Tower Hamlets Council’s

TRANSPORT PLANNING STRATEGY (2011-2031)

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Prepared for:
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ACKNOWLEDGEMENTS

We would like to thank TfL and the LTGDC for their support and contributions to the development of this strategy.
Executive Summary

Overview

1. This is the transport planning strategy for Tower Hamlets Council from 2011 to 2031. Over the next 20 years, the numbers of residents and jobs in the borough will increase by around 50%. This strategy builds on the current funded transport infrastructure improvements and policies that are already underway including Crossrail line 1 and Underground/DLR/Overground/National Rail/Bus capacity improvements. These major strategic transport improvements will assist in accommodating a proportion of the increase in public transport trips resulting from the projected growth in the borough and in the rest of east London over the next 20 years.

2. The strategy presents a package of additional transport interventions which will ensure that the planned growth in Tower Hamlets can be accommodated and people and goods will still be able to move to, from and through the borough efficiently, and that the local economy will continue to prosper and grow in the most sustainable way possible.

3. The development of the strategy was informed by using data from forecasts prepared using Transport for London’s (TfL) transport models. We believe this is the first time that TfL’s East London Sub-Regional model outputs have been used in this way.

4. TfL’s forecasts suggest that delays and congestion on the highway network will increase significantly as a result of a 37% increase in vehicle trips to, from and within the borough combined with a 50% increase in through trips. If this materialises, this would lead to peak spreading with delays and congestion through much of the working day, which will also affect bus operations, walking and cycling. With these delays, some car users may choose to switch to public transport which would increase the forecasts used in this report.

5. As no significant increase in highway capacity is planned, it is unlikely that the forecast increases in traffic can be accommodated without compromising the operation of the highway network.
6. As part of the East London Sub-regional Transport Plan, TfL is undertaking a study to consider the implications of growth in all the Opportunity Areas across the sub-region. This work will aim to progress further the following areas:

- Establish a profile of growth gaining a greater understanding of the probabilities of the growth taking place in the short, medium and long term.
- Consider the impacts of the growth on key stresses on the network. For example, the Jubilee Line, DLR, A12, and A13.
- What mode shift assumptions and behavioural change is needed to accommodate growth.
- What are the links and issues of how the growth will address convergence across the region, particularly in the six host boroughs.
- How to influence development to maximise existing transport networks.
- What is the sub-regional approach needed to accommodate growth and what should be fed into project work, for example, River Crossings, DLR Dagenham Dock, Chelsea Hackney Line, longer term Bus Strategy etc.

Growth

7. Tower Hamlets will see the most significant increase in population and jobs over the next two decades of all the 33 London boroughs. The existing (2007) population of 230,000 will increase by 51% to 342,000 and the existing (2007) 206,000 jobs will increase by 46% to 301,000. The Borough will accommodate about 9% of London’s population growth and about 12% of London’s jobs growth.

8. The borough sits on the City fringe, accommodates Canary Wharf and is on the edge of the London 2012 Olympic park. It is also at the western end of the Thames Gateway, a major ‘growth area’ as designated by the London Plan.

9. Tower Hamlets’ strategic location means that transport improvements in Tower Hamlets are essential to ensure that the growth of east London and the Thames Gateway continues.

The purpose of this strategy

10. The need for this strategy was identified as part of previous work undertaken in the development of the latest Tower Hamlets Local Implementation Plan 2 (LIP2). One of the key objectives of the LIP2
was the need to ensure that the transport system is efficient and reliable in meeting the present and future needs of the borough’s population and economy.

11. This strategy achieves the above objective and provides an evidence base for the key emerging documents which are part of the borough’s LDF, such as the Site and Place Making Development Planning Document (DPD), and the Development Management DPD. It focuses on the objective to support the growth of Tower Hamlets and sets the scene for further work to develop the proposed transport interventions.

**Funded interventions**

12. One of the core conclusions in this strategy is the importance of the current funded major public transport capacity enhancements which will serve this area. These are an essential part of the package of transport improvements needed to accommodate 50% growth and they cannot be delayed or downsized. It is recommended that Tower Hamlets will continue to work with TfL, other stakeholders including developers, and the government to ensure that these schemes are delivered on schedule and that the detailed designs (e.g. stations/interchanges), maximise the benefits to Tower Hamlets and beyond.

13. The schemes include:

   - Jubilee line upgrade - 33% capacity increase.
   - District, Circle, Metropolitan and Hammersmith & City lines - 17% capacity increase.
   - DLR Stratford International Extension - new extension.
   - East London Line: train and platform lengthening to 5 cars - up to 25% capacity increase.
   - Crossrail: line 1, core scheme including stations at Canary Wharf and Whitechapel, and nearby in Custom House and Stratford - new lines, 25,000 passengers per hour in both directions along each branch in east London.

14. A number of other schemes of great importance but not at the same scale in terms of capacity enhancement as those above, are:

   - Tower Hamlets car club network - operator-funded with 170+ vehicles
   - TfL London Cycle Hire Scheme Extension Project across Tower Hamlets by 2012
Car free housing schemes encouraged by Tower Hamlets Council since the late 1990s

15. It is recommended that Tower Hamlets continue to work with TfL and the government to ensure that these schemes are delivered on schedule and that the detailed designs e.g. stations/interchange facilities, maximise the benefits to Tower Hamlets.

Future Interventions

16. In addition, this strategy proposes a number of short (0-5 years), medium (5-15 years) and long (15+ years) term interventions designed to accommodate all the new jobs and homes in the borough up to 2031, to help ensure that the major infrastructure improvements are fully integrated with local transport facilities in the borough and address the key issues of traffic congestion on the roads (and related traffic pollution) and crowding on the public transport systems. The interventions provide more local public transport capacity and encourage much more walking and cycling combined with policies developed to encourage fewer car trips and more trips using environmentally friendly modes.

17. The recommended key interventions in the short term are listed below. (The number after the intervention is its reference number, referred to later in the document. Bold font indicates a high priority scheme.). A map with all the interventions is shown at the end of this Executive Summary.

- **Transport Interchange Area programme (TIA) (11)** - Designations of transport interchange spatial policy areas, to improve 12 interchanges within the borough, in accordance with TfL’s Interchange Best Practice Guidance.

- **Reduce flexibility of parking permits (47)** - Reduce the flexibility of the current parking permit scheme within the borough, to reduce car use.

- **Increased frequency/ capacity of ferries (2)** - Increasing the frequency, capacity and availability of existing ferry routes across the Thames.

- **Area-based, strengthened car parking standards (49)** - New standards to be developed which are more robust, for residential areas, town and neighbourhood areas, Transport Interchange Areas or other designations, to reduce car use.
Awareness campaign about cost and impact of motoring (59) - Awareness techniques such as advertising, targeted campaigns and personalised travel planning to influence and potentially reduce car ownership and use.

Significant measures to increase cycling and improve cycle infrastructure (38) - New cycle ‘hubs’ at Whitechapel and Shadwell station amongst others including cycle hire, parking, shop, repairs and cycle training. Also general improvements to make cycling feel safer (use of rumble-strips, better delineation, etc). Other measures include new cycle superhighways and more canal towpaths for use by cyclists.

In the medium term, the recommended key interventions are:

1. **Capacity improvements at Bank Station (58)** - This station is an important gateway for trips into Tower Hamlets and its lack of capacity creates a bottleneck.
2. **Bus bridge at Sugar House Lane (4)** - A new bus/pedestrian/cycle bridge along Sugar House Lane, crossing the Lea Navigation to link with Three Mills Lane. This will allow direct bus priority between Stratford, Three Mills, the new Tesco site to the south and west.
3. **Docklands Light Railway double-tracking to Stratford (23)** - Two single track sections currently limit the service frequency between Stratford and Poplar. This would enable higher frequency services enabling the DLR to carry more passengers.
4. **Encourage use of public transport outside peak times and in contra-peak direction (39)** - In order to utilise spare capacity through more flexible working hours, careful planning of the locations of jobs and homes and travel planning and communications.
5. **Working with TfL to ensure bus services are meeting the growth in demand (43)** - Providing extra bus capacity to meet demand, including increasing bus frequencies, size of buses and new routes and infrastructure where necessary and seek developer contributions where possible.
6. **Running more Crossrail trains via Canary Wharf and fewer via Stratford if required and feasible (56)** - Consider increasing service frequency on Canary Wharf branch of Crossrail
7. **New and enhanced connections to/from/within Fish Island (5)** - Upgrading existing walking and cycling bridges and routes and
working to deliver new routes to better connect this important development area.

- Increasing river capacities for freight, including bringing wharfs back into use (44) - Increase freight transport by river by bringing wharfs back into use.

- Measures to optimise sustainable freight movement and minimise impacts (60) - Could include consolidation centres, freight advisory routes, better use of rail freight, safeguarded wharfs and shared use lanes.

- Tolling cross-river tunnels (26) - Toll charges to Blackwall and Rotherhithe tunnels in order to discourage car use and potentially provide funds to improve public transport.

- New pedestrian and cycle routes across the Thames (1) - New routes, possibly between Rotherhithe and Wapping, or other locations around the Isle of Dogs.

19. In the long term, the recommended key interventions are:

- Chelsea-Hackney line (10) - Some route options for this new proposed line, also known as Crossrail 2, would divert many passengers off the Central line, freeing up this very busy line, as well as relieving other parts of the public transport network. The line would offer new travel options to the north of the borough as well as supporting regeneration of Fish Island and beyond.

- More public transport from south and east to Isle of Dogs (55) - Modelling shows capacity close to demand from the south and east to the Isle of Dogs. The detail of this intervention is yet to be determined.

- Consideration of TfL’s Silvertown Crossing scheme (62) - The TfL proposed, unfunded Silvertown crossing could potentially add capacity onto the highway network, but its full implications are not yet known.

- New fleet of more capacious DLR trains (22) - These potentially walk-through trains (such as those on the Metropolitan line) could provide higher capacity on the DLR.

- Road User Charging /Tolling for economic and environmental aims (27) - introduction of fiscal discouragement to car use.
Bus route 25\(^1\) to become a high capacity transit corridor (31) - This could be part of any future TfL London transit/tram network. A transit/tram system would offer much higher capacity for this already very busy bus route.

Bow Roundabout improvements (8) - Improvements to this congested roundabout include removal of the flyover and creation of a new four way junction as part of spatial planning of the area.

Workplace Parking levy (25) - Introduce a charge on employers who provide workplace parking, such as the scheme soon to be rolled out in Nottingham.

**Living and working in the borough**

20. Future demand for movement in and out of the borough will be significantly affected by the amount of in/out commuting. Currently, the proportion of those who work and also live in the borough is only 15%, which means that there are a high proportion of journeys from people commuting in, and from borough residents commuting to outside the borough. The modelling undertaken for this study assumes this current pattern remains more or less the same in the future. However, if the proportion of people living and working in the borough could be increased, it would make a significant difference to the number of trips across the borough boundary, particularly those by Crossrail, Underground, DLR and National Rail.

21. Tower Hamlets Council can influence the future movement patterns and potentially minimise the increase in cross borough boundary trips through various measures and policies such as ensuring the right level of new housing and schools are available for the new workforce, improving the skills of the residents and locating new homes close to new jobs. Further research to establish how much difference this could make and specifically what the borough can do to increase the proportion of people living and working in the borough is recommended.

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\(^1\) Bus route 25 currently operates between Oxford Circus and Ilford.
22. The costs, technical and political deliverability of these interventions have been considered and are documented at the end of this strategy document. Tower Hamlets Council will now seek to advance these interventions through initiating studies to develop the interventions further, acknowledging the interventions in planning policy documents and seeking to collect s106 (and future CIL) funding to help to contribute to their implementation. Tower Hamlets Council will also seek to ensure that TfL and the Government understand the importance of the full package of transport interventions not only to accommodate Tower Hamlets growth but also to guarantee that all the planned jobs and population growth in the City, east London and the Thames Gateway, and associated economic benefits of this growth, can be achieved and improve the quality of life for all.
1 Introduction

The brief

1.1 Steer Davies Gleave was commissioned in January 2011 to develop a transport planning strategy for the borough. The study builds on the second round Local Implementation Plan (LIP2) where a key requirement was for boroughs to identify their specific transport objectives and priorities for meeting the new Mayor’s Transport Strategy (MTS2). These are listed in Table 1.1.

**TABLE 1.1 LOCAL IMPLEMENTATION PLAN OBJECTIVES**

<table>
<thead>
<tr>
<th>No.</th>
<th>Objective</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>To promote a transport environment that encourages sustainable travel choices for all</td>
</tr>
<tr>
<td>2</td>
<td>To ensure the transport system is safe and secure for all in the borough</td>
</tr>
<tr>
<td>3</td>
<td>To ensure the transport system is efficient and reliable in meeting the present and future needs of the borough’s population and economy</td>
</tr>
<tr>
<td>4</td>
<td>To reduce the impact of transport on the environment and wellbeing</td>
</tr>
<tr>
<td>5</td>
<td>To ensure transport is accessible for all</td>
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<tr>
<td>6</td>
<td>To encourage smarter travel behaviour</td>
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<tr>
<td>7</td>
<td>To better integrate land use and transport planning policy and programmes</td>
</tr>
<tr>
<td>8</td>
<td>To protect, celebrate and improve sustainable access to the borough’s cultural, historical and heritage assets to enhance local distinctiveness, character and townscape views</td>
</tr>
<tr>
<td>9</td>
<td>To maximise the benefits and opportunities offered by the London 2012 Games and its legacy</td>
</tr>
</tbody>
</table>

1.2 Objective 3 “To ensure the transport system is efficient and reliable in meeting the present and future needs of the borough’s population and economy” is the key objective for this study. It focuses on the need to address the development growth the borough will experience over the next 20 years. This transport planning strategy has been developed in order to meet this objective.
1.3 Tower Hamlets will see the most significant increase in population and jobs over the next 20 years of all 33 of London’s boroughs. The existing population of 230,000 will increase by 51% to 342,000 and the existing 206,000 jobs will increase by 46% to 301,000 by 2031. The borough is in a strategic position, sitting on the City fringe, accommodating Canary Wharf, being on the edge of the Olympic Park and at the western end of the Thames Gateway growth area. This strategic location means that transport improvements are essential to ensure the continuing growth of this area and the whole of east London and the Thames Gateway can continue.

1.4 The strategy also provides an evidence base for some of the supporting Local Development Framework (LDF) documents such as Development Plan Documents (DPDs), and sets the scene for further work to develop transport interventions which will support growth.

Relationship to other key documents

1.5 The Tower Hamlets Transport Planning Strategy builds on the Core Strategy, and the LIP2, as can be seen in Figure1.1. The strategy informs the Development Management Development Plan Document (DPD), the Site & Place-Making DPD, as well as the Fish Island Area Action Plan and the Infrastructure Delivery Plan and other documents in the future.
FIGURE 1.1 RELATIONSHIP OF STRATEGY TO OTHER KEY DOCUMENTS
2 Background

Overview of development in Tower Hamlets

2.1 Tower Hamlets will see the most significant increase in population and jobs over the next two decades of all the 33 London boroughs. The existing (2007) population of 230,000 will increase by 51% to 342,000 and the existing (2007) 206,000 jobs will increase by 46% to 301,000. The Borough will accommodate about 9% of London’s population growth and about 12% of London’s jobs growth.

2.2 The borough sits on the City fringe, accommodates Canary Wharf and is on the edge of the London 2012 Olympic park. It is also at the western end of the Thames Gateway, a major growth and regeneration corridor that stretches to North Kent and South Essex.

2.3 Tower Hamlets’ strategic location means that transport improvements in Tower Hamlets are essential to ensure that the growth of east London and the Thames Gateway continues.

2.4 The LDF Core Strategy sets out the long term spatial strategy to deliver the aspirations set out in the Tower Hamlets Community Plan. This outlines broad areas and principles, as well as where, how and when sustainable development should be delivered across the borough until 2025.

2.5 The LDF Core Strategy sets out how the location, scale, density and design of new development will be principally shaped by the accessibility and urban structure of the area. Areas which benefit from higher accessibility levels can support higher densities of land use (such as town centres) and population density. The majority of new housing will be focussed in Millwall, Isle of Dogs, Cubitt Town, Poplar Riverside, Poplar, Leamouth, Blackwall, Bromley-by-Bow, and Fish Island.

2.6 As set out in the London Plan Tower Hamlets has the highest housing delivery target of any borough with over 43,000 new homes to be built between 2010 and 2025. The most intense period of delivery will take place after 2014. In spatial terms, the highest growth will take place in the opportunity areas of the Isle of Dogs and Lower Lea Valley. It is imperative that the implications of such large growth on the transport system are fully understood and the impacts on the borough are mitigated and the benefits are fully realised.
Both the Tower Hamlets LDF Core Strategy and the Mayor’s Transport Strategy highlight the need to address this housing and employment growth through balancing demand and capacity for transport. This will involve locating development where there is high public transport accessibility as well as sufficient capacity.

**Socio-demographic data**

The socio-economic composition of the borough is illustrated by the Index of Multiple Deprivation (Figure 2.1). Tower Hamlets is ranked as the third most deprived local authority in the country, after the London Boroughs of Hackney and Newham, with local people suffering a number of health and wellbeing problems, such as respiratory and circulatory problems, obesity and smoking. Life expectancy stands at 75 for men and 80 for women, which places Tower Hamlets 383rd and 361st respectively, out of 432 local authority areas.

Tower Hamlets is one of the most economically diverse boroughs in London. Figure 2.1 shows that the riverside areas are relatively affluent with more deprived areas towards the middle of the borough.

Overall, a large amount of the borough falls within the category of the top 5% most deprived areas in the country. The areas of highest deprivation are around Bow, Poplar, Blackwall, Langdon Park and near the Limehouse Cut.
Public transport accessibility

2.11 Accessibility within the borough, as measured by Transport for London’s (TfL’s) Public Transport Accessibility Level (PTAL) is generally quite high. A rating of 6 means very accessible, and 1 reflect very poor accessibility. As can be seen in Figure 2.2, much of the west and central parts of the borough have very high levels of accessibility. The extreme north and south, as well as areas towards Canning Town in the east contain pockets of low accessibility.

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Source: Indices of Deprivation 2010, Department of Communities and Local Government
FIGURE 2.2 EXISTING PUBLIC TRANSPORT ACCESSIBILITY LEVELS FOR TOWER HAMLETS
2.12 It should be noted that PTALs only reflect accessibility in terms of the reliability and frequency of services within the catchment, including the walking time to public transport stops/stations, as well as average waiting time for a service. They do not measure the speed or routes, utility of the services to the passenger, crowding, spare capacity, ease of interchange, information provision, or cost.

2.13 The London Plan directly relates high PTAL levels to areas which can accommodate high density of development and includes a density matrix which matches PTAL ratings to residential units per hectare (Table 3.2 in London Plan 2011).

Summary

2.14 Tower Hamlets is London’s fastest growing borough and it has the highest housing delivery target of any borough as set out in the London Plan. The highest growth will take place in the Opportunity Areas of the Isle of Dogs and Lower Lea Valley. By 2031 the existing (2007) population will increase by 51% and the number of jobs by 46%.

2.15 The borough is one of the most economically diverse boroughs in London. It is ranked as the third most deprived local authority in the country. However, it has wealthy areas around the riverside areas and Canary Wharf.

2.16 In terms of public transport accessibility, according to TfL’s PTAL ratings, the borough is generally good with much of the west and centre of the borough is very accessible. The extreme north and south, as well as areas towards Canning Town in the east contain pockets of low accessibility.
3 Transport baseline

Context

3.1 There has been a large amount of development in Tower Hamlets, and major transport improvements in the area over the past few decades. The Docklands Light Railway (DLR) opened in 1987 to connect the Docklands regeneration area with residential areas, the City of London, and the wider public transport network. This was followed by the introduction of the Jubilee Line extension, which was completed in December 1999, providing additional capacity and new direct links to the Isle of Dogs, and relief to congestion on the DLR.

3.2 The East London Line was previously part of the Underground until it was closed in 2007 to be renovated. It reopened in May 2010 as part of the Overground. This conversion has taken it from a line which had approximately 10 million passengers per year to one which has around 35 million per year. In February 2011, an extension opened to the north, taking the line as far as Highbury & Islington. To the south, it runs to West Croydon and Crystal Palace.

3.3 There have also been significant road improvements, including the Limehouse Link tunnel which opened in May 1993 and is a 1.8km tunnel on the A1203 providing a high capacity east-west route between Central London and the Docklands by-passing the Commercial Road.

Mode split

3.4 To set the context for transport in Tower Hamlets, it is important to understand the types of trips being made, and the relative proportions of these, at present.

3.5 Public transport trips account for 37% of total trips in Tower Hamlets, with 21% of all trips by car, 15% by bus, 40% walking and 2% cycling. This is illustrated in Figure 3.1. The borough has a high proportion of walking trips compared with other east London boroughs (Newham: 37%, Lewisham: 28%, Greenwich: 26%, Hackney: 35%) and is close to the central London walking mode split which is 39%.
3.6 The proportion of cycling is low but higher than most nearby boroughs, most of which have only 1% cycling trips (except Hackney which has 4%).

**FIGURE 3.1 MODE SPLIT OF TRIPS IN TOWER HAMLETS (2006/09 AVERAGE, LONDON TRAVEL DEMAND SURVEY)**

3.7 The car mode share in the borough at 21% is relatively low, as Lewisham has 38% and Greenwich has 44% car trips. Newham has 31% car trip but Hackney is actually quite similar, at 21% car trips.

**Road network**

3.8 The road network in Tower Hamlets consists of the TfL Road Network (TLRN), including the major radials of the A11, A12, A13 and The Highway (A1203), as well as important local roads such as Roman Road (B119), Globe Road (B120) and Devons Road (B140), and other minor roads. The road network is shown by Figure 3.2.

3.9 There are three vehicular river crossings within the Borough, at Tower Bridge, the Rotherhithe Tunnel and the Blackwall Tunnel all of which are managed by TfL. There is also a foot tunnel between the Isle of Dogs and Greenwich.
FIGURE 3.2  TOWER HAMLETS ROAD NETWORK

Rail network

3.10 The rail network is shown by Figure 3.3, which includes overground rail (the West Anglia, Tilbury & Southend (c2c) lines, and London Overground/ East London lines), four London Underground lines, and the DLR.
Bus network

3.11 Figure 3.4 shows the network coverage of the 30 bus routes that pass through the borough, with 429 stops. There are 10 night bus routes that serve the borough. All residential areas are within 400m of a bus stop.
3.12 Figure 3.5 shows buses per hour in Tower Hamlets. The roads with the highest bus frequencies are to the west of the borough, especially along the A10 (Bishopsgate) which passes over Tower Bridge, past Liverpool Street station and through Shoreditch. This route has 60+ buses per hour in the AM peak. It is notable that there are no other roads in the borough which have 60+ buses per hour, although there are some to the north of Tower Hamlets in Hackney, and some to the east, in Newham.
Other frequently served bus locations are the junction between the A13 and the A1205 (Burdett Road), as well as around Bethnal Green Underground station and Cambridge Heath rail station where there are 40 - 59 buses per hour.

The A13 and A1205 (Burdett Road) have relatively high frequencies of bus services (20 - 39 buses per hour). There are pockets in the borough with relatively low frequencies (0 - 99 buses per hour) around Wapping and Blackwall, Poplar and Bow.

FIGURE 3.5  BUSES PER HOUR IN TOWER HAMLETS
3.15 Figure 3.6 shows bus passenger boarding and alighting. The A10, A11, A1209 and A13 corridors are the most heavily used.

**FIGURE 3.6  BUS BOARDING AND ALIGHTING IN TOWER HAMLETS**

**Public transport crowding**

3.16 Figure 3.7 and 3.8 show existing (2007) crowding on the Underground, DLR and National Rail services in the AM peak period (7-10am) measured by standing passengers per square metre.

3.17 The highest levels of crowding on the underground and DLR (more than three passengers per square metre) are on:

- Central Line westbound;
- District Line westbound between Bow Road and Mile End;
- DLR eastbound from Bank to Shadwell;
- Jubilee Line eastbound to Canary Wharf.
3.18 The highest levels of crowding on National Rail (more than three passengers per square metre) are on:

- C2C services westbound from Barking;
- London Overground from Stratford.

FIGURE 3.7 LONDON UNDERGROUND AND DLR CROWDING, 2007

FIGURE 3.8 NATIONAL RAIL CROWDING, 2007
Trends in highway demand

3.19 Figure 3.9 from the Department for Transport’s National Road Traffic Survey of annual estimated flows for all motor vehicles, shows almost no growth in Inner London’s traffic between 1993 and 2008, but there has been a gradual increase in traffic flows in the borough over the same time period.

FIGURE 3.9 ESTIMATED TRAFFIC FLOWS FOR ALL MOTOR VEHICLES (1993 - 2008)

Source: Tower Hamlets LIP2

3.20 Data from TfL suggests that car traffic in central and Inner London has gone down over the last 10 years but increased light goods and van trips have resulted in very little net change in vehicle flows.

Flows and delay on the highway network

3.21 Using outputs from TfL’s ELHAM model, the diagrams below (Figures 3.10 and 3.11) show existing (2008) morning peak hour (8-9am) traffic flows and delays on the borough road network.

3.22 The highest flows are along the A12 and A13, with over 3,400 passenger car units (pcus) per hour on the A12 northbound through the Blackwall Tunnel in the AM peak and over 5,000 pcus per hour westbound on the A13 at the approach of the A12 junction near Canning Town.
3.23 Other heavily trafficked roads in the area include the A11 Stratford High Street and the Inner Ring Road via Aldgate and Tower Bridge, in the far west of the borough. Many of these roads are also those where there are high frequencies of buses, as shown in Figure 3.5.

3.24 Congestion and traffic delay is worst at and near all three river crossings - Tower Bridge, Rotherhithe Tunnel and Blackwall Tunnel due to the high demand for crossing the river. In the AM peak, the peak directional flow is northbound across the river and there are queues on the south side of the river.

3.25 Another key area with significant delay is the City Fringe, which includes the highway network in Bethnal Green, Whitechapel and Stepney Green. Delay is quite severe in and around the Monument - Aldgate - Fenchurch Street - Tower Hill area.
FIGURE 3.10  FLOWS IN VEHICLES PER HOUR IN AM PEAK, 2008 BASE
Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

On-street car parking capacity

3.26 Tower Hamlets has recently undertaken a parking stress survey, which looks at the occupancy of on-street parking bays. Streets which are at 80% occupied or above are considered “stressed”.

3.27 Figure 3.11 shows the level of parking stress across the borough on a weekday. Most roads are at least 60-50% occupied, and there are patches around Fish Island, Bow, Blackwall and around Whitechapel, which are much more ‘stressed’.

3.28 The weekday overnight map, Figure 3.12, shows a much more crowded picture, with most roads at in the 80-100% or 100%+ occupied ranges. The most stressed areas are in the west of the borough.

3.29 The proportion of households owning a car in Tower Hamlets is around 40%. The proportions of one-car households and those with 2 or more cars increased from 2005/6 to 2009/10, as can be seen by Table 3.1

| TABLE 3.1 CAR OWNERSHIP IN TOWER HAMLETS 2005 - 10³ |
|----------------------------------|----------|---------|----------|----------|----------|
| Year                            | 2005/06 | 2006/07 | 2007/08  | 2008/09  | 2009/10  |
| No car                          | 69%      | 63%      | 65%       | 61%       | 58%       |
| One car                         | 28%      | 34%      | 33%       | 35%       | 36%       |
| Two + cars                      | 3%       | 4%       | 2%        | 4%        | 5%        |
|                                 | 100%     | 100%     | 100%      | 100%      | 100%      |

³ Sources: London Travel Demand Survey
FIGURE 3.11 PARKING STRESS, PERCENTAGE OCCUPANCY, WEEKDAY DAYTIME

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FIGURE 3.12 PARKING STRESS, PERCENTAGE OCCUPANCY, WEEKDAY OVERNIGHT
Summary

3.30 Tower Hamlets road network comprises strategic, radial roads such as the A12, A13 and A11 plus important local orbital roads and minor roads.

3.31 The borough has a comprehensive public transport system including Overground rail, Network Rail, four underground lines (including the new Jubilee line) and the DLR.

3.32 There are 30 bus routes that pass through the borough, and the busiest links used by buses are the A10, A11, A1209 and A13. Frequencies are high but not as high as many other parts of London.

3.33 Some parts of the rail network are very congested in the peak period. In the AM peak 3 hours, the Central Line westbound from Mile End, the Jubilee Line eastbound to Canary Wharf and the DLR west to Shadwell are among the worst. On National Rail, congestion is not as bad However, the C2C services from Barking to Limehouse are very crowded.

3.34 On the road network, the A12, A13 and A11 are the most heavily used, with over 3,400 pcus per hour on the northbound A12 through the Blackwall tunnel in the AM peak hour and over 5,000 pcus per hour westbound on the A13. Congestion and traffic delay are worst at the three river crossings - Tower Bridge, Rotherhithe and Blackwall Tunnels due to high demand for crossing the river. The City Fringe area, including Bethnal Green, Whitechapel and Stepney Green also suffer from high congestion and delay in the AM peak.

3.35 Parking stress data shows a very ‘stressed’ on-street parking network in the weekday evenings, but not so much during the weekday daytime, due to people using their cars to get to work/shops/leisure/schools during the daytime. The most stressed areas are in the west of the borough.
4 **Policy background**

**Introduction**

4.1 A review of all relevant policy documents and studies has been carried out. A national and regional level policy review was included in the Tower Hamlets Local Implementation Plan (LIP) so it is not repeated here. The key policies relevant to this strategy are summarised in the following paragraphs.

**Key policies**

*Local Implementation Plan 2 (LIP2)*

4.2 This need for this transport planning strategy was identified during previous work undertaken in the development of the LIP. One of the key objectives of the LIP was the need to ensure the transport system is efficient and reliable in meeting the present and future needs of the borough’s population and economy.

*Local Development Framework (2010 - 2025) (LDF)*

4.3 The primary purpose of the LDF is to assist in the regeneration and sustainable development of Tower Hamlets by implementing the spatial aspects of the Community Plan. The LDF is a suite of documents which include Development Plan Documents (DPDs), Supplementary Planning Documents (SPDs), Area Action Plans and the Core Strategy.

4.4 The LDF Core Strategy was formally adopted by the Council in September 2010 and sets the long term spatial vision for the borough until 2025. It sets broad areas and principles for development and gives guidance on where, how and when this should be delivered across the borough.

*Development Management DPD*

4.5 This document sets out guidance for the planning application process and detailed policies to inform the process of assessing planning applications.

*Sites and Placemaking DPD*

4.6 This document sets out site allocations for different uses, spatial policy areas and guidance for placemaking elements and how these will contribute to achieving the visions for each of Tower Hamlets’ places.
Fish Island Area Action Plan

4.7 The Fish Island Area Action Plan (AAP) is based on the Core Strategy’s strategic spatial guidance, but provides an extra layer of detail to guide the future development and regeneration of Fish Island.

4.8 The AAP identifies the major challenges and opportunities within the area including those relating to connectivity. The AAP acknowledges that elements of the existing transport infrastructure causes severance to the area, internal connections are lacking and public transport services serving Fish Island require improvement.

Infrastructure Delivery Plan (IDP)

4.9 The IDP supports the Core Strategy and identifies the future infrastructure requirements to support population, housing and employment growth as detailed in LDF documents. The IDP provides an indication of the potential costs and means of funding of required infrastructure. It also sets out a roadmap for governance arrangements that establishes effective ways of ensuring infrastructure projects are delivered.

4.10 This Transport Planning Strategy will inform the new, updated IDP.

Summary

4.11 Background policy has informed the development of this strategy, most importantly, the LIP2, the LDF and the Core Strategy. The latter two documents set the planning context, and the LIP work has been very useful in providing some of the transport context. A review of a number of studies has also provided a useful context for some of the interventions proposed (see Figure 5.1 for list of studies reviewed).
5 Methodology

Overall approach

5.1 This strategy builds on data collected from a number of sources:

- TfL East London Sub-Regional Transport Plan
- Tower Hamlets second Local Implementation Plan (LIP2)
- Tower Hamlets Population Change and Growth model

5.2 The work has also been informed by reviews of a number of key documents in addition to the policies mentioned in Section 4, as can be seen in Figure 5.1.

5.3 The study used primary information as well, in the form of three workshops, to which a variety of key stakeholders from different departments within Tower Hamlets, TfL and the London Thames Gateway Development Corporation (LTGDC) were invited. This is described in more detail later in this section.

5.4 TfL has developed a series of sub-regional transport plans to form a bridge between the Mayor’s Transport Strategy and individual local authority transport plans or LIPs. The ‘east’ sub-region comprises the boroughs of Tower Hamlets, Hackney, Newham, Greenwich, Barking & Dagenham, Havering, Redbridge, Lewisham and Bexley.

5.5 The sub-regional transport plans have been informed through the development of multi-modal transport models by TfL.
FIGURE 5.1 REVIEWED DOCUMENTS

National & Regional policy
- DfT Business Plan 2011 - 2015
- White Paper: Creating Growth, Cutting Carbon
- PPG13
- London Plan
- ATS
- TfL Business Plan
- Smarter Choices policies
- London Freight Plan
- East London Sub-Regional Transport Plan
- East London Challenges & Opportunities
- Thames River Pier Plan
- Olympic Legacy Strategic Planning Guidance (emerging)
- draft National Planning Policy Framework

Local policy for Tower Hamlets
- Community Plan - One Tower Hamlets
- LDF Core Strategy
- Infrastructure Delivery Plan
- Local Implementation Plan 2
- Cycling Plan
- Walking Plan
- Road Safety Plan
- Air Quality Action Plan
- Parking and Enforcement Plan
- Environmental Strategy & Action Plan
- Clear Zone Plan
- Fish Island AAP (emerging)
- Development Management DPD (emerging)
- Site & Placemaking DPD (emerging)

Local Strategies/ Studies
- Transport & Utilities Baseline Review
- Public Transport Capacity Assessment
- Housing and Market Needs Assessment
- Planning for Population Growth & Change
- Town Centre Spatial Strategy
- Parking Capacity Study
- Making Connections (STS1)
- Mosaic cycling segmentation
- A12 Transport Capacity & Access Study
- Eastend Tram Study
- Chelsea Hackney Line study
- London & South East Route Utilisation Strategy
- Thames Pedestrian and Cycle Bridge study
- Clear Zone Plan
Transport forecasts

5.6 TfL’s transport model outputs have been used for base year information in terms of flows and delays as well as this study to provide future year forecasts. These use the London Plan assumptions regarding population and employment growth, and assume completion of the (funded) schemes from the Mayor’s Transport Strategy.

5.7 Outputs from the following models have been used:

- Regional Railplan; and
- The East London Highway Assignment Model (ELHAM).

5.8 Regional Railplan is a strategic public transport model using data from demand matrices derived from TfL’s large LTS (London Transportation Studies) model, as well as from surveys. It gives a detailed representation of public transport services and networks, including rail, tube, DLR and buses. It is an assignment model, which can be used to show a base representation of the current year as well as forecasts. It can also be used to test schemes and, for example, is currently being used to test the impacts of the proposed Northern Line Extension at Battersea. It has 3,837 zones which provides significant detail for a strategic model.

5.9 ELHAM is a highways assignment model based on SATURN traffic modelling software. It covers the nine boroughs in east London (Tower Hamlets, Newham, Hackney, Barking & Dagenham, Redbridge, Havering, Bexley, Greenwich and Lewisham). It has 1,471 zones, 2437 nodes and 479 bus routes built-into its network. It focuses on the boroughs in the TfL East London Sub-Regional Transport Plan, and the network is more detailed in those places. It has recently been calibrated using data such as roadside interviews and counts. The model assigns trips to the ‘least cost’ routes, which is calculated using values of time and distance. The model includes a ‘penalty’ in order to represent the Central London Congestion Charge Zone.

5.10 This is likely to be the first time that outputs from these models have been used to help develop a London borough transport strategy.
Planning forecasts

5.11 In addition to TfL’s model, Tower Hamlets Council has developed a Planning for Population Change and Growth Model. This contains data on both the permitted developments (planning permission granted) and potential future development areas in the borough.

5.12 This model has been used to produce Figure 6.3, which shows the locations of residential and employment developments with planning permission, and Table 6.3 in the next section. This table shows the proportion of developments which already have consent compared with the full Core Strategy allocation at the ‘Place’ level.

5.13 It should be noted that this model has some limitations; it makes assumptions at a point of time, and these may change. The overall trajectory of growth is set out in the Core Strategy housing targets.

Stakeholder workshops

5.14 A further input to this strategy has been through workshops with key stakeholders, including TfL and the LTGDC, which were held in January, March and May 2011.

- Workshop 1: Engagement on the strategy, gathered key issues, challenges and goals resulting from increased development in the borough, and informed officers of the process for completing the strategy.
- Workshop 2: Report on progress to date, insights from new data, and gathered ideas and interventions on how to tackle the issues resulting from the increased development in the borough.
- Workshop 3: Report on the appraisal of these interventions, and data from TfL’s models.

Borough and Local ‘Area’ analysis

5.15 The workshops and much of the analysis of data were carried out at a borough level, and where appropriate, three groupings of Local Area Partnerships (LAPs) were used, as in the Core Strategy. LAPs 1 - 4 are to the west of the borough, LAPs 5 - 6 are to the north, and LAPs 7 - 8, to the south, including the Isle of Dogs as shown in Figure 5.2.
FIGURE 5.2 GEOGRAPHICAL ‘AREAS’ WITHIN TOWER HAMLETS
6 Growth in London and Tower Hamlets

Growth in London

6.1 Transport demand is largely driven by the numbers and distribution of people and jobs, and by the linkages between them.

6.2 According to the London Plan, London’s population is forecast to increase by over 1.2m by 2031, as shown in Table 6.1, which is about a 16% increase from 2007. At 8.8m people, London’s population will be higher than ever before. The previous peak was 8.6m in 1939.

6.3 Jobs in London are also forecast to increase significantly, by 770,000 (+16%). This will put pressure on all services, especially transport.

<table>
<thead>
<tr>
<th>TABLE 6.1 POPULATION AND JOBS GROWTH IN LONDON (000'S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
</tr>
<tr>
<td>Population ('000's)</td>
</tr>
<tr>
<td>Jobs ('000's)</td>
</tr>
</tbody>
</table>

Source: London Plan 2011

Growth in East London

6.4 TfL’s Challenges and Opportunities Report records that within the East sub-region there were 2.1 million people in 2006, with significant growth in population reversing recent declines and exceeding the earlier peak population levels of the 1930s.

6.5 In terms of employment, the report notes that there were 830,000 jobs in the East London Sub-Region in 2006 and that a notable proportion of this employment was based within Tower Hamlets, and within the Canary Wharf Estate.

6.6 The sub region is expected to accommodate half of London’s population growth and nearly a quarter of its growth in jobs between 2006 and 2031.

Growth in Tower Hamlets

6.7 In Tower Hamlets population and jobs are forecast to increase by approximately 50% by 2031 with 115,000 new residents (approximately 50,000 new homes) and 95,000 new jobs added to
the existing (2007) population of around 230,000 and around 200,000 jobs as shown by Table 6.2.

**TABLE 6.2 POPULATION AND JOBS GROWTH IN TOWER HAMLETS**

<table>
<thead>
<tr>
<th>Tower Hamlets</th>
<th>2007</th>
<th>2031</th>
<th>Increase</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (‘000’s LTS 2007)</td>
<td>227</td>
<td>342</td>
<td>+115</td>
<td>+51%</td>
</tr>
<tr>
<td>Population (‘000’s LBTH 2009)*</td>
<td>238</td>
<td>364</td>
<td>+127</td>
<td>+54%</td>
</tr>
<tr>
<td>Jobs (‘000’s LTS)</td>
<td>206</td>
<td>301</td>
<td>+95</td>
<td>+46%</td>
</tr>
</tbody>
</table>

*from Tower Hamlets’ ‘Planning for Population Change and Growth Model’ - see paragraph 5.11. Other data in this table is taken from the London Plan 2011.

6.8 Tower Hamlets is one of 33 London boroughs, with 3% of London’s existing population, but it will accommodate 9% of London’s growth. It currently has 4% of London’s jobs, and will take a substantial 12% of London’s jobs growth, resulting in the borough having 6% of London’s jobs by 2031.

6.9 These are significant changes and demographic shifts, all of which will dramatically affect transport demand and movement patterns in the future.

**Location of growth within the borough**

6.10 As shown by Figure 6.1, most of the population and jobs growth (66,000 residents and 53,000 jobs) is forecast to be located in LAPs 7-8, which is the Poplar/Isle of Dogs area. 31,000 new residents are forecast for LAPS 1-4 and 29,000 residents for LAPS 5-6.

6.11 Two thirds of the new jobs would be on the Isle of Dogs and most of the remainder in the west of the borough in the city-fringe.

6.12 The largest percentage increases of new jobs and new population would actually be in LAPS 5-6, with a 71% increase in jobs and a 59% increase in population.

6.13 At present only 15% of the jobs in the borough are held by borough residents. About 60% of the new population (around 70,000) will be economically active. If a substantial proportion were to take up the 95,000 new jobs they could walk, cycle or travel by bus to work and there would be reduced pressure on medium and long distance transport networks such as the underground, DLR and Network Rail lines.
FIGURE 6.1 LOCATION OF POPULATION AND JOBS GROWTH BY LAP AREAS (000’S)

LAPS 1-4

Population: +31 (+25%)
Jobs: +33 (+40%)

LAPS 5-6

Population: +29 (+59%)
Jobs: +9 (+71%)

LAPS 7-8

Population: +66 (+103%)
Jobs: +53 (+48%)

Total for Tower Hamlets

Population: +127 (+54%)
Jobs: +95 (+46%)
Location of permitted developments

Residential development

6.14 According to Tower Hamlets Population Change and Growth model, the potential land available for development exceeds the London Plan quantum (43,000 households) considerably, which means there is scope for allocating development to specific locations e.g. with good transport accessibility and/or spare transport capacity, and limiting it in others.

6.15 A considerable proportion of the allocations already have permission, however, and Figure 6.2 shows where the residential developments which already have permission are located and their size in terms of housing units.

6.16 Areas with the largest numbers of planning consents for residential units are in the Isle of Dogs (around Millwall West India Docks, and to the south of Canary Wharf, in Blackwall) and in Leamouth. There is also a cluster of high levels of residential units with planning consent in Bromley by Bow, Bow Common and Poplar Riverside. Numbers of households with planning consent are generally at lower levels to the north of the borough.
6.17 Table 6.3 shows a summary of future residential development across the borough by ‘place’. The table is split into permitted developments (which have planning permission) and allocations which form part of the borough’s Core Strategy (which corresponds with the London Plan).
### Table 6.3 Permitted and Allocated Residential Units

<table>
<thead>
<tr>
<th>Place</th>
<th>Permitted</th>
<th>Core Strategy Allocation</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LAPs 1-4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aldgate</td>
<td>864</td>
<td>1,230</td>
<td>-366</td>
</tr>
<tr>
<td>Bethnal Green</td>
<td>665</td>
<td>1,200</td>
<td>-535</td>
</tr>
<tr>
<td>Globe Town</td>
<td>459</td>
<td>1,120</td>
<td>-661</td>
</tr>
<tr>
<td>Limehouse</td>
<td>865</td>
<td>1,800</td>
<td>-935</td>
</tr>
<tr>
<td>Shadwell</td>
<td>397</td>
<td>710</td>
<td>-313</td>
</tr>
<tr>
<td>Shoreditch</td>
<td>548</td>
<td>1,840</td>
<td>-1,292</td>
</tr>
<tr>
<td>Spitalfields</td>
<td>419</td>
<td>2,850</td>
<td>-2,431</td>
</tr>
<tr>
<td>Stepney</td>
<td>-</td>
<td>470</td>
<td>-470</td>
</tr>
<tr>
<td>Tower of London</td>
<td>-</td>
<td>90</td>
<td>-90</td>
</tr>
<tr>
<td>Wapping</td>
<td>1,160</td>
<td>1,470</td>
<td>-310</td>
</tr>
<tr>
<td>Whitechapel</td>
<td>504</td>
<td>1,340</td>
<td>-836</td>
</tr>
<tr>
<td><strong>LAPs 5-6</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bow</td>
<td>696</td>
<td>650</td>
<td>+46</td>
</tr>
<tr>
<td>Bow Common</td>
<td>1,505</td>
<td>1,900</td>
<td>-395</td>
</tr>
<tr>
<td>Bromley by Bow</td>
<td>1,609</td>
<td>1,820</td>
<td>-211</td>
</tr>
<tr>
<td>Fish Island</td>
<td>126</td>
<td>2,400</td>
<td>-2,274</td>
</tr>
<tr>
<td>Mile End</td>
<td>881</td>
<td>1,760</td>
<td>-879</td>
</tr>
<tr>
<td>Victoria Park</td>
<td>40</td>
<td>-</td>
<td>+40</td>
</tr>
<tr>
<td><strong>LAPs 7-8</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blackwall and Leamouth</td>
<td>3,441</td>
<td>4,050</td>
<td>-609</td>
</tr>
<tr>
<td>Canary Wharf</td>
<td>2,784</td>
<td>2,640</td>
<td>+144</td>
</tr>
<tr>
<td>Cubitt Town</td>
<td>1,137</td>
<td>4,190</td>
<td>-3,053</td>
</tr>
<tr>
<td>Millwall</td>
<td>4,004</td>
<td>6,150</td>
<td>-2,146</td>
</tr>
<tr>
<td>Poplar</td>
<td>800</td>
<td>1,630</td>
<td>-830</td>
</tr>
<tr>
<td>Poplar Riverside</td>
<td>1,378</td>
<td>1,860</td>
<td>-482</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>24,282</td>
<td>43,170</td>
<td>-18,428</td>
</tr>
</tbody>
</table>
6.18 Locations with the highest allocations for new units include Cubitt Town, Spitalfields, Fish Island, Canary Wharf, Blackwall, Leamouth and Millwall.

**Employment development**

6.19 Figure 6.3 shows the locations of developments with employment or industrial uses which have planning consent provided by the Population and Growth Model. The size of the dot is proportional to the size of the development. Clusters of projected jobs appear around Canary Wharf, the City Fringe and in Canning Town to the east.

**FIGURE 6.3 NEW EMPLOYMENT SPACE WITH PLANNING CONSENT**
Summary

6.20 London’s population is set to increase by 1.2m and jobs by 770,000 by 2031. The east sub region is expected to accommodate half of London’s population growth and nearly a quarter of its growth in jobs between 2006 and 2031, which will put pressure on all services, especially transport.

6.21 In Tower Hamlets, population and jobs are forecast to increase by approximately 50% by 2031, with 115,000 new residents and 95,000 new jobs added to the existing (2007) population of around 230,000 and around 200,000 jobs. Tower Hamlets is taking a high proportion of London’s growth for just one of 33 London boroughs.

6.22 Most of the population growth is taking place in the Isle of Dogs and Poplar (LAPs 7 - 8) and two thirds of the jobs growth is taking place in this area. Most of the remainder is in the City Fringe area. The highest percentage increase is actually in LAPS 5-6 which includes Mile End, Bromley-by-Bow and Fish Island.

6.23 Currently only 15% of jobs in the borough are held by borough residents. If this could be increased the forecast growth in numbers of cross boundary trips could be reduced.

6.24 The largest permitted developments are on the Isle of Dogs around West India, Millwall Docks, Canary Wharf, Leamouth and Blackwall. There is also a cluster of residential units with planning consent in Bromley by Bow, Bow Common and Poplar Riverside. Numbers of households with planning consent are generally at lower levels in the north of the borough.

6.25 For employment, most consented applications are also around Canary Wharf, the City Fringe and at Canning Town.
7 Funded and unfunded transport improvements

Introduction

7.1 The Mayor’s Transport Strategy and the East London Sub Regional Transport Plan include a number of major transport improvements to rail, tube and river services and cycling in the borough and possible new (road) river crossings providing additional transport capacity. These are identified in Table 7.1.

Mayor’s Transport Strategy improvements

7.2 The full list of schemes which impact Tower Hamlets, from the Sub-Regional Plan are set out in Table 7.1.

| TABLE 7.1 KEY INTERVENTIONS AFFECTING TOWER HAMLETS FROM EAST LONDON SUB-REGIONAL TRANSPORT PLAN |
|---|---|---|
| Key Scheme/ Intervention (relevant to Tower Hamlets) | Reference within East SRTP | Date & Funded/ unfunded |
| **Tube upgrades:** | | |
| • Circle, District, Metropolitan and Hammersmith & City lines; new trains & new signalling (17% capacity increase) | Scheme 69, Appendix Table 1 | By 2020, funded |
| • Jubilee line: 33% more peak capacity & 22% reduction in journey time | Scheme 63, Appendix Table 1 | By 2012, funded |
| **Docklands Light Railway:** | | |
| • Enabling of 3 car operation network-wide (by 2012) | Scheme 77, Appendix Table 1 | By 2012, funded |
| • Additional 3 car rolling stock planned for post 2013 but as yet unfunded | Scheme 78, Appendix Table 1 | 2013 - 2020 & post 2020, unfunded |
| • Stratford International extension (2011) | Scheme 79, Appendix Table 1 | By 2012, funded |
| • North - south route capacity enhancement between Canary Wharf & Stratford | Scheme 83, Appendix Table 1 | 2013 - 2020 & post 2020, unfunded |
| **East London Line Extension:** | | |
| • Train and platform lengthening to 5 cars | Scheme 41, Appendix Table 1 | 2013 - 2020, unfunded |
| • Further train lengthening | Scheme 42, | Post 2020,
## Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

<table>
<thead>
<tr>
<th>Key Scheme/ Intervention (relevant to Tower Hamlets)</th>
<th>Reference within East SRTP</th>
<th>Date &amp; Funded/ unfunded</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To Highbury &amp; Islington and Clapham Junction extensions</td>
<td>Appendix Table 1</td>
<td>unfunded</td>
</tr>
<tr>
<td>Crossrail:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Crossrail line 1, core scheme (will alleviate stress on Jubilee &amp; DLR)</td>
<td>Scheme 41, Appendix Table 1</td>
<td>2013 - 2020, funded</td>
</tr>
<tr>
<td>• Stations at Canary Wharf &amp; Whitechapel, and nearby at Custom House &amp; Stratford.</td>
<td>Page 54, East London SRTP</td>
<td>2013 - 2020, funded</td>
</tr>
<tr>
<td>• Chelsea Hackney line</td>
<td>Scheme 46, Appendix Table 1</td>
<td>Post 2020, unfunded</td>
</tr>
<tr>
<td>Cycling:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• TFL London Cycle Hire Scheme extension in Tower Hamlets</td>
<td>Scheme 101, Appendix Table 1</td>
<td>By 2012, funded</td>
</tr>
<tr>
<td>• Cycle superhighways</td>
<td>Not in Scheme table in SRTP, but proposal 53 in MTS.</td>
<td>By 2020, funded</td>
</tr>
<tr>
<td>TFL river crossings &amp; improvements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Refurbishment of Blackwall Tunnel (northbound)</td>
<td>Scheme 131, Appendix Table 1</td>
<td>By 2012, funded</td>
</tr>
<tr>
<td>• Canning Town road improvement scheme</td>
<td>Scheme 133, Appendix Table 1</td>
<td>By 2012, funded</td>
</tr>
<tr>
<td>• Road vehicle crossings in East London</td>
<td>Scheme 149 &amp; 151, Appendix Table 1</td>
<td>2013 - 2020 &amp; post 2020, unfunded</td>
</tr>
<tr>
<td>• Walk/cycle crossings in east London (including links to access Isle of Dogs from east and west, including cable car crossing)</td>
<td>Scheme 150, Appendix Table 1</td>
<td>By 2012, funded, and 2013 - 2020 &amp; post 2020, unfunded</td>
</tr>
<tr>
<td>• Improvements to Thames passenger services including possible enhanced pier facilities</td>
<td>Scheme 152, Appendix Table 1</td>
<td>Up to 2020 funded, post 2020 unfunded</td>
</tr>
</tbody>
</table>
7.3 The key interventions in terms of capacity enhancements, which are funded, are listed below and shown by Figure 7.1.

- Jubilee line upgrade (33% capacity increase).
- DLR 3-car operations network-wide, and additional 3 car rolling stock\(^4\).
- DLR Stratford International Extension.
- East London Line: train and platform lengthening to 5 cars.
- East London Line: extension from Dalston Junction to Highbury & Islington\(^5\).
- Crossrail: line 1, core scheme including stations at Canary Wharf and Whitechapel, and nearby in Custom House and Stratford.
- TfL London Cycle Hire Scheme Extension.

\(^4\) This has recently been completed.
\(^5\) This has recently been completed.
FIGURE 7.1 PLANNED AND FUNDED TRANSPORT IMPROVEMENTS IN TOWER HAMLETS
8 Issues arising from growth

Introduction

8.1 The forecast of approximately 50% increase in population and jobs in Tower Hamlets (2007-2031) will have significant impacts on the transport network, on the roads as well as on public transport. This section explores how the forecast growth will affect the highway network and the public transport network. The information presented is largely extracted from TfL’s models; ELHAM for highways and Regional Railplan for public transport (see Appendix A).

Forecasts of highway demand

8.2 Using TfL’s ELHAM model, the difference between the base year (2008) and the future year (2031) has been analysed. ELHAM outputs are for the morning peak hour (8:00 - 9:00am). The outputs have been factored up by 2.8 in order to make them comparable with data from Regional Railplan, which uses the three hour morning peak period (07:00 - 10:00am).

8.3 Figure 8.1 illustrates the forecast increases in traffic flows and shows:

- an overall increase of 30,000 car trips (+37%) to, from and within the borough;
- substantial increases (+42% to +63%) in trips to/from the east and to/from the south (+35% to +72%); and
- lower increases to/from the west and north.

8.4 These increases would have to be accommodated on the existing road network because no significant road capacity increases are planned. It should be noted that these figures are trips which start or end in Tower Hamlets and not include through trips. Through trips are also forecast to increase by around 50%.
FIGURE 8.1  CHANGES IN TRAFFIC TO/FROM AND WITHIN TOWER HAMLETS (2008 - 2031): FROM ELHAM MODEL (AM PEAK 3 HOURS)
Impact of growth on highway demand

8.5 Figure 8.2 illustrates the differences in highway flows on the road network between 2008 and 2031 using outputs from ELHAM. The key issues arising from ELHAM outputs are:

- The routes which experience the highest increase in flows and delay are the A12 (Blackwall tunnel approach), A13 and A11 as well as the A100 (Rotherhithe tunnel approach).
- Delay increases considerably around the Blackwall Tunnel and along the A12.
- Delay also increases along Old Ford Road and Roman Road in the north of the Borough.
- There are some decreases in flows and delay where traffic in the model is re-routed as roads become congested. This takes place (shown in blue) along parts of the A11 and the A12 to the north of the borough.
FIGURE 8.2  FLOWS IN VEHICLES PER HOUR, IN THE AM PEAK: DIFFERENCE BETWEEN 2008 BASE AND 2031
Public transport trips to, from, through and within the borough

8.6 Table 8.1 shows the forecast increase in public transport trips between 2007 and 2031 from TfL’s public transport model (Regional Railplan). It is notable that through traffic accounts for approximately 50% of total trips.

| TABLE 8.1 CHANGE IN PUBLIC TRANSPORT TRIPS TO/FROM/WITHIN/THROUGH THE BOROUGH (2007 - 2031) |
|---------------------------------|-----------------|---------------|-----------------|-----------------|
| 2007 ('000s) | 2031('000s) | Increase ('000s) | % increase |
| Intra Borough demand | 12 | 19 | +7 | +58% |
| To borough demand | 111 | 165 | +54 | +49% |
| From borough demand | 45 | 71 | +26 | +57% |
| Through trips | 206 | 272 | +66 | +32% |
| Total trips | 374 | 527 | +153 | +29% |

8.7 As can be expected with a 50% increase in jobs and population, trips to and from the borough increase by around 50%. Trips within the borough also increase but remain a fairly small proportion of total trips indicating a very small forecasted increase in the proportion of people living and working in the borough.

8.8 The largest increase in public transport trips is through traffic combined with substantial increases in trips to and from the borough.

Breakdown of public transport trips to and from the borough

8.9 Table 8.2 shows public transport trips to and from the borough in 2007 and 2031, broken down into the LAP areas.

8.10 Table 8.2 shows very large increases in public transport use. For example the extra 32,000 trips to LAPS 7-8 over a 3 hour peak implies around 16,000 trips in the peak hour, which is approximately the current capacity of the Jubilee line.
### TABLE 8.2 CHANGE IN PUBLIC TRANSPORT TRIPS TO/FROM ‘LAP’ AREAS AND TO/FROM BOROUGH

<table>
<thead>
<tr>
<th>Area</th>
<th>Direction</th>
<th>2007 demand ('000's)</th>
<th>2031 demand ('000's)</th>
<th>Increase ('000's)</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAPs 1-4</td>
<td>To LBTH</td>
<td>43</td>
<td>62</td>
<td>+19</td>
<td>+44%</td>
</tr>
<tr>
<td></td>
<td>From LBTH</td>
<td>18</td>
<td>28</td>
<td>+10</td>
<td>+56%</td>
</tr>
<tr>
<td>LAPs 5-6</td>
<td>To LBTH</td>
<td>5</td>
<td>8</td>
<td>+3</td>
<td>+60%</td>
</tr>
<tr>
<td></td>
<td>From LBTH</td>
<td>9</td>
<td>14</td>
<td>+5</td>
<td>+56%</td>
</tr>
<tr>
<td>LAPs 7-8</td>
<td>To LBTH</td>
<td>63</td>
<td>94</td>
<td>+32</td>
<td>+52%</td>
</tr>
<tr>
<td></td>
<td>From LBTH</td>
<td>18</td>
<td>29</td>
<td>+11</td>
<td>+61%</td>
</tr>
<tr>
<td>LBTH</td>
<td>To LBTH</td>
<td>111</td>
<td>165</td>
<td>+54</td>
<td>+49%</td>
</tr>
<tr>
<td></td>
<td>From LBTH</td>
<td>45</td>
<td>71</td>
<td>+26</td>
<td>+58%</td>
</tr>
</tbody>
</table>

**Difference in public transport demand by LAP areas:**

8.11 The demand for public transport varies between LAP areas as shown by Figure 8.3. LAPs 7-8 attract demand from outside Tower Hamlets, as the majority of the new jobs are located in LAPs 7-8. Trips to all LAP areas increase by 2031, but the increase is the greatest for LAPs 7-8 due to many more jobs generating new trips.
Public transport demand and capacity

8.12 Using Regional Railplan, the public transport lines running in each main direction have been grouped together to produce a matrix showing the demand and capacity of the lines, by direction, in 2007 and in 2031. The results are shown in Tables 8.3 and 8.4.

8.13 The tables show the significant increases in demand to/from all directions as a result of growth in the borough and the rest of east London and the Thames Gateway. The tables also show the significant increases in capacity from Crossrail and other rail improvements.

8.14 The demand/capacity ratios in the table show that on the north, south, and east corridors from the borough demand will be very close to, or slightly above capacity. Capacity is calculated by the Regional Railplan model and is a combination of the number of seats and standing passengers per hour. The latter varies according to mode and vehicle type within the mode.
### TABLE 8.3 DEMAND AND CAPACITY - NORTH, SOUTH, EAST AND WEST, GOING TO THE BOROUGH

<table>
<thead>
<tr>
<th>Direction</th>
<th>2007 demand</th>
<th>Railplan 2007 capacity</th>
<th>2007 demand/capacity</th>
<th>2031 demand</th>
<th>Railplan 2031 capacity</th>
<th>2031 demand/capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>34,000</td>
<td>30,000</td>
<td>1.1</td>
<td>45,000</td>
<td>41,000</td>
<td>1.1</td>
</tr>
<tr>
<td>South</td>
<td>54,000</td>
<td>49,000</td>
<td>1.1</td>
<td>65,000</td>
<td>62,000</td>
<td>1.0</td>
</tr>
<tr>
<td>East</td>
<td>180,000</td>
<td>179,000</td>
<td>1.0</td>
<td>240,000</td>
<td>230,000</td>
<td>1.0</td>
</tr>
<tr>
<td>West</td>
<td>48,000</td>
<td>117,000</td>
<td>0.4</td>
<td>86,000</td>
<td>197,000</td>
<td>0.4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>316,000</td>
<td>375,000</td>
<td>0.8</td>
<td>436,000</td>
<td>530,000</td>
<td>0.8</td>
</tr>
</tbody>
</table>

### TABLE 8.4 DEMAND AND CAPACITY - NORTH, SOUTH, EAST AND WEST, GOING FROM THE BOROUGH

<table>
<thead>
<tr>
<th>Direction</th>
<th>2007 demand</th>
<th>Railplan 2007 capacity</th>
<th>2007 demand/capacity</th>
<th>2031 demand</th>
<th>Railplan 2031 capacity</th>
<th>2031 demand/capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>5,000</td>
<td>23,000</td>
<td>0.2</td>
<td>7,000</td>
<td>30,000</td>
<td>0.2</td>
</tr>
<tr>
<td>South</td>
<td>32,000</td>
<td>46,000</td>
<td>0.7</td>
<td>48,000</td>
<td>62,000</td>
<td>0.7</td>
</tr>
<tr>
<td>East</td>
<td>31,000</td>
<td>148,000</td>
<td>0.2</td>
<td>46,000</td>
<td>191,000</td>
<td>0.2</td>
</tr>
<tr>
<td>West</td>
<td>114,000</td>
<td>119,000</td>
<td>0.9</td>
<td>202,000</td>
<td>202,000</td>
<td>1.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>182,000</td>
<td>336,000</td>
<td>0.5</td>
<td>303,000</td>
<td>485,000</td>
<td>0.6</td>
</tr>
</tbody>
</table>

8.15 Figure 8.4 shows the largest increases in capacity are due to Crossrail, which adds over 50,000 places going to and from the west.

8.16 Many of the London Underground lines including the Circle, District, Hammersmith & City, and Metropolitan lines will have increased capacity due to TfL’s planned upgrades. No increase in capacity is planned for the Central line but Crossrail will considerably relieve it.

8.17 There are no planned capacity increases for buses in Railplan, as bus planning is not done as far in advance. The bus network responds to development as it happens so, although the model shows no increase, there will be some increases in bus services/frequencies if the development takes place as planned.
FIGURE 8.4  PUBLIC TRANSPORT CAPACITY INCREASES BY LINE

<table>
<thead>
<tr>
<th>WEST IN</th>
<th>2007</th>
<th>2031</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>16,000</td>
<td>16,000</td>
<td>-</td>
</tr>
<tr>
<td>H &amp; C</td>
<td>8,500</td>
<td>11,000</td>
<td>-</td>
</tr>
<tr>
<td>District</td>
<td>23,000</td>
<td>33,000</td>
<td>-</td>
</tr>
<tr>
<td>Circle</td>
<td>8,600</td>
<td>11,000</td>
<td>-</td>
</tr>
<tr>
<td>Central</td>
<td>92,000</td>
<td>92,000</td>
<td>-</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>19,000</td>
<td>22,000</td>
<td>-</td>
</tr>
<tr>
<td>Crossrail</td>
<td>52,500</td>
<td>52,500</td>
<td>-</td>
</tr>
<tr>
<td>DLR</td>
<td>10,500</td>
<td>20,000</td>
<td>9,500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEST OUT</th>
<th>2007</th>
<th>2031</th>
<th>Difference</th>
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</thead>
<tbody>
<tr>
<td>Bus</td>
<td>16,000</td>
<td>16,000</td>
<td>-</td>
</tr>
<tr>
<td>H &amp; C</td>
<td>8,500</td>
<td>11,000</td>
<td>-</td>
</tr>
<tr>
<td>District</td>
<td>23,000</td>
<td>33,000</td>
<td>-</td>
</tr>
<tr>
<td>Circle</td>
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</tr>
<tr>
<td>Central</td>
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<td>92,000</td>
<td>-</td>
</tr>
<tr>
<td>Metropolitan</td>
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<td>22,000</td>
<td>-</td>
</tr>
<tr>
<td>Crossrail</td>
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<td>52,500</td>
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</tr>
<tr>
<td>DLR</td>
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<td>20,000</td>
<td>9,500</td>
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<table>
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<th>2031</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>1,000</td>
<td>1,000</td>
<td>-</td>
</tr>
<tr>
<td>East London (tube)</td>
<td>8,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jubilee</td>
<td>28,500</td>
<td>34,500</td>
<td>-</td>
</tr>
<tr>
<td>East London line</td>
<td>-</td>
<td>12,500</td>
<td>12,500</td>
</tr>
<tr>
<td>DLR</td>
<td>12,000</td>
<td>24,000</td>
<td>12,000</td>
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</table>

<table>
<thead>
<tr>
<th>SOUTH OUT</th>
<th>2007</th>
<th>2031</th>
<th>Difference</th>
</tr>
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<tbody>
<tr>
<td>Bus</td>
<td>1,000</td>
<td>1,000</td>
<td>-</td>
</tr>
<tr>
<td>East London (tube)</td>
<td>8,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jubilee</td>
<td>28,500</td>
<td>34,500</td>
<td>-</td>
</tr>
<tr>
<td>East London line</td>
<td>-</td>
<td>12,500</td>
<td>12,500</td>
</tr>
<tr>
<td>DLR</td>
<td>12,000</td>
<td>24,000</td>
<td>12,000</td>
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<table>
<thead>
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<th>EAST IN</th>
<th>2007</th>
<th>2031</th>
<th>Difference</th>
</tr>
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<tbody>
<tr>
<td>Bus</td>
<td>8,500</td>
<td>7,500</td>
<td>-</td>
</tr>
<tr>
<td>H &amp; C</td>
<td>8,000</td>
<td>11,000</td>
<td>3,000</td>
</tr>
<tr>
<td>District</td>
<td>23,000</td>
<td>34,000</td>
<td>11,000</td>
</tr>
<tr>
<td>Jubilee</td>
<td>26,000</td>
<td>34,000</td>
<td>8,000</td>
</tr>
<tr>
<td>Crossrail</td>
<td>26,500</td>
<td>26,500</td>
<td>-</td>
</tr>
<tr>
<td>Eastern</td>
<td>11,500</td>
<td>11,500</td>
<td>-</td>
</tr>
<tr>
<td>DLR</td>
<td>10,500</td>
<td>8,000</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EAST OUT</th>
<th>2007</th>
<th>2031</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>4,000</td>
<td>4,000</td>
<td>-</td>
</tr>
<tr>
<td>H &amp; C</td>
<td>8,000</td>
<td>11,000</td>
<td>3,000</td>
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<tr>
<td>District</td>
<td>23,000</td>
<td>34,500</td>
<td>11,000</td>
</tr>
<tr>
<td>Jubilee</td>
<td>23,000</td>
<td>34,000</td>
<td>11,500</td>
</tr>
<tr>
<td>Crossrail</td>
<td>27,500</td>
<td>27,500</td>
<td>-</td>
</tr>
<tr>
<td>Eastern</td>
<td>23,000</td>
<td>26,000</td>
<td>3,000</td>
</tr>
<tr>
<td>DLR</td>
<td>6,500</td>
<td>8,000</td>
<td>1,500</td>
</tr>
</tbody>
</table>
Crowding on rail services

8.18 Despite the capacity increases, and the fact that when grouped together there seems to be spare capacity on some public transport corridors, there will still be crowding on some lines in 2031.

8.19 The Railplan plots of crowding, provided by Transport for London, on the National Rail network (Figure 8.5) show that there will be severe overcrowding on Crossrail in the future year (2031), westbound into central London. The East London Line (Overground) will also be severely crowded northbound.

8.20 There will be spare capacity on the Network Rail lines into Liverpool Street because passengers will have switched to Crossrail.

8.21 Figure 8.6 shows that there will still be significant crowding on the Central line westbound, between Mile End and Liverpool Street.

8.22 The Jubilee line will also be very crowded.
Crowding on London Underground and Docklands Light Railway

FIGURE 8.5 LEVEL OF CROWDING ON INDIVIDUAL NATIONAL RAIL LINES (2031)

FIGURE 8.6 LEVEL OF CROWDING ON INDIVIDUAL UNDERGROUND / DLR LINES (2031)
Summary and conclusions on the impact of growth

8.23 In conclusion, there will be very high levels of population growth in Tower Hamlets (2007-2031), with 66,000 new residents and 53,000 new jobs. Tower Hamlets will accommodate 9% of London’s growth when it currently only has 3% of London’s population. It will take 12% of London’s job growth which will result in it having 6% of London’s jobs by 2031.

8.24 This growth will result in a very large increase in demand, both for road-based and public transport trips. With an approximate 50% increase in jobs and homes, trips to and from the borough will increase by 50%.

8.25 TfL’s forecasts suggests that delays and congestion on the highway network will increase significantly as a result of a 37% increase in vehicle trips to, from and within the borough, combined with a 50% increase in through trips. If this materialises, this would lead to peak spreading with delays and congestion through much of the working day, which will also affect bus operations, walking and cycling. With these delays some car users may choose to switch to public transport which would increase the forecasts used in this report.

8.26 As no significant increase in highway capacity is planned, it is unlikely that the forecast increases in traffic can be accommodated without compromising the operation of the highway network.

8.27 As part of the East London Sub-regional Transport Plan, TfL is undertaking a study to consider the implications of growth in all the Opportunity Areas across the sub-region. This work will aim to progress further the following areas:

- Establish a profile of growth gaining a greater understanding of the probabilities of the growth taking place in the short, medium and long term.
- Consider the impacts of the growth on key stresses on the network. For example, Jubilee Line, DLR, A12, and A13.
- What mode shift assumptions and behavioural change is needed to accommodate growth.
- What are the links and issues of how the growth will address convergence across the region, particularly in the 6 host boroughs.
- How to influence development to maximise existing transport networks.
There will be an additional 153,000 public transport trips by 2031, with the largest increase in through-trips due to growth in central and east London and the Thames Gateway.

The planned extra rail capacity is essential to provide enough capacity to accommodate the planned growth.

It is recommended that Tower Hamlets continues to work with TfL and the government to ensure that the council funded rail and cycle schemes are delivered on schedule and that the detailed designs e.g. stations/interchange facilities, maximise the benefits to Tower Hamlets.

Forecasts show that Crossrail will be very crowded by 2031 in both directions. The Central line will remain very crowded going into London and the Jubilee line will be crowded in both directions. There will be capacity in the counter-peak direction on some lines.

These results show that there will be a need for more local sustainable transport in the form of more buses, as well as local walking and cycling interventions to encourage people to switch modes to walking and cycling, and therefore ease congestion and crowding on the road and public transport networks.

The number of freight vehicles, especially vans, is increasing and adds to through traffic. There are a number of measures to mitigate this, which are explored in the next section.
9 Interventions to address the issues identified

Introduction

9.1 Given the significant pressures on Tower Hamlets’ transport network resulting from the anticipated substantial growth in the borough, a range of interventions which will help to mitigate the impact have been developed.

Long list of interventions

9.2 A long list of 62 options was developed by Steer Davies Gleave, informed by stakeholder workshops, reviewing policy and strategy documents and developing some original ideas. Transport for London and Tower Hamlets officers provided comments on the interventions which have been used in the appraisal process and helped to eliminate some of the ‘non starter’ interventions. The appraisal of options is set out in Appendix B and the eliminated interventions are listed in Appendix C.

Appraisal technique

9.3 The prioritisation of projects emerging from this study was undertaken by a bespoke appraisal framework that captured those objectives specific to Tower Hamlets (from the second Local Implementation Plan) and that also directly map to the London-wide goals set out in the Mayor’s Transport Strategy. The approach is aligned to Transport for London’s Strategic Assessment Framework (SAF). The SAF is a multi-criteria assessment framework designed to enable assessment and comparison of projects and programmes against the Mayor’s Transport Strategy goals. The SAF was adapted to fit this strategy.

9.4 As well as scoring each intervention on a scale of +3 to -3 according to how it fits with each objective, other relevant ‘delivery’ information was collected and presented alongside, such as cost, timescale, delivery lead, etc.
Appraisal framework

9.5 The key headings in the framework, against which each intervention has been ‘scored’ or information filled in, are:

- Reference number
- Category
- Title
- Issues addressed
- Location
- Score against each Local Implementation Plan objective
- Total score against all objectives
- Lead promoter
- Time frame
- Cost
- Technical feasibility
- Delivery risk
- Source
- Commentary

Presenting the interventions

9.6 It was decided that the best way to present the numerous interventions was to group them into ‘short’ (next 5 years), ‘medium’ (5-15 years), and ‘long’ (15 - 20+ years) term. These are presented, along with maps, in the next few pages. It should be noted that, when referring to ‘cost’, this is the cost of the whole project, not just the cost to Tower Hamlets. The cost categories are very low (<£100k), low (£100k-£1m), medium (£1m-£10m), high (£10m-£50m) and very high (>£50m).

Short term interventions (0 - 5 years)

9.7 In the next 5 years, there are a number of interventions which have been put forward to mitigate the crowding and congestion issues identified in previous sections. These are described below and summarised in Table 9.1.

Transport Interchange Area (TIA) programme (Intervention 11)

9.8 This intervention is connected with the designations of transport interchange spatial policy areas. The designations were completed recently, using TfL’s Interchange Best Practice Guidance (IBPG).
9.9 There are 12 interchanges involved and Tower Hamlets intend to roll out this programme, making improvements at the following stations:

- Limehouse
- Whitechapel
- Mile End
- Shadwell
- Devons Road
- Bromley-by-Bow
- Bethnal Green (NR & LUL)
- Crossharbour
- Hackney Wick
- Cambridge Heath
- Tower Hill
- Bow Road and Bow Church

9.10 Overall the scheme is considered to be low/medium cost and low deliverability risk but this does depend on what exactly will take place at each station. As the intervention is quite open and encompasses so many interchanges, it may be high cost in some places but low cost in others.

9.11 There are already some specific schemes at some of these stations which can be noted separately:

- Improvements to Bromley-by-Bow station (better station access and enhanced capacity). This is serving an area where a significant level of growth is expected. London Thames Gateway Development Corporation has done a study looking at capacity and access (Bromley by Bow Station Stage C Design Report, 2010) and further work is ongoing between LTGDC and London Underground to take this scheme forward.

- Improvements to better connect Bow Church DLR station to Bow Road station for the Hammersmith & City, and District Lines. This was identified at Workshop 2 for Tower Hamlets Council to take forward.

- Improve the walking links, which are currently quite poor, to Tower Gateway station - increased use of this station may relieve pressure on the Bank DLR terminus. This scheme was suggested by Transport for London.
It is important not to forget the key interchanges outside the borough, which have an effect on Tower Hamlets. These include London Bridge, Stratford, Fenchurch Street, Canning Town, West Ham and Bank.

**Reduce flexibility of parking permits (Intervention 47)**

Currently, Tower Hamlets residents parking permit scheme is comparatively very lenient, with a lot of flexibility and very little deterrent built-in for multiple car-ownership. Permit holders are entitled to unlimited parking within their own zone and up to 3 hours per day in any other zone. Residents permits cost £55 per annum (3rd and subsequent permits per household increased to £200).

The high level of flexibility and low cost could be changed to make car ownership less attractive, so deterring car trips and encouraging more sustainable modes to be used. This could be done in the short term. The cost would be low and it could produce additional money to feed back into transport.

It should be noted that many other boroughs such as nearby Greenwich have much stricter parking permit rules and higher costs. Further work could be done investigating this and determining what might be suitable for Tower Hamlets.

**Increased frequency/capacity of ferries (Intervention 2)**

This medium cost scheme, with low deliverability risk, was raised at Workshop 2. It also features in the London Development Agency’s Pier Plan.

The intervention includes increasing frequency, capacity and availability of existing ferry routes across the Thames. It could also include extending existing piers.

**Area-based, strengthened car parking standards (Intervention 49)**

Currently parking standards for new developments are a maximum of 0.5 spaces per dwelling for new residential and 1 space per 1250m² Gross Floor Area, for new Office/ Light Industrial.

Car parking standards, for new residential, retail and office development could be revised to address the anticipated increase in vehicle trips from growth. The 18,428 remaining/not permitted units required in the Core Strategy would mean over 9000 additional parking spaces, according to the current residential standard of 0.5.
This would have a significant impact on congestion. The Clear Zone Plan recommends all future development within the zone should be car free to ensure zero additional car trips are generated by new development.

9.20 This intervention would be low cost but medium deliverability risk. It was raised for discussion at Workshop 2.

**Awareness campaign about cost and impact of motoring (Intervention 59)**

9.21 This intervention was raised at Workshop 3 by key stakeholders. It comes from an assumption that Tower Hamlets’ car ownership levels appear to be still growing. The issue of congestion has been discussed in previous sections and this intervention would help to mitigate this, by potentially reducing car ownership and use.

9.22 Awareness techniques such as advertising, targeted campaigns and personalised travel planning are possible - further investigation of this intervention is necessary to define it further.

9.23 The intervention is provisionally expected to be low cost and low deliverability risk. It would help to mitigate road congestion.

**Measures to increase cycling and improve cycle infrastructure (Intervention 38)**

9.24 Although Tower Hamlets already has good cycling facilities including two Cycle Superhighways, further provision can be made to encourage cycling. This would take some public transport or car trips off the roads, helping to address congestion and crowding issues.

9.25 The intervention includes introducing cycle hubs at Whitechapel, Shadwell station and other locations. These could include cycle hire, parking, shop, repairs, cycle training, etc.

9.26 A further aspect to these improvements are a number of canal towpath upgrades along the River Lea. In addition, more cycle parking in existing residential areas was raised as a possible way of encouraging cycling. Usually only new developments are allocated cycle parking (often as part of Section 106 agreements), but there are also opportunities to improve cycle facilities in residential estates.
Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

9.27 Tower Hamlets could also have more cycle superhighways - particularly along the busy corridor between the City and Canary Wharf (there is already a busy cycle route here but a further one, or cycle path widening, might be possible). As part of the Clear Zone initiative, the Council is committed to developing feeder routes to complement the Cycle Superhighways (CS). One route which has been identified is Vallance Road/New Road/Cannon Street Road which would provide a better north - south cycling connection in the borough.

9.28 At Workshop 2 these interventions were discussed, along with one more which was to improve the perception of safety on cycle lanes by delineating them more or using rumble strips to identify the lane better. A further suggestion was to produce cycling difficulty maps to identify which routes are ‘easy’ for cyclists and which are more difficult. This information has been included in Urban Transport Plans in Hertfordshire and elsewhere and could be easily done for the borough.

9.29 Due to the variety of measures, it was decided that this intervention should be classified as medium cost (£1m - £10m) but was classed as low deliverability risk.

Summary of short term interventions

9.30 The following table summarises the short term interventions. They are listed in order of how well they scored against Objective 3 of the LIP out of a scale of -3 to +3, and secondly in order of how well they scored overall against all the objectives, all 9 of which had a scale of -3 to +3.
**TABLE 9.1 SHORT TERM INTERVENTIONS (0-5 YEARS)**

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Issue addressed</th>
<th>LIP Objective 3 score</th>
<th>All LIP objectives score</th>
<th>Cost</th>
<th>Deliverability risk</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Transport Interchange Area (TIA) programme</td>
<td>Public transport capacity; Accessibility</td>
<td>+3</td>
<td>+10</td>
<td>Low/Med</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>47</td>
<td>Reduce flexibility of parking permits</td>
<td>Car demand management</td>
<td>+3</td>
<td>+10</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Increased frequency/capacity of ferries</td>
<td>Cross-river connectivity &amp; capacity.</td>
<td>+2</td>
<td>+4</td>
<td>Med</td>
<td>Low</td>
<td>Med</td>
</tr>
<tr>
<td>49</td>
<td>Area-based, strengthened car parking standards</td>
<td>Car demand management; Equity</td>
<td>+2</td>
<td>+5</td>
<td>Low</td>
<td>Med</td>
<td>High</td>
</tr>
<tr>
<td>59</td>
<td>Awareness campaign about cost and impact of motoring</td>
<td>Car demand management</td>
<td>+2</td>
<td>+10</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>38</td>
<td>Significant measures to increase cycling and improve cycle infrastructure</td>
<td>Lack of cycling</td>
<td>+1</td>
<td>+10</td>
<td>Med</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

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6 Costs: Very High (>£50m), High (£10m-£50m), Med (£1m-£10m), Low (£100k-£1m), Very Low (<£100k)
In the shorter term, the measures are primarily Smarter Choice type interventions and focussed on interchanges, with a number of Parking policy interventions and increased frequency/capacity of ferries. These are lower cost to implement, more achievable and deliverable.
Medium term interventions (5-15 years)

9.32 In the next 5-15 years, some of the key planned public transport capacity enhancements such as Crossrail will still be under construction (Crossrail is set to open in 2018 and the tube upgrades are scheduled to be completed by 2020).

9.33 During this time, the following interventions have been suggested to help mitigate the public transport crowding problems, and highway congestion. They are summarised in Table 9.2.

Capacity improvements at Bank Station (Intervention 58)

9.34 Lack of capacity at Bank makes it a significant bottleneck for travellers trying to interchange from the DLR to other lines and modes. This station is the ‘gateway’ to Tower Hamlets for many. At Workshop 3 it was discussed that the station is not coping well with the passengers who use it at present.

9.35 This scheme is currently being planned by TfL and is expected to be complete by 2021. It has been estimated to have a very high cost and medium deliverability risk.

Bus Bridge at Sugar House Lane (Intervention 4)

9.36 This intervention was put forward in a number of studies, such as the A12 Transport Capacity and Access Study, the Bromley by Bow Land Use and Design Brief, and the Sugar House Lane and Three Mills Land Use and Development Brief. It was also raised at Workshop 2.

9.37 The intervention consists of a new bus/pedestrian/cycle bridge along Sugar House Lane, crossing River Lea Navigation to link with Three Mills Lane. It will allow direct bus priority between Stratford and Three Mills, the new Tesco site, and further to the west and south. This would encourage bus use in this area (LAPs 5-6), and draw people from their cars or from the already crowded Underground.

9.38 The scheme is at a quite advanced stage. In a recent news release (East London Advertiser, June 23rd 2011) the bridge is described as being part of a new development by East Thames and Southern Housing group and will be part of a planning application to London Thames Gateway Development Corporation soon.

9.39 The scheme is medium cost, estimated at £3.5million in the A12 study. However, due to its advanced stage, it is relatively deliverable.
TfL have commented that they are “strongly in support of this. It is necessary to improve the accessibility of the Bromley-by-Bow site too”.

**Docklands Light Railway double-tracking to Stratford (Intervention 23)**

This intervention, derived from workshop 2 and the East London Sub-Regional Transport Plan, involves double-tracking the DLR line between Bow Church and Stratford. Two single-track sections currently limit service frequency between Stratford and Poplar. Double tracking would allow higher frequency services. This would enable the DLR to carry more passengers.

The scheme is high cost, but given a rating of ‘medium’ deliverability, as the scheme is already being developed by TfL and supported through the East London Transport Plan.

**Encourage use of public transport outside peak times and in contra-peak direction (Intervention 39)**

This intervention, to encourage the use of public transport outside of peak times and in the contra peak direction during peak times, was put forward at the second workshop in order to utilise spare capacity which can be seen in the crowding plots in Figure 8.6 and Figure 8.6).

This could be done by a combination of land use planning changes over time by, in broad terms, locating more employment in the east of the borough and the north. For it to be possible to use public transport more in the out of peak hours, more flexible working must be allowed, ‘spreading the peak’ over more hours and using fiscal incentives.

The intervention is at very early stages of development and further study is needed. It is expected to be low cost, and have a high risk of deliverability.

**Working with TfL to ensure bus services are meeting the demands of growth (Intervention 43)**

This intervention is for providing extra bus capacity to meet demand. It includes increasing bus frequencies and where possible, size of buses (single to double decker). TfL have pointed out that “many routes in Tower Hamlets have to be single deck vehicles due to road restrictions (they serve high density housing estates). In these cases, frequency enhancements would have to provide extra capacity”.

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9.47 TfL have also suggested that Tower Hamlets establish an area-based tariff approach for s106 to pool contributions so that the cumulative impact of development can be mitigated.

9.48 One major focus for where bus services must meet demand is bus capacity into/out of the Isle of Dogs. Improvements here would encourage use of bus rather than congested Underground lines. This will be most effective in removing congestion along routes where bus routes replicate Underground lines. It will be less effective on tackling crowding on, for example, the Jubilee line between London Bridge and Canary Wharf.

9.49 Another specific area where there is a perceived need for more buses is along north-south corridors across railway lines.

9.50 The intervention is quite broad so hard to define in terms of costs and deliverability. It is seen to be overall high/medium cost, but low deliverability risk as TfL Buses already try to do this as part of their standard practice. The intervention is for Tower Hamlets to work with TfL Buses to ensure bus services are enhanced to accommodate the growth in their borough.

**Running more Crossrail trains via Canary Wharf (Intervention 56)**

9.51 Although Crossrail provides significant additional east-west capacity, there is also a high proportion of through traffic. It would be prudent to review the demand closer to opening date, to derive the most appropriate balance of services between the Stratford and Canary Wharf branches.

9.52 TfL have responded saying “the capacity is needed on the Great Eastern route. However, theoretically Crossrail could support an additional 6 trains per hour in the peak which could be routed via Canary Wharf”. This would result in 6 fewer trains per hour on the Stratford branch.

9.53 TfL also offered information on the possibility of frequency enhancements on other rail lines: “there is the potential to increase frequencies on the North London Line to 8 trains per hour off peak, and on the West Anglia and Essex Thameside routes off peak only. Increase in train frequency on the East London Line is unlikely to be possible once the extension to Clapham Junction opens, which will result in 16 trains per hour south of Dalston Junction.”

9.54 Intervention 56 is seen to be very high cost and ‘medium’ risk for delivery.
**New and enhanced connections to/from/within Fish Island (Intervention 5)**

9.55 This intervention came directly from the Fish Island Area Action Plan and the Olympic Legacy Strategic Planning Guidance. It was also mentioned in Workshop 2.

9.56 The Fish Island AAP currently considers a wide range of new and enhanced crossings to improve access between the area and Bow, Victoria Park and the Olympic site and to enhance the internal pedestrian and cycle networks.

9.57 The next stage in the process will be to identify the connections that will deliver most significant benefits in supporting the regeneration of Fish Island. This process will also establish the necessary detail of these connections including whether they support vehicular traffic as well as pedestrian/cycle.

9.58 These schemes will open up the development area to new routes, dispersing the pedestrian and vehicle flows, reducing congestion and crowding.

9.59 The intervention is expected to be high cost although there is potential for funding to be secured through planning obligations as developments in the area come forward. The delivery risk is ‘medium’.

**Increasing river capacities for freight, including bringing wharfs back into use (Intervention 44)**

9.60 This intervention, raised at Workshop 2, is to enhance river capacity for freight. With such a large increase in population, there will be by an accompanying increase in the amount of freight transported around and through the borough. If some of this can be transported using the River Thames and other waterways serving Tower Hamlets this will help take HGVs and vans off the roads. This is in the long term category (see intervention 62).

9.61 The intervention is not well developed and would need further work. At this early stage it has been estimated at high cost and high deliverability risk as the scheme is unexplored.
Measures to optimise sustainable freight movement and minimise impacts (Intervention 60)

9.62 This intervention seek to identify measures to reduce the impacts of freight travel. This may include consolidation centres, freight advisory routes, better use of rail freight and safeguarded wharfs, shared use lanes, etc. These measures will mean that fewer freight vehicles will be on the roads (consolidation centres), they will not use up unnecessary mileage by getting lost (freight advisory routes) and more freight will be carried by means other than motor vehicle (wharfs). The shared use of bus lane measure would enable lorries to use bus lanes and reduce congestion. However, this would have to be a London-wide policy to be effective.

9.63 The exact nature of this intervention would need to be studied in further detail. It is currently expected to be of low/medium cost and medium deliverability risk. The intervention was identified in Workshop 3.

Tolling cross-river tunnels (Intervention 26)

9.64 This intervention is to introduce toll charges to Blackwall and Rotherhithe tunnels to discourage use and raise revenue for transport. The intervention was raised at Workshop 2 and is already under consideration by TfL for the financing of other, new road tunnels (at Silvertown - see intervention 62).

9.65 Tolling these tunnel crossings would add a fiscal discouragement to driving and therefore encourage a shift from driving to more sustainable modes. The impact of tolling the tunnels mentioned has not yet been modelled making it difficult to know how much traffic might be shifted onto public transport. It may be that some public transport could be funded with toll revenue, thus enhancing alternatives to driving (especially buses). Tolling may also even remove some trips from the network as people decide not to travel. Further study is necessary.

9.66 The intervention is expected to be medium/high cost and high deliverability risk due to the political acceptability issues of charging for something which was previously free. It should also be noted that tolling can cause re routing of highway trips and may negatively impact other river crossings.
New pedestrian and cycle crossings across the Thames
(Intervention 1)

9.67 This intervention was raised at Workshop 2. It has a high cost but low deliverability risk. The new routes could be between Rotherhithe & Wapping, and various places around the Isle of Dogs. It would be necessary to construct new river passenger piers for ferry crossings.

9.68 TfL have commented that “A new link between Rotherhithe and Wapping would duplicate the East London Line. It might be that an alternative location would be more appropriate. Unless, the ferry was assumed to be zero cost to the passenger, in which case it would be providing a free link across the river. However, this would lead to funding implications.”

9.69 It is noted that a new cable car for pedestrians and cyclists is under construction just outside the borough, linking North Greenwich and the ExCel centre in the Royal Docks.

Summary of medium term interventions

9.70 Table 9.2 summarises the medium term interventions, first in order of how well they scored against Objective 3 of the LIP, and secondly in order of how well they scored overall against all the objectives.
### TABLE 9.2 MEDIUM TERM INTERVENTIONS (5-15 YEARS)

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Issue addressed</th>
<th>LIP Objective 3 score</th>
<th>Objectives fit</th>
<th>Cost</th>
<th>Deliverability risk</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>Capacity improvements at Bank Station</td>
<td>Public transport capacity</td>
<td>+3</td>
<td>+9</td>
<td>Very high</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Bus bridge at Sugar House Lane - also for pedestrian &amp; cycle use.</td>
<td>Access across River Lea, Bus priority</td>
<td>+3</td>
<td>+14</td>
<td>Med</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>23</td>
<td>Docklands Light Railway double-tracking to Stratford</td>
<td>Public transport frequency and capacity</td>
<td>+3</td>
<td>+8</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>39</td>
<td>Encourage use of public transport outside peak times and in contra-peak direction</td>
<td>Public transport capacity</td>
<td>+3</td>
<td>+6</td>
<td>Low</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>43</td>
<td>Working with TfL to ensure bus services are meeting the demands of growth</td>
<td>Increase public transport capacity</td>
<td>+3</td>
<td>+10</td>
<td>High/Med</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>56</td>
<td>Run more Crossrail trains via Canary Wharf and fewer via Stratford if required and feasible</td>
<td>Public transport capacity</td>
<td>+3</td>
<td>+13</td>
<td>Very high</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>5</td>
<td>New and enhanced connections to/from/within Fish Island</td>
<td>Severance; highway capacity</td>
<td>+2</td>
<td>+8</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>44</td>
<td>Increasing river capacities for freight, including bringing wharfs back into use</td>
<td>Cross-river connectivity; Cross-river capacity.</td>
<td>+2</td>
<td>+10</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>60</td>
<td>Measures to optimise sustainable freight movement and minimise impacts</td>
<td>Freight movement</td>
<td>+2</td>
<td>+4</td>
<td>Low/Med</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>26</td>
<td>Tolling cross-river tunnels</td>
<td>Cross-river capacity, Revenue raising</td>
<td>+1</td>
<td>+4</td>
<td>Med/High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>1</td>
<td>New pedestrian and cycle crossings across the Thames</td>
<td>Cross-river connectivity &amp; capacity.</td>
<td>+1</td>
<td>+7</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

7 Costs: Very High (>£50m), High (£10m-£50m), Med (£1m-£10m), Low (£100k-£1m), Very Low (<£100k)
In the medium term, some significant Public Transport interventions are achievable. These include some specific schemes such as a bus bridge at Sugar House Lane and double tracking on the DLR to Stratford, and more strategic interventions such as encouraging the use of inter-peak and contraflow times on public transport routes and enhancements to the bus services.
9.72 A significant intervention for the new emerging development area in Fish Island is developing new connections throughout the area. Although these are assumed to be highways, some may be walking and cycling only.

9.73 The river, a persistent barrier to movement, is again the focus in the medium term, where improvements such as increasing cross river capacity and bringing wharfs back into use are included.

Long term interventions (15+ years)

9.74 Long term interventions have been identified for the period towards the end of the Core Strategy (2025) and beyond. By this period many of the projections for the increase in homes and jobs in the borough would have been achieved and most of the key transport interventions on Transport for London’s current list (see Table 7.1) would be in place.

9.75 The following interventions have been put forward for the long term and are summarised in Table 9.3.

Chelsea-Hackney line (CHL) - also known as Crossrail 2 (Intervention 10)

9.76 Depending on the chosen route the CHL could take some of the through passengers, therefore reducing the number of passengers on the Central Line, which as shown in Figure 8.6 will still be crowded in 2031.

9.77 The main purpose of the CHL scheme is to address the overcrowding projections for rail in London, but the case for the line has recently been enhanced with the emergence of Euston as the London terminus of the planned High Speed 2 line. The CHL could interchange at Euston providing extra capacity at Euston for connecting HS2 passengers.

9.78 One of the current options for the line is via Leytonstone. This would allow many people who are simply passing through the borough to interchange and use the CHL rather than the Central line, relieving this busy tube line considerably and releasing space for people making trips to/from Tower Hamlets.

9.79 A station serving Hackney Wick/Fish Island would significantly improve the accessibility and connectivity and help the sustainable regeneration of Fish Island, the Olympic Park and environs as well as enhancing public transport capacity in Tower Hamlets.
TfL has commented: “The alignment for Crossrail 2 is currently under review, the possible benefit to Tower Hamlets will depend on that review. The Strategy should take into account this review and the various options being considered”

The intervention has very high costs and very high deliverability risks.

More public transport from south and east to Isle of Dogs (Intervention 55)

Modelling results show demand will be close to capacity from south of the borough to the Isle of Dogs. Some capacity enhancement may be necessary to facilitate of Isle of Dogs employees coming in from the south.

This scheme is at the very early stages of development, is undefined and would require further work. Assuming a bus based solution it would be medium/high cost.

Silvertown Crossing scheme (Intervention 62)

The proposed but currently unfunded Silvertown crossing would potentially help to improve the resilience of the local highway network and reduce the impact of incidents at Blackwall Tunnel. This might have the impact of easing some of the congestion issues which were highlighted in the model outputs in Figure 3.11.

However, Tower Hamlets will reserve judgement on support for scheme until more information is known about its impacts. The scheme is being modelled by TfL but the results are not yet known. It is possible that the scheme will worsen congestion in Tower Hamlets, rather than improve it, as it adds additional highway capacity. It is noted that the scheme’s core intention is to improve resilience not address congestion.

The intervention is classed as very high costs but only medium deliverability as TfL is proposing it will be funded from road tolls.

New fleet of more capacious DLR trains (Intervention 22)

The TfL model output in Figure 8.6 shows crowding on the DLR (2-3 people standing per metre square) in the future year, and at workshops this was felt by stakeholders to be an underestimate.

A new articulated fleet could add an extra 10-20% capacity onto the DLR network, representing a significant increase. However, the detail of this intervention is to be determined by further work.
9.89 Currently, the cost estimate is very high, and the deliverability risk is also very high.

Road User Charging/Tolling (Intervention 27)
9.90 This intervention is to introduce some fiscal discouragement to car use, such as road user charging (extending the congestion charge zone or charging for particular roads).

9.91 It is provisionally expected to be very high cost and high deliverability risk and it was identified in Workshop 2.

Bus route 25 to become a high capacity transit corridor (Intervention 31)
9.92 The feasibility of this proposal has been investigated in the Eastend Tram Study (2008), as well as being raised at Workshop 2. A scheme of this nature (such as a tram, trolleybus or bus rapid transit) would offer a higher capacity for this already very busy bus route. Tram/trolleybus/bus rapid transit networks have a series of benefits, including high capacity, accessible, on-street/off-street running on fixed priority corridors that can attract greater numbers of car drivers to switch to public transport than traditional bus services and can also have a positive impact on regeneration and the local environment. This could be part of any future TfL London transit/tram network.

9.93 TfL has commented on this intervention, saying “This bus route [25] will be converted from articulated bus to double deck operation in June [2011] which will enhance capacity. There is also likely to be some abstraction with Crossrail opening, providing a faster, more direct link across London, meaning that a business case for a tram is unlikely to be established. TfL is not progressing new tram schemes at present.”

9.94 Although the current policy position of TfL is noted, this proposed public transport improvement is proposed for the long term by which time TfL may be pursuing tram type schemes.

9.95 This intervention is expected to be ‘very high’ cost and ‘high’ deliverability risk.
Bow Roundabout improvements (Intervention 8)

Various proposals have been put forward for improving the congested Bow roundabout (at the junction of the A12 and A11) as part of long term spatial planning for the area. The favoured proposal, which was presented in the A12 Transport Capacity and Access Study, as well as raised at Workshop 2, was the removal of the flyover with possible improvements to Pudding Mill Lane Junction and the creation of a new four-way junction linking Sugar House Lane with Pudding Mill Lane.

This is a long term solution for Bow roundabout. In the meantime, there is an active scheme to add pedestrian/ cyclist crossings across each arm of the roundabout.

The full scheme is expected to be high cost and high deliverability risk. As this is a ‘highway’ improvement it did not score well against the LIP objectives, which often favour public transport, walking and cycling schemes, which are more sustainable than the car. This would, however, provide better junction movement and improve highway capacity, so is relevant to this strategy.

Workplace Parking levy (Intervention 25)

This is a scheme to introduce a charge on employers who provide workplace parking. Such a scheme is soon to be active in Nottingham, and all money raised will be put back into improving local transport. The scheme only applies to companies with over 10 employees. Further work would needed to be done to investigate the scheme’s merits and workings for Tower Hamlets, but it would result in more money to spend on local transport together with a fiscal discouragement of car use, encouraging people to use public transport instead.

The intervention is expected to be low cost to implement, but would be high risk to deliver, given the risk of political acceptability for such a scheme. It is in the long term category at present as no such scheme is yet in operation in the UK.
# TABLE 9.3  LONG TERM INTERVENTIONS (15+ YEARS)

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Issue addressed</th>
<th>LIP Objective 3 score</th>
<th>Objectives fit</th>
<th>Cost?</th>
<th>Deliverability risk</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Chelsea-Hackney line (also known as Crossrail 2)</td>
<td>PT congestion; Accessibility, connectivity &amp; regeneration</td>
<td>+3</td>
<td>+8</td>
<td>Very high</td>
<td>Very high</td>
<td>High</td>
</tr>
<tr>
<td>55</td>
<td>More public transport from south and east to Isle of Dogs</td>
<td>Public transport capacity</td>
<td>+3</td>
<td>+15</td>
<td>Med/High</td>
<td>Very high</td>
<td>High</td>
</tr>
<tr>
<td>62</td>
<td>Silvertown Crossing scheme</td>
<td>Highway capacity; congestion</td>
<td>+3</td>
<td>0</td>
<td>Very high</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>22</td>
<td>New fleet of more capacious DLR trains</td>
<td>Public transport capacity</td>
<td>+2</td>
<td>+7</td>
<td>Very high</td>
<td>Very high</td>
<td>Medium</td>
</tr>
<tr>
<td>27</td>
<td>Road User Charging/tolling</td>
<td>Car demand management</td>
<td>+2</td>
<td>+12</td>
<td>Very high</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>31</td>
<td>Bus route 25 becomes a high capacity transit corridor</td>
<td>Public transport capacity (East-west)</td>
<td>+2</td>
<td>+7</td>
<td>Very high</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>8</td>
<td>Bow Roundabout improvements</td>
<td>Highway capacity; congestion</td>
<td>+1</td>
<td>-5</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>25</td>
<td>Workplace Parking levy</td>
<td>Car demand management, parking stress</td>
<td>+1</td>
<td>+6</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

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8 Costs: Very High (>£50m), High (£10m-£50m), Med (£1m-£10m), Low (£100k-£1m), Very Low (<£100k)

9 Bus route 25 currently operates from Oxford Circus to Ilford
FIGURE 9.3  LONG TERM INTERVENTIONS MAP
In the long term, there are a number of public transport, interchange and highway improvements. The schemes are generally of a larger, more expensive scale. The Chelsea-Hackney line features, which is also in the Mayor’s Transport Strategy as an unfunded scheme. There are some less well defined schemes such as ‘more high capacity public transport from south and east to Isle of Dogs’ which directly address the issues picked up in Section 8.

Other key schemes such as capacity improvements at Bank and more capacious trains on the DLR also directly address the capacity issues on lines and at stations which will be under pressure by 2031.

There are a number of more controversial interventions at this stage, such as the Silvertown Crossing (where Tower Hamlets will reserve formal support until more information on the impact of the scheme is known) and bus route 25 becoming a transit corridor, as TfL is currently not supporting tram schemes (although this may change in the future). Workplace parking levies are also yet to be implemented in the UK but one scheme in Nottingham is pioneering the way, and others could be in place in the long term.

A map of all the interventions together is shown in Figure 9.4.
FIGURE 9.4 INTERVENTIONS PUT FORWARD IN THE TRANSPORT PLANNING STRATEGY
10 Conclusions, recommendations and delivery plan

Conclusions

10.1 Tower Hamlets will see the most significant increase in population and jobs over the next 20 years of all the 33 London boroughs.

10.2 The existing population of 230,000 will increase by 51% to 342,000 and the 206,000 jobs located in the borough will increase by 46% to 301,000 - about 9% of London’s population growth and about 12% of London’s jobs growth.

10.3 Tower Hamlets’ strategic location means that transport improvements in Tower Hamlets are essential to ensure that the sustainable growth of east London and the Thames Gateway continues.

10.4 The current funded major public transport capacity enhancements which will serve this area are an essential part of the package of transport improvements needed to accommodate 50% growth and they cannot be delayed or downsized.

10.5 The funded schemes include:

- Jubilee line upgrade - 33% capacity increase
- District, Circle, Metropolitan and City lines - 17% capacity increase
- DLR Stratford International Extension - new extension
- East London Line: train and platform lengthening to 5 cars - up to 25% capacity increase
- Crossrail: line 1, core scheme including stations at Canary Wharf and Whitechapel, and nearby in Custom House and Stratford - new lines, 25,000 passengers per hour in both directions along each branch in east London.
- TfL London Cycle Hire Scheme Extension Project

Recommendations

10.6 TfL’s forecasts suggest that delays and congestion on the highway network will increase significantly as a result of a 37% increase in vehicle trips to, from and within the borough combined with a 50% increase in through trips. If this materialises, this would lead to peak spreading with delays and congestion through much of the working day, which will also affect bus operations, walking and cycling. With
Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

these delays some car users may choose to switch to public transport which would increase the forecasts used in this report.

10.7 As no significant increase in highway capacity is planned, it is unlikely that the forecast increases in traffic can be accommodated without compromising the operation of the highway network.

10.8 As part of the East London Sub-regional Transport Plan, TfL is undertaking a study to consider the implications of growth in all the Opportunity Areas across the sub-region. This work will aim to progress further the following areas:

- Establish a profile of growth gaining a greater understanding of the probabilities of the growth taking place in the short, medium and long term.
- Consider the impacts of the growth on key stresses on the network. For example, Jubilee Line, DLR, A12, and A13.
- What mode shift assumptions and behavioural change is needed to accommodate growth.
- What are the links and issues of how the growth will address convergence across the region, particularly in the 6 host boroughs.
- How to influence development to maximise existing transport networks.

10.9 It is recommended that Tower Hamlets continues to work with TfL and the government to ensure that the council funded rail and cycle schemes are delivered on schedule and that the detailed designs e.g. stations/interchange facilities, maximise the benefits to Tower Hamlets.

10.10 In addition, a number of short (0-5 years), medium (5-15 years) and long (15+ years) term interventions designed to accommodate all the new jobs and homes in the borough are recommended to help ensure that the major infrastructure improvements are fully integrated with local transport facilities in the borough.

10.11 The interventions also provide more local public transport capacity and encourage much more walking and cycling combined with policies developed to encourage fewer car trips and more trips using environmentally friendly modes.

10.12 The recommended key interventions in the short term are listed below. (The number after the intervention is its reference number, referred to later in the document. Bold font with the word ‘Priority’ indicates a high priority scheme.)
Priority: Transport Interchange Area programme (TIA) (11) - Designations of transport interchange spatial policy areas, to improve 12 interchanges within the borough, in accordance with TfL’s Interchange Best Practice Guidance.

Priority: Reduce flexibility of parking permits (47) - Reduce the flexibility of the current parking permit scheme within the borough, to reduce car use.

Priority: Increased frequency/capacity of ferries (2) - Increasing the frequency, capacity and availability of existing ferry routes across the Thames.

Priority: Area-based, strengthened car parking standards (49) - New standards to be developed which are more robust, for residential areas, town and neighbourhood areas, Transport Interchange Areas or other designations, reduce car use.

Priority: Awareness campaign about cost and impact of motoring (59) - Awareness techniques such as advertising, targeted campaigns and personalised travel planning to influence and potentially reduce car ownership and use.

Priority: Significant measures to increase cycling and improve cycle infrastructure (38) - New cycle ‘hubs’ at Whitechapel and Shadwell station amongst others including cycle hire, parking, shop, repairs and cycle training as well as general improvements to make cycling feel safer (use of rumble-strips, better delineation, etc). Other measures include new cycle superhighways and more canal towpaths for use by cyclists.

In the medium term, the recommended key interventions are:

Priority: Capacity improvements at Bank Station (58) - This station is an important gateway for trips into Tower Hamlets and its lack of capacity creates a bottleneck.

Priority: Bus bridge at Sugar House Lane (4) - A new bus/pedestrian/cycle bridge along Sugar House Lane, crossing the Lea Navigation to link with Three Mills Lane. This will allow direct bus priority between Stratford, Three Mills, the new Tesco site to the south and west.

Priority: Docklands Light Railway double-tracking to Stratford (23) - Two single track sections currently limit service frequency between Stratford and Poplar. This would enable higher frequency services enabling the DLR to carry more passengers.

Encourage use of public transport outside peak times and in contra-peak direction (39) - In order to utilise spare capacity
Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

through more flexible working hours, careful planning of the locations of jobs and homes and travel planning and communications.

- **Priority: Working with TfL to ensure bus services are meeting the growth in demand (43)** - Providing extra bus capacity to meet demand, including increasing bus frequencies, size of buses and new routes and infrastructure where necessary and seek developer contributions where possible.

- **Priority: Run more Crossrail trains via Canary Wharf and fewer via Stratford if required and feasible (56)** - Consider increasing service frequency on Canary Wharf branch of Crossrail.

- **Priority: New and enhanced connections to/from/within Fish Island (5)** - to better connect this growing development area.

- **Priority: Increasing river capacities for freight, including bringing wharfs back into use (44)** - Increase freight transport by river by bringing wharfs back into use.

- **Priority: Measures to optimise sustainable freight movement and minimise impacts (60)** - Could include consolidation centres, freight advisory routes, better use of rail freight, safeguarded wharfs and shared use lanes.

- **Priority: Tolling cross-river tunnels (26)** - Toll charges to Blackwall and Rotherhithe tunnels in order to discourage car use and potentially funds to improve public transport.

- **Priority: New pedestrian and cycle routes across the Thames (1)** - New routes, possibly between Rotherhithe and Wapping, or other locations around the Isle of Dogs.

10.14 In the long term the recommended key interventions are:

- **Priority: Chelsea-Hackney line (10)** - Some route options for this new proposed line, also known as Crossrail 2, would divert many passengers off the Central line, freeing up this very busy line, as well as relieving other parts of the public transport network. The line would offer new travel options to the north of the borough as well as supporting the regeneration of Fish Island and beyond.

- **Priority: More public transport from south and east to Isle of Dogs (55)** - Modelling shows capacity close to demand from the south and east to the Isle of Dogs. The detail of this intervention is yet to be determined.

- **Consideration of TfL’s Silvertown Crossing scheme (62)** - The TfL proposed, unfunded Silvertown crossing could potentially add
capacity onto the highway network, but its full implications are not yet known.

- New fleet of more capacious DLR trains (22) - These could be walk-through trains (such as those on the Metropolitan line), and could provide higher capacity on the DLR.

- Road User Charging/Tolling for economic and environmental aims (27) - introduction of fiscal discouragement to car use

- Bus route 25 to become a high capacity transit corridor (31) - This could be part of any future TfL London transit/tram network. A transit/tram would offer much higher capacity for this already busy bus route.

- Bow Roundabout improvements (8) - Improvements to this congested roundabout include removal of the flyover and creation of a new four-way junction as part of spatial planning of this area.

- Workplace Parking levy (25) - Introduce a charge on employers who provide workplace parking, such as the scheme soon to be rolled out in Nottingham.

**Living and working in the borough**

10.15 Future demand for movement in and out of the borough will be significantly affected by the amount of in/out commuting. Currently, the proportion of those who work and also live in the borough is only 15%, which means that there are a high proportion of journeys from people commuting in, and from borough residents commuting to outside the borough. The modelling undertaken for this study assumes this current pattern remains more or less the same in the future. However, if the proportion of people living and working in the borough could be increased, it would make a significant difference to the number of trips across the borough boundary, particularly those by Crossrail, Underground, DLR and National Rail.

10.16 Tower Hamlets Council can influence the future movement patterns and potentially minimise the increase in cross borough boundary trips through various measures and policies such as ensuring the right level of new housing and schools are available for the new workforce, improving the skills of the residents and locating new homes close to new jobs. Further research to establish how much difference this could make and specifically what the borough can do to increase the proportion of people living and working in the borough is recommended.
The way forward

10.17 The costs, technical and political deliverability of these interventions have been considered and are documented at the end of this strategy document. Tower Hamlets Council will now seek to advance these interventions through initiating studies to develop the interventions further, acknowledging the interventions in planning policy documents and seeking to collect s106 (and future CIL) funding to help to contribute to their implementation. Tower Hamlets Council will also seek to ensure that TfL and the Government understand the importance of the full package of transport interventions not only to accommodate Tower Hamlets growth but also to guarantee that all the planned jobs and population growth in the City, east London and the Thames Gateway, and associated economic benefits of this growth, can be achieved and improve the quality of life for all.
## TABLE 10.1 DELIVERY PLAN

<table>
<thead>
<tr>
<th>No.</th>
<th>Intervention name</th>
<th>Priority level for LBTH</th>
<th>Delivery partners</th>
<th>Time-scale</th>
<th>Cost11</th>
<th>Next steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Transport Interchange Areas (TIA)</td>
<td>High</td>
<td>LBTH/TfL</td>
<td>Short</td>
<td>Low/Med</td>
<td>Devise set of improvements for each selected TIA, in accordance with TfL’s Interchange Best Practice Guidelines. As development occurs around interchanges, seek contributions to carry out works.</td>
</tr>
<tr>
<td>47</td>
<td>Reduce flexibility of parking permits</td>
<td>High</td>
<td>LBTH</td>
<td>Short</td>
<td>Low</td>
<td>Tower Hamlets Council to consider feasibility.</td>
</tr>
<tr>
<td>2</td>
<td>Increase frequency/capacity of ferries</td>
<td>Med</td>
<td>LBTH/TfL/Developers/Port of London Authority</td>
<td>Short</td>
<td>Med</td>
<td>Seek contributions from developments near piers and where possible encourage more ferry services and facilities on the River Thames.</td>
</tr>
<tr>
<td>49</td>
<td>Area-based, strengthened car parking standards</td>
<td>High</td>
<td>LBTH</td>
<td>Short</td>
<td>Low</td>
<td>Tower Hamlets Council to consider feasibility.</td>
</tr>
<tr>
<td>59</td>
<td>Awareness campaign about cost and impact of motoring</td>
<td>High</td>
<td>LBTH/TfL</td>
<td>Short</td>
<td>Low</td>
<td>Tower Hamlets Council to continue to work with TfL.</td>
</tr>
<tr>
<td>38</td>
<td>Measures to increase cycling and improve related infrastructure</td>
<td>High</td>
<td>LBTH/TfL/Developers/Local Businesses</td>
<td>Short</td>
<td>Med</td>
<td>Tower Hamlets Council to continue work with TfL, developers, and local businesses.</td>
</tr>
</tbody>
</table>

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10 Time scale: Short - 0-5 years, Medium - 5-15 years, Long - 15+ years

11 Costs: Cost = Very High (>£50m), High (£10m - £50m), Med (£1m - £10m), Low (£100k - £1m), Very Low (<£100k)
Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

<table>
<thead>
<tr>
<th>No.</th>
<th>Intervention name</th>
<th>Priority level for LBTH</th>
<th>Delivery partners</th>
<th>Time-scale10</th>
<th>Cost11</th>
<th>Next steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>Capacity improvements at Bank station</td>
<td>High</td>
<td>TfL</td>
<td>Med</td>
<td>Very High</td>
<td>TfL already has a scheme as part of long term plans for interchange improvements, to be completed by 2021. TfL to continue to develop and implement this key scheme.</td>
</tr>
<tr>
<td>4</td>
<td>Bus bridge at Sugar House Lane - also for pedestrian and cycle use</td>
<td>Med</td>
<td>TFL/LBTH/LTGDC/Developers</td>
<td>Med</td>
<td>Med</td>
<td>Tower Hamlets Council to work with TfL/LTGDC in securing developer contributions towards this scheme and to work the scheme up to detailed design stage.</td>
</tr>
<tr>
<td>23</td>
<td>DLR double-tracking (Bow Church to Stratford)</td>
<td>High</td>
<td>TfL</td>
<td>Med</td>
<td>High</td>
<td>TfL to continue to pursue this scheme.</td>
</tr>
<tr>
<td>39</td>
<td>Encourage use of public transport outside peak times and in contra-peak directions</td>
<td>Med</td>
<td>TFL/LBTH/Developers/Local Businesses</td>
<td>Med</td>
<td>Low</td>
<td>All parties to continue to pursue this initiative, mainly through travel planning and communications.</td>
</tr>
<tr>
<td>43</td>
<td>Working with TfL to ensure bus services are meeting the growth in demands</td>
<td>High</td>
<td>TFL/LBTH/Developers</td>
<td>Med</td>
<td>Med</td>
<td>Tower Hamlets Council to work with TfL and seek developer contributions where possible.</td>
</tr>
<tr>
<td>56</td>
<td>Running more Crossrail Line 1 trains via Canary Wharf and fewer via Stratford if required and feasible</td>
<td>High</td>
<td>TfL</td>
<td>Med</td>
<td>Very High</td>
<td>TfL to consider.</td>
</tr>
<tr>
<td>5</td>
<td>New and enhanced connections to/from/ within Fish Island</td>
<td>Med</td>
<td>LBTH/ TFL/Developers/LTGDC</td>
<td>Med</td>
<td>High</td>
<td>To be delivered through working in partnership with key stakeholders.</td>
</tr>
<tr>
<td>No.</td>
<td>Intervention name</td>
<td>Priority level for LBTH</td>
<td>Delivery partners</td>
<td>Time-scale10</td>
<td>Cost11</td>
<td>Next steps</td>
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<td>--------------------------------------------------------</td>
<td>--------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>44</td>
<td>Increasing river capacity for freight, including bringing wharfs back into use</td>
<td>High</td>
<td>LBTH/TfL/Developers/Port of London Authority/Freight Operators</td>
<td>Med</td>
<td>High</td>
<td>As developers and other stakeholders come forward, all parties to discuss and promote.</td>
</tr>
<tr>
<td>60</td>
<td>Measures to optimise sustainable freight movement and minimise impacts</td>
<td>High</td>
<td>LBTH/TfL/Developers/Port of London Authority/Freight Operators/Network Rail/Local Businesses</td>
<td>Med</td>
<td>Low/Med</td>
<td>All parties to pursue.</td>
</tr>
<tr>
<td>26</td>
<td>Tolling cross-river tunnels</td>
<td>Med</td>
<td>TfL</td>
<td>Med</td>
<td>Med/High</td>
<td>TfL to consider.</td>
</tr>
<tr>
<td>1</td>
<td>New pedestrian and cycle routes across the River Thames</td>
<td>Low</td>
<td>LBTH/TfL/Developers</td>
<td>Med</td>
<td>High</td>
<td>When development comes forward along the river, all parties to consider the suitability of a new pedestrian and cycling connections across the River Thames.</td>
</tr>
<tr>
<td>10</td>
<td>Chelsea-Hackney line (also known as Crossrail Line 2)</td>
<td>High</td>
<td>DfT/TfL</td>
<td>Long</td>
<td>Very High</td>
<td>TfL to identify preferred option.</td>
</tr>
<tr>
<td>55</td>
<td>More public transport from south and east to Isle of Dogs</td>
<td>Med</td>
<td>LBTH/TfL/Developers</td>
<td>Long</td>
<td>Med/High</td>
<td>TfL to monitor.</td>
</tr>
<tr>
<td>62</td>
<td>Silvertown Crossing scheme</td>
<td>Med</td>
<td>TfL</td>
<td>Long</td>
<td>Very High</td>
<td>TfL is working on this scheme, and Tower Hamlets Council will be consulted in due course.</td>
</tr>
<tr>
<td>22</td>
<td>New fleet of more capacious DLR trains</td>
<td>Med</td>
<td>TfL</td>
<td>Long</td>
<td>Very High</td>
<td>TfL to monitor.</td>
</tr>
<tr>
<td>No.</td>
<td>Intervention name</td>
<td>Priority level for LBTH</td>
<td>Delivery partners</td>
<td>Time-scale</td>
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<td>-----</td>
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<td>--------------------------------------------</td>
<td>------------</td>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>27</td>
<td>Road User Charging / Tolling</td>
<td>Med</td>
<td>LBTH/TfL</td>
<td>Long</td>
<td>Very High</td>
<td>LBTH to monitor in consultation with TfL.</td>
</tr>
<tr>
<td>31</td>
<td>Bus route 25 becomes a high capacity transit corridor</td>
<td>Med</td>
<td>LBTH/TfL/Other Boroughs/ Developers</td>
<td>Long</td>
<td>Very High</td>
<td>TfL to monitor.</td>
</tr>
<tr>
<td>8</td>
<td>Bow Roundabout improvements</td>
<td>Low</td>
<td>LBTH/TfL/Developers</td>
<td>Long</td>
<td>High</td>
<td>All parties to consider as part of long term spatial planning for area.</td>
</tr>
<tr>
<td>25</td>
<td>Workplace Parking Levy</td>
<td>Low</td>
<td>LBTH/TfL/Developers/Local Businesses</td>
<td>Long</td>
<td>Low</td>
<td>LBTH to monitor in consultation with TfL and local business and developers.</td>
</tr>
</tbody>
</table>
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12 Summary of Model Development, Standards Achieved, and Fitness for Purpose

12.1 Summary of Model Development

General

12.1.1 ELHAM forms part of a sub-regional London modelling capability, the other two components being the LoRDM demand model and the Regional Railplan (RRP) public transport assignment model.

12.1.2 The purpose of the HAMs is to inform and help TfL make decisions on funding priorities and schemes at the sub-regional level and therefore provide inputs to the further development of TfL’s Sub-Regional Transport Plan 2009. ELHAM is capable of testing both local and area-wide schemes and of assessing strategic interventions.

Objective

12.1.3 The main technical objective was to deliver a validated base year SATURN highway assignment model to be used for local and area-wide assessments in the east London area. The model was required to provide adequate coverage of areas bordering ELHAM to ensure that traffic route choice to and from the ten boroughs is represented.

Geographic Scope

12.1.4 The model is made up of the following areas:

- ‘Fully Modelled Area’ comprising:
  - ‘Area of Detailed Modelling’ (SATURN simulation network with fully modelled junctions);
  - ‘Speed/Flow Area’ (SATURN buffer network); and
- ‘External Area’ (SATURN buffer network with fixed speeds).

12.1.5 The London Boroughs that form the focus of ELHAM make up the ‘Area of Detailed Modelling’. These are Tower Hamlets, Newham, Hackney, Redbridge, Barking & Dagenham, Havering, Bexley, Greenwich, Lewisham and Waltham Forest.

Zoning System

12.1.6 The zone system was designed with reference to standard guidelines set by DMRB and WebTAG. It ensures that the model is capable of measuring the effects in key corridors of the region, to opportunity areas, areas of intensification and key development sites as well as town centres in the area. All zones created for ELHAM correspond with Census Output Area (COA) boundaries. There are 1471 zones in total.

12.1.7 Zoning inside the ‘Fully Modelled Area’ also takes accounts of natural barriers (rivers, railways, motorways or other major roads, existing zone boundaries, where an existing
model is being used as the basis of the new model, and administrative and planning data boundaries (wards, parishes, census enumeration districts).

**Network Structure**

12.1.8 Within the ‘Area of Detailed Modelling’ the OS Integrated Transport Network has formed the basis of the network structure. This is based on all motorways, trunk roads, A roads, B roads and ‘local roads’ (as identified within this dataset). Outside the ‘Area of Detailed Modelling’ there is an annulus (‘the Speed/Flow Area’) of link based speed-flow curves to assist with routeing into the ‘Area of Detailed Modelling’. Beyond this (the ‘External Area’) the network is entirely fixed speed in nature and covers the motorway network across the UK.

12.1.9 The definition of the network structure (i.e. choice of road network and junctions) has been undertaken within GIS considering a range of data including LTS B6.0, TGX, ITN and the M25 model network. This provided the framework for which the remainder of the network was developed.

12.1.10 Inside the M25 (particularly to the west), the LTS network has formed the basis of the network. In this area it is too detailed for ELHAM and has required rationalising (down to strategic routes). This has helped shift the balance in terms of the number of links within the ‘Fully Modelled Area’ and ‘External Area’ in favour of the former, which has helped to improve model convergence. The fixed speeds are also taken from LTS from assignments from B6.0.

**Base Month and Year**

12.1.11 The base year model is representative of average Monday to Thursday traffic flows in November 2009.

**Time Periods**

12.1.12 The ELHAM assignment matrices represent a single hour for the following periods:

- AM peak (0700-1000) – assigned peak hour is 0800-0900;
- Inter-peak (1000-1600) – assigned average hour is the period total divided by six; and
- PM peak (1600-1900) – assigned peak hour is 1700-1800.

**User Classes**

12.1.13 The assignment model has the user classes below. Buses have been applied directly to the network links as fixed flows in accordance with the timetables.

- UC1: Car – Non-employers business;
- UC2: Car - Employers business;
- UC3: Taxi (Hackney Carriage);
- UC4: Light Goods Vehicle; and
12 Summary of Model Development, Standards Achieved, and Fitness for Purpose

UC5: Other Goods Vehicle.

**Trip Matrices**

12.1.14 The key stages of prior matrix development were:

- development of period partial car matrices for observed movements from recent TfL RSIs (Road Side Interviews) surveys
- development of period synthetic car trip matrices using a destination choice model to distribute trip ends from version B6.0 of the London Transportation Studies (LTS) model, with appropriate constraints to the partial matrices
- combination of period synthetic car matrices with car matrices from other sources which were used directly (cell by cell after conversion to ELHAM format) for movements that cannot be synthesised
- combination of period prior car matrices with taxi, LGV and HGV matrices taken directly (cell by cell after conversion to ELHAM format) from LTS B6.0 and disaggregation to the ELHAM zoning system; and
- creation of hourly origin/destination matrices using peak hour factors.

**Assignment Methodology**

12.1.15 The standard Wardrop User Equilibrium, using the Frank-Wolfe algorithm, has been used as the assignment procedure for ELHAM.

**Calibration and Validation**

12.1.16 Data collection was undertaken for calibration and validation of the model. This data was of two kinds: traffic counts, and journey times. **Traffic counts** were required for:

- expanding new roadside interviews;
- re-expanding old roadside interviews;
- calibrating trip matrices by means of matrix estimation; and
- validating the model.

12.1.17 **Journey times** were required for:

- calibrating cruise speeds (speeds between junction queues); and
- validating the model.
12.2 Summary of Standards Achieved

12.2.1 Table 12.1 summarises the model's performance against the acceptability guidelines in Chapter 3. These are the results for the runs that assigned matrices estimated using both calibration and validation screenlines. The figures in brackets are the results for the runs that assigned matrices estimated using calibration screenlines only.

**Table 12.1 - Summary of Validation Statistics**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Criteria</th>
<th>Acceptability Guideline</th>
<th>AM Peak</th>
<th>Inter-Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix Validation (see Table 3.1)</td>
<td>Differences between modelled flows and counts should be less than 5% of the counts</td>
<td>All or nearly all screenlines</td>
<td>73% (64%)</td>
<td>84% (80%)</td>
<td>80% (75%)</td>
</tr>
<tr>
<td>(see Table 3.1 detail)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Link Flow Validation</td>
<td>Individual flows within 15% of counts for flows from 700 to 2,700 veh/h</td>
<td></td>
<td>50% (49%)</td>
<td>56% (55%)</td>
<td>49% (45%)</td>
</tr>
<tr>
<td></td>
<td>Individual flows within 100 veh/h of counts for flows less than 700 veh/h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual flows within 400 veh/h of counts for flows more than 2,700 veh/h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(see Table 3.2 for detail)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journey Times Validation</td>
<td>Modelled times along routes should be within 15% of surveyed times (or 1 minute, if higher)</td>
<td></td>
<td>55%</td>
<td>61%</td>
<td>48%</td>
</tr>
<tr>
<td>(see Table 3.3 for detail)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Results in brackets are for the runs that assigned matrices estimated using calibration screenlines only.

12.2.2 The matrix validation results fall short of the acceptability guidelines. They are in the range of 73% to 84% of screenline flows within 5% of the observed count whereas the DMRB acceptability guideline is that all or nearly all should be within 5%.

12.2.3 The link flow validation falls short of the acceptability guidelines. They are achieving a range of 49% to 56% of link flows within the criteria whereas the DMRB acceptability guideline is that 85% should be within the criteria.

12.2.4 The journey times validation falls short of the acceptability guidelines. They are achieving a range of 48% to 61% within the criterion whereas the DMRB acceptability guideline is that 85% should be within the criterion.
12.3 Fitness for Purpose

Control Against DMRB

12.3.1 In building the network and matrices for the ELHAM, the DMRB guidance on model development was followed. Innovative techniques were employed which aimed to improve on current practice, where appropriate, with the aim of achieving a model of higher quality than would otherwise result.

12.3.2 The proximity with which the DMRB standards can be approached depends on the quality of several key elements of the model, only some of which were under our control. These key elements are as follows:

Network data

12.3.3 Some network data was inherited from previous models and extensive checks of these data were undertaken. The risk of this element of the model contributing significantly to a poorer validation is considered to be low.

Traffic count data

12.3.4 Traffic counts from a variety of sources were used in the matrix development, model calibration and model validation. Standards for counts were set in order to reduce the risks. Nevertheless, it is possible that inconsistent or inaccurate counts posed some degree of risk to the quality of the validation.

Roadside interview survey data

12.3.5 The quality levels of these data were outside our control. While the survey was conducted and processed by reputable survey firms to established standards, it is considered that there was some degree of risk that calibration of the model was affected by data inaccuracies.

Trip synthesis

12.3.6 The available and established methods for synthesising trips which have not been surveyed are well-known to have limitations. The significant proportion of trips that were reliant on synthesis led to some degree of risk in terms of matrix reliability.

Matrix estimation.

12.3.7 While the most appropriate software was used, matrix estimation is an imprecise ‘trial and error’ process. Its success depends on, and can be compromised by, any or all of the previously listed elements. Experience suggests that, in some cases, effort may eventually pay off but, in other cases, no amount of additional effort will improve the validation beyond a certain point. It is considered that an appropriate amount of effort was made leading to a reasonable improvement in the validation quality, and that further significant improvement would not have been possible within allowable cost and time limitations.
Assessment of Fitness for Purpose

12.3.8 ELHAM covers a large area and this should be borne in mind when judging the quality of its validation. Although the Department for Transport (DfT) requires that road traffic assignment models be validated against the standards set out in DMRB 12.2.1, it does recognise that some relaxation of these acceptability guidelines may be appropriate for large scale models, such as ELHAM. The DfT argues that the true test of a model’s fitness for purpose is whether or not it enables conclusions to be drawn with sufficient confidence for the required decisions to be made.

12.3.9 For scheme appraisal some improvement of the model may be achievable in the localised area of the scheme.

DMRB, Volume 12 Section 2 Part 1 Chapter 4 states:

“A model that does not meet these guidelines may still be acceptable for approval of a given scheme if the discrepancies are within survey accuracies and the larger discrepancies are concentrated away from the area of greatest importance to that scheme. Conversely, a model that passes the guidelines but has significant discrepancies on the most crucial links may be unacceptable.”
TfL Planning – Policy Analysis

Regional Railplan Validation
AM Peak Period
TNP Technical Note xx

November 2010
Document Details and Circulation

<table>
<thead>
<tr>
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<th>Signature</th>
<th>Role</th>
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<td>Felipe Camargo</td>
<td>Principal Transport Planner (TNP)</td>
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<td>Susanna Bass</td>
<td>Planning Graduate</td>
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<tr>
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<td>Director, Policy Analysis</td>
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<td>Tim Cooper</td>
<td></td>
<td>Subregional model development programme manager</td>
</tr>
<tr>
<td>Policy Analysis Team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy &amp; Strategy Team</td>
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Version Control

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<th>Version</th>
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<td>‘Skeleton’</td>
<td>FC</td>
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<tr>
<td>15/11/2010</td>
<td>1</td>
<td>AM Peak complete</td>
<td>DC</td>
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</table>
1 Executive Summary

1.1.1 The resolution of the Railplan model has been enhanced mainly by disaggregating the zoning system and increasing detail to the on-street walk and bus networks, effectively transforming it into the public transport assignment part of TfL Planning’s sub-regional transport modelling suite. The model updates also involve the inclusion of speeds from the iBus database.

1.1.2 The model has been calibrated to provide a reasonable level of validation at a sub-regional level and uses demand matrices generated by the LTS model, currently matrix 6107rfw9.

1.1.3 The matrix for the AM Peak has validated well against journey to work (2001 data, but it has been assumed that general trip patterns have not changed dramatically since then) and population and employment data. The network journey times have been validated against journey planner times. Both show that the model is fit for purpose at sub-regional level.

1.1.4 Validation in terms of link flows and boarders and alighters at stations, aggregate boarders and alighters and screenline flows is reasonable at sub-regional level and greatly improved over Railplan 54, which was widely accepted as suitable for London-wide level assessment.

1.2 High level Validation Results

1.2.1 The tables shown below present some high level outputs to illustrate the model validation and a comparison with RP 54.

Percentage difference by Subregion and mode

1.2.2 Tables x and y summarise the percentage difference between total modelled and observed boarders and alighters by mode and subregion. The acceptance criteria for this statistic was set to +/-15%, although there is no requirement set in the existing guidance for boarders and alighters. As can be seen, the differences for all modes and subregions are comfortably within this range.

1.1. Percentage difference by subregion and mode - Boarders

<table>
<thead>
<tr>
<th>Subregion</th>
<th>LUL</th>
<th>DLR</th>
<th>CTL</th>
<th>Bus</th>
<th>All</th>
<th>LUL</th>
<th>DLR</th>
<th>CTL</th>
<th>Bus</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>-6.3%</td>
<td>8.8%</td>
<td>3.9%</td>
<td>-3.0%</td>
<td>-20.4%</td>
<td>15.7%</td>
<td>2.4%</td>
<td>-10.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>-8.8%</td>
<td>-1.1%</td>
<td>-4.6%</td>
<td>-8.7%</td>
<td>-45.4%</td>
<td>-31.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>2.4%</td>
<td>-3.1%</td>
<td>-1.0%</td>
<td>-4.4%</td>
<td>-46.3%</td>
<td>-33.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>-8.1%</td>
<td>-8.1%</td>
<td>-4.0%</td>
<td>-5.7%</td>
<td>-27.8%</td>
<td>-17.5%</td>
<td>-34.3%</td>
<td>-31.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>-1.0%</td>
<td>-6.9%</td>
<td>-4.1%</td>
<td>-3.6%</td>
<td>-26.8%</td>
<td>-55.9%</td>
<td>-40.1%</td>
<td>-38.7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.2. Percentage difference by subregion and mode - Alighters

<table>
<thead>
<tr>
<th>Subregion</th>
<th>Final RRP Run</th>
<th>RP54 Ref Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LUL</td>
<td>DLR</td>
</tr>
<tr>
<td>Central</td>
<td>-3.5%</td>
<td>4.9%</td>
</tr>
<tr>
<td>West</td>
<td>-10.7%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>North</td>
<td>2.4%</td>
<td>0.3%</td>
</tr>
<tr>
<td>East</td>
<td>-5.9%</td>
<td>-7.2%</td>
</tr>
<tr>
<td>South</td>
<td>-6.1%</td>
<td>7.4%</td>
</tr>
</tbody>
</table>

Proportion of stations/stops with boarders/alighters within 25% of observed

1.2.3 In addition to total boarders and alighters by subregion, the proportion of individual stations and bus stop clusters (see 5.1 for description) for which the modelled number of boarders and alighters is within +/- 25% if observed. Results for London Underground and DLR are good, while those for Croydon Tramlink and Bus are weaker; however, as flows for the latter modes are lower, percentage difference criteria are somewhat more difficult to achieve.

1.2.4 For all modes, however, there is a marked improvement over the existing Railplan 54.

1.3. Stations/stops within 25% of observed - Boarders

<table>
<thead>
<tr>
<th>Subregion</th>
<th>Final RRP Run</th>
<th>RP54 Ref Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LUL</td>
<td>DLR</td>
</tr>
<tr>
<td>Central</td>
<td>63.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>West</td>
<td>62.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>North</td>
<td>85.2%</td>
<td>19.6%</td>
</tr>
<tr>
<td>East</td>
<td>52.6%</td>
<td>39.5%</td>
</tr>
<tr>
<td>South</td>
<td>66.7%</td>
<td>28.2%</td>
</tr>
</tbody>
</table>

1.4. Stations/stops within 25% of observed - Alighters

<table>
<thead>
<tr>
<th>Subregion</th>
<th>Final RRP Run</th>
<th>RP54 Ref Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LUL</td>
<td>DLR</td>
</tr>
<tr>
<td>Central</td>
<td>48.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>West</td>
<td>34.2%</td>
<td>25.2%</td>
</tr>
<tr>
<td>North</td>
<td>55.6%</td>
<td>24.4%</td>
</tr>
<tr>
<td>East</td>
<td>50.0%</td>
<td>36.8%</td>
</tr>
<tr>
<td>South</td>
<td>41.7%</td>
<td>33.3%</td>
</tr>
</tbody>
</table>
Arrivals at Main Rail Termini

1.2.5 Arrivals at London Rail Termini have also been looked at closely, given the importance these have in terms of the total contribution of passengers they make to the public transport network. Also, many investment initiatives relate to the termini and thus it is expected from the model that it will provide reasonable estimates of demand for further analytical purposes.

1.2.6 All stations fall within 15% of the observed flows and overall, this is an improvement over RP 54.

1.5. Am Peak Arrivals at Main Termini

<table>
<thead>
<tr>
<th>Terminus</th>
<th>Observed</th>
<th>Final RRP Run</th>
<th>RP54 Ref Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Modelled</td>
<td>% Difference</td>
</tr>
<tr>
<td>Blackfriars</td>
<td>13,400</td>
<td>14,797</td>
<td>10%</td>
</tr>
<tr>
<td>Cannon Street</td>
<td>29,800</td>
<td>28,975</td>
<td>-3%</td>
</tr>
<tr>
<td>Charing Cross</td>
<td>37,300</td>
<td>36,715</td>
<td>-2%</td>
</tr>
<tr>
<td>Euston</td>
<td>17,100</td>
<td>16,047</td>
<td>-6%</td>
</tr>
<tr>
<td>Farringdon</td>
<td>9,600</td>
<td>10,720</td>
<td>12%</td>
</tr>
<tr>
<td>Fenchurch Street</td>
<td>23,800</td>
<td>27,031</td>
<td>14%</td>
</tr>
<tr>
<td>Kings Cross/St Pancras</td>
<td>37,400</td>
<td>34,642</td>
<td>-7%</td>
</tr>
<tr>
<td>Liverpool Street</td>
<td>64,500</td>
<td>61,493</td>
<td>-5%</td>
</tr>
<tr>
<td>London Bridge</td>
<td>85,400</td>
<td>80,771</td>
<td>-5%</td>
</tr>
<tr>
<td>Marylebone</td>
<td>10,900</td>
<td>11,521</td>
<td>6%</td>
</tr>
<tr>
<td>Moorgate</td>
<td>7,300</td>
<td>6,663</td>
<td>-9%</td>
</tr>
<tr>
<td>Paddington</td>
<td>27,200</td>
<td>28,350</td>
<td>4%</td>
</tr>
<tr>
<td>Victoria</td>
<td>68,900</td>
<td>74,342</td>
<td>8%</td>
</tr>
<tr>
<td>Waterloo</td>
<td>90,600</td>
<td>89,044</td>
<td>-2%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>523,200</td>
<td>521,111</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source for Termini Arrivals data:
- NR Stations estimates
- CAPC Data

Link flows

1.2.7 In addition to boarders and alighters, passenger flows have also been assessed. The table below shows the proportion of links where modelled flows are within +/- 25% of the observed flows, by mode and subregion.

1.2.8 DLR and Croydon Tramlink flows are very good, with approximately 80% and 90% of links being within the acceptance criterion, respectively. These are also the modes which show the largest change with respect to the RP54 model, where less than a third of DLR links and under 5% of Croydon Tramlink links met this criterion.

1.2.9 London Underground is good, with the West and East subregions being weakest, albeit improved over RP54. For the Central and North subregions, validation is acceptable, with just over 75% of links being within 25% and interestingly, the
South subregion, which was weakest in RP54 is now the best performer, with almost 90% of links within the acceptable range.

1.2.10 For buses, approximately a third (40% for Central) of all links meet the criterion, which is still a fairly low figure, but a marked improvement over the 12-15% (30% for Central) which was obtained from RP 54.

1.6. Links with flows within 25% of observed

<table>
<thead>
<tr>
<th>Subregion</th>
<th>Final RRP Run LUL</th>
<th>DLR</th>
<th>CTL</th>
<th>Bus</th>
<th>RP54 Ref Case LUL</th>
<th>DLR</th>
<th>CTL</th>
<th>Bus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>76.5%</td>
<td>41.5%</td>
<td></td>
<td>78.9%</td>
<td>30.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>67.4%</td>
<td>32.7%</td>
<td></td>
<td>55.6%</td>
<td>11.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>76.9%</td>
<td>32.2%</td>
<td></td>
<td>67.3%</td>
<td>11.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>61.4%</td>
<td>85.1%</td>
<td></td>
<td>31.5%</td>
<td>15.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>87.5%</td>
<td>90.3%</td>
<td>30.5%</td>
<td>37.5%</td>
<td>2.8%</td>
<td>15.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other Considerations on Regional Railplan Validation

1.2.11 It is expected, however, that in addition to sub-regional planning work, the Regional Railplan model will also be used to assess schemes and projects of a local nature. It must be noted, therefore, that as would be expected, validation worsens when evaluating smaller areas.

1.2.12 Borough level station boarding and alighting and individual link boarding is variable (See 0). The validation of the CAPC screenline shows that flows on LU, DLR, CTL and NR all validate within 15% across each screenline segment. And buses do not meet that criterion in 3 sectors as can be seen in the appendix.

1.2.13 A particular issue worth mentioning is a general under assignment of trips to and from the Canary Wharf area. There is an improvement from Railplan 5.4 but underlines that there are still potential improvements that could be made to the underlying matrix.

1.2.14 Also at the individual station level, even some major stations do not validate very well; Brixton shows significant under boarding and Stratford under alighting on London Underground.

1.2.15 Tests of matrix adjustment carried out by Policy Analysis show that this procedure has the potential to further enhance validation. Using screenline observed data to adjust the matrix led to improved London Underground link validation. However, there was a negative effect on bus link and all mode boarder and alighter validation. This highlights the fact that the data used for matrix adjustment should be chosen very carefully.

1.2.16 Matrix adjustment may be particularly useful for studies applied to local areas. The source for the demand matrices is LTS which works on fairly large zones, in comparison to RRP. Thus it is entirely possible that adjustments made to the network will not be enough to achieve an acceptable result because the level of detail of the LTS model is not sufficient and, therefore, some modification of the matrix is justified.
1.2.17 The model is believed to be fit for purpose at sub-regional level. If the model is intended for more local use, it is recommended to users of the model that local validation is carried out. If required, further adjustments could be made to model parameters and coding, as appropriate.

1.2.18 In addition, matrix adjustment based on local observed data should be considered. If this is applied then consideration needs to be taken to changes in the base matrix. If matrix adjustment is applied, it is suggested that future year matrices are derived by applying the percentage changes (by individual OD pairs) of unadjusted matrices to the adjusted base year matrix.
APPENDIX

B

FULL APPRAISAL MATRIX
### FULL APPRAISAL MATRIX

#### Appraisal matrix

| No. | Description | Outcome | OP | FC | AV | Other | T8 | T9 | T10 | T11 | R1 | R2 | R3 | R4 | R5 | R6 | Time factor | Conformity | Diversion/Innovation | Delivery | Position | Scale | Comment |
|-----|-------------|---------|----|----|----|-------|----|----|----|----|----|----|----|----|----|--------|-----------|---------------------|----------|----------|-------|---------|
| 1   | Transport infrastructure planning | Good | 5 | 5 | 5 | Good | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | Reasonable | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | Good | This has been a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 2   | marine/land transport corridor | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 3   | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 4   | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 5   | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 6   | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 7   | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 8   | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 9   | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |
| 10  | Transport network expansion | Moderate | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | Moderate | 3 | 3 | 3 | 3 | 3 | Moderate | This is a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility. |

#### Comment

This has been a consistent theme throughout the strategies, with the focus on improving connectivity and accessibility.
APPENDIX

C

ELIMINATED INTERVENTIONS
### ELIMINATED INTERVENTIONS

Eliminated interventions and reasons for removing them

#### TABLE 10.2 ELIMINATED INTERVENTIONS (FROM THE LONG LIST)

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Source</th>
<th>Reason for elimination</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Pedestrian tunnel across Thames (nr Rotherhithe tunnel)</td>
<td>Workshop 2</td>
<td>Unlikely to be feasible. Duplicates several other crossings. Recommended for deletion by both Tower Hamlets officers and TfL.</td>
</tr>
<tr>
<td>6</td>
<td>Re-open towpath between Old Ford Lock and Stadium Island</td>
<td>OLSPG12, Fish Island AAP</td>
<td>Combined with intervention 38 (Significant measures to increase cycling and improve infrastructure)</td>
</tr>
<tr>
<td>7</td>
<td>New cycle superhighways</td>
<td>Workshop 2 &amp; OLSPG</td>
<td>Combined with intervention 38 (Significant measures to increase cycling and improve infrastructure)</td>
</tr>
<tr>
<td>9</td>
<td>Pedestrian/cycle connectivity improvements between Hackney Wick and Fish Island</td>
<td>OLSPG, Fish Island AAP</td>
<td>Combined with intervention 5, which is ‘new and enhanced connections in Fish Island’.</td>
</tr>
<tr>
<td>12</td>
<td>Safety &amp; permeability improvements to cycle routes</td>
<td>Workshop 2</td>
<td>Combined with intervention 38 (Significant measures to increase cycling and improve infrastructure)</td>
</tr>
<tr>
<td>13</td>
<td>Secure cycle parking at stations</td>
<td>Workshop 2</td>
<td>This is already being implemented.</td>
</tr>
<tr>
<td>14</td>
<td>More cycle parking in existing residential areas</td>
<td>Workshop 2</td>
<td>Combined with intervention 38 (Significant measures to increase cycling and improve infrastructure)</td>
</tr>
<tr>
<td>15</td>
<td>Reduce severance caused by railway</td>
<td>Workshop 2</td>
<td>Combined with intervention 29, which is ‘more direct bus routes north-south, reducing severance caused by railways’.</td>
</tr>
<tr>
<td>16</td>
<td>Pedestrian &amp; cycling bridge across water from South Quay DLR</td>
<td>Workshop 2</td>
<td>Removed as the impact of this would be re routed pedestrians rather than increase in capacity of help mode shift.</td>
</tr>
<tr>
<td>17</td>
<td>New stations (around Bethnal Green and Mile End)</td>
<td>Workshop 2</td>
<td>This would be too expensive and would not necessarily address overcrowding.</td>
</tr>
<tr>
<td>18</td>
<td>Bromley-by-Bow station improvements</td>
<td>Workshop 2</td>
<td>Combined with intervention 11 - Interchange zones</td>
</tr>
<tr>
<td>19</td>
<td>Bow Church to Mile End interchange</td>
<td>Workshop 2</td>
<td>Combined with intervention 11 -</td>
</tr>
</tbody>
</table>

---

\(^{12}\) Olympic Legacy Strategic Planning Guidance
<table>
<thead>
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<th>Title</th>
<th>Source</th>
<th>Reason for elimination</th>
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</thead>
<tbody>
<tr>
<td>20</td>
<td>Central line extension to Fish Island</td>
<td>Workshop 2 (TfL)</td>
<td>This intervention would not have enough demand and other solutions such as Hackney Wick station improvements are better value.</td>
</tr>
<tr>
<td>21</td>
<td>Extend Docklands Light Railway to Hackney Wick station</td>
<td>Workshop 2</td>
<td>As above.</td>
</tr>
<tr>
<td>24</td>
<td>Higher capacity train carriages</td>
<td>Workshop 2</td>
<td>The average length of journey on the different routes needs to be considered. The type of rolling stock used on the London Overground network (i.e. fewer seats enabling higher capacity) is not appropriate for all rail routes particularly those where the average on-train time per passenger is longer than passengers find acceptable to stand (greater than 20 minutes). This sort of rolling stock is therefore unlikely to be appropriate for the West Anglia, Great Eastern (Crossrail) and Essex Thameside routes. Could be possible for DLR trains but this combines with intervention 22.</td>
</tr>
<tr>
<td>28</td>
<td>Bus improvements into/out of Isle of Dogs</td>
<td>Workshop 2</td>
<td>Combined with intervention 43 (Continual monitoring of bus demand and working with TfL to ensure bus services are meeting the demands of growth)</td>
</tr>
<tr>
<td>29</td>
<td>More direct bus routes north-south, reducing severance caused by railways</td>
<td>Workshop 2</td>
<td>Combined with intervention 43 (Continual monitoring of bus demand and working with TfL to ensure bus services are meeting the demands of growth)</td>
</tr>
<tr>
<td>30</td>
<td>Bus infrastructure and interchange enhancements</td>
<td>Workshop 2 &amp; meeting with TfL buses</td>
<td>This is part of an emerging development application</td>
</tr>
<tr>
<td>32</td>
<td>Buses connecting Leamouth to Canning Town</td>
<td>Meeting with TfL buses</td>
<td>Other proposals mean this is unnecessary.</td>
</tr>
<tr>
<td>33</td>
<td>Modify bus Route 8 to go to Stratford</td>
<td>Workshop 2</td>
<td>Transport for London have investigated and state this is not financially viable.</td>
</tr>
<tr>
<td>34</td>
<td>Improve connectivity (bus) between Fish Island and Stratford</td>
<td>Workshop 2</td>
<td>There are already plans to extend route 339 from Fish Island to Stratford City.</td>
</tr>
<tr>
<td>35</td>
<td>Stratford - High Speed 1, High Speed 2 link</td>
<td>Workshop 2</td>
<td>Not within borough and not addressing key issues. Transport for London do not</td>
</tr>
</tbody>
</table>
### Tower Hamlets Transport Planning Strategy (2011 - 2031)

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Source</th>
<th>Reason for elimination</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>Public transport fares review &amp; increase zone boundaries from classification of Zone 2 becoming Zone 3.</td>
<td>Workshop 2</td>
<td>Equality issues and will be unpopular.</td>
</tr>
<tr>
<td>37</td>
<td>Fiscal measures to reduce use of busiest stations in London at peak times (including Canary Wharf)</td>
<td>Workshop 2</td>
<td>There would be equality issues, it would be too unpopular and not politically acceptable.</td>
</tr>
<tr>
<td>40</td>
<td>Encourage use of inter-peak and contra flow times on highway network</td>
<td>Workshop 2</td>
<td>This would encourage further demand for other parts of the borough.</td>
</tr>
<tr>
<td>41</td>
<td>Encourage mixed use development in Isle of Dogs</td>
<td>Workshop 2</td>
<td>This principle is embedded in the Core Strategy. This already takes place.</td>
</tr>
<tr>
<td>42</td>
<td>Encourage key workers housing policy</td>
<td>Workshop 2</td>
<td>This does not add capacity and Tower Hamlets officers felt it should be removed.</td>
</tr>
<tr>
<td>45</td>
<td>Improved walking &amp; cycling and bus links within Isle of Dogs</td>
<td>Workshop 2</td>
<td>The withdrawal of Tower Hamlets Isle of Dogs hoppa bus shows that there is low demand for intra-island trips. Remove as does not address capacity issue. Internal trips within Isle of Dogs are well catered for.</td>
</tr>
<tr>
<td>46</td>
<td>Canal tow-path upgrades</td>
<td>Workshop 2</td>
<td>Combined with 38 (Significant measures to increase cycling and improve infrastructure)</td>
</tr>
<tr>
<td>48</td>
<td>Reduce parking standards for new developments</td>
<td>Workshop 2</td>
<td>Covered by intervention 49, on ‘spatially based parking standards’</td>
</tr>
<tr>
<td>50</td>
<td>Clear Zone</td>
<td>Tower Hamlets officers</td>
<td>This is not addressing capacity and is a definitive scheme already (or set of schemes)</td>
</tr>
<tr>
<td>51</td>
<td>HS1-HS2 link</td>
<td>Workshop 2</td>
<td>This is a repetition of intervention 35</td>
</tr>
<tr>
<td>52</td>
<td>London-North rail freight bypass proposals</td>
<td>Tower Hamlets officers</td>
<td>Already committed.</td>
</tr>
<tr>
<td>53</td>
<td>District line spur from Bow Road to Billingsgate</td>
<td>LIP consultation Canary Wharf</td>
<td>Too expensive, not enough demand and would not be addressing crowding in the place its most needed.</td>
</tr>
<tr>
<td>No</td>
<td>Title</td>
<td>Source</td>
<td>Reason for elimination</td>
</tr>
<tr>
<td>----</td>
<td>-------</td>
<td>--------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td>54</td>
<td>Increased bus priority and bus services going south from borough (e.g. bus lanes over Silvertown crossing)</td>
<td>SDG</td>
</tr>
<tr>
<td></td>
<td>61</td>
<td>Improve walking links to Tower Gateway station</td>
<td>TFL consultation</td>
</tr>
</tbody>
</table>
APPENDIX
D
SELECTED ENLARGED FIGURES
APPENDIX D: SELECTED ENLARGED FIGURES

TOWER HAMLETS COUNCIL’S TRANSPORT PLANNING STRATEGY: RECOMMENDED INTERVENTIONS

Super Output Areas
LSOAs in Tower Hamlets: IMD position in England (percentile)
- In 5% most deprived
- In 5-10% most deprived
- In 10-20% most deprived
- In 20-50% most deprived
- In 50% least deprived


1 Source: Indices of Deprivation 2010, Department of Communities and Local Government
FIGURE D.2 EXISTING PUBLIC TRANSPORT ACCESSIBILITY LEVELS FOR TOWER HAMLETS

FIGURE D.3  TOWER HAMLETS ROAD NETWORK

FIGURE D.6 PARKING STRESS, PERCENTAGE OCCUPANCY, WEEKDAY DAYTIME

- 0-60%
- 60%-74%
- 75%-89%
- 90%-99%
- 100%+

Figure D.7  Parking Stress, Percentage Occupancy, Weekday Overnight
FIGURE D.8 GEOGRAPHICAL ‘AREAS’ WITHIN TOWER HAMLETS
FIGURE D.10  NEW EMPLOYMENT SPACE WITH PLANNING CONSENT
FIGURE D.11 PLANNED AND FUNDED TRANSPORT IMPROVEMENTS IN TOWER HAMLETS

- East London Line
- Central Line
- Circle Line
- DLR
- District Line
- Hammersmith and City Line
- Jubilee Line
- National Rail
- Proposed Crossrail

- Circle, District, H&C lines, upgrades, new trains and 17% increased capacity
- East London Line
- Crossrail Line

- DLR: 3 car operation, more trains, potential double tracking to Stratford
- DLR Stratford International extension

- Jubilee Line, upgrade - 138, increased capacity and faster journey time
- ELL: extensions to Clapham Junction and Highbury & Islington

FIGURE D.12 CHANGES IN TRAFFIC TO/FROM AND WITHIN TOWER HAMLETS (2008 - 2031): FROM ELHAM MODEL (AM PEAK 3 HOURS)
FIGURE D.13 SHORT TERM INTERVENTIONS MAP

- Parking Policies Not Mapped
- Smarter Choices Not Mapped

River Crossings
Interchange
Clear Zone

FIGURE D.16  INTERVENTIONS PUT FORWARD IN THE TRANSPORT PLANNING STRATEGY

[Map showing interventions put forward in the transport planning strategy, with various markers for different types of interventions and a legend indicating what each marker represents.]
CONTROL SHEET

Project/Proposal Name: Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

Document Title: Tower Hamlets Council’s Transport Planning Strategy (2011 - 2031)

Client Contract/Project No.: SDG Project/Proposal No.: 22345601

ISSUE HISTORY

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<td>Draft for comment</td>
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<td>16th August 2011</td>
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REVIEW

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Other Contributors: Nick Austin, Niken Prameswari, Tom Caulfield, Harshil Shar, Steven Bishop

Review by: Print Peter Twelftree

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