

# LEB13

LLDC TRANSPORT REVIEW

## LOCAL PLAN REVIEW - TRANSPORT STUDY

*Prepared for*

London Legacy Development Corporation

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# 1 Introduction

This report outlines the transport conditions of the London Legacy Development Corporation (LLDC) area in terms of existing and proposed infrastructure schemes, the transport evidence base, relevant updated modelling, and the future priorities in relation to the growth predicted for the area.

The area has seen significant transport infrastructure development, particularly as a result of the facilitation of the 2012 Olympic and Paralympic Games. Beyond that, a fast-pace of development has capitalised on this new infrastructure and the area has seen significant change. This continued pace of development since the adoption of the current local plan has meant that a review of the evidence base is required. The area poses a unique set of challenges from a transport perspective, particularly due to the presence of a significant number of bisecting canals, railways, and roads which can make permeability difficult. Further transport infrastructure improvements are currently being planned or progressed, which will help to serve the connectivity needs of the existing population, as well as unlocking the potential for future development. Figure 1 shows the LLDC area and the boroughs that it falls within.

This report reviews the evidence base for transport infrastructure within the LLDC area, outlining the continued relevance of conclusions from previously published documents, any new evidence that is present, as well as the need for further evidence. It also reviews population growth forecasts in relation to those assumptions used within city-wide modelling. Relevant studies from the neighbouring planning authorities are considered, as well as proposed schemes including strategic level infrastructure, sub-regional projects, and small-scale Infrastructure Delivery Plan (IDP) schemes. The report comments on these schemes in relation to their necessity to positively support future growth.

The report then considers what the transport scheme and policy priorities should be for the area in the light of the gaps and opportunities in transport serving or planned to serve the area.



Figure 1: LLDC Area



## 2 Purpose and Context

The purpose of this review is to assess the transport conditions in the LLDC area, particularly in relation to the fast pace of development since the adoption of the current Local Plan. The scale of development in the area means that the pressures on transport infrastructure may have changed since the previous review, and the revised population and employment growth estimates also mean that a review is required, particularly in relation to assumptions within transport modelling that forms part of the evidence base. The existing evidence base has been built up historically in relation to infrastructure improvements undertaken for the Olympics, as well as for the current Local Plan adopted in 2015, and a considerable amount of this evidence is still relevant. This report therefore provides an assessment of the suitability of the existing evidence base, providing an appropriate and proportionate update in terms of new evidence, and the transport measures required to support the proposed growth within the LLDC area.

As a basis, this review looks at previous guidance and studies that informed the current local plan, including the Olympic Legacy Supplementary Planning Guidance Strategic Transport Study (OLSPG) as well as the detailed transport modelling that formed part of the Legacy Communities Scheme (LCS). Beyond this, more recent documents and guidance are considered, including that from neighbouring boroughs, Transport for London (TfL), the Greater London Authority (GLA), and LLDC.

The latest update of TfL's London Transportation Studies (LTS) model is currently in progress (in support of the Draft London Plan update), using updated growth assumptions compared to those used in the latest LTS release (7.1). This model and the highway and public transport regional models that support it (East London Highway Assignment Model – ELHAM – and Railplan respectively) provide the most up-to-date basis for the assessment of transport pressures in the area, and the wider region and sub-region. These models are based on a scale of development which is similar to the latest growth forecasts produced by LLDC, and this review therefore concludes that these models form a suitable basis for the review of highway and public transport capability and there is no requirement to undertake additional transport modelling work to inform the Local Plan.

This review also assesses various other masterplans, strategies and studies from the boroughs, some of which relate to schemes that are already complete or being implemented, and others that may be at an earlier stage. In summary, the following planning policy documents and studies have been considered in relation to the transport conditions in the LLDC area:

**The London Plan (GLA, March 2016, amended January 2017):** This document provides the spatial development strategy at a city-wide level, which local spatial planning should conform with. In terms of transport, there is an emphasis on integrating transport and development, for example by promoting land use patterns that are centred around transport nodes as well as reducing the need to travel by promoting mixed use development. There is also a focus on connectivity improvements, including improving interchange between different modes, as well as improving the capacity and accessibility of public transport and walking/cycling routes in areas of greatest demand.

**The London Plan (Consultation Draft, GLA, December 2017):** This consultation draft has recently undergone public consultation and a final version is expected to be published in 2019. This plan sets ambitious targets, including achieving carbon free travel by 2050, and

80% of all trips being made by foot, cycle or public transport by 2041. Compared to the previous Plan, there is a stronger focus on the promotion of active travel and sustainable modes. At the core of this Plan are the concepts of 'Good Growth' which emphasises the aspirations for economically inclusive and environmentally sustainable growth, and 'Healthy Streets', which prioritises improving health through active travel and attractive street environments. Public realm improvements are seen as being central to creating a city that encourages active travel.

**Mayor's Transport Strategy (MTS) (TfL, 2018):** The document was formally published in March 2018. The key aspirations of this strategy are for 'Healthy Streets' designed to reduce traffic, improve air quality, and encourage active modes of travel (walking and cycling). It also aims to create a reliable and accessible public transport system that can cope with more passengers, and to invest in transport upgrades to support the creation of new homes and jobs. The evidence base for this document, including the **MTS Challenges and Opportunities Report**, assesses the transport conditions across London, showing particular areas of congestion and crowding on both the public transport and highway networks.

**Olympic Legacy Supplementary Planning Guidance: Strategic Transport Study (TfL, 2011):** The conclusions of this document were that "the main focus of future interventions will be encouraging mode shift away from cars while still supporting regeneration through enhancing connectivity into the surrounding areas with a particular emphasis on walking and cycling connectivity or public transport only links". This strategy and specifically its conclusions remain relevant.

**Stratford Metropolitan Masterplan (London Borough of Newham (LBN), 2011):** This masterplan highlighted the strategy to minimise car use, including the need to "successfully deliver significant travel behaviour changes". It identified that "the most urgent need probably lies in physical interventions that address existing barriers and foster connectivity and environment". Local connectivity and local access improvements are therefore central to the proposed approach, as well as general measures to minimise use of private vehicles. This includes improved access from the south-west to Stratford station and updated traffic arrangements to reduce the impact of traffic in Stratford town centre.

**Hackney Transport Strategy 2015-2025 (November 2015):** This document sets out the transport vision and priorities for Hackney, including a number of key projects to improve public transport such as filling connectivity gaps in the network, as well as encouraging mode shift to walking and cycling. There is also a focus on creating liveable neighbourhoods, particularly by reducing traffic volumes, promoting car clubs and sharing, the provision of electric vehicle charging points, and provision of cycle parking. Car free development is required for development proposals located at sites of greater than PTAL 4, and 'car-capped' will be supported for other sites, which will provide limited off-street parking, whilst still limiting on-street parking. Smart Parking systems are also discussed, which would provide data on parking demand and pollution levels and could vary pricing accordingly to discourage parking in particular areas.

**Northern Olympic Fringe Area Action Plan Preferred Options (London Borough of Waltham Forest (LBWF), 2011):** Although most of area covered is outside of the LLDC area, this remains the most relevant review covering the LB Waltham Forest area. It also highlights local connectivity and in this case the barrier effect of railways. In addition to improved/additional walking and cycling links (including additional links to the Olympic

Park) it supports restoration of the Hall Farm Curve to facilitate improved rail links and supports upgrading of Leyton Underground station, which are continued aspirations for LB Waltham Forest.

**Bromley-by-Bow Supplementary Planning Document (SPD) (LLDC, 2017):** This SPD seeks to reduce the severance and adverse impacts of the A12, with improved crossings of the A12 for pedestrians and cyclists proposed, as well as a new junction to improve vehicular access, to support the residential-led mixed use development proposed for the site. It proposes a segregated cycle path along the A12 on the eastern side south of Bow Roundabout and adjacent to new development. It also promotes a route running along the waterway frontage north-south through the area, linking to the Lea River Park route. It is recognised that parking provision should be low, as public transport accessibility is high, but notes that some road access improvements are required for buses and servicing/delivery vehicles that need access.

**Pudding Mill Supplementary Planning Document (LLDC, 2017):** In terms of connectivity, this document provides a focus on maximising permeability through provision of new routes to, from and through the site with a clear hierarchy to promote pedestrian and cycle movement, improving access to the station. Pudding Mill Lane Docklands Light Railway (DLR) station is situated within the site, and double tracking to increase capacity remains a long-term aspiration relevant to this area. Whilst the provision of a limited amount of car parking is discussed, the priority should be for pedestrians and cyclists, and routes should therefore be designed to encourage slow speeds for cars. The document also supports further provision of bus routes through the area. Specific enhancements include - widening of Cook's Road bridge over the Bow Back River; a new bridge across Bow Back River at Marshgate Lane; east-west connections across the site; new pedestrian underpasses linking the Queen Elizabeth Olympic Park (QEOP) and Bridgewater Road; Junction improvements on Stratford High Street.

**Hackney Wick and Fish Island Supplementary Planning Document (LLDC, 2018):** The focus is on walking and cycling connectivity improvements that improve access to public transport, particularly to the upgraded station at Hackney Wick. The interventions and connectivity projects listed largely focus on cycling and pedestrian routes. It also suggests that new bus routes may also be possible in this area with new all-mode connections such as the H14 bridge. Public realm improvements are also discussed, creating high quality and attractive street environments.

**Draft Greater Carpenters Neighbourhood Plan (Greater Carpenters Neighbourhood Forum, 2017):** The central aspiration is to integrate the neighbourhood with the surrounding areas, including improving access to Stratford Station and the Olympic Park. There is also support for a shift towards sustainable transport, including infrastructure improvements that will promote walking and cycling, such as provision of cycle storage, new cycle/walking routes, and urban realm improvements.

**Tower Hamlets Parking Study (2017):** This study examines the impact of removal of parking spaces in terms of reducing trip generation and emissions. Use of the London Highway Assignment Model (LoHAM) reveals the potential flow reductions resulting from a reduction in parking. This mirrors the strategy set out in the Strategic Transport Assessment (London Borough of Tower Hamlets (LBTH), 2017) which outlines that the borough has the ideal conditions for minimising the role of private cars, and limiting this to just essential trips.

**London Stalling – Reducing Traffic Congestion in London (London Assembly, 2017):** This outlines various issues and measures in relation to congestion on London’s highways, and states the objective of encouraging a modal shift away from private vehicles. This includes encouraging use of public transport and active travel modes, consideration of how road pricing could be used to promote mode shift, and improving the reliability of the bus network, particularly in the context of recent reductions in ridership.

**Lea River Park – Primer and Design Manual (LLDC, March 2017):** The strategic initial phase of this vision is the delivery of a linear park named The Leaway which involves the creation of a continuous walking and cycling route along the River Lea. Parks and additional cycling and pedestrian routes are planned to be added later as land becomes available. This project will serve to increase the permeability of the area, linking previously fragmented spaces, as well as providing public open space.

**East London Transport Options Study (ELTOS) (TfL, planned for mid-2018):** This is a major study into transport options in East London which plans to facilitate growth in the area. Regional level work is ongoing between the East London Boroughs and TfL to progress ELTOS to consider what transport infrastructure is required to meet the sub-region’s needs for the future. In discussions with TfL it is considered that the conclusions of this Local Plan review are consistent with the expected direction and options that this study will propose.

A review of policy documents was undertaken as part of the previous transport review, and these are largely still relevant. Recognising the planned focus on low car parking provision and an emphasis on sustainable transport modes, **the A12 Study** (London Thames Gateway Development Corporation [LTGDC], 2010) concluded that *“the existing and planned highway and public transport networks can reasonably accommodate the levels of development proposed”*, *“the provision of an enhanced local public transport network (buses) and improved pedestrian and cycle network will be needed”* and *“A number of regeneration sites will require improved access”*. The **Legacy Communities Scheme Transport Assessment** (Olympic Park Legacy Corporation [OPLC], 2012) considered the transport impacts of the LCS Scheme and wider OLSPG levels of development. Again, in the context of assumed low car parking provision, it suggested an appropriate response would be additional local junction measures to optimise their use for higher levels of demand but that it would not be necessary or appropriate to increase highway capacity. It also recognised the need for measures to address local station congestion and further bus capacity enhancements but that overall public transport capacity was expected to be sufficient to deal with growth, particularly with the introduction of Crossrail (the Elizabeth line).

This latest review considers the conclusions of these previously assessed documents, as well as relevant updated or new studies and guidance. The conclusions are broadly in line with those previously stated. Specifically, a focus on increased uptake of sustainable transport options should be at the core of the transport vision for the area, in order to support the levels of growth forecast. Additional documents that were considered in the previous transport review but have now been superseded are outlined in Appendix B, specifically the Fish Island Area Action Plan, and the Hackney Wick Area Action Plan.

In summary, the conclusions of previous studies and reports from the LLDC, TfL, the GLA and the local boroughs are that the key initiatives to support development should:

- Address the issues of permeability across the area, particularly in relation to the barriers to local connectivity of the A12, the waterways and various rail infrastructure.
- Improve pedestrian and cycle access to local stations.
- Maximise the opportunities and uptake of walking, cycling and public transport.
- Limit use of private vehicles. Highway improvements should be limited to site access, connectivity, efficient use of the existing network (particularly for walking and cycling). There should be no proposals for increasing highway capacity, however capacity reductions could be considered, for instance on Stratford High Street.

The LLDC area presents unique transport and connectivity challenges. Several event venues also add to the unique character of the area, with large numbers of trips taking place outside of the typical peak periods. This is discussed later in the event management section.

### 3 Transport Policy and Strategy

The 2015 **LLDC Local Plan** sets out an ambitious and sustainable movement strategy that aims to achieve higher public transport use and walking and cycling over time and increasingly judicious and efficient trip-making generally. The Plan outlines that there is crowding and congestion on parts of the area's highway and public transport networks, particularly on the A12 and on Underground links into central London. However, expansion of wider highway capacity is neither practicable given the network capacities across a wider area or desirable given the generally adverse impacts of traffic and the aspirations for street-scape improvements that particularly benefit pedestrians and cyclists and making the local area more liveable. Capacity enhancements including the introduction of the Elizabeth line as well as plans to increase frequency on the Central and Jubilee lines will help to support growth in public transport use.

Related to the aspiration to improve accessibility for pedestrians and cyclists is the challenges that are brought about by the roads, rivers and railway lines that cut through the area and create barriers to movement. Whilst Stratford has excellent levels of connectivity, many parts of the LLDC area are less well served by public transport, such as parts of Sugar House Lane and Fish Island, and rail links to the north-west are also relatively poor. The 2015 Local Plan sets out the strategy of promoting sustainable transport choices, minimising private car use from new developments, supporting public transport improvements including access to transport nodes, lobbying for international trains to call at Stratford International Station, and ultimately continuing the shift away from private motorised transport. Street networks should prioritise pedestrians and cyclists as the most important travel modes, followed by public transport, and only where essential the private car.

The draft new **London Plan** (December 2017) emphasises rebalancing the transport system towards walking, cycling and public transport, creating an efficient and sustainable transport network, which reduces reliance on private cars. The 2015 Local Plan accords with the direction of the current and draft new London Plan.

The draft new London Plan sets out the Mayor's strategic target of 80% of all trips in London to be made on foot, bike or by public transport by 2041. Enhancing the connectivity and accessibility of existing and future public transport network by developing walking and cycling routes is a key factor in this, and the document outlines that rebalancing the transport system towards walking, cycling and public transport requires sustained investment including improving street environments and providing better infrastructure.

In order to deliver the Mayor's aim that by 2041 all Londoners will undertake a minimum of 20 minutes of active travel each day, development proposals should deliver land use patterns that facilitate residents making shorter and regular trips by walking and cycling. The draft Plan notes that streets account for 80% of London's public spaces, and the Healthy Streets approach aims to: reduce car dominance, ownership and use, road danger, severance, vehicle emissions and noise; increase walking, cycling and public transport use; and improve street safety, comfort, convenience and amenity. To aid this, opportunities should be identified to improve the balance of space given to people to dwell, walk, cycle, and travel on public transport, so that space is used more efficiently and streets are greener and more pleasant. Car parking policy in the draft Plan states that car-free development should be the starting point for all proposals in places that are well-connected by public transport, and the minimum level required should be provided elsewhere.

On similar lines, new housing development should focus around stations. Improving connections to town centres will mean more people have access to the things they need locally via attractive walking or cycling routes, while destinations further afield will be easily accessible by public transport. Creating strong links to local centres and transport hubs is particularly pertinent for the LLDC area, due to the excellent level of connectivity from Stratford at a national, regional, and city level, yet the poorer accessibility at a more local scale for some fringe parts of the LLDC area, which have a much lower Public Transport Accessibility Level (PTAL) rating than those areas with good access to Stratford.

The draft London Plan also outlines that use of the public transport has increased by 65% since 2000, largely due to enhanced services and an improved customer experience. By 2041, London's transport network will need to cater for over five million additional trips every day and therefore improvements to the public transport capacity and connectivity are critical in continuing to support the city's growth. Consideration of how different modes such as walking and cycling interconnect with public transportation at transport hubs and on streets is important. The bus network also has an important role to play particularly in delivering orbital connections.

The draft new London Plan also supports the delivery of a London wide network of cycle routes with new routes and improved infrastructure aimed at removing the barriers to cycling. The policy emphasises the importance of securing the appropriate levels of cycle parking which should be 'fit for purpose, secure and well located' and at least at the minimum quantities set in the London Plan standards. These minimum levels are increased slightly compared to the current London Plan, for some use classes. The draft plan defines particular areas where higher cycle parking minimum standards apply, which covers the Boroughs of Hackney, Newham and Tower Hamlets, although not Waltham Forest. These higher standards will encourage increased level of cycling and contribute towards healthy streets in town centres. The Mayor aims to deliver a new London wide network of strategic cycling routes in partnership with the boroughs, which will provide a more convenient and better cycling experience for all types of trips.

Recognising the changing emphasis of the draft London Plan and continuing in the direction of the 2015 local plan, future strategy should address the barriers to movement that the railways, highways, and waterways create in the area, and therefore the importance of interventions that address these barriers and create the connectivity and environment required in order to support sustainable development.

This should be accompanied by land use planning focussed on mixed-use development which enables local trip-making. Higher density development should be focussed around the most accessible public transport nodes, and policies should actively seek to minimise car use and encourage walking, cycling and public transport. The level of new development across the LLDC area offers an opportunity for this, as designs and masterplans can be geared towards improving pedestrian and cycle access and limiting car use. Parking standards should aim to minimise private vehicle use, and car-free development should be considered appropriate in areas where good pedestrian and cycle access is present or achievable as part of the development.

In line with a strategy of mixed use development, the nature of employment growth in the area should ideally be oriented towards local residential areas, by ensuring that when homes are built there are jobs available in the local area and also ensuring that the skill requirements match the skills of local residents.

## 4 Projected Growth

The latest LLDC population growth assumptions predict population growth of approximately 70,000 during the 14 years between 2017 and 2031. This will see population increase by some 300%. Year-by-year this is forecast to be relatively consistent throughout this period, although with a slightly higher level of growth until 2028, after which it levels off slightly towards the end of the planning period. Employment growth has also been estimated in the Oxford Economics London Host Boroughs Employment Forecasts Report (2017). This includes separate estimates for the boroughs of Hackney, Newham and Tower Hamlets (but does not distinguish LB Waltham Forest due to the lack of population within the part of Waltham Forest that falls within the LLDC boundary). These forecasts are shown in Table 1 and 2, and Figure 2.

**Table 1: Estimated Population Growth within the LLDC area**

*Source: LLDC Population Projections*

Year	Total Population
2017	26,274
2021	45,692
2026	74,917
2031	96,219
2036	108,946

**Table 2: Estimated Employment Growth within the London Boroughs of Hackney, Newham and Tower Hamlets (000s jobs)**

*Source: Oxford Economics: London Host Boroughs Employment Forecasts*

	Baseline (2030)	Impact (2030)	Total
Hackney	159.4	+3.5	162.9
Newham	138.2	+75.3	213.5
Tower Hamlets	362.4	+57.5	419.9

The growth forecasts are based on four sub-areas covering the LLDC area. To contextualise this growth, the GLA growth forecasts indicate that the boroughs of Newham and Tower Hamlets rank in the top five London boroughs for population growth between 2016-2036.



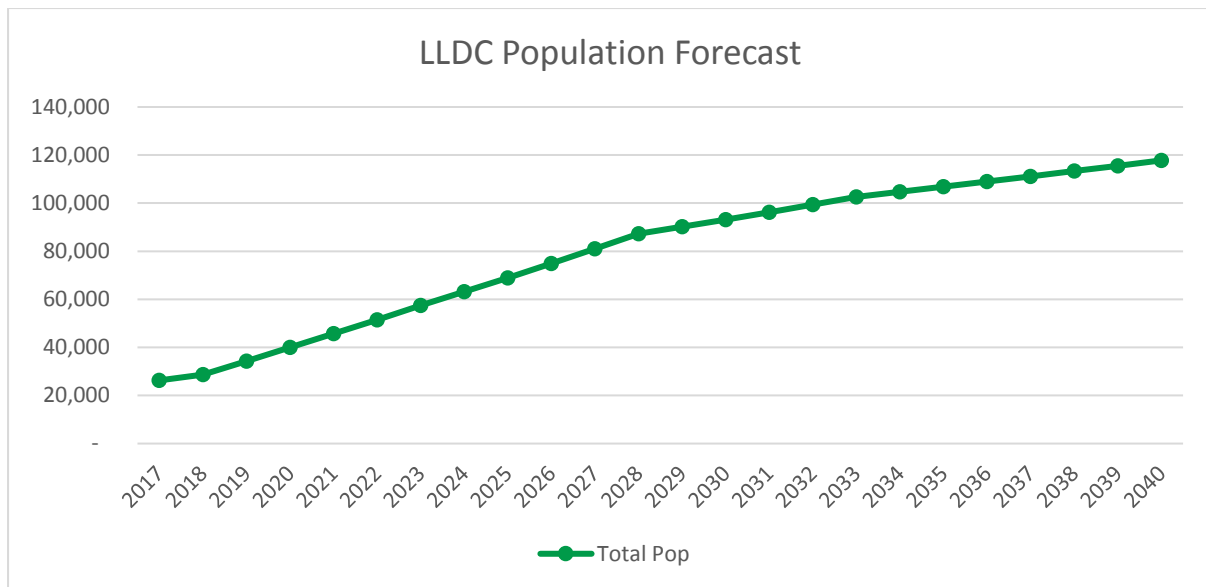


Figure 2: LLDC Population Growth Forecast

At a city-wide level, TfL maintain various models that are used to forecast transport demand and the impacts of this on the transport networks, both highways and public transport. The LTS model uses inputs including assumptions about London’s population and employment growth, data on new transport infrastructure, policy interventions such as new fare systems and macroeconomic factors such as real earnings and fuel prices. Based on this, the model outputs information about trip numbers and mode choices – specifically highway and public transport. Railplan and LoHAM are the public transport and highway models respectively that use this information to assess detailed use of the transport networks, routeing and congestion on the public transport and highway networks. Cynemon is similar, using LTS outputs to estimate the number and routeing of cyclists, used to visualise cyclist route choice. The London Land-use and Transport Interaction Model (LonLUTI) assesses the land-use impact of transport schemes and the demographic, economic and transport outcomes of land-use proposals. A summary of these models is shown in the Figure 3.

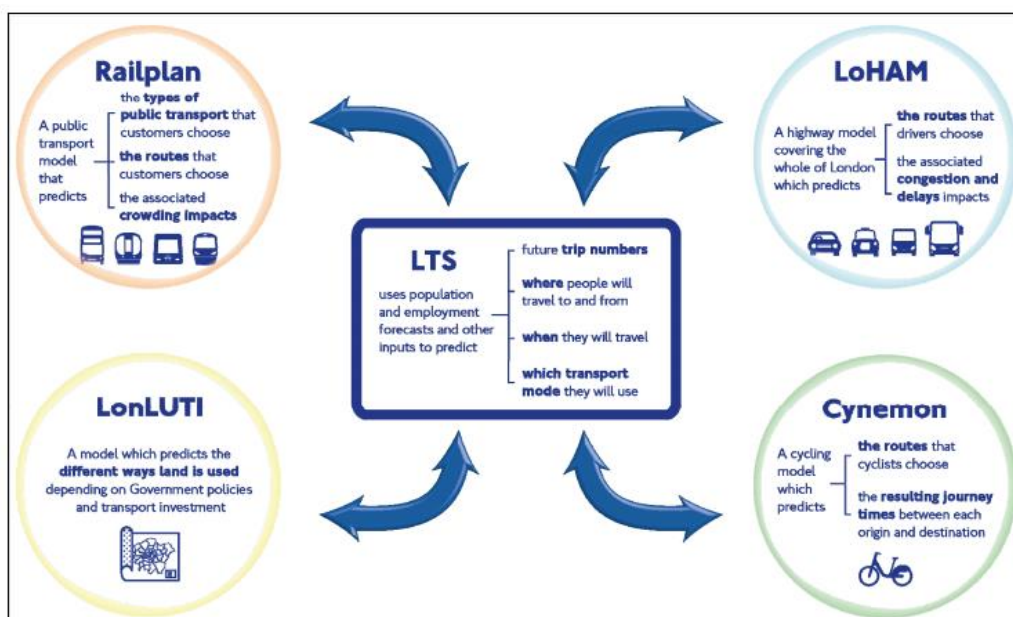


Figure 3: TfL Transport Modelling

In order to ascertain the suitability of these models for assessment of the future conditions of the transport network in the LLDC area and the associated transport infrastructure needs, the employment and population growth assumptions used within the LTS model have been compared to the LLDC forecasts. Although the LTS model spatial representation does not provide an exact fit to the LLDC area (it includes a residential area to the north-east of Stratford), the comparison shows broadly similar population and employment growth forecasts between LLDC's forecasts, and the assumptions used across the LTS area that approximately covers the LLDC area. This comparison is summarised in Appendix A.

# 5 Transport Capacity and Connectivity

The LLDC area has strong transport connections at strategic sub-regional, regional, national and even international levels, both in terms of highways as well as rail and air connections (Eurostar services reached via St. Pancras or Ebbsfleet, and straightforward access to London City and London Southend airports). Several improvements at this strategic level are either planned or in progress and will help to further improve the connectivity of the area. Parts of the Elizabeth Line are already running (as TfL Rail) and incremental improvements will be added until full service commences in December 2019, adding to the transport offer and at a strategic level providing improved links to Heathrow airport and, when it opens in 2026 High Speed 2.

In terms of highways, the area benefits from key strategic highway links towards Central London, as well as linking directly to the Strategic Road Network via the A12. Some small local highways improvements are planned or in progress. However, limited upgrades of highways at a strategic level mean that capacity is unlikely to increase.

## 5.1 Highways

The area is well served by strategic highways. This mainly comes about through the proximity of the A12, which links the area to the UK's Strategic Road Network, specifically the M11 and the M25. The A11 also provides a strategic link towards central London, and the Blackwall Tunnel/A2 link the area across the river to the south. As previous analyses have shown, these highways currently carry high volumes of traffic, and are often congested.

Specifically, the analysis for the London Plan and the MTS using LTS shows that significant parts of the highway network around the area are already suffering significant congestion, which is expected to worsen by 2031 despite the focus on and promotion of sustainable modes of travel and limitation of car use. The Strategic Transport Modelling Report (TfL, December 2017) states that:

*Overall traffic congestion is expected to increase by 2041 without delivery of the MTS, with average vehicle speeds decreasing across London. In the MTS scenario, fewer cars and shorter journeys mean that speeds are likely to increase across most of London in 2041 compared to 2015. Reallocating road space to meet MTS Healthy Streets objectives could be achieved while reducing delay at a London wide level. In the MTS scenario, buses benefit from stable or improved speeds for general traffic as well as the reallocation of road space to buses so that bus speeds improve London-wide to 2041.*

The MTS Challenges and Opportunities Report (TfL, 2017) states that:

*Despite a falling car mode share, without further action traffic is expected to rise across much of London, with 8.6 million more kilometres travelled by road on an average day in 2041 compared to 2015. Over the same period, the amount of space available for use by general road traffic is expected to reduce by 3 per cent. The cumulative impact of more traffic in a reduced network is that congestion is expected to rise steeply over the period to 2041, leading to slower traffic speeds and more time spent travelling. In total, speeds will fall by a quarter in central London throughout the day and by around a sixth across the rest of London in peak periods, with speeds in central London remaining at below 10km per hour all day.*

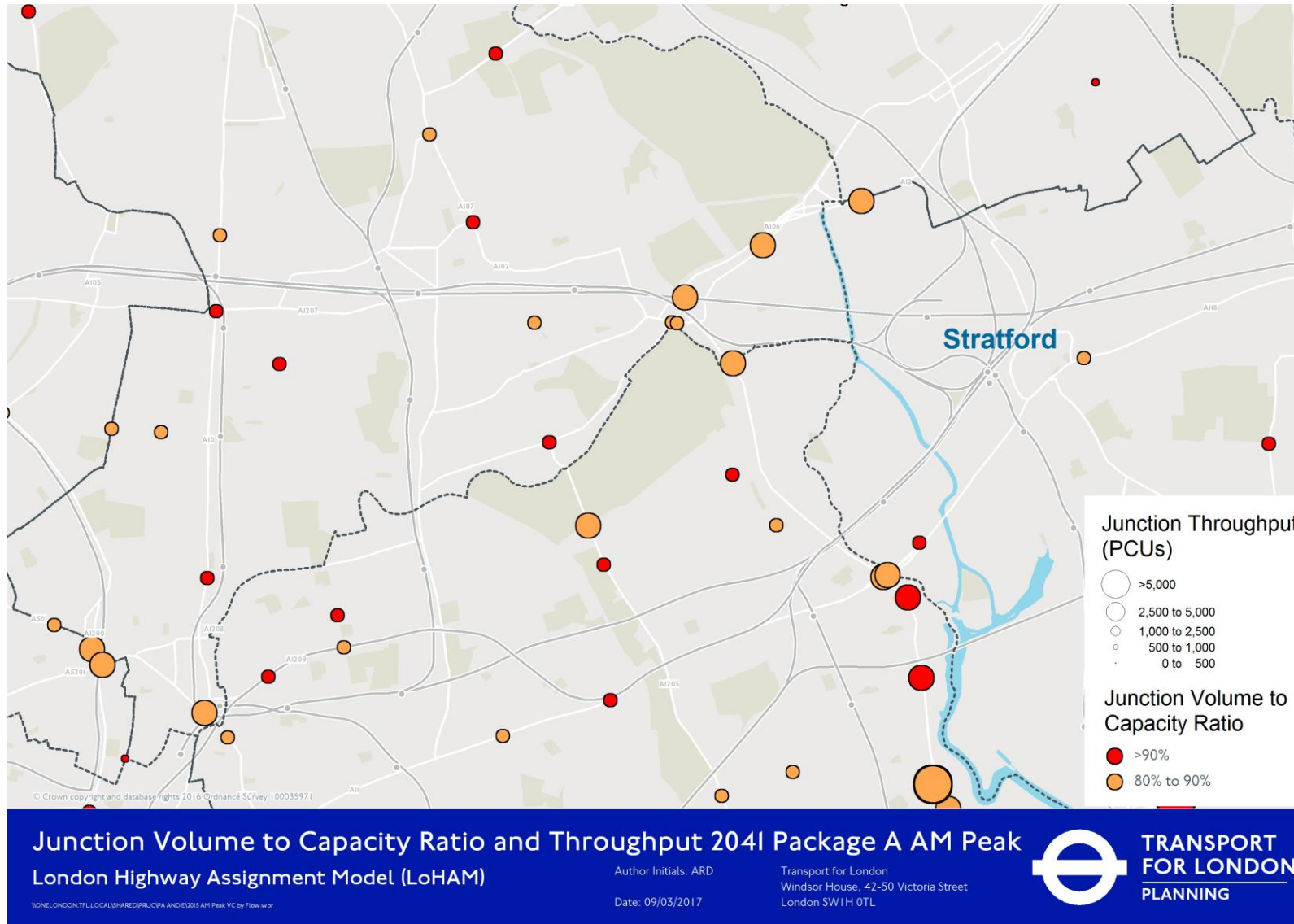


Figure 4: Junctions operating at over 80% of capacity, weighted by flow, baseline forecast 2041 (TfL, 2017)

Figure 4 shows the extent of highway congestion in and around the LLDC area, with several junctions operating above design capacity and high traffic volumes across the area.

There are several specific locations where levels of congestion could cause concern -

- the A12 generally;
- Lea interchange with the A12;
- Bow Roundabout; and
- Stratford generally.

In addition, there are local highway pressures on the highway network including the A118 through Stratford Town centre and the A112 Leyton Road corridor.

Given the current financial context and the city-wide promotion of sustainable modes of travel over the use of private vehicles, even if desirable it is unlikely that any major local highway schemes to increase capacity will be delivered. Their efficacy may also be limited by the capacity constraints of other routes across and around the LLDC area.

This again highlights the movement towards sustainable methods of transport, and any highway upgrades should therefore focus on bringing benefits for pedestrians and cyclists, increasing the safety and permeability of the area for these users and securing local access. The only major strategic highway schemes currently under consideration that could have some impacts on the LLDC area are additional river crossings, in particular the Silvertown Tunnel, as well as other potential locations for crossings further east.

The Roads Task Force (RTF) report (2013) was produced as the result of a manifesto commitment made by the previous Mayor to consider how the highway network in London could better serve local communities, helping to improve the urban realm, cut pollution and ease congestion across the capital. Having several commonalities with the direction of the latest Mayor's Transport Strategy and the Healthy Streets approach, the RTF outlined its key aims: to enable people and vehicles to move more efficiently on London's streets and roads; to transform the environment for cycling, walking and public transport; and to improve the public realm and provide better and safer places for all the activities that take place on the city's streets, and provide an enhanced quality of life. The RTF recognised that a well-functioning city needs a variety of street types that serve different roles and functions. On some types of road, the priority would be on the reliable movement of traffic, whereas on others it will be about calming traffic and improving conditions for pedestrians and cyclists and enhancing the quality and sense of place. Since the RTF report in 2013 which outlined the goals of improving the safety and efficiency of London's roads, TfL has published updates on progress against the recommendations in the report. This included completion of the Cycle Superhighway 2 upgrade, between Aldgate and Bow roundabout. London's Road Modernisation Plan (2015) also discusses repair and improvement works to the A12, specifically at the George Green and Green Man Tunnels, to the north east of the LLDC area.

The long-standing ambition to improve the routes through Stratford Town Centre and specifically improve the urban realm is now progressing. This includes removal of the existing gyratory and is expected to be complete in spring 2019.

The Healthy Streets approach outlined in the new London Plan as well as the Mayor's Transport Strategy sets out to prioritise active travel and to improve air quality by planning street networks that function well for pedestrians and cyclists, as well as providing public transport networks which provide attractive and accessible alternatives to use of private vehicles. This will also help to make streets more attractive and social places, and neighbourhoods more vibrant. Development in line with these aspirations may require a

change in attitudes, particularly in terms of the creation of street space that may create a less convenient environment for cars as a result of the prioritisation of the space for pedestrians and cyclists.

Whilst changes to the local highway network are expected to be relatively limited, in the context of promotion of walking, cycling and use of public transport and limiting car parking it is considered that the highway network in the LLDC area will be able to support the proposed level of development over the Local Plan period.

## 5.2 Public Transport

The LLDC area benefits from an excellent level of accessibility in terms of public transport, which provide local, sub-regional and regional connections. There are a range of services operating, particularly focussed on Stratford. Stratford is one of the best rail connected locations in London. Stratford station is served by the Central and Jubilee London Underground lines, National Rail services, TfL Rail (which is a precursor to the Elizabeth line), London Overground and DLR services. The adjacent Stratford International station provides access to high speed rail services to Central London and to Kent, as well as providing a connection to Eurostar international services via St Pancras, Ebbsfleet International or Ashford.

The **Elizabeth line** is expected to be fully open by December 2019, with services running from Stratford to Shenfield and Abbey Wood in the East, and through central London to Heathrow airport and Reading in the west. Services from Stratford to central London as far as Paddington are expected to commence in December 2018 in advance of full opening of the line. This will provide a significant capacity increase, easing congestion on the current offering of services from Stratford. There will also be a notable decrease in journey times, as well as opening up a range of destinations able to be reached directly from Stratford.

Beyond services at Stratford, there are several other stations serving the LLDC area which provide important transport links. London Underground serves Bromley-by-Bow on the District and Hammersmith and City lines with services east towards Upminster, and west through central London to Hammersmith, Richmond and Ealing. There are also London Overground services from Hackney Wick, and DLR services from Pudding Mill Lane, Stratford High Street and Stratford International Stations.

The **Hackney Wick station** upgrade is nearing completion, a significant improvement from the previous access to the station which was unattractive and inconvenient for many users. The major upgrade offers more direct access, including a new entrance, ticket hall, stairs, lifts, and a new subway creating a pedestrian and cycle link from Wallis Road through to White Post Lane.

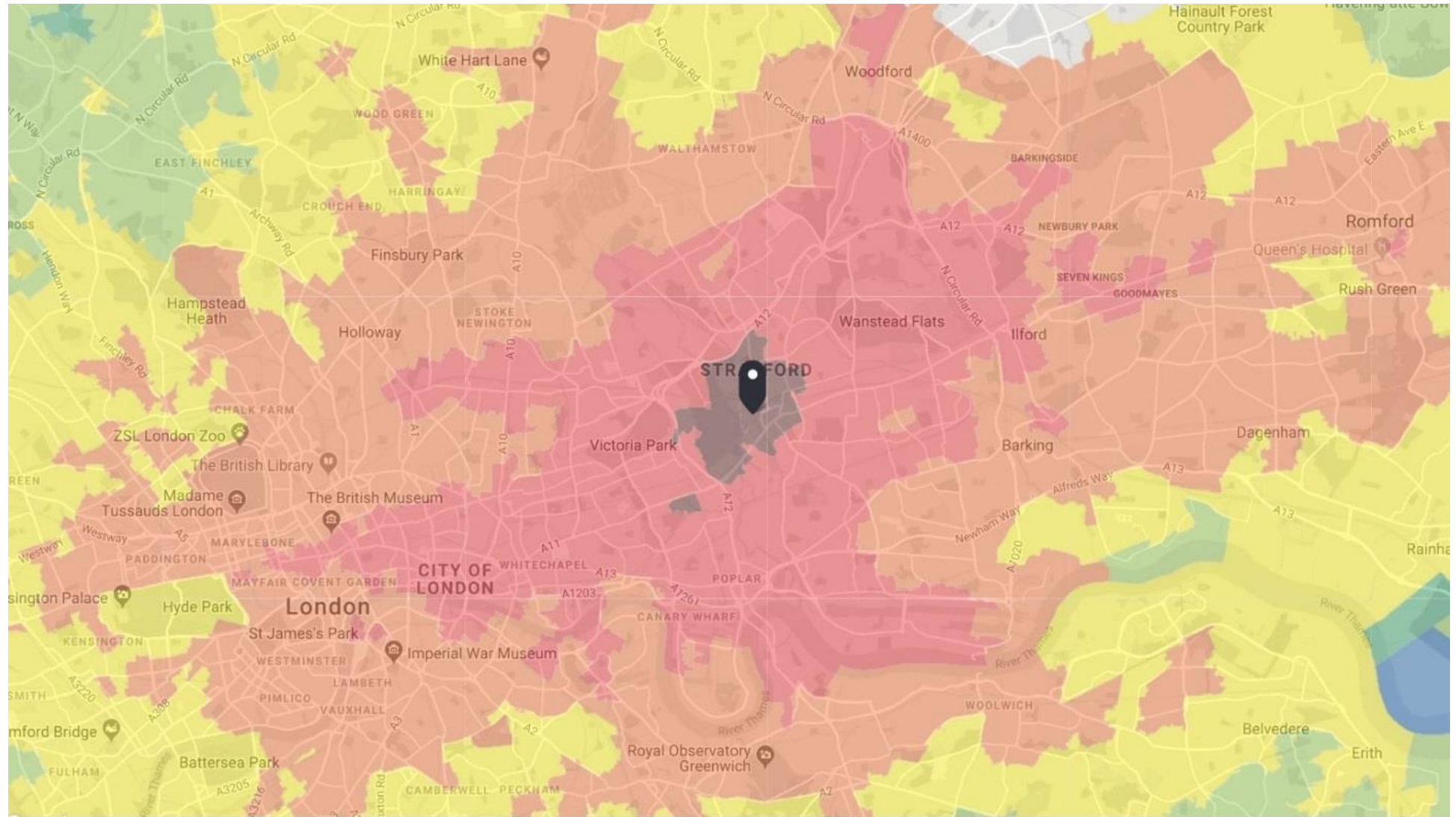
The first phase of the **Bromley-by-Bow station** upgrade is also near completion, and represents an important step in the regeneration of the Bromley-by-Bow area. Congestion problems at Bromley-by-Bow reduced the station's attractiveness, particularly in the context of development levels increasing in the surrounding area. The upgrade includes improvements to the station's appearance and ticket hall, as well as accessibility improvements through the provision of lifts which provide step-free access. Further work will continue as the second phase of the station upgrade, including extension of the building and further access improvements.

Outside of the LLDC area, Lea Bridge station has re-opened, providing connectivity with Stratford and Tottenham Hale and the introduction of the Elizabeth line will result in substantial service improvements at Maryland.

In terms of provision of bus services, the LLDC area is served by large number of routes, which mainly originate/terminate at Stratford, adding to the connectivity offering in the area, and also providing the opportunity for relatively straightforward interchange between bus and rail services. Many routes have recently seen changes in order to better serve the QEOP and the surrounding development, including making use of Eastway bridge now enabling two-way bus operation (Route 388). The Olympics Post-Games Transformation has created a new highway network across the Olympic Park enabling new bus services to be provided across this part of the LLDC area. However, the current highway network does limit access, particularly through Bromley-by-Bow to the east of the A12 and through Sugar House Lane.

Given the policy context of a focus on promoting sustainable modes of travel and limiting private car use, the range of the public transport offering in the area provides a basis to support future development. Given the current and predicted level of congestion on the highway network, it is clear that consideration of how development can be planned in a way that maximises opportunities for residents to conveniently access this public transport will be an important factor in ensuring the future vitality of the area.

Outputs from TfL's WebCAT Time Mapping tool (TIM) provide an indication of the accessibility of the LLDC area by public transport. **Error! Reference source not found.** below shows this accessibility and demonstrate that much of Central London, East London and substantial parts of South London are within a 30 minute journey time by public transport.



**TIM output for 2031 (Forecast)**

Scenario: 2031 (Forecast) Mode: All public transport modes, Time of day: AM peak, Direction: From location

**Map key - Travel Time**



Figure 5: 2031 AM-Peak Public Transport Travel Time



Modelling by TfL for the London Plan and MTS shows that the public transport system will provide sufficient route capacity into the future, particularly given the planned upgrades. Congestion mapping from TfL’s Railplan modelling undertaken as part of the evidence base for the MTS is illustrated in

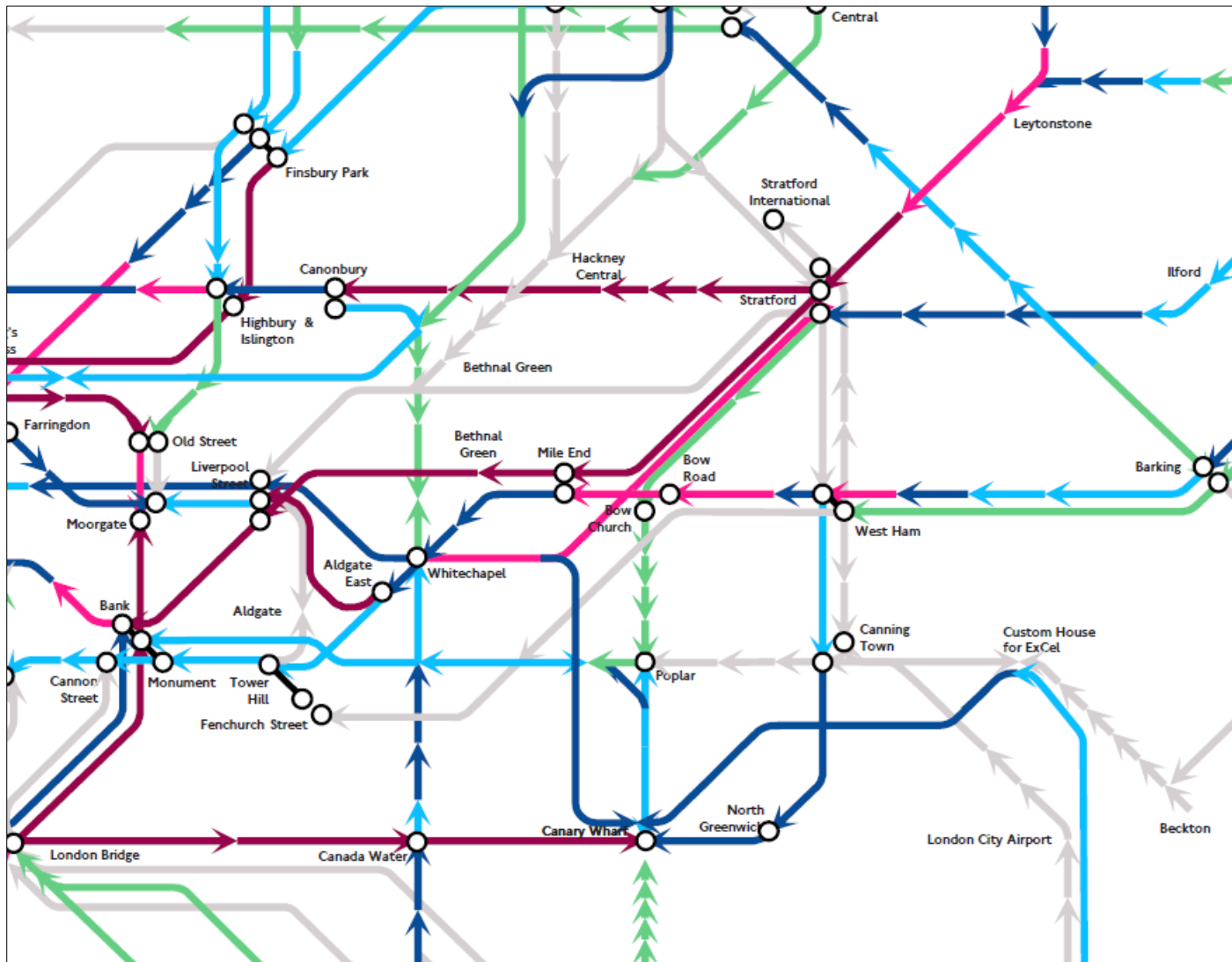


Figure 6. This shows that much of the network through the LLDC area will be very busy with the level of development anticipated but that with the introduction of the Elizabeth line it is able to accommodate this growth.

However, increased crowding is evident at key stations and interchanges, particularly at Stratford, and several stations suffer from congestion and poor accessibility. Whilst the situation at Stratford is acute, much of the pressure on the station arises from passengers interchanging between lines and accessing the station from outside the LLDC area. Consequently, growth in the LLDC area makes only a limited contribution to future overcrowding in the station.

Growth in travel demand will also result in increased demand for buses that will need to be taken into account by TfL in the planning of bus services in the local area.

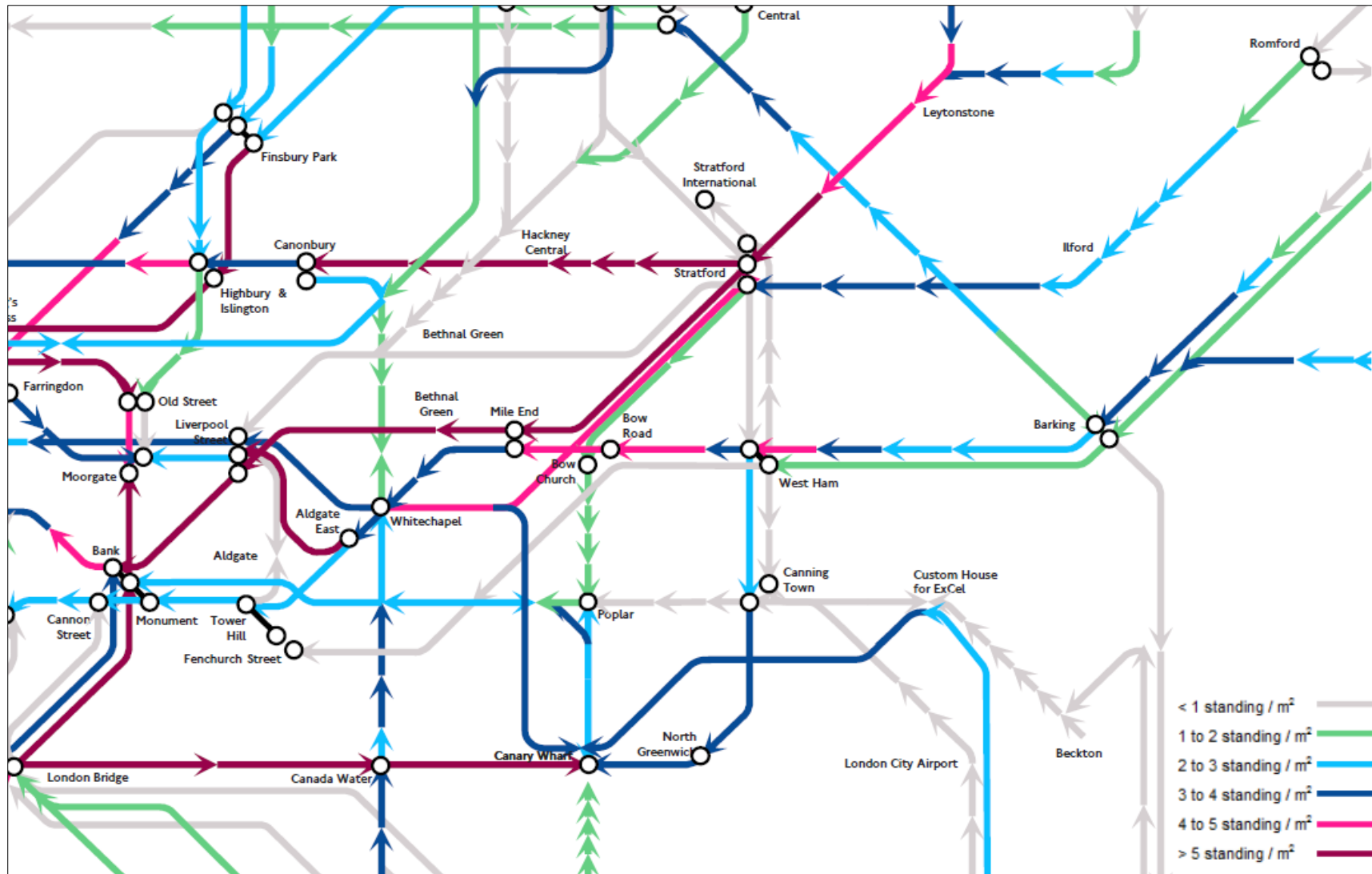


Figure 6: Morning peak crowding on rail and underground services in London, 2041 (TfL)

As discussed above, there is an excellent level of public transport available in the area, specifically at Stratford. Despite this, other parts of the LLDC area away from this transport hub are served relatively poorly. These differences in access to public transport across the area can be seen by the variation in Public Transport Accessibility Level (PTAL – a measure promoted by TfL to indicate relative accessibility) scores. Whilst a significant area surrounding Stratford has very high PTAL scores of level 6a or 6b, these high scores drop notably in the fringe parts of the LLDC area. Several areas, particularly to the west, have a score of 2 or lower. This can be seen in Figure 7.

It should be noted that whilst PTAL provides a useful general assessment of the public transport services available at a particular location, the destination of public transport services is not considered and the PTAL therefore lacks a full assessment of the usefulness of the services available. Additionally, the assessment only considers rail services with 800m of a location (and 400m for bus services) creating somewhat of a ‘cliff-edge’ at these points. PTAL should therefore be used to give a general indication of access to public transport, but further assessment and analysis should be undertaken within Transport Assessments in ascertaining the transport situation of a particular site.

Beyond Stratford, it can be seen that access levels are variable, and this highlights the importance of permeability improvements for walking and cycling, to improve access to existing public transport nodes. An example of this is the proposed new entrance at the south-western side of Stratford station that would substantially improve access to the station from the Carpenters Estate and other areas further west, eliminating what was previously a particularly circuitous route. Similarly, bus route improvements could be beneficial in supporting future development. There have been various changes to the bus routes serving Stratford and the QEOP in order to support development, and as the area develops further the bus network should be reviewed and updated as necessary to continue to support travel in and around the area. The bus service improvements and the improved walking environment arising from recent planning approvals substantially improves upon previous access levels but challenges in terms of improving accessibility to some fringe areas still persists.

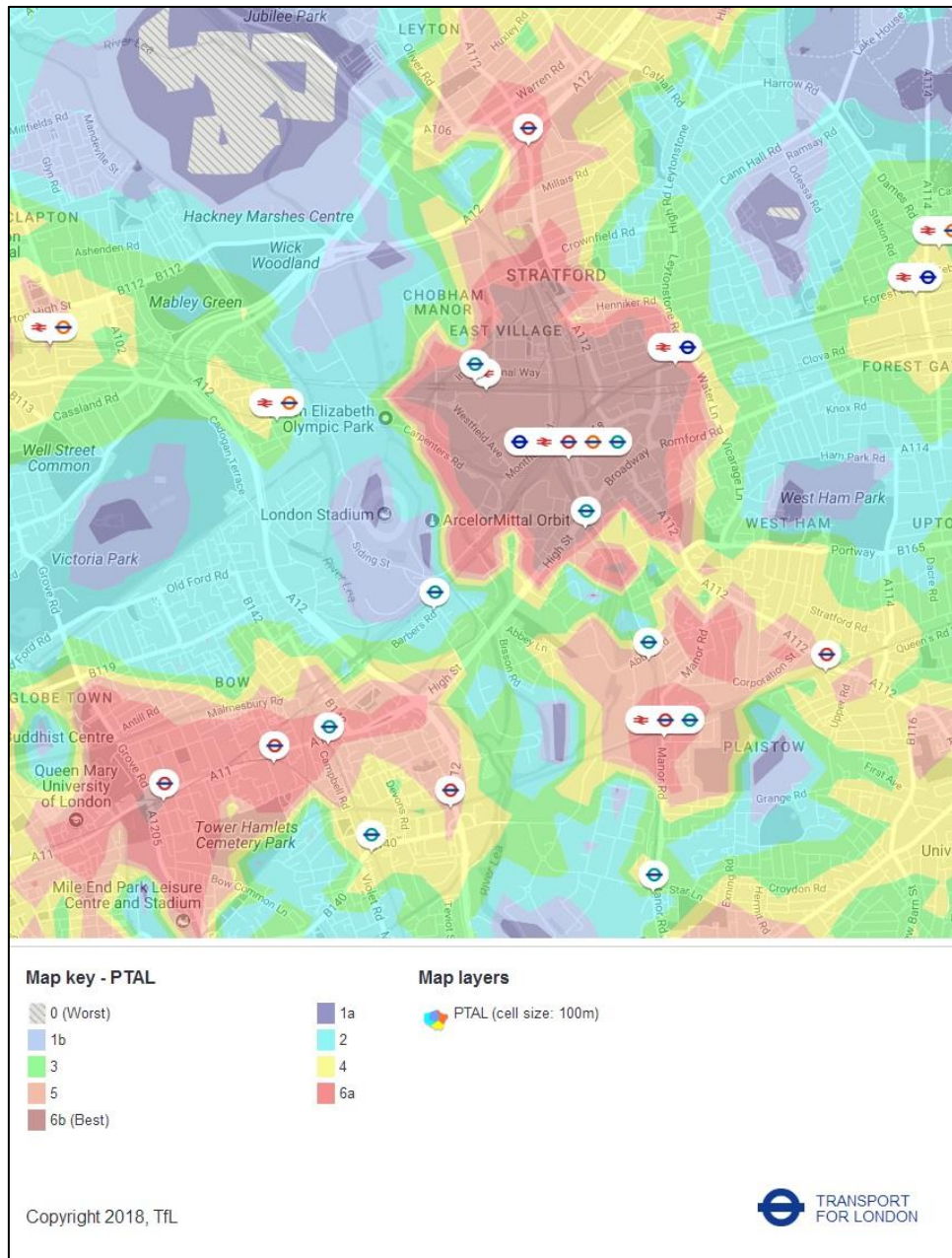


Figure 7: PTALs across the LLDC Area

There are various wider transport projects which whilst aimed primarily to bring benefits elsewhere that are outside the remit of the LLDC Local Plan process but could also serve to improve access to/from the LLDC area. These include:

**Eurostar (or other) international services at Stratford International:** Whilst this was the original intended purpose of the Stratford International station, this has been the subject of much debate. Any future use of this station for international services would connect the LLDC area directly to mainland Europe.

**Crossrail 2:** This could potentially bring some benefit to the LLDC area, specifically via a potential future Eastern branch from Dalston towards Hackney. Design development and options testing are currently in progress. However, the timescale for opening of the core scheme is likely to be beyond the time horizon of the Local Plan, with any further extensions beyond this.

**DLR Twin Tracking:** Aspirations for twin-tracking, which would increase capacity on the Poplar DLR branch serving Stratford and Pudding Mill Lane.

**Hall Farm Curve:** Restoration of the Hall Farm curve and rail services into Stratford could increase connectivity towards the north-east from Stratford. This would provide a direct link between the Chingford-St James Street section of the Overground network and the Lea Valley Line to Lea Bridge and Stratford.

**West Anglia Main Line upgrade:** Part of the Lea Valley Rail Programme, this upgrade involves the construction of an additional track between Stratford and Angel Road/Meridian Water, increasing capacity and connectivity to the Cambridge/Stansted corridor. Further upgrades and four-tracking could take place as part of the proposed **Crossrail 2** scheme, which could release further capacity on this corridor.

## 5.3 Walking and Cycling

The number of waterways, roads and rail corridors transecting the LLDC area, combined with its historic industrial character, mean that it has faced particular challenges in terms of creating continuous and attractive routes for cyclists and pedestrians to cross the area. Initiatives to improve this have gone some way in terms of the creation of routes that provide safe and attractive routes which encourages their use, linking the LLDC area to its surrounding neighbourhoods. The Leaway, for example, crosses and runs alongside the waterways, providing a coherent north-south walking and cycling route across the area. Despite this, the area still faces significant issues of severance by waterways, roads and railways. In the context of the new London Plan, there is a key focus on the Healthy Streets initiative which aims to prioritise walking, cycling and public transport use to create a healthier city, alongside the Plan's target for 80% of all trips to be made on foot, by bike, or by public transport by 2041. This is particularly pertinent for the LLDC area, which offers excellent public transport accessibility from its various public transport nodes, yet faces issues of severance and poor connectivity at a more local level. There is significant opportunity and scope for interventions that can improve this local connectivity for pedestrians and cyclists and contribute to the aspirations of the Healthy Streets initiative and the objectives of the new London Plan more broadly.

The major improvements brought about by the Olympic Games works, Transformation works and increasingly the Legacy Community Scheme (LCS) and other developments that have resulted in new and much improved connectivity, particularly across the Olympic Park and fringe areas. Beyond this there are various schemes that have contributed to improved cycle and pedestrian accessibility in the LLDC area:

**Cycle Superhighway 2:** With sections of full or partial separation from vehicular traffic, this four-mile cycle route provides a link between Stratford and Aldgate East towards central London.

**Bow Interchange:** Whilst plans to redesign the interchange and remove the roundabout and flyover have been deferred, the interim scheme has been completed, making it easier for pedestrians to cross Bow Interchange safely. This has involved the installation of signalised crossings on Bow Road and Stratford High Street and the introduction of crossings to link Bow Road and Stratford High Street via the roundabout's central traffic island.

**TfL Cycle Hire scheme:** This has been extended into the Olympic Park and further into the LLDC area, increasing the opportunities for trip making by bike. However, this is still limited compared to other areas of London so its coverage could be extended into un-served areas as well as increasing the density of docking bays across the LLDC area.

**Leaway:** Continuation of the previous ‘Fatwalk’ scheme conceived by the London Thames Gateway Development Corporation as part of the Lea River Park project, the Leaway forms a key link within the 26-mile Lee Valley Regional Park. Various improvements along the rivers and canal have improved north-south connectivity for pedestrians and cyclists, and created a more attractive environment. This has been particularly successful, with anecdotal evidence suggesting that some tow paths have become congested at peak times. This highlights the enthusiastic uptake of these new links and improved environments, as well as the need to continue to expand the network of cycle and pedestrian routes to tackle the local connectivity issues that the area faces.

In order to continue to promote sustainable means of travel such as walking and cycling, and to improve access to public transport nodes for those areas less well served, a continued focus is required on how severance issues across the area can be reduced, and how routes can be designed so that users perceive them as attractive and safe. To be successful this must address all aspects of the journey, from tackling the more substantial barriers to addressing the more detailed and local barriers or improvements that would make sustainable modes more attractive and encourage greater use.

The relatively small size of the LLDC area, and the dense nature of development means that improving such infrastructure represents a significant opportunity to improve accessibility, and to reduce pressure on roads and public transport.

## 5.4 Remaining Barriers to Movement

As outlined in the previous transport review, the coarse urban grain seen across the LLDC area differs to that of neighbouring areas, and presents a challenge in terms of permeability and integrated connections to these areas, potentially limiting travel options. These barriers to permeability are largely due to the major rail, highway and waterway infrastructure that dissects the LLDC area

The permeability issue is particularly pronounced in these areas:

**Crossings of the Lea Navigation:** While remaining a barrier to full connectivity, the Olympics Post-Games Transformation, Olympics S106 schemes and LCS have largely addressed this with crossings for multi-modal use, improved bus access and dedicated walking/cycle links, improving the permeability of the urban grain largely for east-west movements. Further potential crossing opportunities are limited by adjacent development and, given the improvements already achieved or being completed, would be of relatively limited benefit.

**Bow and Sugar House Lane:** The A12, lack of river crossings and limitations on those that do exist continue to present barriers to movement in the Bromley-by-Bow and Sugar House Lane area to the southwest of the LLDC area. Addressing the lack of attractive crossings of the A12 for pedestrians and cyclists and poor access, including for buses, to the proposed developments is a priority and necessary to support the proposed development proposals in Bromley-by-Bow. The wider area is, however, also fragmented by waterways and roads undermining attractive and efficient sustainable movement. Additional crossings linking eastern Bromley by Bow, Sugar House Lane and the Pudding Mill areas, focused particularly on bus, cycle and walking

opportunities and including river crossings and across the A118, Stratford High Street, would substantially further improve the permeability of the Sugar House Lane and eastern Bromley-by-Bow neighbourhoods.

**Hackney Wick/Fish Island:** The Hertford Union canal and adjacent development present significant barriers to north-south walking and cycling links between Fish Island and Hackney Wick and the existing routes are inconvenient and insufficiently attractive for many potential users. This is a particular barrier to improving the accessibility of the upgraded Hackney Wick station from Fish Island. Improved crossings, access through adjacent developments and an improved street/pedestrian environment could substantially address this barrier.

## 5.5 Philosophy of Movement

Ultimately, sustainable modes of travel need to be attractive, accessible and supported by appropriate policy instruments, and a full range of interventions – transport and land use in nature – are required in order to support the forecast level of growth. Interventions should include:

- proactive efforts to maximise walking, cycling and public transport use with comprehensive and attractive networks, and creation of safer, easier, cleaner and more appealing street environments;
- rail station capacity and accessibility improvements;
- ensuring sufficient bus infrastructure, capacity, and routes which serve existing and, particularly, new developments;
- more efficient and effective highway traffic management and localised highway improvements (to provide access to new developments and relieve local bottlenecks), whilst prioritising the use of street space for pedestrians, cyclists, and public transport; and
- land development policies and planning, design and approval processes that provide opportunities for and encourage efficient and sustainable travel choices and behaviours and limit car use.

Further discussion of land-use strategies, travel planning, and smart travel is given later in section 9.

## 6 Connectivity

The 2015 LLDC Local Plan recognises the criticality of improvements to the area's transport networks and connectivity in supporting the fast pace of growth that the area is expected to continue to see. The Plan outlines the objective of securing the infrastructure required to support growth, including improving local connectivity and the delivery of new bridges and routes to maximise walking and cycling, as well as improvements in public transport infrastructure and services that will help to support growth and improve international, national, regional and local connectivity.

As discussed earlier, the range of transport services available at Stratford bring an excellent level of connectivity to the area, with very high PTAL scores at Stratford and the immediate surrounding areas. However other parts of the LLDC area are relatively less accessible, and as such, a key priority should be to provide local connectivity improvements to increase the permeability of the area, and improve the access to the key transport nodes, particularly Stratford.

The rivers, canals, rail corridors and roads provide connectivity at a regional and national level, yet at the same time dissect the area at a local level, creating a barrier to accessibility and often creating the need for particularly circuitous routes. The schemes proposed therefore tend to focus on local level accessibility improvements, largely based on walking and cycling, and improving access to public transport. Promotion of this type of movement should also entail a move away from private car use, and limit any increase in pressure on the highways in the area. This shift is also in line with guidance and policy objectives at the local, regional and national levels.

Since the 2015 Local Plan, the emergence of the Cultural and Educational District proposals highlights the continuing evolution and changing character of the area. The emergence of such proposals also demonstrates the need to continue to review connectivity proposals in the context of development proposals as they come forward, both ensuring that the individual developments fully support sustainable access and to ensure opportunities for further improvements to connectivity are exploited. Various educational and cultural institutions are part of the proposed development, including the UCL East Campus and Stratford Waterfront proposals that will bring about opportunities to improve connectivity. Inevitably there are also challenges, particularly in relation to the increased numbers of people in the area and the proximity of the London Stadium. Various pedestrian and cycle routes are proposed around and through the UCL East site either as part of the development or S106 requirements, as well as urban realm improvements to create a more pleasant and safer feeling environment. Similarly, the Stratford Waterfront development includes an additional crossing of the rail lines to improve connectivity between the Stratford Waterfront development and Olympic Park and Stratford City.



# 7 Movement and Access Options

Various transport related reports and studies have been completed over recent years, some of which focus specifically on the LLDC area and others which cover neighbouring boroughs or the broader city-wide area but may have implications for movement and access to, from and with the LLDC area.

These have been outlined earlier in section 2 of this review and present broadly consistent themes in terms of identifying key measures to improve transport links and meet development needs.

Local schemes include:

- Station upgrades including improved access;
- Pedestrian and cycling links across the various barriers causing severance issues in the area – this includes new and upgraded links across the A12 and the various waterways.
- Enhanced bus connections;
- Improved highways environments in certain important locations, particularly Stratford High Street, in the interests of improved public realm for pedestrians and cyclists.

There are various other schemes which either cross or fall outside of the LLDC area, yet are relevant for consideration in this transport review as they are important in terms of travel into, out of, or across the area, and may have impacts on the future performance of the area's transport networks.

The following sections of this review consider the measures that are considered necessary to support development under the headings of:

- **Highways;**
- **Public Transport;**
- **Walking & Cycling; and**
- **Waterways.**

It should be noted that some schemes are related to more than one of these, and such cases are therefore allocated to the heading considered most appropriate, with discussion for each including the scheme's broader implications.

The following four sections outline the schemes that are considered to cover the requirements of transport improvements necessary to support growth across the LLDC area. A full list of schemes categorised according to their status/progress is provided in Appendix C.

The schemes within these headings are then categorised by area. The sub-areas within the LLDC area are illustrated in Figure 8 and are (with the borough(s) that each area covers):

- **Sub-area 1:** Hackney Wick and Fish Island (LBH, LBTH)
- **Sub-area 2:** North Stratford and Eton Manor (LBN, LBWF)
- **Sub-area 3:** Central Stratford and Southern QEOP (LBN)
- **Sub-area 4:** Bromley-by-Bow, Pudding Mill, Sugar House Lane and Mill Meads (LBN)

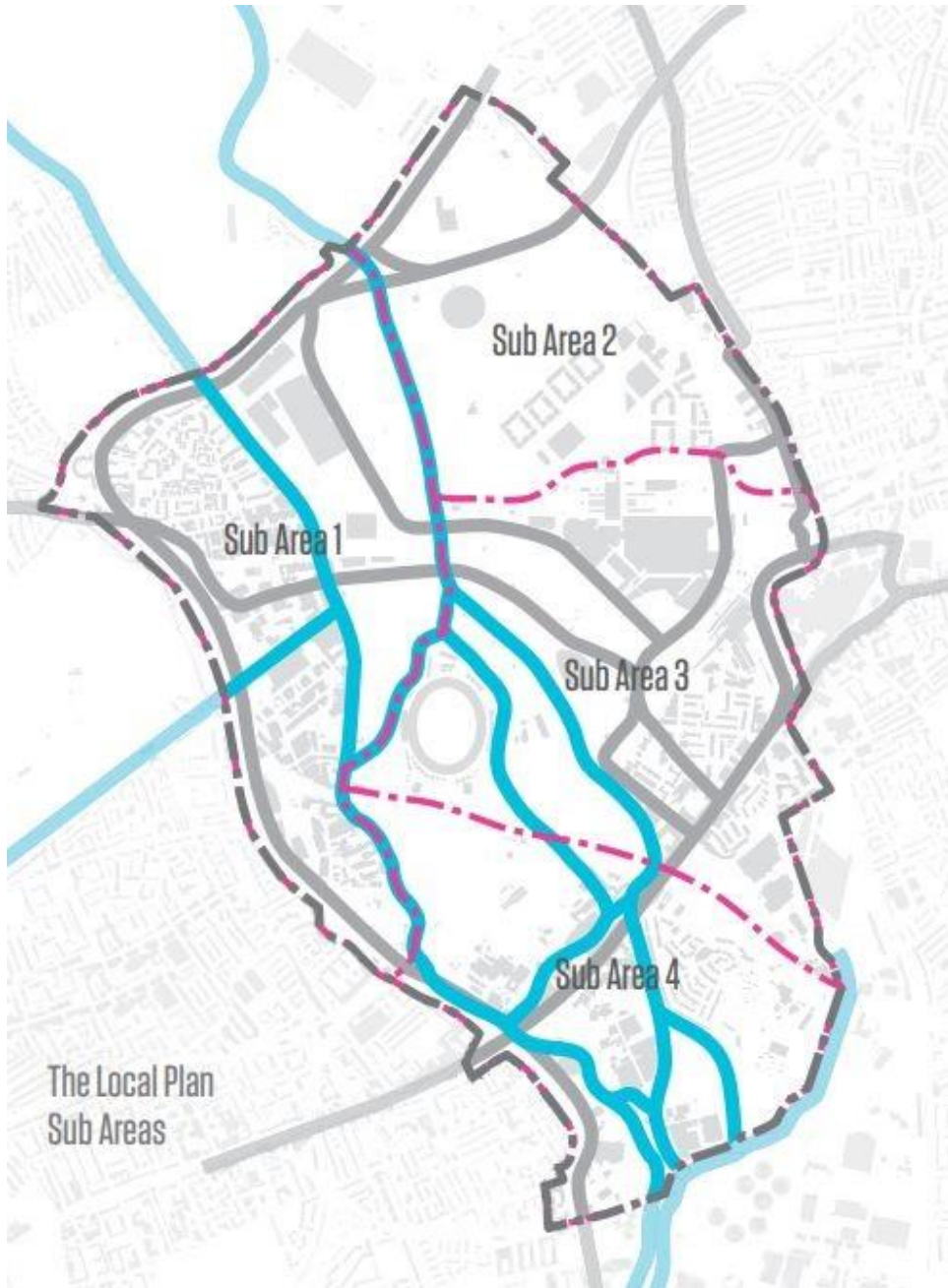


Figure 8: LLDC Sub-areas

## 7.1 Highways

As discussed earlier, schemes to increase capacity of the highway network would not be considered appropriate, particularly given the policy context of the Healthy Streets approach and the promotion of sustainable modes of travel and limiting private car use. As such, there is little aspiration or opportunity for highway schemes which enhance capacity. Instead, the highway schemes that are considered for inclusion in the local plan largely focus on addressing pinch points and creating and/or enhancing links which provide improved amenity for cyclists and pedestrians and support adjacent development. Indeed, a key focus of the new London Plan and the Mayor's Transport Strategy is the way street space is designed and managed so that it encourages and facilitates a shift to active travel, in line with the aspirations of the Healthy Streets approach of making streets more pleasant spaces for people to dwell, walk, cycle, and travel on public transport.

The principal highways schemes recommended in this review for inclusion in the Local Plan are listed below. It should be noted that whilst these have been categorised as highways schemes for the purpose of this report, some of these schemes are largely aimed at road users other than car users, and there is therefore some overlap/synergy with the schemes listed in the public transport and walking/cycling sections later in this document.

### ➤ **Hackney Wick and Fish Island (sub-area 1) –**

- **Monier Road all-mode bridge (H14):** All mode bridge connecting Fish Island Mid to the Olympic Park facilitating bus access between Fish Island and the Olympic Park currently being implemented, also linking to proposed north-south highway improvements between Sweetwater and East Wick in the Olympic Park.

### ➤ **Central Stratford and QEOP (sub-area 3) –**

- **Montfitchet Road/Westfield Avenue:** Changes to the layout for both roads reducing the corridor to a single carriageway and providing enhanced urban realm and facilities for pedestrians and cyclists. The previous conversion of Waterden Road from dual to single carriageway is an example of where this has worked successfully, with traffic surveys indicating that the road is coping well with traffic levels including buses which use it.
- **High Street Stratford improvements:** LB Newham is removing the existing one-way gyratory in Stratford Town Centre and introducing two-way operation to improve the general environment and make it more attractive for all users. Building upon this, there is potential to downgrade much of the Stratford High Street corridor improving pedestrian amenity and public realm and reducing severance, including the junction with Warton Road and general narrowing of Stratford High Street. An option could be additional bus priority as opposed to simply downgrading the corridor.
- **Bridgewater Road bridge:** A replacement all modes bridge would support residential development proposed at Pudding Mill and would be the primary access/egress for vehicles.

### ➤ **Bromley-by-Bow, Pudding Mill and Sugar House Lane (sub-area 4) –**

- **Bow Interchange:** Bow roundabout is a significant barrier to attractive walking and cycling routes east-west from the LLDC area. Whilst an interim scheme is complete, further improvements at Bow roundabout would improve east-west pedestrian connectivity and cycling use and safety. A scheme will have to carefully balance improved pedestrian and cycling with the strategic access function of Bow interchange. A speed limit of 30mph on the A12 could also be introduced.
- **A12 Streetscape at Bromley-by-Bow, and Three Mills Access:** Public realm/street-scene enhancements. This would provide a realigned A12 corridor including both urban realm and connectivity improvements. It would make it easier for people to cross the A12 for pedestrians and cyclists by providing new or upgraded pedestrian and cycle facilities. It would also improve access for vehicles, particularly facilitating new routes. This would encourage more walking and cycling, and connect local communities and new developments in the surrounding area. This also includes environmental enhancement of Hancock Road. The proposed new junction at Three Mill Lane would improve access and connectivity and incorporate improved and at-grade pedestrian and cycling links.
- **Sugar House Lane to Marshgate Lane link:** an all mode access off Stratford High Street into Sugar House Lane together with a direct link across the A118 between Sugar House Lane and Marshgate Lane. This requires a new route through developments on either side of, together with a new bridge across, the Bow Back River. This would create improved bus access but would also help bind together the LLDC area creating better local connectivity.
- **Sugar House Lane to Bromley-by-Bow bus bridge:** Access in the south-west of the LLDC area is limited due to the severance created by waterways. New bus, walking and cycling connections between Bromley-by-Bow and Sugar House Lane are proposed to facilitate a new direct bus route between Bromley-by-Bow and Stratford High Street via Sugar House Lane. This includes installation of a single lane bus bridge with traffic light control, at Culvert Drive, linking Bromley-by-Bow to the Sugar House Lane area. Provision of this link will unlock a new bus route, as well as providing opportunities for existing routes to use this new infrastructure.
- Also, widening **Cooks Road Bridge** and improvements to Cooks Road/Stratford High Street junction would be beneficial in improving connectivity for pedestrians and cyclists.
- **Bow Midland West and Bow Goods Yard East:** currently operating as active rail heads, including for the transfer of aggregates and waste. Whilst consideration of the potential options for development here is not advanced, improved access between the two sites would increase flexibility of use and, potentially, help to reduce adverse impacts of any continued use as railheads.

#### ➤ **Wider/Strategic Schemes –**

- **Silvertown tunnel:** although its direct impact on the LLDC area is unlikely to be substantial, this will enhance cross-river links and help provide reliable and resilient cross-river road links. In particular it should reduce congestion and queues on the A12. The link would also enable new bus routes to be operated, improving the connectivity of the LLDC area to the wider area, particularly south of the Thames.

- **Electric Vehicle Charging Infrastructure:** City wide goals include the provision of extensive and convenient charging infrastructure, as well as the promotion of car clubs and the provision of charging infrastructure for such clubs. The Go Ultra Low City Scheme (GULCS) is providing funding for electric vehicle charging infrastructure for several streets in LB Hackney. Related to this is the Hackney Wick Zero Emissions Network (ZEN) and associated Neighbourhood Programme.

These schemes aim to make best use of the existing highway network in a way that benefits sustainable travel modes of cycling and buses as well as improving traffic flow more generally. Their purpose is not increasing the capacity of highways in the LLDC area, which is neither appropriate nor required.

Technology can also improve the efficiency of the network. This has previously seen traffic signals across most of the area upgraded to SCOOT control and this approach should continue including using measures identified in the Mayor's Traffic Smoothing program and the Roads Task Force, in order to optimise the capacity of the network for all users. As traffic capacity is released, the priority should be to improve conditions for sustainable modes and particularly walking and cycling.

Linking to this, car use should be minimised, and development should promote this by encouraging the use of sustainable modes and limiting car parking. Where car use is required, this can be achieved through car clubs, car sharing or taxis.

## 7.2 Public Transport

In line with the findings of the previous transport review, assessment based on the latest growth assumptions indicate that there will be sufficient overall capacity on public transport to accommodate the growth forecast over the Local Plan period. The analysis shows that although there are expected to be some parts of the network that experience crowding, there is generally adequate provision of public transport. It should be noted however, that a focus on the promotion of cycling and walking should be maintained in order to limit potential future congestion on public transport.

There are several public transport schemes and upgrades in progress and planned, the most significant of which is the Elizabeth line, due to open in December 2018, with the line fully operational in December 2019. This will bring access and connectivity improvements to the LLDC area, with higher capacity, direct links to new destinations more frequent services.

Nonetheless parts of the LLDC area are less well served with only indirect routes to transport hubs. This can restrict the accessibility to transport nodes such as Stratford. It will be vital therefore to improve access to stations, through the creation of more direct routes from surrounding development, which provide attractive and secure environments through which cyclists and pedestrians can reach these transport hubs.

A number of major public transport improvements will become available in the short to medium term as a result of TfL's Business Plan and Network Rail's High-Level Output Specification (HLOS) programme. They include a number of London Underground upgrades and bus improvements, as well as the full opening of the Elizabeth line.

### 7.2.1 Rail

Some of the rail upgrades aim to bring benefits to a much wider area, however the LLDC Local Plan should support these TfL and Network Rail programmes although they are not necessary for development in the LLDC area.

#### ➤ Wider/Strategic Schemes –

- **Elizabeth line:** The introduction of the Elizabeth line will provide a very substantial increase in capacity and connectivity to both Stratford station itself and the wider area linking to Stratford station.
- **DLR Poplar branch twin-tracking:** Increased train frequencies on the Poplar branch is likely to be beneficial but requires the section between Bow Church and Stratford to be twin-tracked. This is not currently funded but could be delivered in phases. This would require agreement with some landowners along the route and it is likely that demolitions would be necessary.
- **Planned frequency upgrades (Central line, DLR, Jubilee line):** increase in frequency of trains on the Central line, Jubilee line, Elizabeth line, and DLR. The planned improvements significantly increase morning peak capacity in 2041 by 26% across the London network, with 16% from London Underground improvements, 4% from DLR improvements, and 6% from the Elizabeth line frequency increase (MTS Outcomes Summary Report). Specifically for the LLDC area, the Central line currently operates a morning peak frequency of 30 trains

per hour westbound and 27 trains per hour eastbound for a short period of time. A power upgrade would allow 30 trains per hour in both directions for a sustained period of 2.5 hours during the morning peak. Increasing the frequency of eastbound services will improve service reliability and also reduce wait times for people taking eastbound morning peak journeys. Planned rolling stock upgrades will also increase capacity and improve reliability.

In relation to the transport requirements of the LLDC area, there are a number of public transport improvement schemes that are required to support development. These focus particularly on station upgrades and improving access, in line with the key objective of ensuring public transport options are as attractive as possible.

The public transport proposals that are recommended in this review for inclusion in the Local Plan as necessary to support development are listed below.

➤ **Stratford Station access improvements (within sub-area 3) –**

- **South-west access:** access to Stratford station from the south-west is inconvenient and likely to deter public transport use for this area, due to the circuitous routes to reach the station, including from the Carpenters estate. A new south-west entrance has gained planning consent and would dramatically improve accessibility and promote greater use.
- **South-eastern entrance on Eastern Road/Angel Lane:** direct access into Stratford Station is potentially available via a disused London Underground ticket hall and passive provision has been provided in the adjacent Angel Lane developments.
- **Access improvements and upgrades at Stratford station:** the major challenge of congestion at Stratford station relates to internal interchange and use of restricted routes within the station. Further potential upgrades to address this congestion include a **western overbridge** as part of a major capacity upgrade, a new event day entrance to link to the northern ticket hall and lift works to support the direct access into the station from the Carpenters estate mentioned above.

➤ **Bromley-by-Bow (within sub-area 4) –**

- **Bromley-by-Bow Underground Station:** Work is continuing on upgrading the station, including step free access and improvements to the appearance of the station building and changes to provide a minor capacity increase within the ticket hall. Early feasibility work has been undertaken by TfL on how the station could be expanded further to provide additional capacity to support the significant level of development planned (as outlined in the Bromley-by-Bow SPD). Improvements to this station are an important step in supporting the various related connectivity improvements in Bromley-by-Bow area.

➤ **Beyond the LLDC area –**

The following public transport improvements are not necessarily focussed on the LLDC area, yet could bring connectivity benefits. They are not however considered essential to support development.

- **North-west transport links:** The re-opening of Lea Bridge station has improved connectivity in this area. Further improvements may be possible including restoration of the Hall Farm Curve. However, this would largely provide benefit to travellers seeking to make journeys through Stratford rather than to/from the LLDC area. This may offer some benefit to the LLDC area, but it is not considered necessary to support LLDC development. Similarly, better rail links to the north can be supported in policy terms, so that residents of those areas have better access to the jobs and retail/leisure facilities at Stratford, but this not necessary for LLDC development.
- **Leyton station upgrade:** Leyton Underground station suffers significant congestion and there is a clear case for action to address current and forecast constraints and crowding. LB Waltham Forest have aspirations for capacity and access upgrades at this station, which are progressing through design stage with TfL. However, the station has a limited role in directly supporting development within the LLDC area, although improvements in east-west connectivity between the QEOP and Leyton could improve access to this station from the LLDC area, and reduce the level of severance created by the railway corridor.
- **Ruckholt Road Overground station:** Waltham Forest's Lea Bridge and Leyton Vision outlines the opportunity for a new Overground station at Ruckholt Road, in order to provide sustainable transport infrastructure to support development of the surrounding area. A new station here could help to improve public transport accessibility at the northern fringe of the LLDC area, but any case for this station would depend upon the benefits to the areas outside the LLDC area.
- **West Ham station:** Whilst not within the LLDC area, links to this station could be improved. Access improvements to the station would support development in the surrounding area, in the south-east corner of the LLDC area. The recently approved Stephenson Street development (February 2018) will potentially bring opportunities for access from the station to Three Mills and Abbey Mills, as well as an additional entrance to the station.
- At a relatively local level, proposals for the provision of **escalators at Pudding Mill Lane DLR Station** would be a welcome initiative but are not considered necessary to support LLDC development.

It is also relevant to note the nature of growth in passenger numbers at Stratford Station. Whilst the significant level of growth in the LLDC area are bringing increased numbers of passengers to the station, the use of the station as an interchange hub for passengers originating beyond this area and for bus access from the north-east of the LLDC area is a major factor in the increasing congestion experienced within the station.



## 7.2.2 Buses

The highway section above outlines various improvements that overlap with public transport in terms of the benefits they may bring. These include a new bus, walking and cycling connection between Bromley-by-Bow and Sugar House Lane; and an all mode access off Stratford High Street into Sugar House Lane and into Marshgate Lane.

Beyond these infrastructure improvements, upgrades to bus services are also required in order to support development, and various service changes and route extensions have been provided for within existing S106 agreements from the Stratford City, Olympics, LCS and Sugar House Lane planning permissions. These include:

- **Bromley-by-Bow to Pudding Mill Lane/Stratford:** Opportunities exist for the creation of a new route using the Bromley-by-Bow to Sugar House Lane bus bridge mentioned above and improved bus services in this area are important to the success of the new developments through which they would run
- **Route 241 – Stratford to East Wick:** It is proposed to extend it at its northern end to support regeneration of the QEOP. It is proposed to extend the route from Stratford City bus station to Here East at East Wick, operating via Montfichet Road, Westfield Avenue and Waterden Road. This will be important to support continuing development across the QEOP.



Figure 9: Proposed 241 bus route

As further development comes forward the capacity of the bus network and the need for additional links and capacity to meet future demands should be reviewed. Further bus route improvements could bring connectivity benefits to the LLDC area. These include:

- **Bus Service Improvements to the north-east:** Opportunities may arise for bus improvements in the north-east of the LLDC area, from LB Waltham Forest's plans

for Lea Valley Eastside. Bus links between the west of Leyton and the QEOP and Stratford are supported by LBWF, which could help in integrating these areas that currently face permeability issues between them. These could be beneficial in improving connectivity between these neighbouring areas, although they are not considered essential to support development in the LLDC area. LLDC and the boroughs should work together to develop these opportunities and proactively engage TfL.

- **Bus service changes to support the Elizabeth line:** It is expected that bus demand into and out of the LLDC area will generally reduce as a consequence of the Elizabeth line opening and especially on the A118 Romford Road corridor to the east of Stratford. However, TfL analysis has indicated that, assuming bus journey times remain attractive, new trips generated by new development are expected to more than offset much of the demand reduction from transfer to the Elizabeth line, and particular mention is given to Stratford/Lower Lee Valley/West Ham<sup>1</sup>. LLDC's interest is primarily to ensure current connectivity is not compromised by bus service changes and, where possible, that service changes further enhance connectivity.

It should be noted that concerns have been raised by TfL that measures focusing on creating more space for cyclists and pedestrians and slowing traffic can have adverse effects on bus routes in terms of the service quality and speed which is important for ridership levels. Careful consideration will therefore be required to manage these conflicts and to provide improvements that provide the best overall benefit.

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<sup>1</sup> Changes to suburban bus services to support the Elizabeth line (TfL, Mayor of London, July 2017)

## 7.3 Walking and Cycling

Various measures to improve connectivity for pedestrians and cyclists have been implemented across the LLDC area, bringing a step-change in provision. The opening up of the Olympic Park has provided major improvements to both pedestrian and cycling access, which includes links to the wider area. Similarly a wide range of improvements were delivered as part of the Olympics and Transformation permissions and S106. Further improvements are anticipated as part of the Legacy Community Scheme development

In relation to cycling, Cycle Superhighway 2 has been implemented, running from Stratford to Aldgate, providing a route to central London. The TfL cycle hire scheme has also been introduced in the LLDC area, with several docking stations.

The Mayor's Vision for Cycling in London document sets out key objectives for cycling, including a tube network for the bike, safety improvements, encouraging more people to travel by bicycle, and creating better places with more space for cyclists and pedestrians and less traffic.

Various key improvements will be important in supporting growth in the LLDC area, and as such are recommended for inclusion in the Local Plan:

### ➤ **Hackney Wick and Fish Island (sub-area 1) –**

- **Crown Close/Wick Lane:** New pedestrian and cycle connection from Crown Close/Wick Lane to Greenway (ramp/stairs). This relates to other public realm improvements envisaged by LBTH and TfL as part of public realm improvements along Wick Lane (Quiteway Newham Greenway).
- **Lee Navigation Western towpath:** Continuous public access to both banks of Lee Navigation, particularly the western bank.
- **Bridges connecting Fish Island Mid to the Olympic Park:** This comprises Monier Road vehicular bridge (**H14**) and Stour Road pedestrian/cycle bridge (**H16**), linking to north-south highway improvements between Sweetwater and East Wick.
- **Old Ford Lock:** The upgrade of the crossing of the River Lee Navigation at Old Ford Lock, supported by the Canal and River Trust. This would involve a widened/upgraded crossing in line with Dace Road, and the addition of a ramp at the crossing to the south of the lock, to improve access for cyclists and wheelchair users.
- **North-South Fish Island Links:** Enhanced crossings over the Hertford Union Canal between Fish Island North and Fish Island Mid to provide a more direct route between the hub at Hackney Wick and Fish Island Mid. This needs to be supported by environmental upgrades to the approaches to Hackney Wick station. This includes-
  - **Hertford Union Canal Lock Crossing:** New link across Hertford Union Canal bottom lock, from Smeed Garden through the proposed development of the adjacent site to the north, using the lock to create a grade level canal crossing from Hackney Wick to Fish Island.
  - **Roach Point Bridge:** Replacement of the pedestrian bridge with a shared pedestrian and cycle bridge creating a new route to the north between Hackney Wick and Fish Island. The new bridge would be wider with improved

street lighting and would link to a new route through planned developments north of the canal, creating a safer alternative to the current tow path route.

- **Wallis Road Footbridge and Cycle Link:** Further improvements to the pedestrian/cycle connection over the A12 between Wallis Road and Cadogan Terrace.
- **Wansbeck Road:** Improvements to the pedestrian and cycling environment on Wansbeck Road and at the junction with Rothbury Road.
- **Eastway to Mabley Green towpath:** An improved pedestrian and cycle link under the A12.
- **Wick Lane A12 underpass:** Improvements to the underpass creating a more attractive streetscape and public realm more conducive to cycling and walking.

➤ **North of Stratford (sub-area 2) –**

- **Leyton Road Corridor improvements:** Pedestrian and cycling-related highways improvements in the Chobham Farm/Leyton Road Area to establish an effective all-mode north-south movement corridor. A corridor approach would build upon previous improvements to ensure all users are able to use this route and would balance increasing traffic pressure with the need to ensure opportunities for walking and cycling are maximised by including public realm upgrades to improve the street-scape.
- **Chobham Farm Area:** Potential improvements including East-West local connectivity to reduce the severance caused by the railway corridor – potential to incorporate to a TfL Liveable Neighbourhood Proposal.
- **Cycle Lane provision between Eastway/Ruckholt Road and the A12:** to complete cycle provision on Temple Mill Lane, between the Eastway/Ruckholt Road and the A12 on a route already well used by cyclists.
- **Pedestrian and Cycle link between Leyton and QEOP:** there is a potential gap in pedestrian and cycling connectivity across the rail corridor to the east of the LLDC area between Ruckholt Road and Temple Mills Lane. A new pedestrian and cycle link into the QEOP from Leyton is proposed by LBWF, which will be particularly important to the Leyton Mills redevelopment. This is not essential to supporting the LLDC Local Plan development and is of limited relevance to the LLDC area - LBWF are currently undertaking early stage feasibility on this, including understanding land ownership.

➤ **Central Stratford and QEOP (sub-area 3) –**

- **Greenway access:** Upgrade of subway connection from the QEOP at U07 under the Greenway on City Mill River including a new ramp and staircase. Upgrade of access point from Greenway to towpath at the crossing of the River Lea and upgrade to towpath.
- **Warton Road Underpass works:** This involves the opening up of an existing blocked arch under the rail lines to provide new pedestrian route connecting to the Olympic Park and connectivity and urban realm improvements within the Park to provide onward connectivity.

- **Carpenters area and Stratford Town Centre:** Improved pedestrian and cycle connections, including upgrading or replacing the Jupp Road footbridge between the Carpenters estate and Stratford town centre.
  - **Olympic Park to Stratford City connections:** new bridge from the International Quarter London (IQL) development to the Olympic Park currently envisaged to be an integral part of the proposed Stratford Waterfront development.
  - **Carpenters Road Underpass:** improvements to the underpass and surrounding environment, making it more attractive for pedestrians and cyclists.
  - **Montfichet Road West:** Pedestrian link at the connection between Montfichet Road and Pool Street/Loop Road.
- **Bromley-by-Bow, Pudding Mill Lane and Sugar House Lane (sub-area 4) –**
- **Bow Interchange:** Whilst the interim stage of Bow Vision is complete, further improved cycle and pedestrian facilities at Bow Interchange linked to the highway measures outlined above should be supported.
  - **Bromley-by-Bow A12 pedestrian, cycle crossings and improved access:** reducing the impact of the A12 and its severance effects, including changes to the subway by Bromley by Bow station, and an at-grade pedestrian crossing at Franklin Street, as part of the wider regeneration and urban realm improvements around Bromley-by-Bow.
  - **Leaway Phase 2:** Link between Twelvetrees Bridge and Lea Valley Walk - new stairs, ramps and associated public realm creating a new local connection between Bromley by Bow to Stratford and the QEOP to the River Thames.
  - **Links to Bow Goods Yard East and Bow Midland West:** Dependent on the future of Bow Midland East rail yard in Newham, new connection across the River Lea at Autumn Street or Riverside Wharf discussed above under highway access that could potentially include pedestrian and cycle access.
  - **Pudding Mill Lane walking and cycle link:** Improved walking and cycling routes along Pudding Mill Lane between Marshgate Lane and the DLR station (part of LCS planning permission and outlined in the Stratford Metropolitan Masterplan).
  - **Bow to Sugar House Lane link:** A new pedestrian/cycle bridge link between Hunts Lane in Sugar House Lane and the portion of Bromley-by-Bow immediately opposite providing local connectivity options particularly to the northern part of Bromley-by-Bow to the east of the A12 that is relatively isolated.
  - **Bisson Road to Three Mills Lane/Sugar House Lane link:** A pedestrian/cycle link between Bisson Road and Sugar House Lane areas, via Three-Mills.
- **Area wide –**
- **TfL Cycle Hire:** The scheme has expanded into the LLDC area and further provision should be made for its potential extension. This intent needs to be translated into further provision across all parts of the LLDC area.
  - **Signing and Wayfinding:** To support this programme of interventions, a broader signing and way-finding strategy needs to be implemented across the LLDC area, as outlined in Policy T.9 in the current local plan. Further Legible London signage should be installed as appropriate, particularly as new developments are constructed and new access routes opened up. This should form part of the

general programme to improve the public realm, encouraging residents and visitors to travel by active modes.

Continuing to implement these schemes and improvements is fundamental to providing the pedestrian and cycling connectivity that the LLDC requires, largely at a local level, but also in terms of linking the area with the surrounding neighbourhoods.

## 7.4 Waterways

The LLDC area is unique in that it contains a significant number of waterways, forming a network that, although in some cases a barrier to permeability, provides potential for improved transport links such as cycle and walkways along the area's rivers and canals, as well as opportunities for transportation of materials and passengers.

The Olympic Legacy Waterways Strategy and Framework set out a vision for the area's canals, outlining various aspirations:

- Little Amsterdam feel; integrated waterspace, public realm and streetscape.
- Canal side public space.
- Develop formalised, 'premium' visitor moorings.
- Long term commercial moorings (cafés, restaurants, event spaces).
- Creation of small residential mooring communities.
- Upgraded towpaths and improved visual amenity.
- Expansion of rowing clubs and other community facilities.

The draft new London Plan (December 2017) also sets out its support of the addition of moorings in appropriate locations.

Consideration should be given to the potential for **provision of additional and improved visitor mooring facilities** within the QEOP including the creation of pontoons north of the existing commercial moorings.

However, congestion on the waterways has become an issue at times, with significant numbers of barges moored on the banks of the canals within the LLDC area, as well as other users such as rowers/canoers. The approach needs to ensure that the needs of all users are taken into account.

There is also significant opportunity to use these waterways for the creation of walkways and cycleways adjacent to them, thereby improving the permeability of the area. The key here is designing schemes in such a way that creates attractive and safe routes which encourage human presence. A number of the initiatives to improve walking and cycling routes outlined above involve use of walkways and towpaths along the area's waterways.

The Waterways Framework also notes that *"the River Lee Navigation is still classified as a 'Commercial Waterway' and has the potential to play an important role in the movement of goods and materials. This would reduce carbon emissions and significantly reduce the impact of new developments on local roads. In the longer term there are opportunities for moving containerised waste and recyclates from new waterside developments"*.

Significant levels of construction are expected throughout the area, including in locations in proximity to the waterways. It is important that the potential for the use of the waterways in terms of transportation of construction materials and removal of waste is fully explored by developers. While use of the waterways in this way has been limited since the construction of the Olympic Park, consideration should be given to how this can be encouraged and its viability, although it is recognised that in many cases use of the waterways in this way may not be practicable.

Whilst there are no specific schemes which include proposals to improve the use of the waterways themselves for transport, opportunities for passenger services as well as transportation of materials should be welcomed, as well as opportunities to make use of the waterway network for creation of further cycle and walking routes.



## 8 Event Management

The LLDC area presents various unique challenges from a transport and connectivity perspective. In particular, the various event venues mean that travel patterns do not necessarily follow typical peak and off-peak timings and often create large surges in demand. Events at the London Stadium, London Aquatics Centre, Copper Box Arena, and the VeloPark, together with the shopping centre travel patterns of Westfield Stratford City mean that peaks in demand can be outside the normal peak travel times. The high levels of people movement create particular capacity issues and themselves create barriers to movement for other people whether due to congestion or temporary closure of road or pedestrian routes.

The changing character of the area is highlighted further by the recent announcement of the Madison Square Garden Company of their desire to submit plans for a large-scale multi-use venue at Stratford.

The draft London Plan (December 2017) states its support for events and activities such as festivals, seasonal markets, exhibitions, performances, outdoor concerts and busking, and notes that these are not always dependent on using a dedicated cultural facility or venue and can make use of a range of outdoor spaces including streets, parks and other public areas. The LLDC area has many such spaces – both dedicated venues and informal outdoor areas, suitable for a range of cultural activities. Use of space in this way should be supported, but careful management will be required in assessing and mitigating the transport implications of such events. In particular, as far as reasonably practicable, such uses should include measures that improve connectivity rather than create barriers to it, both during and outside event times.

The objective of achieving a shift away from private vehicle use towards sustainable and active modes of travel are just as relevant for event spaces as for other developments, and in line with the 2015 LLDC Local Plan, venues that generate a significant level of attendance by members of the public should not provide parking for private vehicles during events, except to meet requirements for Blue Badge users and for parking for vehicles required for operational purposes.

# 9 Land Use, Travel Planning and Smart Travel

A range of soft measures are also important for a successful movement strategy, particularly in terms of encouraging and incentivising trips to be made by sustainable and active modes. As outlined in the previous sections, a range of transport infrastructure schemes will be required to improve the connectivity in the LLDC area, and provide opportunities for an increasing number of trips to be made on foot, bicycle, or by public transport. However, in order to achieve long lasting changes in travel behaviour, these infrastructure interventions should be accompanied by plans and policy that promote travel choice and behaviour changes.

In terms of land use, the implementation of policies that maximise local trips and minimise distance travelled is a fundamental step in encouraging sustainable travel. Policies should aim to make walking and cycling easy and attractive options for residents and employees to take. Land use planning policies should seek to minimise the length of journeys required, so that trips on foot and by bike are the most appropriate option for trip makers to take. Specifically, this should include a land use strategy of mixed use development, so that new neighbourhoods provide residential, commercial, retail, and educational/leisure facilities. The high level of connectivity provided by the area's public transport nodes should be capitalised on by promoting the highest density of development surrounding these hubs, or in locations from which there is easy access to them.

Policies are needed that help to minimise car use, for instance by limiting opportunities for parking. Car free development should be supported where appropriate, particularly in locations with high levels of access to public transport as well as in areas with good walking and cycling connectivity. This strategy of minimising vehicle use should apply for all purposes (residential, commercial, leisure and events). In the fringe zones of the LLDC area where public transport accessibility levels are lower, levels of parking should still be minimised where appropriate, and should seek to achieve levels below the standards set out in the London Plan.

Development of employment space should also take account of the residential development, in terms of spatial proximity, with phasing of developments enabling employment growth in tandem with population growth so that there are potential local jobs available for new residents. Further to this, consideration should be given to matching the type of employment opportunities available with the type of skills of the local residents.

Beyond these policies, Travel Plans should be used to ensure developments include measures that actively promote walking, cycling, and public transport use. These Travel Plans should aim to increase public transport usage, walking and cycling, reduce private car usage, reduce inappropriate car parking, improve health and wellbeing, increase road safety and reduce traffic congestion.

Travel plans should include:

- measures that actively promote walking and cycling and public transport use (cycle parking, travel and wayfinding information, etc.);

- promotion of sustainable car use through initiatives such as car sharing and car clubs;
- provision of a greater smarter choice offer (alternative employment hours, ridesharing, information, etc.);
- transport provision for mobility impaired users;
- active planning of freight and deliveries into and out of the LLDC area generally and development sites more specifically;
- targets for mode-share change and achievement of high levels of sustainable mode access, and the associated details of Travel Surveys to be undertaken; and
- regular monitoring and review together with commitments to additional measures if targets are not being met.

This approach of using Travel Plans should be applied to both construction and operation phases of developments.

The growth in the population of the LLDC area will of course bring an increase in the number of school children, and therefore additional trips which has particular potential to aggravate AM peak traffic conditions. Therefore, school travel planning is one area of particular importance in terms of encouraging active and sustainable travel.

Advances in technology could also bring about benefits in travel management, such as the implementation of demand responsive transport. This type of transport is characterised by flexible routing and scheduling, for users to share small or medium vehicles travel between origins and destinations according to users' needs. This kind of technology could be particularly useful in bringing connectivity to areas currently underserved by public transport, where provision of a permanent bus route may not be viable, and can create sustainable outcomes in terms of providing an alternative to single occupancy vehicle use, whilst still offering a similar level of flexibility in terms of origins and destinations.

Current examples include various car-sharing schemes, TfLs Dial-a-Ride aimed at people with disabilities who are unable to use public transport, as well as CityMapper's smart bus and responsive network initiatives, which links buses to networks rather than routes, so they can respond to changing patterns of demand across the city. Whilst they are primarily taxi/private-hire services, Gett and Uber offer demand responsive travel and also have ride-sharing schemes – Gett Together and Uber Pool respectively. The availability of open data is fundamental to the development of these technologies and their associated apps, and support should be given to data sharing initiatives which can enable transport solutions to be developed, in line with the aspirations of the Smart London Plan (GLA) in growing the London DataStore and promoting its use. The Smart London Plan also discusses initiatives specifically in relation to the LLDC area, where new technologies could be showcased, including extending use of Oyster cards/contactless payment to other modes of transport such as cycle hire or electric car-share schemes, to create a more seamless user experience.

Advances in technology and the creation of 'Smart Cities' are also significant in reducing the need to travel. The widespread availability of high-speed internet can enable working and

shopping from home, eliminating the need for trips particularly at peak times, and free Wi-Fi networks are available in an increasing number of locations across London.

These various Smart City initiatives are still developing, and consideration should be given to how these advances can be best used to support the transport strategy in the LLDC area, ultimately to limit or reduce travel demand, and to promote use of sustainable modes when travel is necessary.

# 10 Conclusions

Whilst it is recognised that it is unlikely that the full set of schemes listed in this review will be realisable in the short to medium term, continuous improvements towards improving transport and connectivity into, out of and within the LLDC area is critical to supporting population and employment growth. Further studies and investigations will be required in relation to the specifics of many of these schemes to bring clarity to their feasibility and the benefits they may bring.

Continuing with the direction of the 2015 LLDC Local Plan, the key focus for the area should be on improving local connectivity and access, particularly for pedestrians and cyclists, overcoming the severance created by roads, railways and waterways, and creating more convenient routes to public transport nodes. based upon recent evidence and forecasts, it is considered that, although crowded in places, the public transport network has the capacity to support the planned development in the LLDC area, particularly given the planned upgrades and capacity enhancements. In relation to the highway network, available capacity is much more limited and plans and proposals should aim to minimise the impact on the already congested network given that any significant capacity upgrades are unlikely and inappropriate, and the focus should be on upgrades which create an improved environment for pedestrians and cyclists or address local pressure points or access requirements to support development. There are a number of strategic level public transport and highway schemes that should be supported but are not critical to successful development of the LLDC area.

Beyond these scheme interventions, a policy framework is required which will be supportive of a shift towards more sustainable modes of travel, and will follow a land use strategy of mixed use development and prioritising highest density development in proximity to transport nodes. In line with the strategy in the current local plan, proposals should be supported that discourage private car use by limiting parking, and prioritise access for pedestrians and cyclists, promoting sustainable travel choices.



# Appendix A Population and Employment Growth Comparison

## Population and Employment Growth Comparison

The comparison between LLDC forecasts and the assumptions used for LTS shows broadly similar population and employment growth figures. For the LTS data, zones that approximately cover the LLDC area have been selected. These zones represent an area slightly larger than the LLDC area, including a residential area to the north-east of Stratford, south of Leyton. It is unlikely that a significant level of development would come forward in this area due to it already being densely developed with terrace housing, so its impact on the growth forecasts is expected to be minimal. The differences between the LTS and LLDC figures are also not considered to be critical in terms of the schemes that this report outlines and the conclusions that it makes. The slightly higher population projection in the LLDC figures highlights the need to limit car use, as these figures would to a degree worsen conditions further if car use is not sufficiently restrained.

### Population

	LTS (latest draft London Plan)	LLDC Pop Projections	Difference
	2031	2031	%
LLDC Area *	91046	96219	5.4%

\* LTS Zones 3120, 3121, 3237, 3239, 3441 approximately cover the LLDC area

### Employment (000s)

	LTS (latest draft London Plan)	Oxford Economics Host Boroughs Report			Difference
		Baseline (2030)	Impact (2030)	Total	
	2031				%
Hackney	156.9	159.4	+3.5	162.9	3.7%
Newham	185.7	138.2	+75.3	213.5	13.0%
Tower Hamlets	390.2	362.4	+57.5	419.9	7.1%

In relation to the baseline/impact scenarios, the Oxford Economic Host Boroughs Report notes the following:

The baseline forecasts used in the modelling and reported are taken from Oxford Economics Local Authority District Forecasting Model. These forecasts are essentially 'policy off' projections of growth. They do not include planned developments or Government policy targets for example. The 'impact' scenario represents a faster growth scenario that assesses the potential labour market impact of major developments in the Host Boroughs that are currently in the pipeline. The economic developments in the Host Boroughs have been modelled on a Borough-by-Borough basis. The direct employment assumptions, timeframe for delivery and sectoral structure of the jobs have been provided and approved by the respective economic development departments and the LLDC.



# Appendix B Superseded Planning Documents

### *Superseded Planning Documents*

The following documents were included in the previous transport review, and whilst may still have some relevance in terms of the transport strategy for the LLDC area, have been superseded by the LLDC Local Plan or other Supplementary Planning Documents.

**Fish Island Area Action Plan (LBTH, 2012):** The particular focus in transport terms is on reducing the barrier effects of the A12 and waterways, with proposals for east-west links (many part of the Olympics or LCS schemes, and now covered in the Hackney Wick and Fish Island SPD) and a new north-south link through Fish Island and the creation of an upgraded Hackney Wick station as part of a Hackney Hub.

**Hackney Wick Area Action Plan (LBH, 2012):** In common with the Fish Island AAP, this focused on walking and cycling links and the upgrading of Hackney Wick station. It identifies the barrier effect of the A12 and of waterways. Aside from highway works to improve conditions for walking, cycling and public transport, the AAP included no significant highway improvements and aimed to minimise car parking.

## Appendix C Scheme Status List

The following table presents the schemes recommended for inclusion. They are categorised by sub-area and ordered by their status. Related schemes are also grouped together, for example Stratford Station upgrades. If the specific year of implementation is unknown, the scheme's phasing is given as short/medium/long term, which refers to 0-2 years, 2-5 years, and 5+ years respectively.

Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
<b>Hackney Wick and Fish Island (sub-area 1)</b>							
1.	Hackney Wick London Overground station new entrance and improved access	Strategic Transport Schemes	Being implemented	Short Term	Network Rail / LLDC	OLSPG Strategic Transport Study and OLSPG Infrastructure Delivery Study	Tower Hamlets / Hackney
2.	Monier Road vehicular bridge (H14): Bridge connecting Fish Island Mid to the Olympic Park	Local Transport Schemes	Being implemented	2018	East Wick and Sweetwater Projects & LLDC	Application ref: 16/00587/REM	Tower Hamlets
3.	Stour Road bridge (H16) - new pedestrian/cycle connecting Fish Island Mid to the Olympic Park	Local Transport Schemes	Being implemented	2018	East Wick and Sweetwater Projects & LLDC	Application ref: 16/00588/REM	Tower Hamlets
4.	Roach Point Bridge: Replacement of the pedestrian Bridge with a shared pedestrian and cycle Bridge between Hackney Wick and Fish Island.	Local Transport Schemes	Has funding and planning permission	Medium term	LLDC/developer	Hackney Wick & Fish Island Supplementary Planning Document	Tower Hamlets
5.	TfL Cycle Hire within Hackney Wick & Fish Island	Local Transport Schemes	Partially Complete	Medium term	TfL	TfL internal work	Tower Hamlets, Hackney
6.	New link across Hertford Union Canal bottom lock, from Smeed Garden through McGrath site	Local Transport Schemes	No planning permission, no funding	Medium term	Developer	LLDC	Tower Hamlets
7.	Upgrade of existing bridge over the Old River Lea (south of Old Ford Lock) for use by cycles and wheelchairs by adding ramp.	Local Transport Schemes	No planning permission, no funding	Long term	C&RT/LLDC	Canal Park project scoping	Tower Hamlets
8.	New pedestrian/cycle connection from Crown Close/Wick Lane to Greenway (ramp/stairs)	Local Transport Schemes	No planning permission, no funding	Short term	Developer	LBTH/OPLC connections study and HWFI public realm strategy	Tower Hamlets

Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
9.	Upgraded pedestrian link (new ramp) from Dace Road to the Greenway	Local Transport Schemes	No planning permission, no funding	Medium term		Hackney Wick & Fish Island Supplementary Planning Document	Tower Hamlets
10.	Upgraded pedestrian and cycle facilities at Wansbeck Road crossing	Local Transport Schemes	No planning permission, no funding	Short term	LLDC/LBTH	Hackney Wick & Fish Island Supplementary Planning Document	Tower Hamlets
11.	Improve pedestrian and cycle route under the A12 from Eastway to Mabley Green	Local Transport Schemes	No planning permission, no funding	Long term		Hackney Wick & Fish Island Supplementary Planning Document	Hackney
12.	Further upgraded pedestrian / cycle connection over the A12 from Wallis Road to Cadogan Terrace.	Local Transport Schemes	No planning permission, no funding	Long term		Hackney Wick & Fish Island Supplementary Planning Document	Tower Hamlets
13.	A12 underpass improvements Wick Lane	Local Transport Schemes	No planning permission, no funding	Short term	LLDC	HWFI Connectivity Study	Tower Hamlets
14.	A12 Road Bridge at Crown Close and Old Ford Road	Local Transport Schemes	No planning permission, no funding	Medium term	LLDC / TfL	Local Plan	Tower Hamlets
15.	Electric Vehicle Charging Infrastructure	Local/Strategic Transport Schemes	No planning permission, no funding	2018-2019	LBH/TfL	Hackney Transport Strategy	Hackney
16.	Hackney Wick Zero Emissions Network (ZEN) and associated Neighbourhood Programme	Strategic Transport Schemes	No planning permission, no funding	2020 onwards	LBH	Hackney Transport Strategy	Hackney

## North of Stratford (sub-area 2)

Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
17.	Pedestrian and Cycle link between Leyton and Olympic Park between Ruckholt Road and Temple Mills Lane	Local Transport Schemes	No planning permission, no funding - Waltham Forest are currently undertaking early stage feasibility on this, including understanding land ownership.	Medium term	LBWF	Lea Bridge and Leyton Vision	Waltham Forest
18.	Cycle Lane provision between Eastway/Ruckholt Road and A12	Local Transport Schemes	No planning permission, no funding	Medium term	LBWF	Lea Bridge and Leyton Vision	Waltham Forest
19.	TfL Cycle Hire - Chobham Manor	Local Transport Schemes	No planning permission, no funding	Medium term	TfL	TfL internal work	Newham
<b>Central Stratford and QEOP (sub-area 3)</b>							
20.	Downgrade of Great Eastern Road / Stratford Gyratory - removal of gyratory - TfL Major Schemes	Strategic Transport Schemes	Being implemented	Med term – completion 2019	LBN	TfL Major Schemes Programme	Newham
21.	Bridgewater Road bridge replacement	Local Transport Schemes	Has funding or planning permission	Assumed 2021	Developer	LCS planning permission	
22.	Warton Road pedestrian/cycle route and associated urban realm works - to add new pedestrian footway into the QEOP underneath railway tracks on western side	Local Transport Schemes	Has funding or planning permission	Medium Term	Newham / LLDC	Stratford Transport Implementation Group (STIG), S106 agreements, Newham	Newham

Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
23.	Direct access into Stratford Station from Carpenters area - including new entrance to Stratford Station	Local Transport Schemes	Has funding or planning permission	Short term		Stratford Metropolitan Masterplan Transport Study	Newham
24.	TfL Cycle Hire within queen Elizabeth Olympic Park	Local Transport Schemes	Partially Complete	Short Term	TfL/LLDC	TfL internal work	Tower Hamlets, Newham, Hackney
25.	Montfichet Road / Westfield Avenue highway / public realm works, Stratford City bus station access. Carriageway reduction and reallocation to urban realm and cycle/pedestrian space. Provision of segregated cycle facilities.	Local Transport Schemes	No planning permission, no funding	Medium term	LBN / LLDC	LLDC Feasibility Study, Mott McDonald & Urban Initiatives	Newham
Further Stratford Station Capacity Enhancements							
26.	Lift works at Stratford station to support new direct access from Carpenters area.	Local Transport Scheme	Permitted Development, no funding	Short term	TfL	TfL LU Outcome Definition Study, Crossrail Legion Model	Newham
27.	Direct access into Stratford Station via a disused ticket hall to Eastern subway onto all NR platforms	Local Transport Scheme	Passive Provision within Westfield YHA / Office planning application, no funding	Short term	TfL/Westfield	TfL LU Outcome Definition Study, and South-eastern Ticket Hall Feasibility Study	Newham
28.	Stratford station Southern ticket hall expansion	Local Transport Scheme	No funding	Short term	TfL	TfL LU Outcome Definition Study	Newham
29.	Western Overbridge for major capacity upgrade at Stratford Station	Major Transport Scheme	No planning and No funding	Medium term	TfL/NR	TfL LU Outcome Definition Study, Crossrail Legion Model, Overbridge Feasibility Study	Newham
30.	New Event Day Entrance to Stratford Station via Northern Ticket Hall	Local Transport Scheme	No planning, and no funding	Short term	TfL	TfL Outcome Definition Study, Event Day Entrance Legion modelling	Newham

Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
31.	Direct access into Stratford town centre from Carpenters area - replacement Jupp Road Bridge	Local Transport Schemes	No planning permission, no funding	Medium term	LLDC/Newham	Stratford Metropolitan Masterplan Transport Study	Newham
32.	E38 Carpenters Road Underpass and surrounding environment	Local Transport Schemes	No planning permission, no funding	2020	Newham, LLDC & Network Rail	LLDC Connectivity Study	Newham
33.	Montfichet Street West - Link to Pool Street/Loop Road pedestrian connection.	Local Transport Schemes	No planning permission, no funding	2020	Newham/LLDC	LLDC Connectivity Study	Newham
34.	Upgrade of subway connection from Olympic Park at U07 under the Greenway on City Mill River	Local Transport Schemes	No planning permission, no funding	Short / Med term	Crossrail / C&RT / LLDC / Newham	Canals & Rivers Trust	Newham
35.	Upgrade of access point from Green Way to towpath at the cross of the River Lea and upgrade to towpath	Local Transport Schemes	No planning permission, no funding	Short / Med term	C&RT / LLDC / Newham	Canals & Rivers Trust	Newham
36.	Bridge from IQL to Stratford Waterfront over rail tracks	Local Transport Schemes	No planning permission, no funding	Short term	Passive safeguarding in Stratford City zone 2 S106 (TIQ). Potential to be brought forward as part of Stratford Waterfront development.	LLDC 10 Year Plan	Newham
Stratford High Street Works to complement removal of town centre gyratory							
37.	Downgrading of Stratford High Street, including improved urban realm and narrowing to northeast of Warton Road, or addition of bus lanes.	Local Transport Schemes	No planning permission, no funding	Medium term		Stratford Metropolitan Masterplan Transport Study	Newham
38.	Downscaling of Warton Road junction	Local Transport Schemes	No planning permission, no funding	Medium term	Newham	Stratford Metropolitan Masterplan Transport Study	Newham
39.	Visitor moorings facilities (Provision of better boater facilities Visitor mooring in the Park with creation of pontoons north of the existing commercial moorings. Could be on a bookable basis)	Local Transport Schemes	No planning permission, no funding	Short term	Canal & River Trust, S106, LLDC	C&RT, Olympic Legacy Waterways Framework	Tower Hamlets



Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
<b>Bromley-by-Bow, Pudding Mill and Sugar House Lane (sub-area 4)</b>							
40.	Improved cycle and pedestrian crossings at Bow Interchange - interim scheme	Local Transport Schemes	Delivered	Short term	TfL	Bromley by Bow Masterplan SPD	Tower Hamlets
41.	Bromley by Bow Underground Station Improvements	Local Transport Schemes	Being implemented	Short term	LUL/Developer/TfL	TfL Business Plan, OLSPG Strategic Transport Study. OLSPG Infrastructure Delivery Plan	Tower Hamlets
42.	Leaway 2 - Link between Twelvetrees Bridge and Lea Valley Walk - new stairs, lift and ramps, and associated public realm - new local connection between Bromley by Bow to Stratford and QEOP to River Thames	Local Transport Schemes	Being implemented	Short term	LLDC/LBN	Lea River Park Primer, Fatwalk Stage E	Newham
<b>Bromley-by-Bow, Sugar House Lane and Pudding Mill links</b>							
43.	Pedestrian and cycle bridge between the Bisson Road and Sugar House Lane areas, via Three-Mills	Local Transport Schemes	Being implemented	2020	Sugar House Lane S106	Stratford Metropolitan Masterplan Transport Study	Newham
44.	Direct link between Sugar House Lane and Marshgate Lane / Marshgate Lane / Stratford High Street junction	Local Transport Schemes	Has funding or planning permission	Short term		Stratford Metropolitan Masterplan Transport Study, Bow Vision	Newham
45.	Bridges between Bromley by Bow and Sugar House Lane, including bus bridge at Culvert Drive.	Local Transport Schemes	Has funding or planning permission	Short / Med term	Sugar House Lane S106, Bromley by Bow North S106	S106 agreements	Newham / Tower Hamlets
<b>Bromley-by-Bow A12 improvements</b>							
46.	Improving pedestrian and cycle links across the A12 south of Bow Roundabout and improved pedestrian and cycle environment along the A12 corridor.	Local Transport Schemes	Has funding or planning permission	Medium-Long term	Developer / TfL	LLDC/TfL	Tower Hamlets

Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
47.	Replacement of subway at Three Mills Lane with a pedestrian crossing - No longer proposed as part of Bow Vision or Bromley by Bow SPD	Local Transport Schemes	No longer proposed	Med term		Bromley by Bow Masterplan SPD	Tower Hamlets
48.	Pedestrian Surface Crossing outside Bromley-by-Bow tube station. Superseded by proposals for crossings as part of new junction	Local Transport Schemes	No longer proposed	Medium term	TfL (A12 Study)	A12 RTF Study/ Bromley by Bow Masterplan	Tower Hamlets
49.	Bromley by Bow Project: new junction	Local Transport Schemes	No planning permission, no funding	Medium term	TfL (Bow Vision)	Local Plan/TfL Bow Vision/TfL A12 Study	Tower Hamlets
50.	A12 Streetscape outside BBB Station	Local Transport Schemes	No planning permission, no funding	Medium term	TfL (Bow Vision)	Local Plan / BBB Station Public Realm works / Forthcoming Bromley by Bow SPD	Tower Hamlets
51.	A12 subway by Bromley by Bow station	Local Transport Schemes	No planning permission, no funding	Medium term	Developer / TfL	LLDC / TfL / Danescroft planning application	Tower Hamlets
52.	Franklin Street pedestrian crossing	Local Transport Schemes	No planning permission, no funding	Short term	TfL	Local Plan	Tower Hamlets
53.	Environmental Enhancement of Hancock Road	Local Transport Schemes	No planning permission, no funding	Medium Term	TfL and Developer. Related to the Bow South development and Bow Vision	TfL A12 Study	Tower Hamlets
54.	A12 30mph Speed limit	Local Transport Schemes	No planning permission, no funding	Medium term	TfL	TfL A12 RTF Study	Tower Hamlets / Hackney
55.	Pudding Mill Lane west-east bridge over A12 at Five Bells Wrexham Road	Local Transport Schemes	No planning permission, no funding	Long term	TfL / LB Tower Hamlets, LB Newham	LLDC	Newham , Tower Hamlets

Ref	Infrastructure Project	Type of project	Status	Phasing	Delivery / other responsible agencies	Information Source	Borough
56.	New bus / ped / cycle bridge over the Bow Back river at Marshgate Lane, Pudding Mill Lane	Local Transport Schemes	No planning permission, no funding	Short / Medium term	Developer - part provision made through S106 for Porsche garage site. Linked to the Marshgate Lane junction proposals.	Stratford Metropolitan Masterplan Transport Study	Newham
57.	Bow Interchange (Flyover removal)	Local Transport Schemes	No planning permission, no funding	Long term	TfL (Bow Vision)	TfL Bow Vision	Tower Hamlets
58.	New bridge connection across the River Lea at Autumn Street or Riverside Wharf (dependent on the future of Bow Midland East rail yard in Newham)	Local Transport Schemes	No planning permission, no funding	Long term		Fish Island AAP	Tower Hamlets
59.	Cooks Road Bridge widening over Bow Back River	Local Transport Schemes	No planning permission, no funding	Med / Long term	Developer/LLDC	Pudding Mill Land Use and Design Framework	Newham
<b>LLDC area wide</b>							
60.	Bus network enhancements - to match the increasing travel demands resulting from the growth in the LLDC area and provide links to neighbouring communities and facilities	Local Transport Schemes	No planning permission, no funding	Medium term	TfL	TfL	All

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