough. This is as outlined spatially within **Figure 3.9** and presented numerically within **Appendix B**.

Figure 3.9 Average Income Levels of Residents by Wards



2011 census data

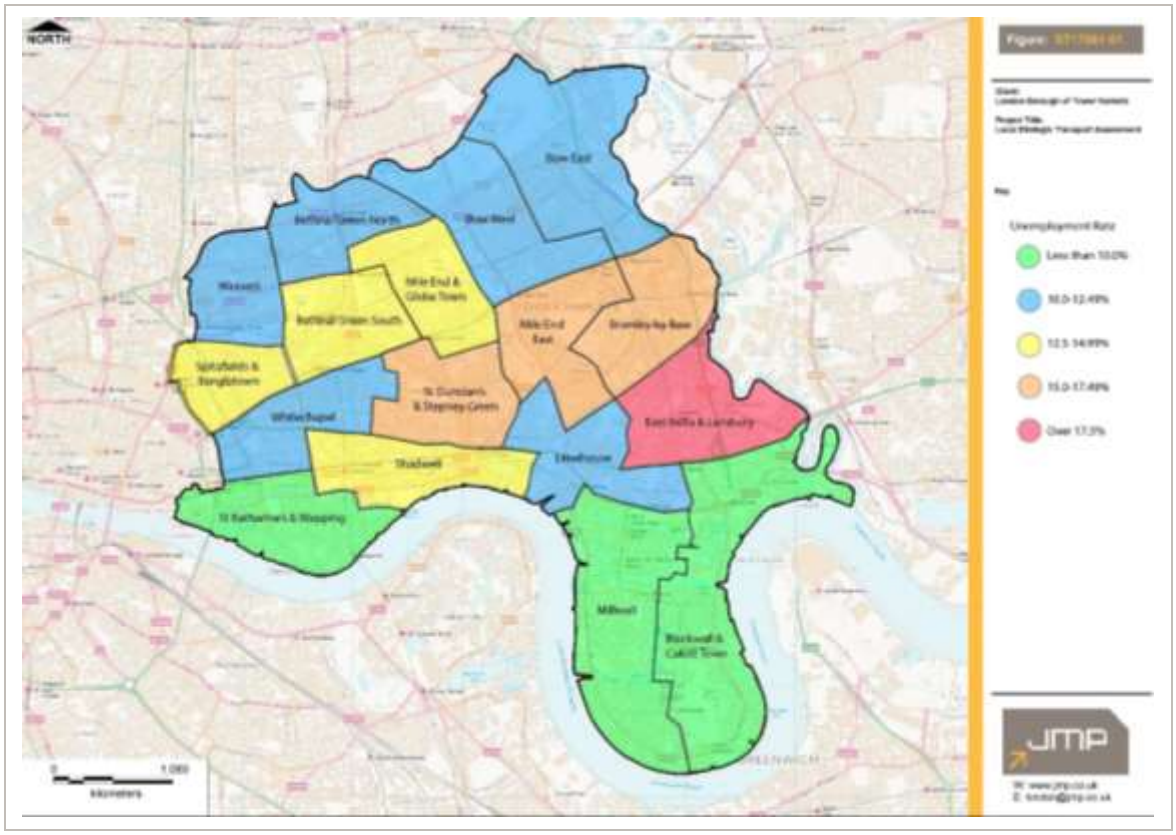
3.39 Income levels are lowest in the east of the borough, within the Lower Lea Valley area. This compares directly to the Isle of Dogs, and specifically Canary Wharf, where income levels are significantly higher. This can be important in terms of travel mode choice, with bus provision often more important for lower income area

Unemployment

3.40 Despite the strong employment areas, the Borough still faces challenges in dealing with high and persistent levels of unemployment in certain groups, particularly amongst women. The data suggests that local people are not necessarily benefitting from the high concentration of jobs in the Borough due to a mismatch in skills.

3.41 Unemployment at a ward-level in presented spatially within **Figure 3.10** below and presented numerically within **Appendix B**.

Figure 3.10 Unemployment Levels by Wards



2011 census data

3.42 Unemployment levels are highest in the east and central areas of the borough. It will be important to have good accessibility by public transport, and other sustainable travel modes, in these areas to minimise constraints to access to work.

Health, Education, and Visitor Attractions

3.43 There are a number of other key trip attractors across the borough, in the form of health and education facilities, as well as visitor attractions. There are three hospitals located within the borough:

- The Royal London Hospital, Whitechapel (E1 1BB) (teaching hospital)
  - *In close proximity to Whitechapel Station and directly served by high-frequency 25 bus route*
- Mile End Hospital, Bancroft Road (E1 4DG)
  - *Within 400m catchment of high-frequency 25 bus route*
- London Chest Hospital, Bonner Road, London, E2 9JX
  - *Directly served by low-frequency 309 and D3 bus routes*

3.44 In terms of major educational establishments there is a university and a college site:

- Tower Hamlets College Poplar High Street (E14 0AF)
  - *Directly served by Poplar Station and within 400m of high-frequency 15 and 115 bus routes*
- Queen Mary, University of London Mile End Road (E1 4NS)
  - *Directly served by high frequency 25 bus route*

3.45 The borough also attracts hundreds of visitors to key attractions, such as the Tower of London and Whitechapel Gallery, and the hotel industry is responding to increased demand for visitor accommodation.

3.46 All of these facilities require good public transport, walking and cycling connectivity in order to be accessible to all.

TOWER HAMLETS OPPORTUNITY AREAS

3.47 There are three areas within Tower Hamlets that have been designated as Opportunity Areas within the London Plan. These are City Fringe/Tech City (including Whitechapel), Isle of Dogs and South Poplar, and Lower Lea Valley (including part of the Olympic Legacy area and the Poplar Riverside Housing Zone). In addition, the Olympic Legacy also encompasses parts of the borough and, in particular overlaps with aspects of the Lower Lea Valley. All of 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.

3.48 **Figure 3.11** provides an overview of the opportunity areas in relation to the ward and borough boundaries.

Figure 3.11 Key Opportunity Areas

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

Spatial Vision

3.50 The current Local Plan Core Strategy focuses upon five spatial themes:

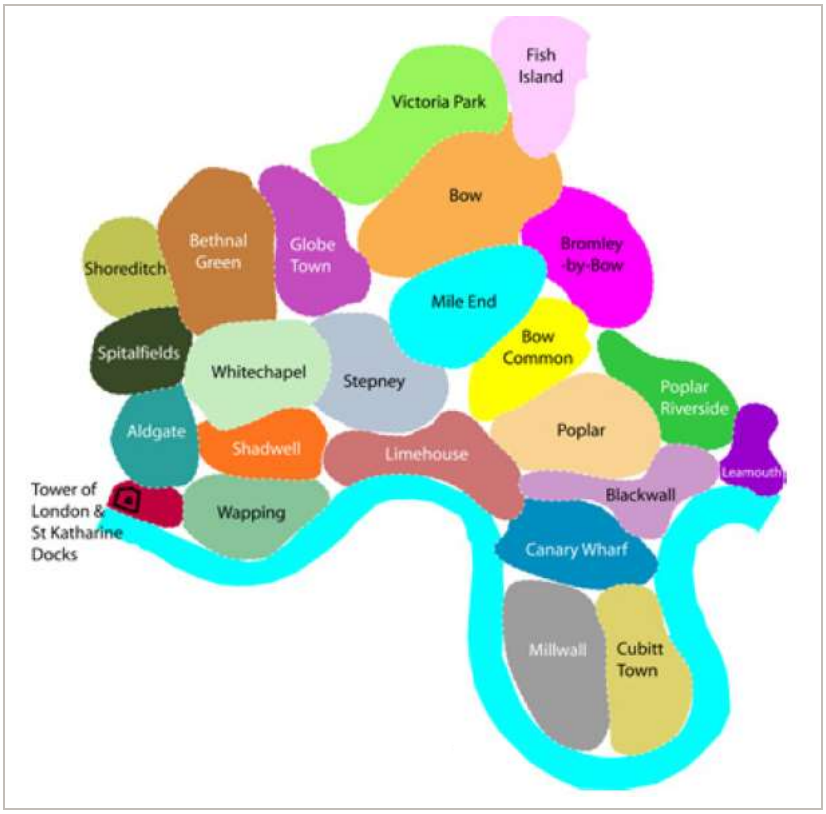
- Refocusing on town centres
- Strengthening neighbourhood well-being
- Enabling prosperous communities
- Designing a high-quality city
- Delivering placemaking

3.51 The overall spatial vision is to reinvent, strengthen and transform the places that makes this borough unique. The concept of placemaking is a key element to this, with the borough seeking:

> *"to create locally distinctive, well-designed, healthy and great places, which interconnect with, respond and integrate into the wider London area."*

3.52 **Figure 3.12** presents an overview of the 24 local 'Character places' that have been identified across the borough.

Figure 3.12 'Character Places' in tower Hamlets



3.53 Each 'Character Places' act as important local and/or major centre, forming part of the borough's distinct identity and character and, act as anchors for local areas. As well as being a focus for residential development, these areas have increasingly being used for leisure purposes and as hubs for essential social and community facilities, such as Idea Stores and health centres. This diversity of use means that

'Character Places' are moving away from their more traditional role as destinations offering predominantly shopping facilities.

3.54 Each 'Character Place' is briefly considered within the context of the three designated Opportunity Areas and the 'Central Area' below.

City Fringe (Tech City) Opportuntiy Area

3.55 The City Fringe area of Tower Hamlets, including Tech City, is emerging as one of London's most significant areas for economic growth, containing considerable opportunities for new and emerging sectors of the economy with particular requirements for clustering and accommodation. The Council's Whitechapel Vision Masterplan Supplementary Planning Document (SPD) (2013) is driving forward regeneration in Whitechapel including new homes and job opportunities, public realm improvements, a new civic hub for Tower Hamlets and potential Med City focused on the Royal London Hospital and Queen Mary University London.

3.56 Within the Opportunity Area six 'character places' have been identified in spatial planning terms:

- **Shoreditch:**
  - Reinforcing and reflecting the historic qualities in Shoreditch to shape future growth and improve connectivity
- **Spitalfield:**
  - Will continue to be a historic gateway to the vibrancy of Spitalfields Market, Trumans Brewery and Brick Lane
- **Aldgate:**
  - Rediscovering its gateway role as a mixed use, high density area with a commercial centre
- **Whitechapel:**
  - A historic place set around Whitechapel High Street with Crossrail and the Royal London Hospital providing a regional role.
- **Shadwell:**
  - Strengthening Watney Market town centre through re-connection onto Commercial Road and capitalising on investment opportunities
- **Tower of London & St Katherine Docks:**
  - Reintegrating the Tower of London back into its surroundings

3.57 The focus of the Opportunity Area is clearly to recognise and build upon its historical qualities, whilst maximising it's locality on the edge of the City of London to maximise future commercial opportunities.

3.58 Public Transport provision is already good, in terms of accessibility; however, a clear challenge will be future capacity and ensuring the volume of passengers can be moved efficiently to and from, and across, the area.

Isle of Dogs Opportuntiy Area

3.59 The Isle of Dogs, South Poplar and Leamouth has been identified as an Opportunity Area by the Mayor of London in the London Plan to potentially accommodate a minimum of 10,000 new homes and 110,000 jobs. In December 2015 the Greater London Authority (GLA) produced an Opportunity Area Planning Framework (OAPF) Supplementary Planning Guidance (SPG) to provide more detailed planning policies for the area. This will help manage growth coming forward in advance of the new Local Plan being adopted in 2017. The OAPF will also be a material consideration that the new Local Plan will need to take into account.

3.60 The Council adopted the South Quay Masterplan SPD in October 2015 that provides additional design guidance to help coordinate new developments in the South Quay.

3.61 Within the Opportunity Area four 'character places' have been identified in spatial planning terms:

- **Blackwall:**
  - A mixed use area with a new town centre and the Town Hall as its commercial and civic hearts
- **Canary Wharf:**
  - Canary Wharf will retain and enhance its global role as a competitive financial district as well as adopting a stronger local function
- **Millwall:**
  - A community brought together through its waterways and a newly established high street at Millharbour
- **Cubitt Town:**
  - A residential waterside place set around a thriving mixed use town centre at Crossharbour

3.62 This Opportunity Area is clearly focussed upon the existing and future employment opportunities within and around Canary Wharf; however with the need to develop residential communities. The delivery of Crossrail will provide significant additional capacity to the area but this will need to be reinforced through enhanced capacity on other Underground/DLR services, and through sustainable travel measures to ensure good connectivity to the island is maintained.

Lower Lea Valley Opportuntiy Area

3.63 The Lower Lea Valley Opportunity Area covers three London Boroughs: Hackney, Newham and Tower Hamlets. Within Tower Hamlets, it comprises the areas of Hackney Wick/Fish Island, Bromley-by-Bow and Poplar Riverside Housing Zone. The LLDC is the planning authority to determine planning applications within Hackney Wick/Fish Island and the Olympic Legacy Area.

3.64 The Olympic Legacy has been a catalyst attracting development opportunities and investment. Through the previous Local Plan and other supporting documents, such as the adopted the Bromley-by-Bow Masterplan SPD (2012), the Council has identified a vision and planning guidance to promote affordable housing, jobs and social infrastructure for local communities in the area.

3.65 More recently, the Poplar Riverside Housing Zone is an initiative of the GLA to drive forward growth located on the redevelopment of former industrial land and existing social housing estates. It is estimated that the Housing Zone could deliver more than 9,000 new homes over the next 10 years. This will require the Council to work collaboratively with the GLA and other key stakeholders to ensure that additional schools, community centres and spaces are planned at an early stage of development proposals in order to meet the needs of all communities.

3.66 Within the Opportunity Area five 'character places' have been identified in planning terms:

- **Fish Island:**
  - A mixed use sustainable community offering a unique place to work and live, right next to the Olympic Park and within walking distance of Stratford
- **Bow:**
  - Showcasing Bow's traditional character through its market, street patterns and relationship with Victoria Park.
- **Bromley-by-Bow:**
  - A prosperous neighbourhood set against the River Lea and Park and a transformed A12
- **Poplar Riverside:**

- Transforming Poplar Riverside into a revitalised and integrated community reconnecting with the A12 and River Lea

- **Leamouth:**
  - Creating a modern waterside place where the River Lea Park meets the River Thames

3.67 This Opportunity Area offers the most potential for transformational change with the creation of new communities and links across to similar development within Newham. Public Transport provision is currently less intensified than other parts of the borough and so this, alongside reducing barriers to movement, will be important aspects for developing the area.

'Central' Tower Hamlets

3.68 Whilst not within a designated Opportunity Area, the Central part of the borough still offers significant potential to enhance community living and raise living standards.

3.69 Within the Central Area are the remaining nine 'character places' have been identified in planning terms:

- **Bethnal Green:**
  - Shaping the future of Bethnal Green around its rich history, strong residential communities and thriving Bethnal Green High Street.
- **Globe town:**
  - Uncovering Globe Town's historic and natural assets for existing and new communities to enjoy
- Victoria Park:
  - Making Victoria Park an exemplary 21st century green space. Victoria Park will continue to be one of the borough's best assets
- **Mile End:**
  - A lively and well connected place with a vibrant town centre complemented by the natural qualities offered by the local open spaces
- **Bow Common:**
  - Establishing Bow Common as a family focused residential neighbourhood set around the civic spine of St Paul's Way.
- **Poplar:**
  - Regenerating Poplar into a great place for families set around a vibrant Chrisp Street and a revitalised Bartlett Park
- **Stepney:**
  - A great place for families nestled around the green spine of Stepney Green, Regents canal and Mile End Park Leisure Centre
- **Limehouse:**
  - A better connected riverside place supported by new neighbourhood centres on and around Commercial Road
- **Wapping:**
  - Integrating Wapping's working and residential communities and connecting them to the canals, basins and River Thames.

3.70 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. The role of the 'Green Grid' throughout the heart of the borough is an important aspect, both for these 'Character Places' but also for wider connectivity across the borough.

LOCAL PLAN DEVELOPMENT

3.71 The emerging Local Plan identifies the potential for significant housing and employment growth across the borough over the next 20 years. This growth will create significant pressures upon wider services and infrastructure provision, not least transport. A summary of the projected growth is provided below.

Housing Growth

3.72 An identified need to continue the delivery of housing in the Borough is required, not only to respond to local need, but also to fulfil the borough's statutory duty to co-operate with neighbouring boroughs and meet the housing need, policies and targets established by the Greater London Authority (GLA) in the London Plan.

3.73 The London Plan (2015) expects Tower Hamlets to contribute a minimum of 39,310 new homes, or approximately 10 per cent of the London housing target, by 2025. The borough's ability to supply land for housing in these quantities is acknowledged to be increasingly limited as a significant proportion of sites have already been developed. Land also needs to be secured to support the delivery of new infrastructure, such as schools, open spaces, and health centres.

3.74 In order to manage the process of allocating land for housing development, the borough has constructed a Housing Model that processes available sites and examines the distribution of units and residential growth by individual wards. The model forecast the number of residential units that could be delivered up to 2036 and translates this into population growth.

3.75 The overall forecasts predict an additional 54,000 residential units by 2036, with the majority of these (50,650) by 2031. This translates to an overall population growth of over 120,000 (or 116,000 by 2031).

3.76 For the purposes of more detailed analysis, the 2031 figures are utilised as they reflect the majority of the growth and provide a direct comparison to the future year traffic and public transport modelling tools that are available for 2031.

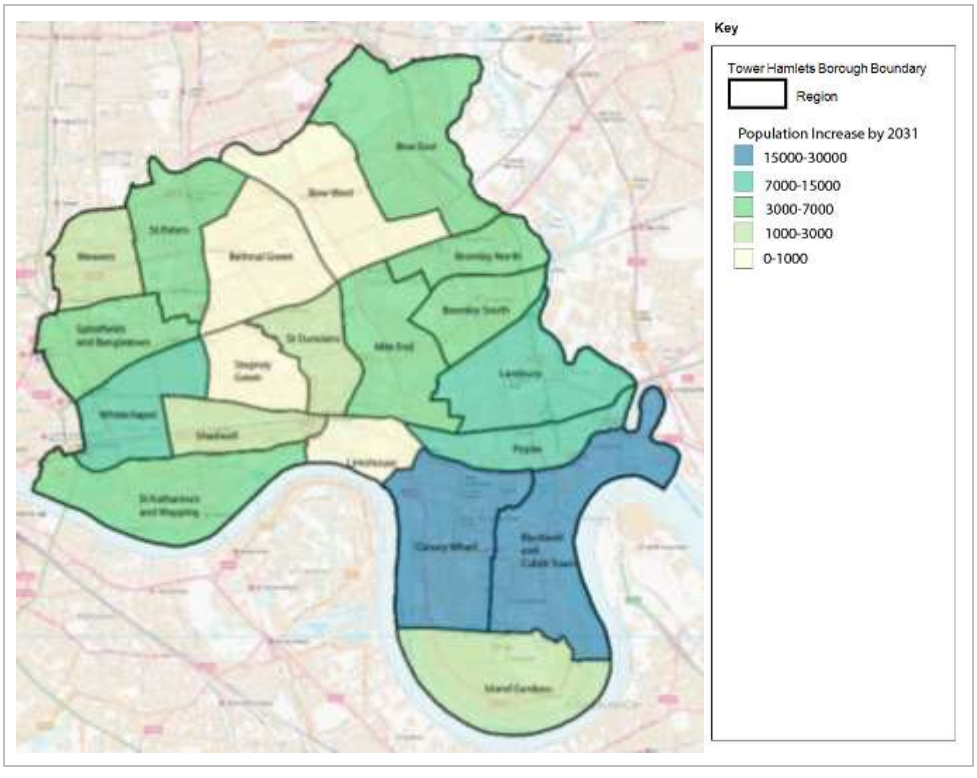
3.77 **Table 3.2** provides a breakdown of the forecast 2031 population growth by ward and presents this against the current ward population, as well as demonstrating the distribution of the growth across the wards. The data is also presented graphically in **Figure 3.13**.

Table 3.2 Forecast Population Growth by 2031

Ward	Current Population	Population Increase (2031)	% Increase in Ward (2031)	Distribution of Overall Growth
Bethnal Green	21,060	815	4%	1%
Blackwall and Cubitt Town	14,612	25,203	172%	22%
Bow East	15,969	3,442	22%	3%
Bow West	13,605	440	3%	0%
Bromley North	11,083	3,666	33%	3%
Bromley South	10,480	5,121	49%	4%
Canary Wharf	13,191	22,649	172%	19%
Island Gardens	15,096	1,414	9%	1%
Lansbury	16,832	8,409	50%	7%
Limehouse	6,757	609	9%	1%
Mile End	18,852	3,943	21%	3%
Poplar	7,746	11,065	143%	10%
Shadwell	13,010	2,450	19%	2%
Spitalfields and Banglatown	13,377	3,941	29%	3%
St Dunstan's	13,606	1,058	8%	1%
St Katharine's and Wapping	11,804	4,825	41%	4%
St Peter's	18,851	4,318	23%	4%
Stepney Green	13,215	288	2%	0%
Weavers	14,454	1,105	8%	1%
Whitechapel	16,885	11,624	69%	10%
TOTAL	**280,485**	**116,386**	**41%**	**100%**

Source: LBTH Housing Model

Figure 3.13 Projected Population Growth to 2031



3.78 The data indicates that over 40% of the population growth will be focussed within Blackwall and Cubitt Town and Canary Wharf, encompassing parts of both the Isle of Dogs and Lower Lea Valley Opportunity Areas. Poplar, Landsbury and Bromley South Wards also account for a significant proportion of the growth within the Lower Lea Valley. These five wards account for over 60% of the projected growth.

3.79 To the west of the Borough, the Whitechapel Opportunity Area accounts for a further 10% of the overall projected growth.

3.80 The remaining 14 wards account for the other 28% (or 32,000) growth in population by 2031.

Employment Growth

3.81 The GLA forecasts of employment growth for Tower Hamlets are for a projected increase of between 60,000 to 125,000 jobs, by 2031, and between 70,000 to 165,000, by 2036. These represent up to 44% and 58% increase over current employment levels, respectively.

3.82 The distribution of this growth has not currently been considered in detail; however, it is likely to be focussed around the opportunity areas of the Isle of Dogs and City Fringe/Tech City.

REPRESENTATION OF GROWTH WITHIN TRANSPORT MODELLING TOOLS

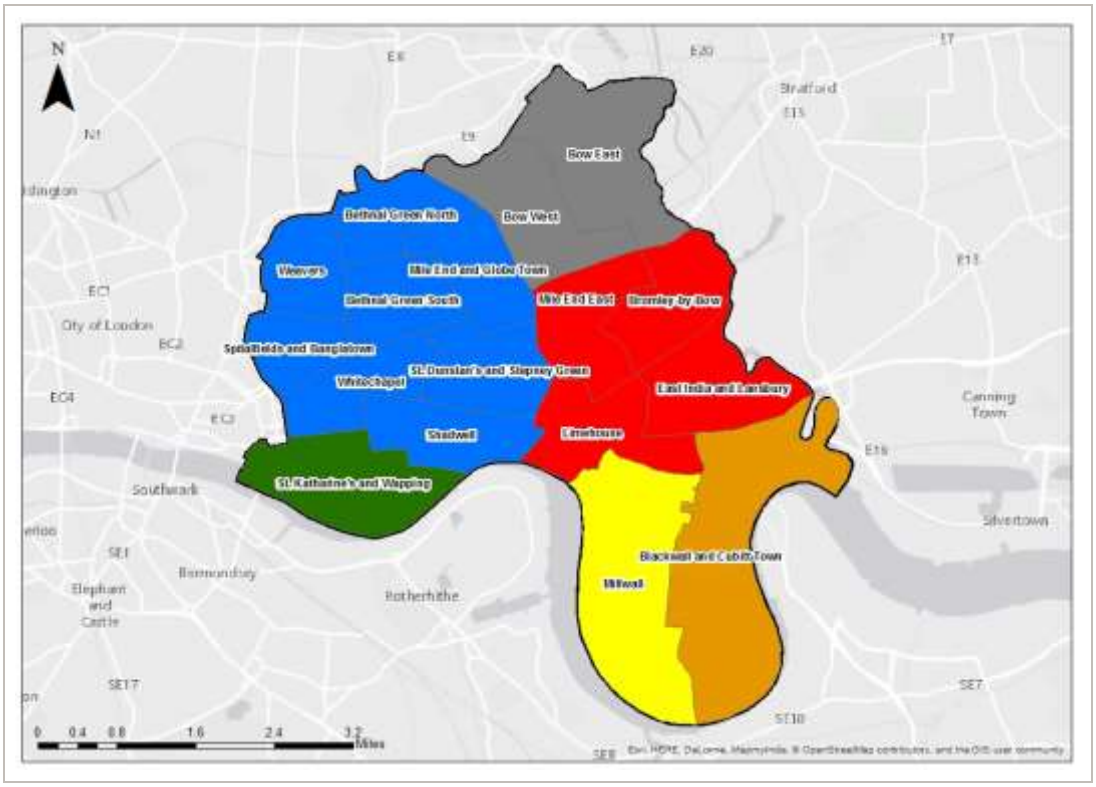
London Transportation Studies (LTS) Model

3.83 As described within Section 1, TfL have a suite of transport modelling tools that provide a mechanism for assessing strategic movements of vehicles and people across London and the surrounding area. These models are calibrated and validated against existing flow and delays data to provide simulations of current day traffic and travel. TfL also produces a range of future year models (currently 2021, 2031, and 2041) to predict the potential impact of growth across the city and to examine the impact of proposed new strategic transport infrastructure and operations.

3.84 The London Transportation Studies (LTS) Model is an overarching tool that can estimate the impact of growth in housing and employment by translating it into new trip origins and trip ends. It also then predicts the proportion of trips that will be undertaken by different modes of travel, creating future year vehicle trips origin – destination matrices and public transport origin – destination matrices.

3.85 For the purposes of this study, we have obtained the planning data from the LTS model used to build the matrices for the CLOHAM and Railplan future year models. We have collated the LTS zones into six ward groupings. This was done as there are cases where LTS zone boundaries overlapped with numerous Wards. **Figure 3.14** presents the collation of Ward Groupings.

Figure 3.14 LTS Ward Groupings



LTS Model

3.86 **Table 3.3** presents a summary of the LTS data for the growth in population and jobs, summed to the Ward Groupings

Table 3.3 LTS Projected Growth

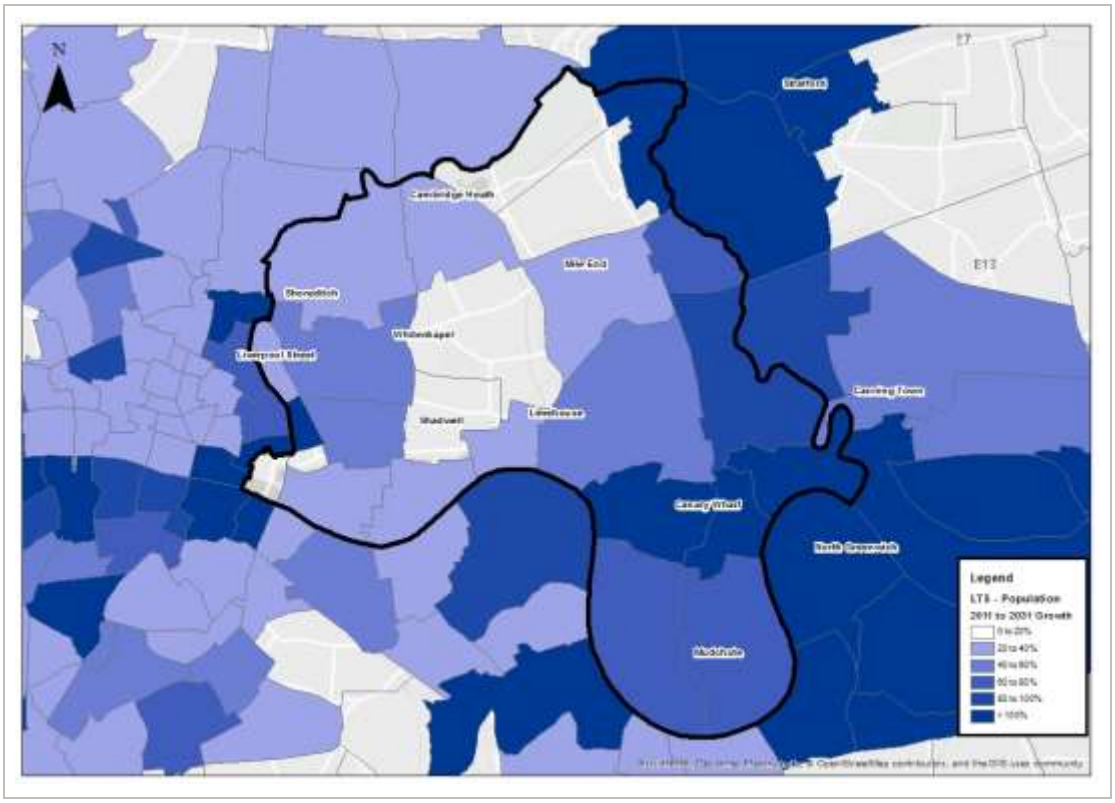
Ward Grouping	Population			Employment		
	2011	2031	Increase	2011	2031	Increase
1. St Katherine's and Wapping	10,652	14,165	3,513	11,903	17,494	5,591
2. Millwall	23,330	47,765	24,435	95,305	151,036	55,731
3. Blackwall & Cubitt Town	19,254	43,019	23,675	20,089	34,871	14,872
4. NorthWest and Central	115,597	149,930	34,333	76,281	108,124	31,843
5. Bow and NorthEast	21,412	28,701	7,289	5,597	8,280	2,683
6. Limehouse and East	66,439	102,495	36,056	17,184	22,698	5,514
Total	**256,685**	**386,075**	**129,391**	**226,360**	**342,503**	**116,143**

LTS Model v7

3.87 The data indicates that the latest LTS forecasts predict an increase in population of just under 130,000 between 2011 and 2031. The largest absolute levels of growth are in 'Limehouse and East' (reflecting the Lower Lea Valley Opportunity Area); 'Northwest and Central' (reflecting the City Fringe Opportunity Area) and 'Millwall' and 'Blackwall & Cubitt Town' (reflecting the Isle of Dogs Opportunity Area)

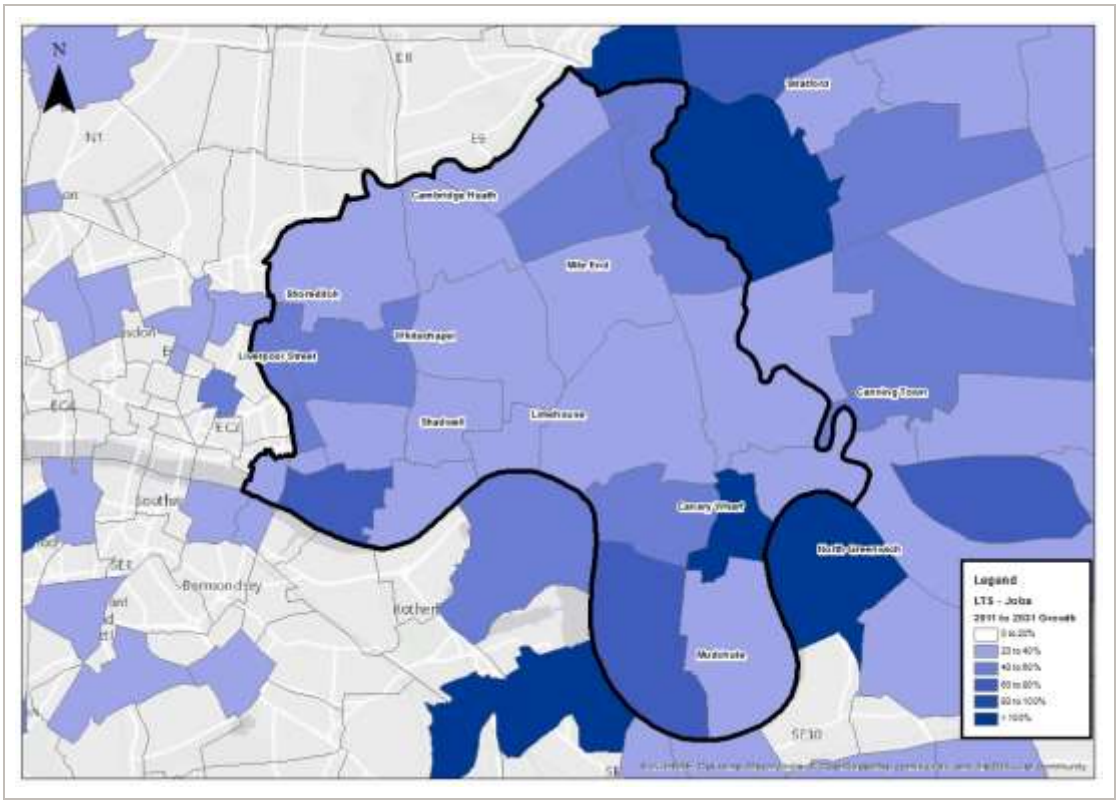
3.88 **Figures 3.15** and **3.16** present the same data for growth in population and jobs used within LTS but as a percentage increase over 2011 levels and presented by individual LTS zone.

Figure 3.15 LTS Projected Percentage Increase in Population (2011 to 2031)



LTS Model v7

Figure 3.16 LTS Projected Percentage increase in Jobs (2011 to 2031)



LTS Model v7

3.89 We have obtained these forecast future year matrices for 2031 and have conducted a comparative analysis of the growth in trips between the 'current year' models and the 2031 models. This can then be compared against the forecast growth in housing and employment within Tower Hamlets emerging Local Plan proposals.

Comparison to Tower Hamlets Housing Model and GLA Employment Projections

3.90 A comparative analysis has been conducted between the LTS growth projections against the latest Tower Hamlet housing growth and GLA employment growth projections (presented earlier in the chapter). To make this comparison, the latter dataset have been grouped in the Ward Groupings used within the LTS analysis.

3.91 **Table 3.4** presents a comparison of the population growth projects from the LTS model and the Tower Hamlets Housing Model. In both cases the current 2015 population (source: LBTH Housing Model) has been used as the baseline (as opposed to the 2011 LTS model data presented above).

Table 3.4 Comparison of LTS Model and LBTH Housing Model Population Projections

Ward Grouping	LTS Growth Projects		LBTH Growth Projection		Differences	
	2031	Increase from 2015*	2031	Increase from 2015*	Number	%
1. St Katherine's and Wapping	14,165	2,285	16,705	4,825	2,540	18%
2. Millwall	47,765	19,272	52,556	24,063	4,801	10%
3.Blackwall & Cubitt Town	43,019	28,224	39,998	25,203	-3,021	-7%
4. NorthWest and Central	149,930	25,559	149,930	25,599	-	-
5. Bow and NorthEast	28,701	-19,891	56,418	7,826	27,717	97%
6. Limehouse and East	102,495	49,737	81,628	28,870	-20,868	-20%
TOTAL	**386,075**	**105,216**	**397,245**	**116,386**	**11,169**	**3%**

LTS Model v7 and LBTH Housing Model (2016) ** 2015 housing level taken from LBTH Housing Model (2016)*

3.92 The data indicates that there is a 3% difference in the overall predicted growth in population between the LTS model and the LBTH housing model; however, there are some differences between the distributions amongst the Ward groupings. Of particular note, for the 'Bow and Northeast' group the LTS model predicts a lower population level in 2031 than is currently the case in 2015. It is unclear why this is the case; however, there is a similar scaled higher forecast growth for 'Limehouse and East' that off-sets this difference, so it could be the result of recent ward boundary changes.

3.93 For the purposes of strategic modelling the observed differences in population are not anticipated to have any fundamental impact upon the outputs from the modelling work.

3.94 **Table 3.5** presents a similar comparison of the employment growth projects from the LTS model and current GLA forecasts, as sourced from London Datastore. In both cases the current 2015 employment has been used (source: GLA projections) as the baseline (as opposed to the 2011 LTS model data presented above). The current 2016 GLA employment forecasts are only available as a borough-wide projection and so are not disaggregated by ward.

Table 3.5 Comparison of LTS Model and current GLA 2016 Employment Projections

Ward Grouping	LTS Growth Projects		GLA 2016 Growth Projection		Differences	
	2031	Increase from 2015*	2031	Increase from 2015*	Number	%
1. St Katherine's and Wapping	17,494	2,350	n/a	n/a	n/a	n/a
2. Millwall	151,036	29,778	n/a	n/a	n/a	n/a
3.Blackwall & Cubitt Town	34,871	9,311	n/a	n/a	n/a	n/a
4. NorthWest and Central	108,124	11,070	n/a	n/a	n/a	n/a
5. Bow and NorthEast	8,280	1,158	n/a	n/a	n/a	n/a
6. Limehouse and East	22,698	835	n/a	n/a	n/a	n/a
TOTAL	**342,503**	**54,503**	**410,000**	**122,000**	**67,497**	**20%**

LTS Model v7 and GLA 2016 forecasts on London Datastore ** 2015 employment level taken from GLA projections*

3.95 The data indicates that there is a 20% difference in the overall predicted growth in employment between the LTS model and the current 2016 GLA forecasts. This is clearly a significant difference and suggests that TfL's LTS model does not utilise the latest 2016 GLA forecast data. This has subsequently been verified with TfL who confirmed the latest LTS is based upon previous 2013 GLA employment forecasts in order to be consistent with the current London Plan.

3.96 On the basis of this analysis it has been concluded that, in order to be consistent with the London Plan, as well as TfL's current adopted assumptions on employment growth, it is good practice to utilise the current LTS growth forecasts. In addition, however, it is considered prudent to undertake a sensitivity that reflects the higher employment growth projections of the latest GLA and aspirations for the Opportunity Areas.

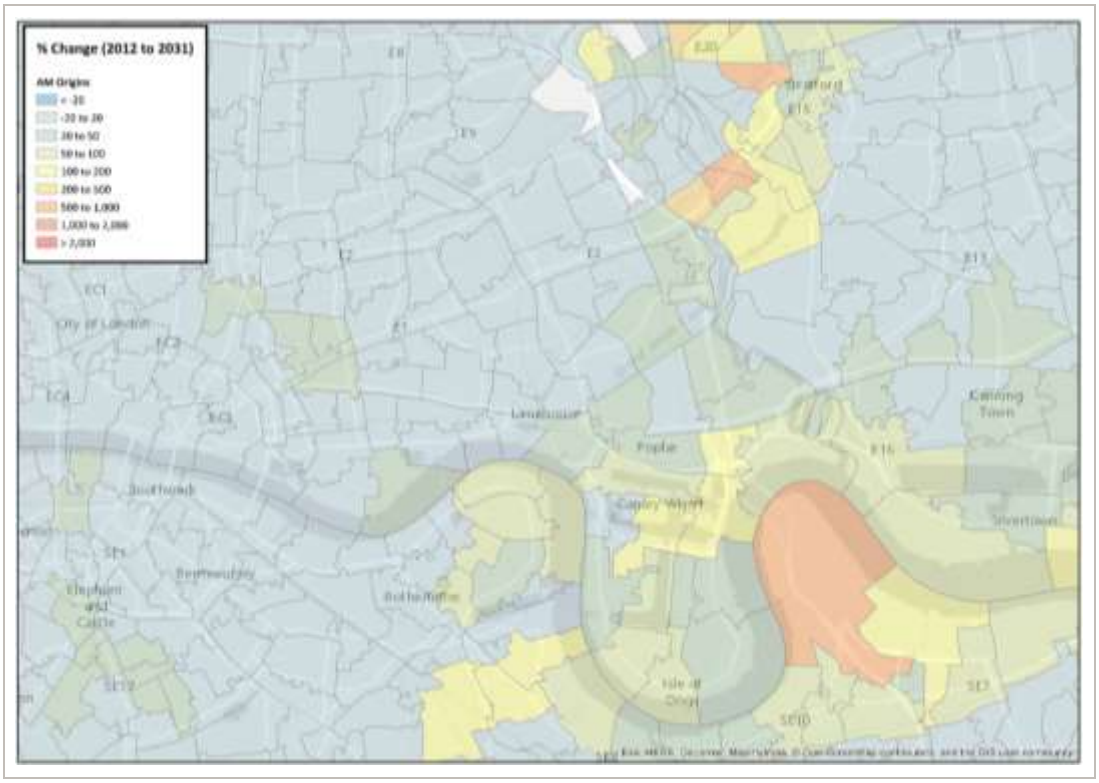
Growth in Vehicle Trips

3.97 The CLoHAM model provides data on current and future year (2031) levels of vehicle trip origins and destinations by model zone. This permits an assessment of forecast growth in vehicle trips across the borough, as well as in surrounding boroughs.

3.98 **Figure 3.17** presents the projected growth in vehicle trip origins within the AM peak hour CLoHAM model, whilst **Figure 3.18** presents the equivalent projected growth in trip destinations.

3.99 The data indicates that the focus of growth in trips origins is within the Isle of Dogs and the Lower Lee Valley. It is also notable that there is significant growth in surrounding boroughs, including Greenwich Peninsula and Stratford that will impact upon vehicle movements within Tower Hamlets. There is a similar pattern in the growth of trip destinations.

Figure 3.17 Projected Growth in AM Peak Vehicle Trip Origins (2012 to 2031)



CLoHAM Model

Figure 3.18 Projected Growth in AM Peak Vehicle Trip Destinations (2012 to 2031)

CLoHAM Model

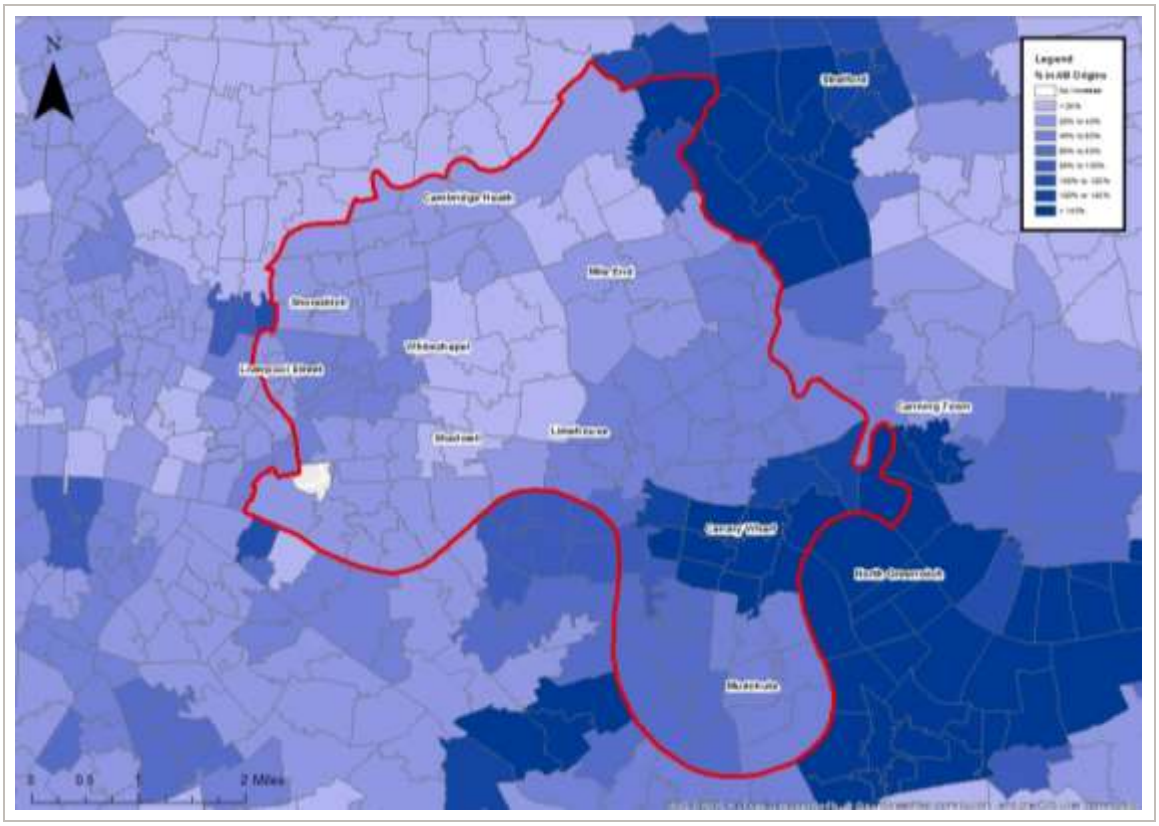
Growth in Public Transport Trips

3.100 The Railplan model provides data on current and future year (2031) levels of public transport trip origins and destinations by model zone. This permits an assessment of forecast growth in public transport trips across the borough, as well as in surrounding boroughs.

3.101 **Figure 3.19** presents the projected growth in public transport trip origins within the AM peak hour Railplan model, whilst **Figure 3.20** presents the equivalent project growth in trips destinations.

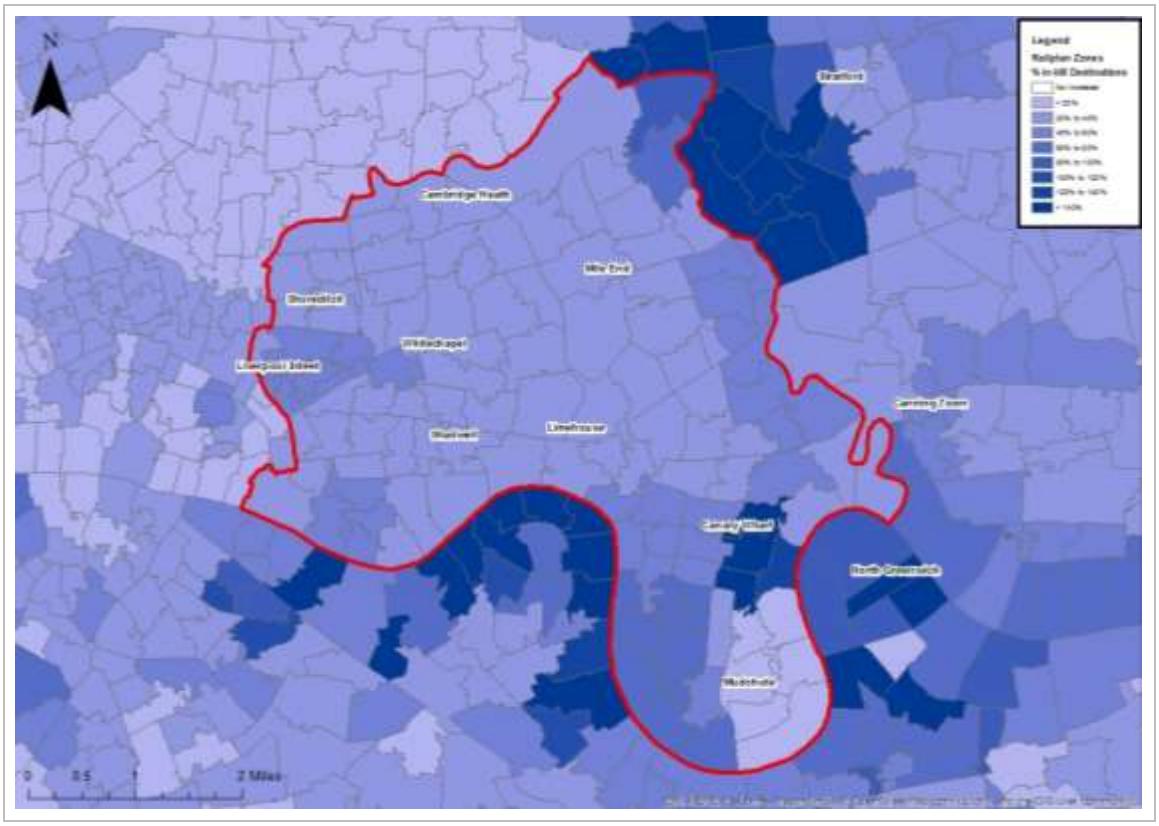
3.102 As within the growth in highway trips, the focus is upon the Isle of Dogs, and Canary Wharf in particular, as well as the Lower Lea Valley.

Figure 3.19 Projected Growth in AM Peak Public Transport Trip Origins (2011 to 2031)



Railplan Model

Figure 3.20 Projected Growth in AM Peak Public Transport Trip Destinations (2011 to 2031)



Railplan Model

KEY LAND-USE & DEVELOPMENT CHALLENGES AND OPPORTUNTIES

Key Challenges

Key Challenge: Ch_LU1 – Providing for different transport needs across the borough

3.103 The analysis has indicated a both a diverse range of land-uses across the borough, as well as varying socio-economic conditions, in terms of income levels and deprivation. There are clear differentials between the west side of the borough, which is fast becoming an extension to the City of London, in comparison to areas within the heart of the borough and to the east, with less density in development and lower income levels. The Isle of Dogs represents a microcosm in itself, with the dominant employment centre of Canary Wharf, alongside increasing levels of high density housing, but with significant under-developed land to the south around Crossharbour.

3.104 It will, therefore, be important to reflect the differing conditions and requirements of each Opportunity Area, as well as individual 'Character Places' within the transport strategy.

Key Challenge: Ch_LU2 – Substantial housing and employment growth within the borough

3.105 It is clear that there will be substantial levels of housing and employment development with the borough over the next 20 years. Whilst the extend of the employment growth remains unclear, it will create a step-change in the demand for travel and, whilst there are a range of strategic transport capacity enhancement already planned (such as Crossrail) the increase in trips will need to be carefully managed so as not to create undue congestion and over-crowding of the strategic transport network.

Key Challenge: Ch_LU3 – Substantial housing and employment growth in neighbouring boroughs

3.106 As well as growth within the borough, there will also be substantial growth across the wider East London Sub Region, with around 40% of all London housing growth anticipated within this sub region alone.

Key Opportunities

Key Opportunity: Op_LU4 – Focus of growth upon Opportunity Areas

3.107 The distribution of development will clearly be focussed around the three Opportunity Areas of City Fringe, Isle of Dogs, and Lower Lea Valley. This should provide a focus for enhancing transport provision, alongside the funding opportunities associated with high-density development.

Key Opportunity: Op_LU5 – Securing develop related transport funding

3.108 The scale of the proposed development provides the opportunity to related funding opportunities to enhance access and the urban realm across the borough. This could contribute to significant strategic investment including: new strategic connections, such as bridges over waterways; major highway infrastructure; capacity investment; and urban realm enhancements across the borough, which all ensure better integration of transport and land-use.

4 Transport Infrastructure and Operations

OVERVIEW

4.1 This section of the report provides a review of the existing transport infrastructure located throughout Tower Hamlets. All modes of travel have been taken into account, including the local and strategic highway network (vehicular travel), parking, rail services (incorporating London Underground, Docklands Light Railway, London Overground, National Rail & Crossrail), local bus services, river travel, cycling and walking.

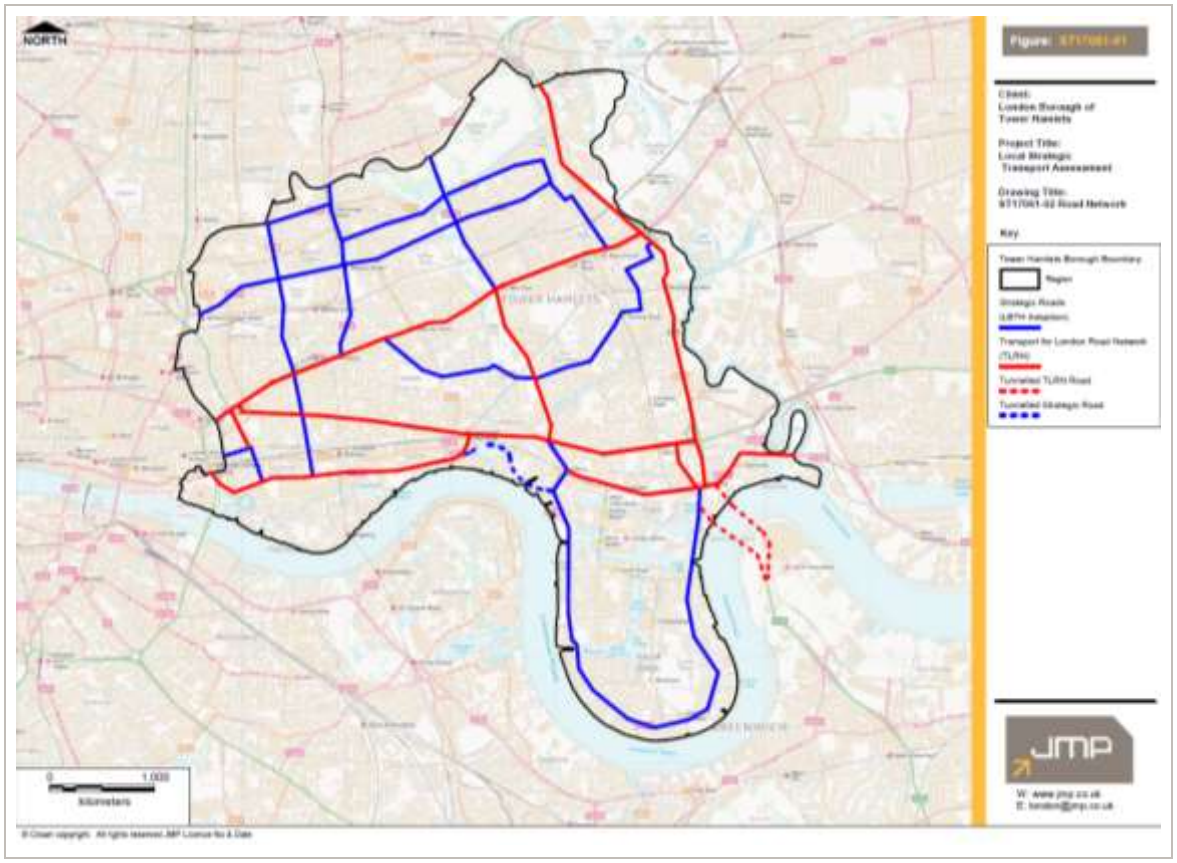
HIGHWAY INFRASTRUCTURE

4.2 Tower Hamlets' road network can be divided into three sub-categories:

- Transport for London Road Network (TLRN);
- Strategic borough routes (adopted by LBTH); and
- Local borough routes (adopted by LBTH).

4.3 The strategic road network within the borough is outlined in **Figure 4.1** below, with the TLRN highlighted in red, and key borough-adopted strategic routes shown in blue.

Figure 4.1 Strategic Road Network



TLRN

4.4 The borough is located within TfL's *North and East Area*. The **A11** runs in an east-west direction from the Aldgate Gyratory in the west through Whitechapel, Stepney Green, Mile End, and Bow to the junction with the A12 at the Bow Roundabout in the east. Within Tower Hamlets, the **A12** runs in a north-south direction, having travelled from Essex in the east. It connects to the A11 and the A102 (the Blackwall Tunnel northern approach) at its southern end. The A102 also forms part of the TLRN.

4.5 Through the borough, the **A13** runs adjacent (to the south) of the A11 and provides access from Aldgate in the west to Limehouse, Poplar and Canning Town at the eastern end of the borough. It continues eastbound into Essex. The A1205 provides a north-south connection between the A11 and A13, from Mile End in the north to Poplar at its southern end.

4.6 The introduction of the Cycle Superhighways on the A11 and the A13 have resulted in some loss of capacity on these routes and some banned turns. Whilst there has been no direct assessment of the impact, anecdotally this is considered to have placed more pressure upon the some of the strategic borough routes.

4.7 Network resilience was reported by stakeholders as a general issue across the whole highway network but particularly affects the TLRN on the approaches to the tunnels across the Thames. In the event of any incident there are reported to be significant delays, particularly on the A12 in relation to the Blackwall Tunnel, but also the Rotherhide Tunnel.

Strategic Borough Routes

4.8 Alongside the TLRN, there are a number of strategic borough roads that provide important east-west and north-south connections across the borough. These include:

- Limehouse Link;
- A1205 – Grove Road (north-south);
- A1206 – Isle of Dogs distributor road;
- A1208 – Hackney Road (east-west);
- A1209 – Bethnal Green Road (east-west);
- A107 – Cambridge Heath Road (north-south);
- B118 – Old Ford Road (east-west);
- B119 – Roman Road (east-west);
- B108 – Whitechapel (north-south);
- B140 – Stepney (east-west); and
- B142 – Parnell Road / Fairfield Road (north-south).

4.9 These routes provide important strategic connectivity within the borough, connecting district centres and linking into the TLRN and cross boundaries into surrounding boroughs.

4.10 Network resilience is again considered by stakeholders to be a key issue with the strategic borough routes. Access to the Isle of Dogs (A1206) is restricted to two entry/exit points by road, the eastern access which requires travel over a lifting bridge (referred to as the Blue Bridge). Whilst the operation of the bridge is a relatively infrequent occurrence, when it does occur it significantly restricts access and causing queuing. Vehicles will often try and turn round when they realise the bridge is up, creating further difficulties. More generally, if there is a network incident that affects either of the accesses onto the Isle of Dogs then this can cause significant congestion. Even without incidents the PM peak is typified by heavy traffic volumes existing the island.

4.11 An additional route onto the Isle of Dogs has been under consideration for some time. One option considered is Hertsmere Road, which provides access of Aspen Way (A1261). This, however, is under a variety of different private ownerships and so would require adoption prior to any ability to upgrade the route.

4.12 There are also considered to be network constraints to the northeast of the borough around Hackney Wick and Fish Island that restrict movement. This is a key issue in relation to current and future development both within the borough as well as in Newham around Stratford.

Local Borough Roads

4.13 Interlinking the TLRN and Strategic Borough Routes are a variety of other local borough roads that serve local access needs and provide the majority of residential on-street parking (discussed further below). These roads should provide a more holistic function catering for a variety of different modes of travel; however, there is an identified need to make them more welcoming to active travel modes of walking and cycling, rather than simply for motorised vehicles.

20mph Restrictions

4.14 The borough has recently introduced an experimental 20mph restriction across all borough roads with the aim to help moderate the speed of motor vehicles and reduce accident rates. Approximately 85% of the borough is already formally within local 20mph zones, the majority of which have demonstrated a reduction in the total number of casualties, by up to 70% since implementation.

4.15 At the time of this report a consultation process was being undertaken to assess the level of support for the borough-wide 20mph scheme. The consultation also seeks views on whether the scheme would benefit from amendments to the roads included (e.g. exclusions of specific borough roads or the inclusion of sections of TLRN roads) and if more work is required to increase the effectiveness of the scheme.

Highway Asset Condition

4.16 TfL conduct a range of visual inspections of the principle road network across London. They assess the percentage of the road network that is considered to be in 'poor overall condition' and requires maintenance. **Table 4.1** presents the results for Tower Hamlets over the last 3 years of data.

Table 4.1 Percentage of Principal Road Network Length in Poor Overall Condition

2011/12	2013/14	2014/15
39.8	28.3	12.8

4.17 The results indicate that the quality of the principal road network improved considerable over the three year period, with a reduction in the percentage of the network considered 'poor' reducing from around 40% to under 13%. This indicates that highway conditions have been improving on the principal road network.

Electric Vehicle Infrastructure

4.18 There is currently no on-street provision of electric vehicle charging points within the borough. Up until now there has considered to be insufficient demand to warrant safe-guarding space; however, it is recognised that this may change going forward as this technology evolves.

4.19 Requests for electric vehicle charging points are currently included within strategic planning applications, but not major applications. The focus to-date for electric charging points has been within private car parks

or within supermarket car parks. Consideration of the role the borough should play in encouraging electric vehicle usage will be important, given the 15-year plan period, and the developments that could take place during that time.

4.20 It may be pertinent to align with a London-wide approach and work in collaboration with other boroughs to promote electric vehicle uptake.

Key Challenges: Highway Infrastructure and Technology

Key Challenge: Ch_HIT1 – Highway Network Resilience

4.21 Network resilience is a primary issue concerning highway infrastructure. The occurrence of highway incidents can create significant congestion issues, in particular, in relation to tunnels across the River Thames.

Key Challenge: Ch_HIT2 – Limited River Crossings

4.22 There are currently a limited number of crossing opportunities across the River Thames within the borough, and a resultant lack of resilience. Key crossing routes are the Blackwall Tunnel, Rotherhithe Tunnel and the Woolwich Ferry. The proposed Silvertown Tunnel will provide additional river crossing capacity and should provide greater resilience to the highway network within Tower Hamlets. Other options for increasing cross-river movements, by all modes, such as ferries, could also help create greater network resilience

Key Challenge: Ch_HIT3 – Access to Isle of Dogs

4.23 Congestion is experienced on the Isle of Dogs due to a lack of resilience due to there being only two access points to the Isle at present. The large amount of development and construction work currently taking place means periodical road closures are required, reducing access to just one location.

Key Challenge: Ch_HIT4 – Role of the TLRN

4.24 Lane width reductions and banned turns brought in as part of Cycle Superhighways have reduced effective capacity on the TLRN and it is important to ensure that these routes continue to fulfil their intended role of facilitating strategic movements across the borough.

Key Opportunities: Highway Infrastructure and Technology

Key Opportunity: Op_HIT5 – Application of Technology

4.25 Potential to use improved technology (such as advance variable message signs) to improve driver navigation when traffic congestion and other issues arise. Such signs could potentially be utilised 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.

Key Opportunity: Op_HIT6 - Road Safety (20 mph trial)

4.26 An experimental borough-wide 20mph speed restriction is in operation at present, with the aim of improving road user safety and vehicle flow. If deemed successful, this could provide a significant opportunity to enhance road safety for all road users, but in particular active travel modes.

Key Opportunity: Op_HIT7 – Electric Vehicles

4.27 Electric vehicles could become an important mode within the borough in reducing vehicle emissions and improve local air quality. The borough may have a role in encouraging uptake, either through infrastructure provision within its own land, or through wider collaboration in a London-wide approach.

PARKING INFRASTRUCTURE AND OPERATIONS

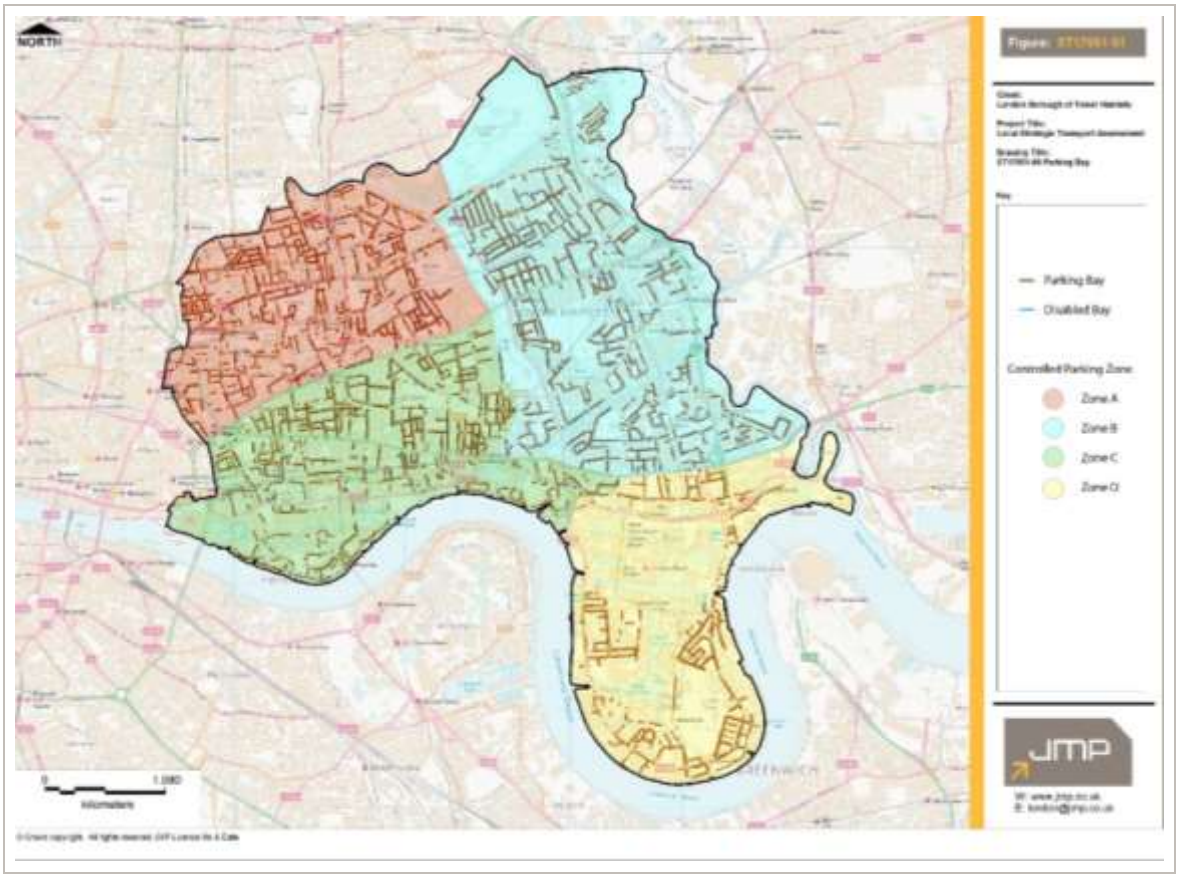
Controlled Parking Zones

4.28 There are currently four main Controlled Parking Zones (CPZs) in operation within Tower Hamlets:

- Zone A: Bethnal Green area (split into six mini zones);
- Zone B: Bow, Poplar and Fish Island (split into four mini zones);
- Zone C: Stepney and Wapping area (split into four mini zones); and
- Zone D: Isle of Dogs area (split into two mini-zones).

4.29 The coverage of each of the zones is shown in **Figure 4.2**.

Figure 4.2 Controlled Parking Zones



4.30 Different operational hours are in place for different zones, but in general there are core weekday hours of 8.30am through to 17.30pm. CPZ hours of operation are set out in **Table 4.2**.

Table 4.2 CPZ Hours of Operation

Zone	Monday to Friday	Saturday	Sunday
A1, A2	08:30-17:30	-	03:30-14:00
A3, B1	08:30-17:30	08:30-17:30	-
A4, B2, B3, C1, C2, C3, C4, D1, D2	08:30-17:30	-	-
A5	08:30-19:00	-	08:30-14:00
A6	Restrictions apply Monday to Sunday, 08:30-22:00 in RESIDENT permit holders parking bays only in streets to the west of Brick Lane, otherwise restrictions apply Monday to Friday, 08:30-19:00; Sunday, 08:30-14:00		
B4	08:30-19:30	08:30-19:30	-
C2 (Trinity Square area)	08:30-17:30	08:30-17:30	08:30-14:00

LBTH, June 2016

4.31 The end time of the weekday restrictions at 17:30pm in most zones is earlier than in other London Boroughs. Alongside limited Saturday and Sunday restrictions, this may impact upon the decision of some residents as to whether they should purchase a permit if they use their car to travel during the day.

Permit Types

4.32 The main two types of permits are “resident permit” and “business, contractor, doctor and public service permits”. In addition permits are also available for market traders and car clubs. Whilst businesses can apply for a three month period, the minimum period of time residents can apply for is six months.

4.33 A variety of permits are issued to public service workers, including teachers, etc., with the intention that these permits are used for employer business related activities only. In practice it is difficult to enforce this and so there is potential for these permits to be used for commuting purposes as well.

Permit Costs

4.34 As a means of encouraging better air quality within Tower Hamlets through minimising car use, the cost of permits is based on a sliding scale and since 2008 has been linked to the level of emissions a vehicle produces, to encourage an improvement in air quality in the borough.

4.35 Charges implemented on the 1st April 2016 are set out in **Table 4.3** below. The values apply to the first permit bought by a household or business. Any additional permit is charged at the G2 Band level, regardless of the actual engine size or emissions level of the vehicle. This is to discourage multiple permits per household/business.

Table 4.3 Cost of Permits for Residents & Businesses

Band	Engine Size (cc)	CO2 Emissions (g/km)	Resident 6 Month Permit	Resident 12 Month Permit	Business 3 Month Permit	Business 6 Month Permit	Business 12 Month Permit
MCL	Any	Any	N/A	£16	N/A	N/A	N/A
Electric	N/A	N/A	£6	£6	£7	£7	£7
A	-	<=100	£6	£6	£231	£343	£554
B	<=1100	101-120	£29	£46.50	£244	£364	£588
C	1101-1300	121-150	£35	£57.50	£265	£391	£627
D	1301-1600	151-165	£46.50	£81	£291	£430	£694
E	1601-1800	166-185	£58	£103	£303	£448	£726
F	1801-2000	186-225	£70	£126	£316	£469	£759
G	2001-3000	226-325	£81	£142	£330	£489	£792
G2	>3000	>325	£92	£172	£343	£504	£825

LBTH, June 2016

Number of Permits

4.36 The number of permits per household or business is not capped, although the cost for multi vehicles is charged at the highest charging band (G2).

4.37 Residents can also purchase visitor scratch cards to enable visiting vehicles to park within the CPZ. These are currently charged at £15 for a book of ten. (Free for those aged over 60 or who have a daily carer). Each permit allows for visitors to park for up to six hours in resident permit bays

4.38 Public service scratch cards are also available to purchase at a cost of £37 which enables parking for three hours in resident permit bays. There is no limit on the number of visitor scratch card books that a resident can purchase

4.39 For those living in car free developments a maximum of three visitor scratch cards books per year can be issued.

4.40 Data is available that compares the total number of permits and vouchers issued against the number of on-street parking bays within each mini-zone. **Table 4.4** presents a summary.

Table 4.4 Permits and Vouchers Issued against Number of On-Street Parking Bays

Zone	On-street Parking Bays	Permits Issued	Vouchers Issued	Ratio of Permits / Bay	Ratio of vouchers / Bay
Zone A1	801	1037	3952	1.29	4.93
Zone A2	575	614	2244	1.07	3.90
Zone A3	1,873	1843	6816	0.98	3.64
Zone A4	2,601	3029	9709	1.16	3.73
Zone A5	341	269	709	0.79	2.08
Zone A6	686	632	1578	0.92	2.30
Zone A Total	**6,877**	**7,424**	**25,008**	**1.08**	**3.64**
Zone B1	2,522	2922	10782	1.16	4.28
Zone B2	2,808	3290	8266	1.17	2.94
Zone B3	3,137	4340	11155	1.38	3.56
Zone B4	383	188	101	0.49	0.26
Zone B Total	**8,850**	**10,740**	**30,304**	**1.21**	**3.42**
Zone C1	1,031	1056	2432	1.02	2.36
Zone C2	533	515	742	0.97	1.39
Zone C3	3,222	3685	12368	1.14	3.84
Zone C4	1,246	2098	5470	1.68	4.39
Zone C Total	**6,032**	**7,354**	**21,012**	**1.22**	**3.48**
Zone D1	2,202	2795	6147	1.27	2.79
Zone D2	1,296	1320	2739	1.02	2.11
Zone D Total	**3,498**	**4,115**	**8,886**	**1.18**	**2.54**

Source: LBTH

4.41 The data indicates that across all four zones there are more permits issued than there are on-street parking spaces available. Zone C has 22% more permits than on-street parking bays available.

4.42 In only five of the mini-zones (A3, A5, A6, B4, and C2) are there sufficient on-street parking spaces to meet the total demand from permit holders. Mini-zone C4 has the most extreme ratio of permits to on-street spaces, with 68% more permits than spaces, followed by B3 (38%), A1 (29%), and D1 (27%).

4.43 The data also indicates that there are large numbers of vouchers used across all the mini-zones for one-off parking by non-permit holders. Again, mini-zones C4 and A1 have high usage, as well as B1.

4.44 This is an initial indication of the significant demands for on-street parking across the borough. This is assessed further in Section 5.

Controlled Parking Zones – Inter Zone Parking

4.45 A permit holder may park for an unlimited amount of time within their larger zone (e.g. A1 within Zone A), and for up to three hours in any other zone. Whilst this can alleviate pressures within the smaller mini zones, it may also encourage cross-borough vehicular trips. Having a time period of three hours allows for a number of leisure activities or indeed parking around transport interchanges to make a trip outside of the borough. This is analysed further in Section 5.

Pay and Display

4.46 There are a large number of Pay and Display bays located throughout all of the CPZs. These provide non-permit holders with the opportunity to park for short periods of time. These tend to be located around retail areas.

4.47 The maximum stay is between 2 and 4 hours (as displayed on the relevant signs) and vehicles cannot return within an hour of departing. The minimum time that can be bought is 30 minutes and tickets must be bought not more than five minutes after parking (not in advance).

4.48 **Table 4.5** shows the costs of Pay and Display charges per hour within the different CPZ zones.

Table 4.5 P&D Parking Charges

CPZ Mini-Zone	Cost per Hour
B1, B2, B3, B4, D1, D2	£3.40
A3, A4, C3, C4	£3.80
A1, A2, A5, A6, C1, C2	£4.40

LBTH, June 2016

4.49 All of Tower Hamlets 'on street' pay & display, shared-use bays, and car parks on Council highway, have a "Pay-by-Phone" parking service. This allows drivers to avoid the need to carry sufficient change to use pay and display facilities in the borough and ensures they will not receive a parking ticket through not having coins of the right denomination on them. This system also provides a benefit of allowing drivers to pay only for the actual parking time that they use and is convenient for motorists and the borough has seen an increase in uptake.

Parking Standards

4.50 The Council currently has a policy to make new residential properties ineligible for on-street parking permits. Whilst this has managed the overall demand for permits and the level of parking during the operating hours of the zones, there remains a perception that residents of these properties still park their cars on-street overnight, causing significant parking pressures. This is examined further within Section 5 of the report.

4.51 The restrictions on on-street parking permit availability have been amended to enable visitor permits to be issued to those that live in permit free developments. This was to address the limited number of off-street visitor parking spaces provided within new developments.

4.52 The local level maximum car parking standards are set out in Appendix 2 of LBTH's Managing Development Document (DMD) (2013). These are replicated in full in **Appendix C** for information.

4.53 The standards currently do not permit any car parking for the following land-use classifications (with the exception of some service parking for sites above 1,000 sqm):

- A1 Retail Uses
- A2 Financial & Professional Services
- A3 – A5 Restaurants, Cafes & Drinking Establishments
- Student Housing or Residential Education / Training Centre
- Assembly and Leisure Usage (with some exceptions for coach parking)

4.54 For ***hotels*** the standards state that in locations with a PTAL of 4-6, on-site provision should be limited to operational needs, parking for disabled people and that required for taxis, coaches and deliveries / servicing. In locations with a PTAL of 1-3, provision should be consistent with objectives to reduce

congestion and traffic levels and to avoid undermining walking, cycling or public transport. In addition, one coach space per 50 rooms.

4.55 For ***residential institutions*** spaces will be considered provided they are supported by a Transport Assessment and the need for patients to be accompanied and for patients and visitors to attend at antisocial hours will be considered. In addition, a Transport Assessment is required to justify the need of other parking, i.e. service vehicles Taxi pick-up and drop-off bay adequate for 2 required for hospitals.

4.56 For ***non-residential institutions*** spaces will be considered provided they are supported by a Transport Assessment and a Travel Plan can be secured.

4.57 **Table 4.6** summarises the standards for Business Uses. For B1 Business Offices the standards depend upon whether or not the business is located within the Central Activity Zone (CAZ).

Table 4.6 Tower Hamlets Business Car Parking Standards

Use Class	Maximum Car Parking	Other Parking
B1 Businesses Offices	CAZ: 1/1,000-1,500 sqm Other areas: 1/600-1,000 sqm	Service parking is required above 1,250 sqm and a servicing agreement must be agreed as part of Travel Plan.
B1b, B1c		
B8 Storage & Distribution	1 space per 1,250 (commercial vehicles only) sqm GFA	1 lorry/ HGV space per 1m250 sqm with additional lorry/ HGV spaces based on a Transport Assessment.

LBTH, 2013

4.58 **Table 4.7** summarises the standards for residential car parking. This is based upon both the size of the dwelling, as well as the Public Transport Accessibility Level (PTAL) of the location of the dwelling.

Table 4.7 Tower Hamlets Residential Car Parking Standards

PTAL Level of Location	Less than Three Bedroom Unit	Three Bedroom Plus Unit	Other Parking
PTAL 5-6	0.1	0.2	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	0.3	0.4	
PTAL 1-2	0.5	1	

LBTH, 2013

Parking Standards in comparison to London Plan Standards

4.59 Whilst the majority of class use types are the same as the London Plan Standards, the Tower Hamlets parking standards on retail and residential are more restrictive. Indeed the boroughs residential parking standards are some of the most restrictive within London when compared across other boroughs,

4.60 **Table 4.8** sets out the maximum number of spaces for residential developments within the London Plan. These are not dependent upon PTAL levels but permit a more generous parking allocation across all size of dwelling that the comparable Tower Hamlets standards.

Table 4.8 London Plan Parking Standards – Residential

Number of Beds	1-2 Bedroom Unit	3 Bedroom Unit	4+ Bedroom Unit
Parking Spaces	Less than 1 per unit	Up to 1.5 per unit	Up to 2 per unit

London Plan, 2015

4.61 Whilst the Tower Hamlets standards are positively designed to encourage new developments to be less car dependent, there is a perception that residents from within these low-car developments still have a desire to own a car and that this can lead to higher levels of on-street parking during times when the CPZ's are not in operation (e.g. overnight and at weekends). This issues is discussed further through the analysis of on-street car parking demand data in Section 5.

Parking Standards in Other Inner London Boroughs

4.62 A review of parking standards in other nearby Inner London Boroughs has been undertaken. This indicates that some boroughs have adopted a more stringent set of parking standards than those current deployed within Tower Hamlets.

4.63 The LB Islington requires all new residential development across the borough to be car-free, with the exception of disabled parking provision. This approach recognises the London Plan (Policy 6.13) to support the promotion of car-free development in locations with high public transport accessibility, whilst ensuring that provision is made for disabled people. Whilst the LB Islington has consistently higher PTAL levels across the borough than Tower Hamlets, with the majority of the borough above PTAL 5, there are also significant areas of PTAL 3 and 4, and even 2, which are subject to the same car-free policy. This is justified with their Local Plan by the level of congestion and air quality across the highway network and the projection for new homes (similar to Tower Hamlets), which will be supported by further enhancements to public transport provision.

4.64 The LB Hackney has also adopted more stringent parking standards as part of it recent Local Plan process. Whilst the full details will be provided in an upcoming supplementary guidance, the Local Plan indicates that car-free development will be required in areas with a PTAL of 4 to 6, including town centre locations and developments in proximity to rail stations. On-site car parking for car free schemes will be limited to spaces for disabled people, and if justified, for operational and service requirements.

4.65 The LB Camden is also seeking to introduce a car-free development policy as part of their new Local Plan and provides evidence relating to air quality and public health benefits of reduced car trips and how, if linked to public transport accessibility, walking and cycling provision and car clubs, then the benefits of car ownership in Inner London are limited.

4.66 These examples demonstrate the approach to parking standards being adopted within other Inner London boroughs to respond to current issues of air quality and public health and future pressures that could be created on their highway networks from projected housing growth if car ownership levels are not reduced.

Car Clubs

4.67 Car Club bays are provided across the borough as part of the permit parking controls. These provide communities with access to short-term private car hire. There are a number of Car Club Operators within the borough, meaning that individuals have to make a choice as to which Club(s) they join, potentially restricting the overall number of vehicles they have access to.

4.68 Car Club Operator have to pay £208/year for a bay.

Key Parking Provision Opportunities

4.69 A range of opportunities exists around the conditions, levels, and controls on parking permits, as well as the application of parking standards, to manage parking demand and private car usage.

Key Opportunity: Op_PP1 – Conditions on permits

4.70 There are a number of potential challenges around the conditions attached to resident parking permits that may influence the utilisation of on-street parking. Whilst the cost of permits generally increases for additional permits, there is no cap on the total number of permits per household or business. This enables

multi-car occupancy for residents, which can be of benefit to those residing in Houses-in-Multiple-Occupation but creates pressure upon on-street parking provision.

4.71 A variety of permits can be issued to public service workers including teachers, etc. Whilst the intention is that permits should not be issued for commuting purposes but only for those using their vehicle to work, in practice this is difficult to enforce and potentially open to abuse.

Key Opportunity: Op_PP2 – Controls on the level of Parking Permits

4.72 The volume of permits issued per zone should be investigated to ensure it is correlated to level of supply of kerb side space. Eligibility rules on persons who can apply for permits could be reviewed to see if these remain appropriate or if more stringent measures should be adopted. The opportunity should be taken to review the number of multiple permits issued to residents and businesses and investigate whether cap should be applied.

Key Opportunity: Op_PP3 – Inter-zone Parking

4.73 Whilst the original intention of allowing inter-zone parking for 3 hours was to stimulate local trade, an investigation could take place to ensure this is still relevant and whether cross-borough vehicular trips need to be undertaken by car. Whilst a reduction in length of stay period permitted might create a turnover of spaces, and lead to less demand for its use, the associate volume of trips may not reduce.

Key Opportunity: Op_PP4 – Parking Standards

4.74 Parking standards for new residential and retail standards are more stringent than those set out within the London Plan. This is provides a positive opportunity, alongside wider sustainable travel measures, to ensure future development growth minimises the generation of additional private car trips.

RAIL PROVISION

General Overview

4.75 Rail operations and infrastructure that serve the borough can be divided as follows. Detailed information on each division of rail services is provided below:

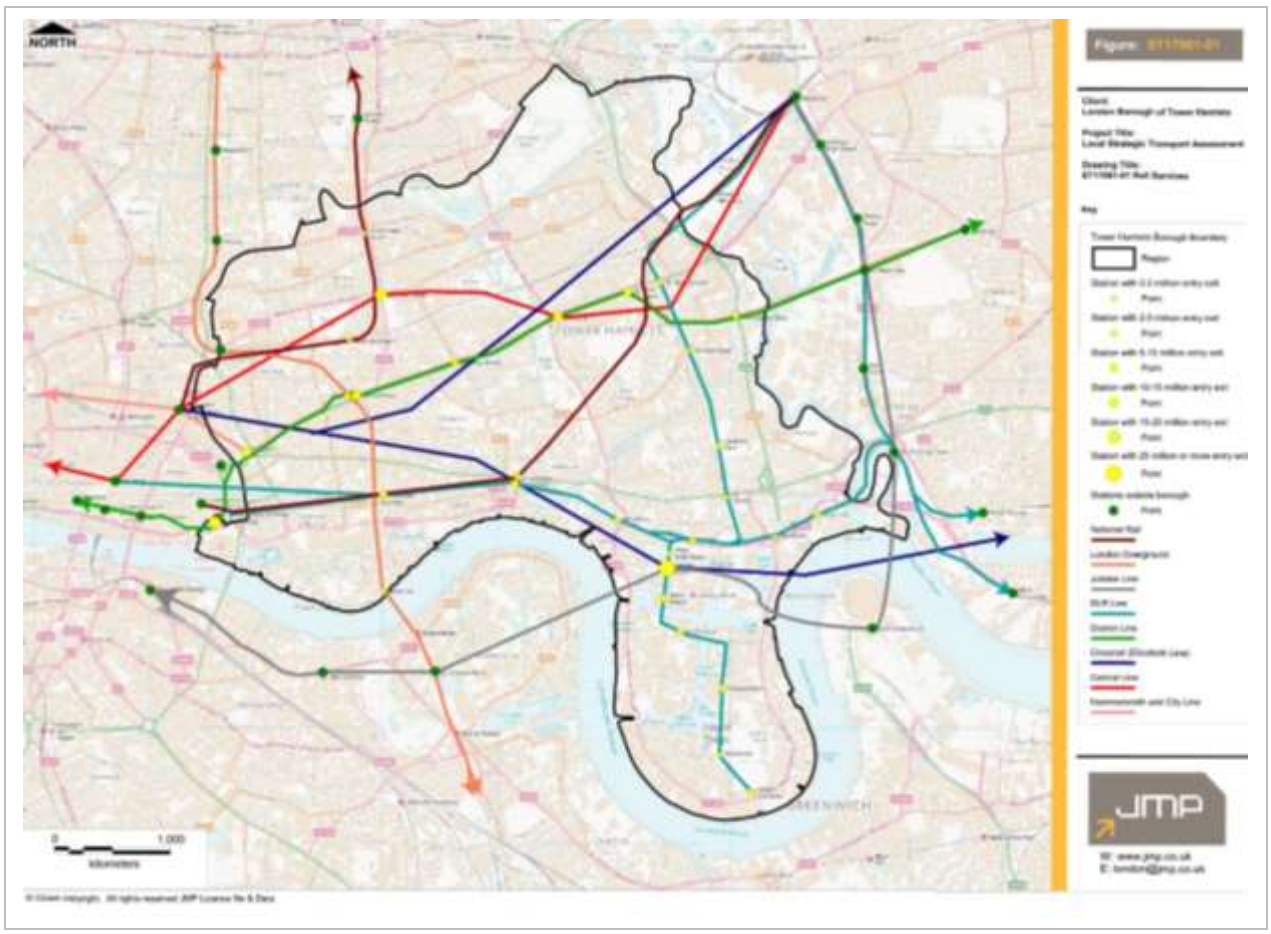
- London Underground;
- Docklands Light Railway;
- London Overground;
- National Rail; and
- Crossrail (Elizabeth Line).

4.76 A plan showing the location of stations and routing of rail services that operate within Tower Hamlets is shown in **Figure 4.3**.

4.77 Generally the borough is well served by rail in terms of a relatively comprehensive network of lines. Whilst there is a predominance of east-west services, the DLR provides some north-south connectivity as well, as does the Jubilee line in terms of connection to Stratford.

4.78 There are wider issues of network capacity both now and that will occur in the future. These issues are discussed within Section 5.

Figure 4.3 Rail Services



London Underground

4.79 The borough is served by a total of four London Underground lines; the Central, District, Hammersmith & City and Jubilee lines. These line serve seven 'Character Places' of Aldgate, Whitechapel, Stepney Green, Mile End, Bow, Bromley-by-Bow, and Canary Wharf.

4.80 The Central line serves two stations within the borough, (Bethnal Green, Mile End) and runs in an east-west direction. Central line services branch to Hainault in the west and Ealing Broadway in the East continuing to Epping and West Ruislip respectively. Key destinations served include Bank, Liverpool Street, Tottenham Court Road and Shepherd's Bush to the west and South Woodford, Loughton and Epping to the east. There are existing plans, as part of TfL's New Tube for London programme to increase capacity on the line by 25% with 33 trains per hour at peak times by 2030.

4.81 Within the borough, the District line serves six stations and runs in an east-west direction, with the route running parallel (underground) to the A11 through Aldgate, Whitechapel, Stepney Green, Mile End, Bow and Bromley-by-Bow. District Line services branch to Ealing Broadway, Richmond and Wimbledon at the western end of the line, and continue to Upminster in the east. Key destinations served include Victoria, Tower Hill, Embankment, South Kensington and Earls Court to the west, and West Ham, Barking and Dagenham to the east.

4.82 The Hammersmith & City line runs along the same track as the District line through Tower Hamlets, and serves the same stations. The line runs from Barking in the east to Hammersmith in the west, and splits from the District line to the west of Aldgate East. Following the split, the line provides additional connectivity

to parts of northern central London including Liverpool Street, Euston, Kings Cross, Paddington and Baker Street.

4.83 The Jubilee line runs between Stanmore in the northwest of London and Stratford in the east. One station on the line is located within the borough, at Canary Wharf. Access is provided to destinations including Stratford, Westminster, Green Park and Baker Street, and transport interchanges including London Bridge (National Rail and Northern line), West Ham (National Rail and District / Hammersmith & City lines) and Waterloo (National Rail, Bakerloo, Northern and Waterloo & City lines).

Docklands Light Railway

4.84 The Docklands Light Railway runs between terminus locations of Stratford (to the north), Lewisham (to the south), Tower Gateway and Bank (to the west) and Beckton and Woolwich Arsenal (to the east). The DLR serves seven 'Character Places' of Tower of London, Shadwell, Limehouse, Poplar, Canary Wharf, Cubitt Town, and Bromley-by-Bow. It also provides connection to London City Airport.

4.85 There are 17 DLR stations within the Borough and all have step-free access from the street to the train. The close proximity of stations along the DLR network is considered to have both positive and negative impacts. Whilst it provides excellent accessibility to stations, minimising walk distances, there are rail operating issues with the frequent stops constraining overall capacity of the line.

4.86 It is understood that TfL are considering options for replacing existing train stock with a 'New DLR Train for London', which will provide significantly more capacity per vehicle. Along with the provision of new train stabling facilities this will permit enhanced operation and capacity on the network. In addition, although not currently under consideration, there are long term opportunities to enhance signalling provision that will permit higher frequency running of services and, hence, also increase capacity.

London Overground

4.87 The London Overground serves 23 of London's 33 boroughs and has six routes, as detailed below:

- Highbury & Islington to West Croydon, Clapham Junction and Crystal Palace;
- Richmond/Clapham Junction to Stratford;
- Gospel Oak to Barking;
- Watford Junction to Euston;
- Liverpool Street to Enfield Town, Cheshunt and Chingford; and
- Romford to Upminster.

4.88 Within the borough, London Overground services can be accessed from Wapping, Shadwell and Whitechapel stations, which are located on the same branch of the Overground (Highbury & Islington to West Croydon, Clapham Junction and Crystal Palace). 16 trains operate per hour in either direction; the frequency of off-peak services from the three London Overground stations is set out below:

- Northbound to Highbury & Islington: eight trains per hour;
- Northbound to Dalston Junction: eight trains per hour;
- Southbound to West Croydon: four trains per hour;
- Southbound to Crystal Palace: four trains per hour;
- Southbound to New Cross: four trains per hour; and
- Southbound to Clapham Junction: four trains per hour.

National Rail

4.89 There are four national rail stations located in the borough: Bethnal Green, Cambridge Heath, Limehouse and Shadwell. The former two are on the Lea Valley Line that has recently been taken over by TfL and added to the Overground Network and provides connections west to Liverpool Street Station and north up to Seven Sisters and beyond. The latter two station are on the C2C network that provides connections west into Fenchurch Street Station and east out to Southend.

4.90 Interchanges with other modes of public transport are provided at the four National Rail stations in the borough. Local bus services can be accessed at all stations, as well as with London Underground (Bethnal Green), Docklands Light Railway (Shadwell) and London Overground (Bethnal Green) services.

4.91 Whilst not in the borough, Fenchurch Street Station plays a key role on the services that can be operated along the C2C network. Capacity at Fenchurch Street is significantly constrained, impacting upon the ability to increase provision along this route.

Crossrail

4.92 Crossrail is a major new railway network covering 38 stations across London and the south east. The route will run from Reading to Shenfield in Essex and is anticipated to increase London's rail capacity by approximately 10%. The first services through Central London are due to start in 2018 and will carry an estimated 200 million annual passengers. Crossrail will form part of the Elizabeth Line and when complete will run between Reading and Heathrow Terminal 4 in the west to Shenfield and Abbey Wood in the east.

4.93 Two Crossrail stations will be located in the borough, at Canary Wharf and Whitechapel. Upon opening these stations will be served by 15 trains per hour (reducing to 12 trains per hour on full opening). Crossrail will help to reduce journey times to and from Central London, Essex and the west.

Role of Rail

4.94 Rail clearly provides the dominant public transport capacity across and through the borough. It offers three main triangular axis of movement from points at the City of London, Canary Wharf and Stratford. It also provides for cross river movements on the Overground, DLR, and Jubilee Line.

4.95 It role is clearly focused upon providing for journey to work movements into the City as well as Canary Wharf, reinforced by the upcoming delivery of Crossrail. This means it will be an important mode in the development of the City Fringe and Isle of Dogs Opportunity Areas; however, it will provide less benefit in the development of the Lower Lea Valley Opportunity Area unless the development of this area incorporates a clear strategy for access to nearby rail lines, such as the DLR and Jubilee Line.

4.96 The role of rail is clearly restricted to available infrastructure capacity, in terms of lines, signalling, carriage capacity and station platform lengths. The sub region analysis, presented in Section 3, has already highlighted some of the challenges identified with the ability for rail provision to cope with the projected demand for travel associated with development proposals across the East of London. This is examined further within the Section 5 modelling outputs.

Key Rail Provision Challenges

Key Challenge: Ch_RP1 – Rail Capacity

4.97 It is recognised that despite the high levels of existing rail provision serving the borough, many lines are already operating at service capacities and that restrictions with rail infrastructure and signalling that will need to be overcome in order to increase future capacity.

Key Rail Provision Opportunities

Key Opportunity: Op_RP2 – Crossrail Connections

4.98 It is recognised that the introduction of Crossrail have the potential to open up development, particularly around Whitechapel and Canary Wharf. Crossrail is also likely to start to ameliorate existing congestion and capacity issues on east to west rail services, particularly on Central line services running from Stratford towards Central London, and Jubilee line services running westbound from Canary Wharf during the morning peak hours (and vice versa in the afternoon peak period).

Key Opportunity: Op_RP3 – New Train Stock and Signalling

4.99 There are upcoming opportunities that may deliver new train stock and upgrade signalling to parts of the network that will provide increased capacity.

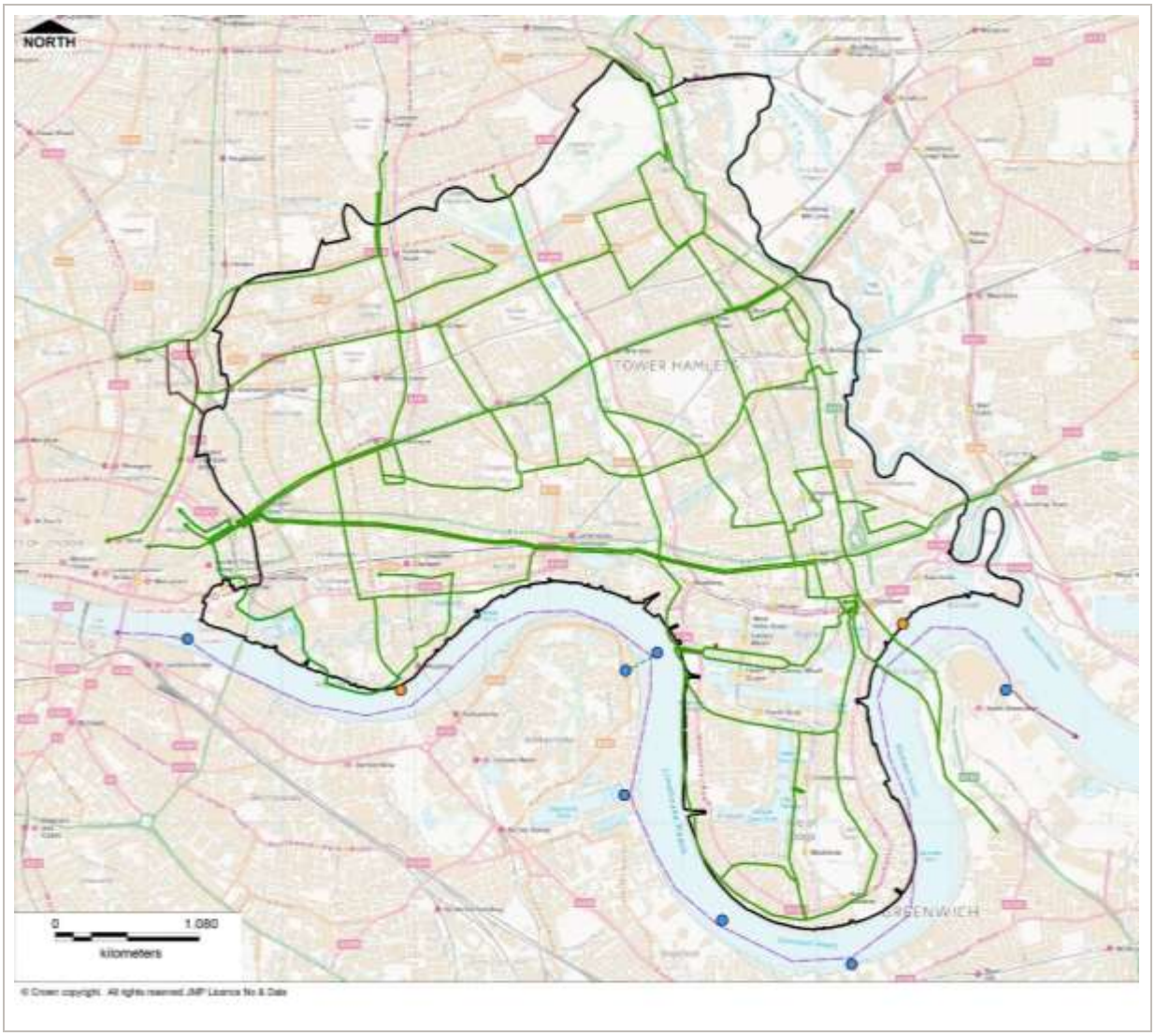
BUS AND COACH PROVISION

Bus Network

4.100 Tower Hamlets is well served by a comprehensive and relatively stable network of bus services, with a total of 26 bus routes running through the borough. The services consist of an external network across LBTH, alongside a series of routes into opportunity areas; City Fringe / Tech City, Isle of Dogs & South Popular and Lower Lea Valley / Popular Riverside.

4.101 **Figure 4.4** shows the roads served by bus services within the borough.

Figure 4.4 Local roads served by bus routes



4.102 A significant proportion of services operate around an east-west axis, running into the City of London. North-South provision is more limited and would be a potential area for enhancement, in particular in relation to future land-use changes.

4.103 **Table 4.9** provides details of the most high frequent bus services (defined as routes with more than 7.5 services per hour in either direction) that operate within the borough, alongside their destinations and the

Opportunity Areas served. The frequencies during peak weekday hours and on weekends are also presented. All bus services are operated and managed by TfL **Figure 4.5** presents the routes graphically.

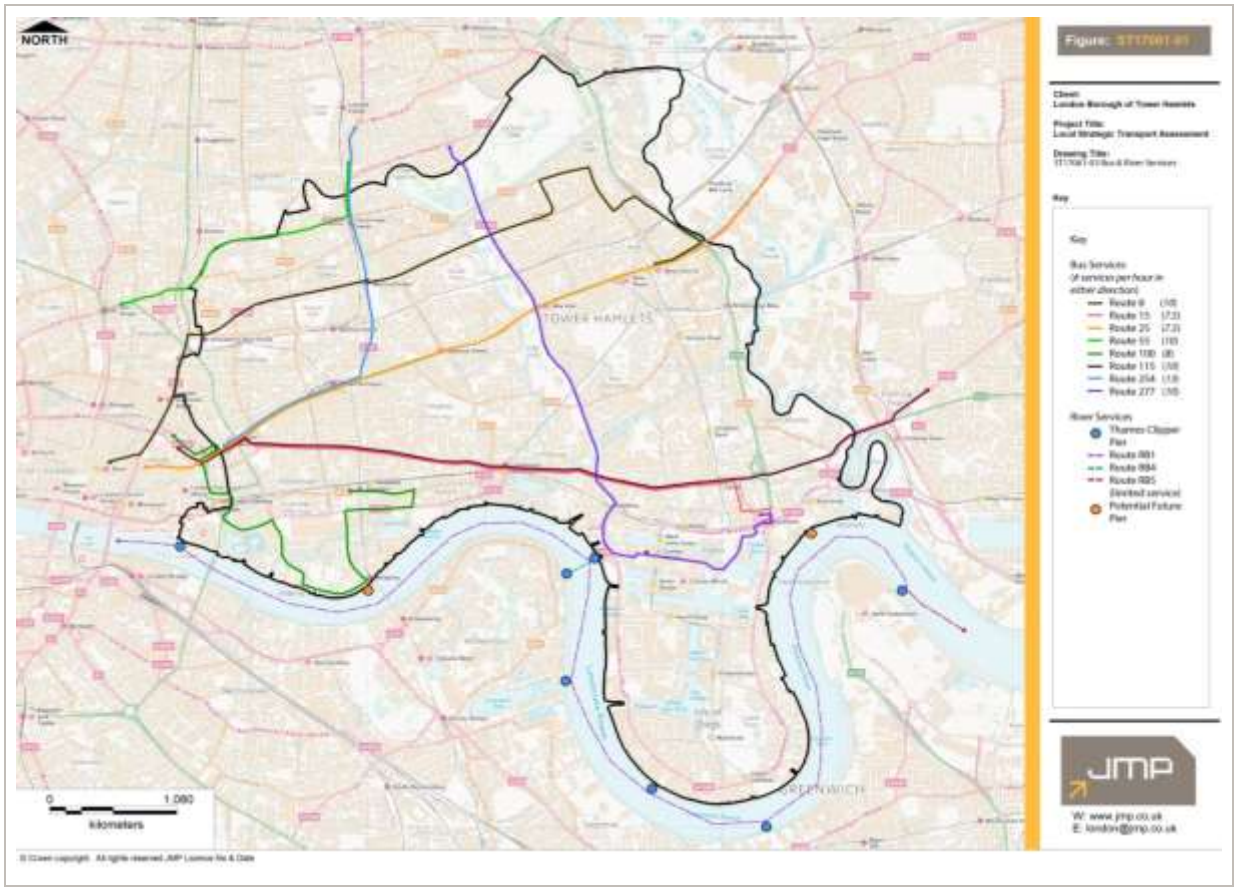
Table 4.9 Major Bus Routes in Tower Hamlets

Route	Destinations	Opportunity Areas Served	Approximate frequencies during peak hours		
			Mon-Fri	Sat	Sun
8	Bow Church – Shoreditch High Street - St Pauls Station - Holborn Station – Tottenham Court Road Station	City Fringe LLV	4-8 mins	6-10 mins	9-11 mins
15	Tower of London – Cannon Street Station – Chancery Lane – Charing Cross Station	City Fringe	Every 20 mins	Every 20 mins	Every 20 mins
25	Holles Street – City Thameslink Station – Stepney Green Station – Bow Church Road – Stratford Centre – Woodgrange Park Station – Hainault Street	City Fringe LLV	5-9 mins	6-10 mins	4-8 mins
55	Lea Bridge Road / Baker Arms – Chatsworth Road – Hackney Central Station – Old Street Station – Grays's Inn Road – Oxford Circus	City Fringe	4-8 mins	7-10 mins	8-11 mins
100	Elephant & Castle / Newington Causeway – Blackfriars Station – Aldgate Station – Dundee Street – St George's Town Hall	City Fringe	9-11 mins	9-13 mins	15-20 mins
115	East Ham – Balaam Street – Canning Town Station – Upper North Street – Limehouse Station – Marion Richardson School	City Fringe LLV	4-8 mins	8-12 mins	8-12mins
254	Darling Row – Mare Street / Well Street – Hackney Baths – Clapton Station – Amhurst Park / Stamford Lodge – Finsbury Park Station – Caledonian Road	City Fringe	4-8 mins	5-9 mins	6-10 mins
277	St Pauls Road / Highbury Corner – Greenwood Road – Terrace Road – Mile End Station – East India Dock Road – Nutmeg Lane	IoD	6-10 mins	10-10 mins	9-12 mins

TfL, May 2016

4.104 **Table 4.8** and **Figure 4.5** demonstrate that whilst nearly all of the major bus routes serve the City Fringe Opportunity Area, the level of bus services in terms of number of routes to both the Lower Lea Valley and Isle of Dogs is considerable less. Whilst the Isle of Dogs may have rail services to compensate, the Lower Lea Valley suffers from a lack of current provision that will need to be addressed in order to support sustainable development within the Opportunity Area.

Figure 4.5 Very High Frequency Local Bus Services and River Services



4.105 In terms of bus connections to the designated 'Character Places', areas such as Stepney, Bow Common, Poplar, Poplar Riverside, as well as Millwall and Cubit Town suffer from poor penetration by high frequency bus services.

4.106 A large number of services provide connections into neighbouring boroughs, although only one provides a cross river service to the south of the River Thames (through the Blackwall Tunnel):

- Routes 8, 15, 25, 55, 100, and 115 all provide connections into the City of London;
- Route 55,254 and 277 provide connections up into Hackney;
- Route 25 provide a connection to Stratford and further into Newham; and
- Route 115 provides a connection to Canning Town and further into Newham.

Night Services

4.107 Alongside the services detailed in Table 4.9, three night bus services also operate within the borough, which in general serve larger areas than the day services. Details of night bus services that operate within the borough are set out in **Table 4.10**.

Table 4.10 Night Services

Route	Destinations
N8	Holles Street – Bank Station – Brick Lane – Medway Road – Stratford Bus Station – Leytonstone Fire Station – Cambridge Road – Gants Hill Station – Tomswood Hill – The Lowe
N15	Trafalgar Square / Charing Cross Station – Aldgate East Station – Arbour Square – Upper North Street – Plaistow Police Station – Barking Station – Romford Market
N55	Holles Street – Hoxton Station – Hackney Town Hall – Markhouse Road – Wanstead Station – Chingford Lane – St Thomas of Canterbury Church

TfL, May 2016

4.108 Whilst the N8 and N15 routes both provide good access across Tower Hamlets, the N55 only serves Shoreditch. The level of service overall is, therefore, relatively limited.

4.109 N8 is more frequent on the weekend than during the week, with one service every six to eight minutes in either direction. It is noted that services do not operate on Tuesday and Wednesday nights.

4.110 Services on N15 run approximately once every 10 to 11 minutes, Monday to Thursday, every seven to eight minutes Friday to Saturday, and every 10 to 11 minutes on Sunday nights. No service is provided on Wednesday nights.

Quality of service

4.111 TfL collate a range of statistics to evaluate the quality of bus service provision across routes. These are summarised to provide metrics by individual borough.

4.112 One metric assesses the Scheduled waiting Time (SWT) of passengers against the actual Average Waiting Time (AWT) experienced. For the most recent data in 2016 (April to June) this indicated that, on average, passengers waited 26% longer than scheduled to obtain a bus during the day. This compares to figures of 28% for Hackney, 26% for Newham, and 29% Islington, suggesting services within the borough perform at least as well as neighbouring boroughs. The worst-performing service was for Route 25, running along the A11, followed by Route 8 (B119), Route 15 (A13), and Route 277 (A1205), indicating that the delays affect both east-west services, as well as north-south services.

4.113 Metrics on average bus speeds are also available from TfL. The data for 2015 indicates that Tower Hamlets ranks 34th out of 38 boroughs, with an average bus speed of only 7.4mph. Whilst this indicates relatively slow speeds, it is again comparable to LB Hackney and slightly better than other inner London boroughs such as LB Islington and LB Southwark.

4.114 The metrics indicate that the current quality of service provision across Tower Hamlets is not dissimilar to other inner London boroughs, although some key routes, such as A11, A13 do suffer from below average performance.

Role of Buses

4.115 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 (discussed further in Section 5) but also the type of market served.

4.116 Buses can 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. They are, therefore, an important considerations within the land use planning process. The impact of future growth and the role of buses in providing additional capacity, is discussed further in Section 5.

4.117 Whilst normally offering slower journey times than equivalent rail trips, buses also offer variant fare structures to rail and can, therefore, be an important mode of travel, not just in general, but particularly for those on lower income levels. This is demonstrated by Route 25, which mirrors the provision of the Central Line and yet is utilised for trips across the borough from Stratford into the City of London. The socio-economic data (in Section 3, Figures 3.7 and 3.9) has demonstrated significant variations in income levels and levels of deprivation across the borough, with the north and east of the borough having particularly low levels. Provision of high frequency bus services for these area is important, and it is noted that this is not currently the case for parts of the east of the borough.

Impact of Crossrail on Bus Services

4.118 With the upcoming opening of Crossrail, it is understood that a number of changes are proposed to bus routes serving the same corridor as rail alignment (Whitechapel to Canary Wharf and Whitechapel to Stratford). Whilst the details of these change are not confirmed, there is likely to be a re-balancing of services to match changing demand patterns resulting from Crossrail and the forecast growth on the Isle of Dogs and City Fringe.

4.119 Whilst the overarching reasoning for considering such changes is understood, concern was expressed amongst the studies stakeholders that Crossrail will, firstly, serve a different market to the current bus services and, secondly, is already forecast to have high patronage. The changing patterns of demand will include both existing travellers making different route choices, as well as new travellers responding to new opportunities within Isle of Dogs and City Fringe. It will be important to ensure any proposed alterations to bus services do not adversely affect local residents and journeys to work, education, and health facilities.

Bus Infrastructure

4.120 There is currently some bus priority on major routes; however, increasing highway congestion means that some routes are affected be increasing delays. Ensuring sufficient roadspace allocation to buses (both in terms of bus lanes and bus only roads, stronger kerbside controls) will be important to maintain the reliability of services.

4.121 Within the context of maintaining bus reliability the provision of bus stands is also considered to be important to allow layover time to be built into the timetabling process. Whilst a detailed assessment of current levels of provision has not been undertaken, requiring specialist assessments, the stakeholders to the study raised concerns that there could be limitations both now and in the future. It will be important to consider the allocation of space for these facilities as part of the wider planning process.

South Tower Hamlets Bus Service Review

4.122 In January 2014, TfL undertook a review of bus services in South Tower Hamlets. The review identified a large projected increase in bus service demand on Westferry Road. A number of schemes were identified that could help to address this, 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.

4.123 The review also noted that growth in Whitechapel may result in the area becoming a “bigger passenger objective”.

Coaches

4.124 A number of coach services 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.

4.125 Coach parking facilities within the borough are located in the Isle of Dogs (at Saunders Ness Road and Lightermans Road); Wapping (Glamis Road); Bethnal Green (Cambridge Heath Road); Aldgate (Whitechapel Road); and Tower Hill (Lower Thames Street). There is currently no specific coach hub within the borough to act as focal point for coach services.

Key Bus Provision Challenges

Key Challenge: Ch_BP1 – Role of buses

4.126 Whilst rail-based public transport provides high-capacity, high-frequency services across the borough, buses still carry high volumes of passengers and are an integral part of the public transport offer. With a variant fare structure to rail, they can be a preferred choice of travel mode, even along competing rail corridors. They can also offer flexibility in routing to directly serve residential, employment, and public service institutions and so it will be important to acknowledge this important role that buses provide and continue to develop services to meet the needs of a growing borough.

Key Challenge: Ch_BP2 – Potential rebalancing of bus service when Crossrail arrives

4.127 Whilst the delivery of Crossrail provides significant additional public transport capacity, TfL are likely to re-balancing bus services along the Whitechapel / Isle of Dogs corridor to respond to changing travel patterns. Whilst this exercise will also consider potential new trips generated by growth in Isle of Dogs and Whitechapel, it will be important to ensure there are no negative implications for current bus users or that these impacts are mitigated against.

Key Challenge: Ch_BP3 – Ensuring resilience in bus operations

4.128 Ensuring there is appropriate infrastructure provision to prioritise bus movements across the highway network (including bus-only route, bus lanes, bus priority, strong kerbside controls) and provision to manage bus service operation through layover time will be important to providing a resilient service.

Key Bus Provision Opportunities

Key Opportunity: Op_BP4 – Enhancing bus service provision through the land use planning process

4.129 Enhanced bus provision offers a flexible option for enhancing public transport provision across the borough without the need for substantial infrastructure provision. They could be particularly important for serving new development areas such as the Lower Lea Valley. This could include additional road capacity for bus and bus priority measures.

4.130 Ensuring more frequent night buses are available could encourage more people to use these services whilst in turn reduce the use of taxis on the road late at night.

Key Opportunity: Op_BP5 – Provision of coach hub

4.131 The provision of a coach hub within could act as a focal point around which to enhance coach services into the borough.

TAXI PROVISON

Taxis and Private Hire

4.132 TfL provide regulated taxis (black cab) and private hire (minicab and chauffeur) services to all customers in London. Hackney Carriages can operation across Tower Hamlets and are permitted to be 'flagged-down' or hired at a rank without any requirement by law to pre-book. Across the borough there are also a variety of private hire offices operating 24 hours a day and 7 days a week. Private Hire Vehicles must be pre-booked by law.

4.133 The market for private hire has changed significantly over recent years with the introduction of 'Apps' to permit more immediate hire of vehicles. A primary example is the increasing dominance of systems such, as Uber, throughout London owing to the low fares offered and business model. Systems, such as Uber, are managed by a phone app, which can be downloaded by all smart phones, with all private hire requests and payments are operated through the app. Drivers are self-employed and so no longer tied to a private hire operator. The system allows the nearest available drivers to identify requests for hire from passengers, significantly reducing response times and making minicabs much more competitive against traditional taxis. Similar systems are also used by hackney carriages, such as Halo, but the same regulation still applies as a standard hackney carriage trip.

4.134 These systems have significantly changed the dynamic of the whole taxi market. On the one hand, they have enhanced customer service and increased completion on fares. The new technologies also offer significant opportunities to how taxis and minicabs are used. In particular, the ability for individuals to share taxi rides on journeys, minimising the cost and making it more competitive against public transport, could change the way they are used. This could be particularly important for night time travel, where we have already seen that the level of bus provision across the borough decreases significantly.

4.135 There remain, however, some concerns about the regulation of the Private Hire industry within this emerging market and it will be important to recognise this as the market develops further.

Key Taxi Challenges Issues

Key Challenge: Ch_TP1 – Monitoring of Private Hire Regulation

4.136 Ensuring that existing regulations of the Private Hire industry can continue to be robustly applied.

Key Taxi Provision Opportunities

Key Opportunity: Op_TP2 – Application of Technology

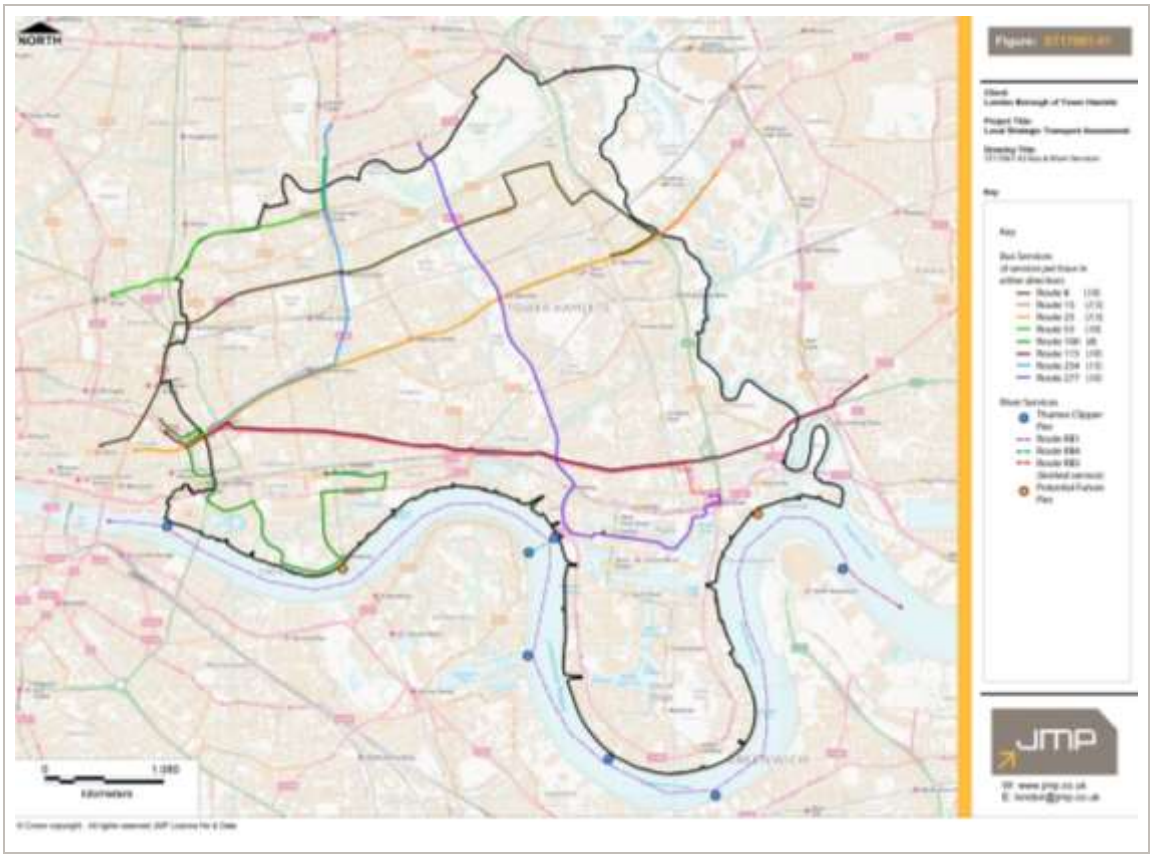
4.137 The development and application of technology has already transformed the market but could continue to do so providing opportunities for approaches such as greater taxi sharing.

RIVER SERVICE PROVISION

River Bus Services

4.138 The borough is served by three river routes; RB1, RB4 and RB5, as shown in **Figure 4.6**. These river services are operated and managed by MBNA Thames Clippers in conjunction with Transport for London. Three piers are located within the borough, providing connectivity to different routes.

Figure 4.6 River (and High Frequency Bus) Services



4.139 Overall River Bus service provides connections to The O2 in Greenwich and other destinations such as Woolwich, Embankment, Westminster and Waterloo. These services also play an important role in terms of accessibility, and reducing the severance caused by the River Thames, as they provide a cross-river connection between Greenland Pier on the south side of the river and Canary Wharf Pier on the north side.

4.140 There are outline proposals for additional piers within the borough, with two locations identified at Wapping and near Canary Wharf East. Again these are shown in **Figure 4.6**.

4.141 The overlaying bus routes provides an indication of the potential inter-connectivity of these services with river services. At present there is relatively limited connectivity between these services. An assessment of walking access to the river, set out further in Section 6, also concludes that accessibility could be improved to riverside walkways and, hence, to river services.

4.142 **Table 4.10** sets out the first and last service of each route on a weekday and weekend.

Table 4.11 River Bus Service information

Route	Destinations	Weekday		Weekend	
		First	Last	First	Last
RB1	Embankment – Canary Wharf – Greenwich – Woolwich	06:58	23:08	09:33	23:08
RB4	Doubletree Docklands Nelson Dock Pier – Canary Wharf	06:20	23:55	08:55	23:45
RB5	North Greenwich – Woolwich Arsenal	06:58	23:08	No Service	No Service

TfL

4.143 RB1 travels to and from London Eye to North Greenwich daily, with servicing operating every 20 minutes in either direction. The service also extends eastwards to Woolwich Arsenal and runs every 20 minutes during peak hours only.

4.144 RB4 runs from Canary Wharf to Doubletree Docklands (south of the river) on a daily basis. The service operates with a 10 to 20 minute frequency depending on the time of day.

4.145 A connecting shuttle service (RB5) is operated by Thames Clipper between Woolwich Arsenal and North Greenwich at weekends.

4.146 RB1 and RB4 serve and provide good access to Canary Wharf and Crossharbour, a current opportunity area within the borough. Service RB4 caters well for workers and commuters who work in Canary Wharf during peak hours.

4.147 Entry and exit counts for the three River Bus piers located within the borough are provided in **Tables 4.12** and **4.13**, with average weekday, Saturday and Sunday entry and exit counts given.

Table 4.12 River Bus Entry & Exit Counts (04-17 September 2015)

Pier	Weekday			Saturday			Sunday		
	Board	Alight	Total	Board	Alight	Total	Board	Alight	Total
Canary Wharf	11,193	10,944	22,137	2,262	2,477	4,739	1,724	1,691	3,415
Masthouse Terrace	1,410	1,502	2,912	287	228	515	134	174	308
Tower	6,505	10,751	17,256	1,747	3,067	4,814	2,152	2,867	5,019

TfL, May 2016

Table 4.13 River Bus Entry & Exit Counts (26 September - 9 October 2015)

Pier	Weekday			Saturday			Sunday		
	Board	Alight	Total	Board	Alight	Total	Board	Alight	Total
Canary Wharf	13,174	11,318	24,492	2,730	2,863	5,593	2,108	1,984	4,092
Masthouse Terrace	1,325	1,425	2,750	383	307	690	246	249	495
Tower	7,500	11,166	18,666	2,410	3,585	5,995	2,556	3,215	5,771

TfL, May 2016

Woolwich Ferry Services

4.148 The Woolwich Ferry provides a free cross-river service between North Woolwich (north of the Thames, within the London Borough of Newham) and Woolwich to the south (in the Royal Borough of Greenwich). The ferry is a multi-modal service, providing access for vehicles, pedestrians and cyclists. It operates between the hours of 06:10 and 20:00, Monday to Saturday, and between the hours of 11:30 and 19:30 on Sundays. During the week, services operate approximately once every five to ten minutes. Service frequency reduces to one boat every 15 minutes at the weekend. Bus services can be accessed at both the north and south ferry terminals, with further accessibility provided through the Docklands Light Railway. The service is operated by Briggs Marine, and is owned and financed by TfL.

Other River Services

4.149 St Katharine Pier, which is also located along the borough's riverside, is served by two companies. Crown River Cruises provides a circular river cruise which goes non-stop to Westminster Millennium Pier before returning via the South Bank arts centres. Thames River Services provide a Westminster-Greenwich express service from this pier.

Role of River Services

4.150 Whilst the River Bus services are operated by fast boats, the required time to dock, board and alight, along with the general service frequency (and hence wait times), can restrict the competitiveness of the service for commuting purposes when compared to the Jubilee Line. For specific point-to-point trips; however, it can be an attractive service, particularly given some of the overcrowding issues related to the Jubilee Line (discussed further in Section 5).

4.151 River services clearly offer an important mode of travel for leisure and tourism purposes, and with the increasing residential development proposals on the Isle of Dogs, and throughout the eastern Thames River corridor, the continued development of the River Bus services to support this market could also be important.

4.152 The barrier the River Thames represents is clearly another key issue and whilst there is a focus upon new river infrastructure crossings, river service could also play an important role.

Key River Service Provision Challenges

Key Challenge: Ch_RSP1 – North-South River Connectivity

4.153 North to south cross-river connectivity is problematic, which is compounded by a lack of resilience on the Woolwich Ferry when technical issues arise.

Key Challenge: Ch_RSP2 – Competitiveness of Commuter services

4.154 Whilst East-to-west River services are designed to primarily cater for commuters and business travel the relative time competitiveness against rail can be restrictive when considering docking and boarding/alighting times and the frequency of services.

Key Challenge: Ch_RSP3 – River Capacity Constraints

4.155 There are constraints on the ability to increase existing river service capacity through higher frequency of services due to existing volume of traffic that users the river and the challenges this creates at certain pinch-points, most notably during low tides at bridges.

Key River Service Provision Opportunities

Key Opportunity: Op_RSP4 – New Piers and Crossings

4.156 Potential to increase the number of piers to expand the accessibility of river services, including at Wapping and Canary Wharf East. These could facilitate new river crossing opportunities.

Key Opportunity: Op_RSP5 – Expanded River Services

4.157 There could be opportunities to expand the River Bus services could be expanded to focus more upon the leisure market

FREIGHT OPERATIONS

4.158 Freight movements are currently relatively unrestricted within the town centre highway network. Key delivery routes 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.

4.159 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.

4.160 This is negatively impacting 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.

4.161 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.

4.162 There is a lack of freight loading facilities on Canal side which is not utilised fully and therefore is restricting connectivity and efficiency within the borough.

Waste and Recycling Refuse

4.163 Tower Hamlets provides a weekly refuse and recycling collection to residents and figures released for April to September 2013 show that 2.27 million collections have taken place over that period.

4.164 Cory Environmental disposes of household rubbish on behalf of the London Borough of Tower Hamlets, providing lighterage and disposal services under contact to Cleanaway, who operate the transfer station.

4.165 Cory is the biggest barge operator in London and owns and maintains a fleet of seven tugs and 47 barges which transport and dispose of the collected municipal rubbish. The waste is transported in sealed containers with an average capacity of 300 tonnes and is loaded onto barges daily and pulled by tugs along the Thames.

4.166 Waterborne transport enables Cory to dispose of the waste at the Mucking Landfill site at Thurrock in Essex.

Key Freight Operations Provision Challenges

Key Challenge: Ch_FOP1 – Changes in Retail Habits

4.167 The increasing numbers of home and office deliveries resulting from on-line retail continues to change the requirements for retail deliveries away from bulk supplies to stores, to instead individual drop-offs to residential and employment locations.

Key Challenge: Ch_FOP2 – Freight Emissions

4.168 Emissions associated with freight vehicles are an important factor to overall air quality and could be a particular issue in relation to the level of construction traffic associated with proposed housing and employment growth.

Key Freight Operations Provision Opportunities

Key Opportunity: Op_FOP3 – Freight Consolidation

4.169 Freight consolidation to a certain area or centre is a major opportunity which would likely reduce road congestion and the number of vehicles on the road. This could include schemes such as Cargo bicycle deliveries.

Key Opportunity: Op_FOP4 – Use of the Canals and River

4.170 There is a need to encourage and utilise the river for the movement of freight and people and create a new station at the Isle of Dogs, which could be extended to the whole borough. There is an opportunity to make use of wharfs for cargo handling and to enable the future transportation of waste through water freight, particularly at Orchard Wharf in Leamouth and Northumberland Wharf in Blackwall

Key Opportunity: Op_FOP5 – Sustainable Freight Strategy

4.171 There is the potential to develop sustainable freight policy that includes requirements on construction management plans and service deliver plans to ensure that future development proposals are managed appropriately in terms of freight

Key Opportunity: Op_FOP6 – New Technology in Freight Delivery

4.172 Trials of new technology in the movement of freight are already underway within the UK, with systems using drones or autonomous deliver vehicles being analysed. These systems could have potentially significant impacts, positive and negative, that will need to be considered.

WALKING AND CYCLING PROVISION

Walking

4.173 The borough has a large green grid network which is a combination of spaces and routes that encourage people to walk cycle and enjoy their local environment. Key walking and cycling routes within Tower Hamlets, including potential future routes for upgrade, are identified within the borough's Green Grid strategy.

Strategic Walking Routes

4.174 Three of London's six strategic network walking routes traverse through Tower Hamlets:

- Lea Valley Walk;
- Jubilee Walk; and
- Thames Path.

4.175 **Lea Valley Walk** is a 50 mile walk from its source close to Leagrave, near Luton, to its confluence with the Thames. The route follows the towpath of the Lea River Navigation, which has been canalised (most of it lies in the borough of Newham). It is part of the Lee Valley Regional Park, much of which is reclaimed land from marshes. Several old sewage works have become a haven for wildlife and are managed as nature reserves. The northern section is dominated by the high embankments. There are links in Tower Hamlets with several towpaths, including the Hertford Union Canal and the Limehouse Cut.

4.176 The Leas Valley walk goes through seven of the 'Character Places' within the borough: Fish Island, Bromley-by-Bow, Limehouse, Poplar, Poplar Riverside Leamouth, and Blackwall.

4.177 **Jubilee Walkway** is a grand tour of the leading attractions of London. In Tower Hamlets, it crosses Tower Bridge and drop down to the riverside crossing St Katharine's Way and into St Katharine's Docks.

4.178 **Thames Path**: The route extends westwards far beyond the Greater London boundary, right up to the river's source in the Cotswold Hills. Much of the route is included in National Cycle Routes 1 and 4. Section 3 (Tower Bridge to Greenwich and the Thames Barrier) crosses Tower Hamlets, passing through eight 'character places' of Tower of London, Wapping, Limehouse, Canary Wharf, Millwall, Cubitt Town, Blackwall and Leamouth.

Other Walking Routes

4.179 **The Leaway:** The Leaway will be a new continuous walking and cycling route that will connect the River Thames and Royal Docks to the Queen Elizabeth Olympic Park. The route will incorporate locations such as Bow Ecology Park, Cody Dock, East India Dock Basin, Three Mills and Trinity Buoy Wharf, and will connect with the Emirates Airline cable car at Royal Docks. The Leaway will be delivered by 2018 by the London Legacy Development Corporation and the London boroughs of Newham and Tower Hamlets.

4.180 The canal tow paths within the borough provide other key walking routes, including north-south along the Regent's Canal, from Limehouse, Mile End, Globe Town, and connecting to Victoria Park, and the Limehouse Cut (used as part of the Lea Valley Walk).

4.181 Other routes that have informed the Tower Hamlets Green Grid include:

- East London Heritage Trails;
- Walking Routes designated by TH Partnership; and
- High Street 2012.

4.182 East London Heritage Trails is a series of thirteen walking trails linking the heritage of historic buildings "built for the past communities and adapted to modern city use" (East London Heritage Trails).

4.183 Walking Routes in Tower Hamlets designated by Tower Hamlets Local Area Partnership are a series of eight sets of routes designed for every LAP. It aims to encourage communities to re-discover the borough's parks, gardens and green spaces, connected through a series of walking routes.

4.184 The routes incorporate 15 of the 'Character places' across the borough as follows:

- Bethnal Green / Globe Town
- Bromley-by-Bow / Bow Common / Mile End
- Millwall / Cubitt Town
- Poplar / Limehouse
- Wapping
- Spitafileds / Shoreditich / Whitechapel
- Stephney / Limehouse
- Victoria Park

Network Gaps

4.185 Despite the formal routes outlined above, an overarching assessment of the network indicates that there are areas in which provision is either of a lower standard or connectivity is poor. Whilst the strategic routes and canal tow paths provide direct routes, connections to and from these routes can be restricitive in places.

4.186 Connections into/out from, and around the Isle of Dogs, is one area that is highlighted with poor connectivity. This is in part caused by barriers to movement (discussed further in Section 6) but also the manner in which the urban form was historically created with limited consideration for pedestrian connectivity. Similarly, the barriers created by the A12 and the River Lea, restrict east-west movement in the east of the borough.

4.187 The Green Grid Strategy recognises some of the general issues with the quality of the urban realm across the borough and the impact this has upon discouraging walking and cycling. This is often due to the predominance of motorised vehicles within the design of streets that affect both strategic routes as well as local roads. The area around Shoreditch is one example that has been identified as a poor environment for walking but it is also true of other areas across the borough.

4.188 As well as the urban realm itself, the quality of lighting provision along footpaths can be a concern along many routes and discourages walking during the hours of darkness.

4.189 Stakeholder also raised the issue of the DLR that is raised up and so permits walking access underneath but that often the environment is unpleasant.

Cycling

4.190 The borough has many off-road cycle routes consisting of canals and parks. The canal cycle network loop comprises of the Regents Canal, the Hertford Union Canal, the Lee Navigation and the Limehouse cut. This loop provides off road connections to the Olympic park and Lea Valley in the north-east, Islington and Camden in the North West and Tower Bridge in the south west.

4.191 Local parks including Victoria Park and Mile End Park all contain quite cycle routes providing internal connections within the borough.

4.192 Cycle movement within the borough is predominately east/west as central London is located on the western edge of the borough. The borough has two cycle superhighways along this axis; CS2 (along the A11) and CS3 (Cable Street). CS2 provides connections to Aldgate and Stratford, with a journey time of 24 minutes. CS3 provides connections to Westminster, Tower Gateway and Barking, with a journey time of 55 minutes.

4.193 National Cycle Route 1 runs north through the borough and consists of an on/off road route with clear signage. The borough also has access to the London Cycle Network route 9 providing access to the London Borough of Hackney in the north.

4.194 There are six LCN+ routes in Tower Hamlets:

- Route 194: This route runs along the A11 linking Aldgate with Bow;
- Route 195: This busy commuter route runs east-west along Cable Street connecting the City with Canary Wharf;
- Route 196: This route is north-south and links Hackney with the south of the borough;
- Route 197: This route links the City with Whitechapel along Hanbury Street;
- Route 199: This route links Cambridge Heath Road with Bow through Old Ford Road near to Victoria Park; and
- Route 200: This route runs through Victoria Park.

Network Gaps

4.195 In response to identified gaps in the cycling infrastructure, in particularly north-south links, the borough is developing their Quietways which is a name given by TfL to a new network of routes on quiet roads for those cyclists for whom comfort and a quieter environment is important. Currently there is one proposed Quietway in the borough which runs through Hackney Wick to Liverpool Street and design options for phase 1 (hackney wick to Stepney Green) are currently been developed.

4.196 The Santander Cycle system is a self-service, bike sharing scheme for short journeys throughout London. Users can hire a bike from a Santander docking station and return it to any docking station with no booking. All bike hires must be returned within 24 hours.

4.197 The Greenwich Foot Tunnel is well used by pedestrians and cyclists alike but there are certain times of day when cycling may be practical due to low pedestrian usage. LB Greenwich manages the tunnel and is planning to trial a real time IT system to allow cycling when pedestrian numbers are very low.

Way-finding and Navigation

4.198 Wayfinding and navigational aids across Tower Hamlets are currently provided primarily in the form of ‘Legible London’ totem pole signage located at key locations across the borough. Legible London signs points out services, infrastructure/amenities, and visitor attractions that are located within a 5 and 15 minute walk.

4.199 As opposed to the traditional mapping technique of having north at the top, Legible London signage maps are provided in a 'heads-up' manner, whereby maps are orientated to face the same way as the reader is facing. This provides an easier understanding of the immediate environment and area.

4.200 Bus stops, London Underground stations and taxi ranks are all marked on maps. Illustrations of key buildings are also provided to help people who struggle to read maps. This helps to provide a literal representation of key landmarks and make the maps more intuitive.

4.201 Important information is located between 900mm and 1800mm above the ground so it can be easily read by most people. To improve navigation by visually-impaired people, wheelchair users and others with limited mobility, the maps show steps, pavement widths and pedestrian crossings.

Key Walking and Cycling Provision Challenges

Key Challenge: Ch_WCP1 – Quality of the urban environment

4.202 The quality of the urban environment, including lighting provision, in some areas discourages walking and cycling. This includes limitations in provision on certain routes at night after public parks have closed. The scale of proposed development across the borough over the next 20 years provides a significant opportunity to enhance the quality of the public realm , including creating quieter streets, to make it more accessibility to walking and cycling

Key Challenge: WCP2 – Incomplete network of waling & cycling infrastructure

4.203 Identified gaps in the network of walking & cycling provision, in particular for north-south connections such as between the strategic routes of CS2 and CS3, as well as east-west connections in the east of the borough. This can be achieved in part through continued delivery of the quietways network.

Key Walking and Cycling Provision Opportunities

Key Opportunity: Op_WCP3 – Maximise waterways for active travel

4.204 More use could be made of the waterways around the borough to encourage walking and cycling, including ensuring that new development 'activates' the frontage to the canals to make them more welcoming environments.

Key Opportunity: Op_WCP4 – Additional cycle parking and provision

4.205 Provide additional cycling parking and infrastructure provision, in particular in relation to new developments, to encourage greater cycle ownership and more cycle trips across the borough.

Key Opportunity: Op_WCP5 – 'Greening' Structures

4.206 Opportunity for 'greening' major infrastructure across the borough, including under the raised DLR route through Canary Wharf area, to provide more attractive walking and cycling routes increasing connectivity.

5 Travel Patterns and Demand

OVERVIEW

5.1 Having examined the provision of infrastructure and transport operations across the borough within the previous section, Section 5 now examines the utilisation of that infrastructure and services, both currently and projected into the future. This considers both the general flow and movement of people, as well as the pressures on the network caused by high levels of demand.

CENSUS DATA

5.2 A summary of the 2011 Census data focusing on the Method of Travel to Work and the Car availability data is presented below. It is noted that this is based on the old ward boundaries and so is not completely up to date. The wards represented in the data sets are as follows:

- Bethnal Green North;
- Bethnal Green South;
- Blackwall and Cubitt Town;
- Bow East;
- Bow West;
- Bromley by Bow*;
- East India and Lansbury*;
- Limehouse;
- Miles End and Globe Town*;
- Mile End East;
- Millwall*;
- Shadwell;
- Spitalfields and Banglatown;
- St. Dunstan's and Stepney Green;
- St. Katherine's and Wapping;
- Weavers; and
- Whitechapel.

**Represent the wards that no longer exist in the borough*

Travel to Work data

5.3 Method of travel to work census data has been downloaded and analysed for all wards across the borough and borough-wide. The data for the London borough of Tower Hamlets as a whole can be seen in **Table 5.1** below.

Table 5.1 Method of Travel to Work - Borough

Mode	Tower Hamlets Mode Share (%)	London Mode Share (%)	Difference
Underground, Metro, Rail, Tram	41%	23%	+18%
Train	6%	14%	-8%
Bus, Minibus or Coach	13%	15%	-2%
Taxi	1%	1%	-
Motorcycle, Scooter or Moped	1%	1%	-
Driving a Car or Van	12%	30%	-18%
Passenger in a Car or Van	1%	2%	-1%
Bicycle	7%	4%	+3%
On Foot	19%	9%	+10%
Other	1%	1%	-

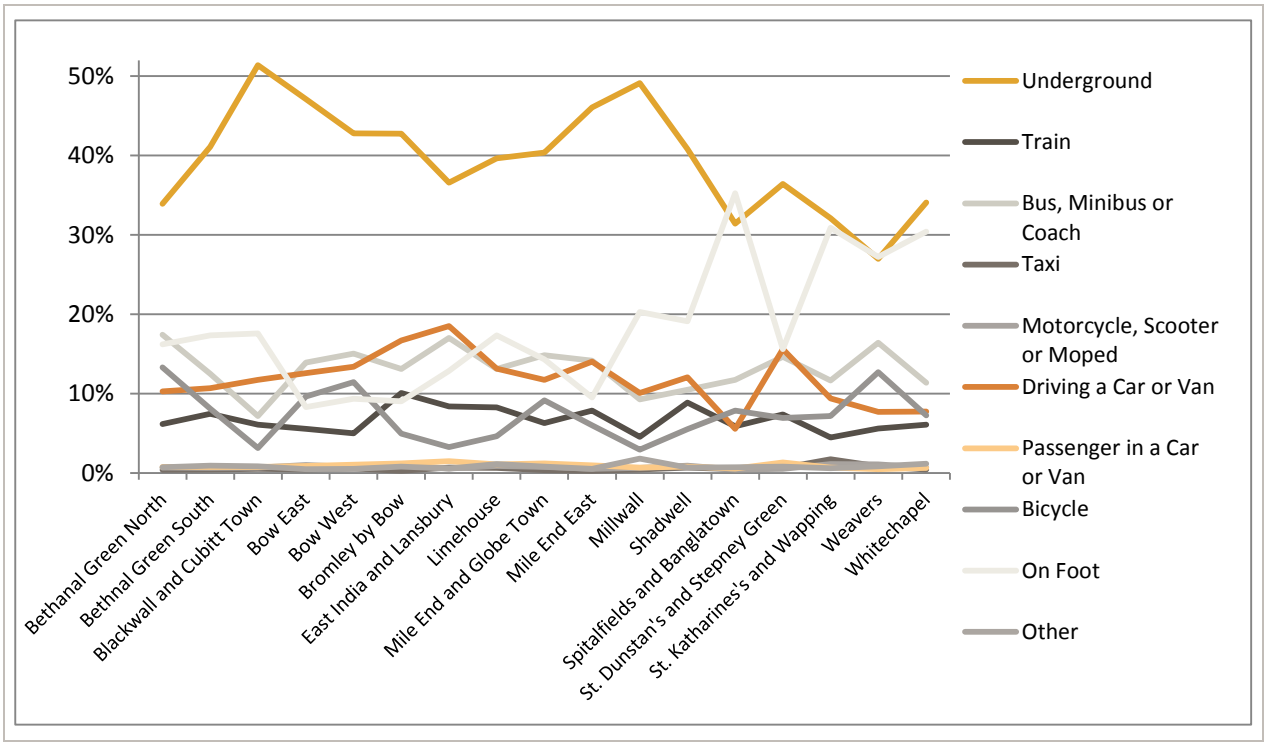
ONS 2011 Census

5.4 **Table 5.1** shows that the majority of people living in the borough travel to work by Underground, Metro, Rail or Tram (41%). Other methods of public transport are also well utilised with a combined total of 60% using public transport to travel to work. Only 26% of people travel to work by active travel modes (walk or cycle) and 12% drive a car.

5.5 **Figure 5.1** presents the data by individual wards. This shows the pattern is consistent with the overall mode split, with generally the most used method of travel is via public transport, walking and cycling and then by car.

5.6 The levels of Underground and Walk trips vary most across the wards, with Spitalfields, St. Katherine's & Wapping, Weavers and Whitechapel, all having higher levels of walking and lower Underground trips. This presumably reflects the closer proximity to the City of London and employment locations.

Figure 5.1 Method of Travel to Work



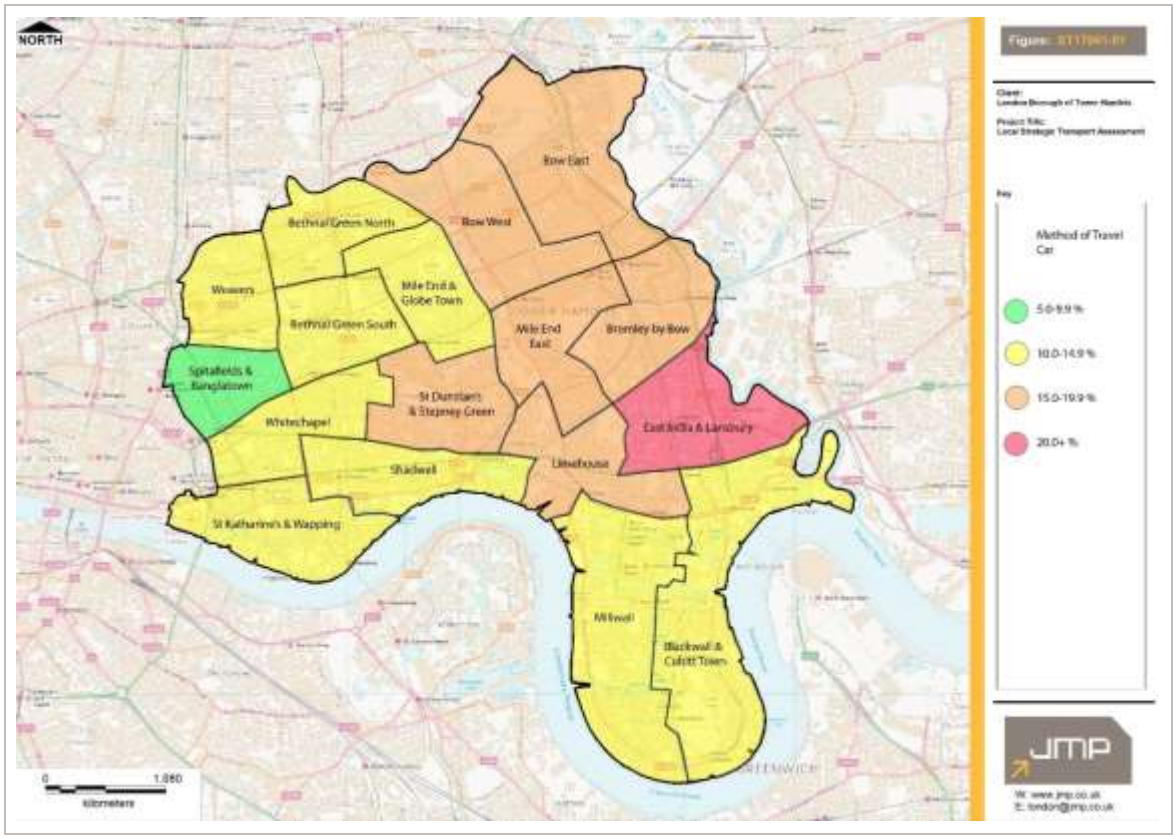
ONS 2011 Census

5.7 With the addition of Crossrail to Canary Wharf the percentage of the borough using public transport is expected to increase further.

5.8 The level of journey to work by car, at 12% for the whole borough, is considerably lower than the average for London. This might be expected, as the London data will include all Outer London Boroughs that are likely to have a higher propensity to drive. Within the ward data it can be seen that one ward, East India & Lansbury, which is on the eastern edge of the borough, is closer to the London average.

5.9 This is seen more clearly in **Figure 5.2** which presents the level of journey to work by car spatially for each of the individual wards.

Figure 5.2 Journey to Work by Car by Ward



ONS 2011 Census

5.10 At a ward level, the proportion of residents travelling to and from work by car (incorporating as a private car driver of passenger, by taxi or by motorcycle) ranges from 7% (Spitafields & Banglatown) to 21% (East India & Lansbury).

5.11 As described above in relation to levels of walking, this can in part be attributed to the close proximity of Spitafields & Banglatown to Central London, meaning there is likely to be a greater propensity for travel to and from work by sustainable modes. Indeed, in the neighbouring wards of Whitechapel, Weavers and Bethnal Green South, travel by car to and from work has a relatively low mode share, ranging from 10% to 12%.

5.12 The wards at the eastern end of the borough have access a range of options in relation to the TLRN, including the A11, A12, and A13. There may as a result be more focus on trips out of London to the east than in comparison to the western side of the borough.

Car Ownership

5.13 The car ownership data for Tower Hamlets average across the borough can be seen in **Table 5.2** below.

Table 5.2 Car or Van Ownership

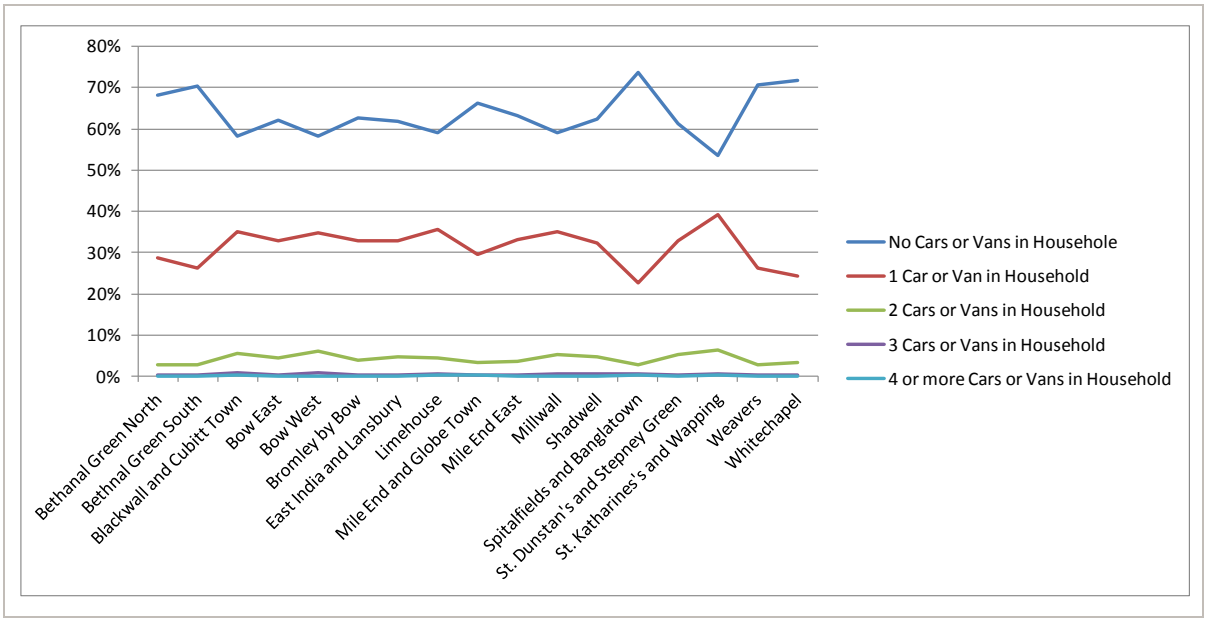
Number of Cars	Tower Hamlets	London
All Households	101,257	3,266,173
No Cars or Vans in Household	63%	42%
1 Car or Van in Household	32%	41%
2 Cars or Vans in Household	4%	14%
3 Cars or Vans in Household	1%	3%
4 or More Cars or Vans in Household	0%	1%
All Cars or Vans in Area	43,589	2,664,414

ONS 2011 Census

5.14 The borough as a whole has a low car ratio with only 37% of households owning one car or more and no households owning more than four cars. This is correlated with the travel to work data that emphasises the reliance on public transport to get to and from work.

5.15 **Figure 5.3** presents the data split by individual war. This indicates that the ward with the highest car ownership is St. Katherine's and Wapping with 44% of households owning at least one car; Spitalfields and Banglatown has the lowest car ownership level with only 26% of households owning at least one car, the next lowest scoring ward is Whitechapel, corresponding with the low percentage share of car travel to work.

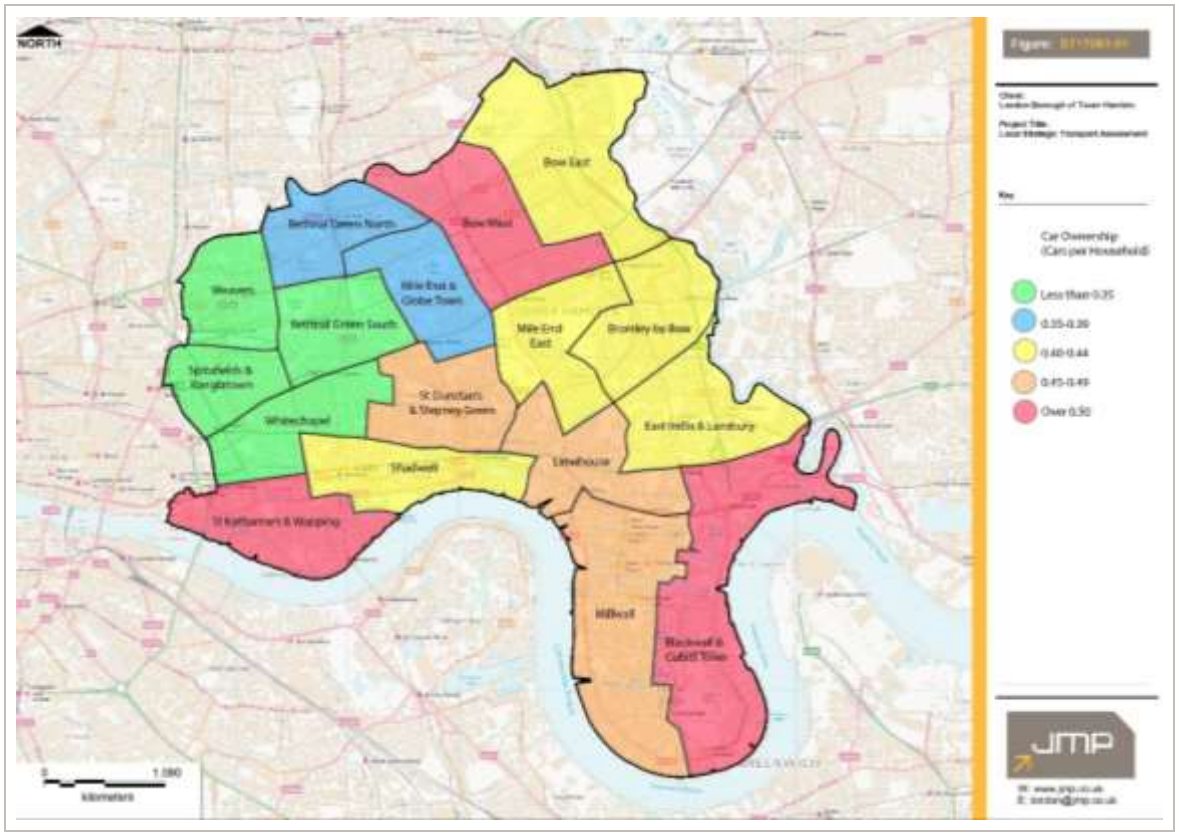
Figure 5.3 Car Ownership Data by Ward



ONS Census 2011

5.16 **Figure 5.4** presents breakdown of average car ownership levels by ward.

Figure 5.4 Average Car Ownership Levels by Ward



ONS 2011 Census

5.17 The data again indicates that wards to the west of the borough generally have much lower levels of car ownership than to the east, although the Isle of Dogs also has some of the highest levels.

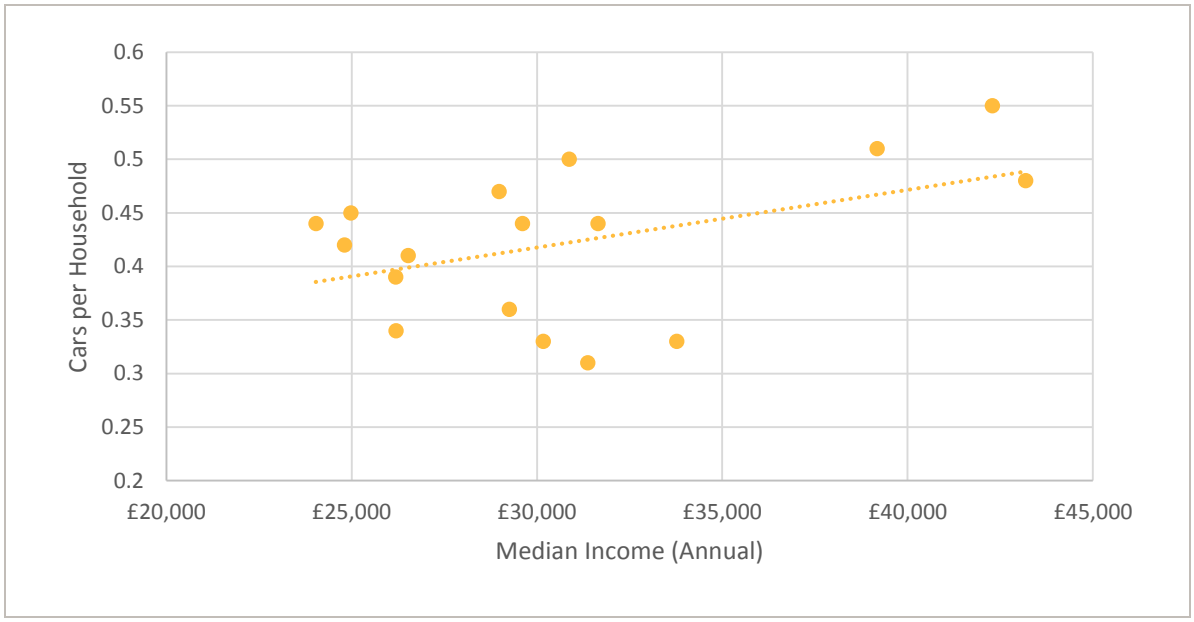
5.18 To investigate whether a correlation exists within the borough between car ownership and average annual income, the two indicators have been compared against each other, as shown in **Table 5.3** and graphically in **Figure 5.5** below.

Table 5.3 Car Ownership & Annual Income

Ward	Median Income	Car Ownership (Cars per Household)
East India & Lansbury	£24,032	0.44
Bromley by Bow	£24,802	0.42
St Dunstan's & Stepney Green	£24,980	0.45
Mile End & Globe Town	£26,188	0.39
Bethnal Green South	£26,196	0.34
Mile End East	£26,527	0.41
Limehouse	£28,980	0.47
Bethnal Green North	£29,254	0.36
Shadwell	£29,610	0.44
Weavers	£30,170	0.33
Bow West	£30,864	0.50
Spitafields & Banglatown	£31,369	0.31
Bow East	£31,641	0.44
Whitechapel	£33,769	0.33
Blackwall & Cubitt Town	£39,172	0.51
St Katherine's & Wapping	£42,284	0.55
Millwall	£43,186	0.48

ONS 2011 Census

Figure 5.5 Car Ownership by Annual Income (Ward-Level)



ONS Census 2011

5.19 Whilst the data contained in **Table 5.23** and **Figure 5.5** suggests that some level of correlation exists between household income and car ownership levels, it is not a particularly strong relationship with some variation between income levels and car ownership. This indicates that other factors must be dictating whether individuals chose to own a car or not.

5.20 Such additional factors are likely to include:

- Local-level accessibility to public transport facilities, including the type of service available and the associated travel cost; for example, travel by bus is most economically advantageous than travel by London Underground;
- Type of job held by local residents;
- Location of employment; and
- Car parking availability, both at the trip origin (place of residence) and destination (workplace).

Car Ownership & Travel to Work Comparison

5.21 Analysis has also been undertaken of ward-level Census data to investigate whether a relationship exists between ward-level levels of car ownership and the proportion of residents that travel to and from work by car, as shown in **Figure 5.6**.

Figure 5.6 Car Travel to Work by Car Ownership (Ward-Level)

ONS Census 2011

5.22 It can be seen that a level of correlation exists at a ward-level between levels of car ownership and the percentage of residents travelling to and from work by car, whereby a higher proportion of cars per household generally corresponds with a higher mode share for travel to work by car.

5.23 The three main oultiers, where car per household is very high but the relative level of car mode share is lower than average, relate to St Katherine's & Wapping, Blackwall & Cubit Town, and Millwall. All three of these areas have the highest average levels of income, which is likely to be the cause of why car ownership is so high even though these cars are used less likely to be used to travel to work.

Key Journey to Work Opportunities

Key Opportunity: Op_JTW1 – Variations in the proportion car trips across the borough

5.24 There is significant differential in the percentage of journey to work trip by car by ward across the borough indicating an opportunity to reduce car travel in some wards.

Key Opportunity: Op_JTW2 – Variations in the percentage car ownership across the borough

5.25 There is significant differential in car ownership levels by ward across the borough in indicating an opportunity to car ownership in some wards and encourage travel by non-car modes.

Key Opportunity: Op_JTW3 – Influence travel behaviour

5.26 The differences that are made in mode choices across the borough indicate there is a significant opportunity to influence those in the east and the south of the borough to adopt travel behaviours that are already adopted in the west of the borough.

AIR QUALITY

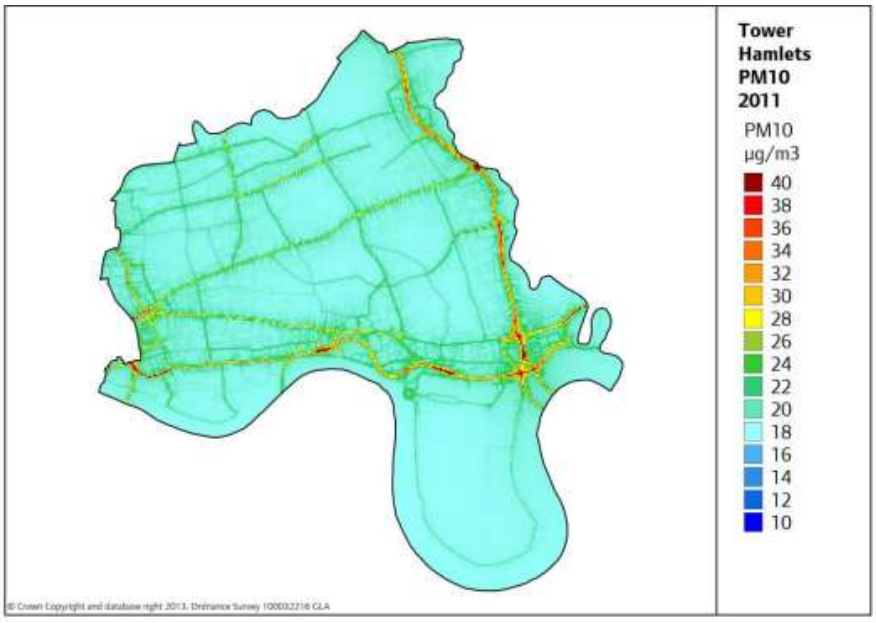
5.27 Air quality is an important concern within the borough. Poor air quality not only has a negative impact on the health and quality of life of local residents, but can also act as a deterrent to the uptake of active travel modes within Tower Hamlets. In order to make cycling and walking truly pleasant travel alternatives to public and private transport, high traffic-generated pollution levels along main routes needs to be addressed. Furthermore, air quality levels are legally required to comply with EU limits – financial penalties can apply for breaching the allowed limits.

Air Quality Management

5.28 An Air Quality Management Area was established in 2000, with currently four monitoring stations established to provide continuous recorded of particulate emissions. The latest 2015 monitoring report confirmed that objectives for nitrogen dioxide levels continue to be exceeded at roadside and background locations, although sulphur dioxide and carbon monoxide objectives were met. This demonstrates a clear need for the borough to continue to focus upon air quality issues, with the minimisation of transport emissions being a key aspect of this approach.

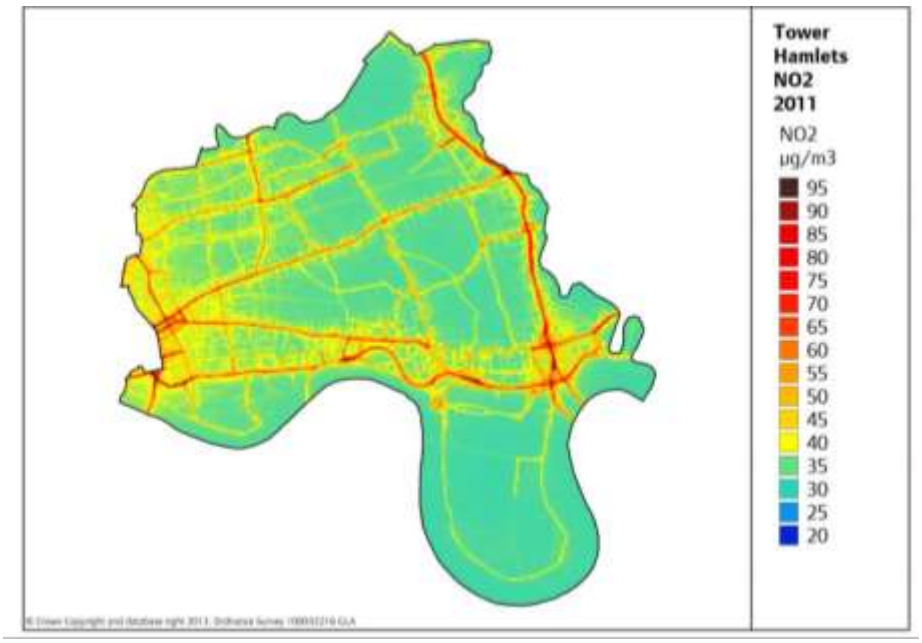
5.29 While air quality throughout Tower Hamlets, as a whole, is generally better than in Central London, certain areas within the borough have extremely high air pollution levels. These areas are located mainly along key roads (A11, A13, Blackwall Tunnel entrance) and the Canary Wharf area, and correspond to locations with heavy motor vehicle traffic (see **Figures 5.7 and 5.8** below).

Figure 5.7 Annual mean concentrations of PM10 in LBTH 2011



GLA,2013

Figure 5.8 Annual mean concentrations of N02 in LB Tower Hamlets 2011



GLA, 2013

5.30 Given the expected levels of population and travel growth in Tower Hamlets, air quality is unlikely to improve significantly if the current traffic trends are maintained. Furthermore, a large proportion of traffic travelling through Tower Hamlets does not originate from within the borough itself, making it hard to address the issue of traffic-generated pollution at a local level.

5.31 The link between poor air quality and deprivation in London has been highlighted in a recent report commissioned by the London Assembly in 2013[5]. In the specific case of Tower Hamlets, this report pointed out the correlation between areas with high air pollution and the location of schools with a large percentage of children receiving free school meals. As this example makes clear, air quality is not only a matter of public health, but also of equity between Tower Hamlets residents and road users.

5.32 The new Mayor of London has recently suggested that the scope of the planned the ULEZ (Ultra Low Emission Zone) to be implemented by 2020 will be significantly increased. According to the new proposals, the whole of LBTH would fall into the ULEZ zone. This would be a very important incentive towards promoting greener vehicles and restricting the use of older polluting vehicles.

5.33 Proposals to build Silvertown Tunnel would add another Thames crossing east of the Blackwall Tunnel. TfL has suggested that this would alleviate congestion and pollution at the northern entrance of Blackwall Tunnel, providing an opportunity to improve air quality within LBTH. A potential negative impact of the Silvertown Tunnel is that it could induce additional strategic traffic movements across the whole of East London and so contribute negatively to carbon emissions.

5.34 Recent efforts to improve cycling and walking infrastructure (e.g. Cycle Superhighways 2 and 3) within the borough can play an important role in furthering the already existing modal shift towards active travel modes within LBTH. In combination with public transport investments like Crossrail, these improvements

[5] Available at https://www.london.gov.uk/sites/default/files/analysing_air_pollution_exposure_in_london_-_technical_report_-_2013.pdf

offer a solid basis upon which to build policies to encourage modal shift away from private vehicles and thereby improve local air quality.

Key Air Quality Challenges

Key Challenge: Ch_AQ1 – Poor Air Quality around the TLRN network

5.35 Nitrogen dioxide levels continue to exceed roadside target, with particularly issues of poor air quality around TLRN network that could have significant health impacts.

Key Air Quality Opportunities

Key Opportunity: Ch_AQ2 – Ultra Low Emissions Zone

5.36 The ULEZ could encompass the whole to Tower Hamlets and employ much more robust measures upon emissions levels from vehicles.

HIGHWAY MOVEMENTS

5.37 This section presents an analysis of the current and future operation of the highway network. The main source of data is the strategic highway model, CLoHAM. This provides information on the level of vehicle flows, delays, and capacity utilisation in both 2012 (used as a proxy for current operation) as well as for a future year scenario of 2031

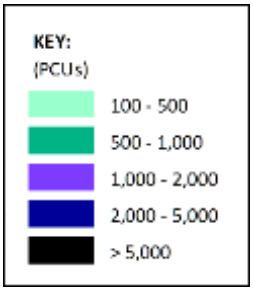
5.38 The 2031 future year scenario is based upon the growth assumptions outline within the Further Alterations to the London Plan (FALP) document, which still forms the underlying basis for all TfL future year transport forecasting. This incorporates projected growth in vehicle trips associated with the housing and employment projections that were established by the GLA in 2013.

5.39 As indicated in Section 3, the GLA have since produced updated employment forecasts that were published earlier this year. These present much higher projections of employment for Tower Hamlets, although the detail of where this growth might be accommodated is not yet available. The implication from other TfL work is that this may be allocated to the Isle of Dogs and City Fringe Opportunity Areas.

5.40 In order to take into account this potentially significantly higher growth in employment levels, a sensitivity test has been undertaken that includes an additional 50,000 growth in jobs, primarily focused upon the Isle of Dogs (67%) and City Fringe (29%), with the rest allocation around the borough.

Traffic Flows

5.41 **Figures 5.9** and **5.10** presents an analysis of the volume of flows on key highway links within the borough from the baseline CLoHAM model, for the AM and PM peak, respectively. The relative colours represent different estimated standardised traffic flows (PCU), as set out within the key.

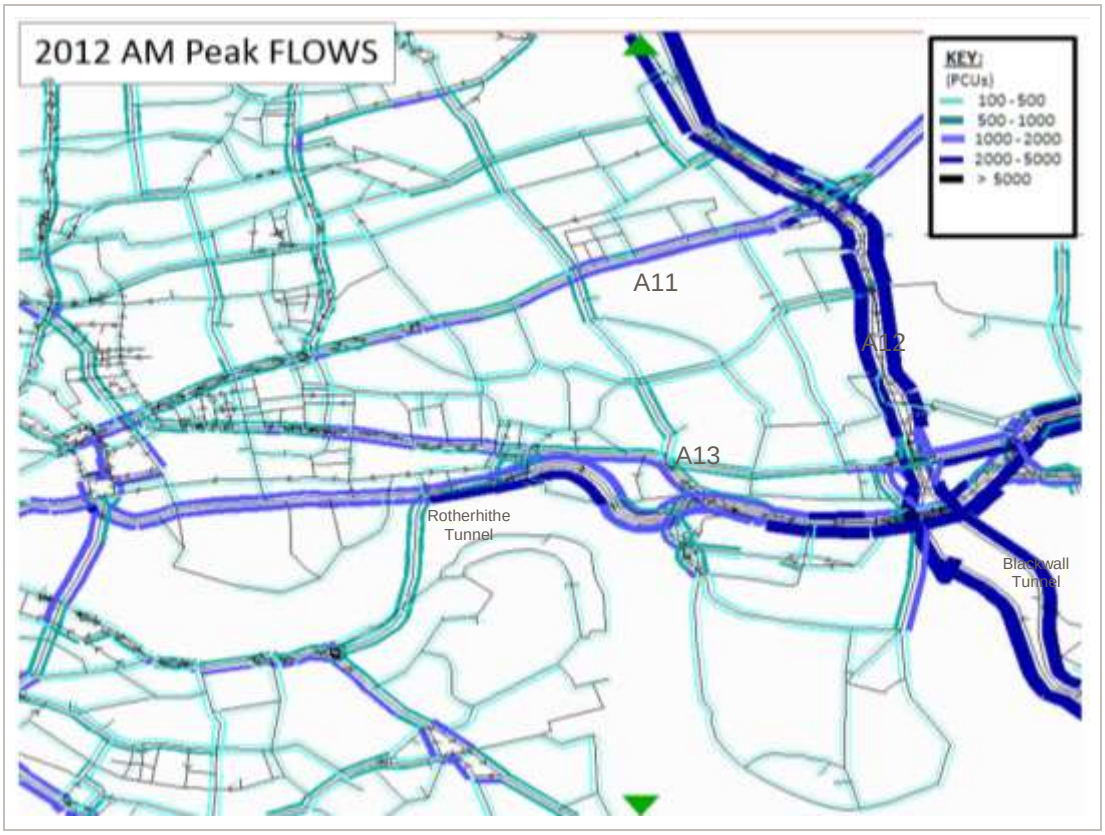


5.42 The data indicates that traffic movements within the borough are dominated by two main axes: the west-east axis running along the A1261/Limehouse Link/A1203 in the south of the borough, and the north-south axis running along the A12 and Blackwall Tunnel.

5.43 The A11 (Mile End/Bow Road) and A13 (Commercial Road / East India Dock Road) also provide important secondary west-east axis. The river crossing points at Rotherhithe Tunnel and Tower Bridge also constitute key traffic routes with high traffic volumes.

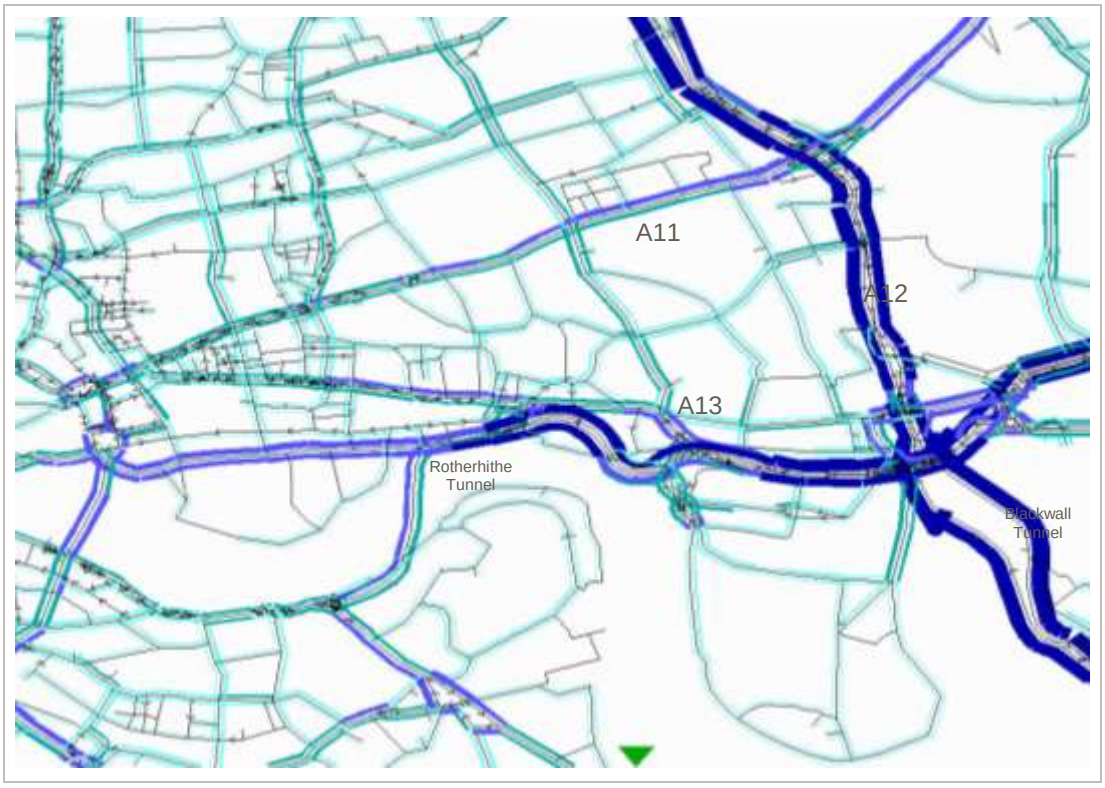
5.44 Of the local borough road network there is a heavy flow on the A1206 (Preston's Road), and the east-west route of A1209 (Bethnal Green Road) and B118 (Old Ford Road) are relatively busy, as is the north-south route of A1205 (Grove Road and Burdett Road).

Figure 5.9 AM Peak Vehicle Flows (2012)



CLoHAM

Figure 5.10 PM Peak Vehicle Flows (2031)



CLoHAM

Existing Delays and Capacity Utilisation

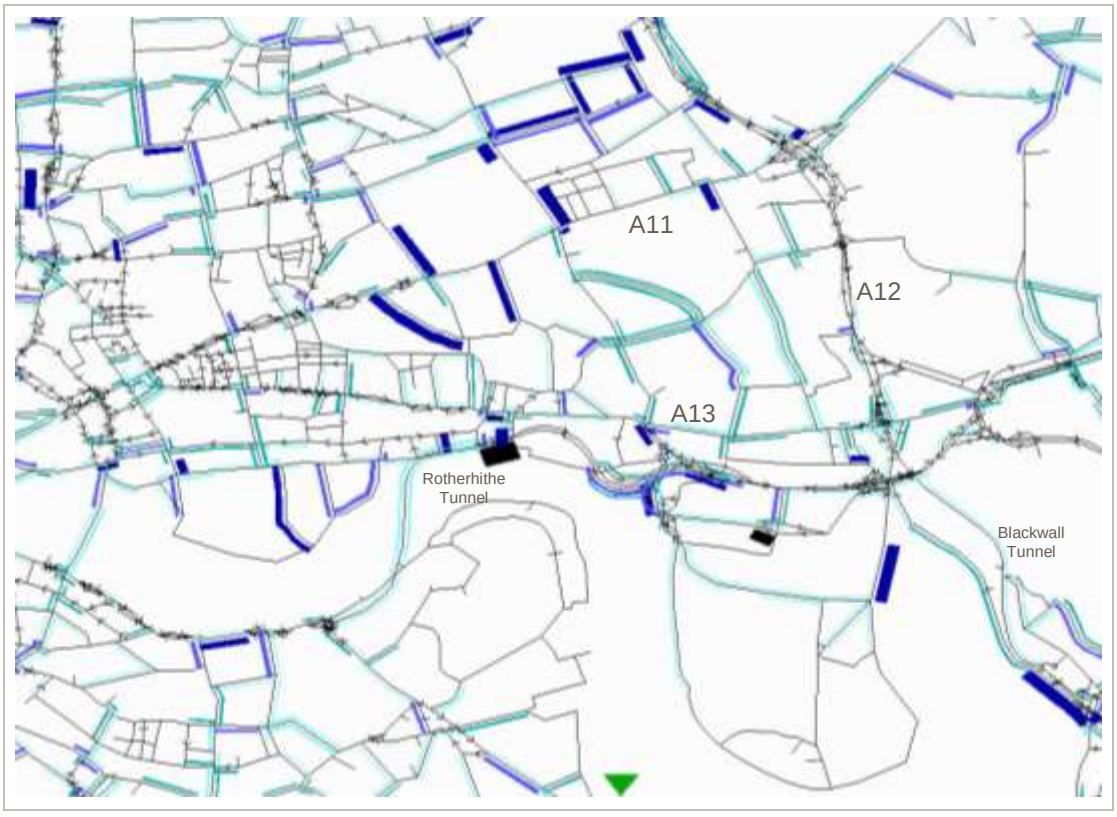
5.45 Forecast highway delays for the AM and PM peak (2012) are displayed in **Figures 5.11** and **5.12,** respectively. These present the forecast level of delay (in seconds) on each highway link within the model and can be interpreted as follows:

- 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)

5.46 The data indicates that there are a number of roads within the borough that experience significant delays during the peak periods. Although the severity and exact location of delays vary somewhat between the AM and PM peaks, locations which frequently suffer significant delays include:

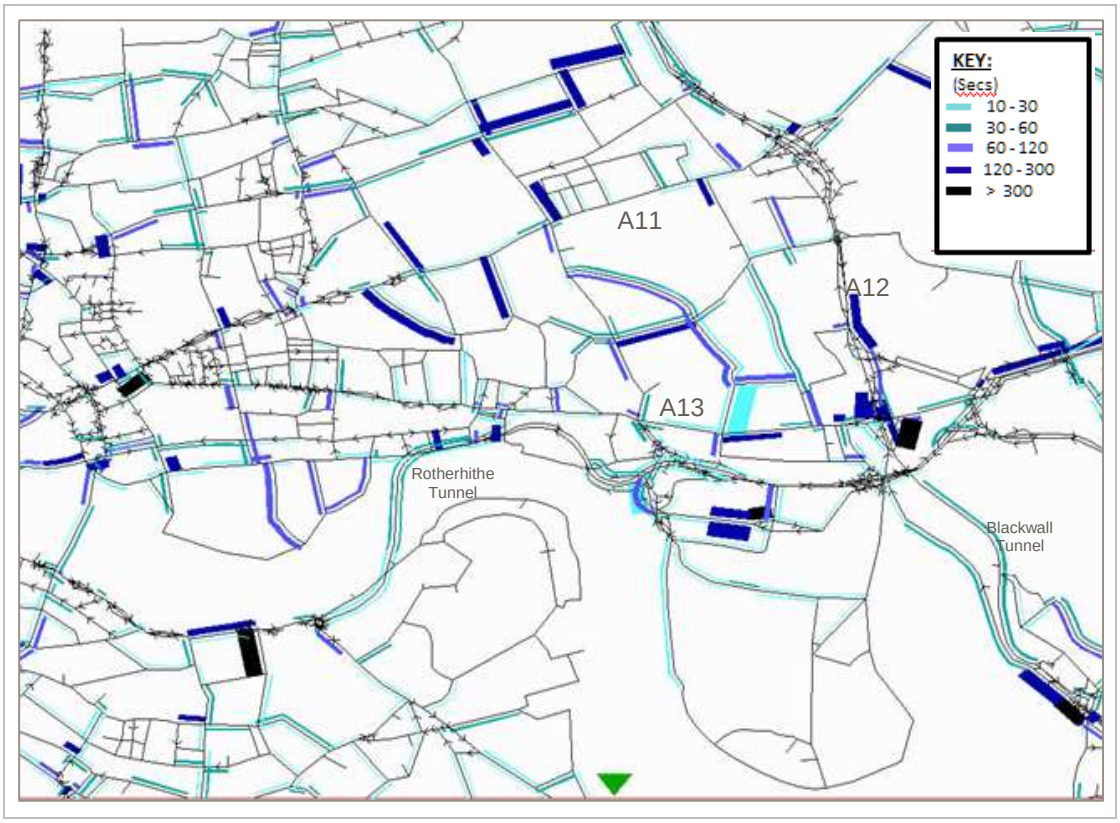
- Blackwall Tunnel (both peaks);
- Accesses to the Isle of Dogs (both peaks, more pronounced in AM);
- B119/B118 in Old Ford area (both peaks);
- Side roads accessing Mile End Road: Stepney Green Road, Globe Road, Grove Road (both peaks);
- Limehouse Link (AM);
- Aldgate (PM); and
- Preston's Roundabout/Cotton St (PM).

Figure 5.11 AM Peak Highway Delays (2012)



CLoHAM

Figure 5.12 PM Peak Highway Delays (2012)



CLoHAM

5.47 Another method of examing the level of congestion on the network is to look at the volume of traffic over the level of theoretical road capacity. This provides an indication of the amount of traffic on a given classification of road and whether congestion is likely to result.

5.48 **Figures 5.13** and **5.14** present the volume of traffic over link capacities for the AM and PM peaks respectively. These present the forecast flow of traffic as a percentage of the theoretical maximum capacity on each highway link within the model and can be interpreted as follows:

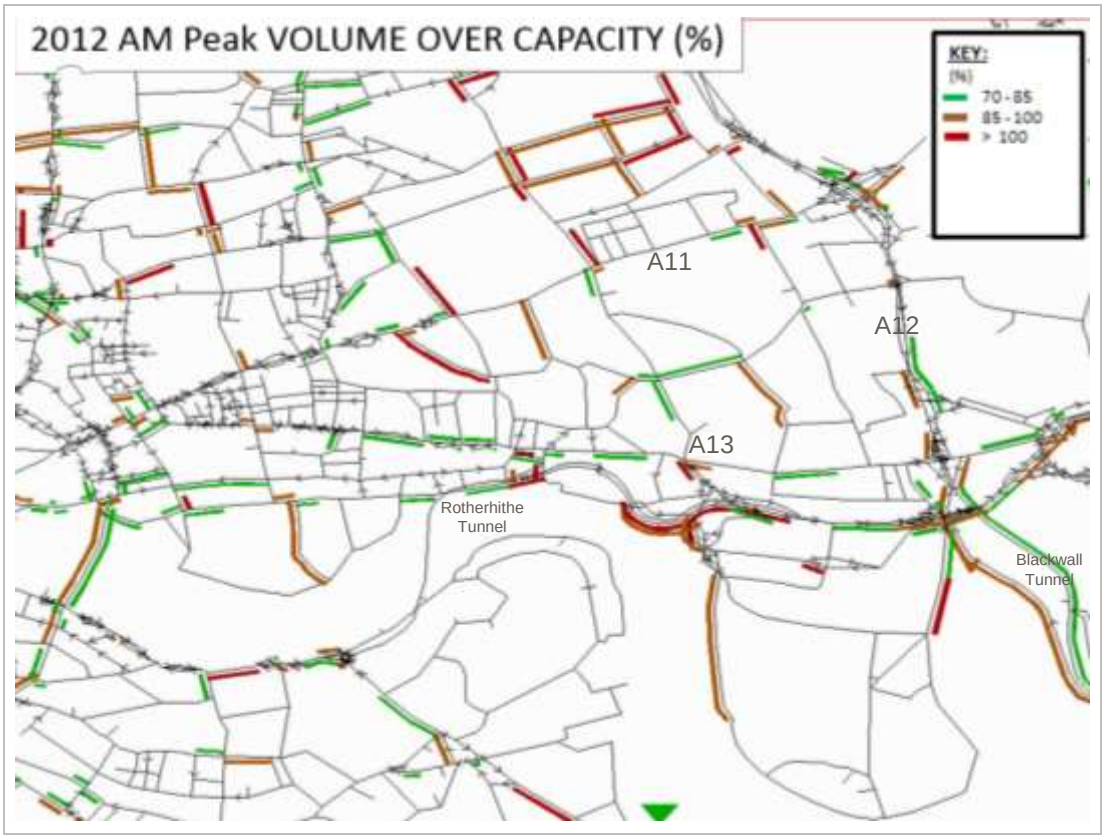
- Green = vehicle flow is between 70% and 85% of the link capacity
- Brown = vehicle flow is between 85% and 100% of the link capacity
- Red = vehicle flow is over 100% of the link capacity

5.49 Various roads across the borough are considered to have traffic volumes in excess of their operating capacity. These locations tend to coincide with the locations that experience significant delays.

5.50 In the AM peak, some of the main roads which are over capacity include Limehouse Link (westbound), Blackwall Tunnel, the eastern arm of the A1206 (southbound) and the B119/B118 in the Old Ford area.

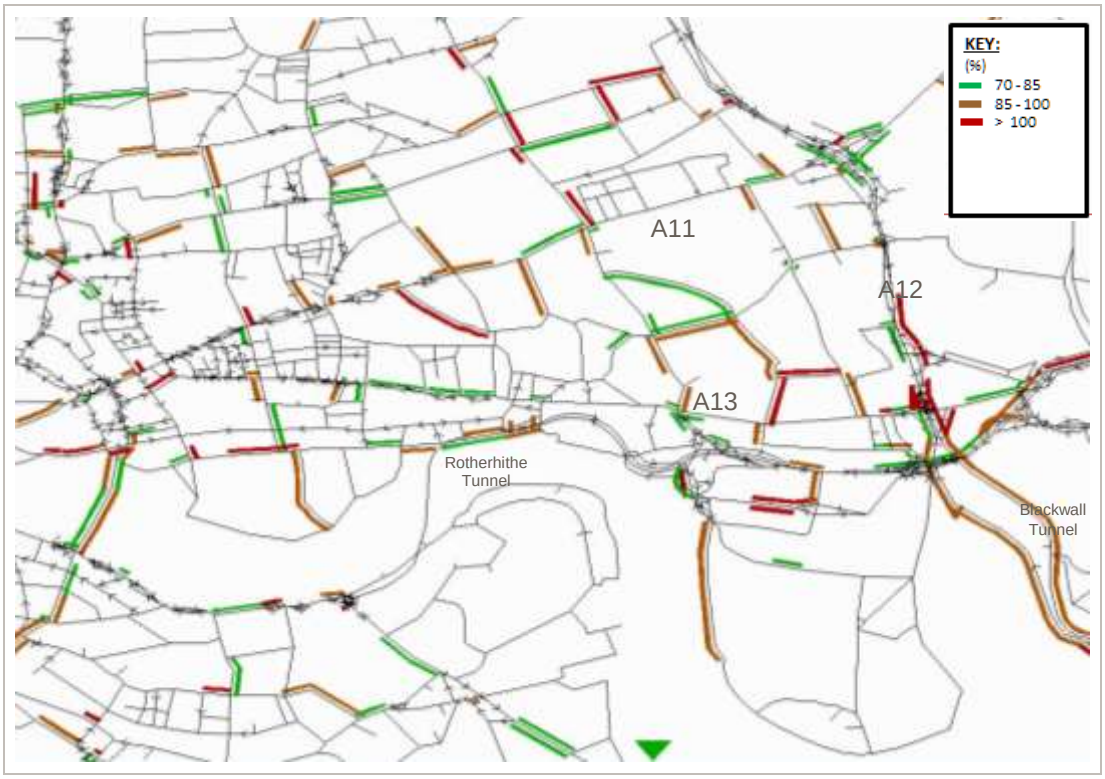
5.51 In the PM peak, the main roads which are over capacity include Cotton St/Preston's Roundabout, Blackwall Tunnel and the eastbound arm of the A13 east of Blackwall Tunnel.

Figure 5.13 AM Peak Traffic Volumes over Link Capacities (2012)



CLoHAM

Figure 5.14 PM Peak Traffic Volumes over Link Capacities (2012)



CLoHAM

Future Traffic Flows

5.52 **Figure 5.15** and **5.16** presents an analysis of the volume of flows on key highway links within the borough from the Central Case 2031 CLoHAM model.

Figure 5.15 AM Peak Vehicle Flows (Central Case, 2031)

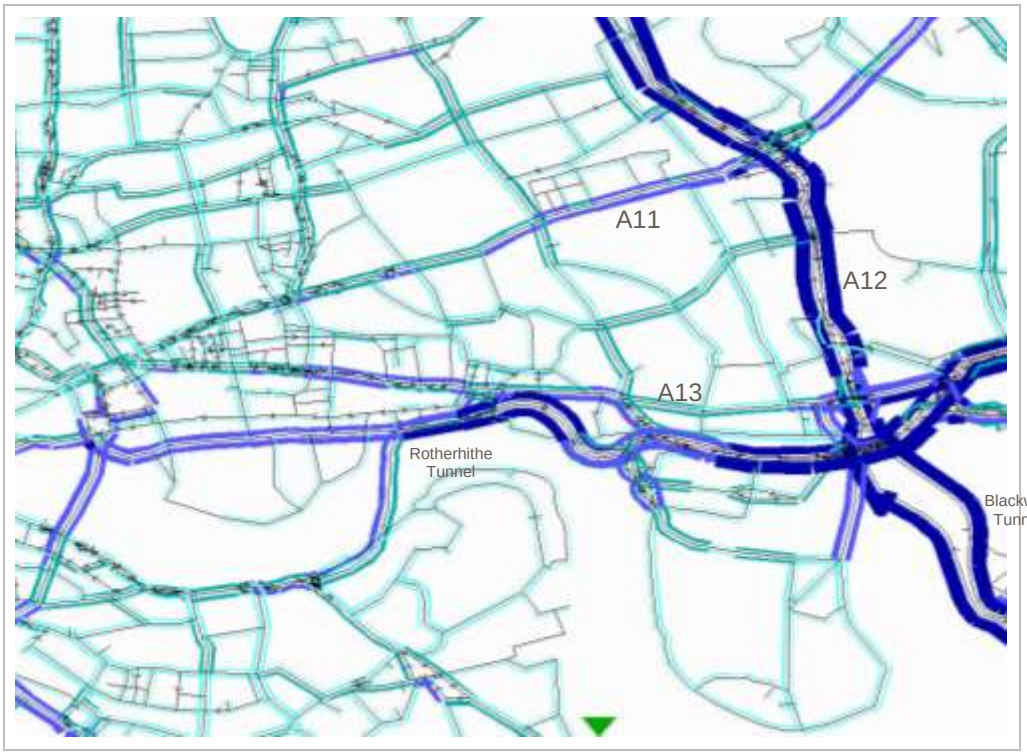
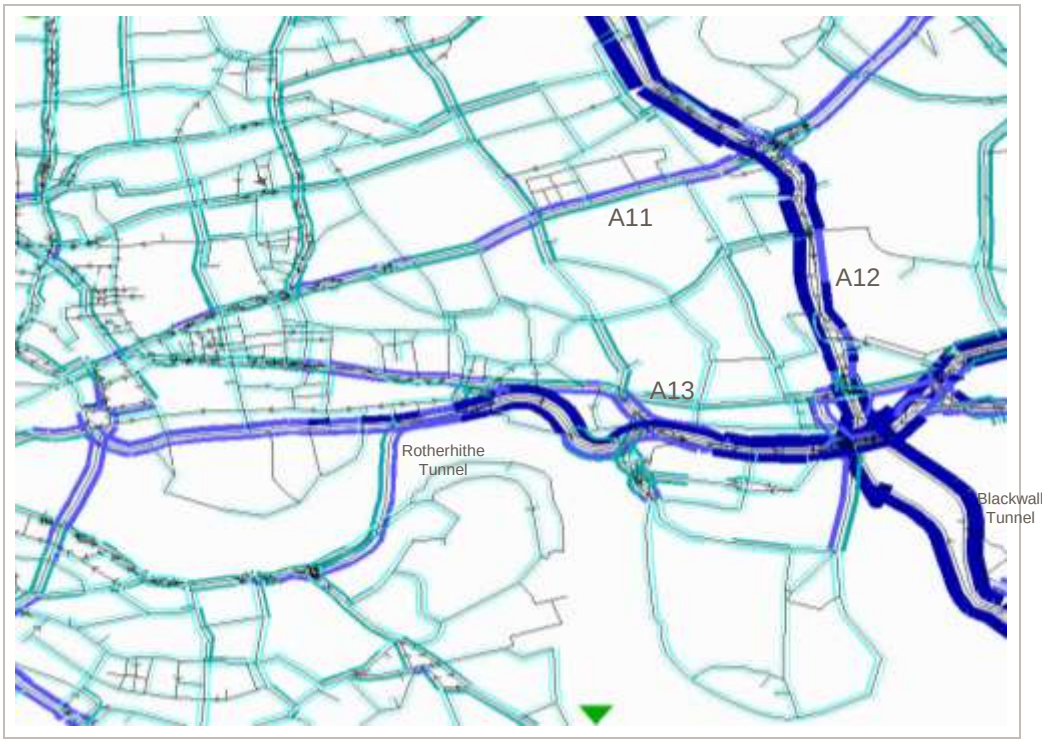


Figure 5.16 PM Peak Vehicle Flows (Central Case, 2031)



CLoHAM

5.53 The flows for the Central Case 2031 demonstrate similar patterns as the baseline, albeit with higher flow levels across links.

5.54 The flow data is also follows very similar patterns for the 2031 'High Growth' sensitivity test. There are limited substantial difference between the outputs, indicating that the network is operating close to or over capacity and so flows may be being restricted at points across the network. Indeed, one observation from outside the Tower Hamlets study area is that A13 has very high westbound flows as it approaches the borough. This may be affecting the flow of traffic into the borough.

5.55 The 'High Growth' flow diagrams are presented within **Appendix D** for completeness.

Future Delays

5.56 Given the large population growth expected in Tower Hamlets, traffic delays are likely to increase significantly by 2031 under the Central Case scenario. Under the 'High Growth' scenario these delays may be exasperated further.

5.57 **Figures 5.17** and **5.18** present the forecast 2031 AM peak delays for the Central Case and High Growth scenarios. As previously, 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)

5.58 While delays are projected to increase throughout the whole borough, these increases are particularly pronounced for Blackwall Tunnel and the A1206 (Isle of Dogs Ring Road). Delays are also observed on both sides of the A1206 providing access onto the Isle of Dogs and on the roads around the Queen Mary University of London (Hartford Road, White Horse Lane, Globe Lane).

5.59 These high delays are extended further under the 'High Growth' scenario, including on borough roads to the south of Victoria Park / Bow (Old Ford Road, Roman Road) again suggesting significant breakdown in the operating capability of the network.

5.60 The key areas of forecast delay on the borough highway network are circled in orange within the figures:

- Roman Road / Old Ford Road area (south of Victoria Park / Bow)
- Hartford Road, White Horse Lane, Globe Lane (Queen Mary University of London)
- Bow Common Lane, St Paul's Way , Upper North Street (Bow Common)
- Westferry Road (Isle of Dogs)
- Preston's Road / Manchester Road (Isle of Dogs)

5.61 **Figures 5.19** and **5.20** present the forecast 2031 PM peak delays for the Central Case and 'High Growth' scenarios.

These demonstrate similar patterns of severe congestion, although in the 'High Growth' scenario there is an additional spike in delay on Hertsmere Road, indicating that significant re-routing of trips is occurring on minor routes to avoid wider delays on major routes. This is, again, an indication of the breakdown in the operating capability of the network in some parts of the borough.

The PM Peak 'High Growth' outputs (**Figure 5.20**) also demonstrates higher levels of delay on the A12 on the southbound approach to the Blackwall Tunnel. This obviously has a range of wider network impacts, including reducing the flow of traffic onto Preston's Road, thus inadvertently reducing delays.

Figure 5.17 AM Peak Highway Delays (2031 – Central Case)

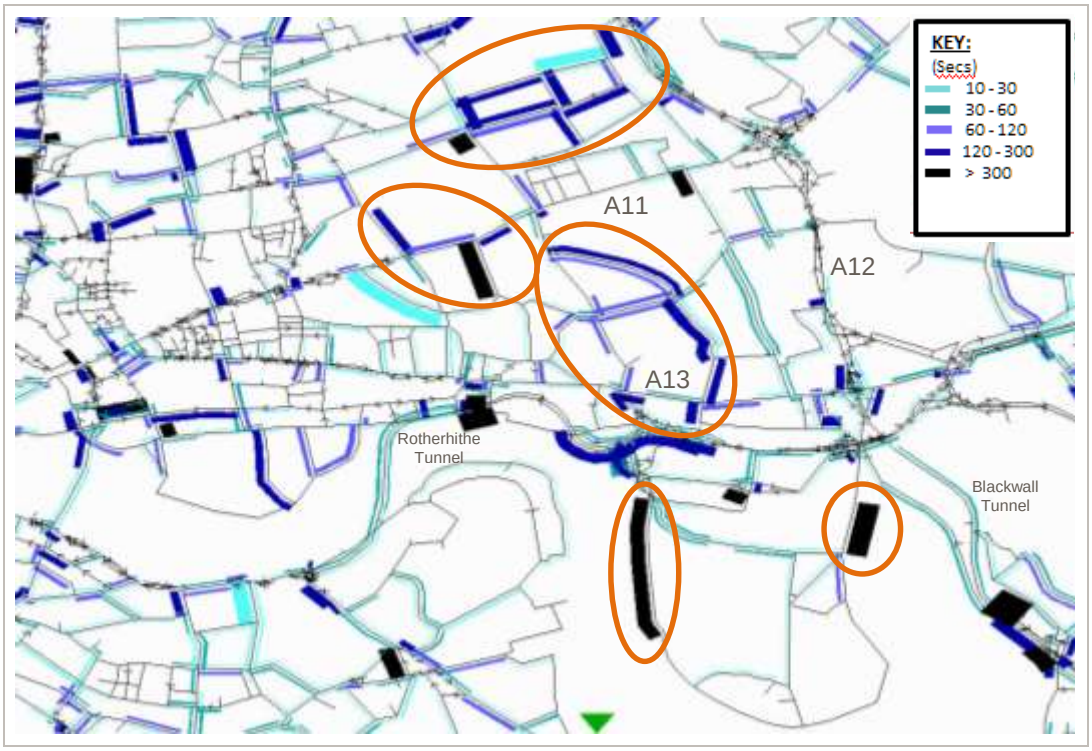


Figure 5.18 AM Peak Highway Delays (2031 – High Growth)

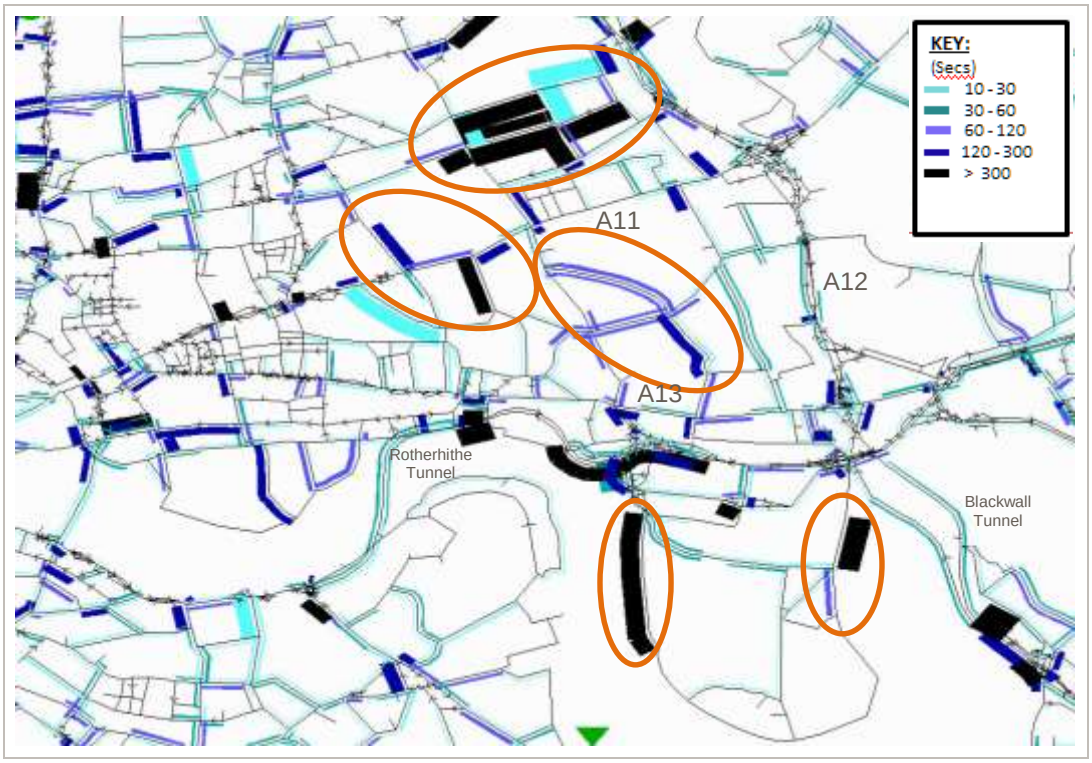


Figure 5.19 PM Peak Highway Delays (2031 – Central Case)

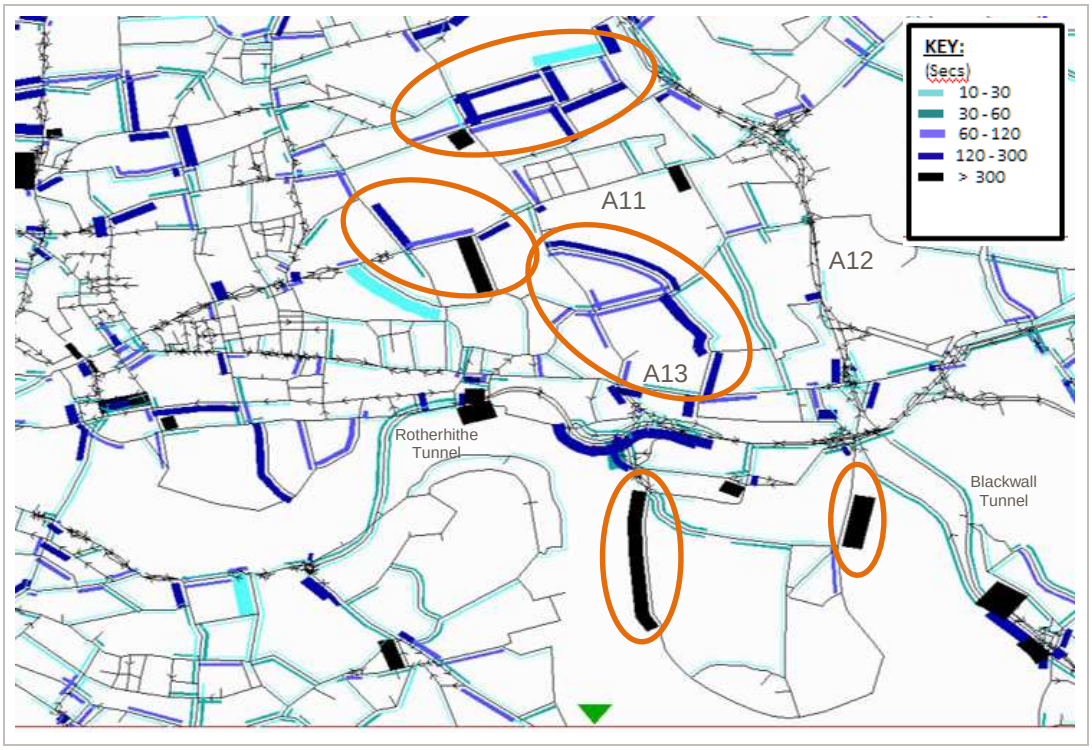
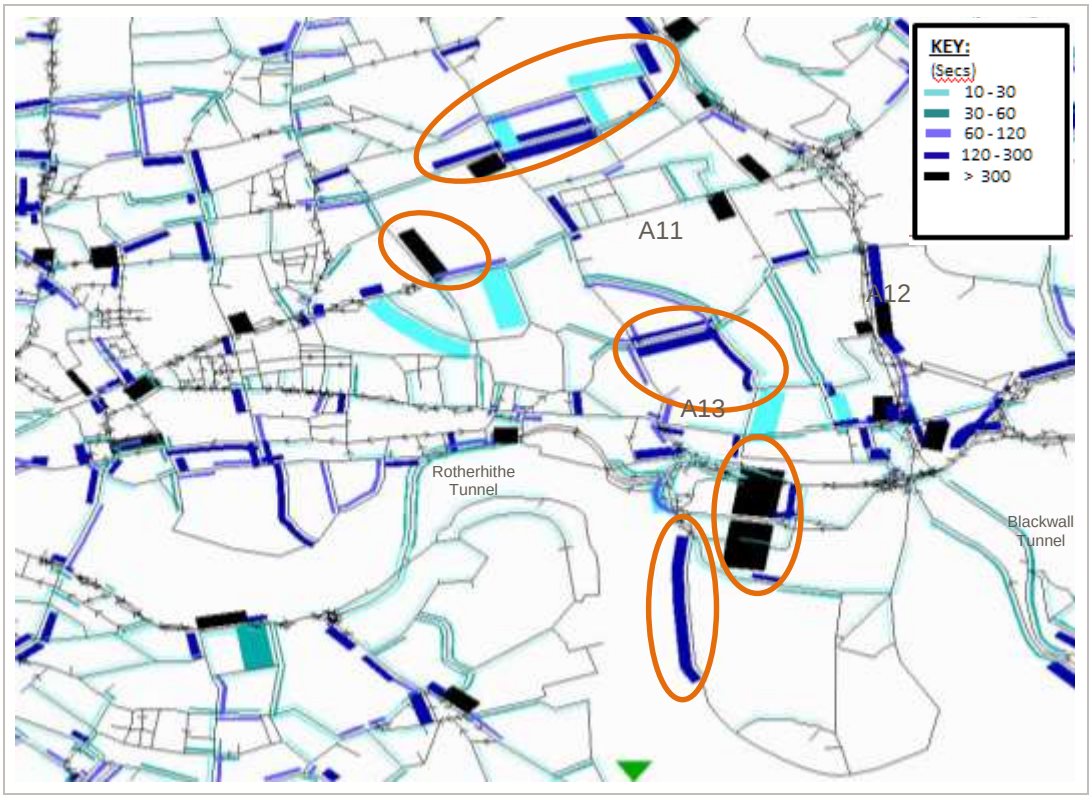


Figure 5.20 PM Peak Highway Delays (2031 – High Growth)



CLoHAM

5.62 **Figures 5.21** and **5.22** present the forecast 2031 AM peak vehicle volume over link capacity data for the 'Central Case' and 'High Growth' scenarios. As previously, these present the forecast flow of traffic as a percentage of the theoretical maximum capacity on each highway link within the model and can be interpreted as follows:

- Green = vehicle flow is between 70% and 85% of the link capacity
- Brown = vehicle flow is between 85% and 100% of the link capacity
- Red = vehicle flow is over 100% of the link capacity

5.63 Both the AM and PM peak forecast there will be significant proportions of the highway network where the number of vehicle trips exceed the operating capacity of the links. In general, these identify the same geographical patterns as the analysis of delay in Figure 5.17 and 5.18.

5.64 The diagrams for the 2031 PM peak present a similar story and are presented in **Appendix D** for completeness.

Figure 5.21 AM Peak Vehicle Volume over Link Capacity (Central Case, 2031)

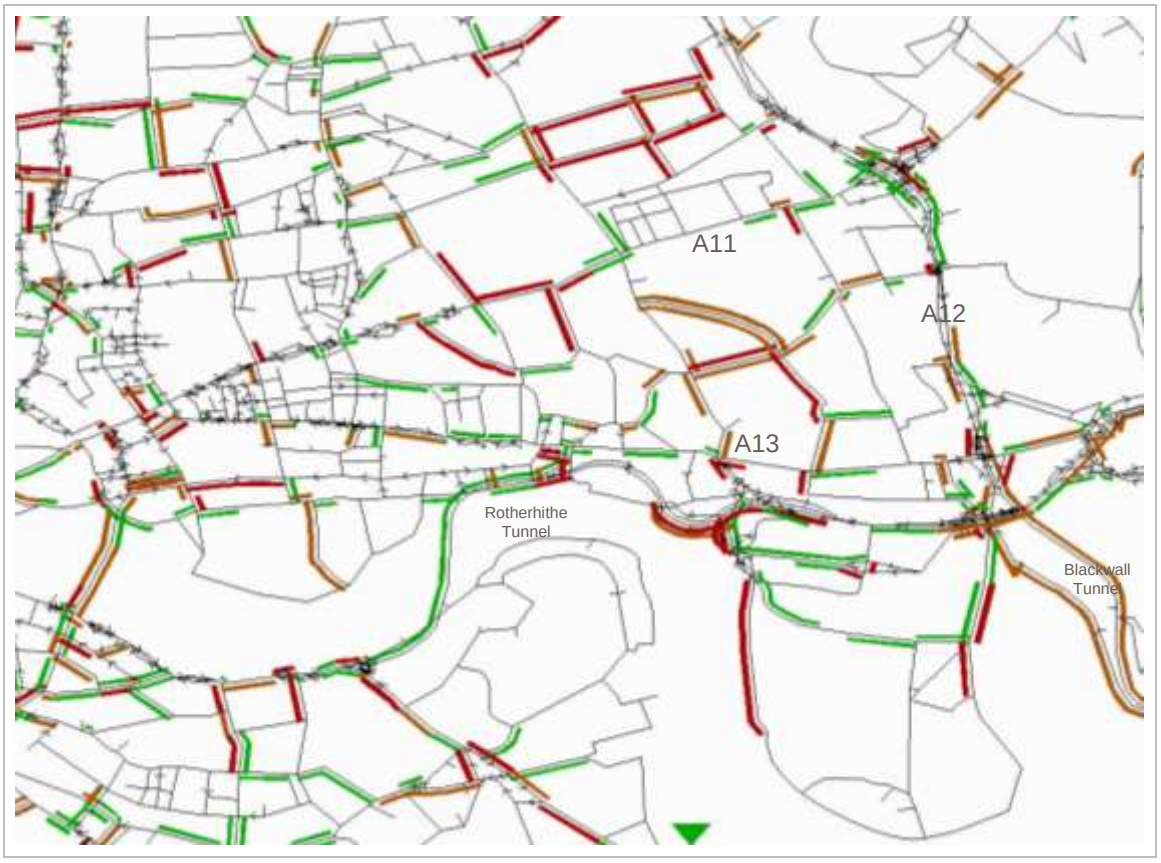
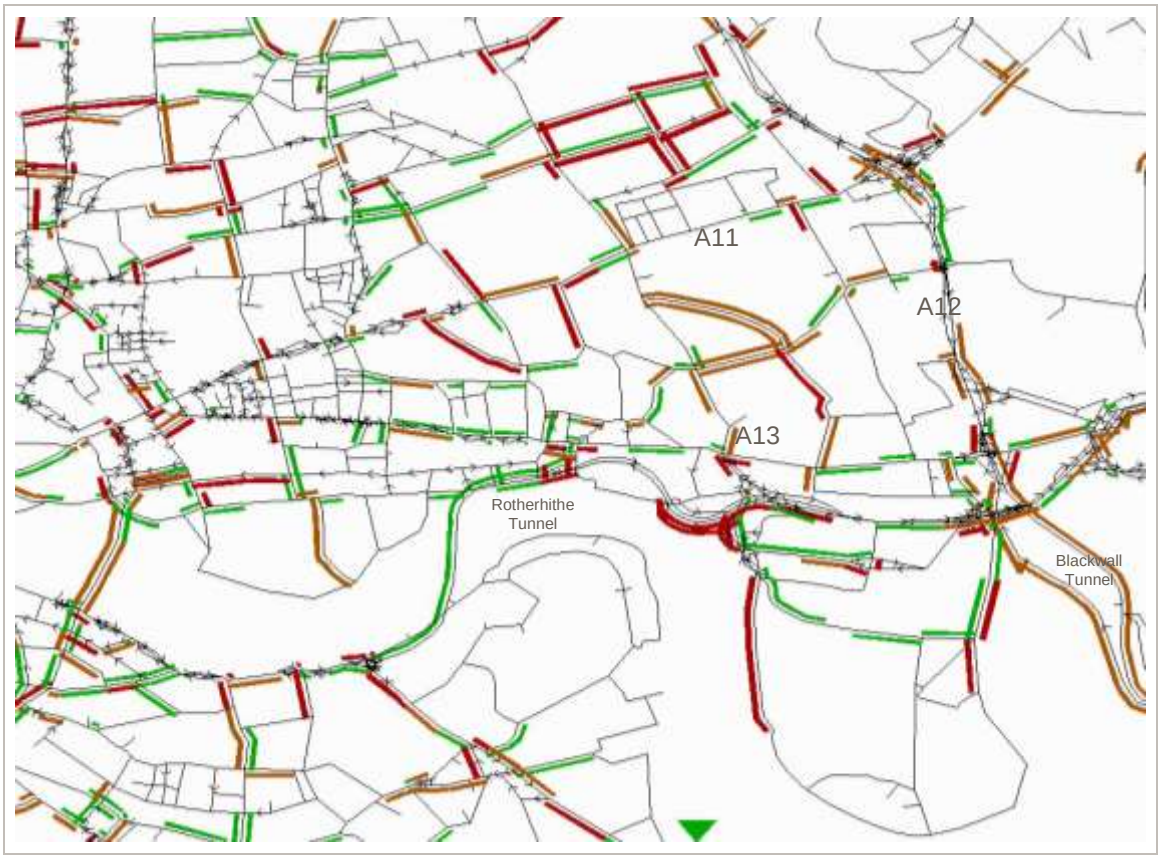


Figure 5.22 AM Peak Vehicle Volume over Link Capacity (High Growth, 2031)



CLoHAM

Key Highway Capacity Challenges

Key Challenge: Ch_C1 – Capacity Constraints on Strategic Routes

5.65 There are currently constraints on parts of the existing strategic road network, most notably the A1261, Limehouse Link, A1203, and parts of the A12, as well as some routes leading onto the strategic network. The A1206 providing access to/from the Isle of Dogs is observed to have capacity constraints on both the eastern and western alignments.

Key Challenge: Ch_HC2 – Highway Capacity on River Crossings

5.66 Two of the three Thames River crossings either in, or in close proximity, to the borough (Blackwall Tunnel and Tower Bridge) have capacity constraints, whilst delays are also observed on the route to the Rotherhide Tunnel.

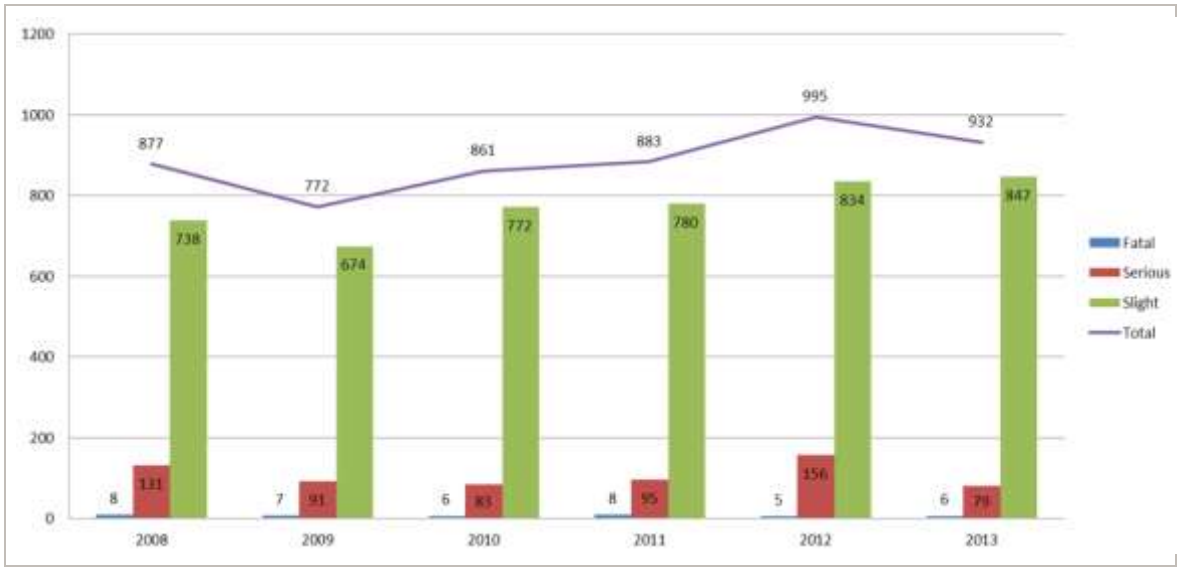
Key Challenge: Ch_HC3 – Impacts of potential growth in car trips

5.67 Future population and development growth will exacerbate the existing network constraints, if unconstrained, to a point where some parts of the network are predicted to begin to breakdown operationally.

ROAD SAFETY

5.68 **Figure 5.23** provides a summary of recent accident data for the borough, disaggregated by fatal, serious and slight accidents.

Figure 5.23 2008-13 All Personal injury Collisions across Borough



LBTH

5.69 Whilst the data presented above suggests there to be a general trend of increasing levels of slight accidents, the number of accidents of serious and fatal severity has remained constant across recent years.

5.70 Further analysis of the 932 personal injury collisions recorded in 2013 demonstrates that almost two thirds (65%) of resulting casualties involved vulnerable road users, broken down as follows:

- Cyclists: 254;
- Pedestrians: 192; and
- Motor powered two wheelers: 214.

Comparative Levels

5.71 A comparison has been undertaken of the number of accidents of a serious/fatal severity and a slight severity in the borough compared to the neighbouring boroughs of Hackney and Newham, as shown in **Figures 5.24** and **5.25** respectively.

5.72 The analysis indicates that Tower Hamlets has historically had higher levels of reported accidents than the two neighbouring boroughs. Slight accidents are notably higher over the last three years of data, whilst fatal / severe accidents are significantly above Newham and slightly above Hackney. It is important to note that these are absolute accident values and so do not take into account the volume of travel.

Figure 5.24 Accidents of Serious / Fatal Severity Comparison

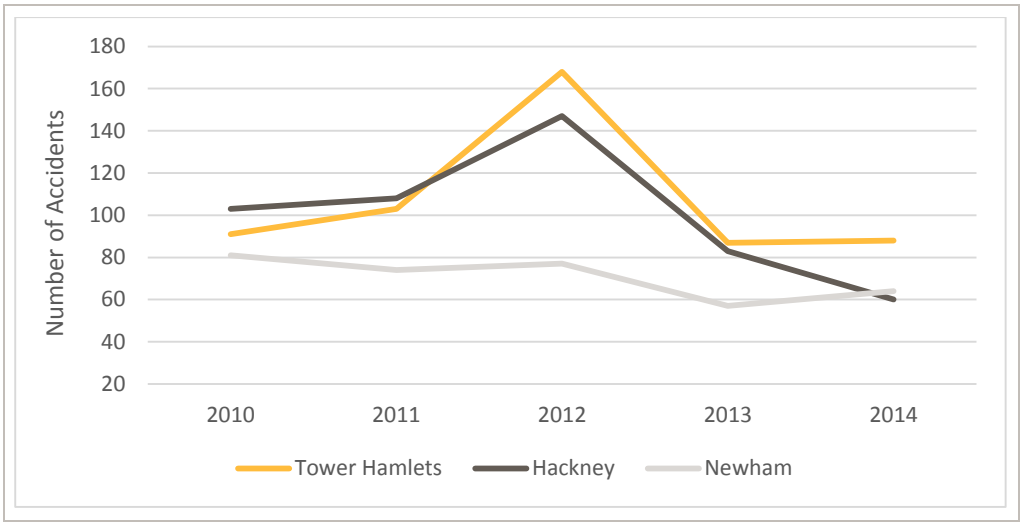
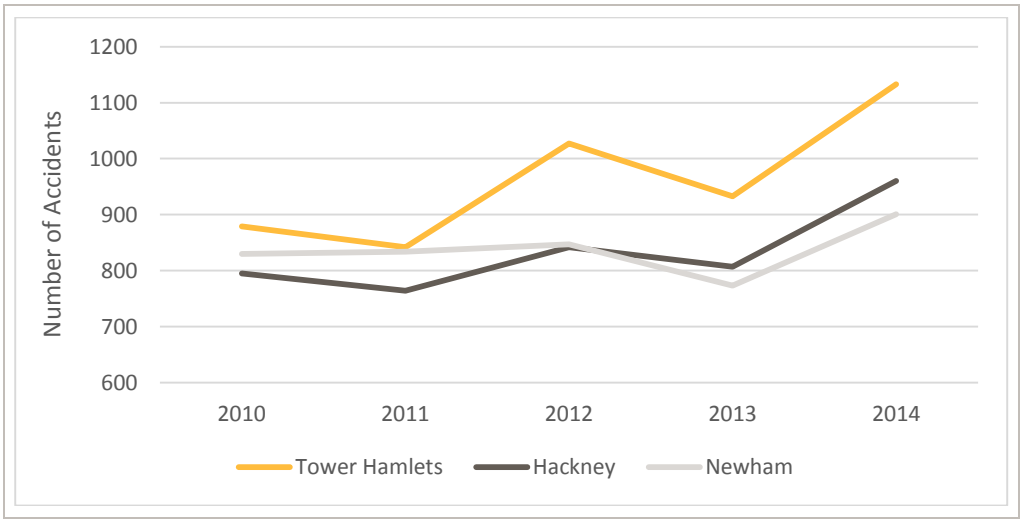


Figure 5.25 Accidents of Slight Severity Comparison



TfL's Borough Local Implementation Plan (LIP) Performance Indicators report

Key Road Safety Challenges

Key Issue: RS1 – Increasing levels of reported personal injury accidents

5.73 An overall trend of a slight increase in accidents levels over the six year period of data and higher absolute levels of accidents in comparison to some neighbouring boroughs.

PARKING DEMAND

On-Street Parking Utilisation

5.74 As detailed within the **Chapter 4**, the borough operates four overarching Controlled Parking Zones (CPZ), which are divided into a total of 16 smaller mini-zones.

5.75 The borough has undertaken a series of on-street parking surveys in each of the mini-zones to identify existing levels of on-street parking provision (marked parking bays) and utilisation for weekday, weekend and overnight (weekday) periods.

5.76 A summary of this data is provided in **Table 5.4** below for each of the mini-zones.

Table 5.4 On-Street Parking Survey Data

CPZ Mini-Zone	Spaces (Bays)	Weekday		Night		Weekend	
		Spaces Occupied	% Occupancy	Spaces Occupied	% Occupancy	Spaces Occupied	% Occupancy
A1	807	552	68%	698	87%	560	70%
A2	568	391	69%	489	86%	411	72%
A3	1,804	1,152	64%	1,500	83%	1,093	61%
A4	2,549	1,711	67%	2,039	80%	1,796	71%
A5	329	230	70%	340	103%	239	73%
A6	664	459	69%	665	100%	577	87%
B1	2,353	1,460	62%	1,802	77%	1,570	67%
B2	2,618	1,702	65%	1,955	75%	1,924	74%
B3	2,617	1,874	72%	2,331	89%	2,212	85%
C1	852	665	78%	793	93%	757	89%
C2	431	246	57%	390	90%	367	85%
C3	2,596	1,931	74%	2,213	85%	2,080	80%
C4	1,154	852	74%	956	83%	885	77%
D1	1,969	1273	65%	1,392	71%	1,274	65%
D2	1,262	587	47%	675	54%	704	56%
Total	**22,573**	**15,085**	**67%**	**18,238**	**81%**	**16,449**	**73%**

LBTH

Weekday

5.77 It can be seen that across all mini-zones, parking stress remains below the 80% threshold considered to represent high parking stress during the week, with a highest occupancy of 78% identified in mini-zone C1. The majority of zones are within a bracket of 60% to 75% occupied during a weekday.

5.78 Zones D2 and C2 record the lowest occupancy levels, with 47% and 57% of all bays occupied during the survey respectively.

5.79 On average, around two thirds of all spaces were occupied on a weekday 7,448 available parking spaces.

Weekend

5.80 Recorded parking stress is higher during the weekend when compared to the weekday; this can be attributed to a general reduction in the hours of operation of CPZs within the borough on Saturdays and Sundays, as set out in **Table 4.2**.

5.81 An overall parking occupancy of 80% or above was observed in a total of five zones, with Zone C1 again recording the highest occupancy levels (89%). This equates to 95 unoccupied spaces within the zone (852 total spaces).

5.82 During the weekend survey, there were a total of 6,124 unoccupied spaces, equating to an average occupancy of 73% across Tower Hamlets' 16 mini-CPZs.

Overnight

5.83 As all CPZs within the borough do not operate during night hours, it is unsurprising that parking levels are recorded to be highest overnight, with an average occupancy of 81% recorded across the borough.

5.84 Two mini-zones recorded parking occupancy levels of 100% or above (A5 and A6, with respective occupancy of 103% and 100%). Within zone A5, a total of 340 vehicles were recorded as parked (compared to 329 identified parking bays), whilst 665 vehicles were recorded as parked within zone A6's 664 spaces.

5.85 Zones C1 and C2 recorded parking levels of greater than 90% and contained some streets with parking demand in excess of 100%. In total, 153 streets within the borough were recorded as having overnight parking occupancy of above 100%.

5.86 Occupancy levels of greater than 100% can be attributed to a proportion of vehicles parking on single yellow lines, which are not identified as parking bays, but can be used for parking outside the hours of operation of a CPZ.

5.87 A lack of parking restrictions overnight mean that cars not in possession of a valid resident or business parking permit are able to park within any CPZ; a summary of such activity is provided in **Table 5.5** overleaf.

Table 5.5 Overnight Non-Permit Holder On-Street Parking

CPZ Mini-Zone	Spaces (Bays)	Spaces Occupied	% Occupancy	Non-Permit Holders	% Non-Permit Holders
A1	807	698	87%	112	16%
A2	568	489	86%	86	18%
A3	1,804	1,500	83%	148	10%
A4	2,549	2,039	80%	88	4%
A5	329	340	103%	15	4%
A6	664	665	100%	113	17%
B1	2,353	1,802	77%	165	9%
B2	2,618	1,955	75%	48	3%
B3	2,617	2,331	89%	110	5%
C1	852	793	93%	53	7%
C2	431	390	90%	13	3%
C3	2,596	2,213	85%	135	6%
C4	1,154	956	83%	49	5%
D1	1,969	1,392	71%	26	2%
D2	1,262	675	54%	112	17%
Total	**22,573**	**18,238**	**81%**	**1,273**	**7%**

LBTH

5.88 **Table 5.5** shows that, across the borough as a whole, overnight parking by non-permit holders is low at 7 %. This increases to 18% in Zone A2, 17% in Zone A6 and D2, and 16% in Zone A1.

5.89 The relatively limited number non-permit holder parking suggests that, rather than large numbers of non-permit holders parking on-street, the issues with overnight parking stress relates more to the total number of permits that are issued to residents and businesses in comparison to the number of spaces.

5.90 Within the two mini-zones where overnight capacity exceeds 100% (A5, and A6) the level of non-permit parking is small in A5 (4%) but is high in A6 (17%).

5.91 Zone A5, is a relatively small zone in the far northwest of the borough, located around Arnold Circus. In Shoreditch. It is a high density housing area and so the overnight pressures here are likely to be as a direct result of the high demand for resident permit parking. Whilst there may be demand for evening parking amongst visitors to the nearby night-time economies around Shoreditch and Old Street, it wold appear that there is simply insufficient kerbside space to accommodate such demand.

5.92 Zone A6 is a much larger zone again located at the far west of the borough around Spitalfield. The level of residential permit demand appear to be slightly lower than A6 (relative to the size of the zone) but the available space is being utilised by non-permit demand. This non-permit demand could be as much to do with demand related to the nearby night-time economy as it is to non-permit residential demand.

5.93 Zone A1 and A2 have overall overnight parking utilisation of 87% and 86% respectively, with 16% and 18% non-permit demand. These zones are located just to the east of Zones A5 and A5, still very much to the northwest side of the borough. The non-permit parking in these zones is not currently causing parking capacity to be exceeded overall, although there are issues with individual streets. Without the non-permit parking, occupancy would fall to 71% and 68% respectively.

5.94 The final mini-zone with high non-permit demand is Zone D2. This is located at the southern end of Isle of Dogs. Levels of parking occupancy are low throughout the day and night and so non-permit parking is not have a detrimental impact upon parking for residents.

Inter-zone parking

5.95 A permit holder is entitled to park for an unlimited amount of time within their larger zone and for up to three hours in any other zone. Whilst this can alleviate pressures within the smaller mini zones, it also encourages cross borough vehicular trips, having a time period of three hours allows for a number of leisure activities or indeed parking around transport interchanges to make a trip outside of the borough.

5.96 **Table 5.6** evaluates the level of inter-zone parking that occurs across the borough.

5.97 The analysis indicates that Mini-zones A3, A6 and A2 are the most popular zones to park in from permit holders possessing a B, C or D permit. This creates particularly high demand in Zone A6 for weekend parking (~90% utilisation).

5.98 The remaining Zone A areas also have higher than average levels of parking from residents/businesses with permits from other zones. It is hypothesised that this may again relate to leisure offer around Shoreditch, Old Street and Spitalfield that attract cross-borough movements to Zone A.

5.99 Conversely, there is little cross-zone parking within areas B, C or D. It is perhaps surprising that Zones C1 and C2 are not more attractive to travel to at weekends, although the absolute level of on-street car parking spaces available is much lower than the equivalent for the combined Zones A1, A2, A5 and A6 and occupancy appears to be much higher amongst permit holders at weekends. It may, therefore, simply be that spaces are very hard to find and this acts as a deterrent.

Table 5.6 Inter Zone Parking at Weekends

CPZ Mini-Zone	% of permit holder parked within own mini Zone (e,g A1)	% of permit holder parked within own larger Zone (e.g. A) Unlimited time	% of permit holder parked from other larger permit zone Max 3 Hours
A1	86%	9%	5%
A2	72%	18%	10%
A3	73%	14%	13%
A4	85%	7%	8%
A5	78%	15%	7%
A6	75%	13%	12%
B1	95%	2%	3%
B2	94%	4%	2%
B3	91%	6%	3%
C1	92%	7%	1%
C2	98%	2%	-
C3	97%	2%	1%
C4	98%	1%	1%
D1	92%	6%	2%
D2	94%	5%	1%

LBTH

5.100 In addition, Zone A also has the highest level of intra-zone parking with between 7% and 18% of permit holders parking in a different park of Zone A than their own designated mini-zone. Some of the min-zone in Zone A are relatively small and so it may be the case that intra-zone parking is required when demand for parking is high.

Key Parking Demand Challenges

Key Challenge: Ch_PD1 – High demand for parking in western zone

5.101 Being on the "city fringes" demand for parking is extremely high within western zones of A5, A6, C1, and C2, particularly overnight and at weekends.

Key Challenge: Ch_PD2 – Non-permit parking overnight

5.102 There are pockets of areas, generally to the northwest of the borough, where notable levels of non-permit parking occurs overnight of between 15% and 20%. In some cases this adds to existing pressures for on-street demand, e.g. in Zones A5 and A6.

Key Challenge: Ch_PD2 – Cross zone permit parking in Zone A

5.103 A notable number of permit holders from other zones are recorded as parking within in Zone A during weekend periods. This creates particularly high demand in Zone A6.

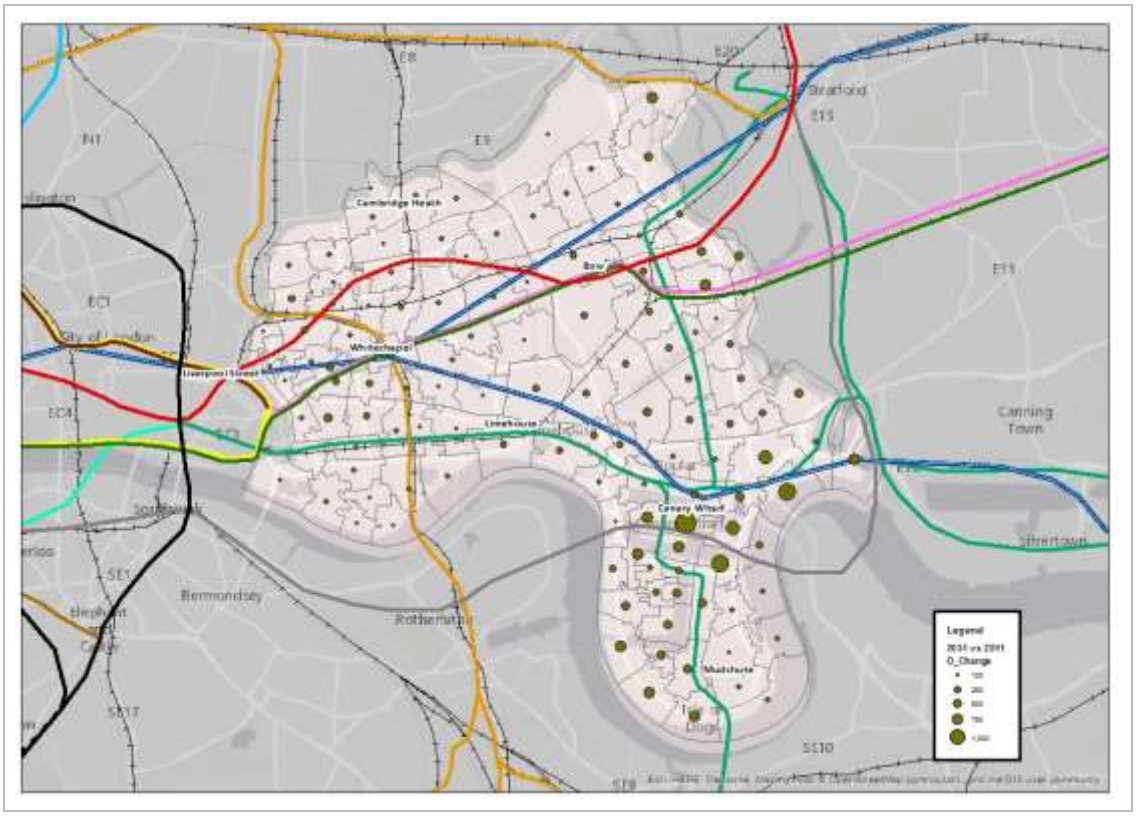
PUBLIC TRANSPORT MOVEMENTS

Demand

5.104 TfL's Railplan model has been used to assess both current and future year public transport movements into and across the borough. As with the strategic highway model assessment, an assessment of both a baseline (2011) and 'Central Case' future year scenario (2031) has been undertaken using TfL underlying growth forecasts. A further sensitivity test has been undertaken to represent a scenario with potentially higher levels of employment growth.

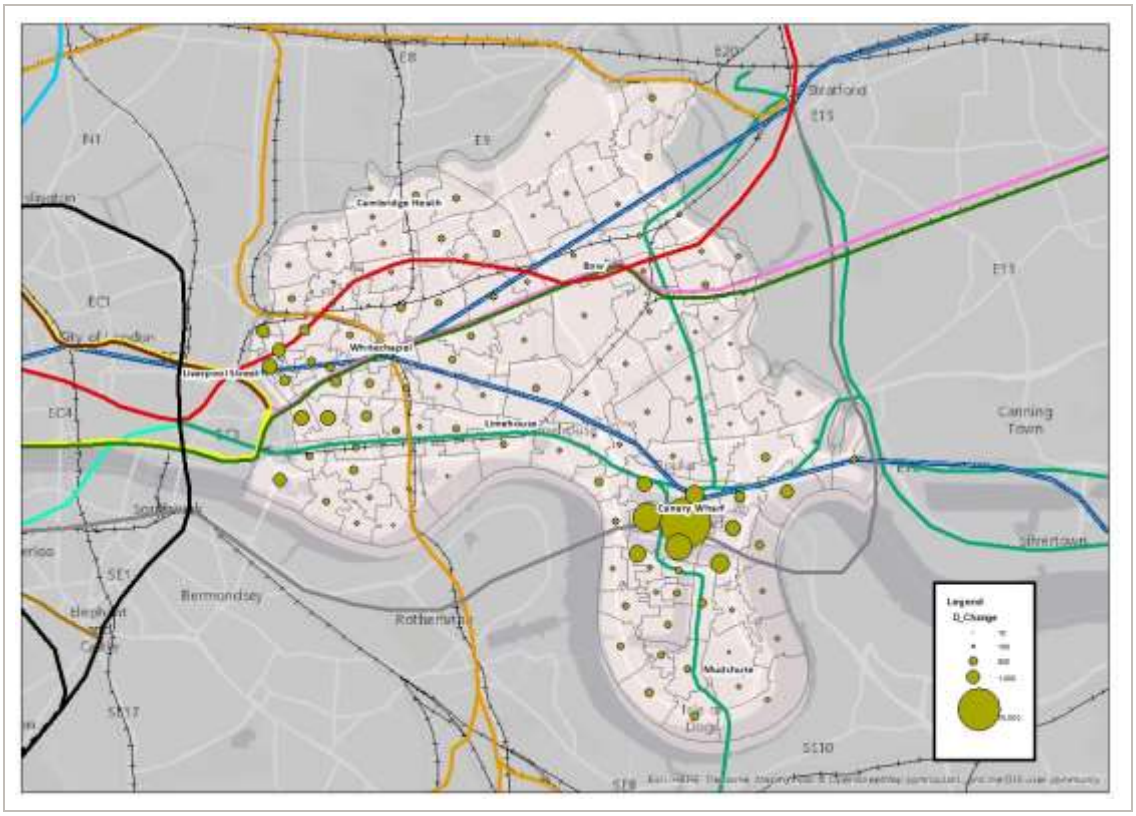
5.105 Underlying rail demand within the 'Central Case' scenario is predicted to increase significantly up to 2031. **Figure 5.26** presents the growth in origin trips in the AM peak within the borough and **Figure 5.27** presents the growth in destinations.

Figure 5.26 Changes in Passenger Origins in AM peak (2011 to 2031)



Railplan

Figure 5.27 Changes in Passenger Destination in AM Peak (2011 to 2031)



Railplan

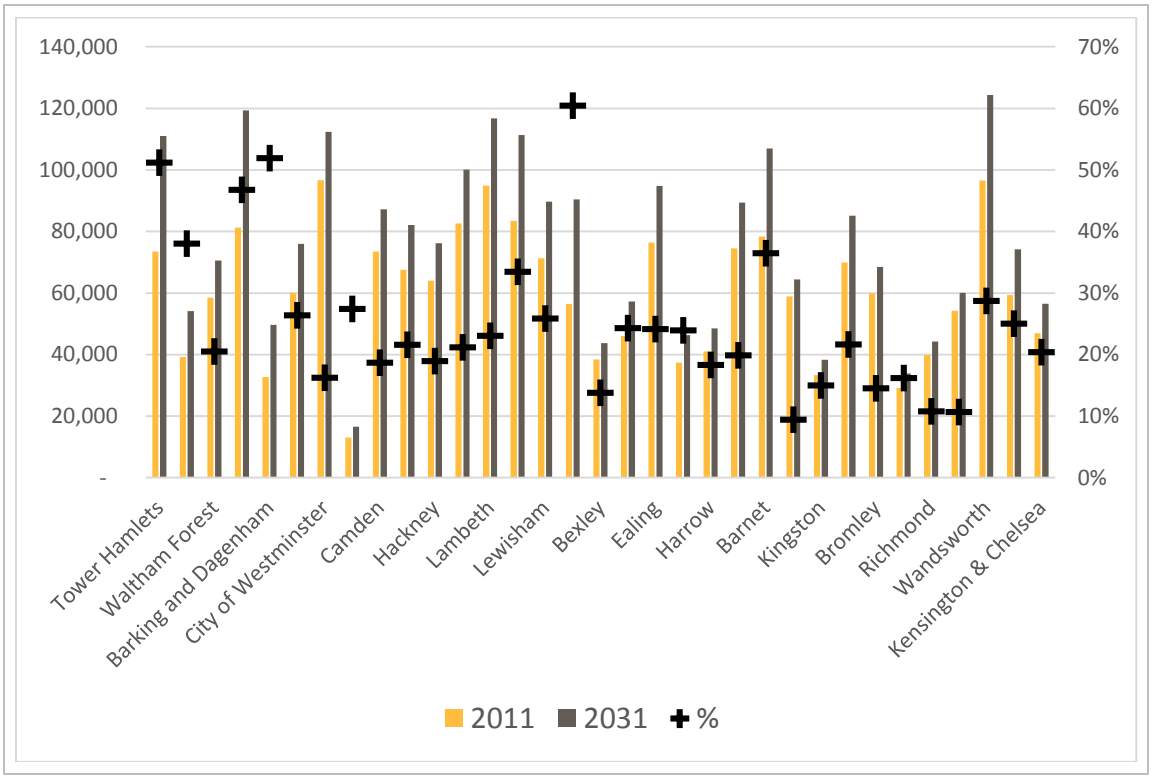
5.106 The analysis demonstrates that the primary focus of growth in demand for rail is within the City Fringe and Isle of Dogs Opportunity Areas, with Canary Wharf having the largest growth, particularly in destination trips.

5.107 To put this into context, Figure **5.28** and **5.29** show the growth in public transport trips in comparison to other London boroughs.

5.108 In terms of trip origins, Tower Hamlets has almost the highest absolute increase (just 2nd to Newham) and 3rd highest percentage increase (to Greenwich & Barking & Dagenham)

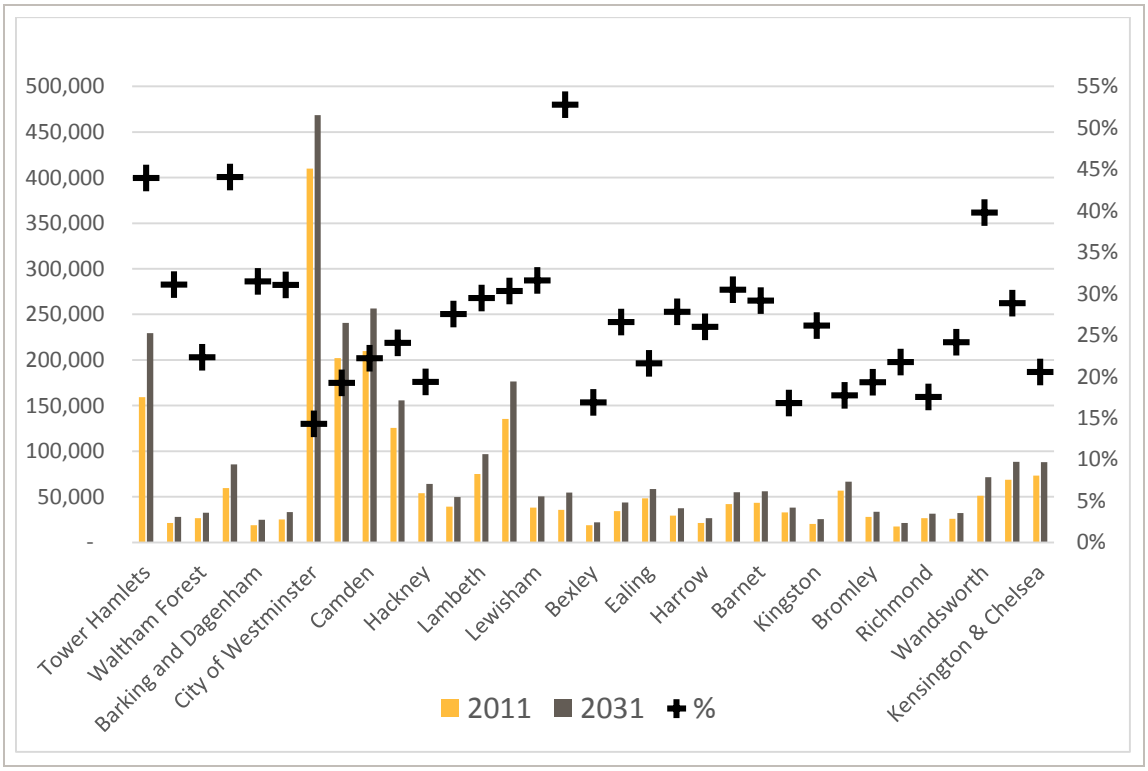
5.109 In terms of trip destinations, Tower Hamlets has most absolute increase (even more than Westminster) and 2nd highest percentage increase (to Greenwich).

Figure 5.28 Changes in Passenger Origins in AM peak (2011 to 2031)



Railplan

Figure 5.29 Changes in Passenger Destination in AM Peak (2011 to 2031)

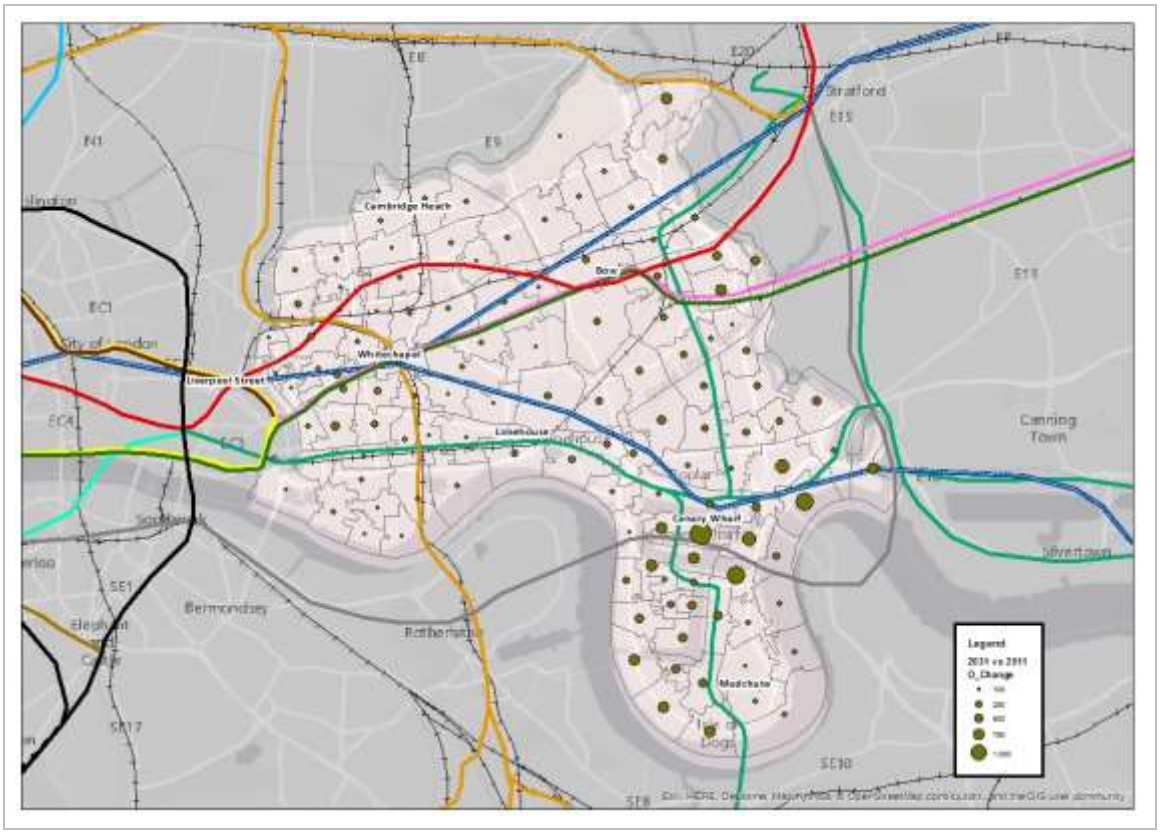


Railplan

5.110 Overall public transport trips to and from locations within the borough are forecast to grow by 47%. This compares to a London-wide average growth rate of 27%, indicating a significantly higher rate of growth in demand.

5.111 The level of internal trips with an origin and destination within the borough is anticipated to grow by 26% or around 7,000 trips in the AM peak. **Figure 5.30** presents the growth in origins for these internal trips.

Figure 5.30 Growth in Demand for Internal Public Transport Trips in Tower Hamlets (2011-2031)



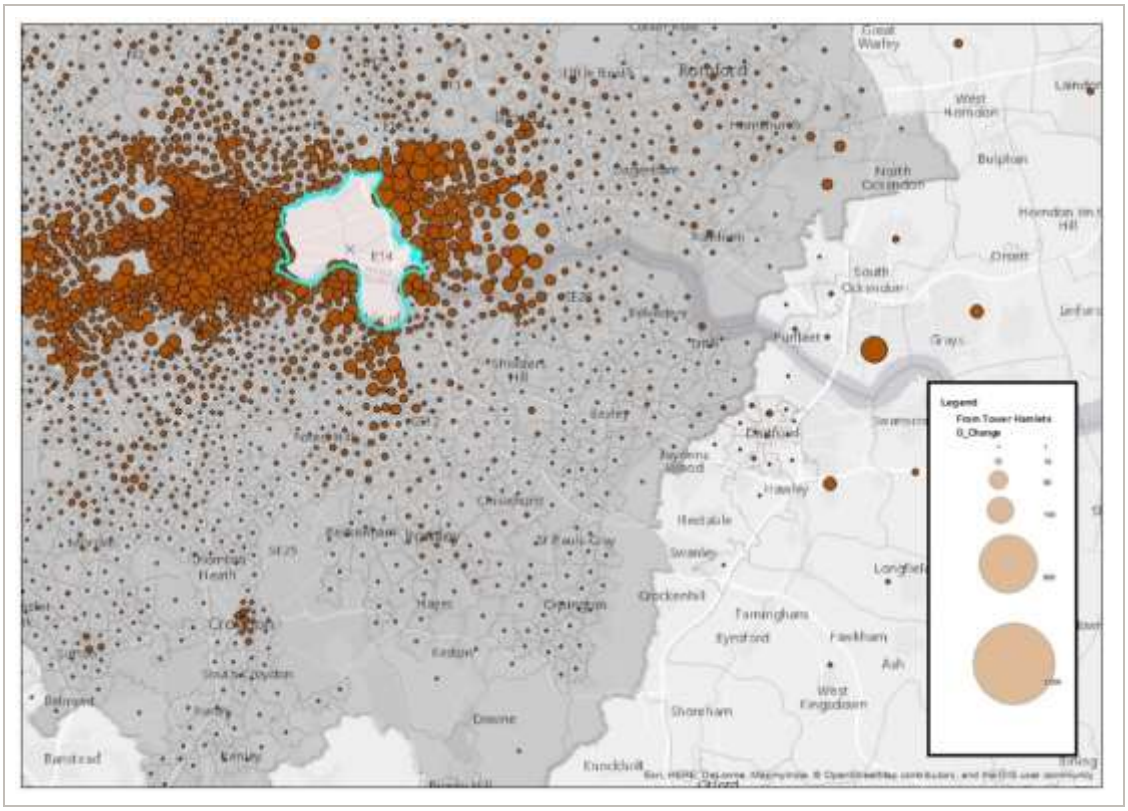
Railplan

5.112 The growth in internal trip origins is around Canary Wharf and the Isle of Dogs, as well as parts of the Lower Lea Valley.

5.113 Growth in public transport trips from Tower Hamlets to destinations outside the borough are forecast to increase by 51% or around 37,500 in the AM peak. **Figures 5.31** presents the growth in the destinations of these trips outside the borough graphically. The increases in trips from Tower Hamlets are mainly towards Central London (City of Westminster, Newham, North London and Southwark) but also towards Stratford

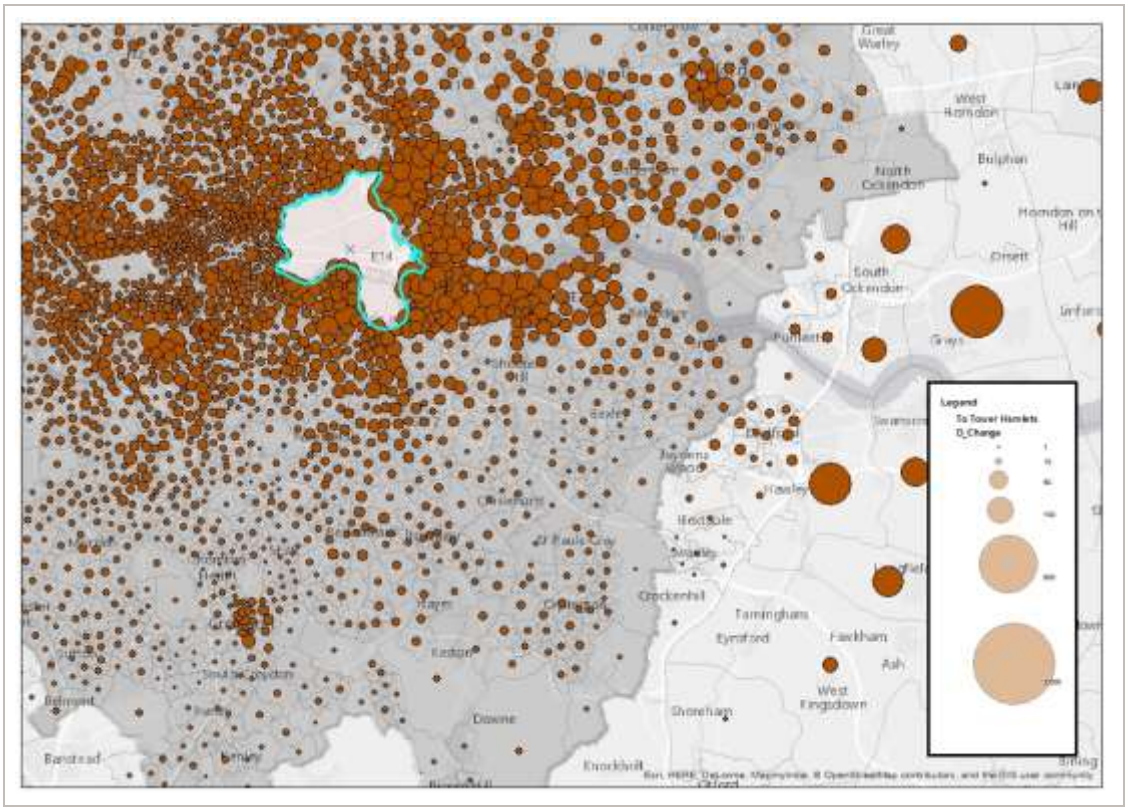
5.114 Growth in public transport trips from outside the borough into Tower Hamlets are forecast to increase by 44%, or 70,000 trips in the AM peak. **Figures 5.32** presents the growth in the origin of these trips outside the borough graphically. The increases in trips to Tower Hamlets are from East London boroughs, as well as further afield in Essex and Kent.

Figure 5.31 Growth in AM Peak Public Transport Demand from Tower Hamlets (2011-2031)



Railplan

Figure 5.32 Growth in AM Peak Public Transport Demand to Tower Hamlets (2011-2031)



Railplan

Key Public Transport Demand Challenges

Key Challenge: Ch_PTD1 – High demand for Public Transport

5.115 The forecasts confirm that there will be exceptionally high increases in the demand for public transport provision across the borough as a result of the proposed growth projections.

Key Challenge: Ch_PTD2 – Inter-borough movements

5.116 There will be significant increases in movements to and from the borough by public transport. This includes increased demand for trips from the borough to Central London and Stratford, as well as large increases in flows into the borough, in particularly to Canary Wharf, from the east.

RAIL MOVEMENTS

Station Demand

5.117 The borough is both an important origin and destination for rail journeys within London and its wider sphere of influence. The main destinations for journeys originating within the borough include Central London and the Stratford area, as well as Canary Wharf within LBTH itself. In addition, the borough is also an important destination for trips from across London and further afield, in particular from the east and south of London.

5.118 **Table 5.7** presents a summary of entry and exit counts for rail station across the borough. In can be observed that the busiest rail stations in the area clearly correspond to London Underground stations.

5.119 With 48 million journeys, Canary Wharf - a major centre of employment and transport interchange - is by far the busiest station. If this is considered alongside the cumulative trips made to the Canary Wharf area in general, via the DLR stations at Canary Wharf, Heron Quay, South Quay and West India Quay, then this adds around a further 30 million entries or exits, giving a total over 78 million for the area.

5.120 Canary Wharf is followed by Tower Hill as the next busiest station (22 million journeys), which provides easy access to the City of London. Other London Underground stations (e.g. Aldgate, Whitechapel, Mile End) also attract relatively large numbers of passengers.

5.121 DLR and London Overground passenger volumes are generally much lower, although it is the National Rail services where passenger volumes are lowest.

Table 5.7 Annual Rail Entry & Exit Counts (2012)

Station	Mode	Board	Alight	Total
Aldgate East	London Underground	-	-	10,134,021
All Saints	DLR	860,167	870,167	1,730,334
Bethnal Green	National Rail	354,396	354,396	708,792
Bethnal Green	London Underground	-	-	15,055,906
Blackwall	DLR	808,672	782,979	1,591,651
Bow Church	DLR	1,804,020	1,260,877	3,064,897
Bow Road	London Underground	-	-	5,180,394
Bromley-by-Bow	London Underground	-	-	2,628,177
Cambridge Heath	National Rail	148,346	148,346	296,692
Canary Wharf	DLR	8,444,145	8,784,263	17,228,408

Station	Mode	Board	Alight	Total
Canary Wharf	London Underground	-	-	48,043,044
Crossharbour	DLR	1,822,315	1,896,512	3,718,827
Devons Road	DLR	834,576	831,998	1,666,574
East India	DLR	1,623,141	1,428,645	3,051,786
Heron Quays	DLR	3,230,564	3,211,676	6,442,240
Island Gardens	DLR	1,231,822	1,106,224	2,338,046
Langdon Park	DLR	1,511,550	1,501,376	3,012,926
Limehouse	DLR	3,577,928	3,400,645	6,978,573
Limehouse	National Rail	1,623,778	1,623,778	3,247,556
Mile End	London Underground	-	-	14,057,083
Mudchute	DLR	975,886	883,886	1,859,772
Poplar	DLR	1,259,314	1,282,561	2,541,875
Shadwell	DLR	3,309,358	3,361,477	6,670,835
Shadwell	London Overground	1,014,371	1,014,371	2,028,742
South Quay	DLR	2,228,620	2,377,691	4,606,311
Stepney Green	London Underground	-	-	4,678,837
Tower Hill	London Underground	-	-	22,537,607
Wapping	London Overground	635,492	635,492	1,270,984
West India Quay	DLR	710,952	682,989	1,393,941
Westferry	DLR	2,275,223	2,388,108	4,663,331
Whitechapel	London Overground	2,225,195	2,225,195	4,450,390
Whitechapel	London Underground	-	-	13,038,867

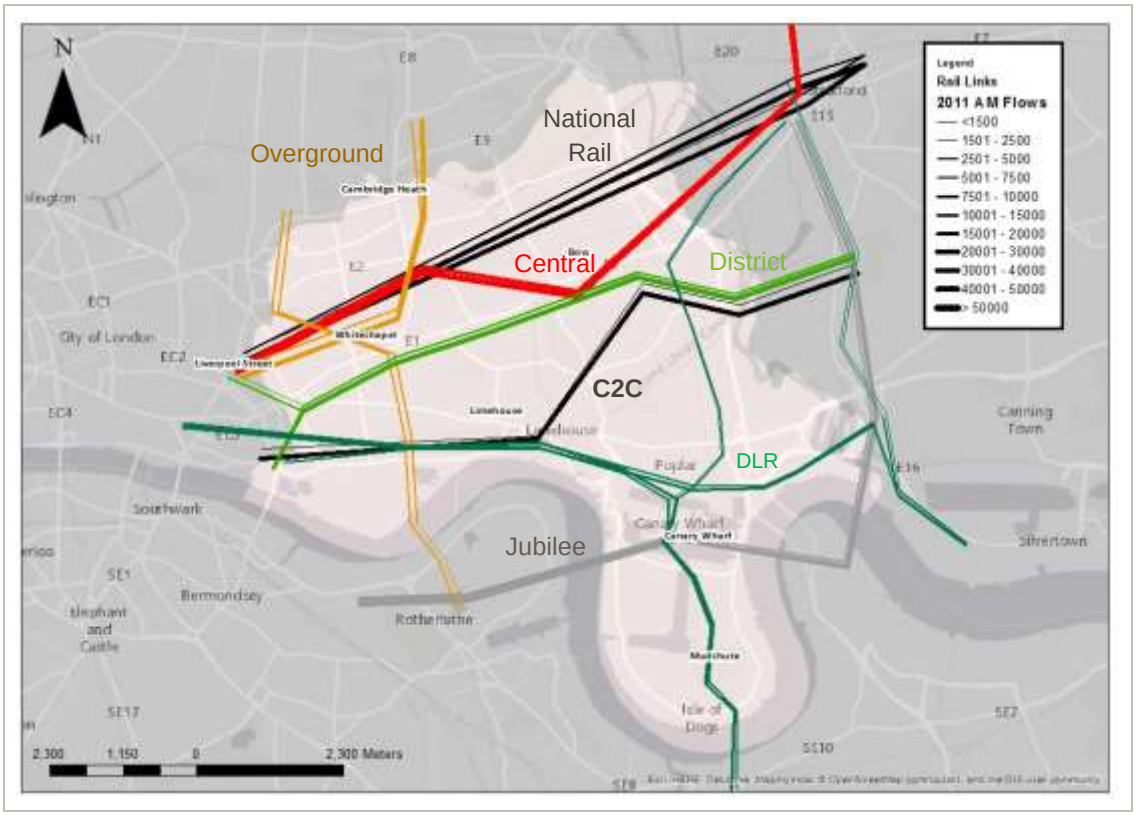
TfL

Current Rail Demand

5.122 **Figure 5.33** and **5.34** present the current levels of flows in the baseline. The lines are colour coded as per TfL designations to ease identification.

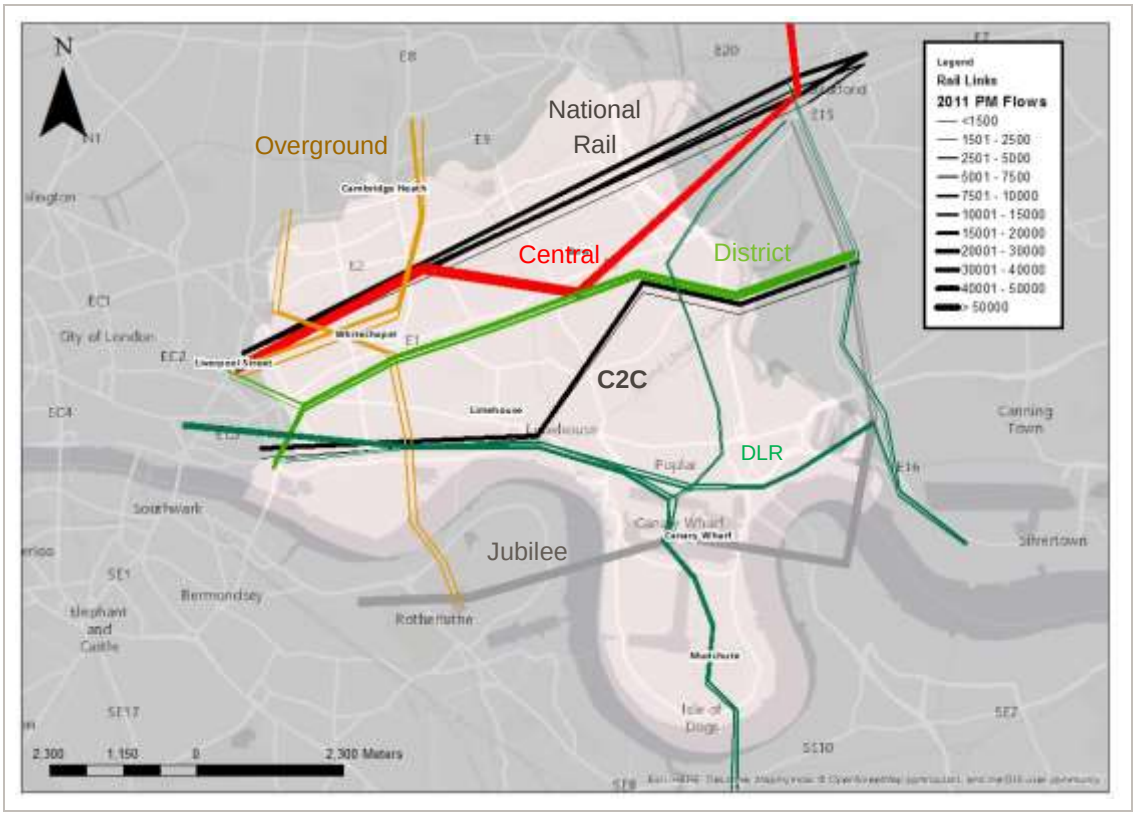
5.123 The data indicates that the Jubilee Line has particularly high flows heading to Canary Wharf in both the AM and PM peak periods. The other underground lines are also busy.

Figure 5.33 AM Peak Rail Flows (2011)



Railplan

Figure 5.34 PM Peak Rail Flows (2011)



Railplan

Current Rail Crowding

5.124 **Figure 5.35** and **5.36** present the baseline rail passenger volumes over the link capacities for the AM and PM peaks.

Figure 5.35 AM Peak Rail Passenger Volume over the Link Capacity (2011)

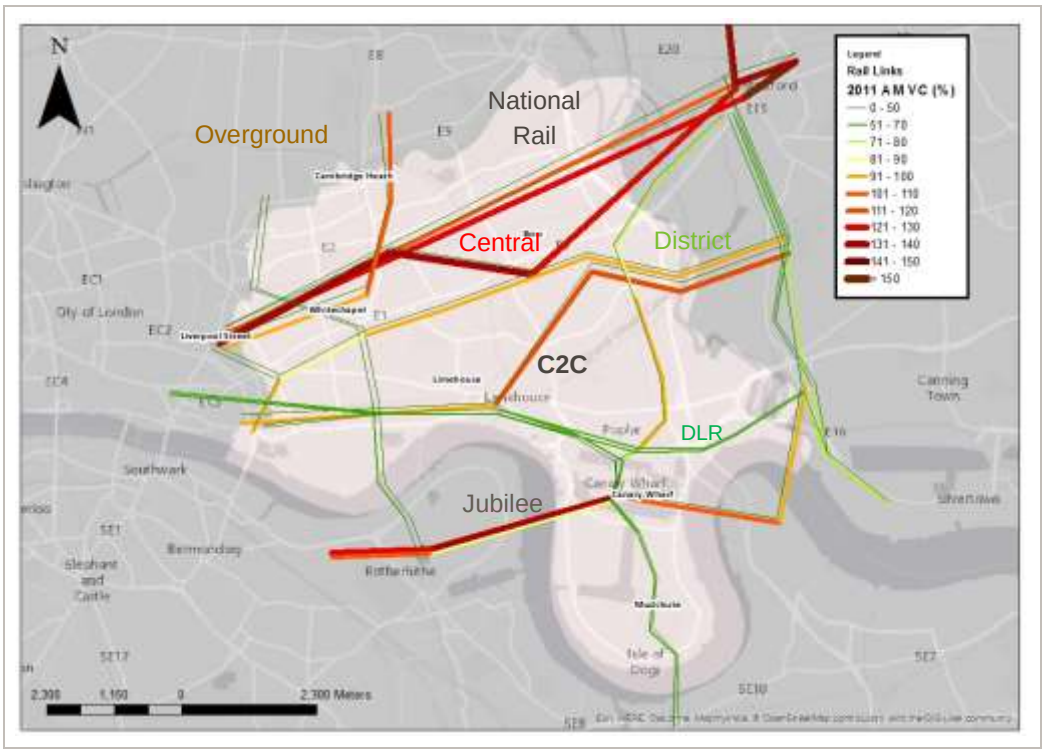
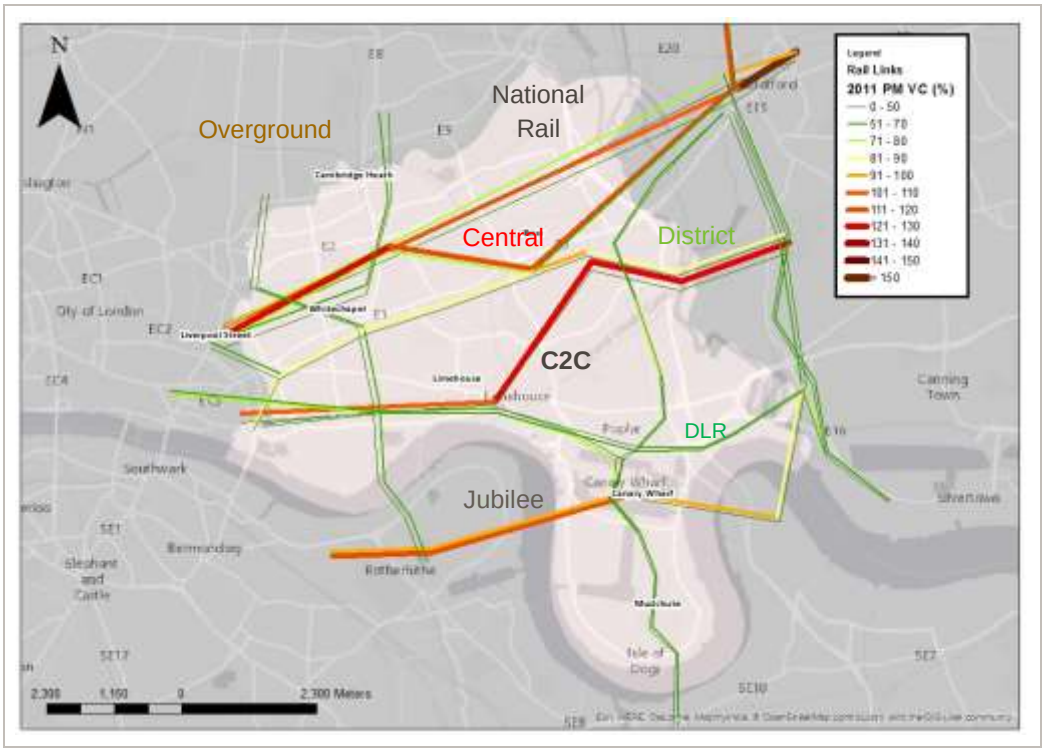


Figure 5.36 PM Peak Rail Passenger Volume over the Link Capacity (2011)



Railplan

5.125 The data indicates there are significant capacity constraints on the Jubilee and Central Lines in the AM peak, as well as National Rail service from Stratford to Liverpool Street.

5.126 There appears to be fewer capacity constraints in the PM peak, with the exception of the C2C services from Limehouse.

Change in Rail Capacity

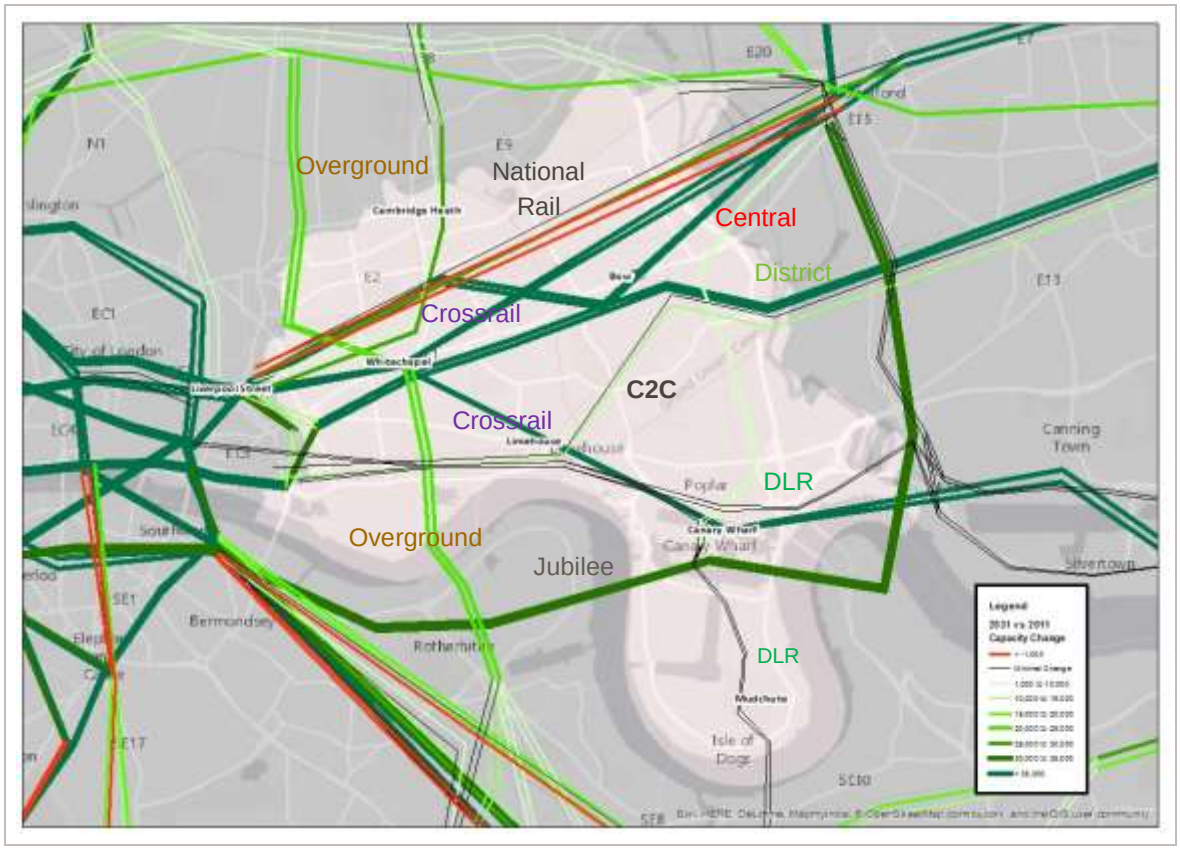
5.127 As outline within Section 4, there are a series of planned improvements to existing rail network capacity, along with the opening of Crossrail, which will lead to a significant increase in rail capacity serving the borough.

5.128 Key planned improvements to the rail network included within TfL's modelling assumptions include:

- Opening of Crossrail (stations at Canary Wharf and Whitechapel);
- Increased frequencies on Central (to 33tph), District and Hammersmith and City (to 32tph), Jubilee (to 33tph) and East London Overground Lines (16tph).

5.129 **Figure 5.37** provides an overview of the changes in underlying rail capacity that will be provided on the network by 2031.

Figure 5.37 Changes in Hourly Rail Link Capacity (2011 to 2031)



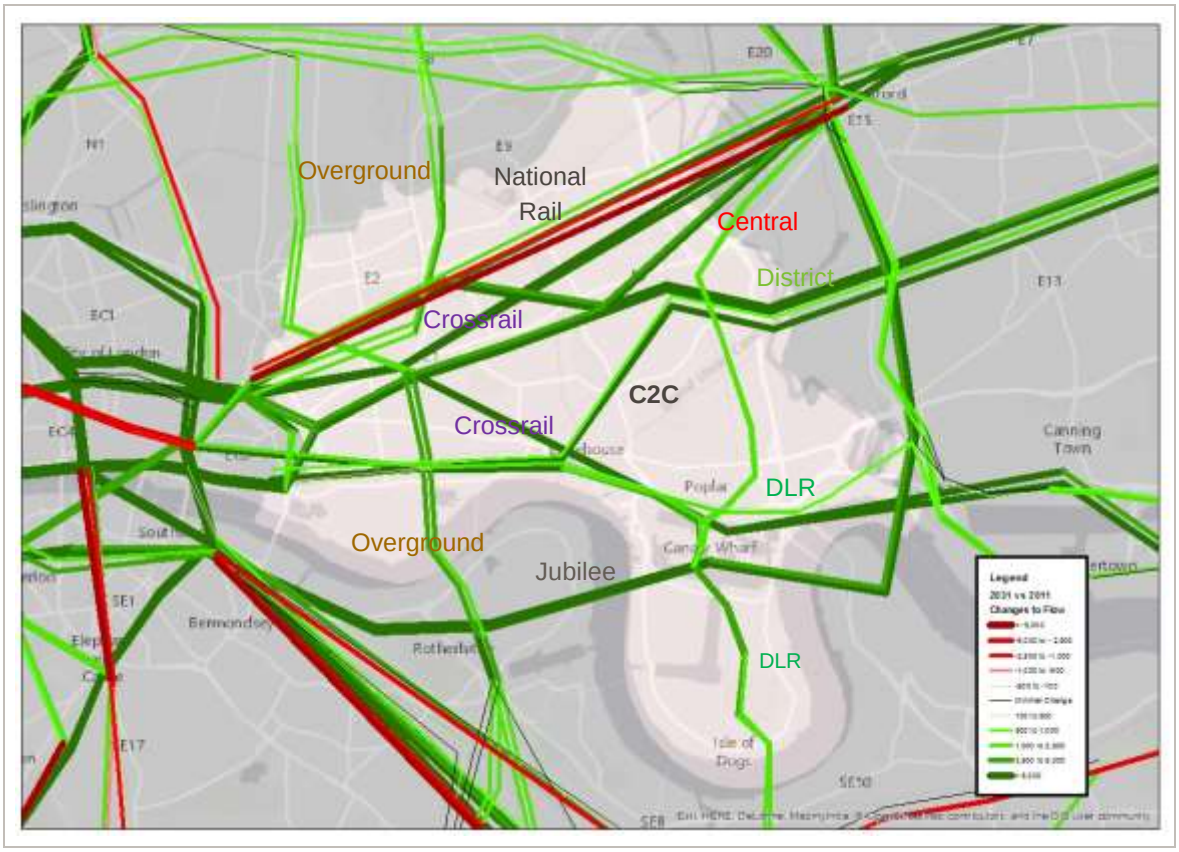
Railplan

5.130 Crossrail is the most obvious increase in capacity, although along the northern branch to Stratford it can be seen that this replaces existing capacity on heavy rail services from Stratford to London Liverpool Street. The improvement in other service frequencies also have an important impact upon capacity.

Change in Rail Demand

5.131 Based upon the change in rail capacity and the increase in forecast trips, **Figure 5.38** presents the forecast change in AM peak passenger flows.

Figure 5.38 Changes in AM Peak Passenger Flows (2011 to Central Case 2031)



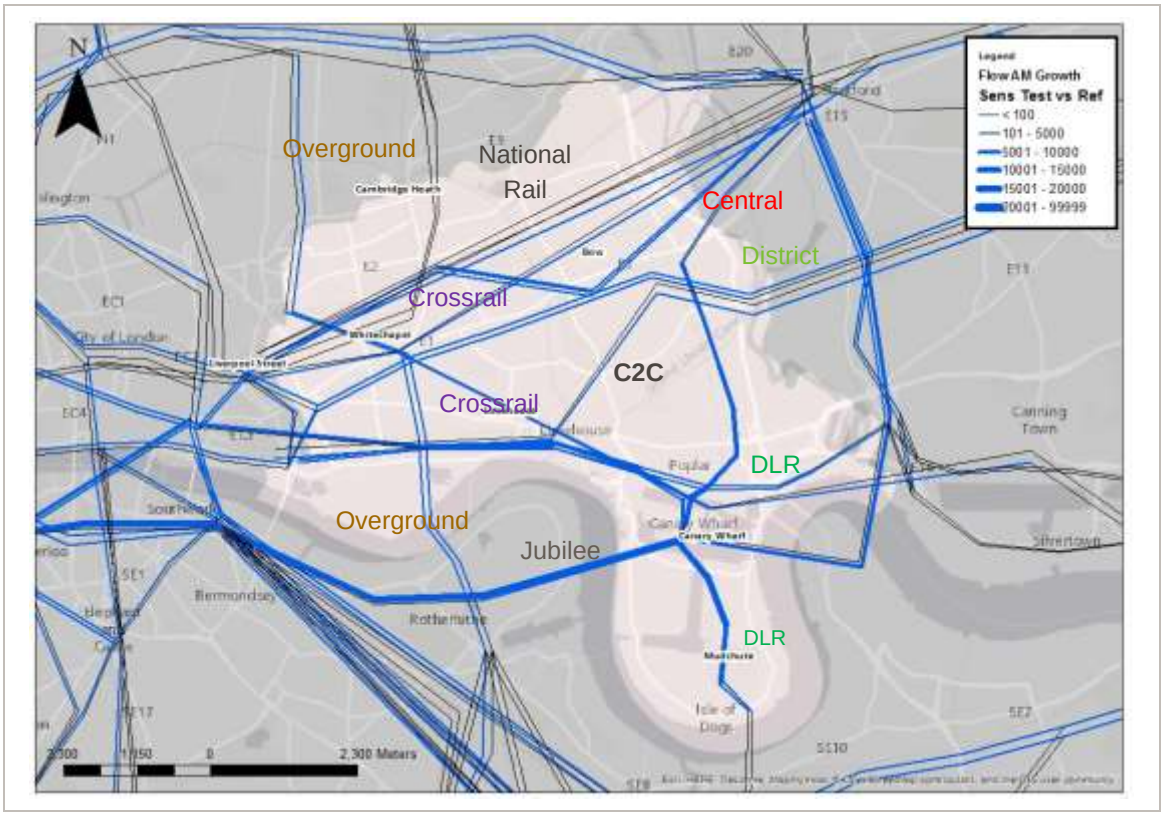
Railplan

5.132 The analysis demonstrates the following changes in passenger flows across each of the lines:

- Central Line
  - Increase of +15,000 westbound from Bethnal Green
- Crossrail
  - Flows of >20,000 inbound in Tower Hamlets
- DLR
  - Increases of nearly 1,000 trips on all branches.
- District and Hammersmith & City Lines
  - Significant inbound increase of 15,000 trips
- National Rail
  - East Anglia – reductions between Stratford – Liverpool St due to Crossrail switch
  - C2C – Increase > 5,000
- Jubilee Line
  - Flows into Canary Wharf increase by up to 12,000 trips
- Overground
  - East London Line - Main increase between South London and Whitechapel
  - Enfield branch has modest increases of 2,000 towards central London

5.133 **Figure 5.39** presents the subsequent change in demand between the 2031 Central Case and High Growth Scenario. This demonstrates further substantial increases in demand on services to Canary Wharf, particularly on the Jubilee Line and DLR from Central London

Figure 5.39 Changes in AM Peak Passenger Flows (Central Case to High Growth, 2031)



Railplan

Future Crowding

5.134 **Figure 5.40** shows the forecast combined impact of increased rail capacity along with increased demand for travel on the level of crowding on rail services in the AM peak 2031 Central Case.

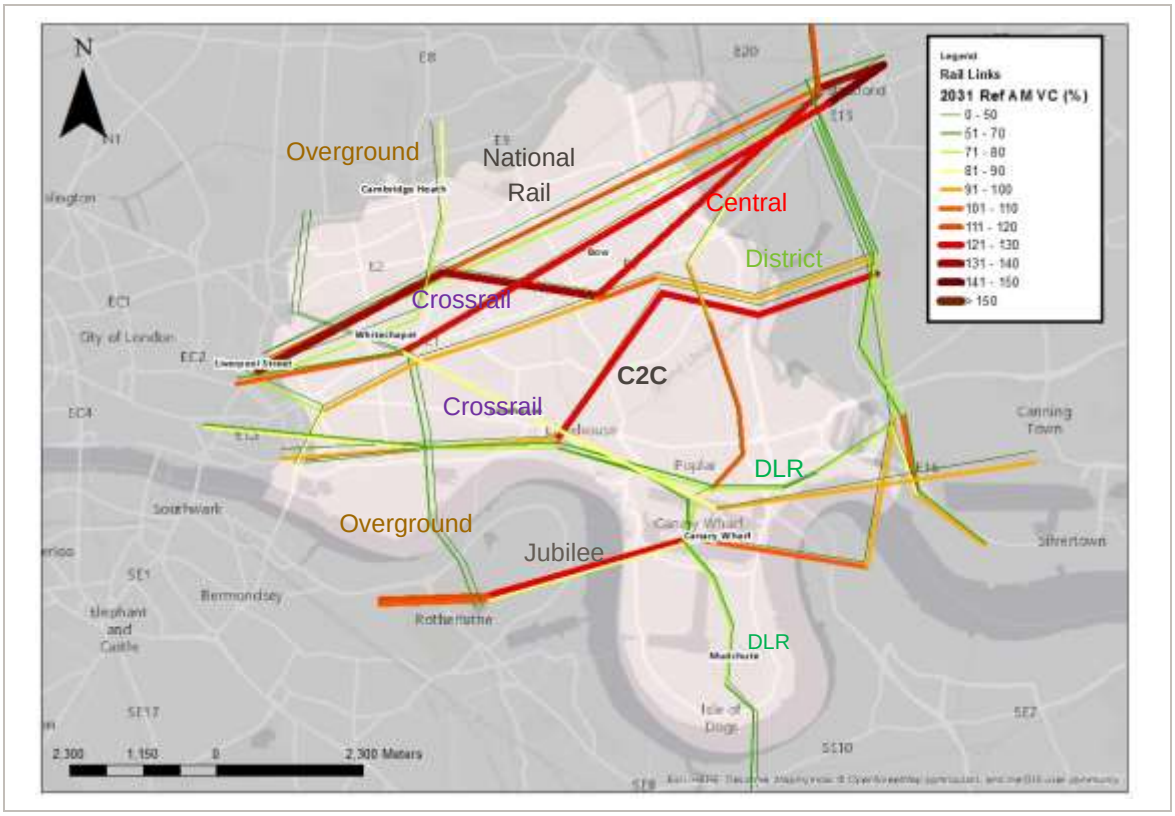
5.135 The analysis indicates that the delivery of Crossrail and the enhancements to Jubilee Line service result some improvement on crowding on the Jubilee Line, although it remain high. The Central Line, however, remains highly crowded despite service improvements and the new Crossrail service between Stratford and Whitechapel are also forecast to be operating over capacity. The C2C line is also overcapacity.

5.136 **Figure 5.41** shows the forecast combined impact of increased rail capacity along with increased demand for travel on the level of crowding on rail services in the AM peak 2031 High Growth scenario.

5.137 The further increase in employment in Isle of Dogs and City Fringe has the impact of significantly worsening congestion on the westbound Jubilee Line and the Central Line, as well as the DLR from Stratford to Canary Wharf. The Crossrail branch to Canary Wharf, as well as the DLR from Central London are also forecast to be close to capacity.

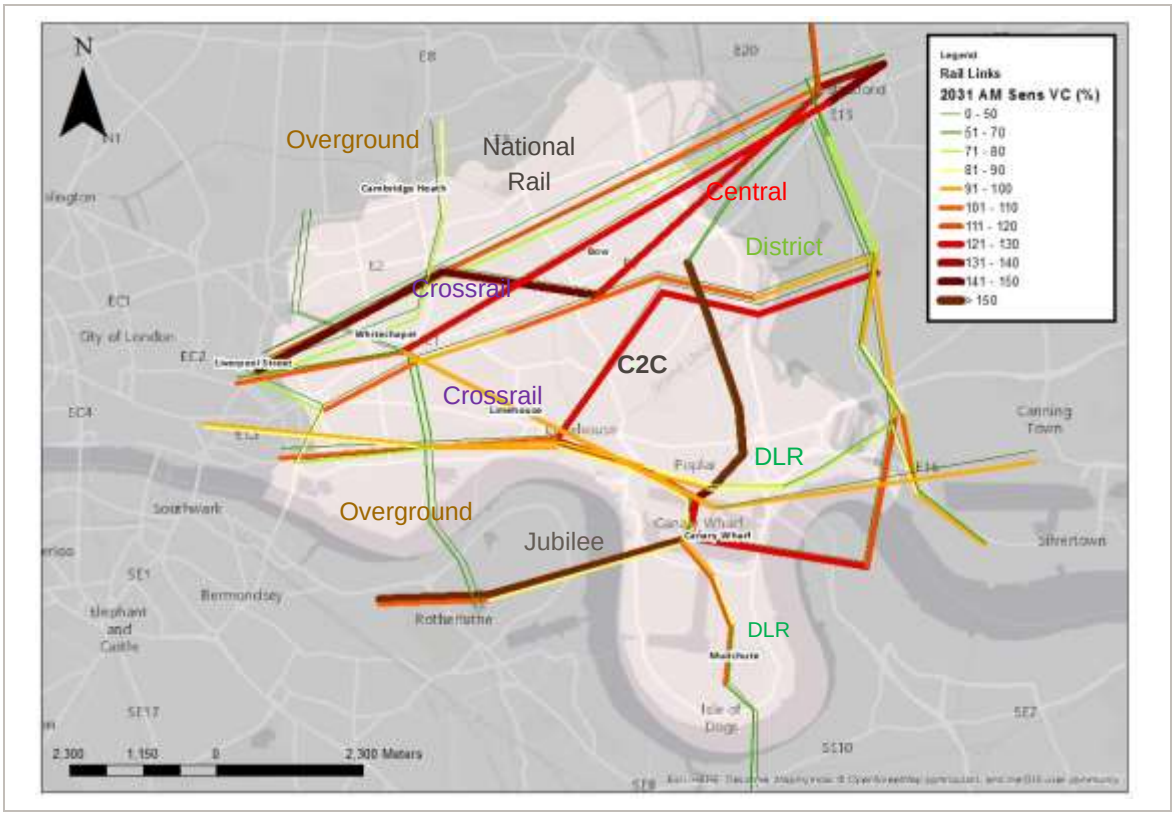
5.138 As with the baseline, crowding is generally worse in the AM peak than the PM peak, with the exception of some parts of the C2C network.

Figure 5.40 AM Peak Rail Passenger Volume over Capacity (Central Case, 2031)



Railplan

Figure 5.41 AM Peak Passenger Volume over Capacity (High Growth, 2031)



Railplan

Key Rail Capacity Challenge

Key Challenge: Ch_RC1 – Overcrowding on Jubilee and Central Lines

5.139 There is currently overcrowding on the Jubilee and Central Lines during peak periods. This is anticipated to continue in the future despite the delivery of Crossrail.

Key Challenge: Ch_RC2 – Rail capacity constraints under high growth scenario

5.140 Under the 'High Growth' scenario, significant pressures will be placed upon current rail provision unless service frequencies or vehicle capacities can be increased.

Key Rail Capacity Opportunities

Key Opportunity: Op_RC3 – Delivery of Crossrail

5.141 The delivery of Crossrail will provide significant additional capacity; however, the forecast suggests that with current planned frequencies there could be capacity constraints on the link from Stratford to Whitechapel and on the Canary Wharf Branch under the 'High Growth' scenario.

BUS MOVEMENTS

Flows

5.142 Key bus routes within the borough and run from east to west along the A11 and A13, as well as north-south along the A1205 (as detailed in **Chapter 4**). **Figure 5.42** and **5.43** presents the main passenger flows in the baseline in the AM and PM peaks.

Figure 5.42 AM Peak Bus Flows (2011)

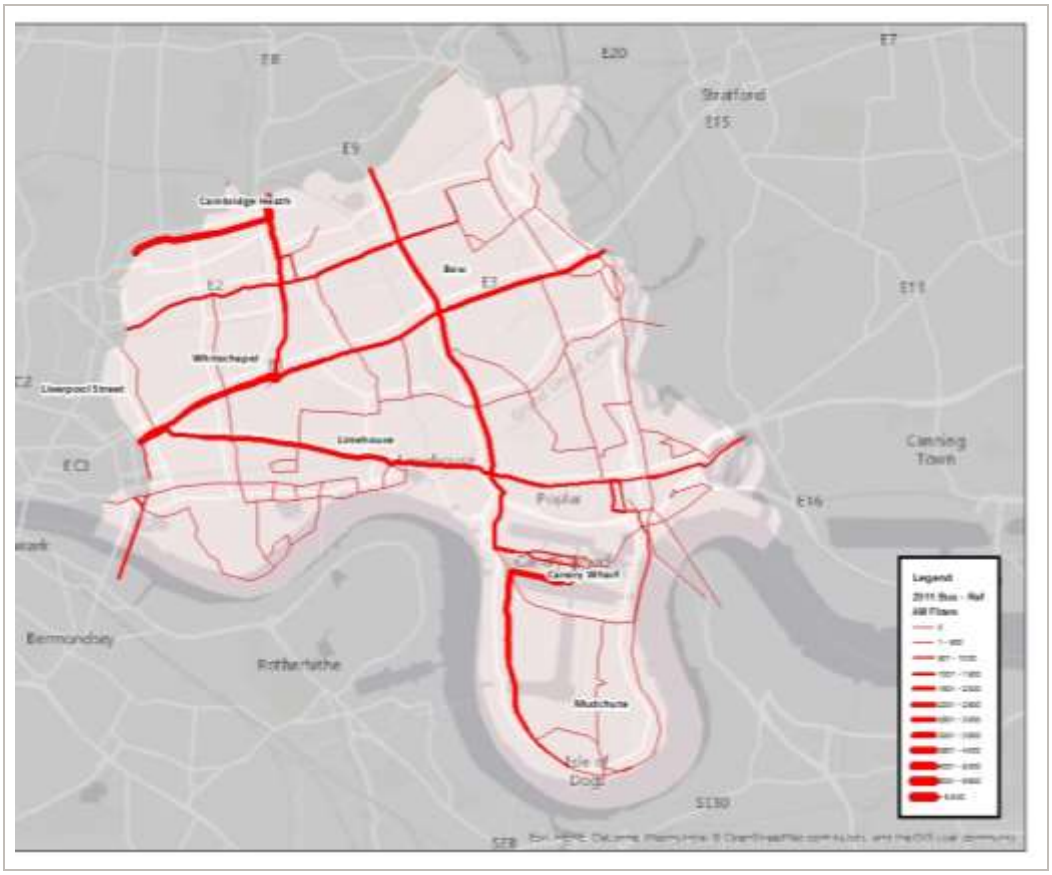
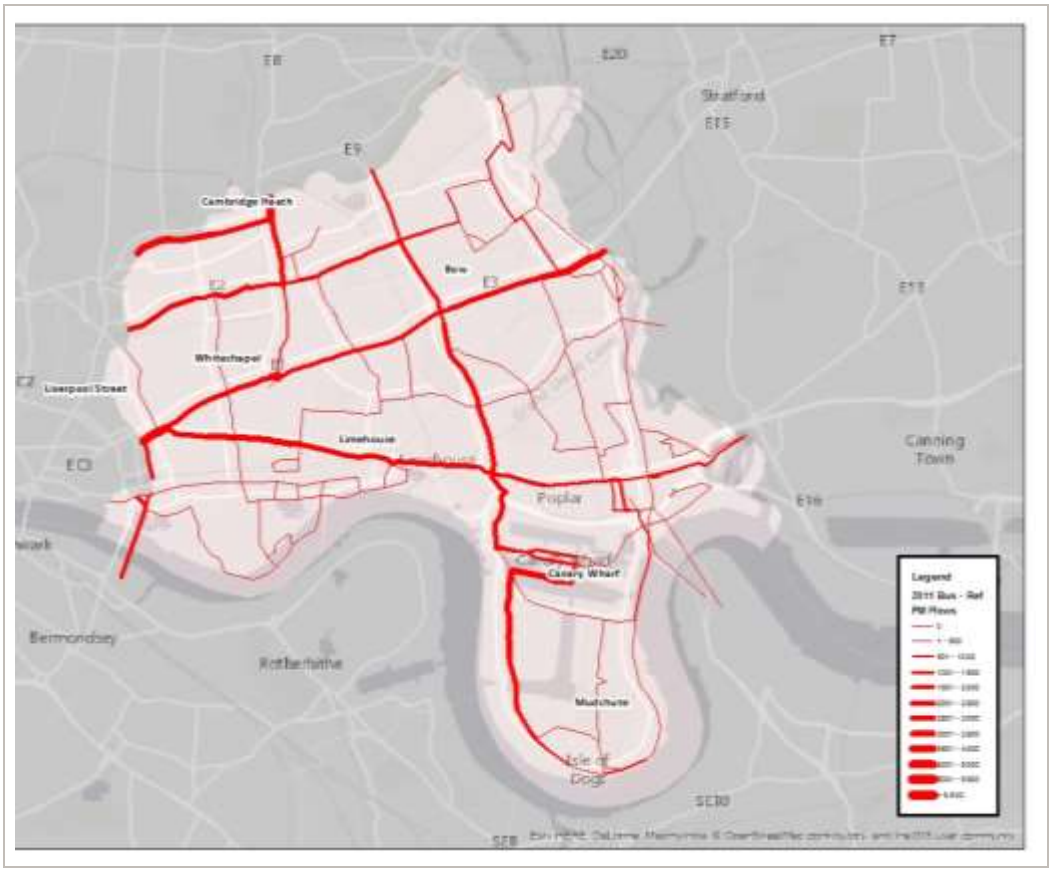


Figure 5.43 PM Peak Bus Flows (2011)



Railplan

Crowding

5.143 **Figures 5.44** and **5.45** presents the levels of bus patronage over service capacities across the network in the baseline in the AM and PM peaks. Each colour band represents a range showing the level of bus patronage against the actual capacity of the services along a particular highway link in the model. 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%)

5.144 The data indicates that there are a number of sections of routes operating over capacity, in particular along the A13, Commercial Road and A1206, Westferrry Road, and A1208 Hackney Road in both peak periods. Notably all of these routes serve the Opportunity Areas of either City Fringe or Isle of Dogs.

5.145 It is also notably that the river crossings (Blackwall Tunnel and Tower Bridge) are over capacity in the PM Peak.

Figure 5.44 AM Peak Bus Patronage over Service Capacities (2011)

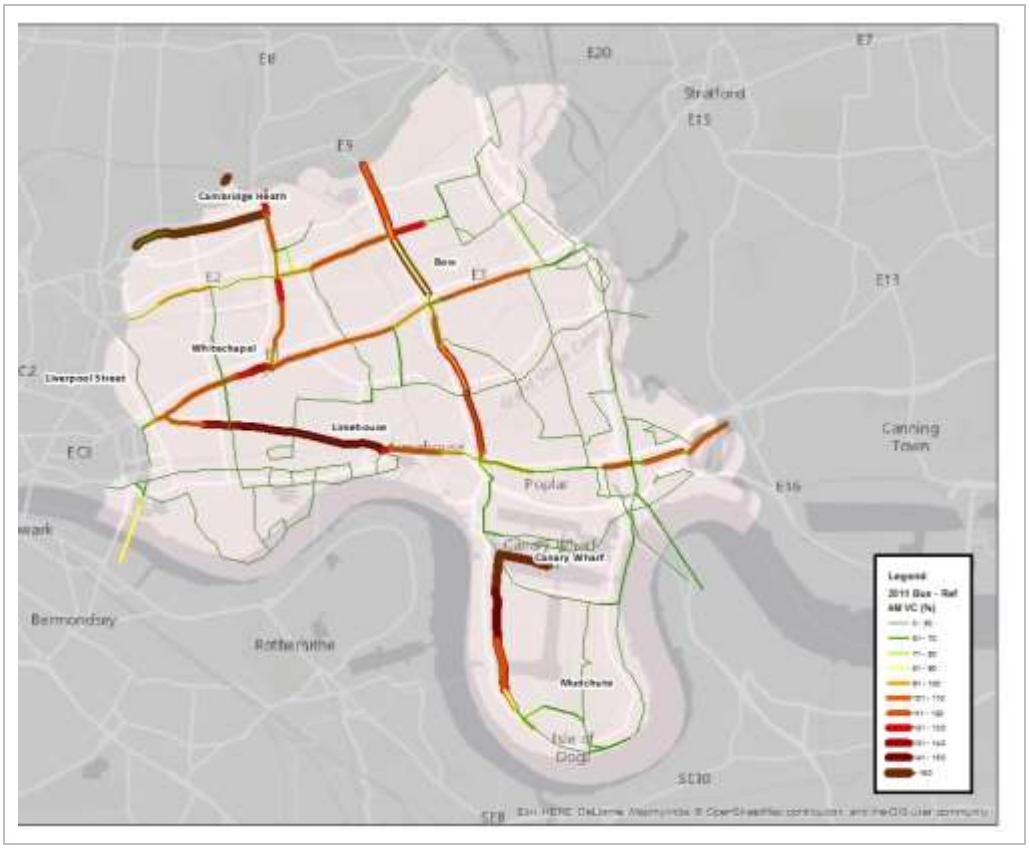
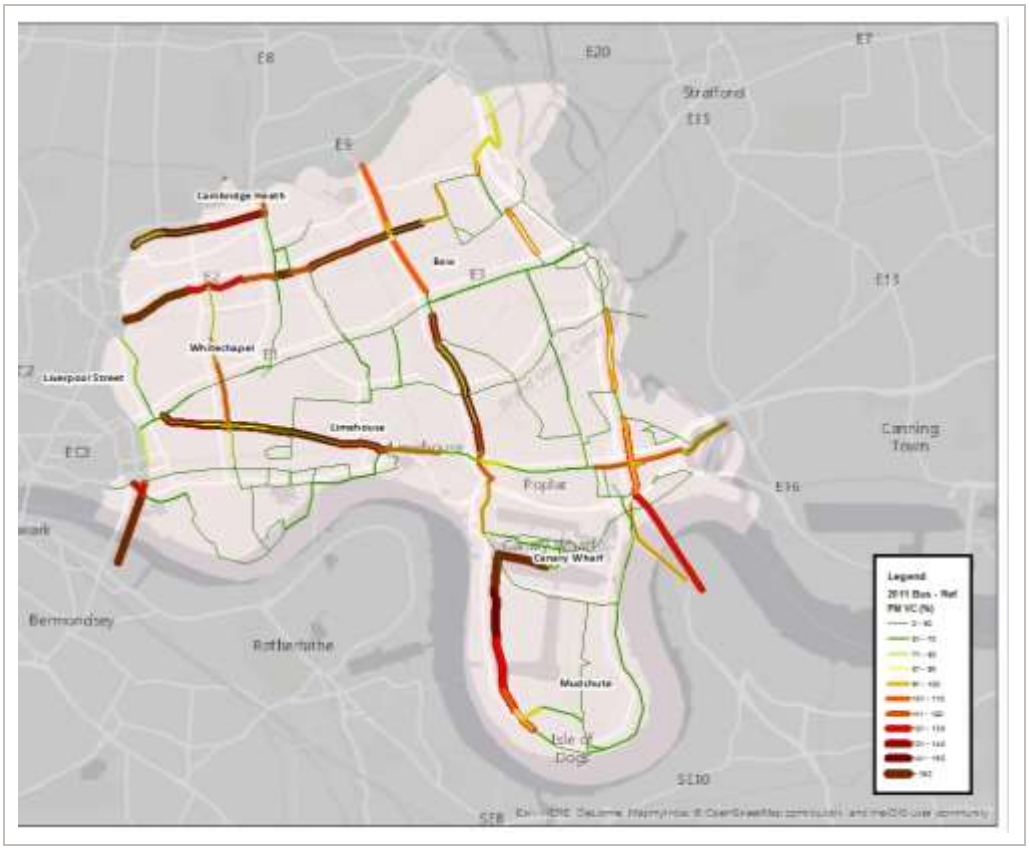


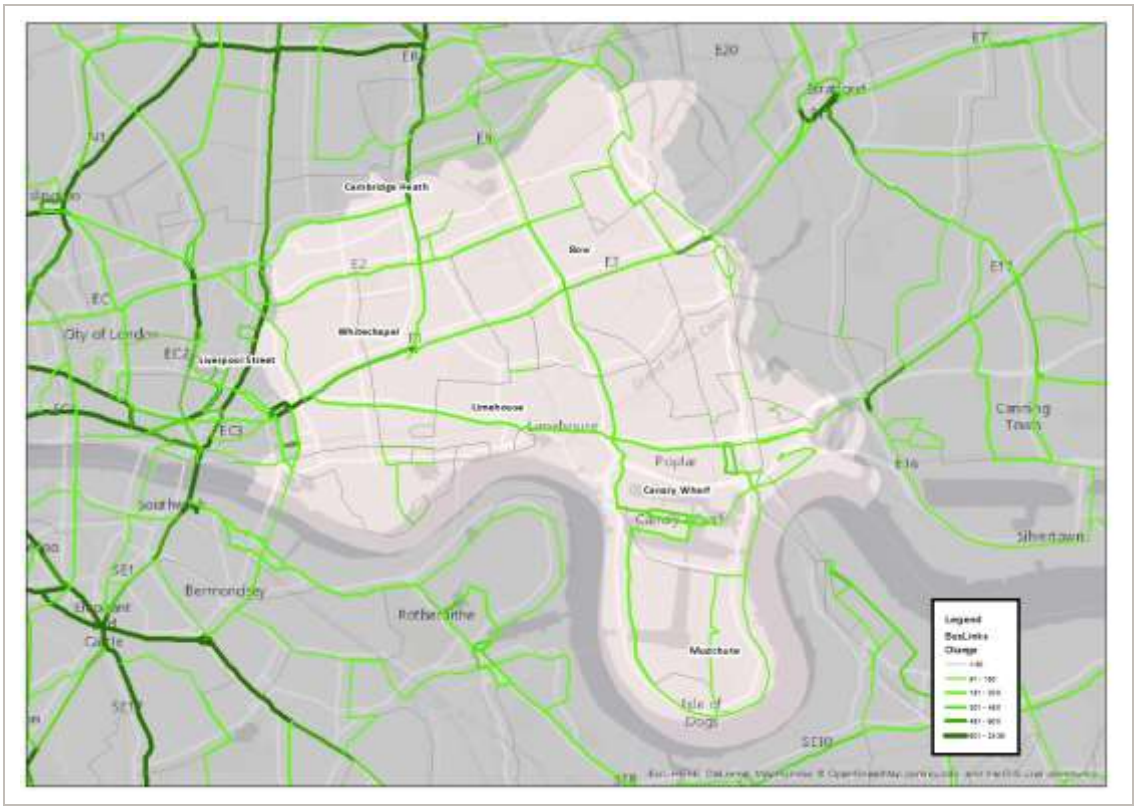
Figure 5.45 PM Peak Bus Patronage over Service Capacities (2011)



Growth in Capacity

5.146 As a result of small increases in bus frequency, capacity will be increased along various routes by 2031; however, planned increases within Tower Hamlets are relatively modest (1 bus/hour on most major routes) and so this has limited impact on link capacities (see **Figure 5.46**).

Figure 5.46 Planned Growth in AM Bus Capacity (2011 to 2031)



Railplan

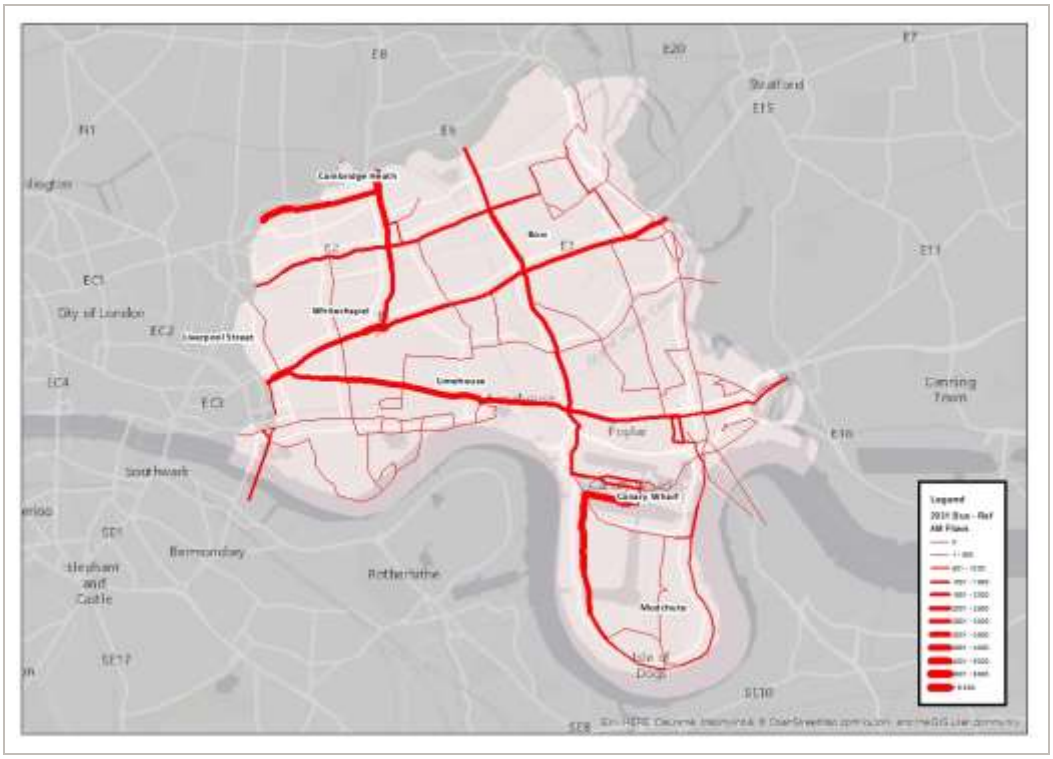
Change in Bus Flows

5.147 **Figure 5.47** and **5.48** present the forecast bus flows in 2031 under the Central Case and 'High Growth' scenario.

5.148 Whilst there is relatively limited increase in flows between the 2011 and Central Case 2031; however there is a significant increase with the 'High Growth' scenario. This is likely to be as a result of rail capacity becoming more constrained and so bus travel becoming a more attractive option.

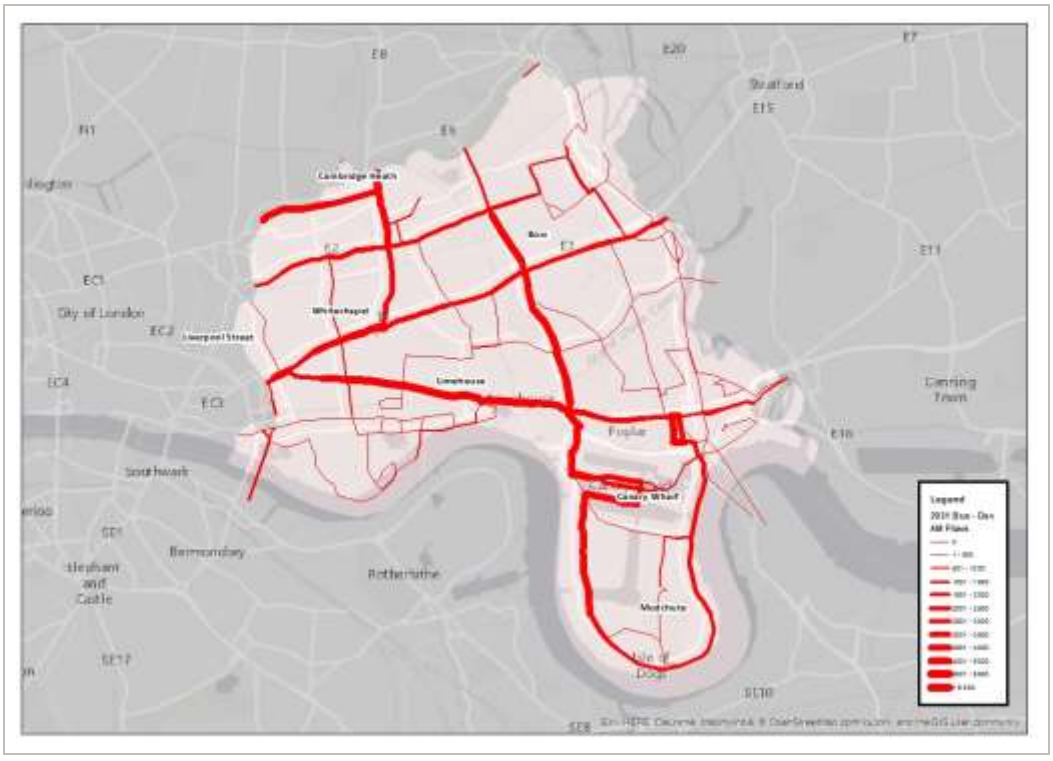
5.149 A similar pattern is demonstrated in the PM Peak.

Figure 5.47 AM Peak Bus Flows (Central Case, 2031)



Railplan

Figure 5.48 AM Peak Bus Flows (High Growth, 2031)



Railplan

Future Crowding

5.150 **Figure 5.49** and **5.50** present the forecast crowding on bus services in 2031 under the Central Case and 'High Growth' scenario. As previously, each colour band represents a range showing the level of bus patronage against the actual capacity of the services along a particular highway link in the model.

Figure 5.49 AM Peak Bus Patronage over Service Capacities (Central Case, 2031)

Figure 5.50 AM Peak Bus Patronage over Service Capacities (High Growth, 2031)

Railplan

5.151 In line with the increase in bus passenger flows between 2011 and 2031, there is limited increase in crowding in the 2031 Central Case; however, with the 'High Growth' scenario there are significant increases across the network, with a large proportion of routes exceed 100% capacity.

5.152 Since this encompasses nearly all parts of the bus network it indicates that a comprehensive increase in bus capacity would be required across the borough to support this high level of projected growth. It is important to recognise, however, that high existing bus frequencies and limited road space along main routes (e.g. A11, A13) mean that opportunities to increase bus route capacity are limited.

Key Bus Capacity Challenges

Key Challenge: Ch_BC1 – Capacity on routes serving the Opportunity Areas

5.153 Current capacity on some route serving the Opportunity Areas is constrained.

Key Challenge: Ch_BC2 – Bus capacity constraints under high growth scenario

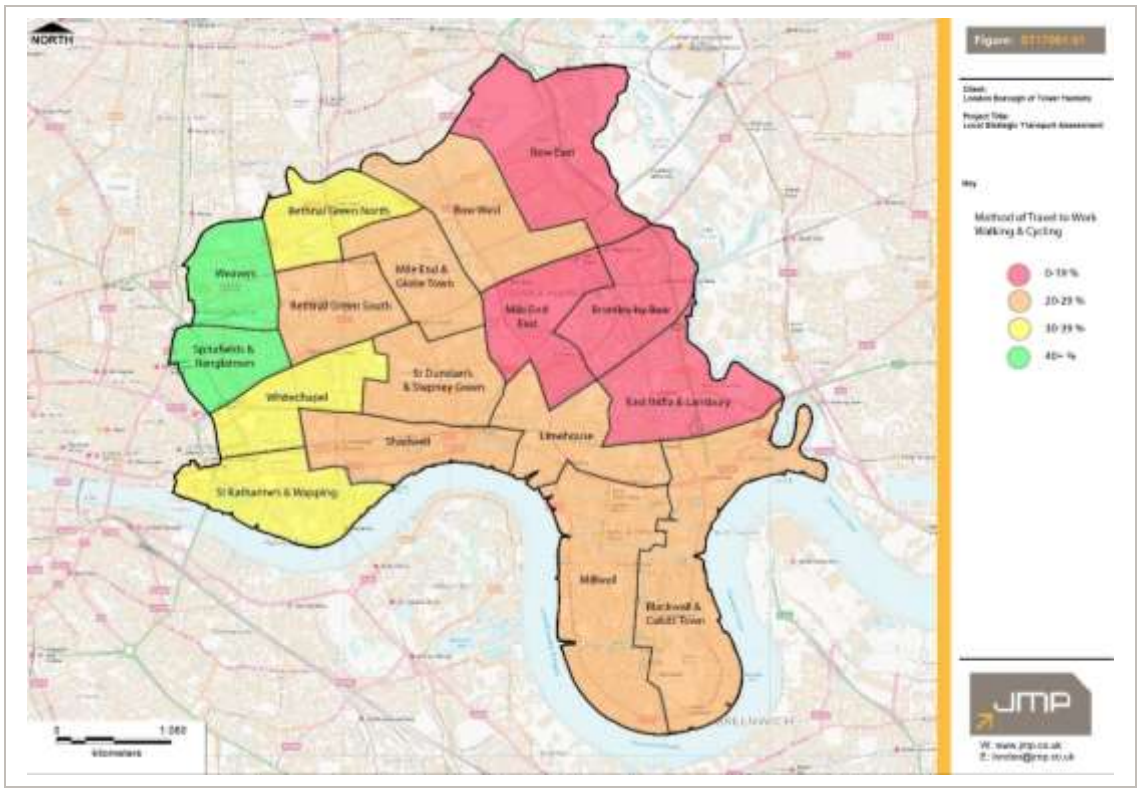
5.154 Under the 'High Growth' scenario, significant pressures will be placed upon current bus provision unless service frequencies or vehicle capacities can be increased.

WALKING AND CYCLE DEMAND

Flows

5.155 The combined proportion of walking and cycling journey to work mode share by ward is presented in **Figure 5.51**.

Figure 5.51 Walking and Cycling Journey to Work Mode Share by Ward



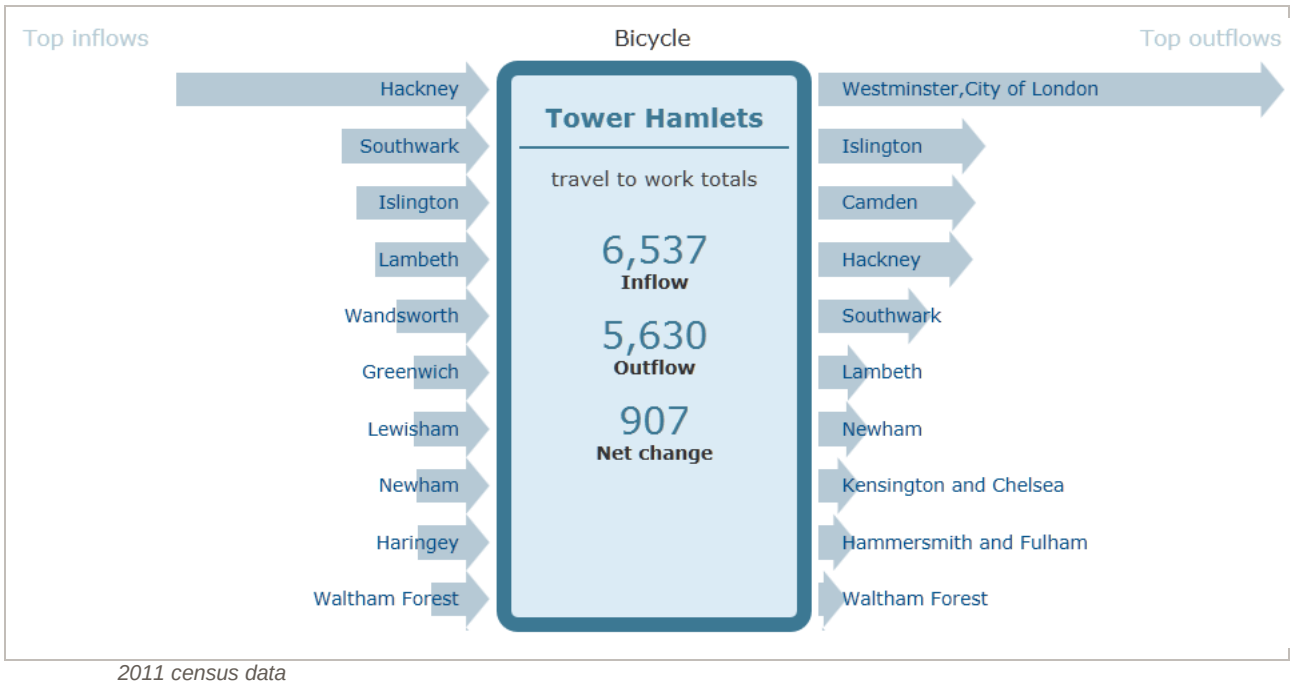
2011 Census Data

5.156 The analysis clearly demonstrates a clear dived between the west and east side of the borough. This is considered to reflect a variety of issues; however, the close proximity of the western wards to key employment locations in the City of London and around Old Street / Shoreditch means these locations are much more accessible by active travel modes.

5.157 Employment opportunities to the east of the borough are perhaps more generally located further afield and so are less attractive to walking and cycling trips. There are also a range of significant barriers to walking and cycling east-west movement within this part of the borough, created by the A12 and the Lower Leas Valley/River Lea.

5.158 Overall census data showed that 7% of the borough residents regularly cycled to work 2011, an increase from 4% in 2001. **Figure 5.52** presents journey to work data in and out of the borough by bicycle. This demonstrates the predominant outflow is to the City of London and Westminster, but there are also significant flows to the northwest to Islington, Camden and Hackney. Flows east to Newham are low.

Figure 5.52 Journey to Work Data by Bicycle (in and out of Tower Hamlets) (2011)



2011 census data

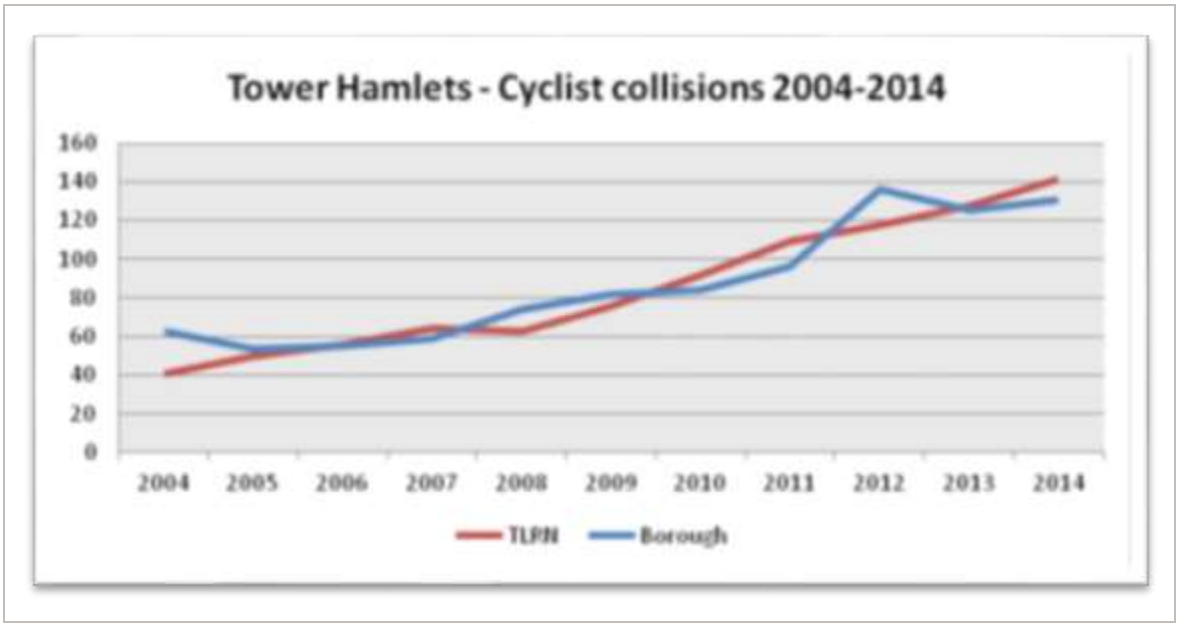
5.159 The Council has a target to double overall cycling levels across the borough by 2025, which would increase the proportion cycling to work trip to 15%. Given the anticipated population growth, this percentage represents significantly more than a doubling of actual cyclists in this group.

5.160 Current walking mode share is 19%, which whilst high in London terms, but again does vary across the borough.

Safety

5.161 The Tower Hamlets Cycling Strategy provides a variety of statistics on historical accident levels involving cyclists within the borough. The data indicates that over the last ten years the level of personal injury collision involving cyclists has been increasing. **Figure 5.53** demonstrates that the absolute level of cycling accidents has increased on both the TLRN and borough road networks in Tower Hamlets between 2004 and 2014.

Figure 5.53 Cycling Accident Trends



Tower Hamlets Cycling Strategy

Key Walking & Cycle Demand Challenge

Key Challenge: Ch_WCM1 – Cycle Safety

5.162 Increasing level of cycling collisions need to be addressed in order to create conditions that encourage cycling.

Key Walking & Cycle Demand Opportunities

Key Opportunity: Op_WCM2 – Variation in levels of walking and cycling across the borough

5.163 There are currently significant differentials between the levels of walking & cycling across the borough that provide an opportunity to target increased levels of active travel.

6 Accessibility

OVERVIEW

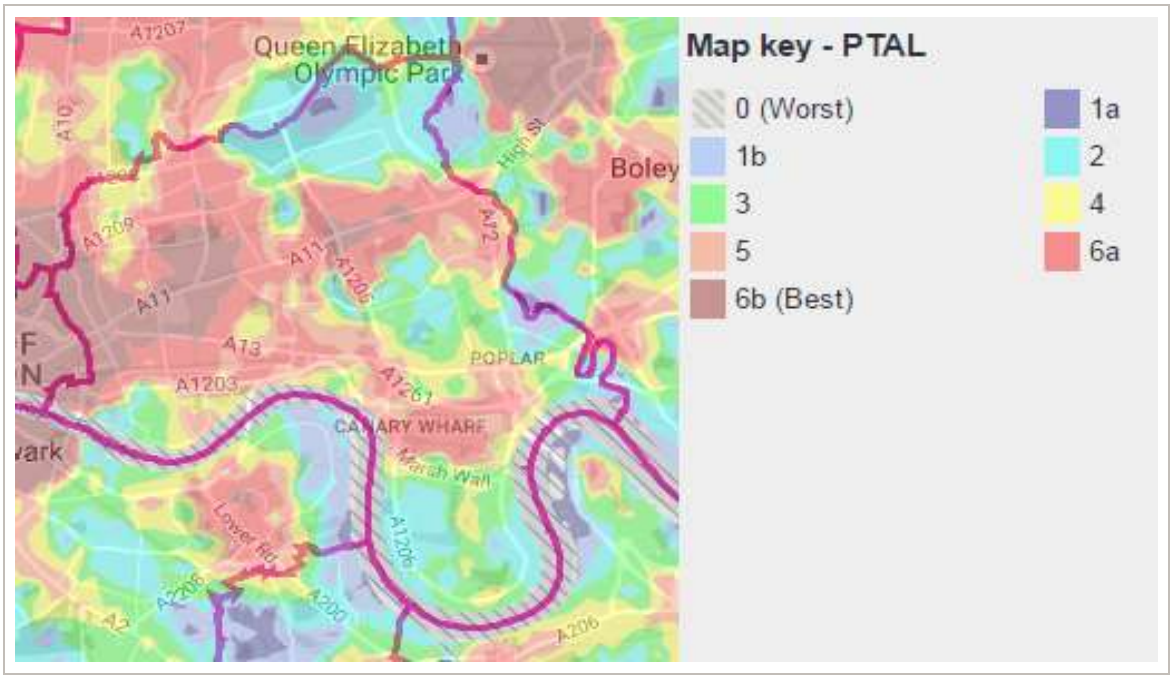
6.1 This section of the report provides a review of public transport, as well as cycling and walking accessibility throughout Tower Hamlets. Whilst reviewing the whole borough, it considers in detail the level of accessibility to the three designated Opportunity Areas within the borough that will provide a focus for future development, namely City fringe (Aldgate East, Whitechapel and Bethnal Green), Lower Lea Valley and the Isle of Dogs.

PUBLIC TRANSPORT ACCESSIBILITY

6.2 PTAL is a measure of connectivity at any given location. A high PTAL in a specific location indicates good connectivity and public transport links, whereas a low PTAL at a location indicates poor connectivity and public transport links. PTAL is influenced by the proximity by walking distances to nearby stations and stops as well as the frequency of services at these stations and stops. PTAL has a range from 0 (Worst) to 6b (Best). Tower Hamlets PTAL ranges from 1b (Poor) to 6b (Best), the greater PTAL is in the north west of the borough in areas such as Aldgate East, Bethnal Green and Mile End where there are frequent public transport services. Areas where there is a poorer PTAL include Isle of Dogs (PTAL 2/3) to the south of the borough.

6.3 Figure 6.1 presents an overall assessment of PTAL levels across the borough. It is immediately apparent that there are significant variations in public transport accessibility, with some areas rated at the lowest level on the scale (1a), through to the highest rating of 6b.

Figure 6.1 Public Transport Accessibility Level (PTAL) Map of the Borough



TfL

6.4 Generally the highest ratings are to the west of the borough as you approach the City of London. PTAL levels are very high along the Overground line from Hackney heading into Liverpool Street Station, as well

as along the Central Line. This provides excellent accessibility from places such Aldgate East, Whitechapel and Bethnal Green, as well as Mile End and part of Bow. PTAL levels are also high around Canary Wharf.

6.5 PTAL levels fall significantly to the north of the borough, although in part this relates to areas such as Victoria Park. There are also pockets within the middle of the borough, around Bow Common, to the east around South Bromley, and to the south within Millwall, where accessibility to public transport falls significantly.

City Fringe / Tech City

6.6 As highlighted above, the 'character places' within the inner city, such as Aldgate, Whitechapel and Bethnal Green, all have high PTAL rating (6, 6a or 6b). This is due to the close proximity of central London where there is a high number and frequency of national rail, underground and bus services operating. This reiterates these locations within the Opportunity Area as sustainable location to develop, in terms of public transport accessibility.

6.7 The PTAL levels do drop notably within the Spitalfield and Shoreditch 'character places' as they are not directly served by rail.

Lower Lea Valley

6.8 The Lower Lea Valley forms part of bordering boroughs of Newham and Hackney, the area is undergoing some of Europe's largest regeneration projects of which part were completed prior to the 2012 Olympics, which has seen many public transport improvements. The whole of the Lower Lea Valley area extends across the east side of Tower Hamlets and has a wide ranging set of PTAL rating ranging from 6a down to as low as 1b.

6.9 The 'character area' Poplar Riverside, which is outlined for significant housing growth, has particularly low public transport accessibility at present, as does Fish Island, also subject to development proposals.

Isle of Dogs

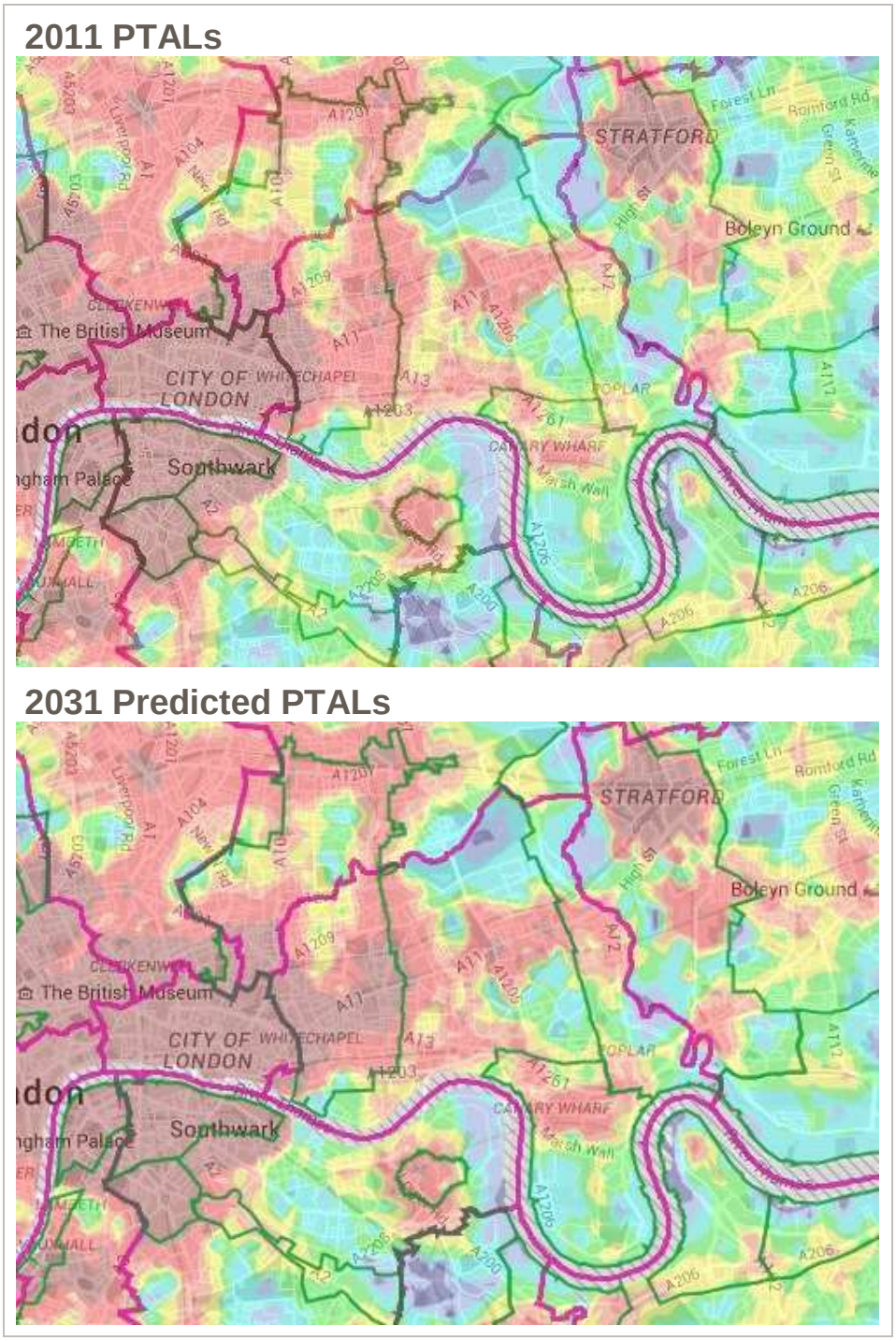
6.10 The Isle of Dogs to the south of the borough again has a mix of PTALs amongst which are some of the boroughs poorest levels, due to its isolation. Most of the area, encompassing the 'character places of Millwall and Cubitt Town is generally between and 2 or 3 PTAL rating; however Canary Wharf has a PTAL rating of 6a due its links with the Jubilee Line, DLR and river services. This will increase further with the opening of the Elizabeth Line (Crossrail 1) in 2018.

6.11 The Isle of Dogs is again anticipated to provide a significant number of new homes and jobs over the next 20 years. There are considered to be a range of severance and network resilience issues relating to the Isle of Dogs, with only two 'A' road routes in and out of the area, and therefore good public transport services will be required to support future development, particularly the further south on the island it is.

Future Public Transport Accessibility

6.12 A comparison of current and future year public transport accessibility for the borough and surround area is given in **Figure 6.2** below. The top map shows current PTAL across the borough (based on a 2011 scenario) and is compared against a 2031 future year scenario.

Figure 6.2 Predicted Changes in Future Public Transport Accessibility



6.13 Whilst the mapping does not permit a detailed assessment it can be broadly seen that some improvements to public transport accessibility are predicted to occur around Canary Wharf and parts of the west of the borough, with the density of 'red' PTALs (above level 5) increasing.

6.14 There is, however, relatively limited impact within areas with a current low PTALs, such as the southern end of the Isle of Dogs and the eastern edge of the borough suggesting the current planned investment is not anticipated to generate significant changes to public transport accessibility in these areas.

Impact of Crossrail

6.15 In order to assess the impact of Crossrail upon accessibility, the strategic transport model, Railplan, has been used to assess generalised journey times to Canary Wharf for the baseline as well as 2031 Central Case scenario.

6.16 **Figures 6.3** and **6.4** presents a set of isochrones showing the generalised journey times (travel time plus travel costs) to Canary Wharf. This demonstrates the impact of Crossrail extending the 90 minute GJT catchment across London making it a more accessible location to either commute to or from.

Key Public Transport Accessibility Challenges

Key Challenge: Ch_PTA1 – Improving Public Transport Access to all Opportunity Areas

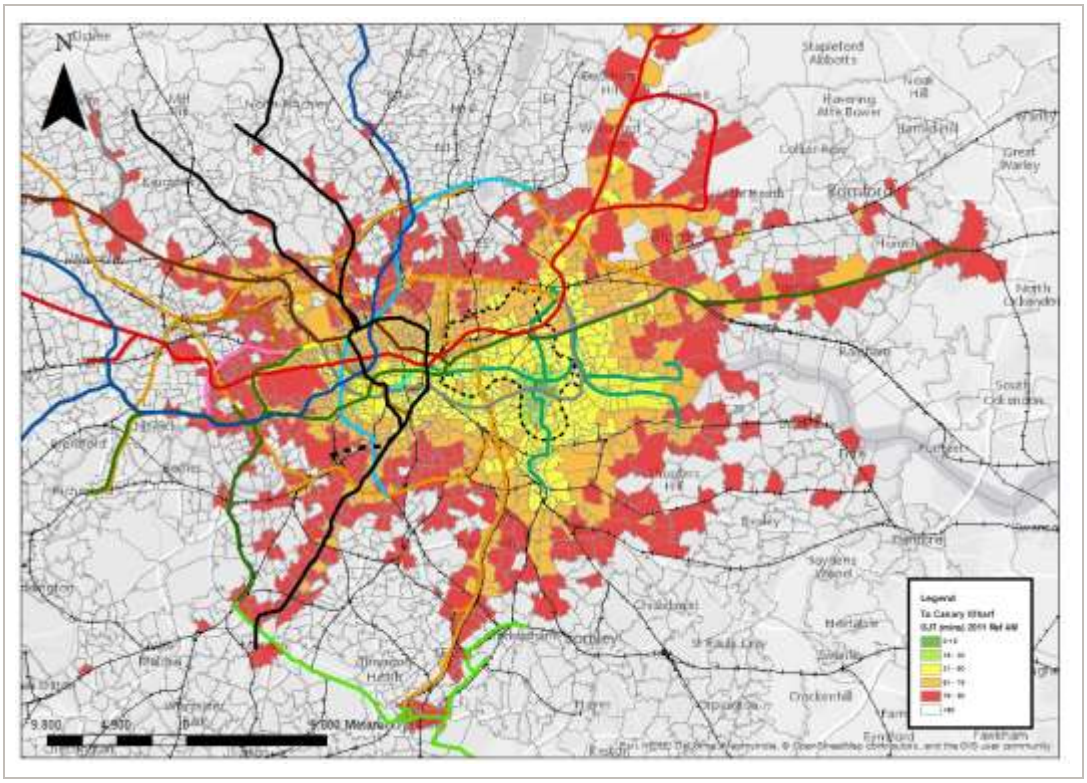
6.17 Whilst public transport accessibility to City Fringe and Canary Wharf is excellent and will continue to improve in the future, other parts of the borough, within the key Opportunity Area of the Isle of Dogs and the Lower Lea Valley, have relatively poor access.

Key Public Transport Accessibility Opportunity

Key Opportunity: Op_PTA2 – Accessibility improvements from Crossrail

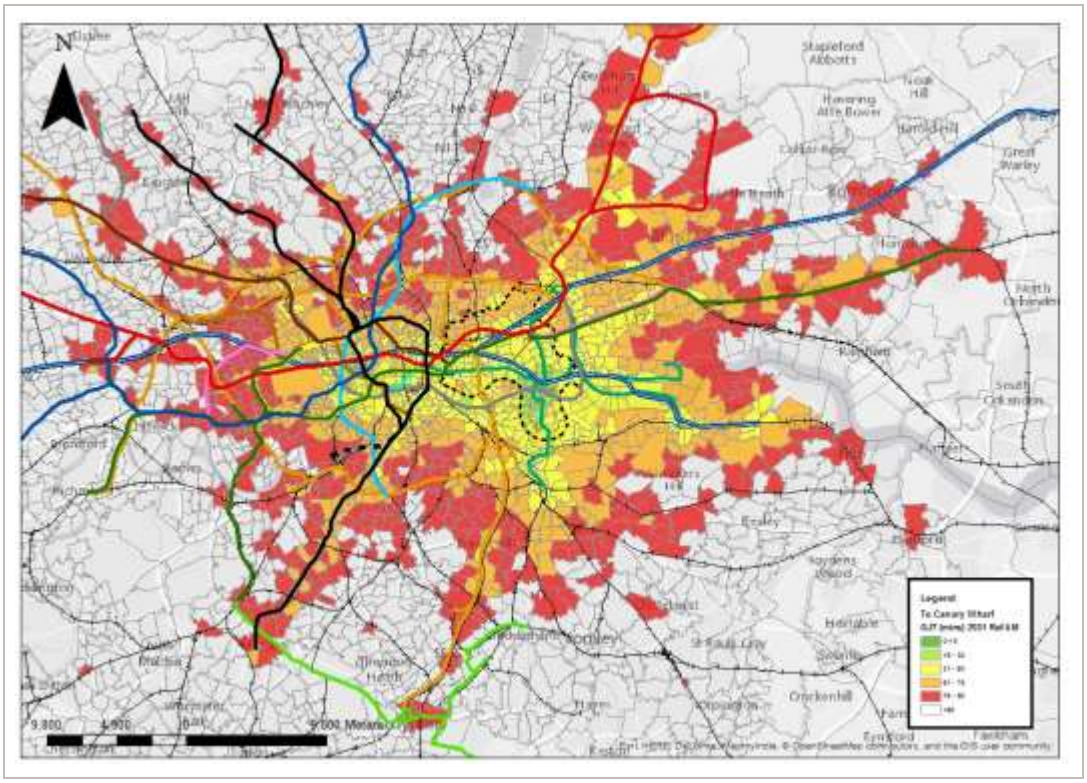
6.18 Crossrail will extend the catchment area from Canary Wharf and Whitechapel making it more accessible to live and work.

Figure 6.3 AM Peak Generalised Journey Times to Canary Wharf (2011)



Railplan

Figure 6.4 AM Peak Generalised Journey Times to Canary Wharf (2031)



Railplan

WALKING AND CYCLING ACCESSIBILITY

Cycling

6.19 Cycle accessibility across the Tower Hamlets is variable, cycling accessibility is important to encourage potential users away from cars to more sustainable modes such as cycling. Cycle user experience is also important to encourage cyclists to make those trips by bicycle.

6.20 Many of the cycle movements within the borough is predominately east/west as central London is located on the western edge of the borough. Some areas of the borough are difficult to access via cycle due to constraints such as lack of river crossings, indirect routes due to DLR or rail routes as well as poor quality of cycling infrastructure.

City Fringe

6.21 The City Fringe has two Cycle Superhighways offer strategic accessibility: CS2 (along the A11) and CS3 (Cable Street). CS2 provides connections to Aldgate and Stratford, with a suggested journey time of 24 minutes. CS3 provides connections to Westminster, Tower Gateway and Barking, with a suggested journey time of 55 minutes. As well as the Cycle Superhighways there are quiet streets within the Opportunity Area which are suitable for cycling; however, the A1202 is a busy north-south route, along with the A10 that are less attractive for cyclists.

Isle of Dogs

6.22 Cycle accessibility to the Isle of Dogs area is relatively poor. The river Thames provides an obvious barrier with only a single theoretical crossing point – the Greenwich foot tunnel (which actually currently prohibits cycling). To the north, the A1261 acts as a barrier for cyclists. There are only three access points to the Isle of Dogs for cyclists, the East and West of Canary Wharf via the A1206 as well as south of Isle Dogs via Greenwich foot tunnel.

6.23 Planning work is being undertake to assess options to enhance the Preston's Roundabout to improve north-south movement for cycling and walking across the A1261. Similarly longer term plans for enhancing north-south access to Canary Wharf Crossrail Station from Poplar are under consideration.

6.24 The London Cycling Network 1 is a signposted route between Greenwich foot tunnels and Westferry, this route then joins up to Cycle Superhighway 3 which runs between East of Tower hamlets and the City.

6.25 Cycling within the Isle of Dogs can also be convoluted, there are many docks, as well as the river Thames, which restricts direct cycle routes across the area. Most of the Thames path around the Isle of Dogs is shared use, which allows cyclists a route away from motor vehicles.

6.26 There is particular poor cycle accessibility to Coldharbour (Poplar) which is only accessible via one road.

Lower Lea Valley

6.27 The Lower Lea valley off road cycle routes consisting of canals and parks. The canal cycle network loop comprises of the Regents Canal, the Hertford Union Canal, the Lee Navigation and the Limehouse cut. This loop provides off road connections to the Olympic park and Lea Valley in the north-east, Islington and Camden in the North West and Tower Bridge in the south west.

6.28 Cycling accessibility in Lower Lea valley can be difficult due to river crossings to the East to neighbouring Newham, busy roads, such as the Blackwall Tunnel approach and national rail and underground links creating longer links.

Walking Accessibility

6.29 The Council has recognised the importance of good walking accessibility across the borough as a mechanism for encouraging sustainable means of travel and promoting health & well-being. The Green Grid Strategy (2010) outlined a vision and set of objectives and targets to enhance walking connectivity

by creating "*an inter-linking, multi-functional, green open spaces and waterways in Tower Hamlets which will encourage active lifestyles and improve the quality of life*".

6.30 The strategy identified a range of deficiencies with current connectivity, including barriers to movement created by other transport infrastructure including the DLR, national rail, busy 'A' roads, as well as the Thames River and the network of canals. These can discourage short distance trips being taken by foot, which in turn can add pressures to of congestion on local roads and overcrowding on public transport as people use other modes for shorter journeys.

6.31 The Green Grid analysis work has previously identified barriers to movement and opportunities to enhance connectivity across the borough. Critical areas where severance occurs includes north-south movement between Poplar and Canary Wharf, caused by the A1261, A13 and the DLR, as well as most east-west movements along the A12 corridor and part of the Lower Lea Valley/River Lea.

6.32 Pedestrian movements around the Isle of Dogs can also be limited by both the form of the old dock layouts, as well as limited permeability of some areas. The South Poplar and Canary Wharf Local Connections Strategy and Design Guidance identifies a range of opportunities for enhance connectivity, including the creation of an environment that encourages active travel for local journeys or the 'last mile' of longer trips. Specific initiatives include:

- Linking: Major new connections
  - New cross river connections, including Rotherhide to Canary Wharf Crossing
  - North-south spine
  - Aspen Way decking
  - Connections to the Leaway to Poplar Riverside Housing Zone
- Bridging: Overcoming local barriers to movement
  - South Dock bridges;
  - Leamouth bridges;
  - Aspen Way footbridge
- Upgrading: Investing in the existing street network
  - Improvements to pedestrian and cycle safety,
  - accessibility and public realm upgrades on key corridors,
  - using the RTF Street Types as a framework;
  - junction improvements;
  - connections to CS3
- Orientating: Enhancing local character and identity through a sequence of connected public realm and open space assets
  - Thames Path upgrades;
  - station public realm improvements;
  - wayfinding strategy

6.33 TfL continues to develop options for potential river crossings linking areas south of the River Thames with the Isle of Dogs. There are two locations being considered: i) Rotherhithe to Canary Wharf crossing; ii) Canary Wharf (East) to North Greenwich crossing.

6.34 Providing a new direct pedestrian and cycle crossing between the growing residential and employment areas of Rotherhithe and Canary Wharf would encourage more people living in south London to walk and cycle to Canary Wharf, and could help to relieve pressure on the Jubilee line at peak times. In recognition of the time it could take to bring forward plans for a fixed crossing, secure the funding and construct, an

enhanced ferry service in this location is also being investigated. This could help meet an immediate need and establish a link that could be replaced by a bridge or tunnel in due course.

6.35 TfL is working with developers to investigate options for a further connection at Canary Wharf East to improve walking and cycling connectivity between Canary Wharf and North Greenwich and relieve the already congested Greenwich Foot Tunnel and Jubilee line (between North Greenwich and Canary Wharf). Ferry options are considered more feasible than a fixed link at this location, given major navigational constraints including the proximity to a bend in the river. There are two ferry options:

- A new pier at the Radisson Blu Edwardian (named Canary Wharf East) near Blackwall installed in Spring 2017. A new cross river ferry could link the new pier with the existing North Greenwich Pier by the end of 2018.
- A further new pier on the western side of the Greenwich peninsula (proposed North Greenwich West Pier) could enable a shorter dedicated cross-river service to Canary Wharf East

6.36 The Thames River is clearly a major barrier to north-south movements to and from the borough; however, there are also limitations in parts of the routes that run alongside the Thames for pedestrians, not necessarily in terms of the Thames Path itself, but in relation to access to and from the River.

6.37 In some areas across the borough the lack of lighting is seen to discourage people to walk due to the lack of safety. Areas where lighting is poor along potentially popular walking routes include docks, canals and rivers and the foot tunnel.

Key Walking and Cycling Accessibility Challenges

Key Challenges: Ch_WCA1 – Barriers to active travel

6.38 A range of barrier to easy movement of pedestrian and cyclists exist across the borough but particularly affecting access to the Isle of Dogs and the Lower Lea Valley Opportunity Areas

7 Development of Objectives

OVERVIEW

7.1 This section seeks to draw together the range of challenges and opportunities identified throughout the baseline report relating to transport and movement within, and across, the Borough of Tower Hamlets.

7.2 A series of evaluation matrices are presented in the section below within **Tables 7.1, 7.2 and 7.3**. These tables summarise:

- the key **policy requirements** surrounding the development of the transport strategy
- the **main challenges** identified in relation to access and movement, and
- the **key opportunities for enhancement** to transport provision.

7.3 In combination, these are then utilised to identify the objectives upon which the overall transport strategy will be developed.

POLICY MATRIX

7.4 The matrix in **Table 7.1** summarises the policy requirements identified within Section 2. They have been re-grouped to allow subsequent comparison with the 'challenges' and 'opportunities' matrices.

7.5 The 'impact area' is also identified to provide some indication of the scale and/or geographic extent of the constraint or opportunity, ranging from London-wide, through borough-wide to specific areas.

CHALLENGE MATRIX

7.6 The matrix in **Table 7.2** summarises the key challenges identified for current and future transport, movement and across the Tower Hamlets.

7.7 The challenges are separated into six categories as follows:

- Land-use;
- Infrastructure provision;
- Operational issues;
- Capacity issues;
- Travel choices; and
- Accessibility

7.8 The 'impact area' is also identified.

OPPORTUNTIES MATRIX

7.9 The matrix in **Table 7.3** summarises the key opportunities for enhancement of transport provision to support the growth of the borough. The opportunities are, again, separated into six categories and the 'impact area' identified.

Table 7.1 Policy Matrix

Identified Policy Requirement		Impact Area	Associated Opportunities or Requirements
General Issues			
P16	Work with neighbouring boroughs, TfL ad GLA to address strategic issues	Sub-regional	Ensure the impact of housing and employment growth are considered holistically across the sub-region
Highways (private car and taxis)			
P7	Develop fair approaches to discourage private car trips	London-wide	The forecast increase in the future demand for travel will require policies to discourage unnecessary car use to avoid creating further congestion and impacting negatively on air quality.
P10	Promote low or zero carbon vehicles	London-wide	The promotion of low or zero emission vehicles, such as electric car, could provide a mechanism for improving air quality
P15	Consider limited improvement to highway network where there is a strong supporting case	Area specific	Targeted highway enhancements may be justified to create additional resilience within the highway network within the context of growth across the network
Parking			
P8	Promote car-free or low-car development	Borough-wide	Given the scale of potential development, the promotion of car-free or low car development will help reduce the potential impact upon car ownership and car travel across the borough.
P9	Manage on-street parking demand	Area specific	The demand for on-street parking, either overnight or at weekends, will need to continue to be managed appropriately
Freight			
P11	Expand options for freight distribution, deliveries and serving	London-wide	Given the scale of future development, a holistic approach to managing freight and deliveries should be considered, incorporating both construction traffic and deliveries.
P12	Consider role for consolidation centres	Opportunity Areas	Consolidation of freight could offer the potential to reduce the number of vehicle delivery trips to high density urban areas
Public Transport			
P4	Improve quality of buses and ensure good connections and interchange	London-wide	Buses provide an important role across the borough and it will be important to ensure appropriate provision to meet the local community's needs, alongside rail enhancements
P5	Provide bus capacity to match future growth in demand	Borough-wide	
P6	Consider role of coach hubs	Area specific	The role of coaches in providing strategic connections to/from the borough should be considered
P14	Continue to enhance public transport provision	Borough-wide	Enhancements to all public transport will be of critical importance to deliver the anticipated scale of growth in demand for travel
P17	Maximising the capacity created by Crossrail	Opportunity Areas	The delivery of Crossrail will enable development opportunities for the areas served, notably Whitechapel and Canary Wharf

Identified Policy Requirement		Impact Area	Associated Opportunities or Requirements
River			
P13	Support the development of river crossings and services	**River**	Promote opportunities to improve river capacity and accessibility, including connections to other transport modes
Walking & Cycling			
P1	Promote cycling	**London-wide**	Ensure the borough is seen as an attractive place to cycle and promote cycle activity
P2	Increase walking through high quality urban environment	**London-wide**	The quality of the urban realm is recognised as an important factor in encouraging active travel, as well as creating safer and more pleasant neighbourhoods
P3	Encourage walking to reduce congestion and improve air quality	**Borough-wide**	Encouraging active travel modes is an important tool in reducing short-distance private car trips and improving local air quality

Table 7.2 Challenge Matrix

Identified Challenge		Category	Impact Area	Associated Requirements for Strategy Development
General Issues				
Ch_LU1	Providing for different transport needs across the borough	Land-use	Borough-wide	Ensure the emerging transport strategy reflects needs of differing socio-economic groups in terms of access to work, education and services.
Ch_LU2	Substantial Housing and Employment Growth	Land-use	Borough-wide	Respond proactively to the substantial growth in demand for travel and the requirement for associated increase in transport provision
Ch_LU3	Substantial housing and employment growth in neighbouring boroughs	Land-use	East London Sub Region	Ensure the growth in transport demand from Opportunity Areas across the East London Sub Region is reflected within the capacity requirements of transport provision within the borough
Ch_AQ1	Poor Air Quality around the TLRN network	Travel choices	TLRN network	Ensure the transport strategy addresses the on-going challenges air quality around the TLRN and across the borough
Highways (private car and taxis)				
Ch_HIT1	Highway Network Resilience	Infrastructure	Borough-wide	Develop measures to enhance highway network resilience, without necessarily increasing capacity, to provide greater certainly in travel times
Ch_HIT2	Limited River Crossings	Infrastructure	River	Consider new opportunities for river crossing facilities that provide both enhances access to and from the borough as well as greater network resilience.
Ch_HC2	Highway Capacity on River Crossings	Capacity	River	
Ch_HIT3	Access to Isle of Dogs	Infrastructure	Isle of Dogs	Consider enhancements to highway access to the Isle of Dogs to provide greater network resilience
Ch_HIT4	Re-establishing the role of the TLRN	Infrastructure	TLRN network	Ensure the TLRN caters for strategic movements across and through the borough to remove these trips from borough roads.
Ch_HC1	Capacity Constraints on Strategic Routes	Capacity	Borough-wide	Encourage mode shift to manage capacity constraints on the network
Ch_HC3	Impacts of potential growth in car trips	Capacity	Borough-wide	The predicted growth in car trips could cause substantial additional network congestion unless mode shift is achieved
Ch_TP1	Monitoring of Private Hire Regulation	Operations	Borough-wide	Ensure the dynamic changes to the operation of the Private Hire market are in the interests of local residents and commuters and monitor associate risks of limited regulation
Ch_RS1	Increasing levels of reported personal injury accidents	Capacity	Borough-wide	Promote road safety improvements to reduce accident levels and encouraging the use of active travel modes
Parking				
Ch_PD1	High demand for parking in western zone	Capacity	Area specific	Ensure appropriate parking policies to manage on-street parking provision
Ch_PD3	Cross zone permit parking in Zone A	Capacity	Zone A	Ensure parking policies do not encourage unnecessary cross-borough vehicle trips

Identified Challenge		Category	Impact Area	Associated Requirements for Strategy Development
Ch_PD2	Non-permit parking overnight	Capacity	Area specific	Monitor the level of non-permit parking as development levels and housing densification increases
Freight				
Ch_FOP1	Change in Retail Habits	Travel choices	Borough-wide	Promote necessary restrictions to minimise the impact of increasing market from home and office deliveries
Ch_FOP2	Freight Emissions	Operations	Borough-wide	Consider options for minimising the impact of freight vehicle emissions
Public Transport				
Ch_PTD1	High demand for Public Transport	Capacity	Borough-wide	Recognise the potential substantial growth in demand for public transport in the borough and from outside and ensure sufficient provision
Ch_PTD2	Inter-borough movements	Capacity	East London Sub Region	
Ch_RP1	Rail Capacity	Infrastructure	Borough-wide	Ensure future year rail capacity continues to grow in line, or exceed, with development levels
Ch_RC1	Overcrowding on Jubilee and Central Lines	Capacity	Area specific	
Ch_RC1	Rail capacity constraints under high growth scenario	Capacity	Area specific	
Ch_BP1	Role of buses	Capacity	Borough-wide	Recognise the important role that buses have as part of the wider public transport network, particularly for lower income groups
Ch_BP2	Potential reduced bus service when Crossrail arrives	Operations	Area specific	Ensure any proposed rationalisation of bus services upon delivery of Crossrail are appropriately planned and recognise the specific role of bus provision.
Ch_BP3	Ensuring resilience in bus operations	Operations	Borough-wide	Ensure sufficient measures are adopted to provide resilience in bus operations
Ch_BC1	Capacity on bus routes serving the Opportunity Areas	Capacity	Opportunity Areas	Releasing constraints to bus travel to Opportunity Areas will be important
Ch_BC2	Bus capacity constraints under high growth scenario	Capacity	Borough-wide	
Ch_PTA1	Improving Public Transport Access to all Opportunity Areas	Accessibility	Opportunity Areas	
River				
Ch_RSP1	North-South River Connectivity	Operations	River	Consider the potential to increase river services that provide access across the Thames
Ch_RSP2	Competitiveness of Commuter services	Operations	River	Promote opportunities to enhance river services for commuters
Ch_RSP3	River Capacity Constraints	Operations	River	Work with stakeholders to prioritise services to maximise the user of the River
Walking & Cycling				

Identified Challenge		Category	Impact Area	Associated Requirements for Strategy Development
Ch_WCP1	Quality of the urban environment	Infrastructure	Borough-wide	Continue to enhance the quality of the urban realm to promote an environment that encourages walking & cycling, maximising the opportunities that come through new developments
Ch_WCP2	Incomplete network of cycling infrastructure	Infrastructure	Borough-wide	Enhance local cycle network to bridge gaps in provision, in particularly through the development of quietways
Ch_WCM1	Cycle Safety			Promote safe cycling routes across the borough, in particularly addressing areas with interactions between motorised and non-motorised modes
Ch_WCA1	Barriers to active travel	Accessibility	Area specific	Promote and develop measures to reduce major barriers to pedestrian and cycling movement

Table 7.3 Opportunity Matrix

Identified Opportunity		Category	Impact Area	Associated Opportunities or Requirements
General Opportunities				
Op_LU4	Focused growth within Opportunity Areas	Land-use	Opportunity Areas	The focussed growth provides the opportunity to consolidate transport provision within specific areas
Op_LU5	Securing develop related transport funding	Land-use	Borough-wide	The scale of development offers the opportunity to secure development-related funding for transport
Op_JTW1	Variations in the proportion of car trips across the borough	Travel choices	Borough-wide	The higher levels of car ownership and car journey to work trips with certain wards provides an opportunity to target these areas to reduce the dependence upon private cars.
Op_JTW2	Variations in percentage of car ownership across the borough	Travel Choices	Borough-wide	
Op_JTW3	Opportunities to influence travel behaviour	Travel Choices	Borough-wide	The scale of new development and associated trip generation creates a significant opportunities to influence travel choices before new habits are developed
Op_AQ2	Ultra-low Emissions Zone	Operations	Borough-wide	A borough-wide ultra-low emissions zone would provide the opportunity to tackle air quality issues
Highways (private car and taxis)				
Op_HIT5	Application of Technology in Highways	Infrastructure	Borough-wide	New forms of monitoring and information technology could be deployed to manage the highway network more efficiently, without the requirement for additional capacity
Op_HIT6	Road Safety (20 mph trial)	Infrastructure	Borough-wide	The trail 20mph zone will provide insight into the impact upon safety and the quality of street environment prior to potential full-scale adoption.
Op_HIT7	Electric Vehicles	Infrastructure	Borough-wide	Increased adoption of electric vehicles would provide the opportunity to tackle air quality issues

Identified Opportunity		Category	Impact Area	Associated Opportunities or Requirements
Op_TP2	Application of Technology in Taxis	Operations	Borough-wide	Technology is already significantly changing the functionality of taxis providing even greater ease of access and permitted multi-person occupancy, giving taxis a more predominant public transport role.
Parking				
Op_PP1	Conditions on permits	Operations	Borough-wide	The currently conditions and overall controls on permit numbers potentially impact upon levels of on-street parking demand and so opportunities to revise conditions should be considered in the future
Op_PP3	Controls on Parking Permits	Operations	Borough-wide	
Op_PP3	Inter-zone Parking	Operations	Borough-wide	Current parking permits require unlimited parking across the sub-zone (A, B, C or D) of issue, as well as 3 hour parking within other sib-zone. In some instances this encourages short distance travel.
Op_PP4	Parking Standards	Policy	Borough-wide	Parking standards for new residential and retail standards are more stringent than those set out within the London Plan. This provides a positive opportunity, alongside wider sustainable travel measures, to ensure future development growth minimises the generation of additional private car trips.
Freight				
Op_FOP5	Sustainable Freight Strategy	Policy	Borough-wide	The development of a sustainable freight strategies for the Opportunity Areas will help manage both the construction impacts of development, as well as the subsequent deliver and servicing needs
Op_FOP3	Freight Consolidation	Operations	Borough-wide	Consolidation of freight could offer the potential to reduce the number of vehicle delivery trips to high density urban areas
Op_FOP4	Use of the Canals and River	Operations	Waterways	The potential for greater use of the canal network and river should be considered
Op_FOP6	New Technology in Freight Delivery	Operations	Borough-wide	The role of new technologies in management and delivery of freight should be considered,
Public Transport				
Op_RP3	New Train Stock and Signalling	Infrastructure	Borough-wide	The provision of new rail stock, and signalling enhancements to increase frequency, will be important aspects of enhancing rail capacity
Op_RP2	Crossrail connections	Infrastructure	Opportunity Areas	The delivery of Crossrail will be enhance strategic connections to the borough and delivery significant additional capacity that will provide significant opportunities for the areas served, notably Whitechapel and Canary Wharf
Op_RC3	Delivery of Crossrail	Capacity	Opportunity Areas	
Op_PTA2	Accessibility improvements from Crossrail	Access		
Op_BP4	Enhancing bus provision	Capacity	Borough-wide	Enhanced bus provision offers a flexible option for enhancing public transport provision across the borough without the need for substantial infrastructure provision. They could be particularly important for serving new development areas such as the Lower Lea Valley.

Identified Opportunity		Category	Impact Area	Associated Opportunities or Requirements
Op_BP5	Provision of coach hub	**Infrastructure**	**Opportunity Areas**	A coach hub could provide a focal point for developing strategic connections into the borough by coach
River				
Op_RSP5	Expanded River Services	**Operations**	**River**	There could be an opportunity to expand out the role of river services to serve a broader market
Op_RSP4	New Piers	**Infrastructure**	**River**	The opportunity to develop new piers could increase the accessibility of river services and allow new services to be developed
Walking & Cycling				
Op_WCP3	Maximise waterways for active travel	**Operations**	**Waterways**	The waterways within the borough provide an excellent opportunity to promote active travel.
Op_WCP4	Additional cycle parking	**Infrastructure**	**Area specific**	Additional targeted cycle parking provision is an important tool in removing barriers to cycling
Op_WCP5	'Greening' the DLR Structures	**Infrastructure**	**Area specific**	The structure associated with the DLR network could be enhanced to create a better environment for active travel
Op_WCM2	Variation in levels of walking and cycling across the borough	**Travel choices**	**Borough-wide**	The proportion of walking & cycling within certain levels of the borough is considerably lower than other offer the opportunity to readdress the balance through appropriate measures

COMMON THEMES

7.10 Across the policies, challenges and opportunities set out within **Table 7.1 to 7.3** a set of common themes have been identified threaded amongst them. These have been summarised below into 15 key themes that provide the underlying basis for the requirements of the emerging transport strategy. References to the relevant policy, challenge or opportunity are provided for cross-reference:

- ***Encouraging travel by sustainable modes***
  - P1, P2, P3, P7, P8, P14, Op_JTW3
- ***Discouraging private car*** ownership and/or the level of private cars use
  - P7, P8, P10, Op_JTW1, Op_JTW2, Op_JTW3
- Continuing to ***manage and improve air quality*** through measures to reduce vehicle emissions
  - P3, P7, P10, Ch_AQ1, CH_FOP2, Op_AQ2, Op_HIT5, Op_HIT7
- ***Promote active travel*** to provide health, air quality and congestion benefits
  - P1, P2, P3, Ch_WCP1, Ch_WCP2, Ch_WCM2, Op_JTW3, Op_WC3, Op_WC4, Op_WC5, Op_WCM2
- ***Enhance the capacity and quality of public transport*** provision in particular for access to Opportunity Areas
  - P4, P5, P6, P14, P17, Ch_RP1, CH_BP1, CH_BP2, Ch_BP3, Ch_RC1, Ch_RC2, Op_RC3, Ch_BC1, Ch_BC2, Ch_PTA1, Op_RP2, Op_RP3, Op_BP4, OPB_P5, Op_PTA2
- ***Reduce the barriers to movement***, including river crossings and walking & cycling permeability
  - P13, Ch_HIT2, Ch_WCM2, Op_RSP4, Op_RSP5
- ***Improving the resilience of the transport network*** to incidents to ensure it is reliable and efficient
  - P15, Ch_HIT1, Ch_HIT3, Ch_HIT4, Op_HIT5
- 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
  - CH_LU2, Op_LU4, Op_LU5, Ch_PTD1, Ch_RC2, Ch_BC1, Ch_BC2, Op_JTW3, Op_PTA2
- 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
  - Ch_LU1, Op_JTW1, Op_JTW2, Op_WCM2
- Recognising the ***requirement to work across borough boundaries*** to manage growth across the sub region
  - P16, Ch_LU3, Ch_PTD2
- ***Enhance road safety and personal security***
  - Ch_HIT4, Ch_RS1, Ch_WCM1, Op_HIT6
- ***Manage areas with high demand for on-street parking provision***
  - P9, Ch_PD1, Ch_PD2, Ch_PD3, Op_PP1, Op_PP2, Op_PP3, Op_PP4

- ***Manage and/or consolidate freight movements***, making use of alternative modes of transport and new technologies
  - P11, P12, Ch_FOP1, Ch_FOP2, Op_HIT5, Op_FOP3, Op_FOP4, Op_FOP5, Op_FOP6
- ***Manage the developing role of taxis***
  - Ch_TP1, Op_TP2
- ***Promoting the use of waterways***
  - P13, Ch_RSP1, Ch_RSP2, Ch_RSP3, Op_FOP4, Op_RSP4, Op_RSP5, Op_WC3

7.11 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 has 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, clearly need to focus upon the needs of pedestrians and cyclists, followed by public transport users, above motorised means of travel.

7.12 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.

DEFINING THE STRATEGY OBJECTIVES

7.13 Having identified the common themes for promoting transport and access into and across Tower Hamlets it is important to translate these into a series of objectives against which to develop, and subsequently appraise, the policies, schemes and measures that will form the basis of the final transport strategy.

Transport Strategy Objectives

7.14 A total of ten transport strategy objectives have been 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

7.15 These ten objectives will form the basis against which the emerging transport strategy measures will be developed. This is set out within the main 'Transport Strategy Development' report.