



# RIVER CROSSINGS: SILVERTOWN TUNNEL

## SUPPORTING TECHNICAL DOCUMENTATION

### RIVER CROSSINGS DEVELOPMENT STUDY

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This study assessed: (a) how each of the proposed river crossings options (in combination with other key transport and regeneration initiatives) could bring about economic growth in terms of job creation and delivery of homes; and (b) how the crossing options could impact on the scale, timing and type of development.

The assessment found that:

- Scenario 4 (Silvertown Tunnel + Gallions Bridge) is likely to result in the greatest development impacts: 18,400-23,800 additional housing units supported and 25,500-34,000 total permanent jobs (net) supported.
- Scenario 6 (Silvertown Tunnel + Belvedere Bridge) is likely to have the next highest development impacts (but about 10% lower): 17,300-22,000 additional housing units support and 22,200-28,900 total permanent jobs (net) supported.
- Scenarios 3 & 5 (Silvertown Tunnel + a ferry at either Gallions or Belvedere) are likely to trigger much lower development impacts, about 50% lower than Scenario 4.

This report is part of a wider suite of documents which outline our approach to traffic, environmental, optioneering and engineering disciplines, amongst others. We would like to know if you have any comments on our approach to this work. To give us your views, please respond to our consultation at [www.tfl.gov.uk/silvertown-tunnel](http://www.tfl.gov.uk/silvertown-tunnel)

Please note that consultation on the Silvertown Tunnel is running from October – December 2014.

# Task 126: River Crossings Development Study Final Report

27<sup>th</sup> June 2014

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# Executive summary

## Background

East London is one of the largest regeneration areas in the UK and the sub-region has the largest physical capacity for growth in the South East. The boroughs that make up the sub-region are expected to accommodate the largest proportion of homes and jobs in London, making the delivery of development in this area absolutely essential to maximising London's significant economic potential. However, movements within the sub-region are significantly constrained by the 'barrier effect' of the Thames. There are only two fixed link road crossings east of Tower Bridge in London, which link populations of over 1 million people on each side of the river, with both crossings suffering from severe capacity constraints.

This 'barrier effect' limits firms' access to markets, the size of retail and leisure catchments and residents' access to employment opportunities. This constraint on economic activity makes delivering the significant scale of development planned for the area more difficult.

The significant growth potential of East London will only be fully realised if the barrier to movement over the Thames can be addressed.

In recognition of this, the Mayor's Transport Strategy (MTS) sets out a long-term programme for investment in river crossings in east London. This includes a new road crossing at Silvertown in the form of a tunnel and the exploration of further links, both road based and other modes. The Secretary of State for Transport recognises that, given the position of London as an economic driver nationally, any decrease in efficiency of London's transport network may have a consequential detrimental impact nationally<sup>1</sup>. For this reason, the Secretary of State designated the Silvertown Tunnel a Nationally Significant Infrastructure Project in June 2012.

## Purpose of this study

Whilst it is agreed that new river crossings will have a significant role in supporting the economic growth potential of London, the scale and distribution of the economic benefits generated by each crossing is uncertain. As a result, TfL have commissioned Atkins to complete a detailed study of potential future land use scenarios, including the potential development and socio-economic impacts for a range of crossing options within East London. The work includes the preparation of a clear baseline and development scenarios to examine potential land use changes linked to investments in the river crossings.

The specific objectives of this work are therefore:

- To assess how each of the crossing options in combination with other key transport and regeneration initiatives, could bring about economic growth in terms of job creation and delivery of homes;
- To assess how crossing options could impact on the scale, timing and type of development.

## Overview of assessment methodology

The approach to estimating the impact of each crossing option follows best practice guidance, notably WebTAG unit A2.2 (Regeneration Impacts) and the English Partnerships Additionality Guide. We provide an overview of our approach here with more detail set out in Section 2.

This study considers six scenarios - five crossing options (the intervention cases), which are compared with a scenario where there is no additional crossing option (the reference case). Our assessment of jobs and homes growth is concerned with not only scale of development opportunities, but also the geography of this development and timing. The geography of this assessment focuses on the seven London Boroughs which make up the project 'Regeneration Area'<sup>2</sup>, namely the London Boroughs of Southwark, Lewisham, Greenwich, Bexley, Tower Hamlets, Newham, Barking & Dagenham, as well as Havering, which is included given the expected impacts from the Belvedere – Rainham option.

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<sup>1</sup> Letter from Secretary of State for Transport to Mayor of London 26<sup>th</sup> June 2012

<sup>2</sup> As defined in the East London River Crossings Regeneration Impacts Scoping Report 2012



Given the size of the study area, we have identified a series of sub-areas, known as 'Property Market Areas' (or PMAs), which represent areas of similar characteristics in terms of market demand, development capacity and changes to connectivity that are likely to result from each of the crossing options.

Our assessment of impact by timing considers the short/medium term which covers the planning and construction period of a crossing option up to 2021; and a longer period covering 2021-2031 to allow growth opportunities to be realised.

We have identified all major development sites<sup>3</sup> within each of the eight Boroughs and subjected them to an appraisal of their potential developability, including market demand, physical site constraints, policy alignment and current access. To estimate the change in a site's developability as a result of each crossing option, we have measured the change in access to the potential labour force, customers and suppliers, and considered this alongside the non access factors, to derive estimates of the future scale and timing of growth at each site. This technical approach has been complemented by consultation with each of the Boroughs and key developers on the growth potential of key sites.

The difference between the potential growth in jobs and homes for each of the crossing scenarios and the reference case is estimated, taking account of multiplier and displacement effects, which provides our final estimate of the net additional impact for each scenario.

## Development Scenarios

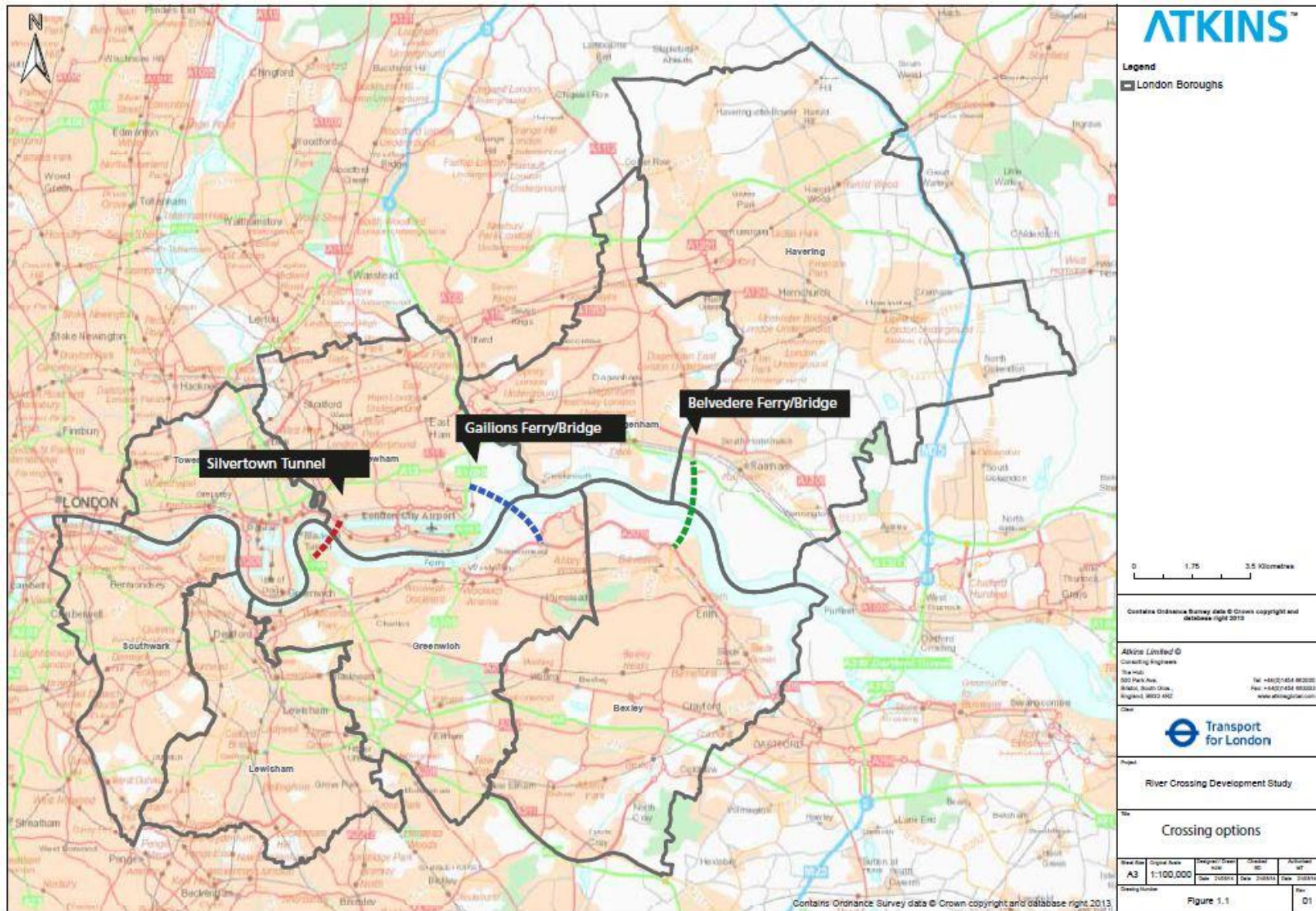
This study considers six scenarios:

- **Scenario 1: Reference case.** This scenario forms the baseline which the other 'do something' scenarios will be measured against. This scenario assumes that no road crossing options are delivered, with no further changes to the existing highway network. The Woolwich Ferry also remains open. A range of public transport commitments are built into this scenario, including Crossrail 1;
- **Scenario 2: Reference case + Silvertown Tunnel** (known as 'Silvertown only' in this report). This scenario looks at the impact of a new tunnel which links the A102 at Greenwich Peninsula with Silvertown in the Royal Docks, consisting of a single lane in each direction for all traffic and an additional lane in each direction for HGVs/buses;
- **Scenario 3: Reference case + Silvertown Tunnel and Gallions Ferry** (known as 'Silvertown + Gallions Ferry' in this report). This scenario is as per Scenario 2 with an additional Ferry which links Gallions Reach with Thamesmead, including construction of link roads to new piers. Capacity is double that of the existing Woolwich Ferry;
- **Scenario 4: Reference case + Silvertown Tunnel and Gallions Bridge** (known as 'Silvertown + Gallions Bridge' in this report). This scenario is the same as Scenario 2 with a new bridge and link roads connecting Gallions Reach and Thamesmead, consisting of a single lane in each direction for all traffic and an additional lane in each direction for HGVs/buses;
- **Scenario 5: Reference case + Silvertown Tunnel and Belvedere Ferry** (known as 'Silvertown + Belvedere Ferry' in this report). This is again the same as Scenario 2 but with a new ferry that links Belvedere with Rainham, including construction of link roads to new piers. Capacity is double that of the existing Woolwich Ferry;
- **Scenario 6: Reference case + Silvertown Tunnel and Belvedere Bridge** (known as 'Silvertown + Belvedere Bridge' in this report). This is the same as Scenario 2, but includes a new bridge at Belvedere which links to the A13 at Rainham.

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<sup>3</sup> Defined as a site with potential for 10 or more residential units or more than 1,000sq.m of floorspace

Figure E.1 - Study Area and Crossing Option Locations



## How Transport Affects Development and Economic Growth

- **Transport can facilitate economic growth** by improving business efficiency through time savings and reliability, expanding labour markets and increasing competition through improving access to customers and suppliers. These tangible benefits mean places that are better connected are more attractive, both for businesses and as residential locations;
- **Improvements in transport connectivity can therefore increase the attractiveness of a location, thereby increasing demand and property values.** This increase in value can make sites more attractive for development, facilitating redevelopment opportunities and increasing densities;
- **Changes in road based connectivity can therefore be measured to provide an indication of the potential effects on development.** In order to measure changes in connectivity, we have defined four criteria that are important to residential and business locational decision making: Access to jobs, access to the workforce, access to businesses (as suppliers or customers) and access to the adult population (as customers), which form the basis of our development scenarios;
- **Transport investment can also facilitate growth through improving the image of an area,** providing a demonstration of long term public sector investment and drawing it to the attention of potential inward investors;
- **Different firms are affected by transport improvements in different ways.** The manufacturing and construction sectors are more road dependent than office based sectors and are likely to respond to changes in road based connectivity more positively. However, sensitivity to changes in the road network is just as much about place as sector, with Outer London Boroughs much more reliant on road based connectivity than Inner and Central London Boroughs;
- **Improvements in the resilience and reliability of the transport network are as important as improvements in connectivity,** especially for many road based sectors. Whilst this is difficult to measure accurately, it is an important consideration in terms of the wider beneficial impacts of a scheme;
- **Transport is a necessary, but not sufficient, condition for growth.** For transport investment to facilitate regeneration, the proposed scheme needs to be set within a context of wider economic growth, with a supportive policy environment, and to provide a significant step change in connectivity. A detailed analysis of the economic and policy context forms a key part of this work;
- Case studies of similar major investments in cross river capacity, such as the Severn Bridge and the Dartford Crossing, have demonstrated that such **investment can generate strong employment growth at levels well above the regional average,** with those areas that the bridge directly links benefiting to the greatest degree. There is also evidence of higher levels of housing development facilitated by the crossings;
- **East London has depended on investment in transport infrastructure to deliver the step change in growth and economic performance over the past 30 years.** Analysis shows that significant office growth was only made possible at Canary Wharf through the opening of the Jubilee Line, whilst anecdotal evidence suggests road improvements in Bexley and the A13 have been key to retaining and attracting manufacturing and distribution uses;
- Empirical research on the link between employment growth and road connectivity improvements found that **for every 10% increase in access to jobs by road, employment in the local area grew by 2% within 10km of the scheme.** This is further evidence of the beneficial effects of road connectivity on economic growth;
- **Crossrail is expected to facilitate office and residential growth around key stations.** This is likely to in turn generate additional demand for cross river movement to and from particular services and supply chain businesses.

## Existing Transport Accessibility in the Study Area

- **The lack of road crossing opportunities is a major constraint on cross river connectivity.** There are 10 times the number of cross river journeys made in west London (which has 15 road crossings) compared to East London (which has three), with cross river journeys much higher in West London for all types of trip purpose;
- **This lack of connectivity restricts the size of labour market and the potential customer catchment for firms,** thereby restricting competition and economic activity. East London Boroughs have lower proportions of the labour force that come from outside each Borough, have lower employment densities per hectare, lower retail catchments and less average spend per town centre;
- Although car mode share has decreased in most Boroughs, **the absolute number of road based trips has increased rapidly across the Study Area,** driven by rapid population and employment growth. This is generating increased demand for cross river trips which, when coupled with no increase in cross river road capacity, has resulted in significant congestion;
- **Travelling by road, rather than rail based public transport, is a faster option for many journeys in the Study Area,** especially journeys that do not start and begin very close to the rail network. It is this which helps to explain why car ownership and usage is much higher in Outer London and why there continues to be high demand for cross-river journeys by car in East London, despite an average wait time of 11 minutes per kilometre – there are simply no viable public transport options to make these particular types of point to point journeys. The dispersed nature of the origins and destinations of trips in Outer London mean demand for road based trips is likely to continue to be significant, with rail based public transport unlikely to be able to act as substitute due to the lower density of existing development;
- **TfL have estimated the daily (Monday to Friday) economic cost of delays to traffic on the A102 alone to be around £50,000 northbound and £20,000 southbound** and rising year-on-year. This equates to around £17.5million every year;
- **Cross river journey time reliability is now very poor in East London due to the poor resilience of the highway network,** with the limited number of river crossings a key factor. This is a major constraint to business planning and operation and a barrier to investment;
- **The Study Area contains a high proportion of businesses in the distribution, construction and manufacturing sectors** that rely on good road links to access customers and suppliers. These businesses also have higher proportions of their labour force that commute by road based modes and were most likely to state that a new road crossing would lead to growing their business. Growth in freight movement is also expected, with the number of LGVs forecast to grow by up to 30% between 2008 and 2031, accounting for 15% of traffic on London's Roads;
- **Road based connectivity is relatively poor across the Study Area when compared with the London average.** This is especially the case in Bexley, Barking & Dagenham, Havering and parts of Greenwich and Newham. It is these areas which stand to see the biggest gains from development and economic activity as a result of a new river crossing;
- **Road based connectivity is also poorest in those locations where access to public transport is poor.** Where the Thames does act as a barrier to road based movement, there is often little alternative public transport option available. This means that, rather than being substituted, trips are simply not made at all. This is a key factor in constraining economic activity within the Study Area;
- **The sensitivity to road based access varies according to location and sector.** Office based sectors are not driven by road connectivity in Southwark and Tower Hamlets, although it is more important in the Outer London Boroughs. Manufacturing, construction, logistics and city serving industries are all heavily dependent on road connectivity.

## Socio-economic characteristics and the demand for floorspace

- This Study has undertaken detailed research to understand how improvements in cross river connectivity can contribute to East London's economy by facilitating the efficient movement of people and goods;
- **Demand for housing is strong at the London level**, with the Study Area experiencing high rates of population growth that is expected to continue. However, the delivery of housing has fallen significantly behind population growth, leading to higher household sizes and rapid increases in property prices;
- Housing delivery targets revised in the Further Alterations to the London Plan 2014 have identified the potential capacity for 16,900 dwellings per annum in the Study Area. However, **with recent rates of delivery under half that, there remains a significant challenge to increase the future rate of housebuilding**;
- **One of the reasons why new housing development is not coming forward is due to the changing structure of London's economy.** Central London (including Canary Wharf) have seen massive employment growth, with very little growth in Outer London. Outer London Boroughs in the Study Area have seen some minor employment growth, although this has largely been in population-related sectors, which expand as the population grows, and has masked a decline in the wider economy. The lack of employment opportunities in Outer London Boroughs mean only developments that have good transport accessibility into central London are in high demand and are coming forward;
- **Without further investment in infrastructure to support economic growth in other parts of the Study Area, there remains a risk that major sites which are not currently well connected to the public transport and central London will not come forward.** In other words, the Study Area, outside of Southwark and Tower Hamlets, requires a step change in the performance of its economy to deliver its full potential. The step change in connectivity provided by new river crossings is likely to contribute significantly to that;
- Office development is likely to continue to be located in northern Southwark and western Tower Hamlets (City Fringe), Canary Wharf, as well as a limited number of select hubs with excellent public transport accessibility, such as Stratford. There is also significant potential at Royal Docks, although **improvements to the accessibility of these sites are key**;
- **Retail demand is expected to decline somewhat compared to recent years** due to structural changes in the market related to e-commerce and other factors. However, there is still potential for growth, especially in town centres and where a quality product can be offered to the market;
- Although traditional industrial space has generally been in decline in the Study Area over the past decade, which is likely to continue in many locations - especially within Inner London Boroughs, this will not be the case in all parts of East London. Growth is more likely to occur in locations where high quality industrial space can meet the needs of hi-tech industries that want to be located close to the London skill base and access to finance, **and can access the strategic transport network**, such as the London Sustainable Industries Park at Dagenham Docks;
- The development of logistics space close to urban areas will also be dependent upon the cost and availability of large plot development land, as well as the opportunity cost of not developing for other, more valuable uses such as residential. This suggests locations such as Barking & Dagenham, Bexley and southern parts of Havering are likely to see the strongest growth in this sector, **but again this will be dependent on good road access.**

## Development Capacity

- **We have drawn upon multiple sources to identify the full extent of development capacity in the Study Area**, including the GLA 2013 Strategic Housing Land Availability Assessment, the London Development Database, Borough site allocation documents, and interviews with the Boroughs and developers;

- We estimate that there is potential capacity for over 243,000 residential units, 2.5millionsq.m of office, 440,000sq.m of retail and 1million sq.m of leisure floorspace. If this was developed, this would result in a loss of 975,000sq.m of industrial floorspace;
- The northern side of the River has over twice as much floorspace capacity that could support employment than on the south side, with the majority of this difference in the office sector. This potential imbalance in employment growth, combined with a relatively even distribution of potential housing growth, will lead to a greater demand for trips from those on the south side of the River commuting to the north, reinforcing the need for new river crossings;
- There is a significant oversupply of capacity when compared to estimated demand, particularly for office and retail development. This suggests that not all sites will come forward for development, with only those where market demand is strongest and site constraints do not threaten viability;
- A high level assessment of physical and policy constraints has been undertaken, using the GLA's SHLAA work as the starting point. This has then been added to via the site visit process. This assessment of constraints is an important informant of the development scenarios in Chapter 8; However, physical and policy constraints are just one part of the story when considering which sites will come forward. The structure of the large site development market means that a significant proportion of sites with planning permission are not in control of companies who build. Furthermore, funding and private sector capacity are key issues which can restrict delivery.

## Changes in Road Connectivity from Crossing Options

- **We have measured changes in connectivity resulting from all five crossing options against the reference case.** The measurement of connectivity includes the change in access to jobs, workforce, adult population and businesses;
- **Under all options the average access to jobs, access to economically active population, and access to the adult population is expected to increase,** providing a net additional benefit across the Study Area as a whole;
- **Under all options, the increase in access to jobs is greatest on the south side of the River,** especially in Greenwich and Bexley, and could be a significant driver of residential development. Although rail based public transport usage is relatively high in Greenwich Peninsula, road based trips are still significant in much of the rest of the Borough. The step change in access to jobs, especially those that are not particularly easily accessible from the rail-based public transport network, could help to equalise the difference in property prices with those on the northern side of the River and bring forward development significantly more quickly than its current pace;
- **Conversely, increase in access to the labour force is greatest on the north side of the River,** especially in Newham, which could drive increased business investment. The increase in the economically active population accessible to Newham, especially southern parts of the Borough including the Royal Docks, could be an attractive prospect for businesses. The area is likely to become more attractive for construction companies, who are already significantly constrained by the lack of river crossings, as well as some light industrial and even some office based development in locations which are less accessible by the public transport network but which still have significant capacity, towards the east of the Borough;
- However, **a slight decrease in access to jobs as a result of increase traffic on this side of the river could result in slight negative impacts in terms of residential development.** Given the size of the decrease in access to jobs (up to 10% in Scenario 4), these impacts are unlikely to be significant, especially when greater access to services south of the River and the enhanced sense of place facilitated by the crossings are taken into account. This also needs to be considered alongside the relatively high rates of public transport usage, as well as the fact that TfL are currently identifying measures to mitigate any potential negative impact from increased traffic flow;
- The modelled flow of commuters to the north side of the River to work in the greater number of employment opportunities available again highlights the imbalance between both sides of the river. **Improved river crossings are imperative to enable residential development on the south side of**

**the river to access employment opportunities on the north.** Without additional capacity there is a real risk the rate of development on both sides of the river will be reduced;

- **Scenarios 4 and 6 are likely to create a step change in connectivity to Thamesmead and Belvedere, increasing the potential for development significantly.** Both Thamesmead and Belvedere are some of the most inaccessible locations in London, with very low numbers of jobs and people accessible within the catchments we have set out in this study. Both Scenarios 4 and 6 include a new road bridge that would directly link Thamesmead and Belvedere with either Gallions Reach or Rainham, opening up access to north east London and creating a step change in connectivity in these locations;
- Taking into account changes in connectivity, the sensitivity to road based connectivity (Chapter 4) and wider issues of resilience and improvements to the sense of place, we have set out high level estimates of the degree of change at each PMA and for each floorspace type. This is a key informant of the development scenarios in Chapter 8.

## Key Impacts of the Crossings

- **Scenario 4 – Silvertown + Gallions Bridge, creates the biggest overall net improvement in connectivity,** improving journey times between both sides of the River and creating a step change in the number of jobs, consumers and the workforce that can be accessed to/from Thamesmead and North Bexley;
- **Development impacts are maximised under Scenario 4,** which results in a gross impact of 18,400 – 23,800 additional residential units and additional 375,000 – 497,000sq.m of commercial floorspace by 2030 (above the reference case);
- **Land owners are expected to see a rise in development value** as improved connectivity facilitates increased demand. Chapter 3 identifies that there is a clear relationship between connectivity and land value in London. Areas that stand to see the largest changes in connectivity, such as Thamesmead and North Bexley in Scenario 4, will see the biggest absolute rise in land value;
- **Business density is estimated to increase** in the Study Area under each of the crossing option scenarios compared to the Reference Case. Under the reference case, employment is expected to be concentrated largely within existing agglomerations, such as Canary Wharf. We estimate the improved connectivity will unlock locations such as Thamesmead, the eastern Royal Docks and Barking, and provide a greater share of local employment;
- **Greater access to employment opportunities can help to combat high levels of unemployment and deprivation.** River crossings will increase road access to jobs, creating greater choice for workers and opening up new opportunities for local residents. The ratio of employment to population will increase under the river crossing scenarios when compared with the Reference Case;
- **Improved connectivity and resilience of the highway network can help support the growing cluster of distribution and green industries in East London.** Demand for good quality distribution premises has been growing around the A13 and A2, and is being partly driven by the new London Gateway port at Tilbury. Expansion of highway capacity is key to supporting this cluster, as well as the emerging green cluster in London Riverside;
- **Improved river crossings will enhance the image of the Study Area** and give confidence to inward investors that the public sector is prepared to invest for the long term. Chapter 3 identified how improvements to the sense of place created by transport investment can have a significant effect on growth;
- **River crossings will play a strategic role in addressing London’s housing crisis,** facilitating housing growth in an area where overcrowding is the highest in the UK.

**Table E.1 - Summary of changes to connectivity and development impacts**

|  | <b>Scenario 2 -<br/>Silvertown Only</b> | <b>Scenario 3 -<br/>Silvertown +<br/>Gallions Ferry</b> | <b>Scenario 4 -<br/>Silvertown +<br/>Gallions Bridge</b> | <b>Scenario 5 -<br/>Silvertown<br/>Tunnel +<br/>Belvedere Ferry</b> | <b>Scenario 6 -<br/>Silvertown<br/>Tunnel +<br/>Belvedere<br/>Bridge</b> |
|--|---|---|--|---|--|
| <b>Connectivity Impacts</b>  |   |   |  |   |  |
| Average change in access to jobs (absolute)  | 64,264                                  | 77,189  | 112,623  | 67,663  | 90,908   |
| Average change in access to jobs (%)   | 5.20%                                   | 6.30%   | 9.10%  | 5.50%   | 7.40%  |
| Average change in access to labour supply (absolute)                                       | 38,266                                  | 56,072  | 105,090  | 57,845  | 100,837  |
| Average change in access to labour supply (%)  | 3.50%                                   | 5.10%   | 9.50%  | 5.20%   | 9.10%  |
| Average change in access to other businesses (absolute)                                    | -535                                    | 1,019   | 5,477  | 406   | 3,167  |
| Average change in access to other businesses (%)   | -0.30%                                  | 0.50%   | 2.70%  | 0.20%   | 1.50%  |
| Average change in access to consumers (absolute)   | 28,490                                  | 50,635  | 133,756  | 44,771  | 122,156  |
| Average change in access to consumers (%)  | 1.80%                                   | 3.20%   | 8.40%  | 2.80%   | 7.70%  |
| <b>Potential development Impacts (additional development above Reference Case to 2030)</b> |   |   |  |   |  |
| Housing units supported  | 9,000 to 11,200                         | 10,300 to 12,800  | 18,400 to 23,800   | 11,300 to 15,000  | 17,300 to 22,000   |
| Resident population  | 20,700 to 25,800                        | 23,700 to 29,400  | 42,300 to 54,700   | 26,000 to 34,300  | 39,800 to 50,600   |
| Office floorspace  | 96,200 to 128,400                       | 96,200 to 128,400                                       | 210,200 to 286,200                                       | 100,000 to 133,000  | 161,000 to 216,000   |
| Retail floorspace  | 16,800 to 22,500                        | 24,200 to 31,200  | 46,600 to 61,600   | 25,900 to 33,500  | 39,800 to 52,500   |
| Leisure floorspace   | 11,900 to 15,700                        | 14,500 to 19,200  | 22,900 to 30,700   | 14,500 to 19,200  | 22,400 to 30,000   |
| Industrial floorspace  | 52,500 to 68,100                        | 52,500 to 68,100  | 95,600 to 118,000  | 55,500 to 72,100  | 137,000 to 172,000   |
| Permanent jobs (gross)   | 9,850 to 13,100                         | 10,250 to 13,650  | 21,650 to 29,300   | 10,700 to 14,200  | 17,850 to 23,700   |
| <b>Permanent jobs (net)</b>  | <b>7,200 to 9,600</b>                   | <b>7,500 to 10,000</b>                                  | <b>15,800 to 21,400</b>                                  | <b>7,800 to 10,400</b>  | <b>13,000 to 17,300</b>  |
| Permanent jobs (from residential growth)   | 4,800 to 5,900                          | 5,500 to 6,800  | 9,700 to 12,600  | 6,000 to 7,900  | 9,200 to 11,600  |
| <b>Total permanent jobs (net)</b>  | <b>12,000 to 15,500</b>                 | <b>13,000 to 16,800</b>                                 | <b>25,500 to 34,000</b>                                  | <b>13,800 to 18,300</b>   | <b>22,200 to 28,900</b>  |



# 1. Introduction

## Background

- 1.1. East London is one of the largest regeneration areas in the UK and the sub-region has the largest physical capacity for growth in the South East. The boroughs that make up the sub-region are expected to accommodate the largest proportion of homes and jobs in London, making the delivery of development in this area absolutely essential to maximising London's significant economic potential. However, movements within the sub-region are significantly constrained by the 'barrier effect' of the Thames. There are only two road crossings east of Tower Bridge in London, which link populations of over 1 million people on each side of the river, with both crossings suffering from severe capacity constraints.
- 1.2. This 'barrier effect' limits firm's access to markets, the size of retail and leisure catchments and resident's access to employment opportunities. This constraint on economic activity makes delivering the significant scale of development planned for the area more difficult.
- 1.3. In recognition of this, the Mayor's Transport Strategy (MTS) sets out a long-term programme for investment in river crossings in east London. This includes a new road crossing at Silvertown in the form of a tunnel; a new pedestrian and cyclist link between Greenwich Peninsula and Royal Docks (now open as the Emirates Air Line) and options for improving connectivity further east including a potential new ferry at Gallions Reach.
- 1.4. Whilst TfL is fully committed to continuing the shift from private to public transport across London, there are certain types of trips – business/freight related trips for example, which have to take place by road. The level of growth in this part of London is such that these essential users of the road network will be negatively affected (with consequences for London's economy) if additional capacity and resilience in the network is not forthcoming.
- 1.5. A number of shortlisted a number of options for expanding highway capacity across the Thames in East London are currently being considered:
  - A new road tunnel linking Silvertown with Greenwich Peninsula designed to relieve congestion and improve resilience at the Blackwall Tunnel;
  - A new ferry or bridge linking Gallions Reach with Thamesmead, designed to replace the ageing Woolwich Ferry; and
  - A possible bridge or tunnel linking Belvedere with Rainham
- 1.6. TfL is now completing a programme of research to explore the feasibility, impacts and benefits of each of the proposed options and to support the development of the business case through to planning application.

## Purpose of this study

- 1.7. The significant growth potential of East London will only be fully realised if the barrier to movement over the Thames can be addressed. Current infrastructure is likely to be unable to absorb the forecast in movements generated by growth, leading to even greater congestion and less attractive environment for potential future housing and employment development in the area, both of which will negatively affect economic performance. The Secretary of State for Transport recognises that, given the position of London as an economic driver nationally, any decrease in efficiency of London's transport network may have a consequential detrimental impact nationally<sup>4</sup>. For this reason, the Secretary of State designated the Silvertown Tunnel a Nationally Significant Infrastructure Project in June 2012.
- 1.8. Whilst it is agreed that new river crossings will have a significant role in supporting the economic growth potential of London, the scale and distribution of the economic benefits generated by each

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<sup>4</sup> Letter from Secretary of State for Transport to Mayor of London 26<sup>th</sup> June 2012

crossing is uncertain. As a result, TfL have commissioned Atkins to complete a detailed study of potential future land use scenarios, including the potential development and socio-economic impacts for all crossing options within the study area. The work includes the preparation of a clear baseline and development scenarios to examine potential land use changes linked to investments in the river crossings.

1.9. The specific objectives of this work are therefore:

- To assess how each of the crossing options in combination with other key transport interventions, could bring about economic growth in terms of job creation and delivery of homes;
- To assess how crossing options could impact on the scale, timing and type of development;
- To provide a detailed database of sites and their development potential which TfL can draw upon to build the case for the wider regeneration benefits of the crossing/s; and
- To provide inputs to TfL's transport modelling, including ELHAM (East London Highway Assessment Model) and LonLUTI;

## Overview of assessment methodology

1.10. The approach to estimating the impact of each crossing option follows best practice guidance, notably WebTAG unit A2.2 (Regeneration Impacts) and the English Partnerships Additionality Guide. We provide an overview of our approach here with more detail set out in Section 2.

1.11. This study considers six scenarios - five crossing options (the intervention cases), which are compared with a scenario where there is no additional crossing option (the reference case). Our assessment of jobs and homes growth is concerned with not only scale of development opportunities, but also the geography of this development and timing. The geography of this assessment focuses on the seven London Boroughs which make up the project 'Regeneration Area'<sup>5</sup>, namely the London Boroughs of Southwark, Lewisham, Greenwich, Bexley, Tower Hamlets, Newham, Barking & Dagenham, as well as Havering, which is included given the expected impacts from the Belvedere – Rainham option.

1.12. Our assessment of impact by timing considers the short/medium term which covers the planning and construction period of a crossing option up to 2021; and a longer period covering 2021-2031 to allow growth opportunities to be realised.

1.13. We have identified all major development sites<sup>6</sup> within each of the eight Boroughs and subjected them to an appraisal of their potential developability, including market demand, physical site constraints, policy alignment and current access. To estimate the change in a site's developability as a result of each crossing option, we have measured the change in access to the potential labour force, customers and suppliers, and considered this alongside the non access factors, to derive estimates of the future scale and timing of growth at each site. This technical approach has been complemented by consultation with each of the Boroughs and key developers on the growth potential of key sites.

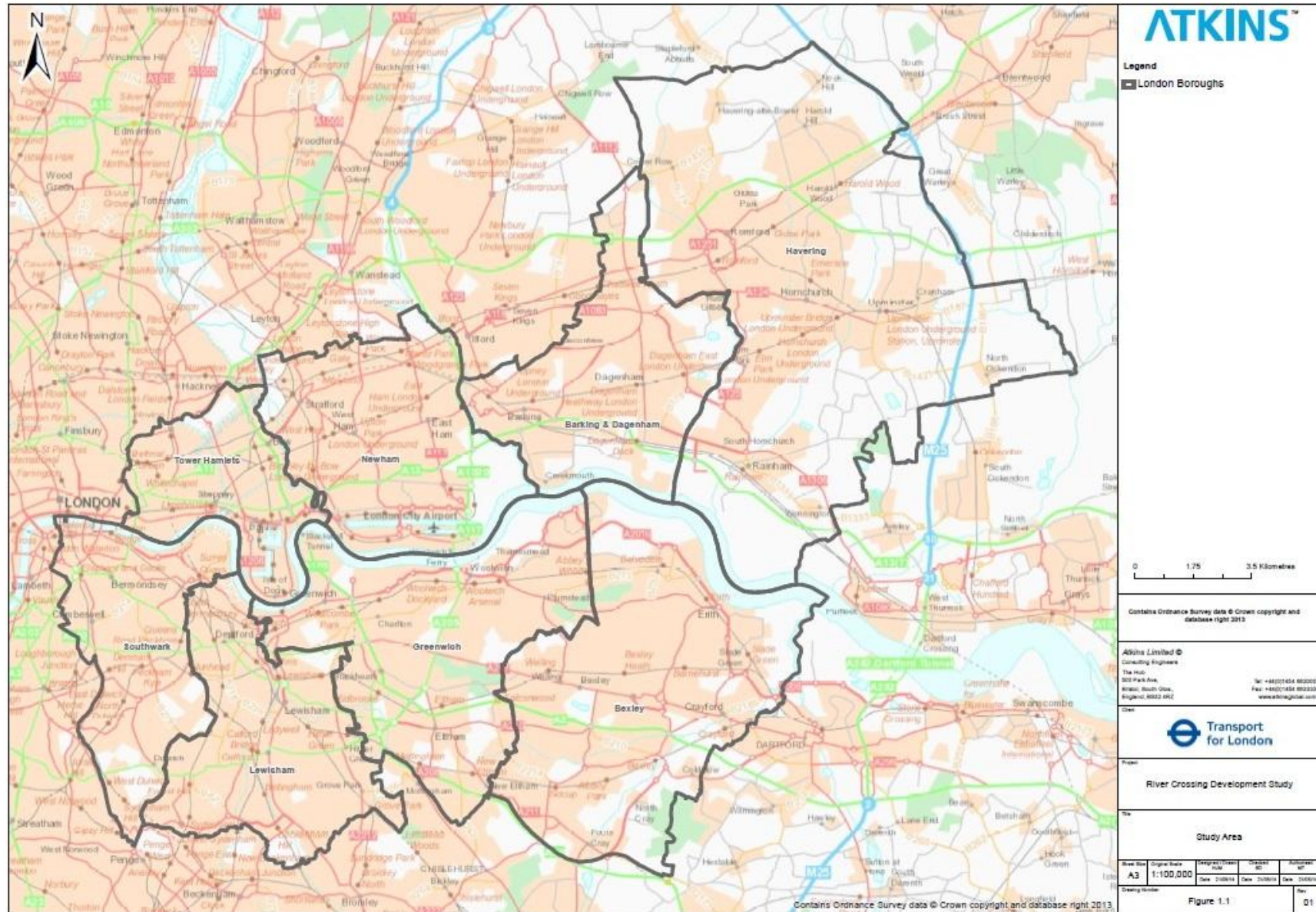
1.14. The difference between the potential growth in jobs and homes for each of the crossing scenarios and the reference case is estimated, taking account of multiplier and displacement effects, which provides our final estimate of the net additional impact for each scenario.

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<sup>5</sup> As defined in the East London River Crossings Regeneration Impacts Scoping Report 2012

<sup>6</sup> Defined as a site with potential for 10 or more residential units or more than 1,000sq.m of floorspace

Figure 1. Definition of the Study Area



## Structure of this report

1.15. This report is structured as follows:

- Chapter 2 provides further details of the methodology used in this study;
- Chapter 3 sets out the evidence for how improvements to road connectivity can affect economic activity and development;
- Chapter 4 provides an analysis of the existing transport accessibility issues in the study area, including how the River Thames acts as a barrier to movement;
- Chapter 5 includes an overview of the economic context of the study area, including key drivers of growth;
- Chapter 6 summarises the development potential within the study area and considers other non-transport factors that are likely to affect its delivery;
- Chapter 7 sets out the proposed crossing options and the potential impacts these might have on connectivity;
- Chapter 8 provides the development scenarios including profiles of potential development impacts within local property market areas; and
- Chapter 9 concludes by considering the wider economic impacts resulting from the development scenarios.

## 2. Methodology

### Introduction

- 2.1. This section sets out our approach to estimating the development impacts that will be facilitated by the crossing options.

### Study Methodology

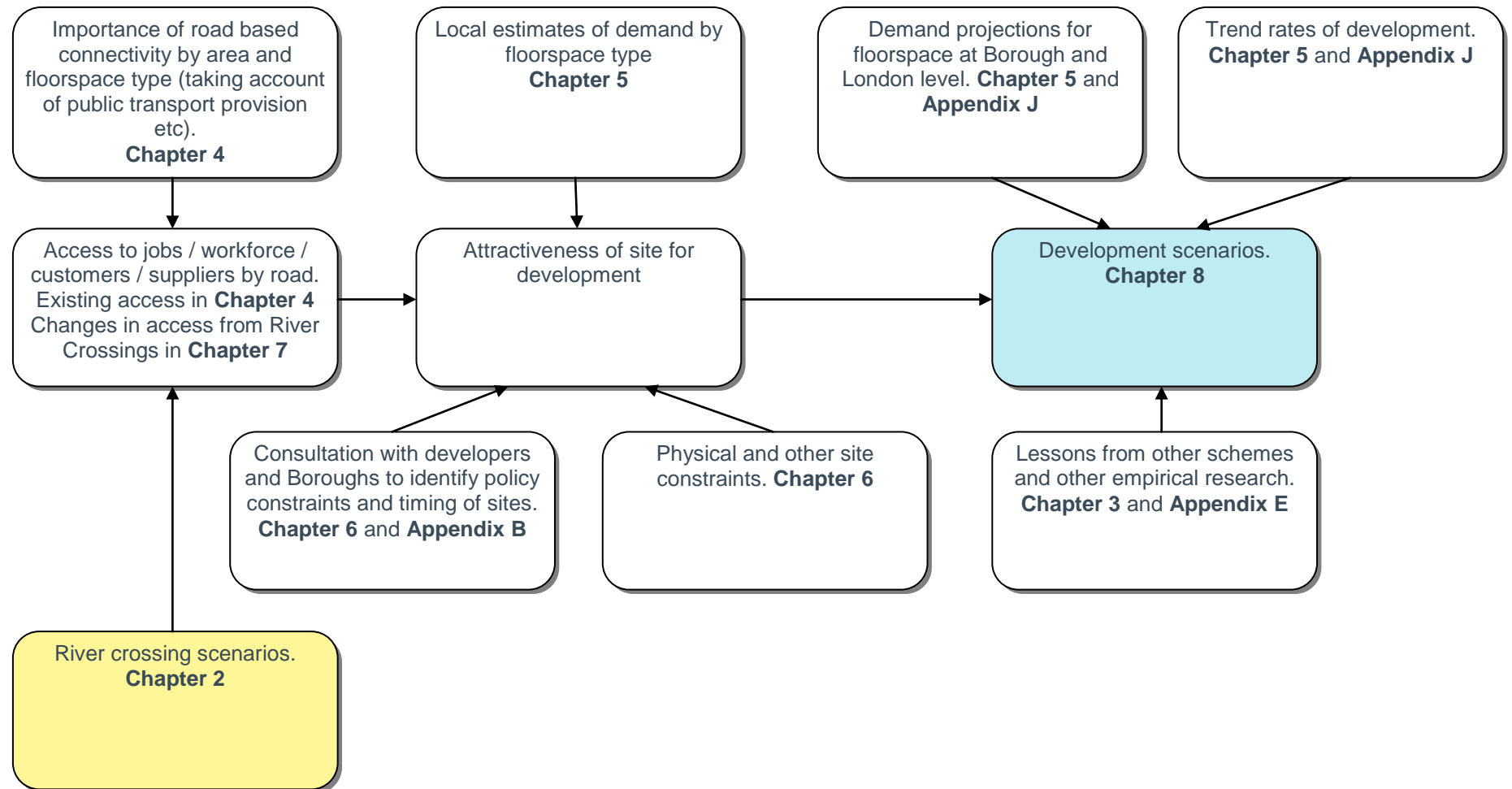
- 2.2. WebTAG sets out the DfT guidance on the conduct of transport studies. The website<sup>7</sup> notes that the guidance should be seen as a requirement for all projects/studies that require government approval. For projects/studies that do not require government approval WebTAG should serve as a best practice guide.
- 2.3. Our approach to estimating the net additional economic impact in terms of jobs and housing therefore uses WebTAG unit 2.2 (Regeneration) as the starting point. WebTAG 2.2 notes that the purpose of the assessment of regeneration impacts is to demonstrate how a proposed transport scheme will impact on the economy in regeneration areas. An assessment is expected to consider the processes that link transport to economic activity, and explain how the proposed scheme can be expected to affect employment in the regeneration area.
- 2.4. However, the scope of this study is somewhat different to a standard WebTAG2.2 regeneration assessment for the following reasons:
- The primary focus of this study is on development impacts. Whilst the jobs that are supported by development are an important consideration of this study, the purpose of the work is not to measure **all** changes in employment that could result from changes in connectivity (including those that do not result in physical development), as required by WebTAG 2.2; and
  - A key objective of this study is to identify the scale of housing development that may come forward as a result of each crossing option, which is not considered as part of WebTAG 2.2. Whilst WebTAG 3.16<sup>8</sup> provides guidance on how to estimate the benefits of transport interventions that unlock new housing, it does not provide an appropriate methodology for assessing what the scale and distribution of these benefits might be as a result of changes to the transport network.
- 2.5. As a result, we have tailored the approach used in WebTAG 2.2 as set out in Figure 2 below. As this study is focused on development impacts, we begin from the premise that transport can facilitate development by improving connectivity, and therefore access to customers, labour markets and jobs, raising land values and encouraging developers to build to meet the increase in demand (this is explained in more detail in the next Chapter). This needs to be set within the context of local and sub-regional demand for premises, as well as the capacity of sites to accommodate development. The overall level of development facilitated by improvements to road connectivity is therefore directly related to the change in access to jobs, the workforce, customers etc, taking into account the fact that different sectors and different parts of the Study Area will have different levels of sensitivity to road based connectivity.
- 2.6. This study therefore builds on and complements WebTAG in two ways:
- By providing estimates of how the crossing options could impact on the development potential for new jobs and homes, rather than solely looking at impacts on employment; and
  - By providing estimates of the spatial distribution of these impacts.
- 2.7. The relationship with the study methodology and WebTAG 2.2 is shown in Figure 3.

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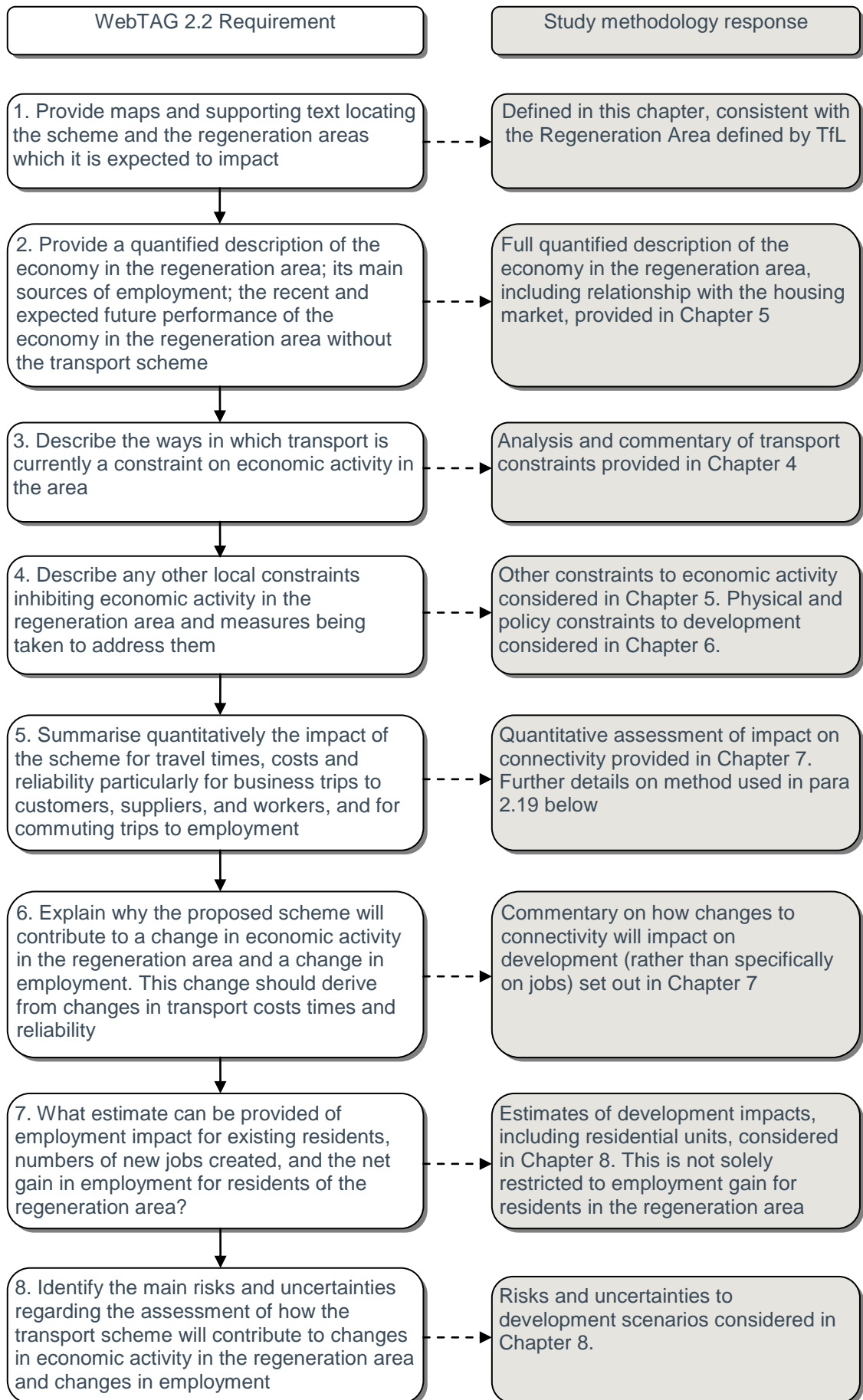
<sup>7</sup> <https://www.gov.uk/transport-analysis-guidance-webtag>

<sup>8</sup> WebTAG Unit 3.16: Appraisal in the Context of Housing Development

Figure 2. Overview of Study Methodology



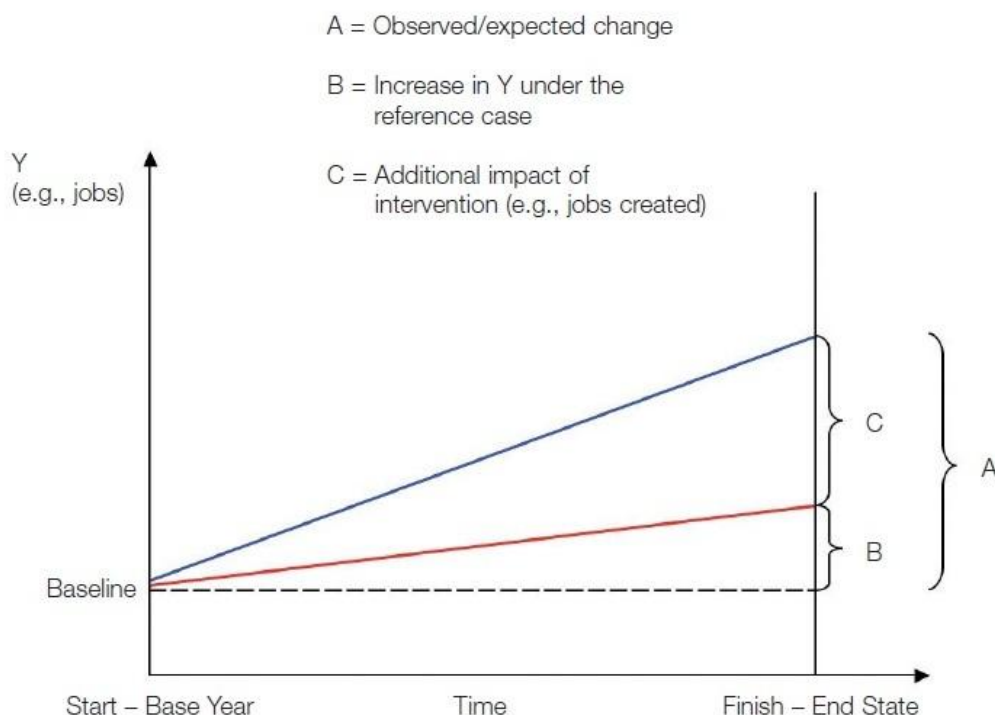
**Figure 3. Study methodology – relationship with WebTAG 2.2**



## Identifying the net benefit of each crossing option

- 2.8. Our approach to estimating the net additional economic impact in terms of jobs and housing follows best practice Government guidance, as set out in the English Partnerships Additionality Guide<sup>9</sup>. Following the Guide, our approach is anchored by an assessment of the intervention case scenarios compared with the reference case. The net additional impact, or additionality, being the difference between the cases. For both the reference case and intervention case we consider the direct economic impact arising in terms of floorspace, jobs and homes.
- 2.9. Figure 4 illustrates the net approach to calculating net additionality.

**Figure 4. Assessing Net Additionality**



Source: English Partnerships Additionality Guide 3<sup>rd</sup> Edition

## Allowing for multiplier, displacement and other net effects

- 2.10. As well as the direct effects of economic activity generated by the crossing options (floorspace, employment and homes located in the study area), we also allow for multiplier effects which cover indirect and induced activities. These economic impacts arise through the local expenditure by employees, residents and the purchase of goods and services required down the supply chain as a result of direct effects.
- 2.11. In aggregate, direct and multiplier effects are referred to as the gross impact. The gross impact is converted to the net impact by accounting for leakage, which describes the distribution of employment and expenditure impact beyond the area of impact; and displacement effects which refer to the reduction in economic activity occurring within the impact areas as a result of a scenario. This approach is fully consistent with the Additionality Guide. Full details of the multiplier, leakage and displacement effects are set out in Chapter 8.

<sup>9</sup> English Partnerships Additionality Guide 3<sup>rd</sup> Edition 2008



## Crossing option scenarios

2.12. This study considers six scenarios:

- **Scenario 1: Reference case.** This scenario forms the baseline against which the other 'do something' scenarios will be measured against. This scenario assumes that no road crossing options are delivered, with no further changes to the existing highway network. The Woolwich Ferry also remains open. The following public transport commitments are also expected to come forward<sup>10</sup>:
  - Crossrail, including stations at Canary Wharf, Custom House, Woolwich, Abbey Wood, Whitechapel and all stations from Stratford – Shenfield, is operational by 2018
  - A new rail link providing access from Barking to Barking Riverside is operational by 2020
  - Increases in rail capacity along the Tilbury and Dartford/Bexleyheath lines by 2015
  - Further increase in capacity on the Jubilee Line to 2022
  - Increased capacity for interchange between DLR and Crossrail at Custom House by 2018
- **Scenario 2: Reference case + Silvertown Tunnel** (known as 'Silvertown only' in this report). This scenario includes the same public transport assumptions as Scenario 1 but includes the following assumptions on the operation of the Silvertown Tunnel:
  - The tunnel links the A102 at Greenwich Peninsula with Silvertown, consisting of a single lane in each direction for all traffic and an additional lane in each direction for HGVs/buses
  - Woolwich Ferry remains open with no charge to users
  - A charging regime is put in place for both the existing Blackwall Tunnel and the Silvertown Tunnel (see Appendix A)
- **Scenario 3: Reference case + Silvertown Tunnel and Gallions Ferry** (known as 'Silvertown + Gallions Ferry' in this report). This scenario includes the same public transport assumptions as Scenario 1, as well as the same assumptions on the Silvertown Tunnel as Scenario 2, but includes the following further assumptions on Gallions Ferry:
  - Gallions Ferry links Gallions Reach with Thamesmead, including construction of link roads to new piers. Capacity is double that of the existing Woolwich Ferry
  - Woolwich Ferry is closed
  - A charging regime is put in place for both the existing Blackwall Tunnel and the Silvertown Tunnel (see Appendix A)
- **Scenario 4: Reference case + Silvertown Tunnel and Gallions Bridge** (known as 'Silvertown + Gallions Bridge' in this report). This scenario includes the same public transport assumptions as Scenario 1, as well as the same assumptions on the Silvertown Tunnel as Scenario 2, but includes the following further assumptions on Gallions Bridge:
  - A new bridge and link roads connecting Gallions Reach and Thamesmead, consisting of a single lane in each direction for all traffic and an additional lane in each direction for HGVs/buses;
  - Woolwich Ferry is closed

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<sup>10</sup> These have been sourced from Table 6.1 of Further Alterations to the London Plan 2014

- A charging regime is put in place for both the existing Blackwall Tunnel, the Silvertown Tunnel and Gallions Bridge (see Appendix A)
- **Scenario 5: Reference case + Silvertown Tunnel and Belvedere Ferry** (known as 'Silvertown + Belvedere Ferry' in this report). This scenario includes the same public transport assumptions as Scenario 1, as well as the same assumptions on the Silvertown Tunnel as Scenario 2, but includes the following further assumptions on a new ferry at Belvedere:
  - Belvedere Ferry links Belvedere with Rainham, including construction of link roads to new piers. Capacity is double that of the existing Woolwich Ferry
  - Woolwich Ferry is closed
  - A charging regime is put in place for both the existing Blackwall Tunnel and the Silvertown Tunnel (see Appendix A)
- **Scenario 6: Reference case + Silvertown Tunnel and Belvedere Bridge** (known as 'Silvertown + Belvedere Bridge' in this report). This scenario includes the same public transport assumptions as Scenario 1, as well as the same assumptions on the Silvertown Tunnel as Scenario 2, but includes the following further assumptions on a new bridge at Belvedere:
  - A new bridge and link roads connecting Belvedere and Rainham, consisting of a single lane in each direction for all traffic and an additional lane in each direction for HGVs/buses;
  - Woolwich Ferry is closed
  - A charging regime is put in place for both the existing Blackwall Tunnel, the Silvertown Tunnel and Gallions Bridge (see Appendix A)

## Geography of impact

- 2.13. As set out in Chapter 1, the study area has been chosen to be consistent with the Regeneration Area as defined by the East London River Crossings Regeneration Impacts Scoping Report 2012. We have also added Havering to the study area given the potential development impacts that could result from a new bridge or ferry linking Belvedere with Rainham.
- 2.14. Given the size of the study area, we have identified a series of sub-areas, known as 'Property Market Areas' (or PMAs), which represent areas of similar characteristics in terms of market demand, development capacity and changes to connectivity that are likely to result from each of the crossing options. A profile of each PMA is included in Chapter 6, with further socio-economic data on each included in Appendix K.
- 2.15. PMAs are used as the basic unit of analysis which current and future accessibility, as well as economic characteristics and development capacity are presented within this report. This is considered more appropriate than presenting analysis for each of the 1,000 development sites included in this report<sup>11</sup>.

## Timing of impact

- 2.16. Our assessment of impact by timing considers the short/medium term which covers the planning and construction period of a crossing option up to 2021; and a longer period covering 2021-2031 to allow growth opportunities to be realised. Estimates of development potential post 2031 are also included, but are inherently more uncertain.

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<sup>11</sup> Note that we have still collected development capacity, constraints and accessibility data for each site, but that it is more appropriate to present the aggregate of this analysis at the PMA level

Figure 5. Location of crossing options assessed

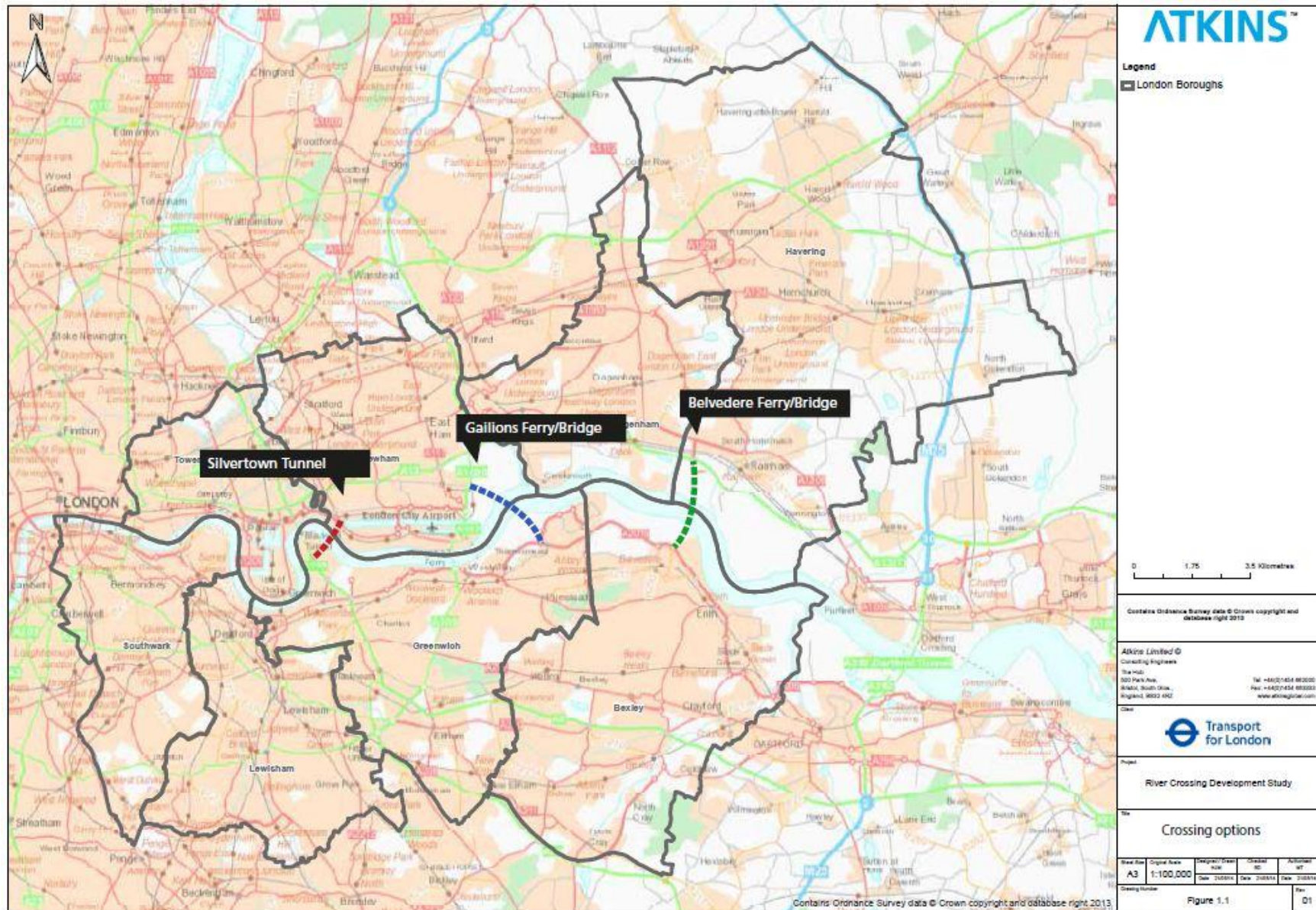
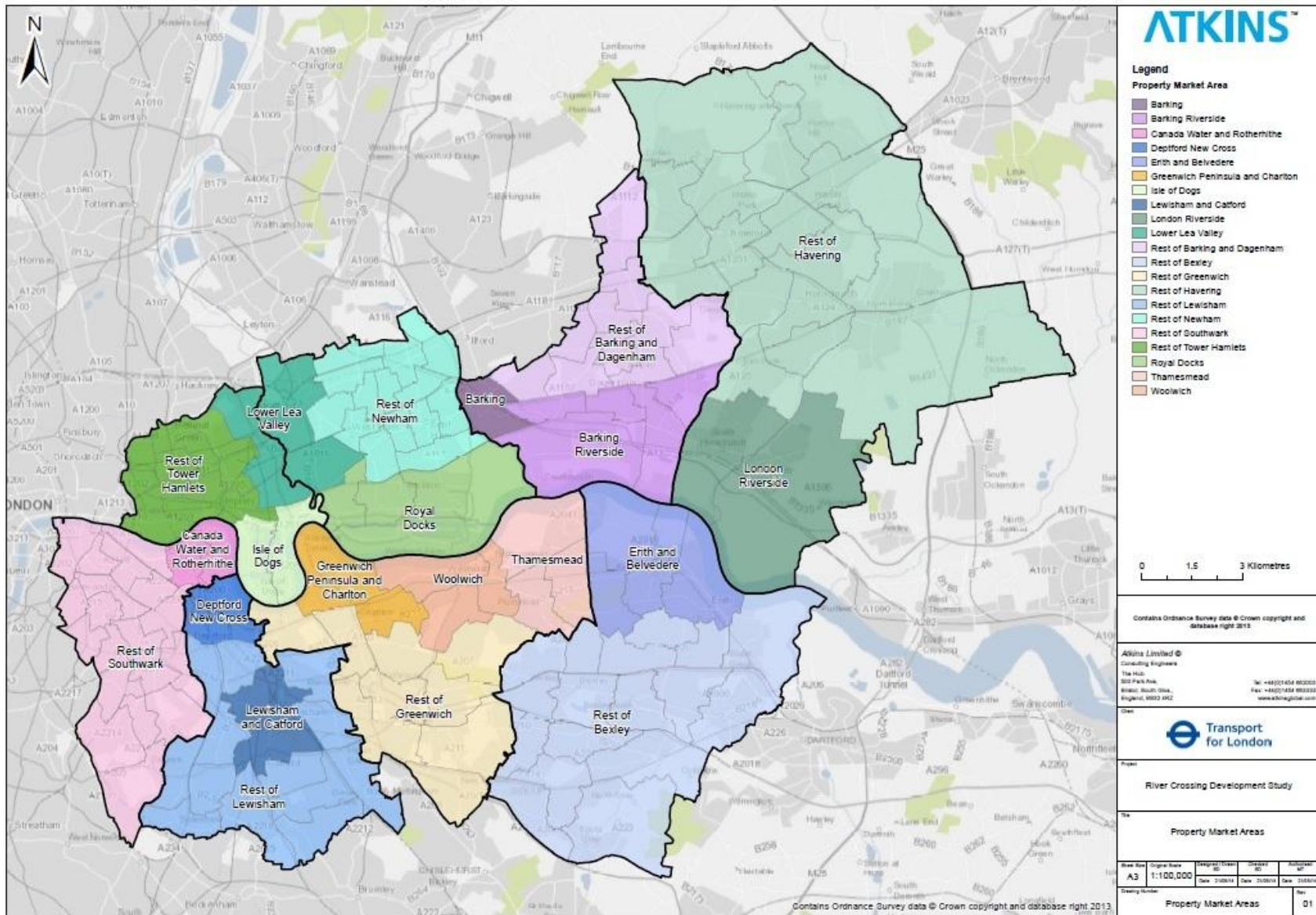


Figure 6. Definition of Property Market Areas



## Development capacity assessment

- 2.17. The identification of development capacity has drawn upon a range of sources including:
- London Strategic Housing Land Availability Assessment 2013;
  - The London Development Database;
  - Borough planning strategies, including Core Strategies and Site Allocation documents;
  - Other land in the ownership of the GLA;
  - Consultation with Boroughs
- 2.18. These sources have been amalgamated to provide a single database of development potential for all sites with capacity for over 10 units or 1,000sq.m of floorspace. Further details on the process of how these sources were augmented are set out in Chapter 6.

## Measuring changes in the development potential of sites resulting from changes to connectivity

- 2.19. A key factor in the assessment of changes to development potential resulting from the crossing options is the degree to which the option impacts on connectivity to and from sites, and therefore their attractiveness for development. This is also consistent with the requirements of WebTAG 2.2, which requires a quantitative assessment of the impact of a scheme in terms of travel times, costs and reliability.
- 2.20. Given that the study area is a very large and complex economic area, with a high degree of functional relationship with other parts of London and the South East<sup>12</sup>, it is not possible to accurately explore the changes in travel times and costs between each component part of the study area and the rest of London. Instead, we have considered changes in connectivity to and from parts of the study area in terms of the change in the number of businesses, jobs, labour force and potential customers. These have been used as metrics to measure the change in attractiveness of each location to a range of uses, which can then be used to inform the development of future development scenarios, considering wider factors of market demand, physical constraints etc.
- 2.21. Further details on the approach to measuring changes in connectivity is included in Chapter 7.

## Consultation with stakeholders

- 2.22. Consultations were held with the all eight London Boroughs in the study area as well as a number of developers. The discussions included:
- Long term planning strategy and development potential of key sites in terms of scale, type and timescale
  - Other development opportunities and constraints on sites not yet in the planning system;
  - The degree to which a crossing could influence the scale, type and timescale of development of the key sites, as a result of increased accessibility and demand market attractiveness; and
  - Their preferred crossing options and reasons.
- 2.23. The consultation process has informed the assessment of development potential and the appraisal of the attractiveness of each site. A list of all consultees is included in Appendix B.

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<sup>12</sup> See Appendix I for example which demonstrates commuting links with other parts of London and the South East

## Definition of floorspace types

- 2.24. A key output of this work will be to provide estimates of development capacity and floorspace scenarios for TfL's Landuse-Transport Interaction model (LonLUTI). LonLUTI uses specific categories of floorspace which the outputs of this work are consistent with. These categories are:
- Residential units;
  - Office floorspace – which we have defined as all floorspace within Use Classes B1a and B1b;
  - Retail floorspace – which we have defined as all floorspace within Use Classes A1 and A2;
  - Hotels and Leisure floorspace – which we have defined as all floorspace within Use Classes A3, A4, A5 and C1;
  - Industrial floorspace – which includes logistics and warehousing and which we have defined as all floorspace within Use Classes B1c, B2 and B8;
  - Education and Health – which we have defined as all floorspace within Use Classes D1;
- 2.25. Development scenarios are therefore presented for each of the above floorspace types, with the exception of education and health, the development decisions of which are driven by the public sector and are therefore impossible to predict.

# 3. Relationship between Transport and Development

## Summary

- **Transport can facilitate economic growth** by improving business efficiency through time savings and reliability, expanding labour markets and increasing competition through improving access to customers and suppliers. These tangible benefits mean places that are better connected are more attractive, both for businesses and as residential locations.
- **Improvements in transport connectivity can therefore increase the attractiveness of a location, thereby increasing demand and property values.** This increase in value can make sites more attractive for development, facilitating redevelopment opportunities and increasing densities;
- **Changes in road based connectivity can therefore be measured to provide an indication of the potential effects on development.** In order to measure changes in connectivity, we have defined four criteria that are important to residential and business locational decision making: Access to jobs, access to the workforce, access to businesses (as suppliers or customers) and access to the adult population (as customers), which form the basis of our development scenarios;
- **Transport investment can also facilitate growth through improving the image of an area,** providing a demonstration of long term public sector investment and drawing it to the attention of potential inward investors;
- **Different firms are affected by transport improvements in different ways.** The manufacturing and construction sectors are more road dependent than office based sectors and are likely to respond to changes in road based connectivity more positively. However, sensitivity to changes in the road network is just as much about place as sector, with Outer London Boroughs much more reliant on road based connectivity than Inner and Central London Boroughs;
- **Improvements in the resilience and reliability of the transport network are as important as improvements in connectivity,** especially for many road based sectors. Whilst this is difficult to measure accurately, it is an important consideration in terms of the wider beneficial impacts of a scheme;
- **Transport is a necessary, but not sufficient, condition for growth.** For transport investment to facilitate regeneration, the proposed scheme needs to be set within a context of wider economic growth, with a supportive policy environment, and to provide a significant step change in connectivity;
- Case studies of similar major investments in cross river capacity, such as the Severn Bridge and the Dartford Crossing, have demonstrated that such **investment can generate strong employment growth at levels well above the regional average,** with those areas that the bridge directly links benefiting to the greatest degree. There is also evidence of higher levels of housing development facilitated by the crossings;
- **East London has depended on investment in transport infrastructure to deliver the step change in growth and economic performance over the past 30 years.** Analysis shows that significant office growth was only made possible at Canary Wharf through the opening of the Jubilee Line, whilst anecdotal evidence suggests road improvements in Bexley and the A13 have been key to retaining and attracting manufacturing and distribution uses;

- Empirical research on the link between employment growth and road connectivity improvements found that **for every 10% increase in access to jobs by road, employment in the local area grew by 2% within 10km of the scheme**. This is further evidence of the beneficial effects of road connectivity on economic growth.
- **Crossrail is expected to facilitate office and residential growth around key stations**. This is likely to in turn generate additional demand for cross river movement to and from particular services and supply chain businesses.

## Introduction

- 3.1. This chapter provides a review of the available evidence on how transport accessibility can impact on land use and development. This includes a summary of a literature review on the links between transport and economic growth, as well a review of the impacts of recent transport investments in the UK.

## Improvements in transport connectivity can facilitate economic growth and development

- 3.2. Appendix C provides a summary of evidence which demonstrates that transport is key to the functioning of modern economies. Improvements in transport connectivity can stimulate business efficiency through time savings and reliability, can increase the number of potential customers accessible to business and improve access to the labour force. Improvements to transport connectivity can therefore increase the attractiveness of a location, thereby increasing property values and facilitating redevelopment opportunities.
- 3.3. However, transport is a necessary, but not sufficient, condition for growth. For transport investment to facilitate regeneration, the proposed scheme needs to be set within a context of wider economic growth, with a supportive policy environment, and to provide a significant step change in connectivity. Improvements to the resilience and reliability of the transport network are also as important as improvements to connectivity, whilst the potential for transport to facilitate growth through improving the image of an area is also important.

## Case studies demonstrate that recent improvements to road connectivity have led to significant impacts in development and employment

- 3.4. Appendix F provides a review of the impacts of three major highway transport interventions in the UK with relevance this work: the Severn Bridge, the Humber Bridge and the Dartford Crossing
- 3.5. The review identified that major investment in road crossings can have significant development impacts including:
- Improved connectivity from river crossings can impact significantly on employment growth, with the authorities in close proximity to the Dartford Crossing seeing growth rates of 20% above those of the wider sub-region during the past 20 years, and the Severn Crossing increasing economic activity in South Wales by 4%. Furthermore, SACTRA identifies that, following the opening of the A14 upgrade linking the A1 and M1, industrial and commercial development within seven miles of the road is reported to have increased by 470%<sup>13</sup>;
  - Analysis of the spatial distribution of the Dartford crossing employment impacts suggests that these are most likely to be felt in authorities directly linked by the new crossing (in this case Dartford and Thurrock). However, there may be some displacement effects with new employment choosing to locate closer to the crossing at the expense of other authorities in reasonable proximity to the crossing;

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<sup>13</sup> Standing Advisory Committee on Trunk Road Appraisal Full Report 1999



- Analysis of the impacts on particular sectors from the Dartford crossing suggests that the construction, retail and distribution sectors are most likely to benefit from the improved road connectivity, although smaller scale positive impacts on office based sectors are also possible too. This conforms with recent analysis on the importance of road based connectivity in East London by sector conducted for TfL (see Appendix D);
- The impact of new crossings on housing growth is less certain, and is much more aligned to local authority planning policy. However, analysis from the Dartford Crossing suggests that dwelling growth rates in both Thurrock and Dartford have been above the regional averages by 28% and 34% respectively since the crossing opened. The Severn Bridge also appears to have generated significant housing growth of up to 8,800 dwellings per annum

3.6. The case study review also confirms the fact that transport is a necessary, but not sufficient, factor for growth and that impacts are highly dependent on a wide range of external factors including:

- Wider market factors which could influence investment decisions and operational efficiencies from the scheme ;
- The degree of integration of any new crossing with the wider local and strategic transport network; and
- The degree of integration of the scheme more widely with strategic regeneration and development objectives – using the scheme as a catalyst to bring forward wider regeneration opportunities at both the local and sub-regional level;

### **Empirical evidence suggests that road improvements can have positive impacts on employment**

3.7. The London School of Economics Spatial Economics Research Centre has undertaken research<sup>14</sup> to assess the productivity and employment effects from transport improvements at a very detailed geographic scale. The paper measured the intensity of exposure to improvements using changes in employment accessibility constructed at the electoral ward level.

3.8. The paper's estimates of the benefits from transport improvements relate to those impacts that can be detected through changes in employment accessibility. These should incorporate agglomeration effects, and any direct effects related to transport cost savings that are correlated with the accessibility changes. The research was undertaken for road improvements across the UK with a range of differing socio-economic contexts.

3.9. Overall, the paper found strong effects from transport improvements on area employment and plant counts including:

- A 10% improvement in accessibility (to jobs) leads to about a 3% increase in the number of businesses and employment, up to 30 km from the site of the improvement. This falls to a 2% increase in the number of businesses and employment up to 10km from the site of improvement. The estimates range between zero and 10% according to sector and specification.
- Producer services (business and professional services, financial and insurance and real estate) are the sectors with most additional employment growth resulting from road improvements. Construction also saw some gains, although retail employment was negatively affected.
- The employment increases appear to come about through firm entry, rather than increases in the size of existing firms.

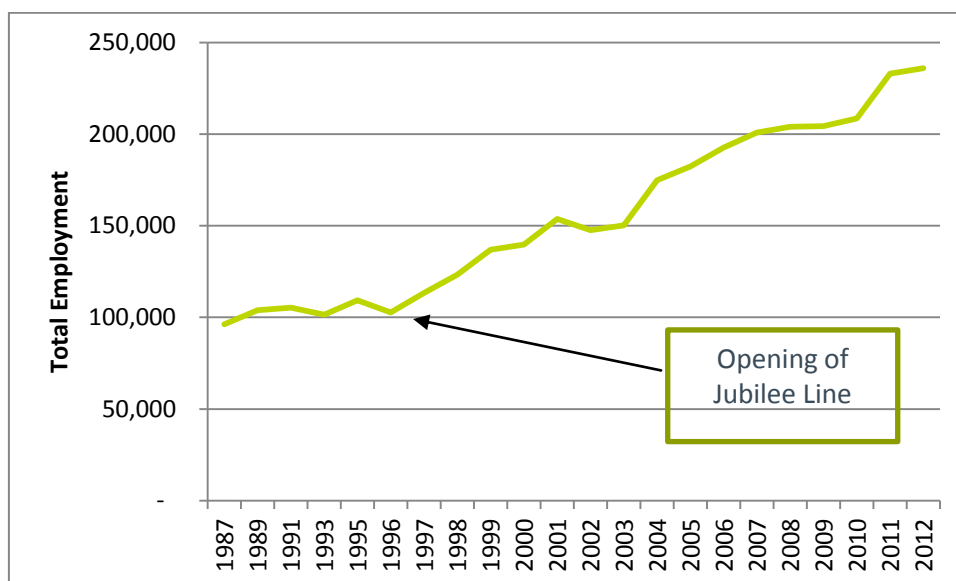
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<sup>14</sup> New Road Infrastructure: the Effects on Firms. SERC Discussion Paper 117

## There is evidence that major growth will only be unlocked in East London through investment in transport

- 3.10. The success of the regeneration of east London has been clearly tied to investment in transport infrastructure. Canary Wharf was only able to fulfil its potential once the Jubilee Line was extended, allowing the area to grow to over 100,000 jobs. The Docklands Light Railway, which has now been expanded six times (north to Stratford, south to Lewisham, east to Beckton and over the river to Woolwich), has also played a crucial role in the development of this part of London. The Excel Exhibition centre and City Airport, which now handles about three million passengers a year, would have been impossible without it.

Figure 7. Employment growth in Tower Hamlets 1987 - 2012



Source: ABI/BRES

- 3.11. But is it not just rail based public transport that has facilitated growth in East London. Discussions with landowners as part of this work revealed that the opening of Bronze Age Way in Erith, Bexley, in 1996 helped to stop the flow of businesses out of the Borough towards Kent, especially in manufacturing and distribution sectors. The consultation process also identified anecdotal evidence that upgrades to the A12 and A13 have had a beneficial impact on facilitating development in Canary Wharf and the growing demand for logistics uses in Barking & Dagenham.

## The economic impacts of Crossrail are expected to create a greater need for road based river crossings

- 3.12. Crossrail, which will directly link many parts of the Study Area with Central London, West London and Heathrow Airport when operational in 2018, is expected to have a major impact on development decisions in the coming years.
- 3.13. A study into the potential property impacts of Crossrail<sup>15</sup> estimated that, over the next 10 years:
- Commercial office values around Crossrail stations in central London will increase due to Crossrail over the next decade, with an uplift of 10% in capital value above a rising baseline projection.
  - There will be significant increases in residential capital values immediately around stations in central London of some 25% and in the suburbs of some 20%;
  - Urban realm improvements and the development of new schemes above Crossrail stations will act as a highly visible and beneficial driver for further development activity, the

<sup>15</sup> Crossrail Property Impact Study 2012, GVA Grimley

intensification of use and in several areas. Crossrail will have a transformative effect on the property market and development activity over time.

- 3.14. The study notes that the additional impact values are all based on an assumption of a supportive planning policy and stable regulatory regime continuing to be in force during the construction and operational phases of Crossrail. The continuing, positive and supportive development environment created through the adopted London Plan and individual authority Local Plans (or LDFs) is critical to development activity and to encouraging investment in the property market.
- 3.15. A review of the areas served by Crossrail was undertaken as part of the Crossrail Environmental Statement<sup>16</sup> in order to estimate the scale of residential and commercial development that might happen over the next 12-15 years (and in some cases beyond) and consider how much of this might be attributable to Crossrail. The analysis focused on establishing the potential quantum of development in terms of employment floorspace and residential units and then estimating the proportion of development due to Crossrail's effect on relieving transport constraints and improving the image of areas;
- 3.16. Table 1 summarises the estimated impacts for those stations within the Study Area. It was estimated that Crossrail is much more likely to have an impact on facilitating jobs rather than residential units. However, the estimates for impact on residential units may be somewhat conservative when compared with GLA research on the potential impact of Crossrail on employment and population density (Appendix G), which estimates that Crossrail could create the conditions to help generate tens of thousands of new homes in East London.

**Table 1. Estimated Jobs and Residential Units Facilitated by Crossrail 2005 - 2020**

| Station      | Jobs   | Residential Units |
|--------------|--------|-------------------|
| Stratford    | 9,500  | 2,200             |
| Whitechapel  | 3,500  | 70                |
| Isle of Dogs | 40,000 | 1,040             |
| Royal Docks  | 11,000 | 1,920             |
| Abbey Wood   | -      | 750               |
| Forest Gate  | 1,000  | 800               |
| Manor Park   | 0      | 200               |

Source: Crossrail: Socio-economic Technical Report

- 3.17. We consider that Crossrail will be a key driver of growth, which will in turn generate demand for further movement within the Study Area, including across the Thames. This is likely to take the form of the following:
- The range of evidence on the relationship between public transport and development<sup>17</sup> as well as the specific impact assessment on Crossrail (see above) suggest that Crossrail is likely to open up sites for office jobs and residential units to a greater extent than road based industries such as manufacturing;
  - The increase in office based activity could generate additional business support services, such as food preparation, printing and document archiving. These are typically road based activities and could generate the need for additional premises, with River Crossings opening up a greater range of potential locations to serve the increased levels of office activity;
  - Whilst Crossrail would bring forward employment that is largely accessed by rail, the additional employment could also be accessed by bus, and other forms of non motorised transport, as well as by car. The additional employment could therefore generate additional

<sup>16</sup> Crossrail Environmental Statement: Socio-Economic Technical Report

<sup>17</sup> See RICS Policy Unit: Land Value and Public Transport, Hall & Marshall: Report on Transport and Land Use/Development for Independent Transport Commission and Jubilee Line Impact Study Unit – Working Paper 22, University of Westminster 2003

demand for residential uses, which would have a greater range of locational choice if additional river crossings were operational;

- The increase in residential units generated by Crossrail could generate additional road based retail trips for bulky goods. Improved crossings would give retailers a greater choice of potential locations on both sides of the River.
- Both crossings will work together to create a step change in connectivity to both sides of the River and create a more cohesive sense of place, further attracting more investment in homes and businesses.

3.18. The key message here is that the development of Crossrail further underlines the importance of River Crossings in the Study Area, with both crossings working together to create impacts that are likely to be greater than if they were developed by themselves.

### **An approach to measuring the attractiveness of a location according to its road based connectivity**

3.19. The above shows that there is clear evidence for how increases in road based connectivity can increase the attractiveness of a location and therefore increase land values and development densities, all of which are dependent on the wider set of policy and economic conditions. However, 'connectivity' can be measured in many different ways.

3.20. The evidence presented above suggests that connectivity is essentially a measurement of the number of potential connections between individuals and firms, with greater numbers of potential connections driving choice, competition, productivity and economic activity. Connectivity can therefore be measured by the number of people/firms available within a travel time that is acceptable to the individual/firm.

### **Measuring connectivity to understand changes in the attractiveness of locations for businesses**

3.21. Firms place varying degrees of importance on connectivity to customers, the labour force and access to suppliers<sup>18</sup>. Connectivity can therefore be measured to each of these in the following ways:

- The size of the potential customer base can be measured by either the **number of people** (for business to consumer firms) or the **number of other firms** (for business to business firms);
- The ability to access the labour force can be measured by **the economically active population**;
- The ability to access suppliers can be measured by **the number of other firms** within a reasonable travel time

3.22. However, as identified above, different types of firms in different sectors will respond to changes in road based connectivity in different ways. Table 2 below provides our estimate of the relative importance of road based connectivity to different types of firms by sector in the Study Area. This analysis has been informed by the TfL Business Survey, as well as an analysis of commuting patterns (Appendix J), and the impacts identified from the case studies (Appendix F). It is also recognised that there will be significant differences in sensitivity to road based connectivity within the Study Area, with firms in Inner London less dependent on road based connectivity than firms in Outer London. This is considered in more detail at the end of Chapter 4.

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<sup>18</sup> See The Importance of Transport in Business Location Decisions DfT 2004

**Table 2. Importance of Road Based Connectivity by Sector**

| Sector     | Access to customers | Access to labour force | Access to suppliers | Overall importance of road based connectivity |
|------------|---------------------|------------------------|---------------------|---|
| Office     | Low                 | Medium - Low           | Low                 | Medium - Low                                  |
| Retail     | Medium              | Medium - Low           | Medium - High       | Medium  |
| Leisure    | Medium High         | Medium - Low           | Medium              | Medium  |
| Industrial | High                | High                   | High                | High  |

Source: Atkins

**Measuring connectivity to understand changes in the attractiveness of locations for residential development**

3.23. The evidence suggests that the key connectivity consideration when considering residential location is the ability to access **a range of suitable jobs** within a reasonable travel time. Other connectivity measures, such as the ability to access local services are a secondary consideration.

**Measuring changes in connectivity resulting from River Crossing Options**

3.24. In summary, changes to connectivity can be measured using the change in access to the following variables within a specific travel time:

- Adult population;
- Businesses;
- Economically active population; and
- Jobs.

3.25. Chapter 7 explains how changes in these variables can be measured to assess the overall affect on connectivity and the resulting impact on attractiveness for development.

## 4. Transport Accessibility in the Study Area

### Summary

- **The lack of road crossing opportunities is a major constraint on cross river connectivity.** There are 10 times the number of cross river journeys made in west London (which has 15 road crossings) compared to East London (which has three), with cross river journeys much higher in West London for all types of trip purpose;
- **This lack of connectivity restricts the size of labour market and the potential customer catchment for firms,** thereby restricting competition and economic activity. East London Boroughs have lower proportions of the labour force that come from outside each Borough, have lower employment densities per hectare, lower retail catchments and less average spend per town centre;
- Although car mode share has decreased in most Boroughs, **the absolute number of road based trips has increased rapidly across the Study Area,** driven by rapid population and employment growth. This is generating increased demand for cross river trips which, when coupled with no increase in cross river road capacity, has resulted in significant congestion;
- **TfL have estimated the daily (Monday to Friday) economic cost of delays to traffic on the A102 alone to be around £50,000 northbound and £20,000 southbound** and rising year-on-year. This equates to around £17.5million every year;
- **Cross river journey time reliability is now very poor in East London due to the poor resilience of the highway network,** with the limited number of river crossings a key factor. This is a major constraint to business planning and operation and a barrier to investment;
- **The Study Area contains a high proportion of businesses in the distribution, construction and manufacturing sectors** that rely on good road links to access customers and suppliers. These businesses also have higher proportions of their labour force that commute by road based modes and were most likely to state that a new road crossing would lead to growing their business. Growth in freight movement is also expected, with the number of LGVs forecast to grow by up to 30% between 2008 and 2031, accounting for 15% of traffic on London's Roads;
- **Travelling by road, rather than rail, is a faster option for many journeys in the Study Area,** especially journeys that do not start and begin very close to the rail network. It is this which helps to explain why car ownership and usage is much higher in Outer London and why there continues to be high demand for cross-river journeys by car in East London, despite an average wait time of 11 minutes per kilometre – there are simply no viable public transport options to make these particular types of point to point journeys. The dispersed nature of the origins and destinations of trips in Outer London mean demand for road based trips is likely to continue to be significant, with rail based public transport unlikely to be able to act as substitute due to the lower density of existing development;
- **Road based connectivity is relatively poor across the Study Area when compared with the London average.** This is especially the case in Bexley, Barking & Dagenham, Havering and parts of Greenwich and Newham. It is these areas which stand to see the biggest gains from development and economic activity as a result of a new river crossing;
- **Road based connectivity is also poorest in those locations where access to public transport is poor.** The constraints from the Thames as a barrier to road-based trips are likely to constrain that movement, meaning that trips are simply not made at all rather than being made on public transport as a viable alternative. This is a key factor in constraining economic activity within the Study Area;

- **The sensitivity to road based access varies according to location and sector.** Office based sectors are not driven by road connectivity in Southwark and Tower Hamlets, although it is more important in the Outer London Boroughs.

## Introduction

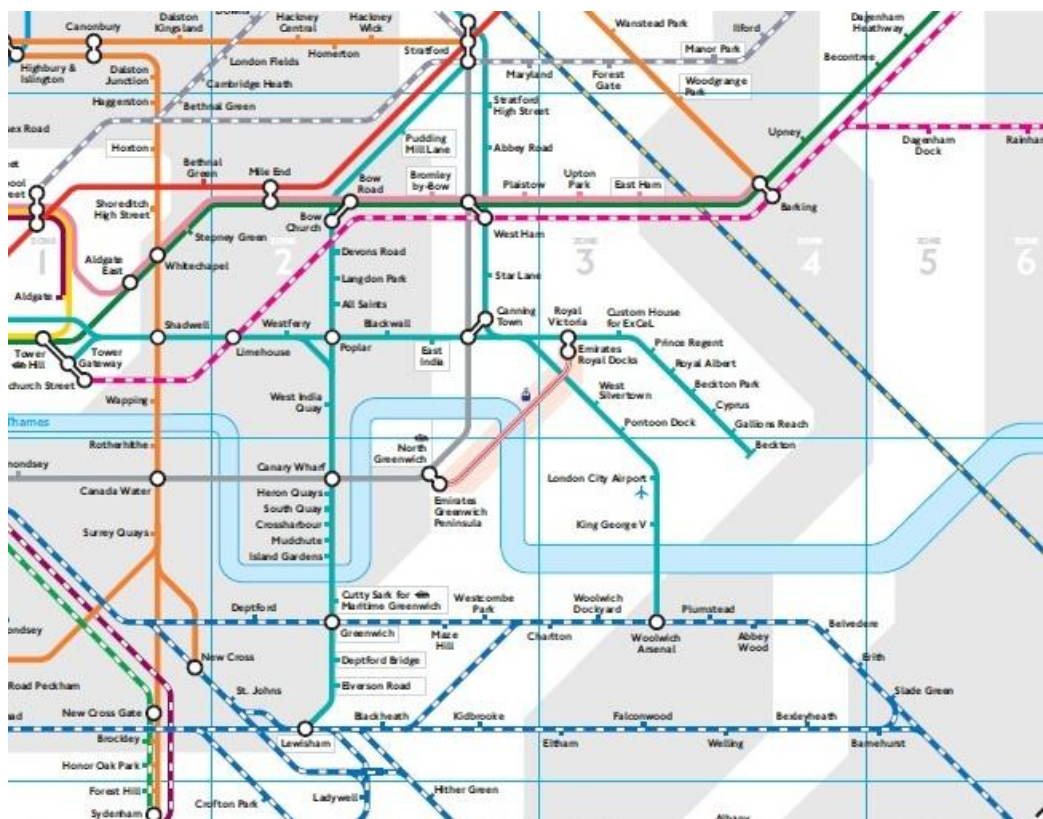
- 4.1. This chapter reviews the current levels of transport provision in the Study Area. It looks at levels of public transport accessibility, as well as highway accessibility and tests the idea that the River is a barrier to movement within the Study Area.

## Current Accessibility in the Study Area

### Public transport accessibility is largely radial in nature

- 4.2. The public transport network within the study area has undergone significant improvements over the last decade, including the extension of the DLR to Woolwich and Beckton, the opening of the Jubilee line with stops including Canning Town and North Greenwich and enhancements to national rail services (Figure 8).

Figure 8. East London Public Transport Network

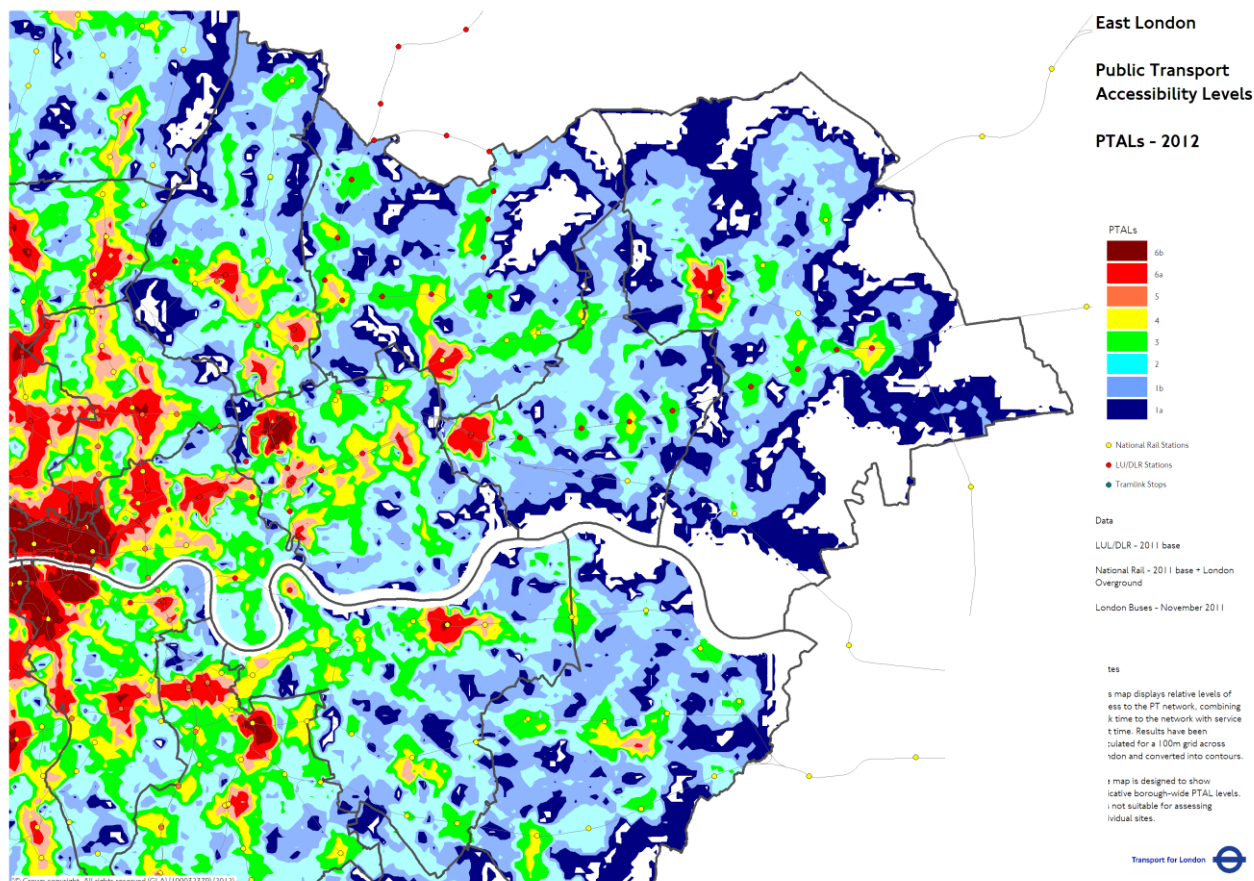


Source: TfL

- 4.3. Whilst the DLR does provide north-south links across the River, the majority of the public transport network caters for east-west radial movements into central London. Cross-river public transport services between much of Greenwich, Bexley, Newham and Barking & Dagenham are limited, and direct services only cater for a small number of origin-destination points (Canning Town to North Greenwich, Royal Docks to Woolwich). In general bus routes cater for north-south movements within boroughs but are also limited in terms of cross river movements.
- 4.4. Figure 9 shows the PTAL levels in east London. The red/purple colours denote the highest level of public transport accessibility and dark blue the lowest. The Figure shows that the Study Area as a whole has comparatively low public transport accessibility, but that this is particularly acute

towards the east of the study area, especially in Thamesmead Barking Riverside and parts of the Royal Docks and central Newham. Some of the Study Area's town centres have comparatively good access to public transport, including Barking, Canning Town, Woolwich and Lewisham, which are all major transport interchanges.

Figure 9. PTAL Map



Source: London Plan 2011

## The Strategic Road Network presents few opportunities to cross the River

- 4.5. The strategic highway network in the Study Area is characterised by good strategic linkages to the east via the A12 and A13 on the north side, and the A2 (Channel Tunnel and ports) to the south. The north-south link with the greatest capacity is the Dartford Crossing (on the M25), with the Blackwall Tunnel the next fixed-link road crossing into London.
- 4.6. The river crossings available to vehicles in the Study Area are:
- the Blackwall Tunnel linking the Greenwich Peninsula to the A102 near East-India Dock;
  - the Rotherhithe tunnel further west linking the B205 to the A1203; and
  - the Woolwich Ferry.



Figure 10. TfL Strategic Road Network



Source: TfL

## The need for additional River Crossings

4.7. The need for improved river crossings in east London is defined by a set of issues set out below:

### **Demand for cross river movements is well in excess of opportunities to cross, generating significant traffic congestion at existing crossing points of the highway network**

4.8. This is particularly the case on the approaches to Blackwall Tunnel. TfL surveys suggest that the journey time for the final approach to the Blackwall Tunnel (1,700m) averages 19 minutes northbound in the morning peak period, or a delay of 11 minutes per kilometre over this key section of the network<sup>19</sup>.

4.9. Trafficmaster journey time data for journeys along the A102 leading to the Blackwall Tunnel and other roads in the network linking to the A102, show that traffic delay during the peak periods is in excess of 1.5 minutes per kilometres – the highest delay category recorded by TfL<sup>20</sup>.

4.10. Both the journey time data recorded by TfL and the independently recorded Trafficmaster data illustrate that the Blackwall Tunnel approaches are among the most congested roads in London during the peak hours with significant delays to traffic resulting. TfL have estimated the daily (Monday to Friday) economic cost of delays to traffic on the A102 alone to be around £50,000 northbound and £20,000 southbound and rising year-on-year. This equates to around £17.5million every year<sup>21</sup>.

### **The lack of crossing opportunities is a barrier to movement and economic activity**

4.11. The River Thames is much more of a barrier to the movement of commercial traffic and people in East London when compared to West London.<sup>22</sup> This is linked to the fact that West London has a

<sup>19</sup> TfL Data

<sup>20</sup> ibid

<sup>21</sup> ibid

<sup>22</sup> East Thames River Crossing, Summary of Economic Regeneration Impact: Final Report, Pricewaterhouse Coopers, July 1999

greater concentration of bridges than east London that enables people to move more freely back and forth across the river for work/study/leisure & entertainment and retail purposes.

4.12. Businesses in West London typically benefit from a 'circular catchment area' that includes a certain radius both north and south sides of the river, in contrast to East London which is constrained by a much more 'semi-circular catchment area', with the River Thames acting as a strong barrier to people movement. The River Crossings Package Report identifies that the barrier imposed by River Thames increases the costs of doing business and accessing new markets on the opposite side of the river. Some business sectors find it difficult to compete effectively for new business in growth areas north of the river. Without a new crossing the negative economic effect of this congestion and lack of resilience will increase as demand to travel increases<sup>23</sup>. This is supported by the results of a business survey recently conducted for TfL<sup>24</sup> which shows that a third of all businesses see the river as a barrier to the development of their business.

4.13. This barrier to movement between areas north and south of the Thames is clearly evident in data collected as part of the London Travel Demand Survey (LTDS). Figure 11 shows that there are 10 times as many total trips across the Thames in West London when compared to East London, when trips via central London are discounted<sup>25</sup> (see Appendix G for details on the methodology used in this analysis).

**Figure 11. Comparison of Total Trips over the River Thames not via Central London**



Source: Atkins analysis of London Travel Demand Survey

4.14. This lack of cross river movement is evident for all types of trips. Cross river commuting (not included central London) accounts for just 5% of total commuting trips in East London, where as the figure is 13% in West London. This finding is also supported by our analysis of Census commuting data, which shows that most parts of the Study Area have between 2% and 5% of the population that cross the river to travel to work (see Appendix J for more details).

4.15. Cross river shopping trips are just 0.7% of the total in East London, compared to 9.6% in West London, with cross river leisure trips at 3.5% in East London compared to 14.1% in West London.

<sup>23</sup> River Crossings Package, Regeneration Impacts Scoping Report, Steer Davis Gleave, 2012

<sup>24</sup> WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014

<sup>25</sup> It is necessary to discount central London trips to identify cross River movements only within the Study Area. Cross river movements that include central London form the vast majority of cross River trips from the Study Area

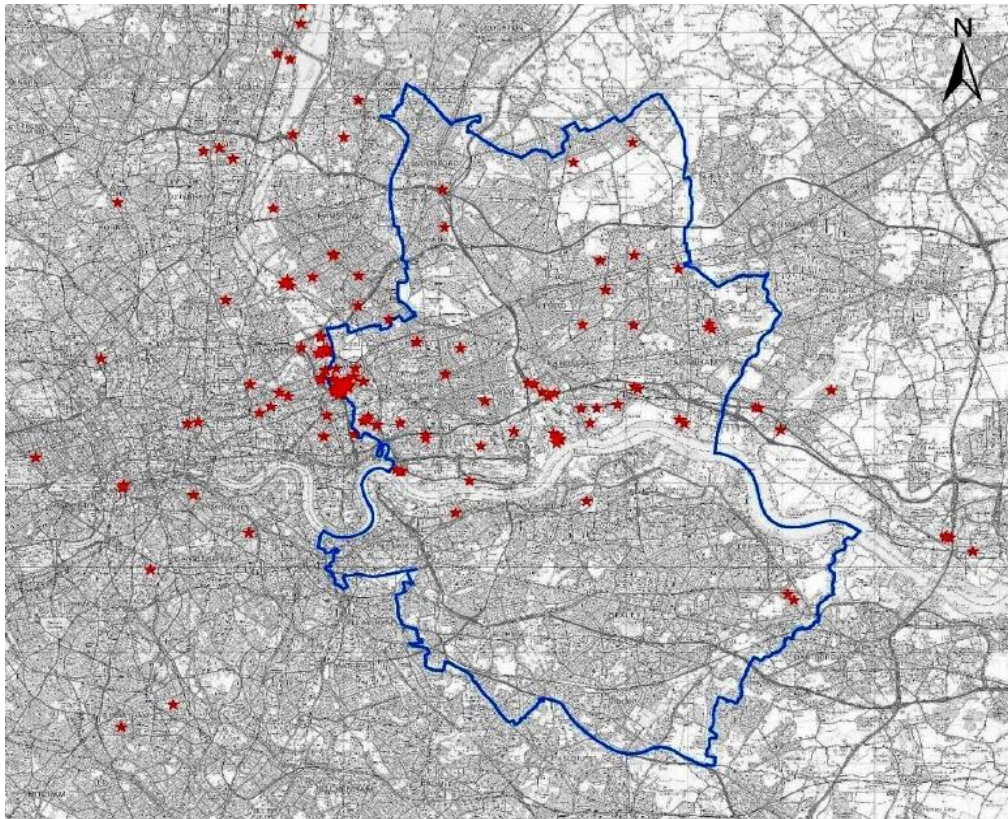
**Figure 12. % of total trips that are cross river movements (non central London)**



Source: Atkins analysis of London Travel Demand Survey

4.16. This lack of cross river movement in East London and the way it affects business location decisions can be illustrated by the relocation of displaced businesses from the 2012 Olympics site (Figure 13). Businesses that were based in Stratford decided to overwhelmingly remain north of the river, presumably to maintain access to their labour force and customer base, rather than move south of the river, which in many cases is actually closer to their original business location than their new base.

**Figure 13. Relocation sites of businesses displaced from the Stratford Olympic site**



Source: TfL

## The barrier to movement limits the size of labour market and retail catchments and inhibits economic activity

- 4.17. Table 3 shows that this barrier to movement results in clear differences between the commuting patterns to local authorities in East and West London. Authorities in the East have a much higher proportion of workers that live within the same Borough to which they work than in the West. The number of different local authorities from which workers are sourced is also much lower in the East than the West. This is evidence of firms having a lower labour market catchment area to draw upon. This more limited labour market catchment is a potentially contributing factor to the lower employment density in East London authorities than those in the West.

**Table 3. Commuting and Employment Density – East vs West London**

| East London        | % from inside Borough | Number of significant origins | % from other side of River | 2012 Emp Density (emp per ha) | West London          | % from inside Borough | Number of significant origins | % from other side of River | 2012 Emp Density (emp per ha) |
|--------------------|-----------------------|-------------------------------|----------------------------|-------------------------------|----------------------|-----------------------|-------------------------------|----------------------------|-------------------------------|
| Havering           | 53%                   | 11                            | 2%                         | 6.7                           | Hounslow             | 29%                   | 16                            | 14%                        | 24.8                          |
| Bexley             | 50%                   | 10                            | 2%                         | 10.5                          | Kingston             | 37%                   | 14                            | 4%                         | 19.7                          |
| Barking & Dagenham | 33%                   | 12                            | 3%                         | 13.1                          | Richmond             | 35%                   | 14                            | N/A                        | 12.6                          |
| Greenwich          | 38%                   | 10                            | 6%                         | 14.2                          | Wandsworth           | 25%                   | 18                            | 11%                        | 31.5                          |
| Newham             | 29%                   | 14                            | 8%                         | 22.8                          |                      |                       |                               |                            |                               |
| Lewisham           | 39%                   | 10                            | 5%                         | 17.9                          | Ealing               | 37%                   | 12                            | 6%                         | 22.2                          |
| Tower Hamlets      | 13%                   | 25                            | 18%                        | 111.5                         | Hammersmith & Fulham | 14%                   | 21                            | 25%                        | 75.9                          |
| Southwark          | 21%                   | 18                            | 15%                        | 67.1                          | Kensington & Chelsea | 18%                   | 24                            | 24%                        | 101.2                         |

Source: 2001 Census. Note: West London authorities selected based on their proximity to the River Thames. Number of significant origins are all those authorities which provide at least 2% of the workforce

- 4.18. There is also clear evidence that the barrier effect affects the vitality of retail centres in East London. Table 4 demonstrates that town centres in West London have a higher potential catchment population (defined as all people accessible within 45 minutes by all modes of transport) than those in East London, which is true for Inner/Outer London, as well as the different types of town centres in the GLA retail hierarchy. This is likely to be a potentially contributing factor to the lower average turnover per town centre in East London (Table 5), although this will also be influenced by income levels, which are also generally lower in East London.

**Table 4. Average number of people accessible within 45 minutes from town centres 2011**

| Centre Type          | East      | West      | % Difference of West over East |
|----------------------|-----------|-----------|--------------------------------|
| <b>Inner London</b>  |           |           |                                |
| Metropolitan / Major | 1,057,818 | 1,398,693 | 32%                            |
| District             | 1,152,180 | 1,567,795 | 36%                            |
| <b>Outer London</b>  |           |           |                                |
| Metropolitan / Major | 717,941   | 846,937   | 18%                            |
| District             | 504,711   | 609,227   | 21%                            |

Source: GLA Town Centre Healthcheck 2014. Note: 'East' is defined as the eight boroughs within the Study Area, 'West' is defined as the seven authorities that front onto the Thames in West London – see Table 3

**Table 5. Average turnover per town centre per annum (million £) 2013**

| Centre Type          | East | West | % Difference of West over East |
|----------------------|------|------|--------------------------------|
| Inner London         |      |      |                                |
| Metropolitan / Major | 128  | 166  | 30%                            |
| District             | 28   | 40   | 44%                            |
| Outer London         |      |      |                                |
| Metropolitan / Major | 131  | 206  | 58%                            |
| District             | 13   | 30   | 136%                           |

Source: GLA Town Centre Healthcheck 2014. Note: 'East' is defined as the eight boroughs within the Study Area, 'West' is defined as the seven authorities that front onto the Thames in West London – see Table 3

### The lack of crossings create a lack of resilience with the existing highway network

- 4.19. Chapter 3 (and Appendix C) identifies that journey time reliability is becoming an increasingly important requirement for many transport users. The significance of reliability increases as transport systems become more congested, as it deteriorates disproportionately as congestion increases. Cross river journey time reliability is now very poor in East London due to the poor resilience of the highway network, linked to the small number of crossings.
- 4.20. In the event of a tunnel closure or reduction in capacity on any of the existing road crossings, the consequent traffic congestion and delays are widespread, and it takes a significant amount of time to recover. This can have a detrimental effect on quality of life and performance of the local economy.
- 4.21. Delays are caused not only by an excess of demand, but also by the need to close the Blackwall Tunnel at short notice for a variety of reasons. Blackwall Tunnel incident data, which is collected by TfL, shows that there were 1088 unplanned closures of the northbound tunnel and 291 similar closures of the southbound tunnel during 2012<sup>26</sup>.
- 4.22. On the occasions when the Blackwall Tunnel suffers from one of the longer unplanned closures, the impact on traffic can be quite substantial. The four principal alternative routes for traffic are shown in Table 6. The shorter routes, via Tower Bridge, the Rotherhithe Tunnel and the Woolwich Ferry, are unsuited to substantial additional volumes of traffic. The better route is the longer one taking in the A2, Dartford Crossing and A13 but even that would be overloaded with an additional 2,000+ vehicles per hour.

**Table 6. Comparison of Alternative Cross River Routes**

| Route via ...      | Distance   | Free-flow Journey Time* | Fuel Cost <sup>+</sup> |
|--------------------|------------|-------------------------|------------------------|
| Blackwall Tunnel   | 2.4 miles  | 7 mins                  | £0.47                  |
| Tower Bridge       | 8.6 miles  | 30 mins                 | £2.18                  |
| Rotherhithe Tunnel | 6.6 miles  | 23 mins                 | £1.74                  |
| Woolwich Ferry     | 6.6 miles  | 42 mins                 | £1.77                  |
| Dartford Crossing  | 30.7 miles | 40 mins                 | £5.89                  |

Notes: \* Journey Time during tunnel closures may be considerably longer because of congestion. <sup>+</sup> For a typical petrol engine car at a fuel price of £1.35 per litre.

- 4.23. A business survey recently conducted for TfL<sup>27</sup> shows that the predictability of journey times cross-river is a particular issue for businesses. 67% of firms consider that poor reliability of cross-river travel acts as a constraint on or disruption to their business to an extent. 44% of firms think predictability of journey times are poor or very poor, against 12% who regard them as good or

<sup>26</sup> TfL data

<sup>27</sup> WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014

very good. This is of most concern to firms in Greenwich and Bexley. 79% of firms anticipate more predictable journey times as a result of the investment package.

### **There are physical limitations on access for large vehicles at the Rotherhithe and Blackwall tunnels and Tower Bridge**

- 4.24. This means that the Woolwich Ferry is the only option for some HGVs (the tallest and those carrying certain flammable goods) crossing the Thames between central London and the Dartford Crossing. The ferry is relatively low capacity and long delays can be encountered. Congestion on both sides of the Woolwich Ferry caused by queuing traffic has negative environmental impacts in terms of air quality and noise.

## **Why do additional crossings need to be road based?**

### **There has been significant investment in cross river public transport, generating economic growth, but no increase in cross river highway capacity**

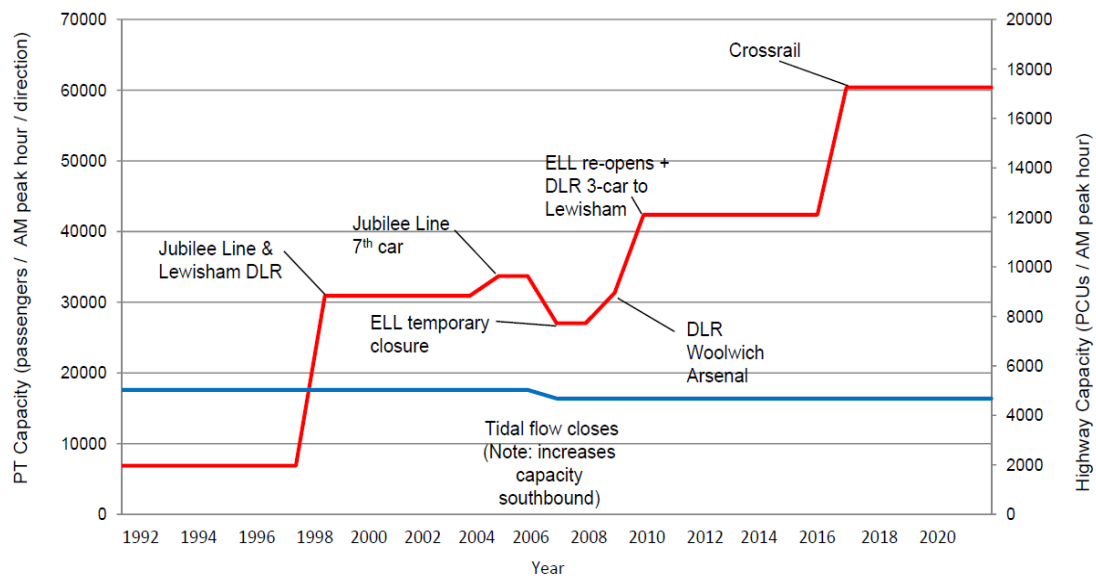
- 4.25. East London has seen a significant amount of housing and employment growth in recent years (considered in more detail in Chapter 5), with much of this growth facilitated by new fixed public transport infrastructure. Public transport links in the wider area have already seen very significant investment, with new cross-river links provided on these routes<sup>28</sup>:
- (1) Jubilee line (opened 1999, and subsequently enhanced with more frequent and longer trains);
  - (2) Docklands Light Railway (extended to Greenwich and Lewisham in 1999, and subsequently enhanced with longer trains, and to Woolwich in 2009);
  - (3) High Speed 1, which started operating frequent high speed trains between Kent and east London in 2009;
  - (4) London Underground's East London line was transferred to the London Overground network, with new services to a much wider range of destinations from 2010, and further services from 2012;
  - (5) Emirates Air Line, providing a new cross-river link from the Greenwich peninsula to the Royal Docks, opened in 2012;
  - (6) (vi) Crossrail, now under construction and which will provide a new high frequency cross-river link to Woolwich from 2018.
- 4.26. Although there have been improvements to radial road links, such as the A12 and A13, there have been no corresponding increases in cross-river highway provision within London since the construction of the southbound Blackwall Tunnel in the 1960s, although outside London's boundaries the Queen Elizabeth II Bridge on the M25 corridor at Dartford opened in 1991.
- 4.27. Since traffic using the Blackwall Tunnel includes both private and commercial vehicles, with a wide range of origins, destinations and journey purposes, it is considered unlikely that yet further new rail (either overground or underground) capacity could in itself achieve a significant degree of modal shift<sup>29</sup>.

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<sup>28</sup> East London River Crossings: Assessment of Need, TfL 2012

<sup>29</sup> *ibid*

**Figure 14. Cross River Transport Capacity – Highway vs Public Transport**



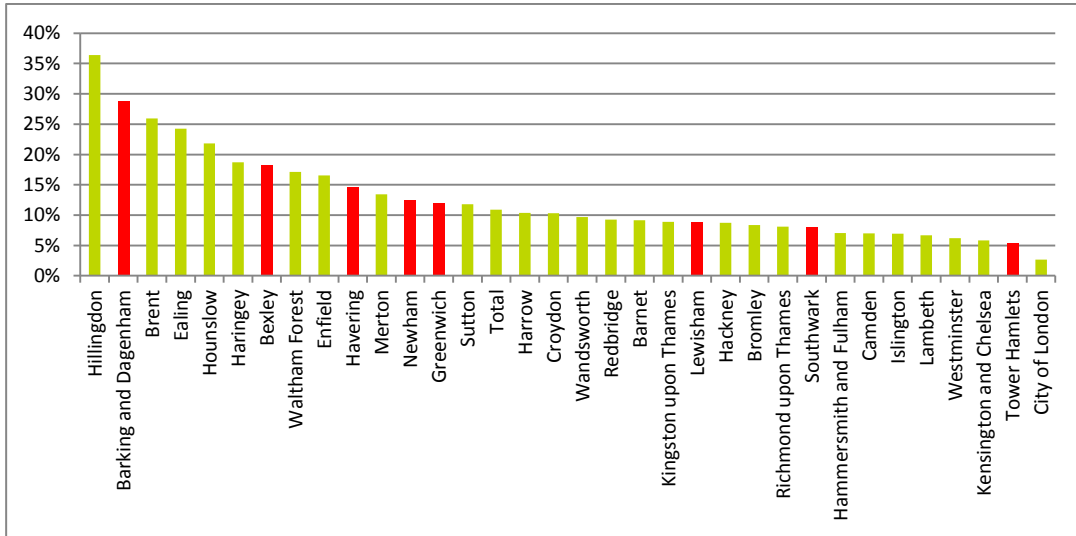
Source: TfL

**The Study Area contains a significant degree of road dependent businesses, with demand for road freight expected to grow**

- 4.28. The Study Area contains a high proportion of businesses in the distribution, construction and manufacturing sectors that rely on good road links to access customers and suppliers. These businesses also have higher proportions of their labour force that commute by road based modes (see Appendix D) and were most likely to state that a new road crossing would lead to growing their business<sup>30</sup>. Road based dependent employment is particularly high in those areas in close proximity to the River itself (Figure 16).
- 4.29. There is also expected to be growth in road freight during the next 20 years, which is likely to generate additional road based trips from these road dependent industries, and drive the demand for premises with good highway accessibility. Evidence suggests that:
- Growth in freight movement is also expected, with the number of LGVs forecast to grow by up to 30% between 2008 and 2031, accounting for 15% of traffic on London's Roads<sup>31</sup>. Road freight currently accounts for 89% of all freight lifted in London.<sup>32</sup>
  - The freight industry in London has followed wider industry trends, with increasing consolidation and decentralisation of activities to locations with good access to the motorway network<sup>33</sup>.

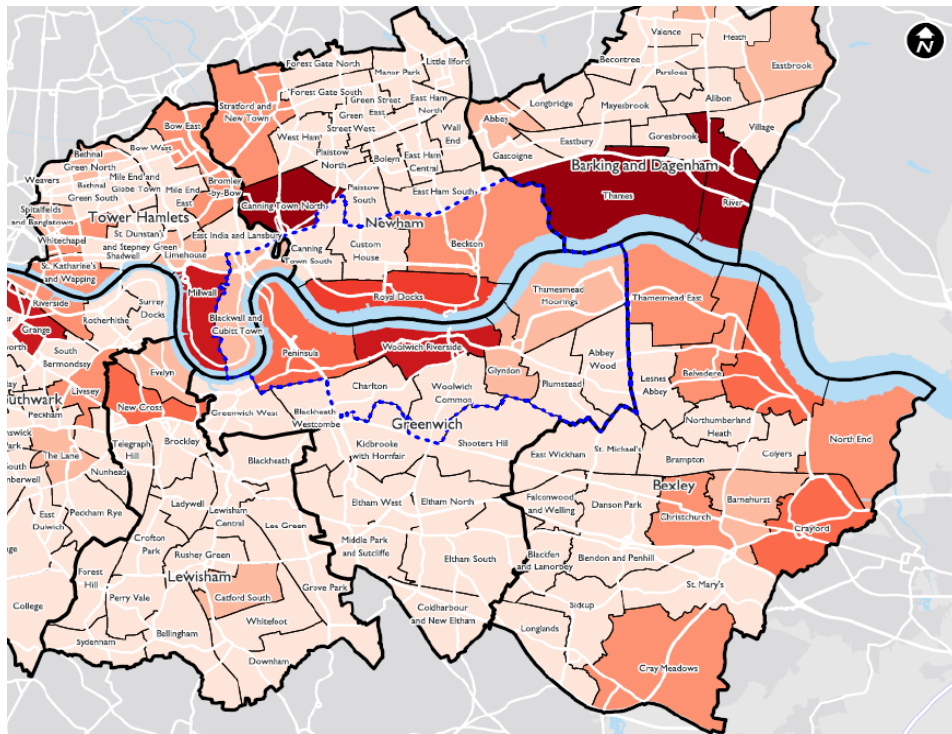
<sup>30</sup> ibid  
<sup>31</sup> Mayor's Transport Strategy 2010  
<sup>32</sup> Roads Task Force Technical Note 3  
<sup>33</sup> ibid

**Figure 15. Proportion of Road Dependent Employment – Borough**



Source: Atkins analysis of BRES / River Crossings Package, Regeneration Impacts Scoping Report, Steer Davis Gleave, 2012

**Figure 16. Proportion of Road Dependent Employment - Ward**



Source: River Crossings Package, Regeneration Impacts Scoping Report, Steer Davis Gleave, 2012

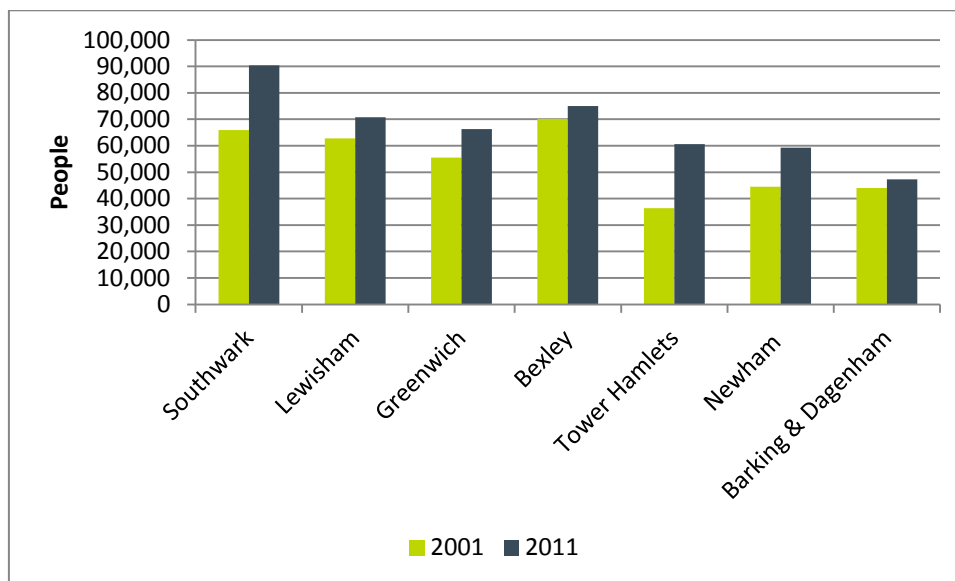
### The Study Area has continued to see a rise in road based trips resulting from population growth

4.30. Commuting by road is still a very important method of travel to work. Indeed, it is the majority commuting mode in all Boroughs in the Study Area within the exception of Newham. Nearly 469,000 residents commute by road, an increase of 90,000 since 2001 (Figure 17). All Boroughs have seen an increase in commuting by road, with Southwark, Tower Hamlets and Newham recorded the highest levels of growth, driven by strong population growth, as the population has



increased, generating additional demand for highway space and for more effective links between growing economic and residential areas.

**Figure 17. Study Area Residents Commuting by Road**



Source: Census

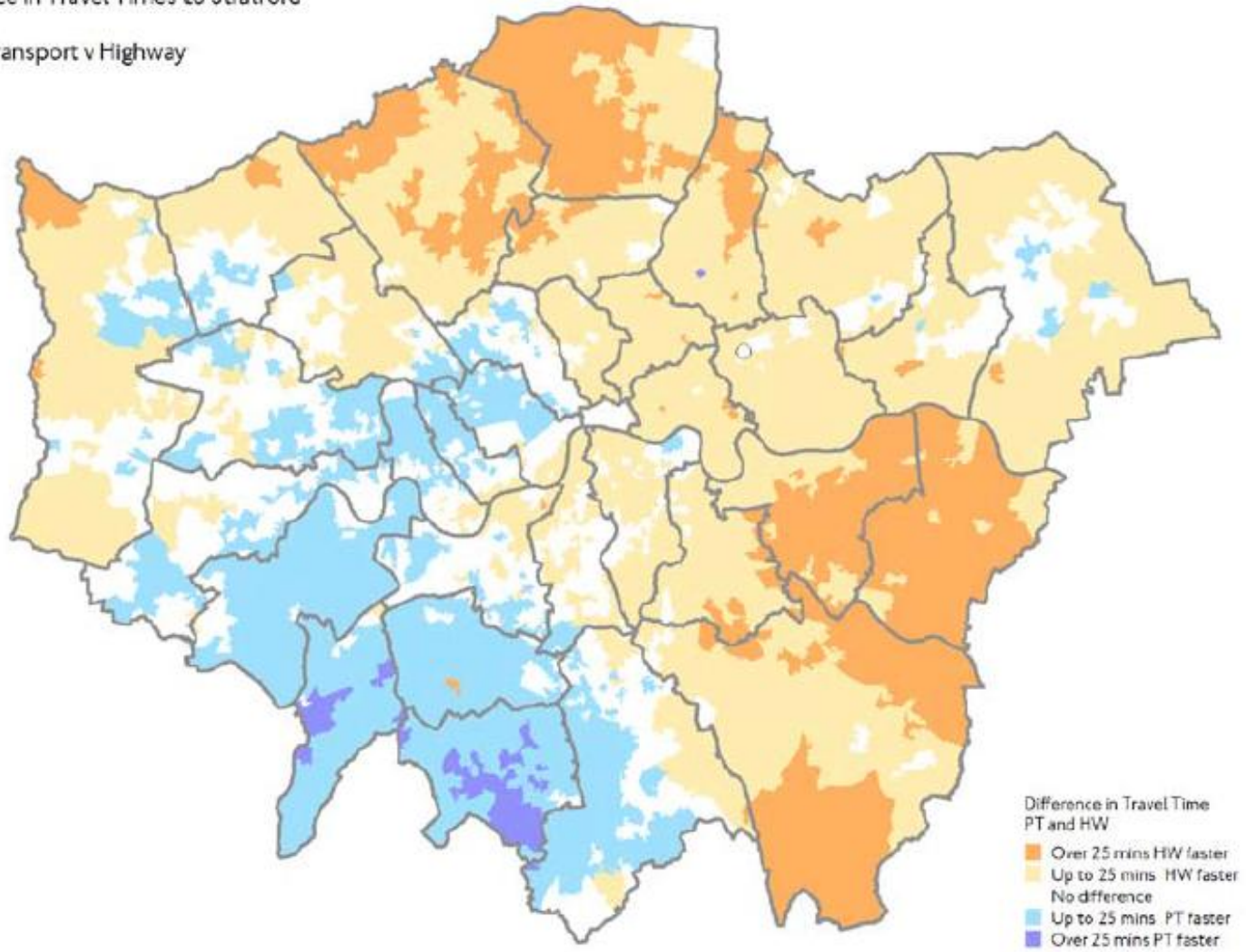
### Travelling by road is still the fastest way to access most parts of the Study Area...

- 4.31. The Mayor's Roads Task Force recently identified that access to roads in London is almost universal – in the sense that virtually all locations are within a very short walking distance of the nearest road. Once on the road network, it is possible to navigate to, or send goods to, an almost infinite number of other locations, provided of course one has access to a suitable vehicle.
- 4.32. The Roads Task Force undertook an analysis which compared journey times by public transport and by car to key destinations in London. An example is shown in Figure 18, which illustrates the difference in travel times to Stratford from all parts of London. The areas in orange are those where travel to Stratford is quicker by road (with darker orange illustrating a journey time that is quicker by at least 25 minutes), and clearly shows that most of the Study Area can access the centre more quickly by car, despite its excellent public transport connectivity. This is because, as set out in paragraph 4.3 above, public transport links are largely radial in nature. This is reflected in connectivity to Dagenham (Figure 19) and Erith (Figure 20), which show good links into central London, but relatively poor radial links, with the Thames a clear barrier.
- 4.33. From this analysis, the Roads Task Force was able to make the following observations about roads' contribution to connectivity in London:
- The road network provides a more uniformly-concentric and 'predictable' level of accessibility compared to public transport. It tends to be faster for more local journeys and journeys between pairs of locations not directly served by public transport; and
  - Public transport tends to provide faster journeys than road for longer radial journeys to/from the centre, journeys between pairs of points that are directly served, and for longer-distance journeys.
- 4.34. It is this which helps to explain why car ownership and usage is much higher in Outer London and why there continues to be high demand for cross-river journeys by car in East London, despite an average wait time of 11 minutes per kilometre (see above) – there are simply no viable public transport options to make these particular types of point to point journeys.

Figure 18. Difference in travel times to Stratford – Highway vs Public Transport

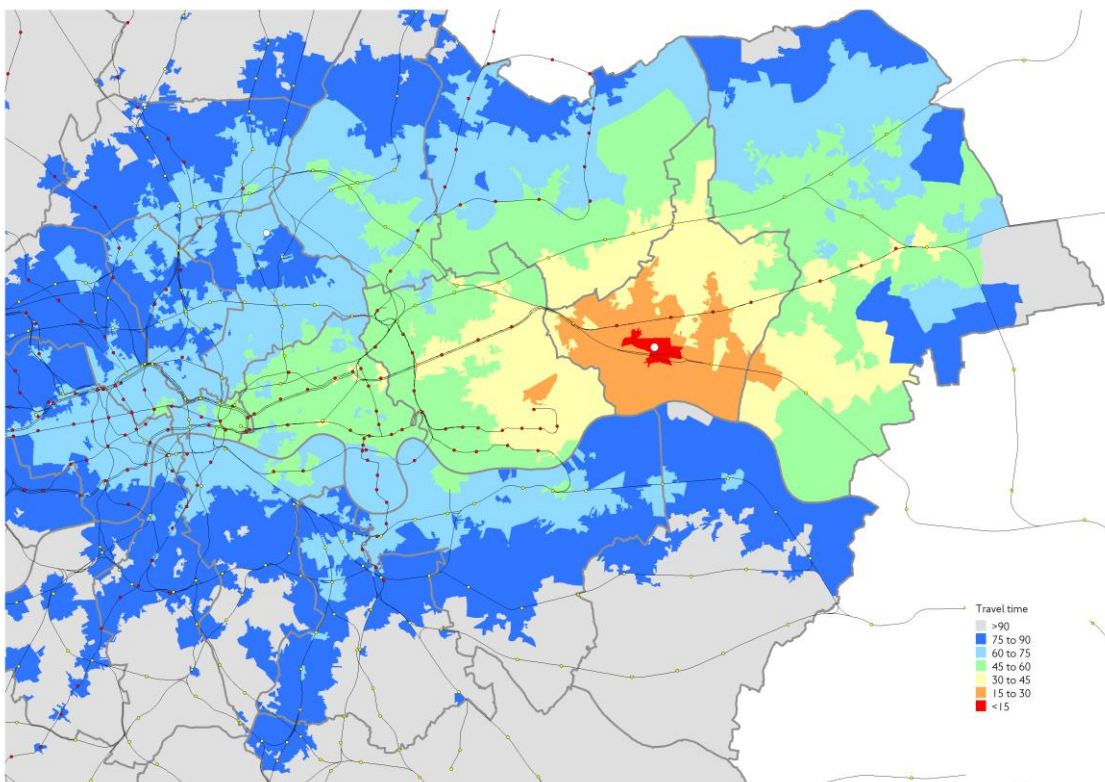
Difference in Travel Times to Stratford

Public Transport v Highway

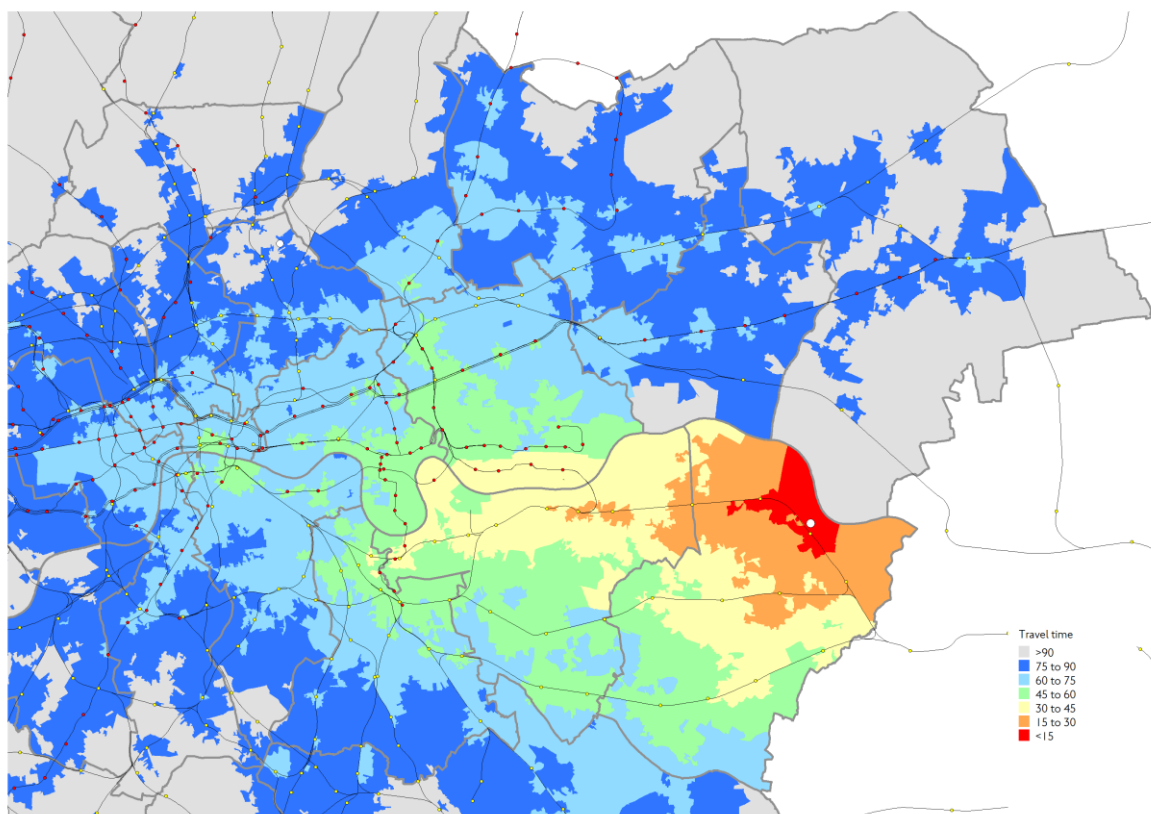


Source: Roads Task Force

**Figure 19. Public Transport Accessibility from Castle Green Dagenham**



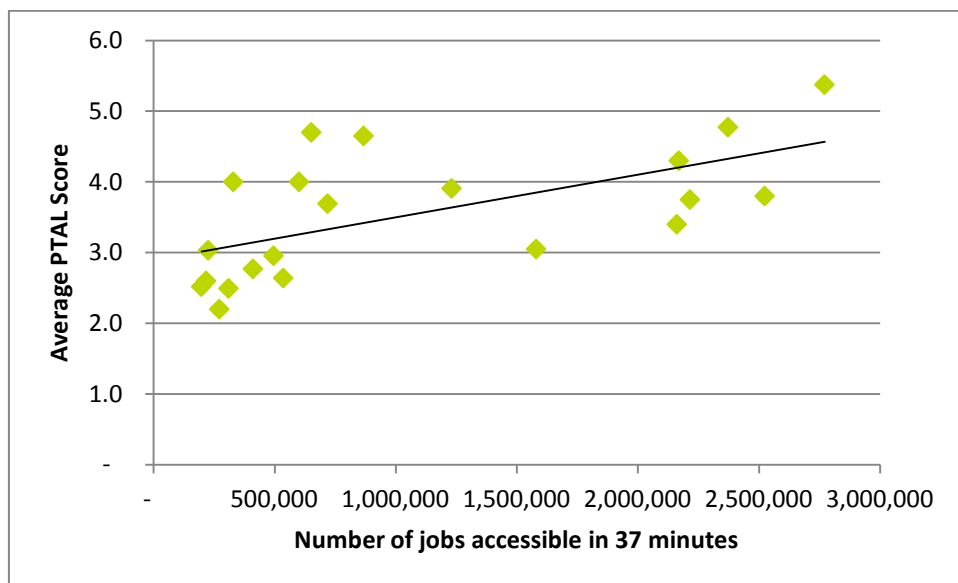
**Figure 20. Public Transport Accessibility from Erith**



### ...although parts of the Study Area with poorest public transport connectivity, also have poorest highway connectivity

- 4.35. Despite the fact that road based trips are the only option for many point to point journeys in Outer parts of the Study Area, it is in these areas where road based connectivity to jobs and businesses is poorest, with the barrier effect of the River a significant factor in this.
- 4.36. The constraints from the Thames as a barrier to road-based trips are likely to constrain that movement, meaning that trips are simply not made at all rather than being made on public transport as a viable alternative. This is a key factor in constraining economic activity within the Study Area.

Figure 21. Number of jobs accessible by road vs average PTAL score – PMA level



### Current highway connectivity is poor in the Study Area when compared against the London average

- 4.37. Table 7 illustrates the difference between the current road connectivity, measured in terms of access to the workforce, jobs, adult population and businesses<sup>34</sup>, in each PMA compared to the Inner and Outer London average. The table shows that road connectivity is poor when compared to London, especially in the Outer London Boroughs of Bexley, Barking & Dagenham and Havering. Greenwich and parts of Newham also suffer from below average connectivity, especially in terms of access to jobs. These are areas where step changes in improvements to road connectivity can bring about the biggest potential change in economic activity and development.

<sup>34</sup> See Chapter 3 for why these were chosen as indicators of connectivity

**Table 7. Current Road Connectivity – PMA vs Inner/Outer London Average**

| Property Market Area             | Access to Workforce | Access to Jobs | Access to Adult Population | Access to Businesses |
|----------------------------------|---------------------|----------------|----------------------------|----------------------|
| <b>Inner London - South</b>      |                     |                |                            |                      |
| Canada Water & Rotherhithe       | -11%                | 32%            | -15%                       | 8%                   |
| Rest of Southwark                | 5%                  | 24%            | -8%                        | 10%                  |
| Deptford New Cross               | -7%                 | 16%            | -13%                       | 6%                   |
| Lewisham & Catford               | 10%                 | -66%           | -3%                        | -7%                  |
| Rest of Lewisham                 | 2%                  | -62%           | -10%                       | -13%                 |
| Greenwich Peninsula and Charlton | 6%                  | -69%           | 1%                         | -7%                  |
| Woolwich                         | -21%                | -83%           | -31%                       | -28%                 |
| Thamesmead                       | -47%                | -88%           | -65%                       | -60%                 |
| Rest of Greenwich                | -6%                 | -74%           | -16%                       | -22%                 |
| <b>Outer London - South</b>      |                     |                |                            |                      |
| Erith and Belvedere              | -47%                | -77%           | -65%                       | -59%                 |
| Rest of Bexley                   | -26%                | -67%           | -41%                       | -31%                 |
| <b>Inner London - North</b>      |                     |                |                            |                      |
| Isle of Dogs                     | -28%                | 13%            | 0%                         | -1%                  |
| Rest of Tower Hamlets            | -13%                | 45%            | 7%                         | 7%                   |
| Lower Lea Valley                 | -17%                | 13%            | 13%                        | 0%                   |
| Royal Docks                      | -17%                | -17%           | 0%                         | -4%                  |
| Rest of Newham                   | -23%                | -36%           | -12%                       | -13%                 |
| <b>Outer London - North</b>      |                     |                |                            |                      |
| Barking                          | -2%                 | -6%            | 14%                        | 25%                  |
| Barking Riverside                | -19%                | -42%           | -13%                       | -2%                  |
| Rest of B&D                      | -28%                | -56%           | -28%                       | -27%                 |
| London Riverside                 | -19%                | -71%           | -28%                       | -9%                  |
| Rest of Havering                 | -47%                | -79%           | -59%                       | -55%                 |

### Importance of Road Accessibility at PMA level

- 4.38. Table 8 presents a summary of the importance of road connectivity to each floorspace type at the PMA level. Full details of the analysis are presented in Appendix E.
- 4.39. This analysis a key informant on the potential impact of changes in road based accessibility on development, as considered in more detail in Chapter 7.

**Table 8. Importance of Road Accessibility at PMA Level**

| Property Market Area             | Residential | Office | Retail & Leisure | Industrial |
|----------------------------------|-------------|--------|------------------|------------|
| Canada Water & Rotherhithe       | Low         | Low    | Low              | High       |
| Rest of Southwark                | Low         | Low    | Low              | High       |
| Deptford New Cross               | Medium      | Low    | Low              | High       |
| Lewisham & Catford               | Low         | Medium | Low              | High       |
| Rest of Lewisham                 | Medium      | Medium | Medium           | High       |
| Greenwich Peninsula and Charlton | Low         | Medium | Medium           | High       |
| Woolwich                         | Medium      | Medium | Low              | High       |
| Thamesmead                       | High        | High   | Medium           | High       |
| Rest of Greenwich                | Medium      | High   | High             | High       |
| Erith and Belvedere              | High        | High   | High             | High       |
| Rest of Bexley                   | High        | High   | High             | High       |
| Isle of Dogs                     | Low         | Low    | Low              | High       |
| Rest of Tower Hamlets            | Low         | Low    | Low              | High       |
| Lower Lea Valley                 | Low         | Medium | Medium           | High       |
| Royal Docks                      | Medium      | Medium | High             | High       |
| Rest of Newham                   | Medium      | Low    | Medium           | High       |
| Barking                          | Low         | Medium | Low              | High       |
| Barking Riverside                | High        | High   | High             | High       |
| Rest of B&D                      | High        | High   | High             | High       |
| London Riverside                 | High        | High   | High             | High       |
| Rest of Havering                 | High        | High   | High             | High       |

## 5. Socio-Economic Characteristics and the Demand for Floorspace

### Summary

- **Demand for housing is strong at the London level**, with the Study Area experiencing high rates of population growth that is expected to continue. However, the delivery of housing has fallen significantly behind population growth, leading to higher household sizes and rapid increases in property prices;
- Housing delivery targets revised in the Further Alterations to the London Plan 2014 have identified the potential capacity for 16,900 dwellings per annum in the Study Area. However, **with recent rates of delivery under half that, there remains a significant challenge to increase the future rate of housebuilding.**
- **One of the reasons why new housing development is not coming forward is due to the changing structure of London's economy.** Central London (including Canary Wharf) have seen massive employment growth, with very little growth in Outer London. Outer London Boroughs in the Study Area have seen some minor employment growth, although this has largely been in population-related sectors, which expand as the population grows, and has masked a decline in the wider economy. The lack of employment opportunities in Outer London Boroughs mean only developments that have good transport accessibility into central London are in high demand and are coming forward;
- **Without further investment in infrastructure to support economic growth in other parts of the Study Area, there remains a risk that major sites which are not currently well connected to the public transport and central London will not come forward.** In other words, the Study Area, outside of Southwark and Tower Hamlets, requires a step change in the performance of its economy to deliver its full potential. The step change in connectivity provided by new river crossings is likely to contribute significantly to that;
- Office development is likely to continue to be located in northern Southwark and western Tower Hamlets (City Fringe), Canary Wharf, as well as a limited number of select hubs with excellent public transport accessibility, such as Stratford. There is also some potential at Royal Docks, although the total share of office employment demand in the sub-region will need to be considered when distributing this potential growth;
- **Retail demand is expected to decline** somewhat compared to recent years due to structural changes in the market related to e-commerce and other factors. However, there is still potential for growth, especially in town centres and where a quality product can be offered to the market;
- Although traditional industrial space has generally been in decline in the Study Area over the past decade, which is likely to continue in many locations - especially within Inner London Boroughs, this will not be the case in all parts of East London. Growth is more likely to occur in locations where high quality industrial space can meet the needs of hi-tech industries that want to be located close to the London skill base and access to finance, and can access the strategic transport network, such as the London Sustainable Industries Park at Dagenham Docks;
- The development of logistics space close to urban areas will also be dependent upon the cost and availability of large plot development land, as well as the opportunity cost of not developing for other, more valuable uses such as residential. This suggests locations such as Barking & Dagenham, Bexley and southern parts of Havering are likely to see the strongest growth in this sector.

## Introduction

- 5.1. This chapter sets out a summary of the key socio-economic drivers in the Study Area, drawing upon a more comprehensive analysis set out in Appendix K. The information set out here is a key informant of the Reference Case development scenario (Scenario 1), as well as the potential for future growth within the PMAs facilitated by the Crossing Options.

### **Demand for housing is strong, but varies significantly across the Study Area – only sites with good links to the employment centres of central London are coming forward**

- The Study Area has experienced strong population growth during the past 20 years at a rate faster than London as a whole. Tower Hamlets and Newham have seen the strongest rates of growth, with relatively little growth in Bexley and Havering;
- However, the rate of housebuilding has not kept pace with population growth, averaging around 8,000 units per year compared to population growth of around 26,000 people per year, leading to rapid increases in property prices, especially in Inner London Boroughs;
- Despite recent price increases, East London, especially Barking & Dagenham, parts of Newham and Bexley, remain relatively affordable in the context of Greater London. This could help to support the attractiveness of East London as a residential location, as long as it can address wider quality of life issues<sup>35</sup> and can support access to a wide range of jobs. Improved River Crossings could play an important role in achieving this;
- Population projections produced by the GLA expect the strong rates of population growth to continue over the next 20 years and beyond, resulting in high demand across London for residential units for the foreseeable future;
- Housing delivery targets revised in the Further Alterations to the London Plan have identified the potential capacity for 16,900 dwellings per annum in the Study Area. However, with recent rates of delivery under half that (Table 9), there remains a significant challenge to increase the future rate of housebuilding without further investment in infrastructure to support growth. This is particularly true in the Outer London Boroughs of the Study Area where demand and rates of delivery are lower. The gap between the apparent high levels of demand (through high population growth and rapid increases in house prices) and the lack of new supply coming onto the market is partly a result of only the most accessible sites coming forward that can access employment opportunities in central London. In other locations, demand is still relatively low and site constraints prevent schemes from coming forward (discussed in more detail in Chapter 6);
- With levels of development capacity that are above trend levels of population growth, the Study Area Boroughs will need to increase the rate of net-migration on recent levels if it is to fulfil its potential. The Study Area will only be able to do this if it can position itself as an attractive destination that people want to move to, with good access to jobs, services and a high quality of life, with improved River Crossings a part of this offer.

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<sup>35</sup> Such as access to education, services, open space, quality of the urban realm and levels of crime



**Table 9. Annual housing targets 2015 – 2025 vs annual rate of delivery 2003 - 2012**

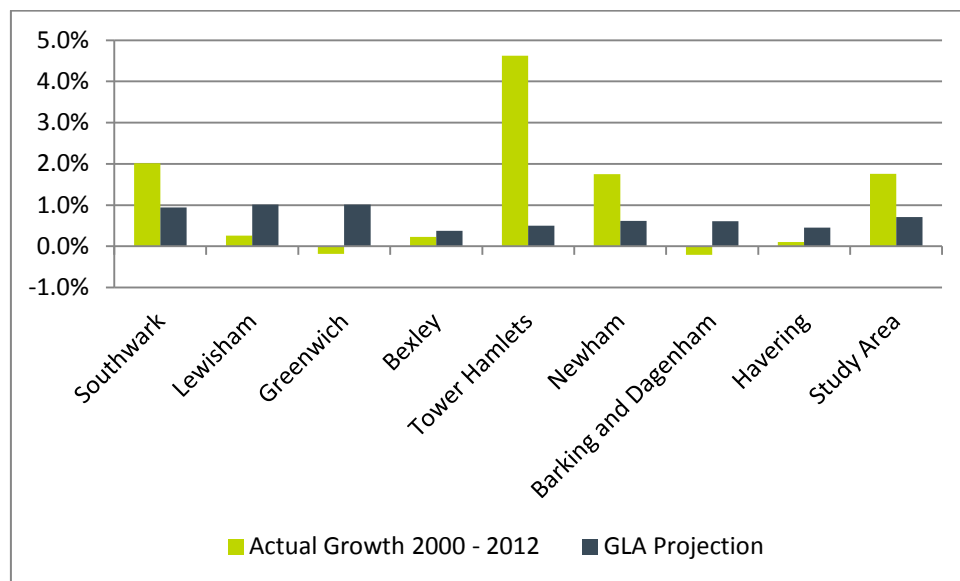
|                    | FALP Annual Housing Target 2015 - 2025 | Annual Delivery 2003 - 2012 | % increase required to meet target |
|--------------------|--|-----------------------------|------------------------------------|
| Southwark          | 2,736                                  | 1,540                       | 78%                                |
| Lewisham           | 1,385                                  | 994                         | 39%                                |
| Greenwich          | 2,685                                  | 1,115                       | 141%                               |
| Bexley             | 446                                    | 247                         | 81%                                |
| Tower Hamlets      | 4225                                   | 2,110                       | 100%                               |
| Newham             | 3024                                   | 1,129                       | 168%                               |
| Barking & Dagenham | 1,236                                  | 455                         | 172%                               |
| Havering           | 1,170                                  | 443                         | 164%                               |
| Study Area         | 16,907                                 | 8,034                       | 110%                               |
| Western Boroughs   | 8,346                                  | 4,645                       | 80%                                |
| Eastern Boroughs   | 8,561                                  | 3,389                       | 153%                               |

Source: Further Alterations to London Plan 2014, London Plan Monitoring Report

## **The Study Area's economy is polarised with strong growth in high value services in Tower Hamlets and Southwark, and relative decline everywhere else**

- Over the last 20 years there has been significant diversification of the economic base and a substantial increase in employment in the area. Over 160,000 jobs were created in the Study Area between 2000 and 2012, largely within the financial and business services sectors, with manufacturing continuing its long term decline. The net rate of job creation in the Study Area has been faster than that in London as a whole;
- However, the distribution of growth has been highly polarised with Southwark and Tower Hamlets generating 143,000 additional jobs (90% of the Study Area total), largely around Canary Wharf, and the City Fringe at London Bridge, and most other Boroughs seeing relative stagnation as the continued loss of manufacturing jobs struggle to be replaced with higher value sectors;
- This significant growth in employment in Canary Wharf and the City Fringe in Southwark is mobile employment. The rest of the Boroughs have experienced population related employment growth as the population of the Boroughs have grown, much of which has largely masked a decline in the strength in the rest of the economy;
- The GLA's employment projections estimate that rates of growth will slow over the next 20 years, partly as a result of a slowdown in growth related to financial and business services. Figure 22 shows that this will mean a significant drop in growth compared to the past 12 years in Tower Hamlets, whilst other locations, such as Lewisham, Greenwich, Barking & Dagenham and Havering will see growth rates pick up, partly due to the existence of development sites with employment potential. However, it remains to be seen whether these sites will actually come forward without significant investment in infrastructure to support growth.

**Figure 22. Comparison of recent annual employment growth (2000 – 2012) and GLA projected annual employment growth (2011 – 2031)**



Source: Annual Business Inquiry/BRES, Further Alterations to the London Plan 2014

## The labour market is well qualified and will support growth, although significant variations exist

- The Study Area shows marked differences in the labour market between Inner London and Outer London Boroughs. Both Southwark and Tower Hamlets have a highly qualified population, in line with the Inner London average and much higher than England, whereas Bexley, Barking & Dagenham and Havering have a much less well qualified workforce, at levels below the Outer London and England averages. However, this is unlikely to constrain growth in most sectors given the large pool of qualified labour in other parts of London, which again demonstrates that good transport connectivity is critical;
- There has been a significant change in the qualifications held by the workforce in the Study Area since 2001, with Barking & Dagenham and Newham seeing large increases in those with the highest qualifications compared to the London and national average. This is promising for the future growth prospects of the Study Area and also suggests that a higher proportion of professionals are now starting to live in the area;
- Levels of economic inactivity are also much higher in Newham and Barking & Dagenham when compared to London or England, and also exhibit greater levels of unemployment. The potential for road crossings to unlock development and create jobs can help to tackle some of these long running issues in the Study Area.

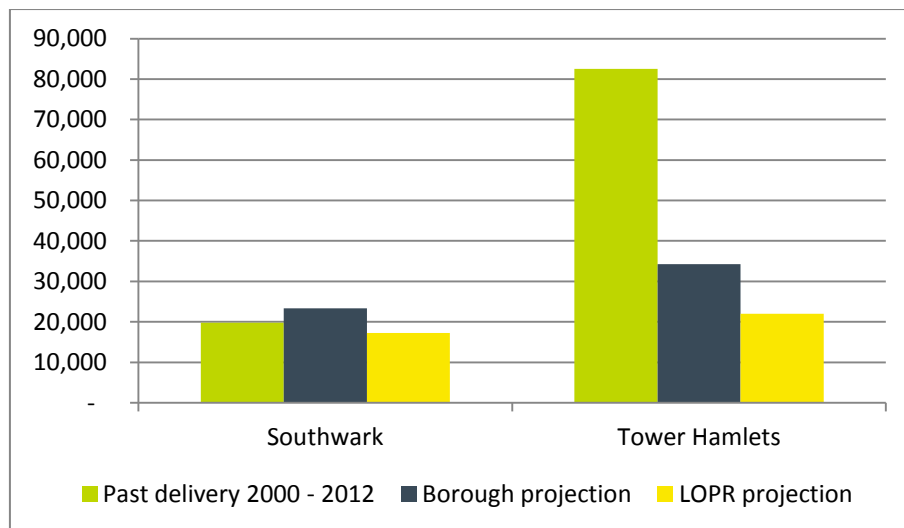
## Speculative office development is only likely to come forward in Southwark, Tower Hamlets and a small number of growth poles such as Stratford

- Structural change in the office market has meant that office demand is now increasingly focused on central London as well as a limited number of highly accessible locations outside the Central Activities Zone that support an existing critical mass of office activity, such as Canary Wharf;
- The office market in Outer London has been through a period of relative decline, and will face particular challenges in the future as back office and public sector demand remains weak. A

forecast increase in office based jobs should support demand providing this is met by good quality space;

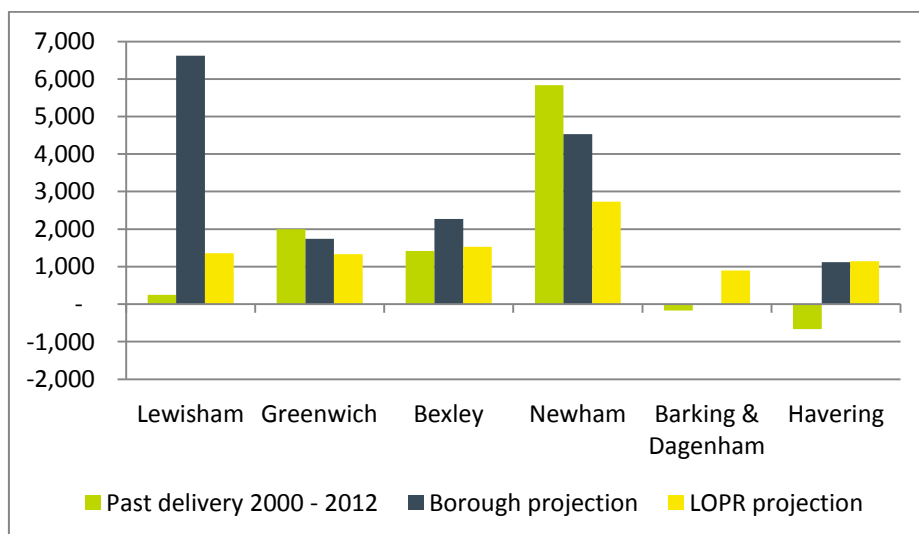
- This suggests that speculative office development is unlikely to occur in most places within the Study Area outside of Canary Wharf and the City Fringe in Southwark and Tower Hamlets. However, very large scale schemes that can offer good transport accessibility, high quality space and a critical mass of activity, such as those proposed at Royal Docks and Stratford, may be able to attract a share of London-wide demand;
- Office floorspace projections are available from the GLA's London Office Policy Review 2012 and from each Borough's employment planning work. When these are compared against past rates of delivery during the past 12 years (Figures 23 and 24), some Boroughs exhibit significant differences, especially in Lewisham, and Tower Hamlets. However, these projections are largely based on past trends and do not factor in the potential for strategic office locations to change the pattern of future growth.

**Figure 23. Average net office floorspace change per annum 2000-2012 vs annual office floorspace projection – Southwark and Tower Hamlets**



Source: VOA/Employment Land Reviews/London Office Policy Review

**Figure 24. Average net office floorspace change per annum 2000-2012 vs annual office floorspace projection – other boroughs in Study Area**

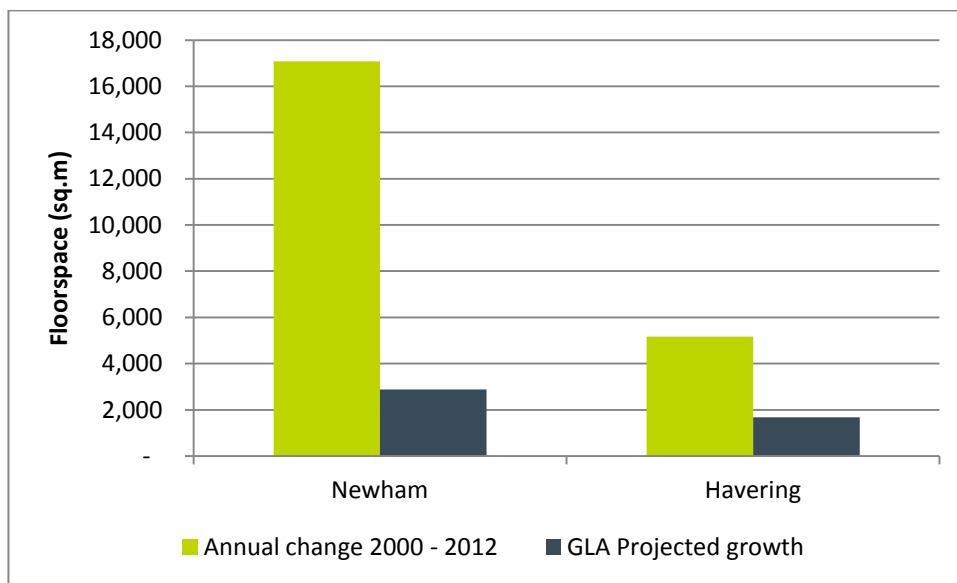


Source: VOA/Employment Land Reviews/London Office Policy Review

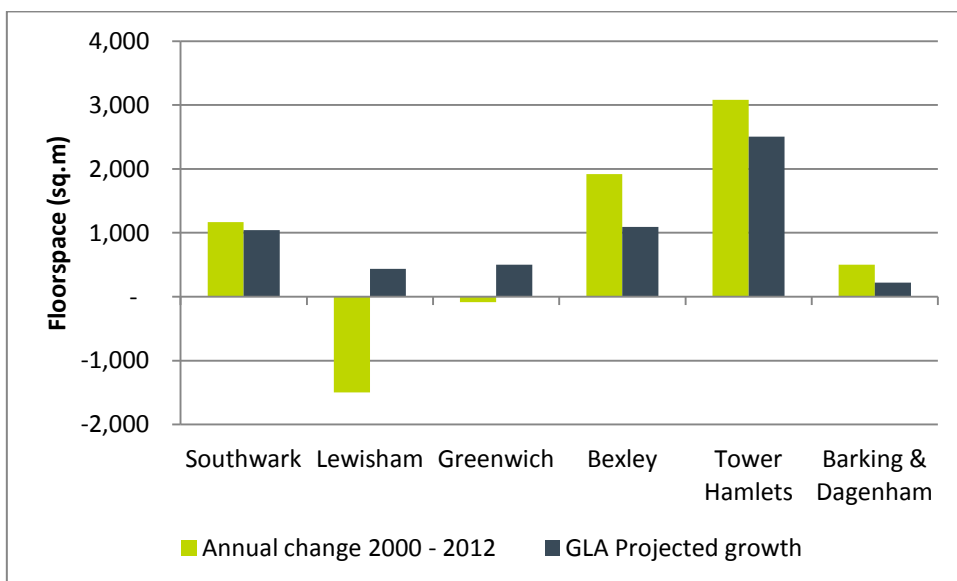
## Retail demand is expected to decline compared to recent years

- The retail sector is also undergoing structural change with the influence of e-commerce and the growth in experiential shopping and destination shopping malls. Whilst there is expected to continue to be demand for out of town retail, new floorspace is likely to be focused on town centres that can provide a high quality shopping experience;
- Recent work for the GLA provides estimates of floorspace demand at the Borough and town centre level. The work provides estimates of total floorspace demand at the Borough and town centre level. Figures 25 and 26 illustrate that growth during the next 20 years is generally expected to be much lower than that seen during the past 12 years. This is especially the case in Newham and Havering, which have just seen large amounts of floorspace created in new town centre shopping malls.

**Figure 25. Average net retail floorspace change per annum 2000-2012 vs GLA retail projection per annum 2011-2036 – Newham and Havering**



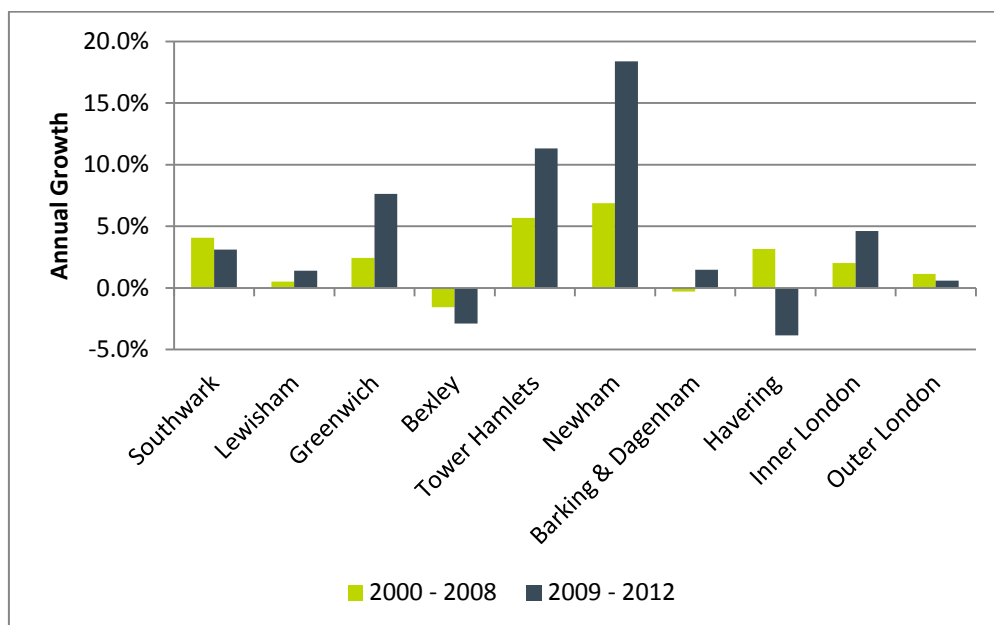
**Figure 26. Average net retail floorspace change per annum 2000-2012 vs GLA retail projection per annum 2011-2036 – Other Boroughs in Study Area**



## Demand for leisure floorspace has been growing quickly

- There are no projections for leisure floorspace available either at the Borough or London level. However, employment in this sector has continued to grow quickly, especially in Newham and Tower Hamlets (Figure 27). This is likely to be partly a result of the growing evening economy in both Boroughs, although the increase demand for this sector may also have been partly driven by the 2012 Olympic and Paralympics Games.
- Continued demand for leisure floorspace is expected within town centre locations, as well as some demand for leisure facilities in out of town retail parks if policy allows;

Figure 27. Annual Growth in leisure employment 2000-2012



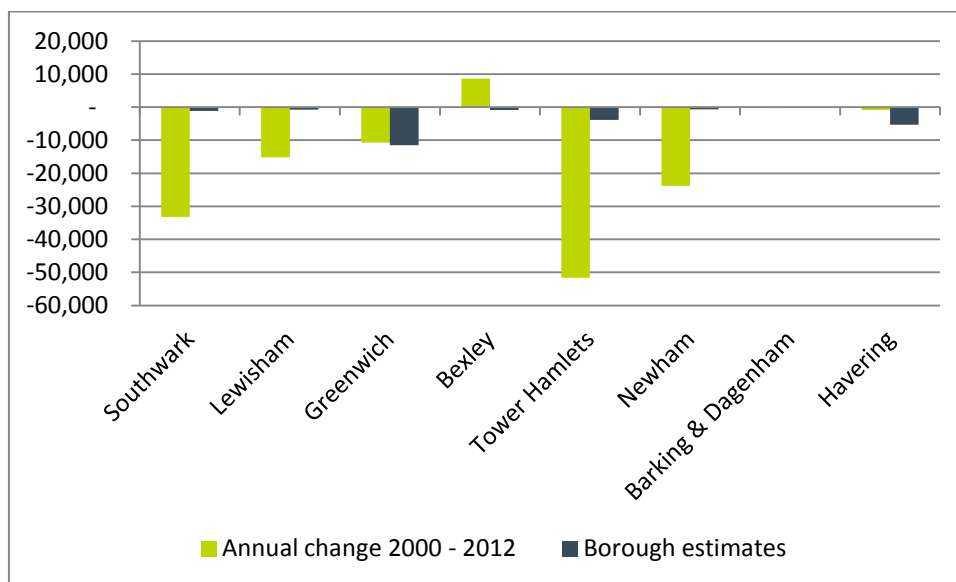
Source: Annual Business Inquiry and Business Register and Employment Survey

## Although demand for industrial space is in decline, opportunities still exist for high quality space close to the Strategic Road Network

- Although traditional industrial space has generally been in decline in the Study Area over the past decade, which is likely to continue in many locations - especially within Inner London Boroughs, this will not be the case in all parts of East London. Growth is more likely to occur in locations where high quality industrial space can meet the needs of hi-tech industries that want to be located close to the London skill base and access to finance. An example of this is the development of the London Sustainable Industries Park at Dagenham Docks;
- Some Borough's have recently seen an increase in demand for logistics floorspace, driven by the growth of online retailing, guaranteed delivery times and supermarket online fulfilment centres. The provision of transport infrastructure, particularly road transport, will have a significant impact on logistics location decisions, as future demand is drawn to those locations that offer excellent access to London's orbital road networks and to the country's major distribution hubs – particularly the National Distribution Centres of the Midlands, Heathrow Airport and ports of South East England, including London Gateway;
- The development of logistics space close to urban areas will also be dependent upon the cost and availability of large plot development land, as well as the opportunity cost of not developing for other, more valuable uses such as residential. This suggests locations such as Barking & Dagenham, Bexley and southern parts of Havering are likely to see the strongest growth in this sector;

- All industrial floorspace projections produced by the Boroughs have estimated that the net loss of industrial floorspace will slow significantly, with the exception of Greenwich where it is expected to continue at a similar rate.

**Figure 28. Average net industrial floorspace change per annum 2000-2012 vs Borough projection per annum**



## Summary of Market Attractiveness by PMA

- 5.2. Table 10 presents a summary of our assessment of the market attractiveness of each floorspace type at the Property Market Area level. This assessment has been informed by a detailed analysis of job growth, floorspace, rents and property prices set out in Appendix L. The assessment ranks each PMA according to the level of demand (relative to London as a whole) for each floorspace type. This is a key informant of the scenario development process set out in Chapter 8.

**Table 10. Summary of Market Attractiveness by Property Market Area**

| Property Market Area             | Residential | Office | Retail & Leisure | Industrial |
|----------------------------------|-------------|--------|------------------|------------|
| Canada Water & Rotherhithe       | High        | Medium | High             | Low        |
| Rest of Southwark                | High        | High   | High             | Low        |
| Deptford New Cross               | Medium      | Medium | Medium           | Low        |
| Lewisham & Catford               | Medium      | Medium | Medium           | Low        |
| Rest of Lewisham                 | Medium      | Low    | Medium           | Low        |
| Greenwich Peninsula and Charlton | High        | Low    | High             | Medium     |
| Woolwich                         | Medium      | Low    | Low              | Medium     |
| Thamesmead                       | Low         | Low    | Low              | High       |
| Rest of Greenwich                | Medium      | Low    | Medium           | Medium     |
| Erith and Belvedere              | Low         | Low    | Medium           | High       |
| Rest of Bexley                   | Medium      | Low    | Medium           | Medium     |
| Isle of Dogs                     | High        | High   | High             | Low        |
| Rest of Tower Hamlets            | High        | Medium | High             | Low        |
| Lower Lea Valley                 | Medium      | Low    | High             | Medium     |

| Property Market Area | Residential | Office | Retail & Leisure | Industrial |
|----------------------|-------------|--------|------------------|------------|
| Royal Docks          | Medium      | Medium | Medium           | Medium     |
| Rest of Newham       | Medium      | Low    | Low              | Medium     |
| Barking              | Low         | Low    | Medium           | Medium     |
| Barking Riverside    | Low         | Low    | Low              | High       |
| Rest of B&D          | Low         | Low    | Low              | High       |
| London Riverside     | Low         | Low    | Low              | High       |
| Rest of Havering     | Medium      | Low    | Low              | High       |

## 6. Development Capacity

### Summary

- We have drawn upon multiple sources, including the GLA 2013 Strategic Housing Land Availability Assessment, the London Development Database, Borough site allocation documents, and interviews with the Boroughs and developers, to create a comprehensive database of development opportunities in the Study Area;
- We estimate that there is potential capacity for over 243,000 units, 2.5million sq.m of office, 440,000sq.m of retail and 1million sq.m of leisure floorspace. If this was developed, this would result in a loss of 975,000sq.m of industrial floorspace.
- The northern side of the River has over twice as much floorspace capacity that could support employment than on the south side, with the majority of this difference in the office sector. This potential imbalance in employment growth, combined with a relatively even distribution of potential housing growth, will lead to a greater demand for trips from those on the south side of the River commuting to the north, reinforcing the need for new river crossings;
- There is a significant oversupply of capacity when compared to estimated demand, particularly for office and retail development. This suggests that not all sites will come forward for development, with only those where market demand is strongest and site constraints do not threaten viability;
- A high level assessment of physical and policy constraints has been undertaken, using the SHLAA work as the basis. This has then been added to via the site visit process. This assessment of constraints is an important informant of the development scenarios in Chapter 8; However, physical and policy constraints are just one part of the story when considering which sites will come forward. The structure of the large site development market means that a significant proportion of sites with planning permission are not in control of companies who build. Furthermore, funding and private sector capacity are key issues which can restrict delivery.

### Introduction

- 6.1. This chapter provides an analysis of the capacity for development within the Study Area. It presents a summary of the process for identifying sites with development potential, a high level commentary of key constraints to delivery and a detailed look at key sites within each Property Market Area.

### Process for identifying sites with development potential

- 6.2. This study has drawn upon a range of sources to identify a comprehensive database of land and sites with development potential. These sources include:
- The 2013 GLA Strategic Housing Land Availability Assessment (SHLAA) – this provides an estimate of the housing capacity of all sites with 10 units or more, along with an assessment of development constraints, the timing of development and the area for non residential uses. Sites with planning permission, sites without permission but are allocated in Borough development plans, and sites not currently allocated but with high potential for development are all included within this dataset;
  - The London Development Database (LDD) – this provides details of the net floorspace with planning permission, but is still to be built, for all Use Class types;
  - Borough site allocation documents – this includes sites which may not have planning permission (and so not included in the LDD) and may not have a significant element of



housing (and so not included in the SHLAA) but are still allocated for development in Borough planning strategies;

- Consultation with the Boroughs has also identified key areas of change, along with estimates of development potential, at sites which have been identified for long term change but have not yet been tested through the local development plan process;
- Site visits to locations with greatest potential for change have identified development potential, site development constraints and existing uses.

6.3. These sources have been augmented into a single database of sites, each with their own reference number. Appendix M provides mapping which illustrates the location of each site by Borough. All estimates of development capacity are net of existing uses. Where LDD data is available, this provides the most reliable estimate of existing floorspace. Where it is not available, we have made estimates of the existing floorspace through site visits.

## Summary of development capacity

6.4. A total of 1,300 sites have been identified with potential for major development (10 residential units or more or more than 1,000sq.m of other floorspace). Tower Hamlets has the largest number of sites (336), although Newham has the greatest amount of land (615ha).

6.5. We estimate that these sites could accommodate up to 243,000 residential units if all of them were built out according to Borough and GLA policy guidelines, assuming all site constraints can be overcome. This estimate is largely informed by the findings of the 2013 SHLAA work, but also includes an additional number of dwellings that have been identified following consultation with the Boroughs.

6.6. We estimate that there is capacity for over 2.5million sq.m of office, 440,000sq.m of retail and over 1million sq.m of leisure floorspace within the Study Area. Much of this development is expected to come forward on sites that currently support industrial uses. If all developments did come forward, there would be a loss of almost 1million sq.m of industrial floorspace.

6.7. These estimates have been informed by the LDD, as well as our own estimates of the scale and mix of non-residential uses that may come forward on housing-led mixed use sites. It should be noted that these are not rigid estimates of maximum capacity for each floorspace type - there is an inherent degree of flexibility of the development potential of many sites.

6.8. It should be noted that these are estimates purely of capacity and do not necessarily mean that all these sites will come forward. This will depend on the successful resolution of site constraints, as well as the level of market demand in the Study Area, which is considered below.

**Table 11. Summary of development capacity by Borough**

| Borough            | Total sites | Total Area (ha) | Potential residential units | Potential office floorspace (sq.m) | Potential retail floorspace (sq.m) | Potential leisure floorspace (sq.m) | Potential industrial floorspace (sq.m) |
|--------------------|-------------|-----------------|-----------------------------|------------------------------------|------------------------------------|-------------------------------------|--|
| Southwark          | 225         | 187             | 29,909                      | 136,084                            | 71,813                             | 66,823                              | - 195,316                              |
| Lewisham           | 82          | 133             | 16,472                      | 65,179                             | 42,501                             | 97,723                              | - 166,011                              |
| Greenwich          | 118         | 388             | 35,990                      | 423,207                            | 81,464                             | 240,890                             | 38,141                                 |
| Bexley             | 125         | 390             | 20,969                      | 23,889                             | 45,042                             | 33,379                              | - 65,832                               |
| Tower Hamlets      | 336         | 339             | 57,921                      | 1,171,733                          | 87,212                             | 206,285                             | - 429,739                              |
| Newham             | 159         | 615             | 41,502                      | 681,031                            | 69,470                             | 319,433                             | - 67,855                               |
| Barking & Dagenham | 126         | 518             | 25,177                      | 25,272                             | 25,300                             | 44,560                              | - 3,657                                |
| Havering           | 135         | 217             | 15,097                      | 14,801                             | 16,296                             | 22,145                              | - 84,910                               |
| Total              | 1,306       | 2,787           | 243,037                     | 2,541,195                          | 439,099                            | 1,031,239                           | - 975,179                              |

Source: Atkins

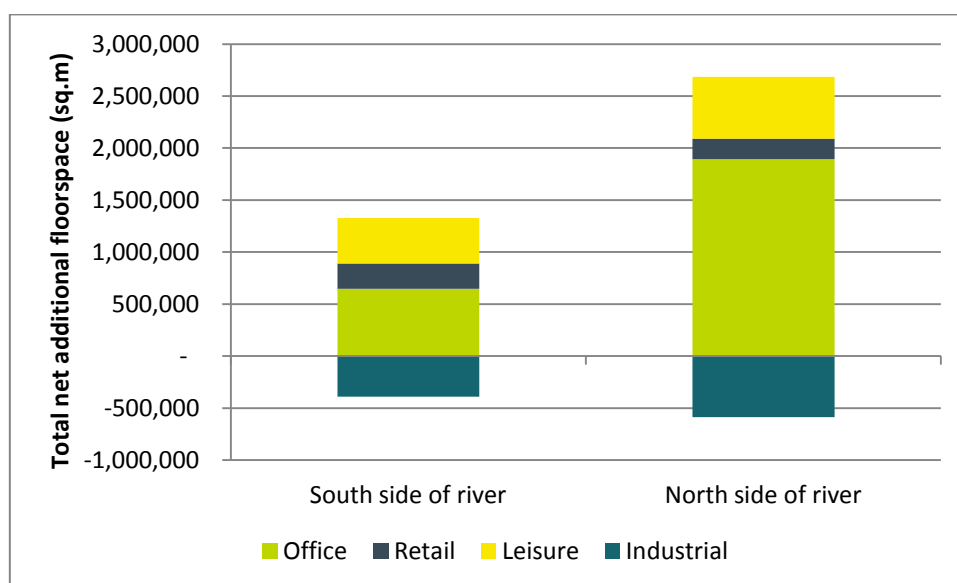
## The balance of employment generating development opportunities is uneven on both sides of the River, which could mean greater demand for cross river movements

6.9. The northern side of the River has over twice as much floorspace capacity that could support employment than on the south side, with the majority of this difference in the office sector (Figure 29). This potential imbalance in employment growth, combined with a relatively even distribution of potential housing growth, will lead to a greater demand for trips from those on the south side of the River commuting to the north. This reinforces the need for greater cross river capacity, and also raises the prospect that:

- Housing delivery on the south side could be compromised if access to employment is not improved in the north; and
- Employment delivery on the north side could be compromised if access to the labour force in the south is not improved.

6.10. Whilst Crossrail will certainly play a significant role in achieving this, it will only be able to facilitate point to point journeys and facilitate growth at particular sites. It will be the sites which are less well served by rail based public transport that will rely on improved highway based cross river capacity, of which there are many in all Boroughs except Southwark and Tower Hamlets.

**Figure 29. Net additional employment supporting floorspace – North vs South of River Thames**



## With levels of capacity greater than demand, not all sites will come forward for development

6.11. Chapter 5 identifies that many of the Study Area Boroughs, in particular Newham and Greenwich, have a greater level of housing capacity than trend-based projections suggest will be required to meet local need. These Boroughs are expected to meet the London-wide requirement for dwelling growth, which will only happen if concerns over quality of place and access to jobs can be addressed thereby facilitating an increase in net-migration.

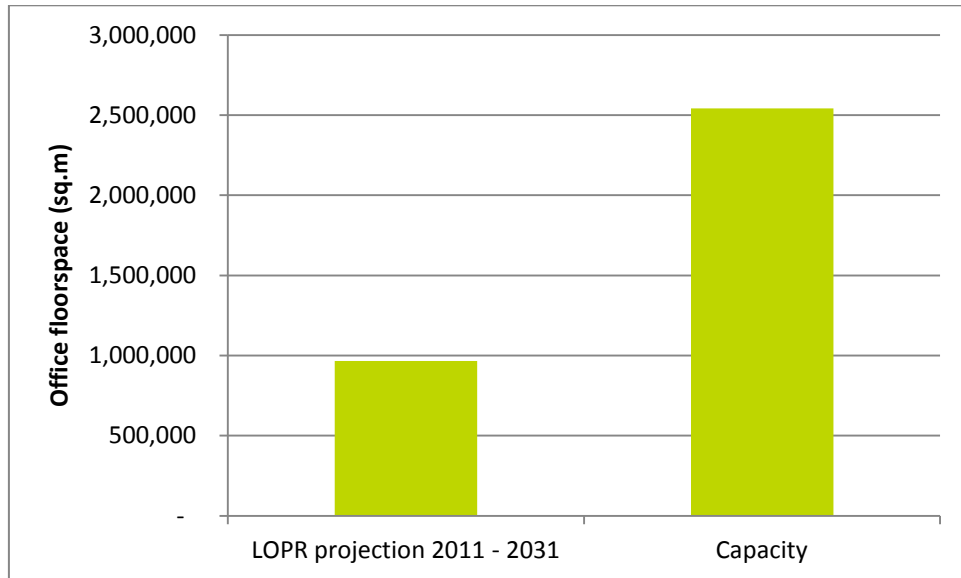
6.12. However, the difference between the demand and capacity for other types of floorspace is significant. There is capacity for over 250% of the projected office floorspace need<sup>36</sup> between 2011 and 2031 in the (Figure 30), and capacity for 170% of projected retail floorspace need between 2011 and 2036<sup>37</sup> (Figure 31) in the Study Area. This suggests that, unless there is a

<sup>36</sup> As set out in the London Office Policy Review 2012

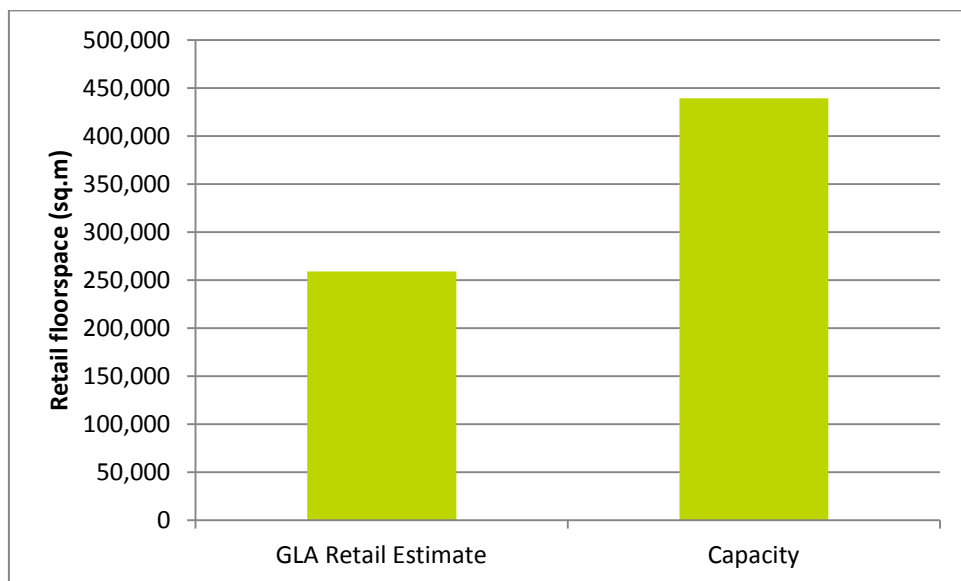
<sup>37</sup> As set out in the GLAs Retail Floorspace Projections 2013

major change in the spatial distribution of growth in London compared with the past 20 years, there will simply not be enough demand to fulfil potential capacity.

**Figure 30. Projected office demand (2011 – 2031) in Study Area vs supply**



**Figure 31. Projected retail demand (2011 – 2036) in the Study Area vs capacity**



## The delivery of sites will be influenced by physical and policy constraints

- 6.13. The potential for the development capacity identified in Table 11 to come forward will depend on the degree of physical and policy constraints at a site level, as well as the level of market demand (as identified at the PMA level in Chapter 5). A high level understanding of the development constraints at key sites is therefore key to the development to future growth scenarios.
- 6.14. The GLA's 2013 SHLAA provides an assessment of the key constraints to all sites coming forward for development. As the SHLAA dataset forms the largest contribution to the development database, the work provides a useful base for a high level assessment of site constraints. Much of the non-residential floorspace capacity is included as part of mixed use elements of housing schemes and so is also picked up within this assessment. Key sites that are

not included in the SHLAA dataset have had site constraints assessed (in the same format as the SHLAA work) through the site visit process.

6.15. The SHLAA assessment includes consideration of the following constraints, which have been fed through into this work:

- Policy constraints, including:
  - Designated open space
  - Protected Wharves
  - Strategic Industrial Locations and Local Strategic Industrial Locations
- Strategic and environmental constraints, including:
  - Air pollution
  - Flood risk
  - Noise pollution
  - Pylons
  - Health and Safety executive consultation zones
- Local constraints including:
  - Ownership
  - Local infrastructure
  - Environmental setting
  - Contamination

6.16. The SHLAA treats these constraints as reducing the potential probability of development. Sites that are assessed to have constraints that are considered to be insurmountable are not included within this work. We also treat sites with constraints as having less potential to come forward for development, although we combine this with our assessment of market demand to derive our development scenarios in Chapter 8.

6.17. A summary of constraints at the PMA level, grouped into the high level categories set out above, is presented below, with further commentary on key sites where appropriate.

## **Developer activity and the structure of the large site development market also plays a key role**

6.18. This study includes a detailed appreciation of development constraints (at the site level), as well as a high level understanding of future market demand by floorspace type and Property Market Area. However, it is recognised that the delivery of development does not always happen where high levels of demand and low levels of site constraints can make a site viable.

6.19. In 2012, the GLA identified the market-perceived barriers to residential development in London<sup>38</sup>. Four main constraints were identified which included:

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38 Barriers to Housing Delivery: what are the market perceived barriers to housing delivery in London? (GLA, 2012).

- **Control of the Pipeline** – a significant proportion of sites with planning permission are not in control of companies that build;
- **Funding** – difficulty in financing debt, particularly of schemes of £20m plus;
- **Private Sector Capacity** – limited number of development companies with limited appetite to expand. Developers only bringing forward sites which they consider to be easily deliverable.
- **Public Sector Speed and Consistency** – planning system constraints and changing policy which adds additional burden on development costs.

6.20. This analysis is consistent with other recent work which suggests that large sites in particular are considered to be too difficult, and therefore too risky, to be brought forward by many UK developers. Our consultation with developers has also revealed that many of the larger sites will not be brought forward in the short-medium term without support from large international investors. An example of this is Ballymore's recent partnership with Singapore based Oxley Holdings to bring forward Royal Wharf in the Royal Docks.

6.21. Issues of funding and private sector capacity are difficult to be taken into account at the site level, although our discussions with developers have informed this to a certain extent. Our development scenarios (set out in Chapter 8) take these issues into account by considering past levels of growth, especially on larger sites.

## Summary of development capacity by PMA

### Canada Water & Rotherhithe

6.22. Canada Water is identified in the FALP as a potential new Opportunity Area. The Area has significant potential for mixed-use regeneration on infill sites and intensification of existing commercial sites focussed on the transport interchanges and the District shopping centre. Subject to retail demand Canada Water may evolve to become a Major town centre in the network and the scope for a substantial increase in the minimum new homes target and employment capacity should be explored. There is also potential to develop a new science cluster linked to King's College.

6.23. The amended Canada Water AAP identifies the following scale of growth:

- There is a target to expand the amount of retail space by around 35,000 sq.m, a net housing provision of 2,500 units (although this could rise to as much as 4,500 units) and 12,000 sq.m of office space;
- Retail Development will be located in Surrey Quay Shopping Centre, The Decathlon Site and Surrey Quay Leisure Park;
- Housing will be located in various infill sites outside the Town Centre;
- Business and Office Space will be located in Surrey Quay Shopping Centre, Surrey Quay Leisure Park and Mulberry Business Park.

6.24. Our assessment of capacity is consistent with the development strategy identified in the AAP (Table 12). The assessment of site constraints identified that almost all of the sites in this area are subject to potential flood risk, although these are likely to be overcome without significantly affecting the delivery of development, especially given that demand for all land use types, especially residential, is relatively high.

**Table 12. Development Potential at Canada Water & Rotherhithe**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 938               | -             | 638           | 319            | -                 |
| With permission, not started                     | 1,434             | 3,876         | 5,234         | 1,980          | - 8,046           |
| Allocated, no permission                         | 1,982             | 10,312        | 30,193        | -              | - 6,963           |
| Not allocated, no permission                     | 93                | -             | -             | -              | -                 |
| of which with planning policy constraints        | -                 | -             | -             | -              | -                 |
| Total  | 4,447             | 14,188        | 36,065        | 2,299          | - 15,009          |
| Total with Strategic / Environmental constraints | 4,288             | 14,188        | 35,968        | 2,299          | - 15,009          |
| Total with Other local constraints               | 841               | -             | 30,000        | -              | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Rest of Southwark

6.25. The Rest of Southwark area covers the vast majority of the Borough of Southwark and with it a significant range of development opportunities including:

### Elephant & Castle

- Elephant & Castle is undergoing major transformation with significant investment in housing and potential for new retail provision integrated with a more efficient and attractive transport interchange. There is scope to deliver 5,000 new homes as well as 5,000 new jobs at this location
- The Elephant and Castle opportunity areas includes the Elephant and Castle junction and shopping centre, the Heygate estate, Walworth Road, the Pullens estate, West Square, St George's Circus, the Enterprise Quarter bounded by London Road, Borough Road and Newington Causeway and the Rockingham estate.
- The area could support up to 440,000 sqm of new development including up to 45,000 sqm of new shopping and leisure floorspace and 25,000-30,000 sqm of business floorspace.

### London Bridge, Borough & Bankside

- London Bridge, Borough and Bankside has considerable potential for intensification, particularly at London Bridge station and its environs. There is scope to develop the strengths of the Area for strategic office provision as well as housing, especially in the hinterland between Blackfriars and London bridges. Mixed leisure and culture related development should enhance its distinct offer as part of the South Bank Strategic Cultural Area. A total of 2,000 new homes and up to 24,000 new jobs

### Peckham & Nunhead

- The Peckham and Nunhead AAP identifies development options for 28 large possible major development sites. The AAP states that the growth will be higher in Town Centre than but not as high as in places like Canada Water, Bankside, Borough and London Bridge. To achieve the growth the AAP identifies potential options for sites with 14,000-15,000 sqm of additional shopping space around the Rye lane/ Peckham Rye Station and Copeland Industrial Area. There is also a potential of providing 8,000 sqm of new business space in the same area. The AAP also sets out a target of 2000 new homes across the area in the next 15-20 years.

6.26. We estimate that there is potential for over 25,000 residential units in this area, with almost 50% which already has planning permission, alongside a significant amount of office and retail floorspace. Many sites are judged to have some low risk of flooding, although this is not expected to constrain delivery to a significant extent.

**Table 13. Development Potential at Rest of Southwark**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 2,361             | 77,213        | 9,008         | 19,576         | - 26,362          |
| With permission, not started                     | 9,449             | - 546         | 12,076        | 18,143         | - 67,852          |
| Allocated, no permission                         | 3,999             | 15,941        | 5,037         | 7,704          | - 7,742           |
| Not allocated, no permission                     | 9,653             | 29,288        | 9,627         | 19,101         | - 78,351          |
| of which with planning policy constraints        | 1,897             | 19,123        | 5,843         | 4,348          | - 54,650          |
| Total  | 25,462            | 121,896       | 35,748        | 64,524         | - 180,307         |
| Total with Strategic / Environmental constraints | 19,076            | 34,142        | 24,562        | 23,711         | - 154,511         |
| Total with Other local constraints               | 2,483             | 2,776         | - 4,362       | 701            | - 32,389          |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Deptford New Cross

6.27. This area represents the Borough of Lewisham's greatest focus for change and contains the following key strategic sites:

### Convoys Wharf

- Convoys Wharf is allocated for mixed use development. It should accommodate about 3,500 homes and provide at least 20% of the built floorspace for B class employment uses, as well as a mix of retail uses that do not adversely impact on established town centres
- Development will need to satisfactorily addresses the protected wharf status of part of the site in general conformity with London Plan policy and ensures that any new development does not interfere with the operation of the wharf or prejudice its future operation

### Surrey Canal Triangle

- The Surrey Canal Triangle site is composed of the industrial estates and yards at the western end of Surrey Canal Road, the industrial estate on Bolina Road, Millwall Football Stadium and surrounding buildings in leisure use.
- The site as a whole presents a degraded, low quality environment. It is overwhelmingly industrial in character and the industrial estates are closed off and inward looking. The site and wider area suffers from a good deal of severance caused by railway lines on wide viaducts leading to an environment which discourages pedestrian access and connectivity. Bridge House Meadows is a relatively large public open space to the south-east of the site. This open space would require enhancement to meet the needs of the development. The site falls within Flood Zone 3a (high probability of flooding) with high to medium residual risk.
- The site is expected to provide for up to 2,500 new homes, as well as at least 20% of the built floorspace for B class employment uses, as well as a mix of retail uses that do not adversely impact on established town centres

### Oxestalls Road

- The Oxestalls Road site occupies approximately 4.6 hectares and is a complete urban block bordered by Evelyn Street, Oxestalls Road, Grove Street and Dragoon Road. The site is in close proximity to the Pepys Estate and lies between Evelyn Street and the Thames river frontage, and between Deptford Park and Convoys Wharf. The former route of the Surrey Canal runs through the site.
- Redevelopment is expected to provide for a mix of uses to improve the environmental quality of both the site and the surrounding area. The site has sufficient scale to allow a distinct 'business quarter' that could be adjacent rather than integral to residential buildings as part of an intensive mixed use development. Opportunities should be taken to provide residential

uses, quality business and light industrial uses providing higher density employment, and contribute towards public realm upgrade.

- The site is expected to provide for up to 905 new homes, as well as at least 20% of the built floorspace for B class employment uses, as well as a mix of retail uses that do not adversely impact on established town centres

6.28. We estimate that there is potential for over 10,000 residential units in Deptford New Cross, the majority of which are judged to have some low risk of flooding, although this is not expected to constrain delivery to a significant extent. The potential impacts on the Safeguarded Wharf will also need to be managed carefully as part of any development proposal.

**Table 14. Development Potential at Deptford New Cross**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 532               | 2,154         | 922           | 2,829          | - 12,103          |
| With permission, not started                     | 4,892             | 14,578        | 5,230         | 25,669         | - 30,831          |
| Allocated, no permission                         | 4,856             | 28,814        | 3,249         | 12,781         | - 59,127          |
| Not allocated, no permission                     | 66                | 1,276         | 1,701         | 1,276          | - 11,540          |
| of which with planning policy constraints        | -                 | -             | -             | -              | - 11,540          |
| Total  | 10,346            | 46,822        | 11,102        | 42,555         | - 113,602         |
| Total with Strategic / Environmental constraints | 9,421             | 37,432        | 14,725        | 32,917         | - 110,248         |
| Total with Other local constraints               | 4,659             | 24,248        | 4,950         | 14,057         | - 43,446          |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Lewisham & Catford

6.29. Both Lewisham and Catford have scope for intensification, regeneration and renewal. There is particular scope for further intensification in central Lewisham, where a significant amount of development has already taken place in recent years.

### Lewisham

- The Lewisham AAP estimates that the town centre can accommodate 4,100 housing units with most housing development located at Loampit Vale, Connington Town and Lewisham Gateway;
- Lewisham Town Centre is also the largest retail and shopping centre in the Borough. The Council has aspirations to develop 40,000 sqm of additional retail floorspace most new development concentrated towards Lewisham gateway and Lewisham Centre.

### Catford

- Catford Town Centre is set to accommodate an additional 1,750 net dwellings for the period of 2013-2026 distributed in the areas of Catford Centre, Laurence House, Plassy Road, Former Grayhound Stadium and Wickes and Halford;
- There is scope for an additional 8,100 sqm of A1 comparison floorspace and 1,800 sqm of A1 convenience floorspace by 2026. Most of this is expected to be concentrated towards the redevelopment of the Catford Centre and strengthening of the evening economy;
- The office based employment market in Catford is limited with only local demand.

6.30. We estimate that there is over potential for over 4,300 units remaining in this area. However, many sites have ownership constraints (such as Lewisham Shopping Centre) and there are some concerns about flooding and local infrastructure connections. These could constrain the future delivery of development, although much of these can be overcome if levels of demand remain high.



**Table 15. Development Potential at Lewisham / Catford**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 324               | 378           | 1,856         | -              | -                 |
| With permission, not started                     | 1,432             | 9,161         | 18,642        | 33,300         | - 3,872           |
| Allocated, no permission                         | 1,979             | 8,866         | - 8,804       | 23,150         | - 2,599           |
| Not allocated, no permission                     | 589               | -             | 681           | -              | - 1,310           |
| of which with planning policy constraints        | -                 | -             | -             | -              | - 1,310           |
| Total  | 4,324             | 18,405        | 12,375        | 56,450         | - 7,781           |
| Total with Strategic / Environmental constraints | 3,335             | 16,704        | - 1,421       | 38,018         | - 5,182           |
| Total with Other local constraints               | 2,049             | 8,028         | - 19,964      | 4,218          | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Rest of Lewisham

- 6.31. The development potential within the Rest of Lewisham is much more limited than in Lewisham & Catford and Deptford New Cross. We estimate that there is just 1,800 units split over 32 sites with two estate renewal schemes (Excalibur Estate Renewal and Heathside and Lethbridge Estate Renewal) providing over half this capacity. Site constraints are generally relatively minor given the limited size of many schemes in this area.

**Table 16. Development Potential at Rest of Lewisham**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 209               | 1,635         | 14,642        | - 1,714        | 5,580             |
| With permission, not started                     | 986               | - 1,290       | 664           | - 1,750        | - 297             |
| Allocated, no permission                         | 335               | 2,191         | 1,336         | 2,182          | - 1,891           |
| Not allocated, no permission                     | 272               | - 2,585       | 2,382         | -              | - 48,020          |
| of which with planning policy constraints        | -                 | -             | -             | -              | - 36,508          |
| Total  | 1,802             | - 48          | 19,024        | - 1,282        | - 44,628          |
| Total with Strategic / Environmental constraints | 566               | 45            | 1,875         | 2,182          | - 20,689          |
| Total with Other local constraints               | 337               | - 2,530       | 3,718         | 2,182          | - 13,403          |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Greenwich Peninsula & Charlton

### Greenwich Peninsula

- 6.32. Greenwich Peninsula is Greenwich's single largest regeneration area. The main focus of commercial development is at the north of the peninsula around the O2 Centre and the Jubilee Line station with residential and retail development further south. There is planning permission for 10,010 residential units, with capacity for approximately 6,000 units left.
- 6.33. As at 2010, the first two phases of Greenwich Millennium Village had been completed providing 1,095 homes, a primary school, medical centre and nature reserve. A Holiday Inn hotel has been built and cycle paths and public realm have been provided together with office space. The next phase of development has been approved for Peninsula Quays to develop out 6 of 11 sites for residential units.
- 6.34. It was originally estimated that the time for completion of the regeneration of the Greenwich Peninsula would be 2022 but the National Audit Office<sup>39</sup> identified that this was now likely to move back to at least 2026, taking into account the delays that this site has encountered. Given the recent further delays to commencement of development, related to the site changing hands and negotiations over affordable housing, it is likely the completion date will now be even later.

<sup>39</sup> The Regeneration of the Greenwich Peninsula: A Progress Report – NAO 2008

However, four large new developments which will accommodate almost 900 new homes have recently been given detailed planning permission, which suggests the pace of development is starting to pick up slowly.

- 6.35. Greenwich Peninsula is also expected to see development at Lovell's Wharf (667 dwellings, hotel, small scale retail and community uses), and Enderby's Wharf (770 dwellings, a hotel, retail, commercial and community facilities).

### Charlton Riverside

- 6.36. The Charlton Riverside Masterplan outlines a potential opportunity to create a new neighbourhood of 3,000-5,000 new homes and up to 1,000 new jobs. The plan is to create an education and creative industries hub in the eastern Historical Quarter surrounded by a mix of high quality, residential led uses including high quality business space. The retail and industrial uses will be consolidated and rationalised.
- 6.37. The delivery of high value residential development will be dependent on the education hub going ahead and the early delivery of the widening of the Thames Barrier Park to enhance the landscape environment and setting for that new housing.
- 6.38. We estimate that there is potential for almost 15,000 residential units in this area, with up to 400,000 sq.m of office, 43,000sq.m of retail and 170,000 of leisure floorspace. However, the likelihood of all of this capacity coming forward over the next 20 years is questionable, given the track record of past delivery and the relatively low levels of demand for office floorspace in this location at present. Although much of this development appears as 'started' in the table below, this is because the Outline permission has commenced, although reserved matters applications are still pending on many sites.

**Table 17. Development Potential in Greenwich Peninsula & Charlton**

| Status   | Residential Units | Office (sq.m)  | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|----------------|---------------|----------------|-------------------|
| With permission, started                         | 7,879             | 347,294        | 32,368        | 152,795        | - 24,414          |
| With permission, not started                     | 6,653             | 41,219         | 10,900        | 17,652         | - 10,072          |
| Allocated, no permission                         | -                 | -              | -             | -              | -                 |
| Not allocated, no permission                     | 243               | -              | -             | -              | -                 |
| of which with planning policy constraints        | -                 | -              | -             | -              | -                 |
| <b>Total</b>                                     | <b>14,775</b>     | <b>388,513</b> | <b>43,268</b> | <b>170,447</b> | <b>- 34,486</b>   |
| Total with Strategic / Environmental constraints | 7,699             | 45,369         | 10,695        | 24,335         | - 11,046          |
| Total with Other local constraints               | 182               | -              | -             | -              | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

### Woolwich

- 6.39. The Woolwich Town Centre SPD notes that, if a fixed link at Gallions to Thamesmead becomes operation (Scenario 4), this would create an option to close or downgrade the existing Woolwich ferry. Such a proposal would release valuable riverside land and would allow for reappraisal of the South Circular as it runs though Woolwich Town Centre. This could bring very significant advantages by rerouting heavy goods traffic and removing the severance between the town centre and the river.
- 6.40. Building on existing and proposed transport infrastructure including Crossrail, and realisation of the substantial residential capacity, Woolwich could evolve to perform a higher role in the town centre network, which could merit Metropolitan status. Implementation of proposals for the Royal Arsenal is also raising the profile of Woolwich and encouraging the wider regeneration of the town centre.
- 6.41. The Woolwich Arsenal site is now one of the focal points for redevelopment in the Borough, much of which is being undertaken by Berkeley Homes. Royal Arsenal has already established a new community, with over 1,248 homes provided to date and with a further 2,517 planned for the

future, which are currently being built. The latest planning permission on 25th April 2013 will provide: 2,032 residential units and 2,230sq.m of commercial floorspace.

6.42. A number of key sites stand out as having great development potential:

- Bathway Quarter – located north of the town squares, this area contains a rich mix of historic buildings with sites becoming available for redevelopment.
- Island site, Thomas Street – located at the heart of the town centre, with potential for 400 dwellings, retail and leisure facilities
- Beresford Street, including MacBean Street and Callis Yard – located in the heart of the town centre with planning consent in place.
- Hare Street Triangle – a considerable retail led mixed use site on the Western side of the town centre
- Spray Street quarter – land assembly is required to facilitate the development of this area opposite the Crossrail development.

6.43. There are also significant future opportunities including the Warren Masterplan (approx 4,000 units), which will involve the redevelopment of the existing housing estate, as well as at Love Lane. Constraints to delivery are centred around fragmented ownership at some sites, as well as flood risk and negative impacts from heavy traffic flows. We estimate that there is potential for almost 12,000 residential units, as well a significant amount of office and retail floorspace in the town centre.

**Table 18. Development Potential in Woolwich**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 4,347             | 7,879         | 17,784        | 32,278         | 33,201            |
| With permission, not started                     | 696               | - 6,980       | - 3,056       | 2,947          | -                 |
| Allocated, no permission                         | 4,776             | 1,222         | - 6,324       | 1,630          | 8,918             |
| Not allocated, no permission                     | 2,029             | 4,354         | 6,500         | 4,354          | -                 |
| of which with planning policy constraints        | 70                | -             | -             | -              | -                 |
| Total  | 11,848            | 6,476         | 14,904        | 41,209         | 42,119            |
| Total with Strategic / Environmental constraints | 7,070             | 10,355        | 9,261         | 6,251          | 8,918             |
| Total with Other local constraints               | -                 | -             | -             | -              | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Thamesmead and Abbey Wood

6.44. Thamesmead is expected to be enhanced through estate renewal integrated with strategic opportunity sites for new housing, social and recreation facilities together with improved open space and Metropolitan Open Land. Crossrail is likely to present in step change in access to Abbey Wood and south Thamesmead. In view of the low lying nature of parts of the Area, particular attention is required on flood risk management. There is scope to enhance employment capacity in the White Hart Triangle and other industrial sites, including waste management and logistics provision.

6.45. The Thamesmead and Abbey Wood SPD identifies the following recent Initiatives in this area:

- Gallions Reach Urban Village – new residential community in West Thamesmead;
- Tamesis Point - adopted SPG and outline planning consent for the delivery of 2,000 new homes to the west of Thamesmead town centre;

- White Hart Triangle - creation of high quality business premises in West Thamesmead;
- Tavy Bridge - phased renewal of the housing estate by Southmere which includes the provision of a new library; and
- Veridion Park - rejuvenation of East Thamesmead Business Park including the Thames Innovation Centre (TIC) and outline consent for new office, light industrial and warehouse uses in Bexley.

6.46. We estimate that there is potential for over 3,000 residential units in this area, as well as over 20,000 sq.m of office floorspace associated with the planning permission at White Hart Triangle. Many large sites are subject to flooding constraints.

**Table 19. Development Potential in Thamesmead and Abbey Wood**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 121               | 20,830        | -             | - 1,237        | 45,410            |
| With permission, not started                     | 10                | 1,387         | - 307         | 196            | 6,460             |
| Allocated, no permission                         | 134               | - 1,358       | -             | -              | - 1,630           |
| Not allocated, no permission                     | 2,846             | - 821         | 493           | 164            | - 985             |
| of which with planning policy constraints        | -                 | -             | -             | -              | -                 |
| Total  | 3,111             | 20,037        | 186           | - 877          | 49,255            |
| Total with Strategic / Environmental constraints | 2,951             | - 2,180       | 493           | 164            | - 2,615           |
| Total with Other local constraints               | -                 | -             | -             | -              | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

### Rest of Greenwich

- 6.47. The Rest of Greenwich area covers the central and southern parts of the Borough, which has fewer development opportunities than the north. Kidbrooke Village, which is currently under construction (with an estimated 1,760 units remaining), represents the biggest single development opportunity.
- 6.48. Most other sites are of a medium size and include the potential development of education facilities as well as town centre sites in Greenwich and Eltham. We estimate that there is potential for 6,300 units in the Rest of Greenwich, with many sites subject to potential flood risk and air pollution constraints.

**Table 20. Development potential in Rest of Greenwich**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 3,558             | 9,815         | 13,583        | 19,633         | - 15,099          |
| With permission, not started                     | 717               | - 323         | 2,669         | 6,404          | - 692             |
| Allocated, no permission                         | 551               | - 266         | 4,406         | 3,130          | -                 |
| Not allocated, no permission                     | 1,430             | - 1,045       | 2,448         | 944            | - 2,956           |
| of which with planning policy constraints        | -                 | -             | -             | -              | -                 |
| Total  | 6,256             | 8,181         | 23,106        | 30,111         | - 18,747          |
| Total with Strategic / Environmental constraints | 4,040             | 11,037        | 16,305        | 17,262         | - 15,926          |
| Total with Other local constraints               | 123               | -             | -             | -              | - 2,956           |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

### Erith & Belvedere

- 6.49. Improvements in public transport accessibility, especially associated with Crossrail, are expected to provide scope for intensification in the western part of this area.

- 6.50. Although there is relatively limited capacity for residential development on sites that are currently either allocated or with permission (approximately 1,600 units in total), there could be capacity for up to an additional 15,000 units if sites currently allocated (and in use for) industrial sites. However, this is likely to be a long term solution, and needs to be balanced against the area's strategically important role in addressing London's logistics requirements including protection for inter-modal freight transfer facilities at Howbury Park and safeguarded wharves on the River Thames, as well as waste management.
- 6.51. Any new development and infrastructure brought forward in this area must avoid adverse effects on any European site of nature conservation importance (to include SACs, SPAs, Ramsar, proposed and candidate sites) either alone or in combination with other plans and projects. Many sites are also subject to flooding constraints, as well as potential land remediation issues.

**Table 21. Development potential in Erith & Belvedere**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 592               | 6,431         | 3,143         | 5,553          | 6,017             |
| With permission, not started                     | 192               | 743           | -             | -              | 72,685            |
| Allocated, no permission                         | 867               | 14,835        | 5,192         | 2,967          | - 2,472           |
| Not allocated, no permission                     | 15,186            | -             | 7,892         | 2,842          | - 120,610         |
| of which with planning policy constraints        | 6,668             | -             | 5,341         | 2,671          | - 80,466          |
| Total  | 16,837            | 22,009        | 16,227        | 11,362         | - 44,380          |
| Total with Strategic / Environmental constraints | 2,588             | 17,742        | 13,811        | 11,362         | 5,785             |
| Total with Other local constraints               | 14,018            | 18,359        | 7,608         | 2,967          | - 104,775         |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

### Rest of Bexley

- 6.52. The Rest of Bexley contains a range of small and medium sized sites with development potential, although the majority are expected to accommodate no more than 100 units. Some sites are considered to be constrained in terms of their proximity to major roads and the resulting noise and air pollution, although such constraints can be overcome. Issues of flood risk also exist on some sites, especially towards the north of the area. Retail and office opportunities existing in some of the Borough's town centres.

**Table 22. Development potential in Rest of Bexley**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 714               | - 12,819      | 1,327         | 6,781          | - 23,108          |
| With permission, not started                     | 186               | -             | 22,678        | 3,165          | 22,136            |
| Allocated, no permission                         | 11                | -             | 285           | 711            | -                 |
| Not allocated, no permission                     | 3,221             | 14,700        | 4,525         | 11,360         | - 20,480          |
| of which with planning policy constraints        | 710               | -             | 4,363         | 1,146          | - 17,106          |
| Total  | 4,132             | 1,881         | 28,815        | 22,017         | - 21,452          |
| Total with Strategic / Environmental constraints | 1,844             | - 1,271       | 26,509        | 8,518          | - 19,816          |
| Total with Other local constraints               | 1,337             | 14,361        | 9,694         | 9,856          | - 3,654           |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

### Isle of Dogs

- 6.53. The north of the Isle of Dogs forms a strategically significant part of London's offer for financial, media and business services and is recognised as part of the Central Activities Zone for office policy purposes, with Canary Wharf also functioning as a Major town centre for its workers and more local communities.

- 6.54. Proposed transport investment including Crossrail 1 should allow it to accommodate an additional 110,000 jobs by 2031 focused on the area with particularly good and improving public transport accessibility and capacity in and around Canary Wharf.
- 6.55. Parts of the Area have significant potential to accommodate new homes and there is scope to convert surplus business capacity south of Canary Wharf to housing and support a wider mix of services for residents, workers and visitors. Retail provision in Canary Wharf has the potential to develop and serve a wider catchment, complemented by a broader range of civic, leisure and other town centre facilities.
- 6.56. We estimate that there is potential for 21,500 residential units and over 420,000sq.m of office floorspace, most of which is associated with the Wood Wharf development. All sites are considered to have some degree of flood risk, although this is not expected to constrain development in this location. Constraints imposed by the Jubilee Line tunnels have informed the current site layout but are not expected to hold back delivery of the site.

**Table 23. Development Capacity in Isle of Dogs**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 2,804             | 66,237        | 4,308         | 9,443          | - 2,770           |
| With permission, not started                     | 6,430             | 436,584       | 16,106        | 25,619         | - 69,106          |
| Allocated, no permission                         | 9,419             | - 76,203      | - 10,630      | -              | - 40,558          |
| Not allocated, no permission                     | 2,800             | - 3,116       | - 658         | -              | - 33,995          |
| of which with planning policy constraints        | 374               | -             | -             | -              | -                 |
| Total  | 21,453            | 423,502       | 9,127         | 35,062         | - 146,429         |
| Total with Strategic / Environmental constraints | 21,453            | 423,502       | 9,127         | 35,062         | - 146,429         |
| Total with Other local constraints               | -                 | -             | -             | -              | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

### Rest of Tower Hamlets

- 6.57. The Rest of Tower Hamlets area includes parts of the City Fringe in the west of the PMA, as well as a range of locations that are expected to see significant growth, including:
- Aldgate: 1,230 dwellings to 2025
  - Bethnal Green: 1,200 dwellings
  - Limehouse: 1,800 dwellings
  - Shadwell: 710 units
  - Shoreditch: 1,840 units
  - Spitalfields: 2,850 units
  - Wapping: 1,470 units; and
  - Whitechapel: 1,340 units.
- 6.58. In total, we estimate that this area could see 21,000 additional dwellings and up to 750,000sq.m of office floorspace, most of which would be located in the City Fringe.

**Table 24. Development Potential in Rest of Tower Hamlets**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 8,809             | 559,325       | 12,323        | 65,608         | - 64,548          |
| With permission, not started                     | 3,990             | 174,915       | 4,190         | 73,493         | - 70,954          |
| Allocated, no permission                         | 1,791             | 9,688         | 9,688         | -              | - 6,591           |
| Not allocated, no permission                     | 6,388             | - 898         | 39,887        | 20,555         | - 41,329          |
| of which with planning policy constraints        | 218               | -             | -             | -              | -                 |
| Total  | 20,978            | 743,031       | 66,088        | 159,656        | - 183,422         |
| Total with Strategic / Environmental constraints | 5,810             | 89,822        | - 74          | 19,018         | - 37,976          |
| Total with Other local constraints               | -                 | -             | -             | -              | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Lower Lee Valley

- 6.59. The Further Alterations to the London Plan describes this area as the most important single strategic regeneration initiative for London and an urban renewal challenge of global significance. The Lower Lee forms the axis linking two nationally important growth corridors: the London-Stansted-Cambridge-Peterborough corridor to the north and the Thames Gateway to the east.
- 6.60. A new Metropolitan centre will be focused on Stratford town centre and a mix of employment, housing and open spaces across the Lower Lee Valley. Stratford is recognised as one of the capital's two strategic office centres beyond central London and a potential Outer London Strategic Development Centre with particular potential for office development. The area will contain a significant new residential community providing at least 32,000 new homes and potentially up to 40,000. There is estimated capacity for up to 50,000 new jobs including over 30,000 predominantly office jobs at Stratford City.
- 6.61. Building on over a decade's worth of regeneration and the positive impact of Westfield Stratford City and the Olympic Park, this metropolitan centre is set to evolve further with the delivery of a new community of over 2,800 homes in East Village, the TIQ Stratford City development creating 500,000sq.m of new work space, as well as other significant mixed use sites at Chobham Farm and Strand East.
- 6.62. Coupled with new transport infrastructure, this enhanced residential and commercial offer is set to be accompanied by higher education provision including UEL, Birkbeck and UCL, who have established a vision for the creation of a new university quarter on the Carpenters Estate. This cluster of universities and their attendant support services will be critical to the establishment of a new knowledge economy across East London.
- 6.63. Any new development and infrastructure brought forward in this area must avoid adverse effects on any European site of nature conservation importance (to include SACs, SPAs, Ramsar, proposed and candidate sites). There is also the issue of the need to manage the release of appropriate industrial sites for mixed-use development, whilst retaining key industrial land, particularly in the Strategic Industrial Locations.
- 6.64. We estimate that there is potential for 35,000 new homes in this location at present, with up to 500,000sq.m of office floorspace, alongside additional retail and leisure floorspace.

**Table 25. Development Potential in Lower Lee Valley**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 9,377             | 462,183       | 9,664         | 146,627        | - 27,524          |
| With permission, not started                     | 16,161            | 42,574        | 15,449        | 51,894         | 2,348             |
| Allocated, no permission                         | 4,479             | - 1,580       | 7,795         | 4,568          | - 38,115          |
| Not allocated, no permission                     | 5,085             | - 4,267       | 15,356        | 8,943          | - 44,753          |
| of which with planning policy constraints        | 249               | - 6,896       | -             | -              | - 3,448           |
| Total  | 35,102            | 498,910       | 48,263        | 212,032        | - 108,044         |
| Total with Strategic / Environmental constraints | 11,223            | 7,455         | 15,376        | 17,924         | - 74,276          |
| Total with Other local constraints               | 548               | - 2,535       | 194           | 164            | 2,515             |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Royal Docks

- 6.65. There have been repeated attempts to regenerate Royal Docks to which there have been some successes. The University of East London now has more than 23,000 students and is positioning itself as an international campus with exciting plans for future expansion. City Airport, which started as a tiny venture, is now London's premier business airport. ExCeL, which started as an exhibition centre, is now developing into a world-class convention centre feeding a growing hotel and entertainment sector.
- 6.66. However the market response to these initiatives has been limited. Housing has been opportunistic, of variable quality and not supported by the range of local centres needed to create sustainable neighbourhoods. Development has been disconnected, ad hoc, and in many cases, has not been high quality or as enduring as would have been hoped.
- 6.67. The Enterprise Zone at Royal Docks is expected to be able to accommodate at least 6,000 jobs. Joint public and private investment will create London's first Asian business park. Key issues to be addressed include maximising the benefits of the Crossrail station at Custom House, future growth of London City Airport, capitalising on the success of ExCel and its potential as a focus for further visitor/business related growth and improving connections to London Riverside. For Thameside West, strategic development principles are set out in the adopted Lower Lee Valley OAPF. Thameside East, West and Beckton Waterfront are also key locations for river-related industries. The management of safeguarded wharves, including scope for consolidation, will be an important issue in realising the potential of these sites.
- 6.68. London City Airport is a major employer within the area but the operation of the airport has impacts on the local environment and also could constrain some types of development in the Public Safety Zone to the east and west of the runway.
- 6.69. A number of wharves on Thameside are safeguarded in the London Plan (and by a Direction from the Secretary of State), protecting them from development which could prejudice their future use for transporting goods by river. However, the wharves are spaced out across the river frontage and the land is in many cases underused.
- 6.70. Key sites in this area include:
- **Silvertown Quays.** Residential-led mixed use with potential for leisure and hospitality and green industries including research and development, building on the visitor attraction cluster at the western end of the docks.
  - **Minoco Wharf.** The release of land designated as a Strategic Industrial Location at Thameside West up to the eastern boundary of Lyle Park, and west of Lyle Park adjacent to North Woolwich Road, (18 hectares) will assist in the development of a new neighbourhood at West Silvertown.



- **Thames Wharf.** If it can be demonstrated that either scheme can be delivered, this could provide the opportunity to develop new employment, leisure/ tourism and residential uses grouped around a potential new DLR station where passive provision is in place, subject to addressing the constraints on the site, including the Silvertown Crossing safeguarding area, and the removal of the wharf safeguarding by the Secretary of State.
- **Albert Basin.** New housing around Albert Basin will consolidate existing residential development, with a new local centre focused around Gallions Reach DLR station, providing day-to-day shopping, health, education and community uses. North of Armada Way new development will be employment -led and consistent with Strategic Industrial Locations (SIL). Residential development to be focused around southern end of the site.
- **Canning Town Central.** Expanded District Centre abutting a transport hub, moving towards a Major Centre in composition and scale, within a revised boundary to comprise retail (to include anchor food store of up to 6,500 sq m net, and significant comparison floorspace - up to 25,000 sq m net) leisure and civic space making use of the more pleasant street environment created by the re-modelling of the junction and public realm, residential, and community uses.

6.71. We estimate that there is potential for over 18,000 units in the Royal Docks area, with almost 190,000sq.m of office floorspace.

**Table 26. Development Potential in Royal Docks**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 2,294             | 8,391         | 37,669        | 39,724         | 7,233             |
| With permission, not started                     | 3,727             | 11,108        | 5,074         | 26,558         | - 44,999          |
| Allocated, no permission                         | 6,068             | 52,720        | 11,789        | 15,393         | - 24,527          |
| Not allocated, no permission                     | 6,185             | 115,906       | - 25,934      | 26,002         | - 6,892           |
| of which with planning policy constraints        | 94                | - 5,691       | -             | -              | 854               |
| Total  | 18,274            | 188,126       | 28,599        | 107,677        | - 69,185          |
| Total with Strategic / Environmental constraints | 18,249            | 188,126       | 837           | 84,250         | - 75,320          |
| Total with Other local constraints               | 1,157             | 2,882         | - 6,157       | 1,092          | - 2,620           |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Rest of Newham

6.72. The Rest of Newham area is expected to see less change than the Royal Docks and Lower Lea Valley. Approximately 3,000 additional dwellings will be developed in this area, with a focus around key centres including:

- Forest Gate town centre will become an attractive and vibrant centre, with cafes, community and cultural facilities and independent shops together with a small to medium-sized foodstore to add to the mix and quality of offer.
- Manor Park will see most change around the new Crossrail station which will gradually redefine and reinvigorate Manor Park local centre, creating a more significant focus to the area for the local community.
- East Ham town centre will continue to be important within the borough as a whole, with recognised heritage assets, employment, civic and community spaces, good accessibility by bus

6.73. Constraints on these sites are relatively limited given the small size of most of the development opportunities.

**Table 27. Development Potential in Rest of Newham**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 31                | 758           | - 401         | 2,154          | -                 |
| With permission, not started                     | 387               | 567           | 3,253         | 1,349          | 10,968            |
| Allocated, no permission                         | 958               | 465           | - 3,654       | 2,154          | -                 |
| Not allocated, no permission                     | 2,240             | - 2,595       | 5,407         | 5,634          | - 1,482           |
| of which with planning policy constraints        | 535               | -             | 3,988         | 2,194          | - 5,730           |
| Total  | 3,616             | - 805         | 4,605         | 11,291         | 9,486             |
| Total with Strategic / Environmental constraints | 1,333             | - 1,805       | - 3,105       | 1,187          | 7,299             |
| Total with Other local constraints               | 600               | 2,271         | 698           | 967            | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Barking

- 6.74. The Barking Town Centre AAP states that, in addition to providing 6,000 new homes (some of which have already been built) for all sections of the community, the town centre will serve as the retail, leisure, commercial and training centre for Borough residents and grow in vitality and importance as it plays its full part in the expansion of the Thames Gateway. In line with the conclusions of the Barking Town Centre Retail Study Update 2009, the Council considers that up to 9,000 sq. m. (net) of additional shopping floorspace should be provided in the town centre in the period up to 2016. Demand for office development is likely to be limited, although there is potential for a major hotel and leisure use.
- 6.75. Key sites for development in this area include the redevelopment of the Gascoigne Estate, Fresh Wharf Estate and the Abbey Retail Park. We estimate there is now potential for over 4,400 units, along with some small amounts of office and retail floorspace that could come forward subject to market conditions.

**Table 28. Development Potential in Barking**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 75                | 481           | 5,636         | -              | - 490             |
| With permission, not started                     | 1,380             | -             | 4,194         | 11,614         | - 41,109          |
| Allocated, no permission                         | 1,650             | - 483         | - 15,472      | 6,183          | - 793             |
| Not allocated, no permission                     | 1,303             | 7,329         | 9,739         | 8,300          | - 14,666          |
| of which with planning policy constraints        | 469               | -             | -             | -              | - 14,666          |
| Total  | 4,408             | 7,326         | 4,097         | 26,096         | - 57,058          |
| Total with Strategic / Environmental constraints | 2,823             | - 971         | - 3,701       | 2,613          | - 55,068          |
| Total with Other local constraints               | 375               | 8,300         | 11,066        | 8,300          | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Barking Riverside

- 6.76. Barking Riverside is a 180-hectare site, and is a joint venture between the Homes and Communities Agency (HCA) and Bellway Homes plc. Bellway act as the lead developer for many of the new homes on site and project manage the infrastructure works for the new community on behalf of the joint venture. The objective is to deliver serviced development plots for 10,800 new, mixed-tenure homes to accommodate 26,000 people, together with healthcare, shopping, community and leisure facilities and environmental benefits, new public transport links and employment opportunities.
- 6.77. Many of the attendant facilities – a primary school, places of worship, healthcare facilities and social enterprise units – will be within the new Rivergate Centre, which opened in September 2011, shortly before the first 350 homes were ready for occupation. These are set to be joined by 700 more during 2013–14: in total, 10% of the target set a decade ago.

- 6.78. The long delay in implementation was due in part to the difficulty and cost of preparing the land, much of which is marshy or rendered undevelopable by the overhead power lines that cross the site. The other main problem is access. For a long time the plan was to extend the Docklands Light Railway from a point close to its present Beckton terminus, across a wilderness of sewage treatment works and a crossing of the lower Roding Valley (Barking Creek), into the new development. But this proved technically difficult and expensive, leading to pressure to increase development densities to help pay the cost. The DLR extension was finally abandoned, replaced by an interim scheme for a Bus Rapid Transit link from Barking station, the first stage of which opened through Barking town centre in February 2010, completed by a second stage leading directly into the heart of the development in September 2013. There is a long-term plan to electrify the London Overground route from Gospel Oak to Barking and, which has now been announced in the 2013 Comprehensive Spending Review. This would potentially allow an extension from Barking station on to the site.
- 6.79. As well as Barking Riverside, The Core Strategy identifies Dagenham Dock and South Dagenham as key sites, both of which are within this PMA. In total we estimate that there is capacity for almost 16,000 units in this area, the majority of which have constraints related to flooding, land remediation and local access.

**Table 29. Development Potential in Barking Riverside**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 10,829            | 11,250        | 18,000        | 8,900          | 41,334            |
| With permission, not started                     | 942               | 2,395         | - 171         | - 1,053        | 78,870            |
| Allocated, no permission                         | 2,205             | -             | - 6,542       | 5,669          | - 13,192          |
| Not allocated, no permission                     | 1,958             | -             | 2,377         | -              | - 35,133          |
| of which with planning policy constraints        | -                 | -             | -             | -              | -                 |
| Total  | 15,934            | 13,645        | 13,663        | 13,516         | 71,879            |
| Total with Strategic / Environmental constraints | 12,371            | 13,313        | 13,834        | 8,900          | 19,365            |
| Total with Other local constraints               | 10,800            | 11,250        | 18,000        | 8,900          | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

### Rest of Barking & Dagenham

- 6.80. Most of the sites in the Rest of Barking & Dagenham are relatively small, although there is still potential for over 5,000 units across 50 sites. The largest single site is the University of East London campus on Longbridge Road, which has permission for over 1,000 units. Very few site constraints were recorded in this area, with some minor flooding and air pollution concerns recorded at three sites.

**Table 30. Development Potential in Rest of Barking & Dagenham**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 1,733             | -             | 736           | -              | -                 |
| With permission, not started                     | 1,735             | 6,586         | 16,112        | 3,309          | 17,828            |
| Allocated, no permission                         | 296               | - 871         | - 3,715       | 1,639          | -                 |
| Not allocated, no permission                     | 1,359             | - 1,415       | - 5,136       | -              | - 36,306          |
| of which with planning policy constraints        | 1,155             | -             | - 5,154       | -              | - 36,306          |
| Total  | 5,123             | 4,301         | 7,997         | 4,948          | - 18,478          |
| Total with Strategic / Environmental constraints | 227               | 759           | - 3,687       | -              | -                 |
| Total with Other local constraints               | -                 | -             | -             | -              | -                 |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## London Riverside

- 6.81. The Havering section of London Riverside includes the two major sites of Beam Park and Rainham West, which are expected to accommodate 1,000 and 1,300 units respectively.
- 6.82. Any new development and infrastructure brought forward in this area must avoid adverse effects on any European site of nature conservation importance (to include SACs, SPAs, Ramsar, proposed and candidate sites). Substantial improvements in public transport will also be needed, building on plans for increased capacity on the C2C rail line, exploring the potential for additional stations, for example at Beam Park along the current rail corridor, and extended bus services. It is also imperative to plan for long term flood risk management. Access to rail, river wharves, trunk roads and existing warehousing clusters support the provision of strategically important logistics facilities, including inter-modal freight transfer (potentially at Renwick Road/Ripple Road), as well as consolidating the strengths of modern manufacturing excellence.
- 6.83. We estimate that the Havering section of London Riverside has potential for 3,500 units, with some very small amounts of office, retail and leisure floorspace.

**Table 31. Development Potential in London Riverside**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 23                | -             | -             | -              | - 14,636          |
| With permission, not started                     | 1,283             | 940           | -             | -              | 7,450             |
| Allocated, no permission                         | 1,141             | -             | 597           | 961            | -                 |
| Not allocated, no permission                     | 1,068             | -             | -             | -              | - 5,235           |
| of which with planning policy constraints        | 28                | -             | -             | -              | -                 |
| Total  | 3,515             | 940           | 597           | 961            | - 12,421          |
| Total with Strategic / Environmental constraints | 3,287             | -             | 597           | 961            | - 550             |
| Total with Other local constraints               | 1,283             | -             | -             | -              | - 550             |

Source: Atkins. Note: Negative figures relate to a net loss in capacity

## Rest of Havering

- 6.84. The Rest of Havering area contains 100 sites with total development capacity of over 11,500 units. Although the main focus within this area will be in Romford Town Centre, there are a large number of small and medium sized sites located throughout the Borough. A large proportion of capacity is expected to come forward on public sector sites, such as Harold Wood Hospital (800 units) and St Georges Hospital (90 units).
- 6.85. The majority of sites do not have significant constraints, although there are issues related to fragmented ownership at the Station Gateway site, which is a key focus for development related to Crossrail in Romford Town Centre.

**Table 32. Development Potential in Rest of Havering**

| Status   | Residential Units | Office (sq.m) | Retail (sq.m) | Leisure (sq.m) | Industrial (sq.m) |
|--|-------------------|---------------|---------------|----------------|-------------------|
| With permission, started                         | 43                | -             | -             | -              | -                 |
| With permission, not started                     | 834               | 96            | 10,802        | 8,081          | - 13,609          |
| Allocated, no permission                         | 2,047             | 13,765        | 8,423         | 9,843          | - 4,227           |
| Not allocated, no permission                     | 8,658             | -             | - 3,526       | 3,260          | - 54,653          |
| of which with planning policy constraints        | 1,956             | -             | -             | -              | - 37,841          |
| Total  | 11,582            | 13,861        | 15,699        | 21,184         | - 72,489          |
| Total with Strategic / Environmental constraints | 3,193             | -             | - 3,817       | 4,930          | - 14,722          |
| Total with Other local constraints               | 1,474             | 10,365        | 3,939         | 8,085          | - 8,826           |

Source: Atkins. Note: Negative figures relate to a net loss in capacity



# 7. Changes in Connectivity from Crossing Options

## Summary

- Using the framework set out in Chapter 3, we have measured changes in connectivity resulting from all five crossing options against the reference case. The measurement of connectivity includes the change in access to jobs, workforce, adult population and businesses;
- **Under all options the average access to jobs, economically active, and the adult population is expected to increase**, providing a net additional benefit across the Study Area as a whole;
- **Under all options, the increase in access to jobs is greatest on the south side of the River**, especially in Greenwich and Bexley, and could be a significant driver of residential development. Although rail based public transport usage is relatively high in Greenwich Peninsula, road based trips are still significant in much of the rest of the Borough. The step change in access to jobs, especially those that are not particularly easily accessible from the rail-based public transport network, could help to equalise the difference in property prices with those on the northern side of the River and bring forward development significantly more quickly than its current pace.
- **Conversely, increase in access to the labour force is greatest on the north side of the River**, especially in Newham, which could drive increased business investment. The increase in the economically active population accessible to Newham, especially southern parts of the Borough including the Royal Docks, could be an attractive prospect for businesses. The area is likely to become more attractive for construction companies, who are already significantly constrained by the lack of river crossings, as well as some light industrial and even some office based development in locations which are less accessible by the public transport network but which still have significant capacity, towards the east of the Borough.
- However, **a slight decrease in access to jobs as a result of greater traffic on this side of the river could result in slight negative impacts in terms of residential development**. Given the size of the decrease in access to jobs (up to 10% in Scenario 4), these impacts are unlikely to be significant, especially when greater access to services south of the River and the enhanced sense of place facilitated by the crossings are taken into account. This also needs to be considered alongside the relatively high rates of public transport usage, as well as the fact that TfL are currently identifying measures to mitigate any potential negative impact from increased traffic flow;
- The modelled flow of commuters to the north side of the River to work in the greater number of employment opportunities available again highlights the imbalance between both sides of the river. **Improved river crossings are imperative to enable residential development on the south side of the river to access employment opportunities on the north**. Without additional capacity there is a real risk the rate of development on both sides of the river will be reduced.
- **Scenarios 4 and 6 are likely to create a step change in connectivity to Thamesmead and Belvedere, increasing the potential for development significantly**. Both Thamesmead and Belvedere are some of the most inaccessible locations in London, with very low numbers of jobs and people accessible within the catchments we have set out in this study. Both Scenarios 4 and 6 include a new road bridge that would directly link Thamesmead and Belvedere with either Gallions Reach or Rainham, opening up access to north east London and creating a step change in connectivity in these locations.

- Taking into account changes in connectivity, the sensitivity to road based connectivity (Chapter 4) and wider issues of resilience and improvements to the sense of place, we have set out high level estimates of the degree of change at each PMA and for each floorspace type. This is a key informant of the development scenarios in Chapter 8.

## Introduction

- 7.1. Chapter 3 identified the process by which improvements in transport connectivity can improve the attractiveness of an area, increase land values and facilitate development. Changes in road based connectivity facilitated by each of the crossing options are therefore key to understanding the differences in development potential under each Scenario (as set out in Chapter 2).
- 7.2. This section provides an analysis of the changes in highway connectivity that would be facilitated by each of the crossing options.

## Method

- 7.3. The research in Chapter 3 identified that connectivity is essentially a measurement of the number of potential connections between individuals and firms, with greater numbers of potential connections driving choice, competition, productivity and economic activity. Connectivity can therefore be measured by the number of people/firms available within a travel time that is acceptable to the individual/firm.
- 7.4. Chapter 3 identified that changes in connectivity can therefore be measured in its simplest form by recording the changes in highway access to:
- **Employee access to jobs:** which is the key locational criteria in housing decisions (within a defined region);
  - **Business access to the workforce (economically active population):** The economically active population is a proxy for the potential size of the labour force, and therefore a measure of the attractiveness of a location to businesses, especially sectors which require a highly qualified labour force, including many office based sectors;
  - **Businesses access to other businesses:** This can be used as a proxy for the number of potential businesses to business customers, and for the potential range of suppliers, and is therefore a measure of the attractiveness of a location to businesses;
  - **Business access to the adult population;** which is a proxy for the number of potential business to consumer customers, and is therefore a measure of the attractiveness of a location to these types of businesses.
- 7.5. The change in access to each of the above as a result of each particular river crossing (when compared against the reference case) therefore gives us the change in connectivity which can inform the assessment of future attractiveness for development as part of the long term development scenarios. The analysis can be performed for all Transport Zones (as defined by TfL's ELHAM model) to give a granular analysis of connectivity changes within the Study Area. The analysis uses model runs of the AM peak in 2021 which take account of projected changes in traffic growth and initial estimates of the spatial distribution of population and employment which drive the demand for road trips.
- 7.6. In order to measure the change of each of these variables that are accessible within an acceptable travel time, we have defined catchment areas for each:
- **Access to Jobs:** is defined as the number of jobs that are accessible **within 37 minutes** travel time by car **from** each transport zone. This is the average travel to work time for all eight Boroughs as identified from the TfL's London Travel Demand Survey;

- **Access to Economically Active Population:** is defined as the number of economically active people by car **to** each transport zone. Again, this is the average travel to work time for all eight Boroughs as identified from TfL's London Travel Demand Survey;
- **Access to Businesses:** is defined as the number of businesses that are accessible within 45 minutes by car **from** each transport zone. Although no data is available to support this, we feel this is an appropriate catchment for the Study Area;
- **Access to Adult Population:** is defined as the total adult population accessible within 30 minutes by car **to** each transport zone. This is a typical distance shoppers are willing to travel as identified by a high level review of retail studies in East London.

## Results by Option

7.7. This section presents the results of the connectivity mapping in the following ways:

- A table shows the average change in access to each variable considered for each of the crossing options at the PMA level. This table shows the absolute change in access to each variable as well as the percentage change;
- A set of figures shows the change in access to each variable at the Transport Zone level (for the whole Study Area) which provides a much more granular analysis of changes at the local level. Areas shaded blue are those which will see an increase in access to the particular variable (with darker blue indicating greater access), and areas shaded pink are those which will see a decrease in access to the particular variable (with darker pink/red indicating lesser access). The scales are consistent across each option but vary according to the variable being measured.

7.8. The following text provides commentary for the changes in access to each of the four variables, whilst the section at the end of this chapter interprets these into potential impacts on the attractiveness of each PMA for development.

## Scenario 2 – Silvertown Tunnel Only

7.9. Key results from Scenario 2 are:

- There will be a net positive impact across the Study Area, with the average number of additional jobs accessible within 37 minutes increasing by 64,000 (5%) on the reference case. The economically active population accessible within 37 minutes will increase by an average of 38,000 (2%) and the adult population accessible within 30 minutes will increase by an average of 28,500 (2%);
- Most of the Borough of Greenwich, as well as large sections of southern Bexley, will see the greatest increase in access to jobs. The average number of jobs accessible will increase by 440,000 in Greenwich Peninsula (64%) and 323,000 in Woolwich (89%), as commuters can drive further into North East London boroughs as a result of the additional cross river capacity at Silvertown Tunnel;
- However, the additional traffic heading north into Newham from South East London Boroughs will result in a slight increase in congestion on the north side of the River, thereby reducing the number of jobs accessible from southern parts of Newham, particularly the Royal Docks. However, the reduction in accessible jobs is small (8%) compared to the increase in accessible jobs in Greenwich Peninsula (64%). The purpose of the Silvertown Tunnel scheme is to relieve congestion associated with Blackwall Tunnel and create smoother, more reliable journeys. It will therefore be important to address any localised traffic impacts as part of the overall design;
- The increase in ability to travel north of the River means that most businesses in Newham, Tower Hamlets and parts of Barking will have access to a larger labour force (16% in the Isle of Dogs, 17% in Lower Lea Valley and 18% in the Royal Docks). This will also provide a



potentially larger retail catchment, with Royal Docks seeing a 7% increase in the total adult population accessible by road;

- Bexley and the Isle of Dogs will also see an increase in the potential retail catchment population (7% increase and 8% increase respectively);
- Parts of Lewisham will also see some modest increases in the number of accessible jobs, with the Lewisham & Catford PMA having an average of 85,000 additional accessible jobs (12%) and Rest of Lewisham seeing an average of 120,000 additional jobs (16%);
- The impacts on Southwark, other parts of Tower Hamlets and Havering are likely to be negligible;

**Table 33. Impact of Scenario 2 – Silvertown Only**

| PMA                              | Jobs          |           | Ec Active     |           | 16+           |           | Businesses  |           |
|----------------------------------|---------------|-----------|---------------|-----------|---------------|-----------|-------------|-----------|
|                                  | No.           | %         | No.           | %         | No.           | %         | No.         | %         |
| Canada Water & Rotherhithe       | 22,807        | 1%        | 8,566         | 1%        | - 10,595      | -1%       | - 986       | 0%        |
| Rest of Southwark                | 32,520        | 1%        | - 2,138       | 0%        | - 9,223       | 0%        | - 693       | 0%        |
| Deptford New Cross               | 64,126        | 3%        | - 13,739      | -1%       | - 38,161      | -2%       | - 1,900     | -1%       |
| Lewisham & Catford               | 85,672        | 12%       | 3,499         | 0%        | 8,302         | 0%        | - 25        | 0%        |
| Rest of Lewisham                 | 120,532       | 16%       | - 8,156       | -1%       | - 9,953       | -1%       | - 1,493     | -1%       |
| Greenwich Peninsula and Charlton | 438,066       | 64%       | 2,360         | 0%        | 60,882        | 3%        | 3,701       | 2%        |
| Woolwich                         | 323,268       | 89%       | - 45,903      | -4%       | - 24,452      | -2%       | - 6,582     | -3%       |
| Thamesmead                       | 138,792       | 56%       | - 20,954      | -3%       | 37,447        | 5%        | - 3,476     | -3%       |
| Rest of Greenwich                | 378,152       | 69%       | - 5,372       | 0%        | 56,760        | 3%        | - 917       | 0%        |
| Erith and Belvedere              | 16,021        | 7%        | - 1,555       | 0%        | 43,913        | 8%        | 1,598       | 2%        |
| Rest of Bexley                   | 190,210       | 57%       | 13,795        | 2%        | 71,033        | 7%        | 829         | 1%        |
| Isle of Dogs                     | - 80,448      | -3%       | 162,440       | 16%       | 160,978       | 8%        | - 106       | 0%        |
| Rest of Tower Hamlets            | - 6,673       | 0%        | 63,923        | 5%        | 47,025        | 2%        | - 1,218     | 0%        |
| Lower Lea Valley                 | - 59,326      | -2%       | 202,886       | 17%       | 58,538        | 3%        | 756         | 0%        |
| Royal Docks                      | - 141,383     | -8%       | 204,369       | 18%       | 154,336       | 7%        | 353         | 0%        |
| Rest of Newham                   | - 71,980      | -5%       | 115,040       | 11%       | 34,252        | 2%        | - 1,144     | 0%        |
| Barking                          | 19,883        | 2%        | 101,685       | 9%        | 28,251        | 1%        | - 2,578     | -1%       |
| Barking Riverside                | - 14,130      | -2%       | 67,007        | 7%        | 26,487        | 2%        | - 994       | -1%       |
| Rest of B&D                      | - 5,176       | -1%       | 43,389        | 5%        | 19,964        | 2%        | - 500       | 0%        |
| London Riverside                 | - 2,014       | -1%       | 55,515        | 6%        | 2,939         | 0%        | - 1,271     | -1%       |
| Rest of Havering                 | - 587         | 0%        | 1,748         | 0%        | - 1,598       | 0%        | 1,630       | 2%        |
| <b>Study Area</b>                | <b>64,264</b> | <b>5%</b> | <b>38,266</b> | <b>3%</b> | <b>28,490</b> | <b>2%</b> | <b>-535</b> | <b>0%</b> |

Figure 32. Change in Access to Jobs Under Scenario 2

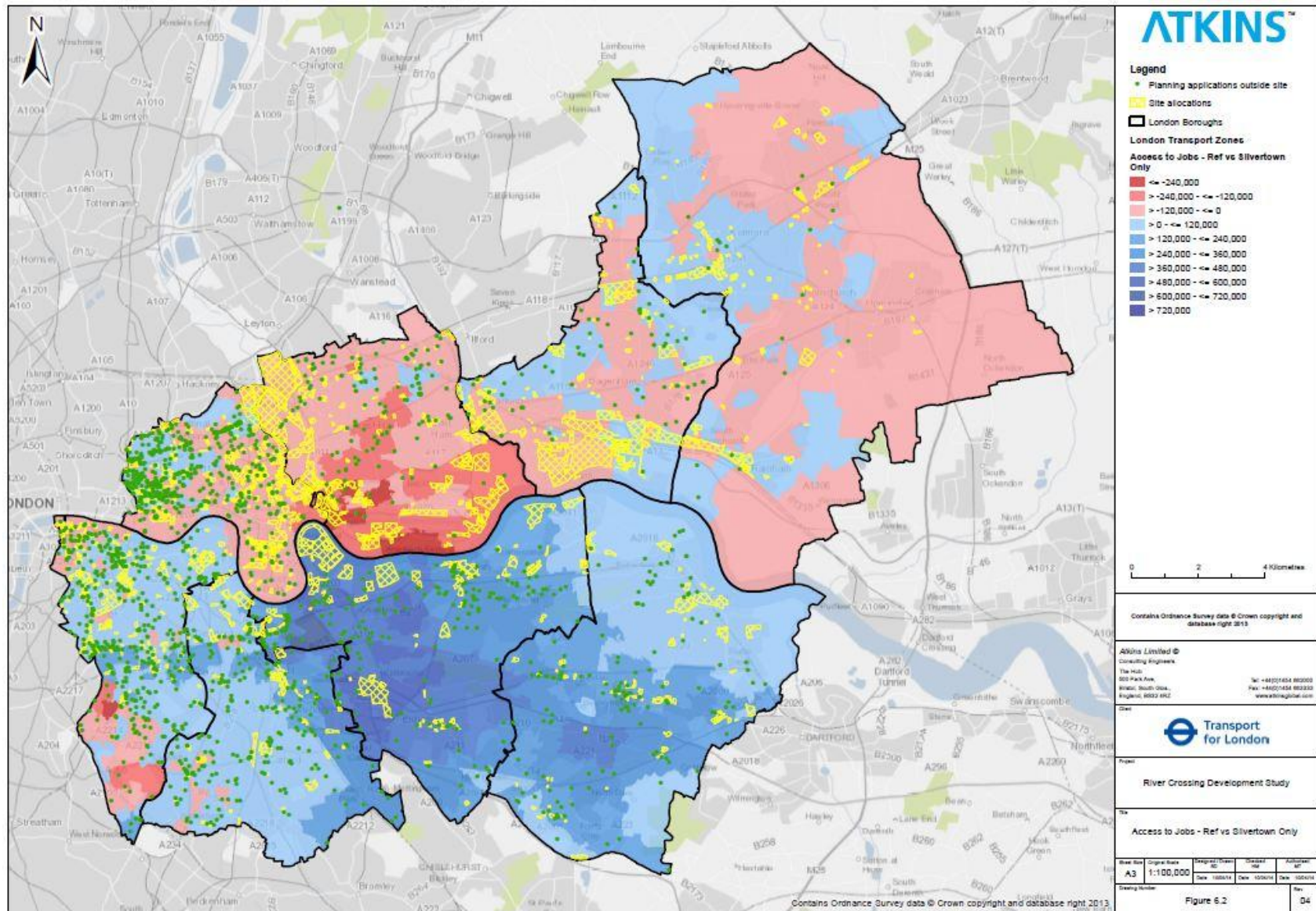


Figure 33. Change in Access to Economically Active Population – Scenario 2

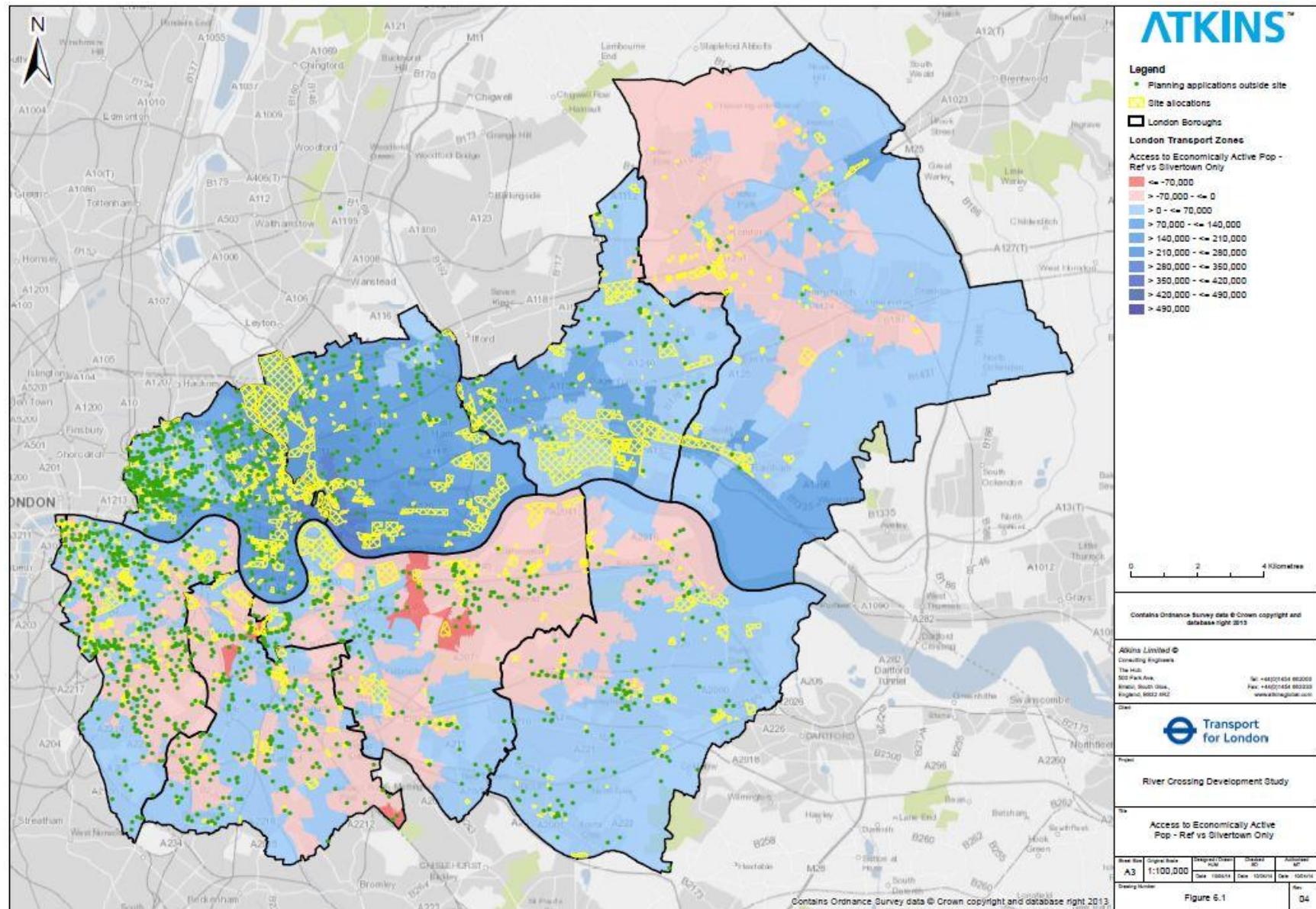


Figure 34. Change in Access to Adult Population - Scenario 2

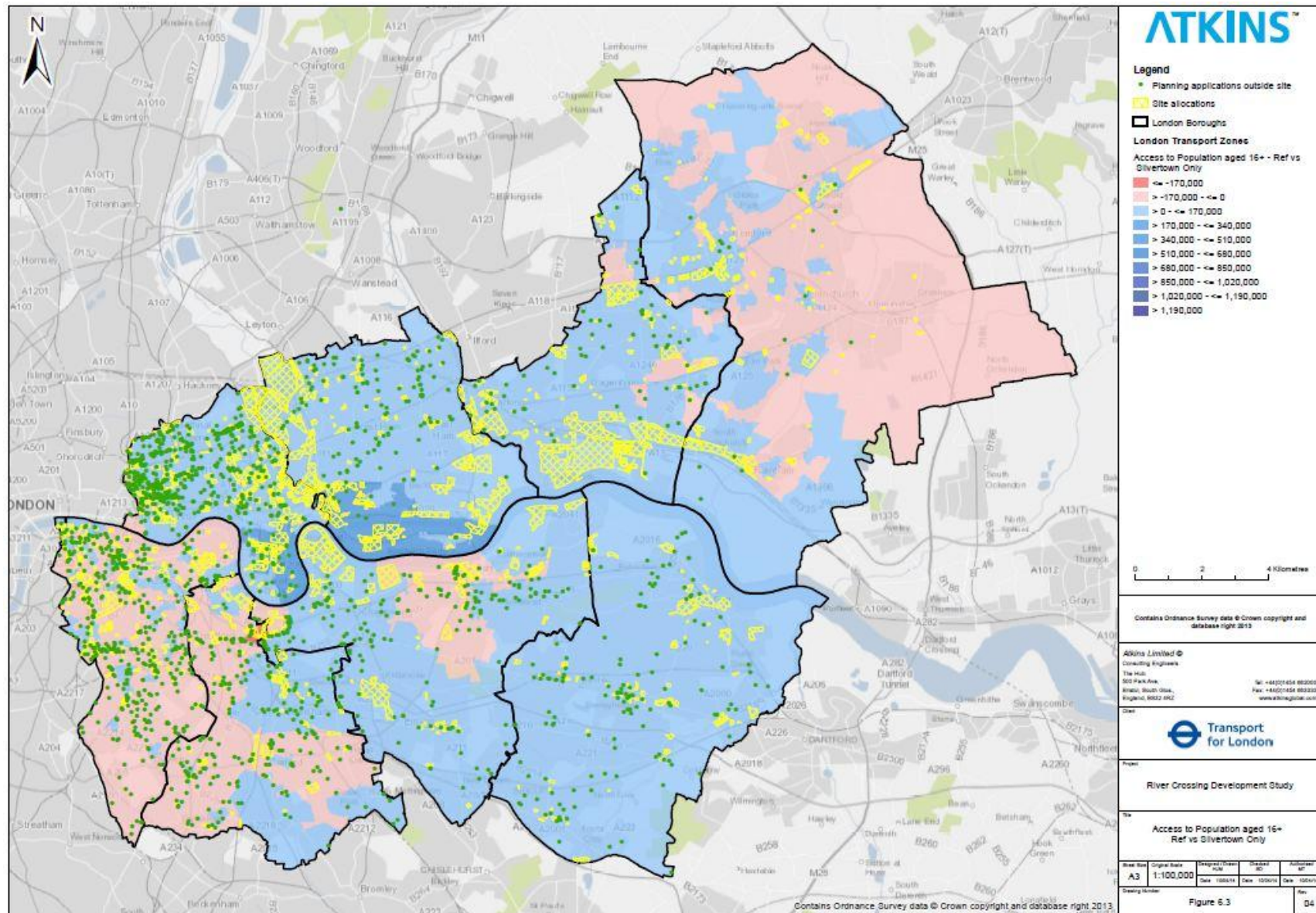
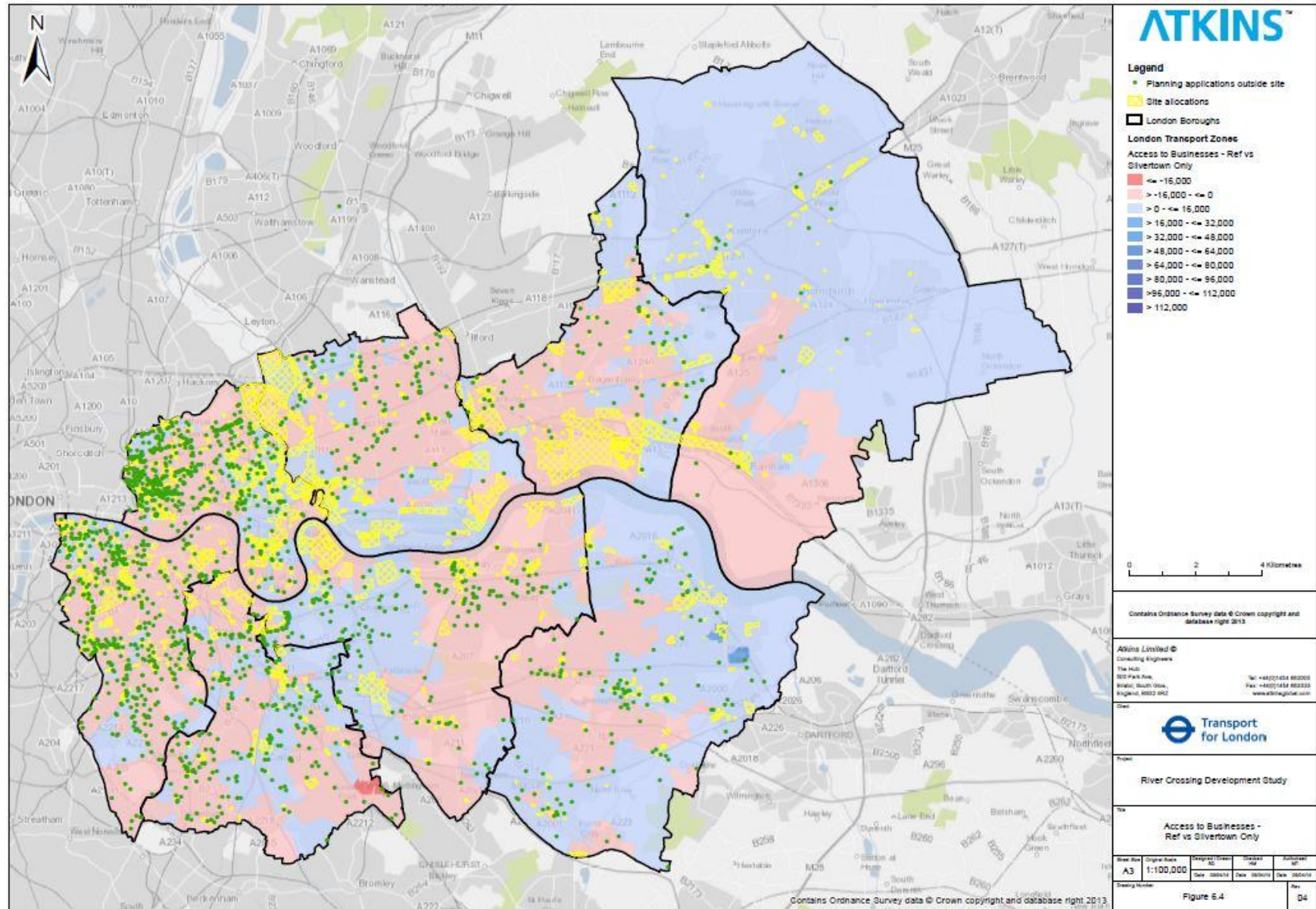


Figure 35. Change in Access to Businesses – Scenario 2



### Scenario 3 – Silvertown + Gallions Ferry

7.10. The impacts from Scenario 3 will be almost the same as Scenario 2, with the following exceptions:

- Woolwich, Thamesmead and Erith & Belvedere will see a greater increase in the number of jobs accessible (increasing from 89% to 116%, 56% to 109% and 7% to 40% respectively when compared to Scenario 2);
- The average number of accessible economically active people is expected to increase from 0% to 14% in Erith and Belvedere, and from 18% to 26% in Royal Docks, when compared with Scenario 2;
- Erith & Belvedere will also see a greater accessible adult population, rising from an 8% increase in Scenario 2, to 23% increase in this Scenario;
- Erith & Belvedere and Thamesmead will also see a greater number of businesses accessible, rising from 2% to 17% in Erith & Belvedere and from -3% to 11% in Thamesmead when compared with Scenario 2.

**Table 34. Impact of Scenario 3**

| PMA                            | Jobs      |      | Ec Active |     | 16+      |     | Businesses |     |
|--------------------------------|-----------|------|-----------|-----|----------|-----|------------|-----|
|                                | No.       | %    | No.       | %   | No.      | %   | No.        | %   |
| Canada Water & Rotherhithe     | 22,193    | 1%   | 20,903    | 2%  | 2,544    | 0%  | - 1,049    | 0%  |
| Rest of Southwark              | 49,893    | 2%   | 1,543     | 0%  | - 7,646  | 0%  | - 634      | 0%  |
| Deptford New Cross             | 69,680    | 3%   | - 9,213   | -1% | - 22,839 | -1% | - 2,211    | -1% |
| Lewisham & Catford             | 85,607    | 12%  | 3,461     | 0%  | 24,893   | 1%  | 239        | 0%  |
| Rest of Lewisham               | 124,420   | 16%  | - 7,765   | -1% | 18,246   | 1%  | - 541      | 0%  |
| Greenwich Peninsula & Charlton | 446,311   | 65%  | 8,681     | 1%  | 81,427   | 4%  | 3,610      | 1%  |
| Woolwich                       | 419,638   | 116% | 15,002    | 1%  | 88,818   | 6%  | 2,194      | 1%  |
| Thamesmead                     | 268,520   | 109% | 68,866    | 9%  | 148,406  | 21% | 11,970     | 11% |
| Rest of Greenwich              | 391,669   | 72%  | 667       | 0%  | 68,457   | 4%  | 1,028      | 0%  |
| Erith and Belvedere            | 95,139    | 40%  | 89,314    | 14% | 129,615  | 23% | 13,567     | 17% |
| Rest of Bexley                 | 216,296   | 65%  | 25,571    | 3%  | 79,628   | 8%  | 3,669      | 3%  |
| Isle of Dogs                   | - 85,582  | -4%  | 181,629   | 18% | 172,214  | 8%  | - 477      | 0%  |
| Rest of Tower Hamlets          | - 16,686  | -1%  | 69,999    | 6%  | 57,580   | 3%  | - 1,562    | -1% |
| Lower Lea Valley               | - 77,882  | -3%  | 211,712   | 18% | 65,453   | 3%  | 821        | 0%  |
| Royal Docks                    | - 124,986 | -7%  | 302,003   | 26% | 270,193  | 13% | 189        | 0%  |
| Rest of Newham                 | - 55,556  | -4%  | 148,416   | 14% | 70,279   | 4%  | - 198      | 0%  |
| Barking                        | - 13,168  | -1%  | 163,305   | 14% | 89,401   | 5%  | - 1,698    | -1% |
| Barking Riverside              | - 8,189   | -1%  | 92,580    | 10% | 33,994   | 2%  | 406        | 0%  |
| Rest of B&D                    | - 13,512  | -3%  | 53,458    | 6%  | 19,090   | 2%  | 419        | 0%  |
| London Riverside               | - 2,885   | -1%  | 70,351    | 7%  | 1,862    | 0%  | - 599      | 0%  |
| Rest of Havering               | - 1,561   | -1%  | 6,152     | 1%  | - 1,146  | 0%  | 1,971      | 2%  |
| Study Area                     | 77,189    | 6%   | 56,072    | 5%  | 50,635   | 3%  | 1,019      | 0%  |

Figure 36. Change in Access to Jobs – Scenario 3

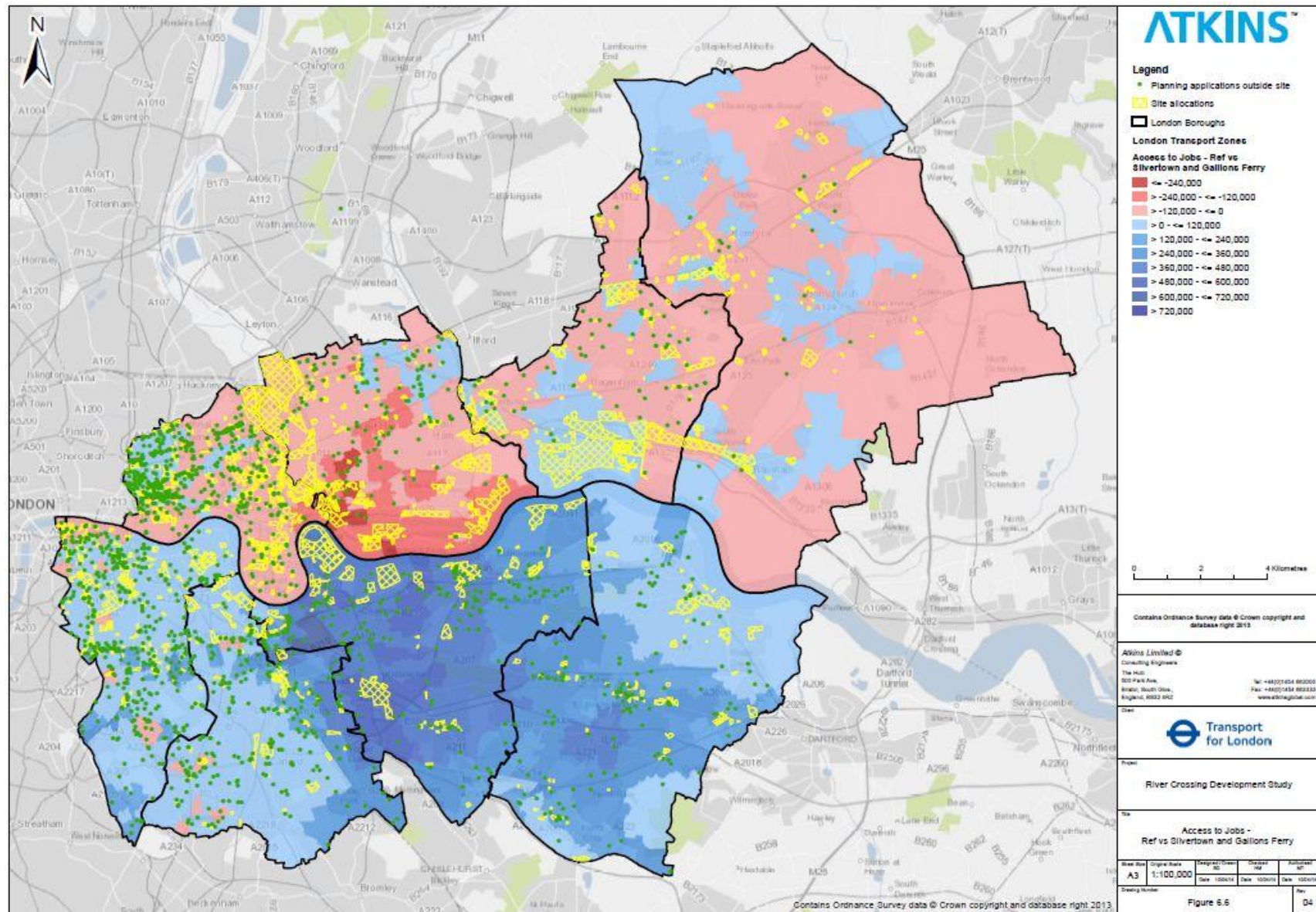


Figure 37. Change in Access to Economically Active Population – Scenario 3

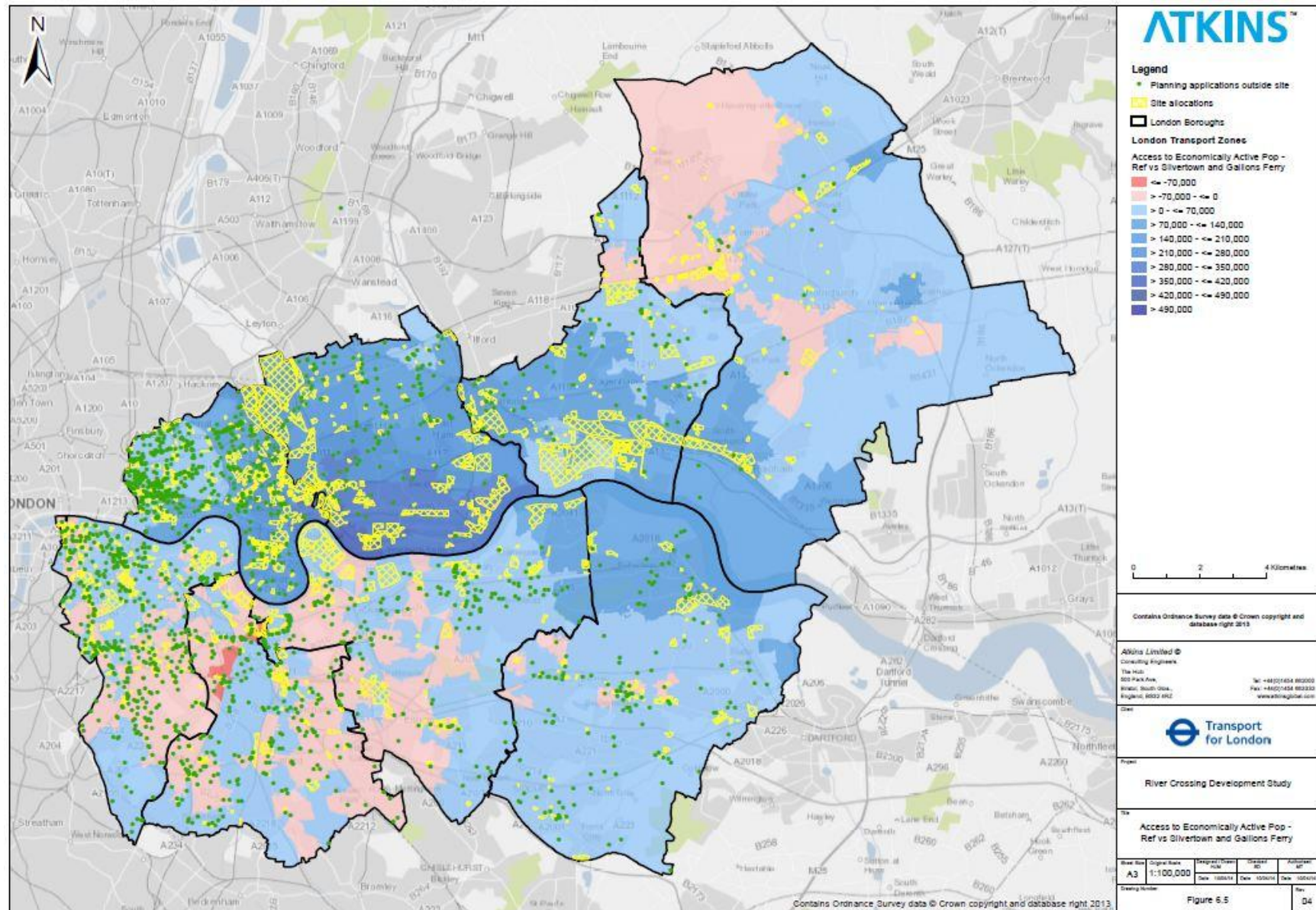




Figure 38. Change in Access to Adult Population

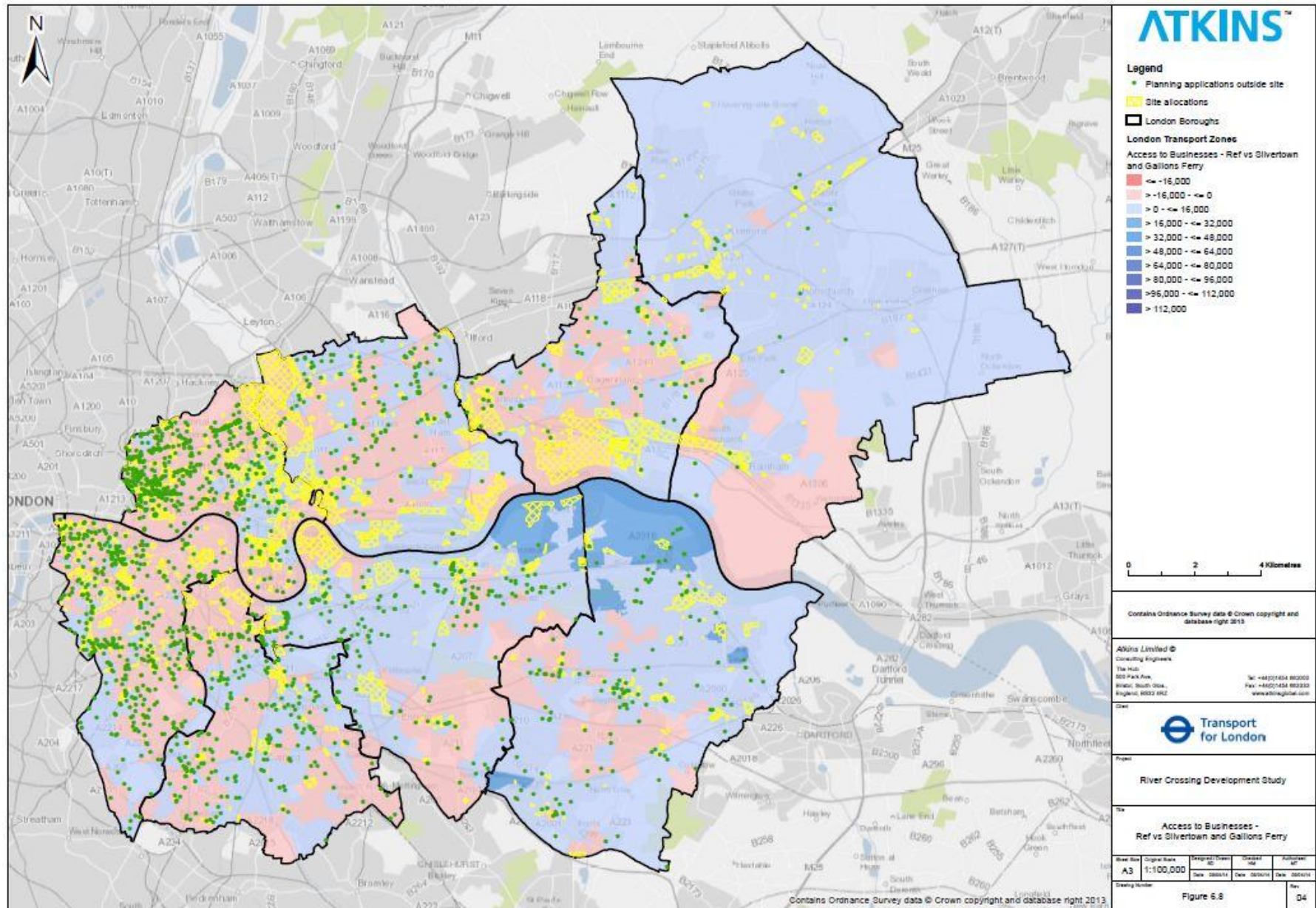
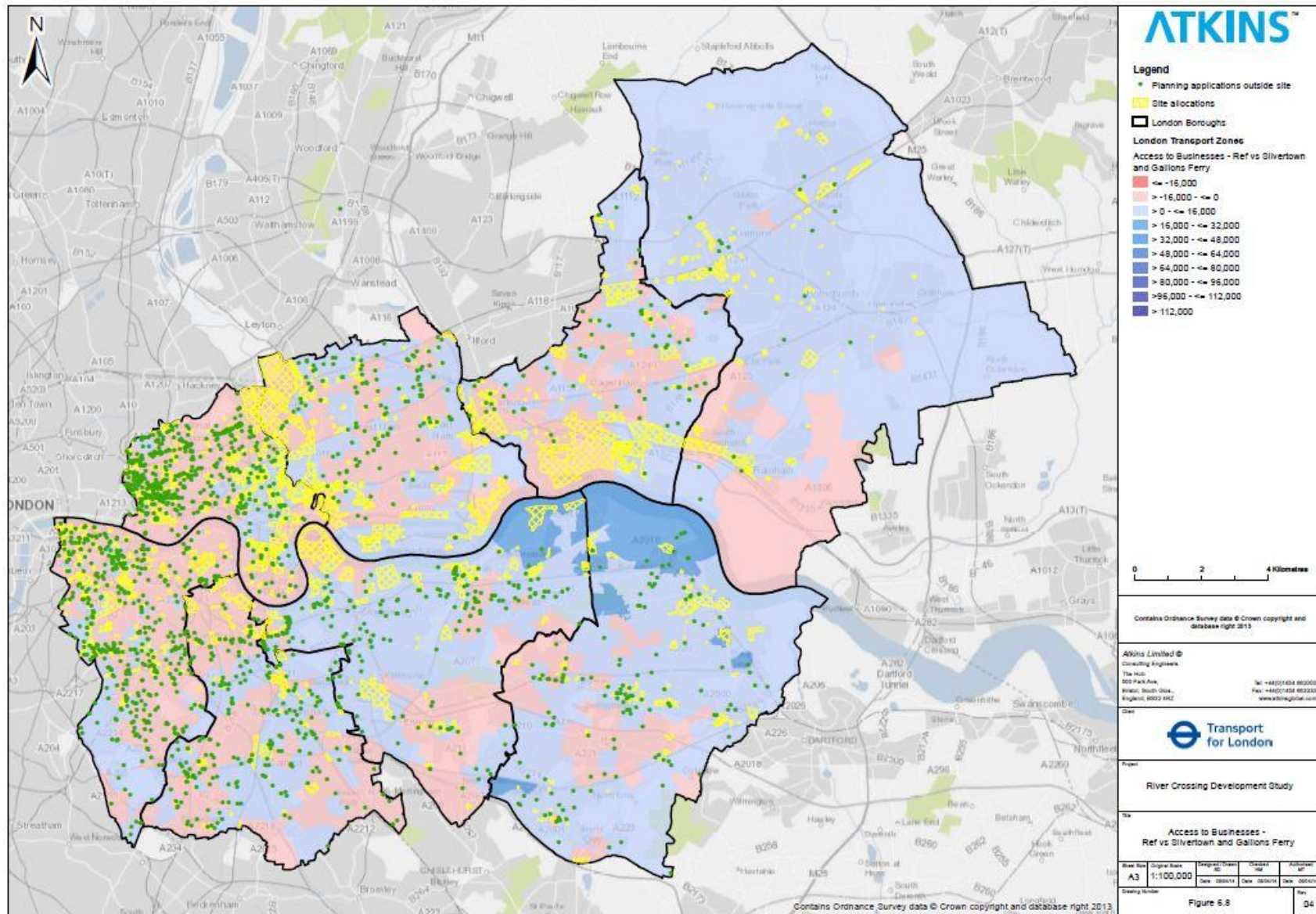


Figure 39. Change in Access to Businesses – Scenario 3



## Scenario 4 – Silvertown Tunnel + Gallions Bridge

7.11. The impacts from Scenario 4 will be the same as Scenario 2, with the following exceptions:

- Woolwich, Thamesmead and Erith & Belvedere will see a much greater increase in the number of jobs accessible (increasing from 89% to 148%, 56% to 231% and 7% to 211% respectively when compared to Scenario 2);
- The average number of accessible jobs is also expected to increase in the Rest of Barking & Dagenham (from -1% to 6% when compared with Scenario 2), and in Rest of Bexley (57% to 99% when compared with Scenario 2);
- The average number of accessible economically active people is expected to increase from -3% to 47% in Thamesmead, and from 7% to 62% in Erith & Belvedere, when compared with Scenario 2. Much of Barking and Rest of Newham are both also expected to see an increase in the accessible economically active population;
- However, the negative impact of a greater number of trips heading north across the river will make congestion in Royal Docks worse, with the average number of accessible jobs falling by 10% compared to the reference case;
- Erith & Belvedere will also see a much greater accessible adult population, rising from an 8% increase in Scenario 2, to 163% increase in this Scenario. Thamesmead will also see an increase from 5% in Scenario 2 to 120% in this Scenario.
- Erith & Belvedere and Thamesmead will also see a greater number of businesses accessible, rising from 2% to 129% in Erith & Belvedere and from -3% to 65% in Thamesmead when compared with Scenario 2.

**Table 35. Impacts of Scenario 4**

| PMA                              | Jobs      |      | Ec Active |     | 16+      |      | Businesses |      |
|----------------------------------|-----------|------|-----------|-----|----------|------|------------|------|
|                                  | No.       | %    | No.       | %   | No.      | %    | No.        | %    |
| Canada Water & Rotherhithe       | 19,672    | 1%   | 21,263    | 2%  | - 1,323  | 0%   | - 1,081    | 0%   |
| Rest of Southwark                | 41,487    | 2%   | 2,577     | 0%  | - 4,136  | 0%   | - 788      | 0%   |
| Deptford New Cross               | 71,319    | 3%   | - 1,908   | 0%  | - 22,459 | -1%  | - 2,601    | -1%  |
| Lewisham & Catford               | 95,938    | 14%  | 21,999    | 1%  | 15,086   | 1%   | 364        | 0%   |
| Rest of Lewisham                 | 133,016   | 17%  | 12,002    | 1%  | 4,773    | 0%   | - 1,067    | 0%   |
| Greenwich Peninsula and Charlton | 496,535   | 72%  | 18,426    | 1%  | 100,247  | 5%   | 4,845      | 2%   |
| Woolwich                         | 533,394   | 148% | 121,325   | 11% | 307,272  | 21%  | 5,927      | 3%   |
| Thamesmead                       | 572,015   | 231% | 349,128   | 47% | 867,403  | 120% | 72,337     | 65%  |
| Rest of Greenwich                | 443,597   | 81%  | 10,518    | 1%  | 99,197   | 6%   | 1,528      | 1%   |
| Erith and Belvedere              | 500,615   | 211% | 401,084   | 62% | 936,279  | 163% | 100,861    | 129% |
| Rest of Bexley                   | 329,218   | 99%  | 101,175   | 11% | 252,862  | 25%  | 14,736     | 11%  |
| Isle of Dogs                     | -107,562  | -5%  | 237,269   | 23% | 235,836  | 11%  | - 740      | 0%   |
| Rest of Tower Hamlets            | - 8,694   | 0%   | 109,182   | 9%  | 106,803  | 5%   | - 1,483    | -1%  |
| Lower Lea Valley                 | - 80,883  | -3%  | 254,505   | 22% | 106,183  | 5%   | 751        | 0%   |
| Royal Docks                      | - 167,503 | -10% | 302,782   | 26% | 267,588  | 13%  | - 2,603    | -1%  |
| Rest of Newham                   | - 64,894  | -5%  | 226,777   | 21% | 172,324  | 9%   | - 783      | 0%   |
| Barking                          | 37,375    | 4%   | 242,296   | 20% | 241,464  | 12%  | - 3,194    | -1%  |
| Barking Riverside                | 8,296     | 1%   | 176,313   | 18% | 137,763  | 9%   | - 1,234    | -1%  |
| Rest of B&D                      | 28,223    | 6%   | 117,917   | 14% | 65,399   | 5%   | 590        | 0%   |
| London Riverside                 | - 1,152   | 0%   | 119,137   | 12% | 53,280   | 4%   | - 699      | 0%   |
| Rest of Havering                 | 818       | 0%   | 10,612    | 2%  | - 6,492  | -1%  | 2,744      | 3%   |
| Study Area                       | 112,623   | 9%   | 105,090   | 10% | 133,756  | 8%   | 5,477      | 3%   |

Figure 40. Change in Access to Jobs – Scenario 4

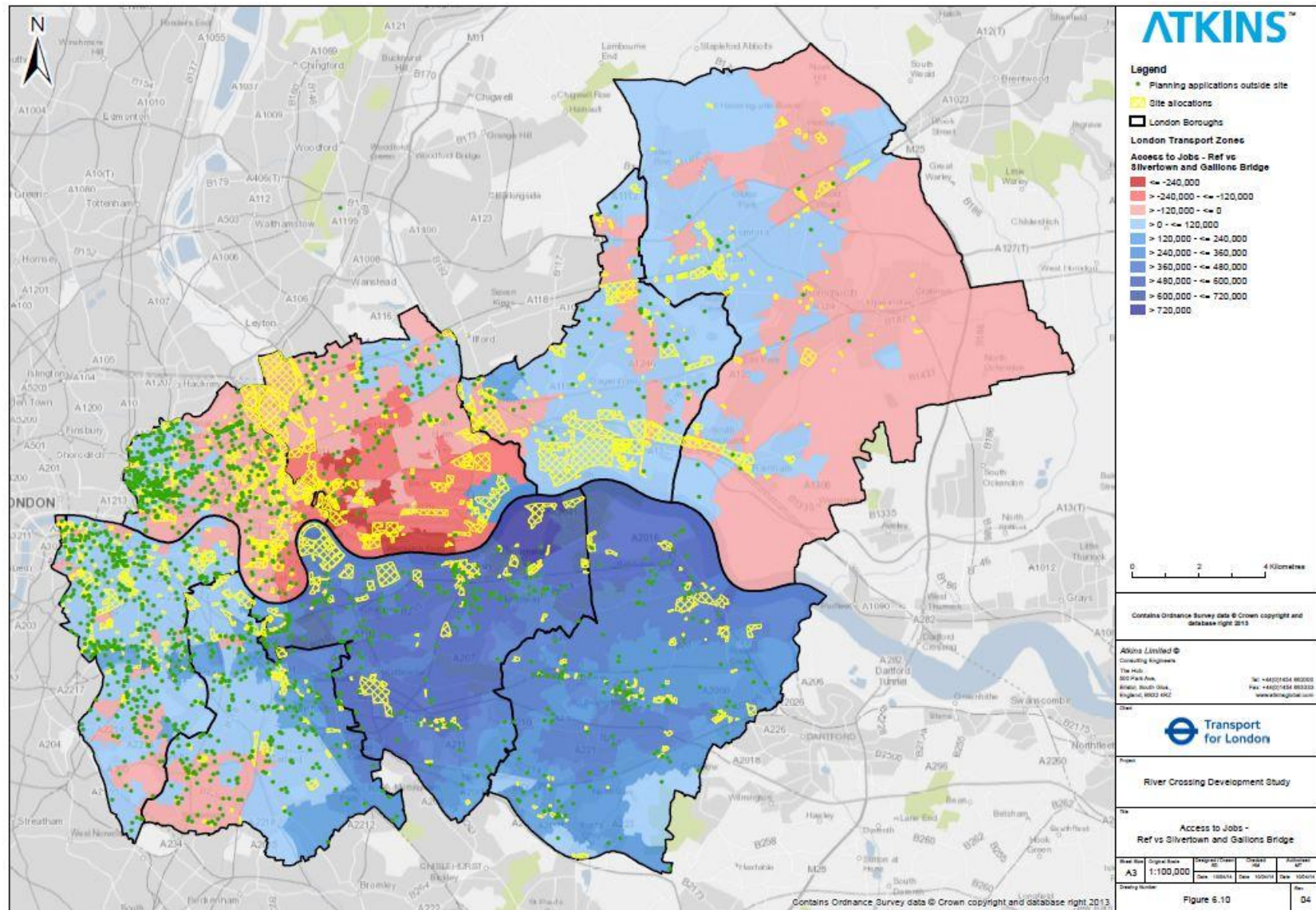


Figure 41. Change in Access to Economically Active Population – Scenario 4

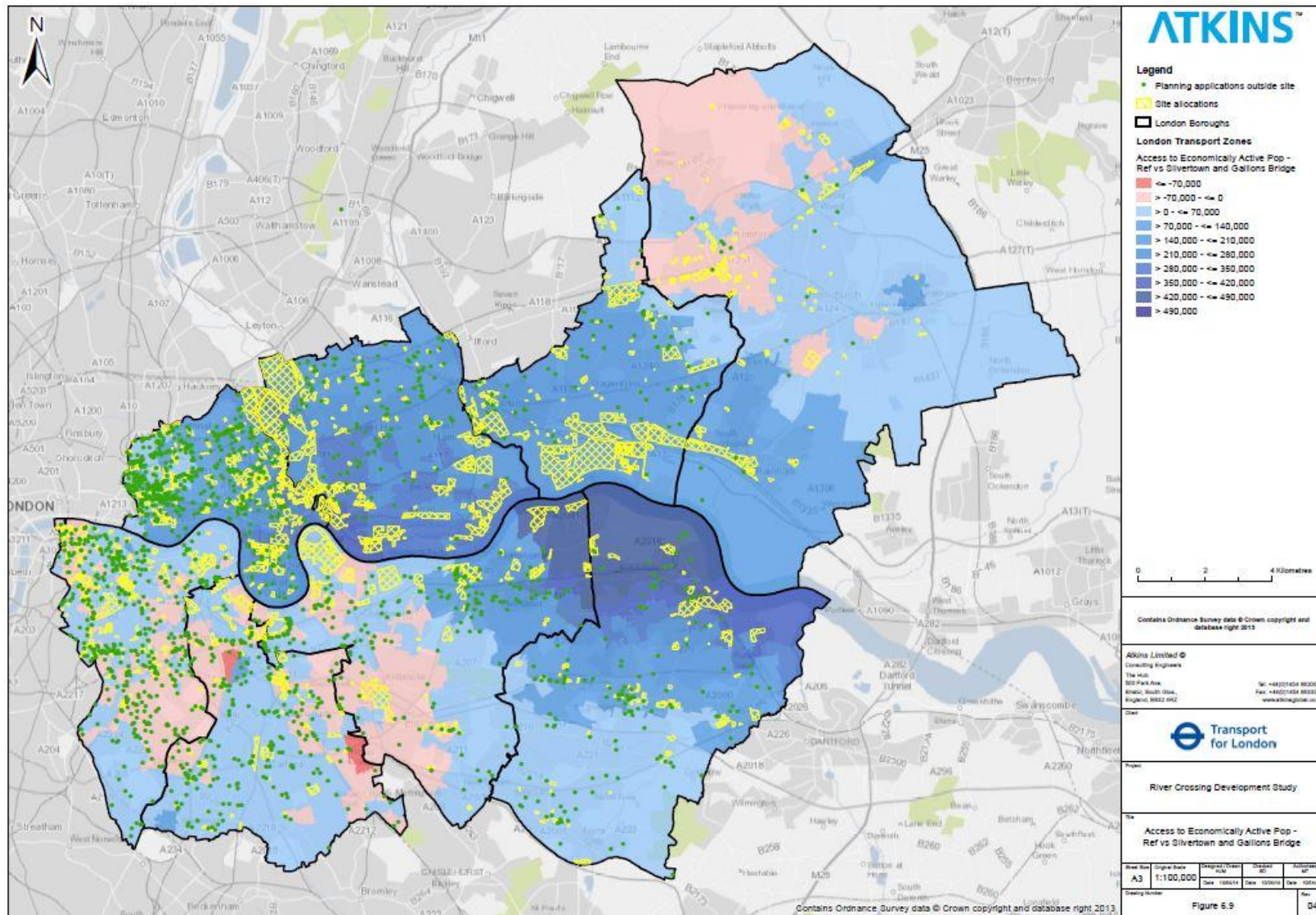


Figure 42. Change in Access to Adult Population – Scenario 4

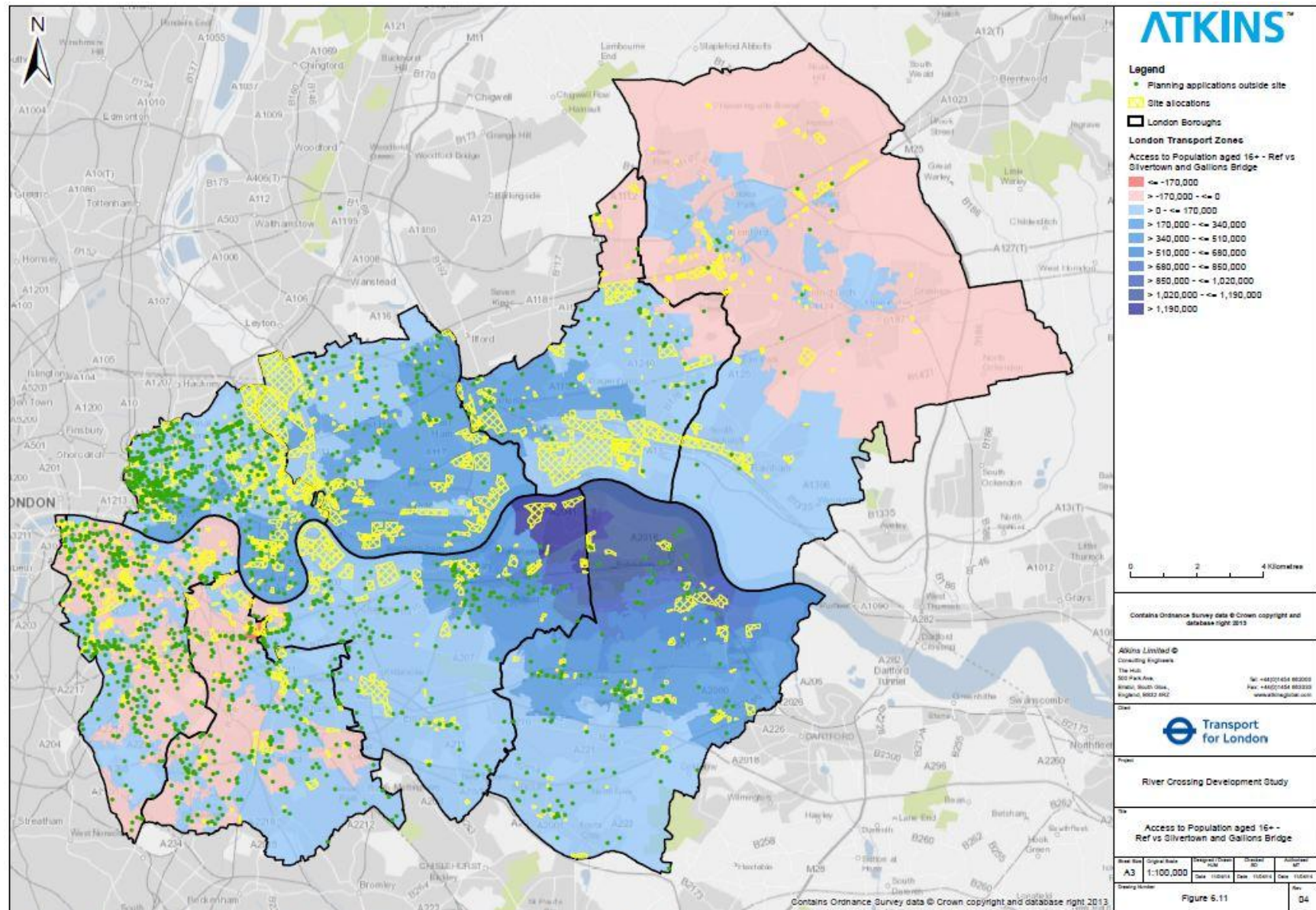
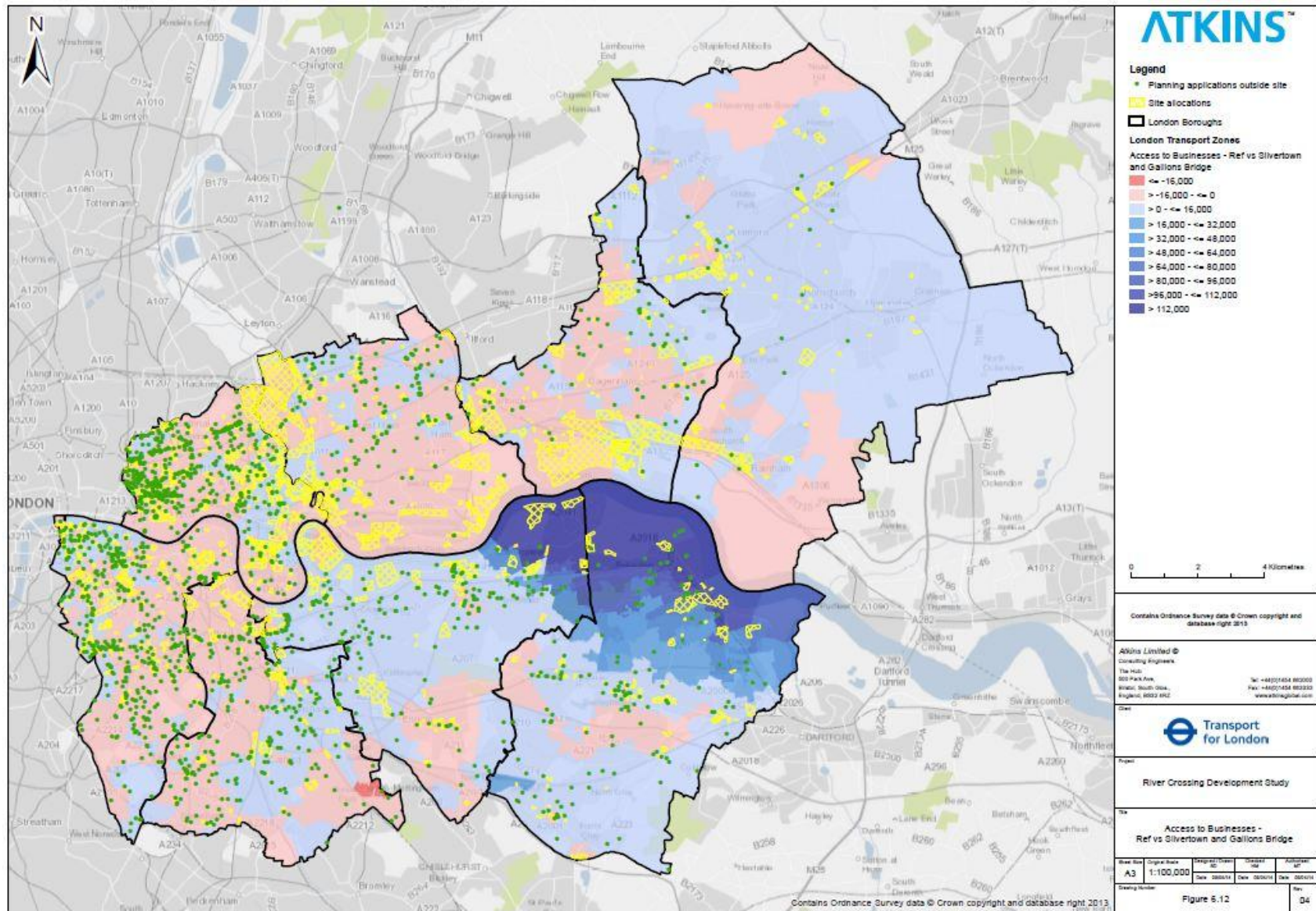


Figure 43. Change in Access to Businesses – Scenario 4



## Scenario 5 – Silvertown Tunnel + Belvedere Ferry

7.12. The impacts from Scenario 5 will be almost the same as Scenario 2, with the following exceptions:

- Woolwich, Thamesmead and Erith & Belvedere will see a greater increase in the number of jobs accessible (increasing from 89% to 112%, 56% to 78% and 7% to 25% respectively when compared to Scenario 2);
- The average number of accessible economically active people is expected to increase from 0% to 17% in Erith and Belvedere, and from 18% to 24% in Royal Docks, when compared with Scenario 2;
- Erith & Belvedere will also see a greater accessible adult population, rising from an 8% increase in Scenario 2, to 25% increase in this Scenario;
- Erith & Belvedere and Thamesmead will also see a greater number of businesses accessible, rising from 2% to 15% in Erith & Belvedere and from -3% to 7% in Thamesmead when compared with Scenario 2.
- Barking will see slight increases in the number of accessible jobs, rising from 2% to 5% and from -1% to 4% in the Rest of Barking & Dagenham when compared with Scenario 2.

**Table 36. Impacts of Scenario 5**

| PMA                              | Jobs     |      | Ec Active |     | 16+      |     | Businesses |     |
|----------------------------------|----------|------|-----------|-----|----------|-----|------------|-----|
|                                  | No.      | %    | No.       | %   | No.      | %   | No.        | %   |
| Canada Water & Rotherhithe       | - 14,917 | -1%  | - 1,171   | 0%  | - 31,232 | -2% | - 987      | 0%  |
| Rest of Southwark                | 23,441   | 1%   | - 4,869   | 0%  | - 11,462 | -1% | - 852      | 0%  |
| Deptford New Cross               | 4,346    | 0%   | - 13,989  | -1% | - 39,158 | -2% | - 2,104    | -1% |
| Lewisham & Catford               | 69,003   | 10%  | 7,977     | 1%  | 18,256   | 1%  | - 113      | 0%  |
| Rest of Lewisham                 | 104,586  | 14%  | - 3,851   | 0%  | 3,996    | 0%  | - 1,445    | -1% |
| Greenwich Peninsula and Charlton | 421,624  | 61%  | 11,432    | 1%  | 77,055   | 4%  | 3,325      | 1%  |
| Woolwich                         | 404,459  | 112% | 23,435    | 2%  | 86,844   | 6%  | 146        | 0%  |
| Thamesmead                       | 192,124  | 78%  | 64,401    | 9%  | 105,734  | 15% | 7,797      | 7%  |
| Rest of Greenwich                | 366,329  | 67%  | 15,479    | 1%  | 66,444   | 4%  | - 311      | 0%  |
| Erith and Belvedere              | 58,642   | 25%  | 110,075   | 17% | 141,677  | 25% | 12,046     | 15% |
| Rest of Bexley                   | 195,853  | 59%  | 30,670    | 3%  | 74,263   | 7%  | 2,010      | 2%  |
| Isle of Dogs                     | - 83,625 | -4%  | 163,199   | 16% | 164,560  | 8%  | - 108      | 0%  |
| Rest of Tower Hamlets            | - 18,636 | -1%  | 65,829    | 5%  | 44,547   | 2%  | - 1,029    | 0%  |
| Lower Lea Valley                 | - 71,695 | -3%  | 208,201   | 18% | 56,729   | 2%  | 809        | 0%  |
| Royal Docks                      | -100,992 | -6%  | 275,233   | 24% | 213,263  | 10% | 538        | 0%  |
| Rest of Newham                   | - 50,293 | -4%  | 138,248   | 13% | 52,598   | 3%  | - 428      | 0%  |
| Barking                          | 49,951   | 5%   | 138,686   | 12% | 77,604   | 4%  | - 1,125    | 0%  |
| Barking Riverside                | 10,020   | 2%   | 119,109   | 12% | 93,766   | 6%  | 164        | 0%  |
| Rest of B&D                      | 20,023   | 4%   | 73,659    | 8%  | 31,698   | 3%  | 714        | 1%  |
| London Riverside                 | 2,784    | 1%   | 104,687   | 11% | 49,336   | 4%  | - 1,197    | -1% |
| Rest of Havering                 | 1,503    | 1%   | 14,950    | 2%  | 1,883    | 0%  | 991        | 1%  |
| Study Area                       | 67,663   | 5%   | 57,845    | 5%  | 44,771   | 3%  | 406        | 0%  |



Figure 44. Change in Access to Jobs – Scenario 5

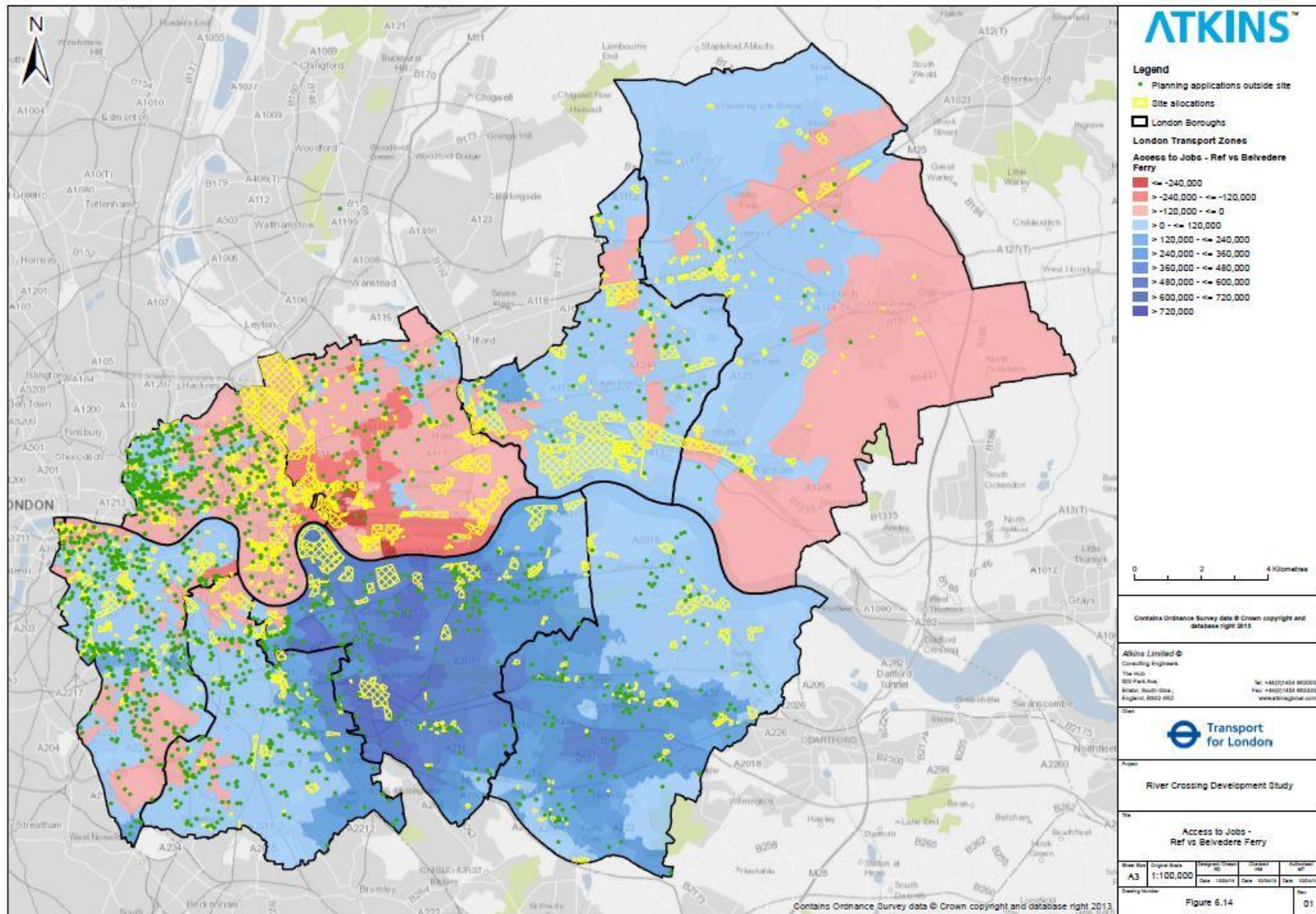


Figure 45. Change in Access to Economically Active Population – Scenario 5

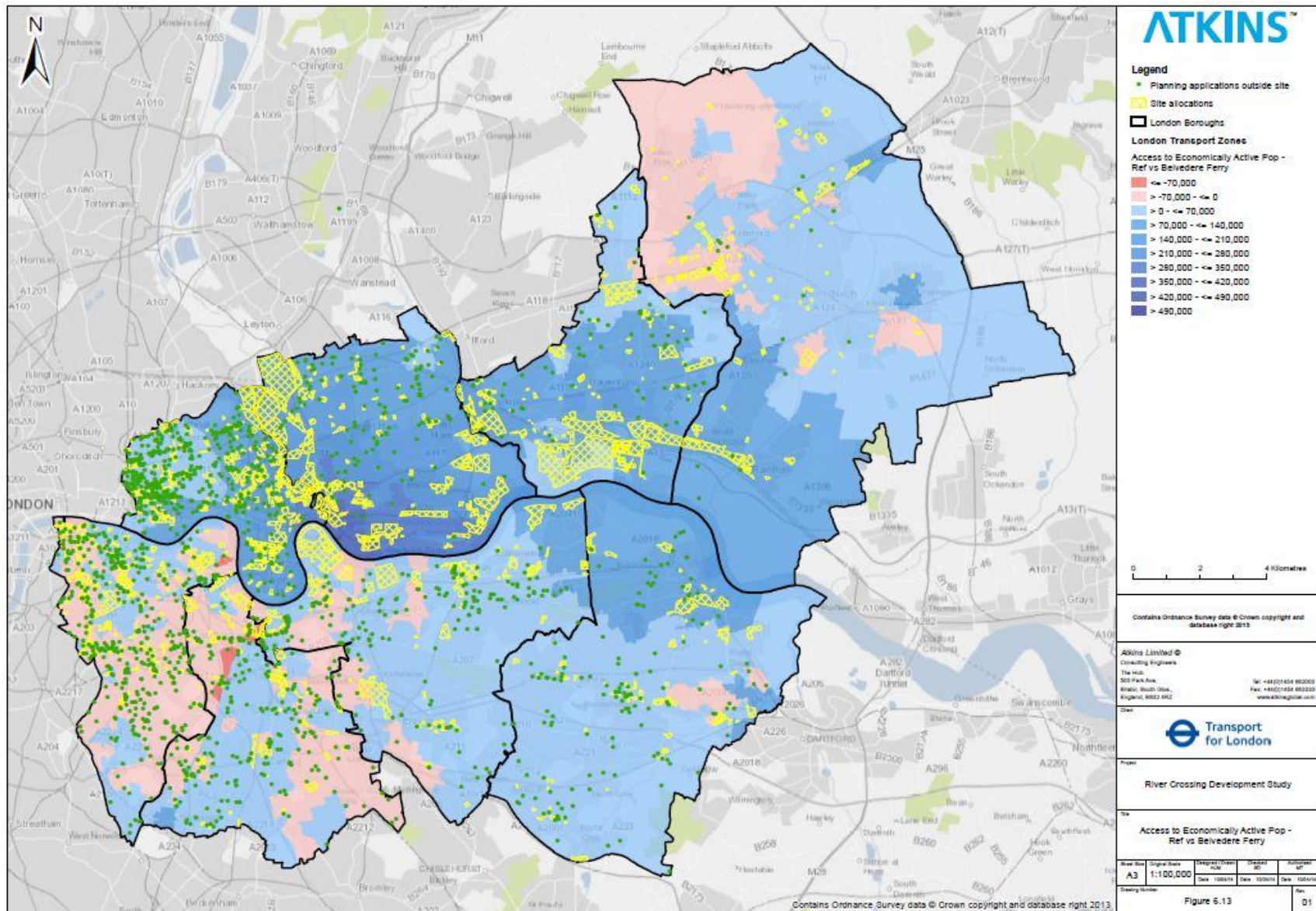


Figure 46. Change in Access to Adult Population – Scenario 5

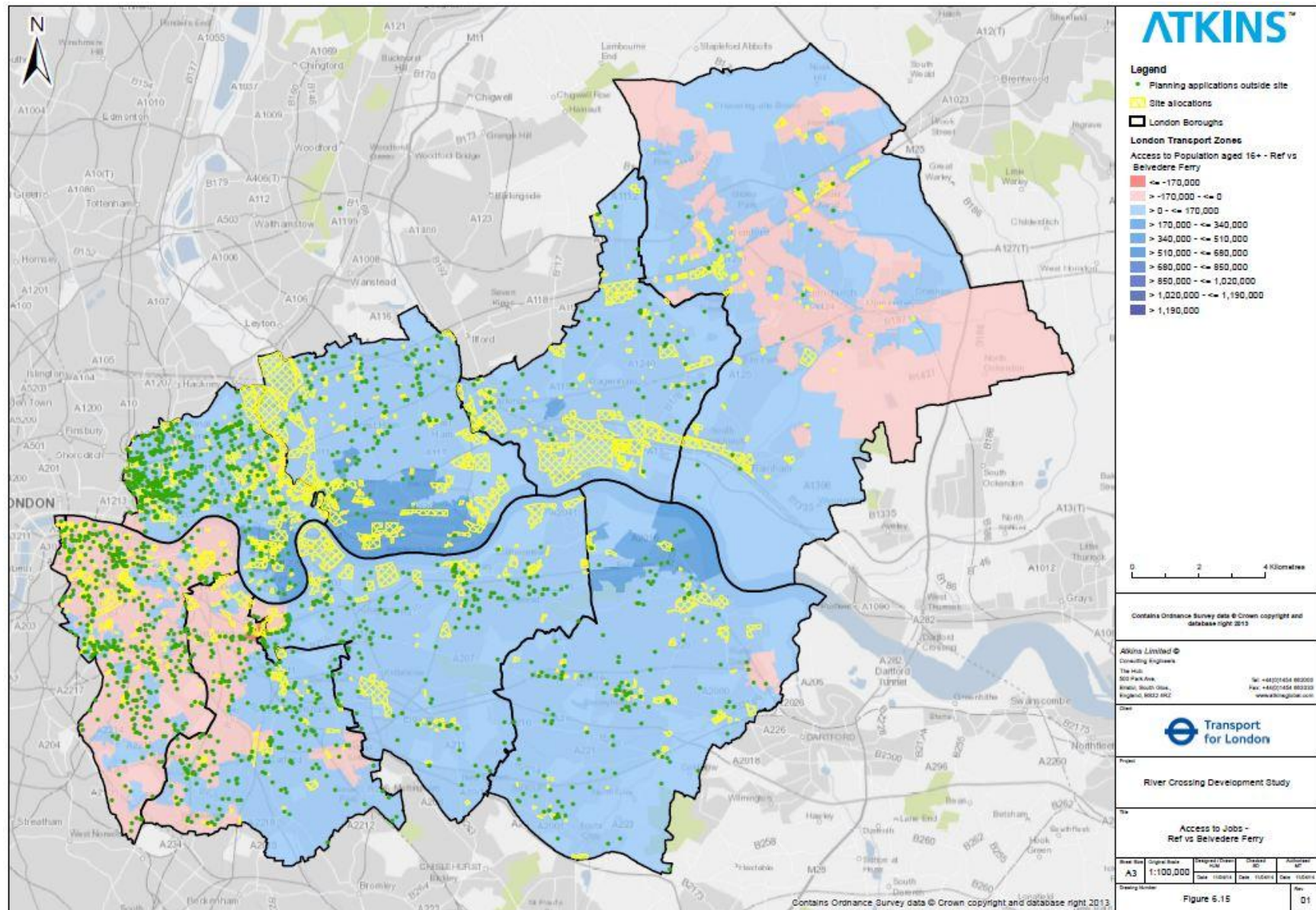
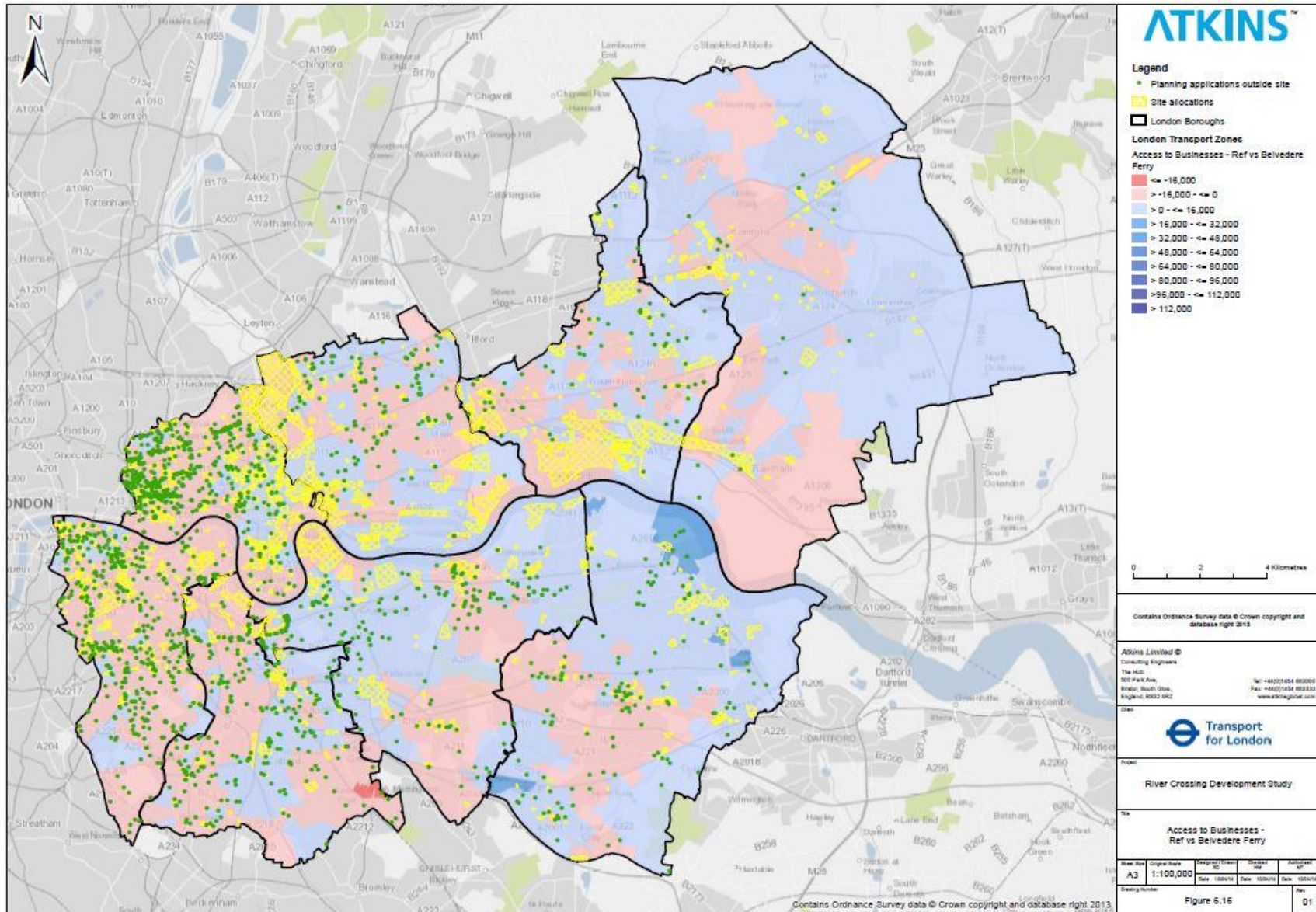


Figure 47. Change in Access to Businesses – Scenario 5



## Scenario 6 – Silvertown Tunnel + Belvedere Bridge

7.13. The impacts from Scenario 6 will be the same as Scenario 2, with the following exceptions:

- Woolwich, Thamesmead and Erith & Belvedere will see a much greater increase in the number of jobs accessible (increasing from 89% to 128%, 56% to 103% and 7% to 69% respectively when compared to Scenario 2);
- The average number of accessible jobs is also expected to increase in the Rest of Barking & Dagenham (from -1% to 11% when compared with Scenario 2), and in London Riverside (-1% to 16% when compared with Scenario 2);
- The average number of accessible economically active people is expected to increase from -3% to 38% in Thamesmead, and from 7% to 69% in Erith & Belvedere, when compared with Scenario 2. Much of Barking and Havering are both also expected to see an increase in the accessible economically active population;
- Erith & Belvedere and Thamesmead will also see a greater number of businesses accessible, rising from 2% to 90% in Erith & Belvedere and from -3% to 19% in Thamesmead when compared with Scenario 2.

**Table 37. Impacts of Scenario 6**

| PMA                              | Jobs     |      | Ec Active |     | 16+      |      | Businesses |     |
|----------------------------------|----------|------|-----------|-----|----------|------|------------|-----|
|                                  | No.      | %    | No.       | %   | No.      | %    | No.        | %   |
| Canada Water & Rotherhithe       | - 13,128 | 0%   | 4,960     | 0%  | - 14,100 | -1%  | - 632      | 0%  |
| Rest of Southwark                | 29,519   | 1%   | - 977     | 0%  | - 6,137  | 0%   | - 31       | 0%  |
| Deptford New Cross               | 10,577   | 0%   | - 17,550  | -1% | - 28,505 | -2%  | - 1,250    | 0%  |
| Lewisham & Catford               | 66,116   | 9%   | 8,158     | 1%  | 6,248    | 0%   | 272        | 0%  |
| Rest of Lewisham                 | 100,820  | 13%  | 3,213     | 0%  | - 21,048 | -1%  | - 1,049    | 0%  |
| Greenwich Peninsula and Charlton | 441,612  | 64%  | 36,912    | 3%  | 94,246   | 5%   | 4,570      | 2%  |
| Woolwich                         | 463,637  | 128% | 95,426    | 9%  | 181,121  | 13%  | 4,296      | 2%  |
| Thamesmead                       | 254,981  | 103% | 283,110   | 38% | 470,729  | 65%  | 21,328     | 19% |
| Rest of Greenwich                | 385,759  | 71%  | 25,177    | 2%  | 83,754   | 5%   | - 8        | 0%  |
| Erith and Belvedere              | 164,367  | 69%  | 449,061   | 69% | 756,673  | 131% | 69,875     | 90% |
| Rest of Bexley                   | 236,385  | 71%  | 148,361   | 17% | 243,265  | 24%  | 9,096      | 7%  |
| Isle of Dogs                     | - 88,341 | -4%  | 168,999   | 16% | 228,620  | 11%  | - 178      | 0%  |
| Rest of Tower Hamlets            | - 6,413  | 0%   | 81,033    | 7%  | 76,482   | 3%   | - 773      | 0%  |
| Lower Lea Valley                 | - 70,161 | -3%  | 211,674   | 18% | 84,925   | 4%   | 1,214      | 0%  |
| Royal Docks                      | -101,692 | -6%  | 295,979   | 26% | 289,077  | 14%  | 748        | 0%  |
| Rest of Newham                   | - 27,307 | -2%  | 144,164   | 13% | 134,480  | 7%   | - 115      | 0%  |
| Barking                          | 81,075   | 8%   | 182,692   | 15% | 229,912  | 12%  | - 578      | 0%  |
| Barking Riverside                | 67,209   | 11%  | 179,567   | 19% | 224,576  | 15%  | - 24       | 0%  |
| Rest of B&D                      | 82,285   | 18%  | 160,393   | 18% | 180,585  | 15%  | 1,145      | 1%  |
| London Riverside                 | 46,847   | 16%  | 127,382   | 13% | 137,643  | 11%  | - 6,265    | -4% |
| Rest of Havering                 | 31,750   | 15%  | 72,543    | 12% | 75,548   | 11%  | 2,073      | 2%  |
| Study Area                       | 90,908   | 7%   | 100,837   | 9%  | 122,156  | 8%   | 3,167      | 2%  |

Figure 48. Change in Access to Jobs – Scenario 6

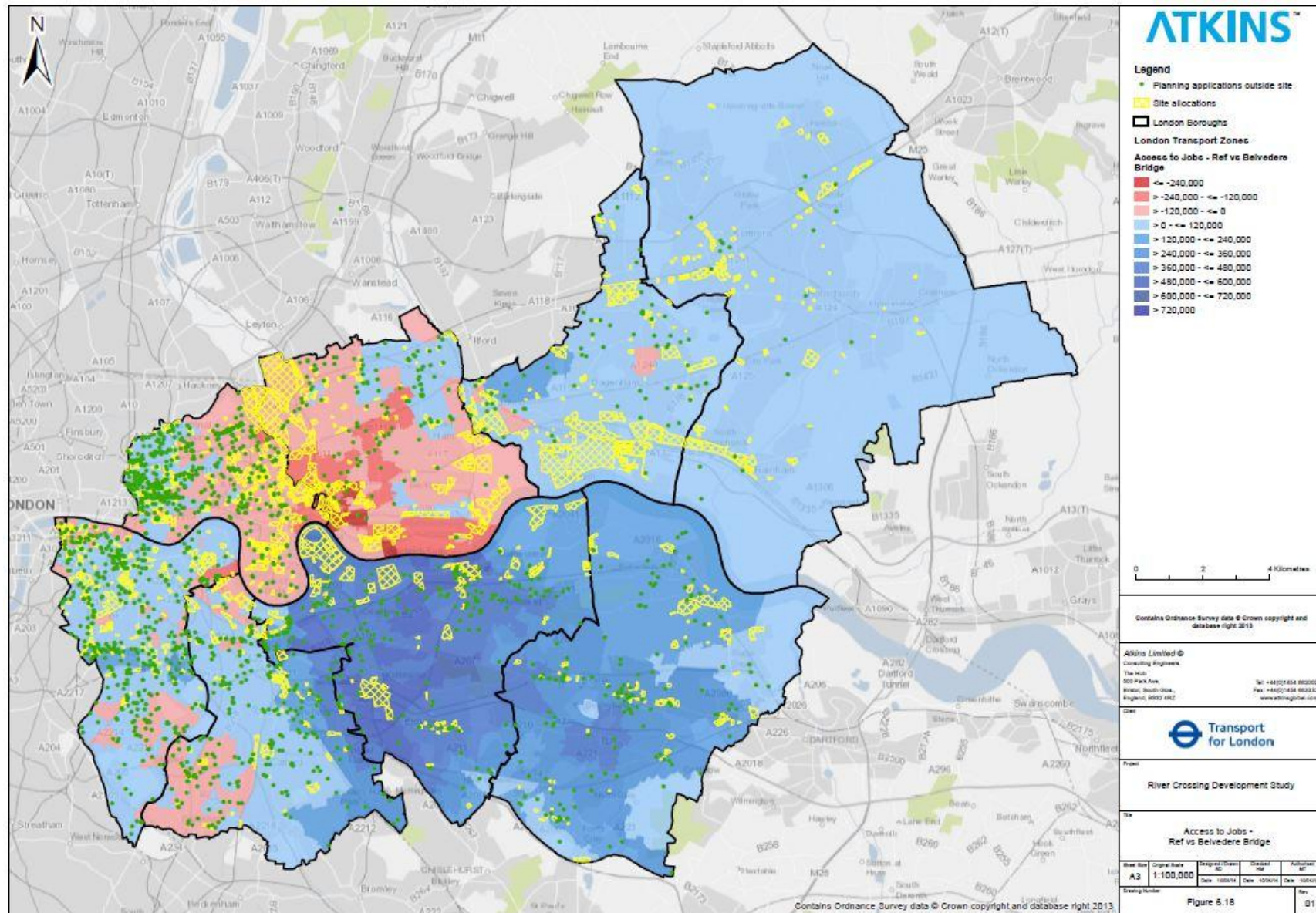


Figure 49. Change in Access to Economically Active Population – Scenario 6

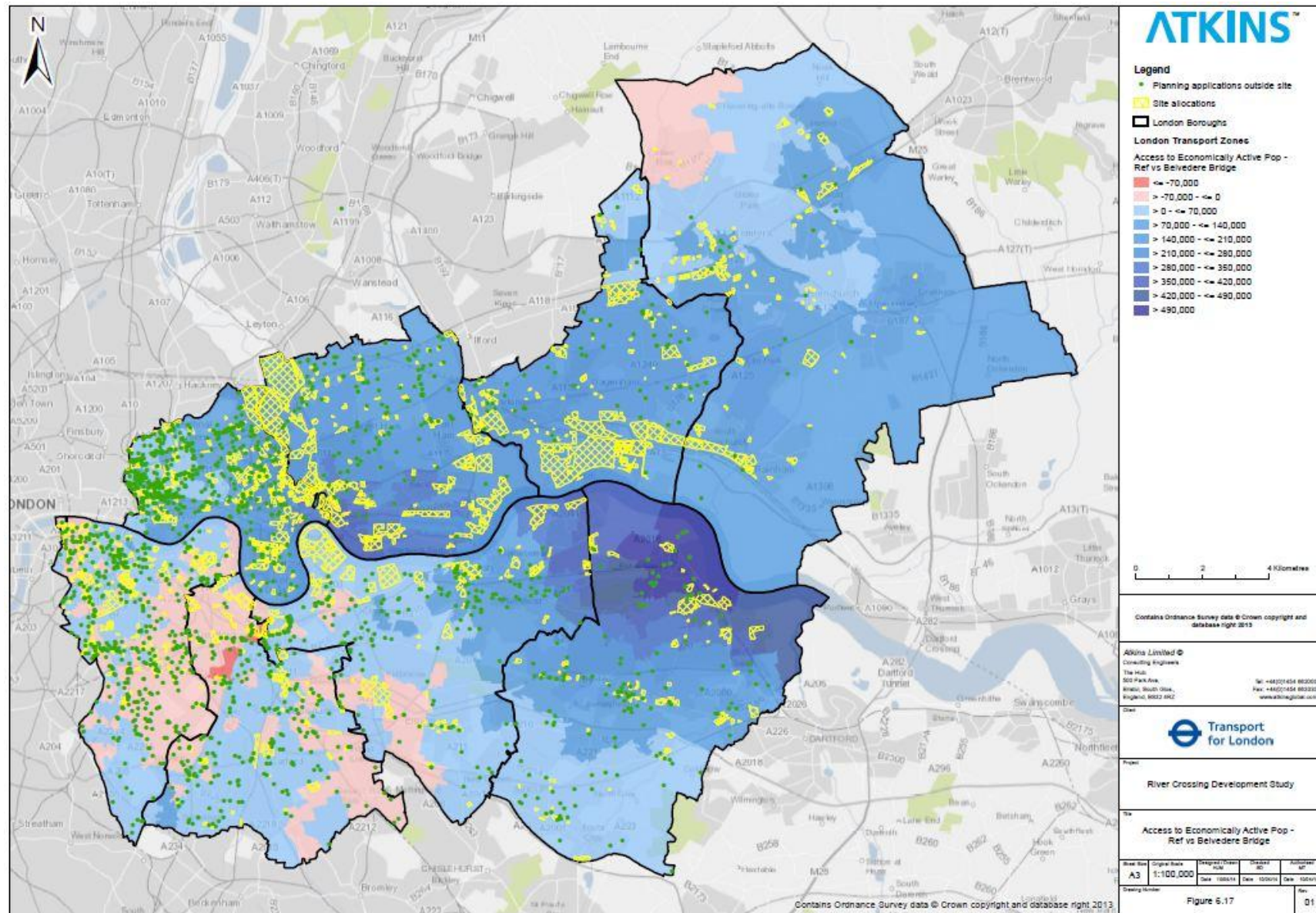


Figure 50. Change in Access to Adult Population – Scenario 6

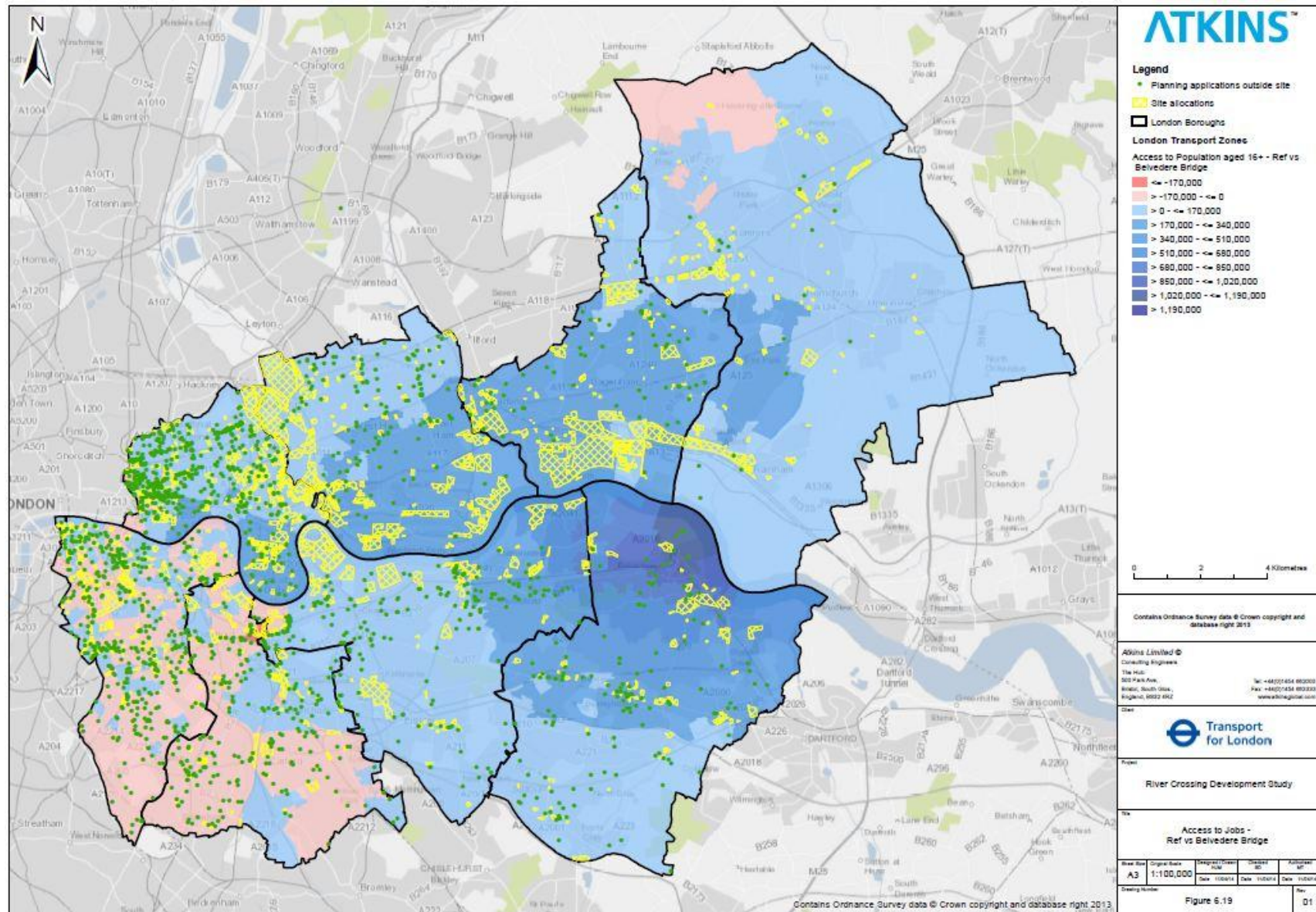
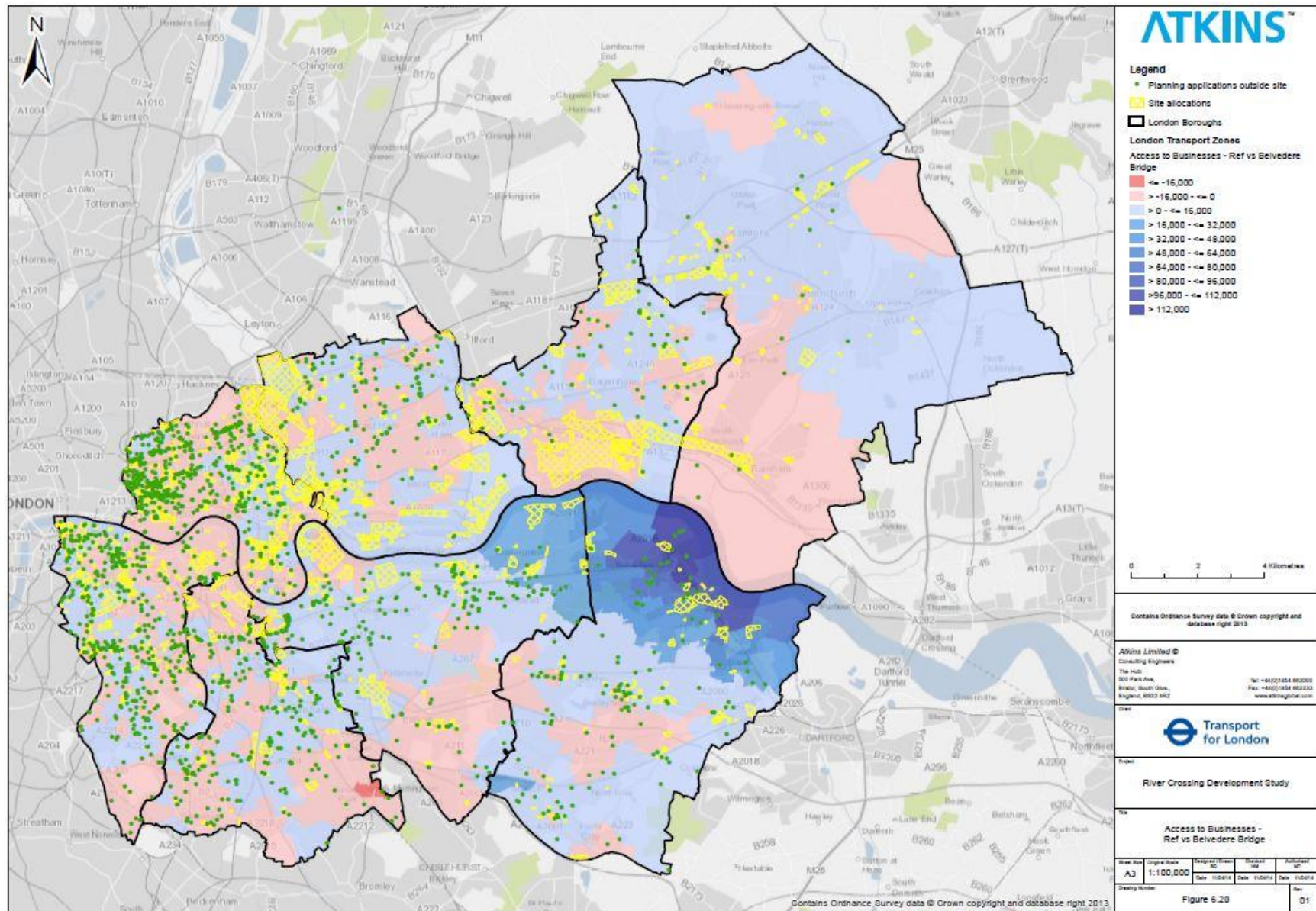




Figure 51. Change in Access to Businesses – Scenario 6



## Summary of Impact of Crossing Options on Connectivity and Development

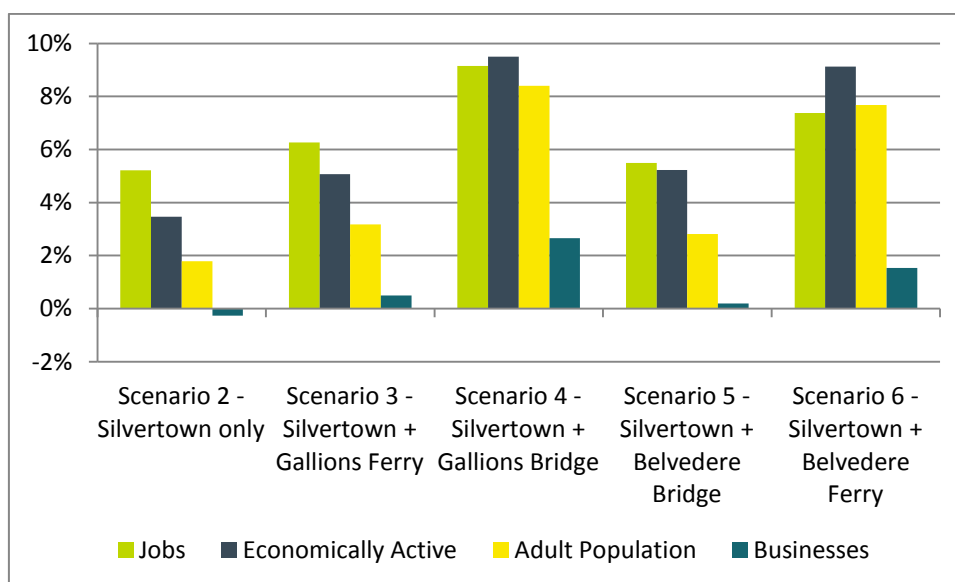
7.14. This section presents a summary of the high level impacts on the attractiveness of the Study area for development resulting from the changes in connectivity identified above. This has also been informed by the analysis of the importance of highway accessibility by PMA and floorspace type in Chapter 4.

7.15. A summary of the expected impacts on each PMA and floorspace type is presented in Tables 38 and 39, with additional high level messages set out below.

### Scenario 4 provides the greatest net benefit for access to jobs, labour force, businesses and adult population

7.16. Figure 52 illustrates that the average increase in accessible jobs, economically active population, businesses and the adult population is greatest under Scenario 4 – Silvertown + Gallions Bridge. Scenario 6 – Silvertown + Belvedere Bridge also provides significant positive connectivity changes. The differences between Scenario 2, 4 and 5 are relatively marginal.

**Figure 52. Percentage increase (on Reference Case) in average access to/from each variable across entire Study Area**



### All options have a net benefit to the Study Area as a whole

7.17. Figure 52 shows that, under all options the average access to jobs, economically active, and the adult population is expected to increase, providing a net additional benefit across the Study Area as a whole.

### Under all options, the increase in access to jobs is greatest on the south side of the River, especially in Greenwich and Bexley, and could be a significant driver of residential development

7.18. Rest of Greenwich is likely to see an increase in the number of accessible jobs by as much as 81% under Scenario 4 and at least 69% in Scenario 2, on top of the reference case. Impacts in Greenwich Peninsula, Woolwich and Thamesmead are likely to be even higher. Although rail based public transport usage is relatively high in Greenwich Peninsula, road based trips are still significant in much of the rest of the Borough. The step change in access to jobs, especially those that are not particularly easily accessible from the rail-based public transport network,

could help to equalise the difference in property prices with those on the northern side of the River and bring forward development significantly more quickly than its current pace.

### **Conversely, increase in access to the labour force is greatest on the north side of the River, especially in Newham, which could drive increased business investment**

- 7.19. The increase in the economically active population accessible to Newham, especially southern parts of the Borough including the Royal Docks, could be an attractive prospect for businesses. The area is likely to become more attractive for construction companies, who are already significantly constrained by the lack of river crossings, as well as some light industrial and even some office based development in locations which are less accessible by the public transport network but which still have significant capacity, towards the east of the Borough.
- 7.20. However, the decrease in access to jobs as a result of greater congestion on this side of the river could result in slight negative impacts in terms of residential development. Given the size of the decrease in access to jobs (up to 10% in Scenario 4), these impacts are unlikely to be significant, especially when greater access to services south of the River and the enhanced sense of place facilitated by the crossings are taken into account.
- 7.21. It should also be noted that many of the jobs accessible from this location are in Canary Wharf and the City which are overwhelmingly accessed by public transport. We do not therefore anticipate that the apparent reduction in access to jobs by car on this side of the River will actually result in either significantly increased journey times to work or a major reduction in the number of job opportunities accessible from much of the north of the River.
- 7.22. Furthermore, TfL are currently undertaking work to understand potential impacts on traffic flow north of the Thames and will identify mitigation measures where appropriate to ensure connectivity to jobs is not negatively affected in this location.

### **Scenarios 4 and 6 are likely to create a step change in connectivity to Thamesmead and Belvedere, increasing the potential for development significantly**

- 7.23. Scenario 2 generates a step change in connectivity by effectively doubling road crossing capacity. It is therefore not surprising that the other Scenarios which include road crossings (Scenario 4 and Scenario 6) also have significant impacts when compared with the Ferry based scenarios, where capacity, and therefore potential travel distances, are much more limited.
- 7.24. Both Thamesmead and Belvedere are some of the most inaccessible locations in London, with very low numbers of jobs and people accessible within the catchments we have set out in this study. Both Scenarios 4 and 6 include a new road bridge that would directly link Thamesmead and Belvedere with either Gallions Reach or Rainham, opening up access to north east London and creating a step change in connectivity in these locations.
- 7.25. This is likely to result in both areas being considered more seriously for residential development, as well as retail and some industrial uses as potential catchments are enlarged and access to markets is increased.

### **Changes in connectivity in Southwark and Tower Hamlets are relatively minor and likely to be negated by public transport use**

- 7.26. The analysis shows that the relative changes in connectivity are minor in Southwark and are therefore unlikely to affect development decisions. Although the increase in the economically active population in the Isle of Dogs PMA is relatively significant, this is unlikely to have much bearing on development decisions, which are largely driven by public transport connectivity and capacity.

**Only Scenario 6 is likely to have any significant impact on Havering**

- 7.27. Changes in connectivity are minor in all Scenarios except Scenario 6, where a new bridge link to Rainham could increase the number of accessible jobs, labour force and adult population by up to 16%. This could result in housing, industrial and retail development coming forward more quickly although it will not provide the step change in connectivity that will occur on the south side of the River, where connectivity is already much poorer.

**Scenario 6 is likely to have the greatest impact on Barking Riverside, although it won't create a step change like that in North Bexley**

- 7.28. Barking Riverside is the largest single development site in the Study Area (and London). Most of the scenarios are unlikely to generate a step change in connectivity to jobs or the labour force and therefore may not have significant impacts on the timing of development. Scenario 6 will increase the number of accessible jobs by the greatest amount when compared with the reference case, although this is still relatively small at 11%.

**Table 38. Summary of relative impact on development resulting from changes in connectivity (Southern PMAs)**

|   | Canada Water & Rotherhithe | Rest of Southwark | Deptford New Cross | Lewisham & Catford | Rest of Lewisham | Greenwich Peninsula and Charlton | Woolwich | Thamesmead | Rest of Greenwich | Erith and Belvedere | Rest of Bexley |
|---|----------------------------|-------------------|--------------------|--------------------|------------------|----------------------------------|----------|------------|-------------------|---------------------|----------------|
| <b>Scenario 2 – Silvertown Only</b>               |                            |                   |                    |                    |                  |                                  |          |            |                   |                     |                |
| Residential                                       | None                       | None              | None               | Low                | Low              | High                             | High     | High       | High              | Low                 | High           |
| Office  | None                       | None              | None               | None               | None             | None                             | None     | None       | None              | None                | None           |
| Retail & Leisure                                  | None                       | None              | None               | None               | None             | None                             | None     | Low        | None              | Low                 | Low            |
| Industrial  | None                       | None              | None               | None               | None             | None                             | None     | None       | None              | None                | None           |
| <b>Scenario 3 – Silvertown + Gallions Ferry</b>   |                            |                   |                    |                    |                  |                                  |          |            |                   |                     |                |
| Residential                                       | None                       | None              | None               | Low                | Low              | High                             | High     | High       | High              | Medium              | High           |
| Office  | None                       | None              | None               | None               | None             | None                             | None     | Low        | None              | Low                 | None           |
| Retail & Leisure                                  | None                       | None              | None               | None               | None             | None                             | Low      | Medium     | None              | Medium              | Low            |
| Industrial  | None                       | None              | None               | None               | None             | None                             | None     | Low        | None              | Low                 | None           |
| <b>Scenario 4 – Silvertown + Gallions Bridge</b>  |                            |                   |                    |                    |                  |                                  |          |            |                   |                     |                |
| Residential                                       | None                       | None              | None               | Low                | Low              | High                             | High     | High       | High              | High                | High           |
| Office  | None                       | None              | None               | None               | None             | None                             | None     | High       | None              | High                | Low            |
| Retail & Leisure                                  | None                       | None              | None               | None               | None             | None                             | Medium   | High       | Low               | High                | Medium         |
| Industrial  | None                       | None              | None               | None               | None             | None                             | None     | High       | None              | High                | Low            |
| <b>Scenario 5 – Silvertown + Belvedere Ferry</b>  |                            |                   |                    |                    |                  |                                  |          |            |                   |                     |                |
| Residential                                       | None                       | None              | None               | Low                | Low              | High                             | High     | High       | High              | Medium              | High           |
| Office  | None                       | None              | None               | None               | None             | None                             | None     | Low        | None              | Low                 | None           |
| Retail & Leisure                                  | None                       | None              | None               | None               | None             | None                             | Low      | Low        | None              | Medium              | Low            |
| Industrial  | None                       | None              | None               | None               | None             | None                             | None     | Low        | None              | Low                 | None           |
| <b>Scenario 6 – Silvertown + Belvedere Bridge</b> |                            |                   |                    |                    |                  |                                  |          |            |                   |                     |                |
| Residential                                       | None                       | None              | None               | Low                | Low              | High                             | High     | High       | High              | High                | High           |
| Office  | None                       | None              | None               | None               | None             | None                             | None     | Medium     | None              | High                | Low            |
| Retail & Leisure                                  | None                       | None              | None               | None               | None             | None                             | None     | High       | None              | High                | Medium         |
| Industrial  | None                       | None              | None               | None               | None             | None                             | None     | Medium     | None              | High                | Low            |

**Table 39. Summary of relative impact on development resulting from changes in connectivity (Northern PMAs)**

|   | Isle of Dogs | Rest of Tower Hamlets | Lower Lea Valley | Royal Docks  | Rest of Newham | Barking | Barking Riverside | Rest of B&D | London Riverside | Rest of Havering |
|---|--------------|-----------------------|------------------|--------------|----------------|---------|-------------------|-------------|------------------|------------------|
| <b>Scenario 2 – Silvertown Only</b>               |              |                       |                  |              |                |         |                   |             |                  |                  |
| Residential                                       | None         | None                  | None             | Low Negative | None           | None    | None              | None        | None             | None             |
| Office  | Low          | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | None             |
| Retail and Leisure                                | None         | None                  | None             | Low          | None           | None    | None              | None        | None             | None             |
| Industrial  | None         | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | None             |
| <b>Scenario 3 – Silvertown + Gallions Ferry</b>   |              |                       |                  |              |                |         |                   |             |                  |                  |
| Residential                                       | None         | None                  | None             | Low Negative | None           | None    | None              | None        | None             | None             |
| Office  | Low          | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | None             |
| Retail and Leisure                                | None         | None                  | None             | Low          | None           | None    | None              | None        | None             | None             |
| Industrial  | None         | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | None             |
| <b>Scenario 4 – Silvertown + Gallions Bridge</b>  |              |                       |                  |              |                |         |                   |             |                  |                  |
| Residential                                       | None         | None                  | None             | Low Negative | None           | None    | None              | Low         | None             | None             |
| Office  | Low          | None                  | High             | High         | Low            | Low     | Low               | Low         | Low              | None             |
| Retail and Leisure                                | None         | None                  | None             | Low          | Low            | Low     | Low               | Low         | None             | None             |
| Industrial  | None         | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | None             |
| <b>Scenario 5 – Silvertown + Belvedere Ferry</b>  |              |                       |                  |              |                |         |                   |             |                  |                  |
| Residential                                       | None         | None                  | None             | Low Negative | None           | None    | None              | None        | None             | None             |
| Office  | Low          | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | None             |
| Retail and Leisure                                | None         | None                  | None             | Low          | None           | None    | None              | None        | None             | None             |
| Industrial  | None         | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | None             |
| <b>Scenario 6 – Silvertown + Belvedere Bridge</b> |              |                       |                  |              |                |         |                   |             |                  |                  |
| Residential                                       | None         | None                  | None             | Low Negative | None           | Low     | Low               | Low         | Low              | Low              |
| Office  | Low          | None                  | High             | High         | Low            | Low     | Low               | Low         | Low              | Low              |
| Retail and Leisure                                | None         | None                  | None             | Low          | None           | Low     | Low               | Low         | Low              | Low              |
| Industrial  | None         | None                  | Medium           | Medium       | Low            | Low     | Low               | Low         | Low              | Low              |



## 8. Development Impacts

### Introduction

- 8.1. This chapter draws upon the analysis set out in chapters 3 - 7 to develop a series of planning and development scenarios for the study area for the next 20 years. The potential impact of each crossing option is identified, with results split by land use type, timing and location.

### Approach to the Development of Scenarios

- 8.2. For the purpose of this work, we define a scenario as “an internally consistent view of what the future might turn out to be - not a forecast, but one possible future outcome”<sup>40</sup>. We have not reduced the future development of the study area to a mathematical model, but have produced future outcomes which are possible by taking account of the many factors which could affect the development process.
- 8.3. Our approach to the development of scenarios is set out in Figure 2. For the reference case scenario (Scenario 1) we combine a bottom up analysis of the capacity at each site, considering site development constraints, and calibrate this according to forecasts of estimated demand and the Borough and sub-regional level, combined with our view on major changes to the spatial distribution of growth in East London that trend based forecasts don't always pick up.
- 8.4. For Scenarios 2 – 6 we consider the impact of other schemes and research to guide the overall scale of additional development facilitated by each crossing option, which is then distributed according to the impact of changes in connectivity, as summarised in Tables 38 and 39.

### Baseline Scenario

- 8.5. The baseline scenario takes Borough and London wide estimates of future growth as the key determinate of the scale and phasing of development, but makes some important adjustments according to future infrastructure investment and what we see as the likelihood of delivery over policy aspirations. In summary, the baseline scenario assumes that:
- The ambitious housing targets for an average of 17,000 new dwellings per year on average in the Study Area between 2015 and 2025 cannot be met in full. This is because the Study Area has never built more than 11,000 units in the past 20 years (with the average just over 8,000 units) and the private sector is unlikely to have the capacity to be able to step up rates of delivery so quickly, especially given the constraints that some large sites still have (see Chapter 6);
  - Crossrail opens in 2018, which stimulates higher levels of growth, particularly residential and office on the Isle of Dogs, Royal Docks, Woolwich and Abbey Wood, as well as some more limited growth in Romford and Rest of Newham;
  - A new rail link opens to Barking Riverside which allows the site to come forward from about 2018 onward;
  - A new strategic office location at Stratford is delivered, which competes for London wide demand with the City, Tower Hamlets and other central Boroughs such as Southwark;
  - Road crossings are assumed to be able to accommodate no additional cross river flows. Without additional crossings, the number of homes delivered on the south side of the River to access jobs on the north side is more limited, with the number of jobs on the north side also more limited.

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<sup>40</sup> Porter, M in Scenarios, planning and economic outlooks, GLA Economics



- This scenario is consistent with planning policy in so far as it does not exceed capacity identified in the SHLAA or agreed planning permissions. Longer term sites with development potential which have not gone through the SHLAA process or which do not have planning permission are therefore excluded.

8.6. The scenario is built from the bottom up (i.e by adjusting the scale of development and phasing of all 1,300 sites according to their capacity and site constraints), with adjustments informed by these strategic principals and by Borough and London wide estimates of future growth, as well as rates of past delivery and estimates of local demand at PMA level (see Chapter 5).

8.7. The starting point for the phasing of sites is the phasing contained in the SHLAA work, which provides estimates of delivery for each 5 year period to 2036 (although these are then heavily adjusted to take account of the above). For LDD sites with planning permission we have assumed phasing in line with the following:

- If they have been started and are under 200 units they will come forward by 2015;
- If they have been started and are over 200 units they come forward 50% by 2015 and 50% by 2020 (depending on size); and
- If they have not been started they are likely to come forward after 2015

8.8. Further details for each land use type are set out below.

### **Residential**

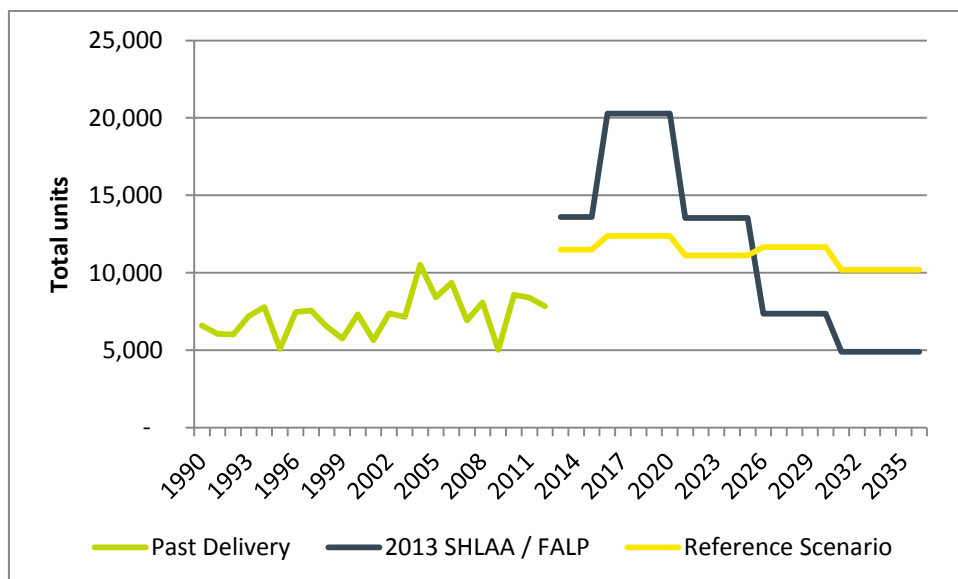
8.9. The SHLAA work, which is essentially the evidence base for the updated housing targets in the Further Alterations to the London Plan, assumes that housing delivery could rise to as much as 20,000 units per annum between 2015 and 2020 in the Study Area, before falling back down to levels associated with past rates of delivery (see Figure 53).

8.10. As set out above, we do not think the private sector has the capacity to meet these ambitious targets. We therefore take the approach that a degree of 'smoothing' is required to the SHLAA phasing, where sites still come forward but are expected to at a later date. We have assumed that sites with a significant number of constraints, as well as very large sites, will come forward over slightly longer timescales than those assumed in the SHLAA work.

8.11. Overall, we still expect an increase in the delivery of residential units compared with past trends, rising from about 8,000 units per year to about 11,500. We think this is justified as:

- Over a 10 year period between 2015 and 2025, the Study Area would meet about 70% of the housing target set within the FALP. This is a similar level to that achieved of previous London Plan housing targets during the past 10 years (see Appendix K);
- An average of 11,500 units is not a significant stretch from the 10,500 units that were delivered in 2004 (the highest rate of delivery during the past 20 years); and
- International funding is expected to support the development of some large sites, resulting in an increase in the rate of delivery.

**Figure 53. Residential Units Phasing – Reference Case vs FALP**



Source: Atkins

8.12. Table 40 demonstrates the phasing of development by Borough under the Reference Case scenario. We expect the biggest increase in delivery (when compared to previous rates of delivery in the past 10 years) to come forward in Tower Hamlets, where there are significant opportunities and high levels of market demand.

**Table 40. Phasing of Residential by Borough – Reference Case Scenario**

| Borough            | 2013 - 2015   | 2015 - 2020   | 2020 - 2025   | 2025-2030     | 2030 - 2036   | Average 2013 - 2036 | Average 2013 - 2025 | Actual Delivery 2003 - 2013 |
|--------------------|---------------|---------------|---------------|---------------|---------------|---------------------|---------------------|-----------------------------|
| Southwark          | 3,604         | 12,243        | 9,094         | 9,495         | 6,919         | 1,798               | 2,078               | 1,540                       |
| Lewisham           | 2,708         | 6,413         | 5,110         | 4,230         | 5,855         | 1,057               | 1,186               | 994                         |
| Greenwich          | 2,885         | 8,878         | 7,027         | 8,270         | 11,050        | 1,657               | 1,566               | 1,115                       |
| Bexley             | 1,581         | 1,021         | 1,394         | 2,063         | 2,370         | 366                 | 333                 | 247                         |
| Tower Hamlets      | 7,322         | 16,289        | 14,772        | 14,130        | 10,227        | 2,728               | 3,199               | 2,110                       |
| Newham             | 1,597         | 10,569        | 10,155        | 10,787        | 10,062        | 1,877               | 1,860               | 1,129                       |
| Barking & Dagenham | 1,827         | 3,806         | 3,835         | 5,613         | 10,799        | 1,125               | 789                 | 455                         |
| Havering           | 1,682         | 2,895         | 4,248         | 3,716         | 3,870         | 713                 | 735                 | 443                         |
| <b>Total</b>       | <b>23,206</b> | <b>62,114</b> | <b>55,633</b> | <b>58,304</b> | <b>61,152</b> | <b>11,322</b>       | <b>11,746</b>       | <b>8,034</b>                |

## Office

8.13. We have used the forecasts for office floorspace in the London Office Policy Review 2012as the main informant of office demand across the Study Area. The Reference Case has then been adjusted to take account of the following:

- There are no known opportunities for office development in Southwark above the 136,000sq.m identified in the Reference Case scenario, which limits the scale of growth achievable;

- As a result, demand is picked up elsewhere, including Tower Hamlets, which has significant capacity at Canary Wharf, and Stratford, which results in a step change in office growth in Newham, related to the excellent public transport accessibility at Stratford;
- Greenwich is expected to see stronger growth than anticipated in the LOPR through some of the office capacity coming forward at North Greenwich, although this is still only expected to be a fraction of what was originally planned there;
- All other Boroughs see levels of growth that are consistent with trend rates, with variations down to limits in available capacity or the provision of slightly larger schemes.

**Table 41. Office Development (sq.m) – Reference Case Scenario**

| Borough            | Reference Case (2013 - 36) | LOPR Projection to 2036 |
|--------------------|----------------------------|-------------------------|
| Southwark          | 136,084                    | 442,437                 |
| Lewisham           | 36,270                     | 38,303                  |
| Greenwich          | 61,366                     | 37,588                  |
| Bexley             | 23,889                     | 42,479                  |
| Tower Hamlets      | 635,133                    | 525,992                 |
| Newham             | 368,302                    | 68,625                  |
| Barking & Dagenham | 19,194                     | 24,064                  |
| Havering           | 14,801                     | 33,595                  |
| <b>Total</b>       | <b>1,295,039</b>           | <b>1,213,083</b>        |

Source: Atkins/LOPR 2012

**Table 42. Phasing of Office Development by Borough – Reference Case**

| Borough            | 2013 - 2015    | 2015 - 2020    | 2020 - 2025    | 2025-2030      | 2030 - 2036    | Average 2013 - 2036 |
|--------------------|----------------|----------------|----------------|----------------|----------------|---------------------|
| Southwark          | 49,147         | 33,551         | 13,658         | 21,771         | 17,956         | 5,917               |
| Lewisham           | 4,981          | 7,293          | 10,992         | 12,053         | 951            | 1,577               |
| Greenwich          | - 5,707        | 11,024         | 9,191          | 39,941         | 6,918          | 2,668               |
| Bexley             | - 6,295        | 743            | 172            | 7,537          | 21,732         | 1,039               |
| Tower Hamlets      | 76,688         | 279,163        | 261,736        | 14,053         | 3,493          | 27,614              |
| Newham             | - 92           | 8,405          | 65,535         | 130,093        | 164,361        | 16,013              |
| Barking & Dagenham | - 911          | - 1,030        | 1,607          | 5,657          | 13,872         | 835                 |
| Havering           | -              | 1,036          | 3,400          | 10,365         | -              | 644                 |
| <b>Total</b>       | <b>117,811</b> | <b>340,185</b> | <b>366,289</b> | <b>241,470</b> | <b>229,284</b> | <b>56,306</b>       |

Source: Atkins

## Retail

8.14. We have used the forecasts for retail floorspace undertaken by the GLA as the main informant of retail demand across the Study Area. The Reference Case has then been adjusted to take account of the following:

- Lewisham is expected to see significant growth as a result of its plans to expand and become a Metropolitan Town Centre;

- Greenwich is also expected to see a big increase in retail floorspace, largely as developments come forward at Greenwich Peninsula, but also as Woolwich town centre becomes more attractive to retailers because of Crossrail;
- All other Boroughs see levels of growth that are consistent with trend rates, with variations down to limits in available capacity or the provision of slightly larger schemes.

**Table 43. Retail Development (sq.m) – Reference Case Scenario**

|                    | Reference Case | GLA projection 2011 - 2036 |
|--------------------|----------------|----------------------------|
| Southwark          | 22,953         | 26,032                     |
| Lewisham           | 27,510         | 10,934                     |
| Greenwich          | 36,116         | 12,521                     |
| Bexley             | 34,737         | 27,353                     |
| Tower Hamlets      | 55,576         | 62,598                     |
| Newham             | 56,146         | 72,014                     |
| Barking & Dagenham | - 1,072        | 5,518                      |
| Havering           | 16,296         | 42,017                     |
| <b>Total</b>       | <b>248,263</b> | <b>258,987</b>             |

Source: Atkins

**Table 44. Phasing of Retail Development by Borough – Reference Case**

| Borough            | 2013 - 2015   | 2015 - 2020    | 2020 - 2025   | 2025-2030     | 2030 - 2036  | Average 2013 - 2036 |
|--------------------|---------------|----------------|---------------|---------------|--------------|---------------------|
| Southwark          | 7,244         | 9,933          | 2,456         | 3,922         | - 601        | 998                 |
| Lewisham           | 3,112         | 11,779         | 3,496         | 4,222         | 4,901        | 1,196               |
| Greenwich          | 3,537         | 2,830          | 6,154         | 11,018        | 12,576       | 1,570               |
| Bexley             | 4,470         | 15,538         | 2,506         | 4,992         | 7,232        | 1,510               |
| Tower Hamlets      | 9,526         | 28,769         | 18,548        | 2,949         | - 4,215      | 2,416               |
| Newham             | 14,760        | 25,246         | 7,026         | 11,315        | - 2,202      | 2,441               |
| Barking & Dagenham | 2,351         | 5,271          | 40            | - 3,164       | - 5,570      | - 47                |
| Havering           | -             | 10,821         | 5,717         | 2,543         | - 2,785      | 709                 |
| <b>Total</b>       | <b>44,999</b> | <b>110,189</b> | <b>45,943</b> | <b>37,796</b> | <b>9,336</b> | <b>10,794</b>       |

Source: Atkins

## Leisure

- 8.15. There are no projections of leisure floorspace available at the Borough or London level. Most proposals for leisure use are usually part of wider mixed use schemes however, and so the phasing of these has been used to inform the phasing of the leisure component. These projections have been verified against previous levels of leisure employment growth by Borough.

**Table 45. Phasing of Leisure Floorspace by Borough – Reference Case**

| Borough            | 2013 - 2015    | 2015 - 2020    | 2020 - 2025    | 2025-2030      | 2030 - 2036    | Average 2013 - 2036 |
|--------------------|----------------|----------------|----------------|----------------|----------------|---------------------|
| Southwark          | 15,280         | 17,661         | 11,577         | 2,056          | 1,565          | 2,093               |
| Lewisham           | 1,120          | 9,616          | 12,730         | 12,283         | 8,817          | 1,938               |
| Greenwich          | 12,121         | 50,516         | 47,096         | 25,208         | 24,091         | 6,914               |
| Bexley             | 11,330         | 4,404          | 742            | 2,598          | 4,141          | 1,009               |
| Tower Hamlets      | 52,072         | 32,933         | 21,788         | 13,413         | 8,503          | 5,596               |
| Newham             | 20,618         | 85,284         | 48,818         | 52,511         | 53,503         | 11,336              |
| Barking & Dagenham | -              | 8,034          | 1,710          | 9,944          | 5,456          | 1,093               |
| Havering           | -              | 8,139          | 3,893          | 10,113         | -              | 963                 |
| <b>Total</b>       | <b>112,540</b> | <b>216,588</b> | <b>148,353</b> | <b>128,124</b> | <b>106,076</b> | <b>30,943</b>       |

Source: Atkins

## Industrial

- 8.16. We have used the Borough level Employment Land Reviews (ELRs) as the base for informing the projections on industrial floorspace. However, the change in industrial floorspace is mainly driven by the transfer of industrial floorspace to other more valuable uses, such as residential. If the housing, office and retail developments identified above are to go ahead, there will be an automatic loss of industrial floorspace where this is replaced by other uses. The estimates of industrial floorspace change in the reference case are therefore driven more by the market demand for these other more valuable uses, rather than the market demand for industrial per se, with planning policy the main factor in whether these sites are released. As a result, there are some large differences between the Reference Case projections for industrial use and estimates produced by the Boroughs, although the overall loss in the Study Area is similar.

**Table 46. Industrial Development (sq.m) – Reference Case Scenario**

| Borough            | Reference Case   | Borough ELRs     |
|--------------------|------------------|------------------|
| Southwark          | - 91,417         | - 20,303         |
| Lewisham           | - 46,473         | - 15,460         |
| Greenwich          | 28,506           | - 185,045        |
| Bexley             | - 7,949          | - 16,200         |
| Tower Hamlets      | - 226,744        | - 77,817         |
| Newham             | - 28,837         | - 14,998         |
| Barking & Dagenham | 20,400           | -                |
| Havering           | - 15,186         | - 68,960         |
| <b>Total</b>       | <b>- 367,700</b> | <b>- 398,783</b> |

Source: Atkins

**Table 47. Phasing of Industrial Floorspace by Borough – Reference Case**

| Borough            | 2013 - 2015     | 2015 - 2020      | 2020 - 2025     | 2025-2030       | 2030 - 2036    | Average 2013 - 2036 |
|--------------------|-----------------|------------------|-----------------|-----------------|----------------|---------------------|
| Southwark          | - 14,789        | - 66,994         | - 2,851         | - 4,345         | - 2,438        | - 3,975             |
| Lewisham           | - 10,024        | - 22,963         | - 8,575         | - 4,911         | -              | - 2,021             |
| Greenwich          | - 5,722         | 33,498           | 581             | 149             | -              | 1,239               |
| Bexley             | - 15,142        | 10,090           | -               | - 1,170         | - 1,727        | - 346               |
| Tower Hamlets      | - 26,653        | - 128,535        | - 69,478        | - 1,419         | - 660          | - 9,858             |
| Newham             | - 222           | - 6,761          | - 6,209         | - 15,644        | -              | - 1,254             |
| Barking & Dagenham | - 2,025         | 40,844           | 10,998          | - 27,023        | - 2,394        | 887                 |
| Havering           | -               | - 14,636         | - 275           | - 275           | -              | - 660               |
| <b>Total</b>       | <b>- 74,578</b> | <b>- 155,457</b> | <b>- 75,809</b> | <b>- 54,638</b> | <b>- 7,218</b> | <b>- 15,987</b>     |

Source: Atkins

### Comparison of total employment vs GLA projections

- 8.17. Table 48 compares the total estimated employment generated by office, retail, leisure and industrial uses in the Reference Case with the GLA's most recent estimates of job growth by Borough. Overall, the Reference Case provides 70% of the total GLA employment projection in the Study Area. When employment that is not supported in office, retail and leisure uses (such as in education and health) is taken out of the London wide projections (which is an estimated 25 % - 30%), the Reference Case Scenario is therefore consistent with the GLA's work.
- 8.18. However, there are some differences at the Borough level, with Southwark expected to see much less growth in the Reference Case, largely because of the lack of available capacity for office growth. Under this scenario, employment continues to be located in Tower Hamlets as Canary Wharf continues to grow, with much lower rates of employment growth in other Boroughs.

**Table 48. Comparison of total employment generated by Reference Case vs GLA projections**

| Borough            | Total jobs growth 2013 - 2036 - Reference Case | Total jobs growth 2013 - 2036 - GLA Projections |
|--------------------|--|---|
| Southwark          | 11,400   | 61,870  |
| Lewisham           | 4,154  | 20,278  |
| Greenwich          | 9,936  | 21,718  |
| Bexley             | 3,926  | 7,966   |
| Tower Hamlets      | 53,152   | 34,939  |
| Newham             | 36,934   | 15,342  |
| Barking & Dagenham | 2,341  | 8,772   |
| Havering           | 2,085  | 8,686   |
| <b>Total</b>       | <b>123,928</b>                                 | <b>179,571</b>                                  |

### Growth at PMA level

- 8.19. Figure 57 illustrates the distribution and phasing of floorspace growth under the Reference Case Scenario at the PMA level.

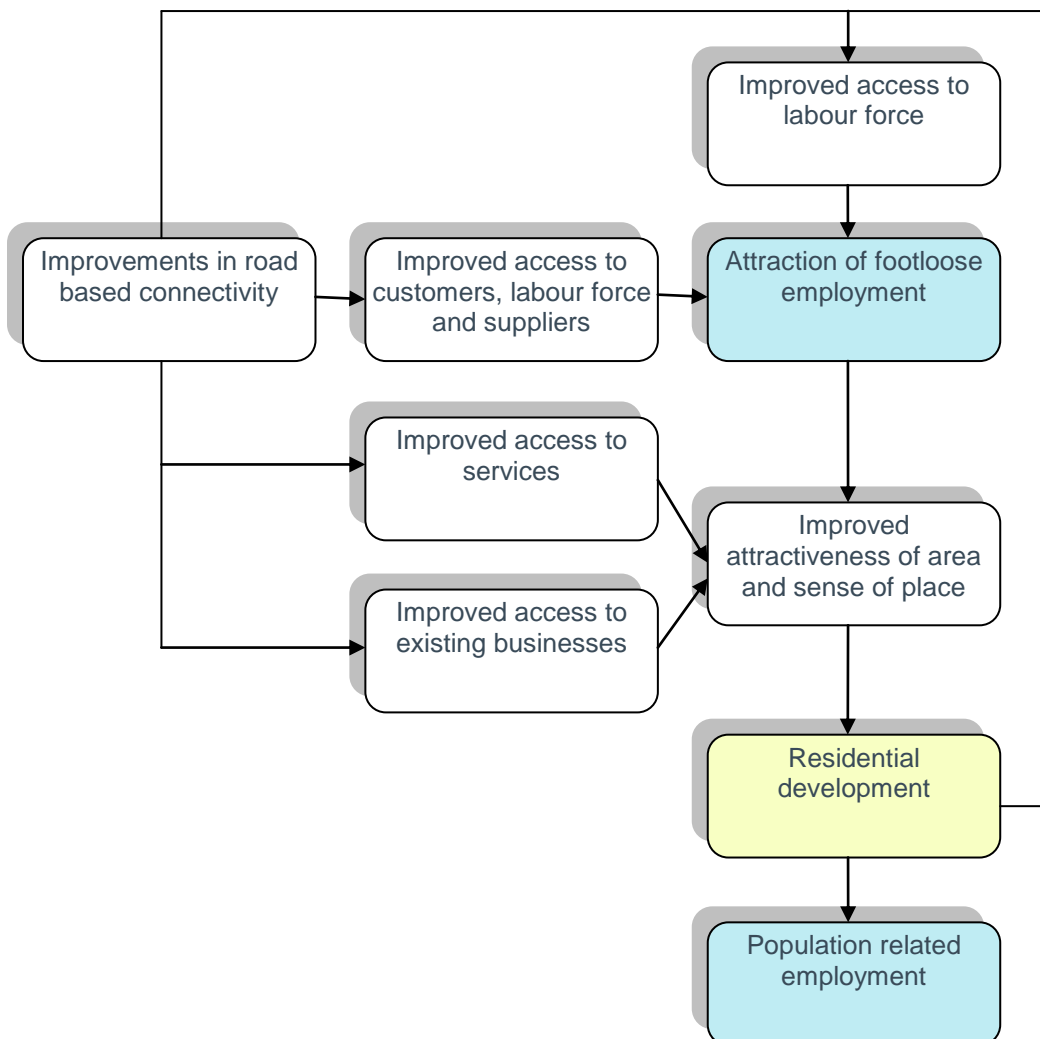
**Figure 54. Distribution and phasing of floorspace under Reference Case Scenario**

|                                  | Residential (units) |             |             | Office (sq.m) |             |             | Retail (sq.m) |             |             | Leisure (sq.m) |             |             | Industrial (sq.m) |             |             |
|----------------------------------|---------------------|-------------|-------------|---------------|-------------|-------------|---------------|-------------|-------------|----------------|-------------|-------------|-------------------|-------------|-------------|
|                                  | 2013 - 2020         | 2020 - 2030 | 2030 - 2036 | 2013 - 2020   | 2020 - 2030 | 2030 - 2036 | 2013 - 2020   | 2020 - 2030 | 2030 - 2036 | 2013 - 2020    | 2020 - 2030 | 2030 - 2036 | 2013 - 2020       | 2020 - 2030 | 2030 - 2036 |
| Canada Water & Rotherhithe       | 2,372               | 1,017       | 743         | 3,876         | 5,910       | 4,402       | 2,328         | 4,833       | - 60        | 2,790          | -           | -           | - 8,046           | -           | -           |
| Rest of Southwark                | 8,253               | 10,112      | 2,446       | 78,822        | 29,519      | 13,555      | 14,849        | 1,544       | - 540       | 30,151         | 13,633      | 1,565       | - 73,737          | - 7,196     | - 2,438     |
| Deptford New Cross               | 2,895               | 3,282       | 2,840       | 8,427         | 15,781      | 3,277       | 3,113         | 2,350       | 2,224       | 9,648          | 10,199      | 8,817       | - 27,751          | - 13,486    | -           |
| Lewisham & Catford               | 1,875               | 1,211       | 709         | 3,502         | 7,679       | 259         | 6,447         | 4,821       | 295         | 4,773          | 13,723      | -           | - 3,872           | -           | -           |
| Rest of Lewisham                 | 1,243               | 407         | 86          | 345           | - 415       | - 2,585     | 5,332         | 547         | 2,382       | - 3,685        | 1,091       | -           | - 1,364           | -           | -           |
| Greenwich Peninsula and Charlton | 3,350               | 5,397       | 4,864       | 2,972         | 37,445      | 1,371       | 2,137         | 6,061       | 3,500       | 43,925         | 63,708      | 17,525      | - 34,909          | 595         | -           |
| Woolwich                         | 3,209               | 4,464       | 3,192       | - 8,841       | 9,641       | 6,563       | 65            | 10,229      | 8,108       | 13,667         | 7,285       | 5,113       | 33,201            | -           | -           |
| Thamesmead                       | 131                 | 1,255       | 1,279       | 6,595         | - 679       | - 1,500     | - 307         | -           | -           | - 1,041        | -           | -           | 45,410            | -           | -           |
| Rest of Greenwich                | 3,490               | 1,921       | 586         | 4,591         | 2,723       | 484         | 4,472         | 883         | 969         | 6,087          | 1,310       | 1,453       | - 15,926          | 135         | -           |
| Erith and Belvedere              | 926                 | 1,055       | 581         | 7,267         | 7,370       | 7,372       | 3,143         | 7,683       | 5,267       | 5,553          | 2,018       | 2,819       | 6,017             | -           | -           |
| Rest of Bexley                   | 913                 | 1,312       | 1,244       | - 12,819      | 339         | 14,361      | 16,865        | - 185       | 1,965       | 10,181         | 1,322       | 1,322       | - 11,069          | - 1,170     | - 1,727     |
| Isle of Dogs                     | 4,598               | 9,001       | 4,865       | 223,664       | 196,699     | 3,140       | 13,382        | 3,820       | - 8,075     | 2,402          | 22,714      | 2,148       | - 70,819          | - 1,057     | -           |
| Rest of Tower Hamlets            | 11,045              | 7,790       | 461         | 129,184       | 74,807      | 2,440       | 22,498        | 14,779      | 4,022       | 80,652         | 9,673       | 4,925       | - 57,443          | - 63,629    | - 660       |
| Lower Lea Valley                 | 10,466              | 15,641      | 6,035       | 3,790         | 125,402     | 99,593      | 11,146        | 18,239      | 6,511       | 55,413         | 90,159      | 41,648      | - 30,508          | 5,332       | -           |
| Royal Docks                      | 3,348               | 7,914       | 4,015       | 6,304         | 76,245      | 65,243      | 31,677        | 2,096       | - 9,165     | 47,606         | 12,696      | 12,712      | - 3,561           | - 34,205    | -           |
| Rest of Newham                   | 706                 | 1,479       | 904         | 1,223         | - 1,736     | - 2,562     | - 401         | 904         | 289         | 4,833          | 1,289       | 573         | 160               | 808         | -           |
| Barking                          | 1,086               | 1,472       | 1,153       | - 1,152       | 3,956       | 4,150       | 2,419         | - 5,119     | 3,492       | 7,433          | 2,565       | 5,456       | - 2,515           | - 39,084    | -           |
| Barking Riverside                | 1,637               | 5,924       | 8,036       | 332           | 1,932       | 5,757       | - 171         | 2,153       | - 3,907     | - 1,053        | 7,449       | -           | 41,334            | 23,260      | - 1,595     |
| Rest of B&D                      | 2,231               | 1,083       | 1,125       | - 1,121       | 1,376       | 3,965       | 5,374         | - 158       | - 5,154     | 1,654          | 1,639       | -           | -                 | - 201       | - 799       |
| London Riverside                 | 110                 | 1,767       | 1,141       | 940           | -           | -           | -             | 775         | - 177       | -              | 961         | -           | - 14,636          | - 550       | -           |
| Rest of Havering                 | 3,410               | 4,686       | 1,974       | 96            | 13,765      | -           | 10,821        | 7,486       | - 2,608     | 8,139          | 13,045      | -           | -                 | -           | -           |
| Study Area                       | 67,294              | 88,188      | 48,277      | 457,996       | 607,759     | 229,284     | 155,188       | 83,739      | 9,336       | 329,128        | 276,478     | 106,076     | -230,034          | -130,447    | - 7,218     |

## Impacts of Improved Connectivity on the Reference Case

- 8.20. Chapter 3 identifies that improvements in road based connectivity can lead to an increase in access to labour markets and customers and improve business efficiency, thereby increasing the attractiveness of a location for both businesses and residents. This increase in demand raises the value of property and encouraged developers to build new floorspace.
- 8.21. We consider that the step change in connectivity that will result from improved River Crossings will have significant impacts on the demand for housing and business premises in the Study Area. Chapter 7 identifies that these impacts are most likely to be felt in Greenwich, Bexley and Newham depending on the crossing option.
- 8.22. The improved connectivity is critical to attracting new businesses into the area, which in turn is an important driver for attracting residential development. Residents will have the benefit of not only being able to access existing employment opportunities more quickly, but also being able to access new local employment opportunities facilitated by the river crossings. Chapter 3 identified that the improved image that a crossing will facilitate will also be beneficial for inward investment and housing growth, with improved access to jobs and services also helping to improve the sense of place in the Study Area. New residents are also likely to require additional population related employment, which further adds to economic activity.
- 8.23. This process for how improvements in road based cross river connectivity is illustrated in Figure 55 below.

**Figure 55. How Improvements in Road Based Connectivity can Facilitate Growth**





- 8.24. The research set out in Chapter 3, combined with the assessment of market potential in Chapter 5, suggests that improved road based cross river connectivity could have a positive impact on the following sectors:
- **Office:** Although it is unlikely there will be any impact on office development in Southwark and Tower Hamlets, there is potential for some significant office based growth to be facilitated in places that are less well served by public transport, and where journeys from residential locations are also not well served by public transport. Depending on the scenario, this could mean that some office growth is facilitated in eastern parts of the Royal Docks, as well as parts of north Bexley, where demand has been more buoyant than other Outer London boroughs in the Study Area. Locations such as Stratford which, even though highly accessible by public transport, are often more quickly reached by car from south east London, could also benefit;
  - **Retail and leisure:** There are a number of out-of-centre retail developments in the pipeline which could benefit in particular from a step change in the size of the potential retail catchment area. Some town centre retail development in Outer London centres such as Bexleyheath, Rainham and Eltham, where car use is higher, could also benefit;
  - **Industrial:** Industrial development is perhaps likely to see the biggest benefit from road based connectivity. Chapter 3 identified that the construction sector, as well as the logistics and distribution sector, are expected to benefit from improvements in access to customers and the resilience of the network. Although the Industrial sector as a whole will continue to decline, there are still opportunities for growth where good quality sites and premises can be brought forward. River Crossings may therefore help to slow the rate of overall decline in some locations. However, there is an important relationship between the growth of other uses and the loss of industrial land. Improvements in accessibility could make a site currently in industrial use more likely to come forward for residential use, generating a net loss of employment land. In many places, such as North Bexley and Barking & Dagenham, there is scope to intensify the utilisation of land, developing it for residential whilst at the same time retaining higher quality industrial premises.

## Potential Scale of Impacts on the Reference Case

### LSE Research

- 8.25. Recent research by the London School of Economics identified that a 10% improvement in accessibility (to jobs) leads to about a 3% increase in the number of businesses and employment, up to 30 km from the site of the improvement. This falls to a 2% increase in the number of businesses and employment up to 10km from the site of improvement. The estimates range between zero and 10% according to sector and specification (more details in Chapter 3)
- 8.26. If these findings were applied to the average change in access to employment resulting from each crossing option (as identified in Chapter 7), then the Study Area could expect to see an **increase of 11,000 jobs under Scenario 2, rising to 19,000 jobs under Scenario 4**, on top of the Reference Case.

**Table 49. Potential additional employment above Reference Case – LSE Method**

| Scenario                                   | Total average increase in access to employment | Additional employment above Reference Case |
|--|--|--|
| Scenario 2 - Silvertown only               | 5.2%   | 11,250                                     |
| Scenario 3 - Silvertown + Gallions Ferry   | 6.3%   | 13,512                                     |
| Scenario 4 - Silvertown + Gallions Bridge  | 9.1%   | 19,715                                     |
| Scenario 5 - Silvertown + Belvedere Ferry  | 5.5%   | 11,845                                     |
| Scenario 6 - Silvertown + Belevdere Bridge | 7.4%   | 15,914                                     |

### Impacts from Dartford Bridge

- 8.27. Chapter 3 identified that the Dartford Crossing has resulted in employment growth in the five Boroughs close the crossing (which covers a similar geographical extent to the Study Area) of 21% above the sub-regional average during the past 20 years. Employment in London is expected to grow at an annual rate of 0.65% over the next 20 years. If the Study Area could grow 20% faster than this (0.78% per annum), **this would generate a total of 27,860 jobs above the Reference Case by 2031.**
- 8.28. However, the Study Area is already expected to grow at a faster rate than the rest of London, at 0.71% instead of 0.65% per annum. If the 20% uplift is applied to this slightly faster rate of growth, **the Study Area could see an additional 30,650 jobs above the Reference Case by 2031.**
- 8.29. This Dartford Bridge is an example of a significant expansion in capacity of an existing road link. There are therefore clear similarities with Silvertown Tunnel. Although we don't have full details on the scale of increase in capacity, the Dartford Crossing is likely to have been of a comparable scale, with a total of four additional lanes opening – similar to the Silvertown proposals.

### TfL River Crossings Business Survey

- 8.30. The Business Survey undertaken by TfL<sup>41</sup> identified that 50% of businesses in the Study Area expected to recruit additional staff as a result of improved river crossings. Although it was not asked how many additional staff would be employed by each business, even a conservative estimate of one additional person per business would result **in almost 32,000 additional jobs.** This growth would be split relatively evenly throughout the Study Area, with Tower Hamlets and Southwark seeing the greatest growth as they have the largest business base. The service sector (which is largely office based) would be expected to see the greatest absolute growth.
- 8.31. It should be noted that the responses on additional staff do not relate to a specific set of crossing options, so responses were given on the premise that cross river capacity would simply be 'improved'.

<sup>41</sup> WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014

**Table 50. Number of businesses that could recruit additional staff – by Borough**

| Borough       | Businesses 2012 | Will recruit additional staff | Number of businesses that could recruit additional staff |
|---------------|-----------------|-------------------------------|--|
| Southwark     | 13,835          | 45%                           | 6,226  |
| Lewisham      | 8,060           | 42%                           | 3,385  |
| Greenwich     | 7,815           | 57%                           | 4,455  |
| Bexley        | 7,450           | 51%                           | 3,800  |
| Tower Hamlets | 13,590          | 51%                           | 6,931  |
| Newham        | 7,880           | 54%                           | 4,255  |
| B&D           | 5,325           | 47%                           | 2,503  |
| Total         | 63,955          | 50%                           | 31,554   |

**Table 51. Number of business that could recruit additional staff – by sector**

| Sector                           | Businesses | Will recruit additional staff | Number of businesses that could recruit additional staff |
|----------------------------------|------------|-------------------------------|--|
| Primary                          | 2,730      | 50%                           | 1,365  |
| Construction                     | 5,430      | 62%                           | 3,367  |
| Transport, Retail & Distribution | 11,785     | 51%                           | 6,010  |
| Services (private)               | 32,735     | 46%                           | 15,058   |
| Services (public)                | 11,275     | 54%                           | 6,089  |
| Overall                          | 63,955     | 50%                           | 31,889   |

## Accessibility – density research

- 8.32. Appendix G summarises research that was undertaken for the previous Thames Gateway Bridge on the relationship between accessibility and density. The research identified that the accessibility improvements facilitated by the proposed Thames Gateway Bridge could mean result in **an increase of 34,600 jobs and 72,500 people** across a Study Area which was similar to that defined in this work. The research showed that employment and population impacts would be greatest in Greenwich and Newham.
- 8.33. This research only considered the impacts of the Thames Gateway Bridge, so Silvertown Crossing was not included. However, the proposed capacity of the Thames Gateway Bridge was significantly greater than the Gallions each fixed link considered in this work, so it is difficult to extract robust transferrable lessons from it.

## Summary of research on scale of impacts

- 8.34. The above strands of research suggest that the overall scale of impacts on total job growth could vary from **between 11,000 - 30,000 additional jobs for Scenario 2 - Silvertown crossing** (which will have the lowest net positive connectivity impact), and **between 19,000 – 31,000+ jobs for Scenario 4 – Silvertown + Gallions Bridge**. Other Scenarios will be somewhere in between depending on their level of total connectivity improvements. The overall scale of actual impacts will depend on the additional capacity of sites and the potential for the improved connectivity to bring them forward more quickly. This is considered within the development of Scenario 2 – 6.

- 8.35. The distribution of development impacts will depend upon the availability of sites, and of course the change in connectivity (as well as the sensitivity to road based connectivity by location and sector), as summarised in Chapter 7.
- 8.36. There is less research available on the impacts of improved road connectivity on the housing market, although the step change in access to jobs on the south side of the River suggests it could be significant. The accessibility – density research in Appendix G identified the potential for 72,500 additional people as a result of improved connectivity, which is approximately 29,000 additional dwelling units. Our approach is to note the potentially significant increases in new employment facilitated by each crossing option, as well as the change in access to existing businesses, and consider the impact that this will have on bringing sites forward more quickly in particular areas, especially south of the River in Greenwich and Bexley.

## Scenario 2: Silvertown Crossing Only

- 8.37. Scenario 2 assumes that the top down drivers of demand remain the same as in the Reference Case scenario, with the exception that Silvertown Tunnel provides a step change in connectivity across the River – as set out in Chapter 7.
- 8.38. This change in connectivity is expected to have the following high levels impacts on development:
- Greenwich and Bexley become much more attractive destinations to live in as the number of accessible jobs by road increases dramatically. The rise in property values encourages developers to bring sites forward more quickly and enables site constraints to be dealt with. As a result, the phasing of housing sites across much of the Borough starts to follow the phasing estimates set out in the SHLAA work;
  - Newham, especially the Royal Docks, becomes much more accessible to the labour force from south of the River which, when combined with the cheaper land values compared with Canary Wharf and more central locations, as well as the gradually improving physical environment, generates greater demand for premises. Despite being located relatively close to the new Crossrail station at Custom House, the Royal Docks Business Park is likely to benefit, with journey times from much of south east London quicker to this location by road;
  - The Lower Lea Valley, in particular the Stratford City office development, is also likely to see benefits from an increase in the available workforce. Although the majority of people working at Stratford City will travel by train, the development is likely to benefit from improved road access from south east London and Kent where links to Stratford are currently heavily constrained by road and uncompetitive by public transport;
  - A small amount of negative impact on housing sites in the Royal Docks is possible due to the potential reduction in access to jobs caused by increased congestion. We estimate that any negative development impact is likely to occur close to the entrance of the tunnel, near Thames Wharf;
  - Industrial development is also likely to benefit in the Royal Docks and in Barking & Dagenham, where improvements in access to the labour force will be combined with improved access to potential customers. Sites such as Limmo and Ivax in particular could see industrial development coming forward more quickly;
  - Improvements to the retail catchment are likely to bring forward retail and leisure development in the Royal Docks, largely as part of mixed use developments, with Thamesmead and northern Bexley also benefiting.
- 8.39. Table 52 summarises the amount of development expected to come forward before 2030 in addition to the Reference Case scenario, with the change in development at the PMA level set out in Table 53.

**Table 52. Summary of Total Development Impacts – Scenario 2**

| <b>Floorspace Type</b>       | <b>Increase over Reference Case 2013 - 2030</b> | <b>Estimated population / jobs</b> |
|------------------------------|---|------------------------------------|
| Residential units            | 9,000 to 11,200                                 | 20,700 to 25,800                   |
| Office floorspace (sq.m)     | 96,200 to 128,400                               | 8,000 to 10,700                    |
| Retail floorspace (sq.m)     | 16,800 to 22,500                                | 850 to 1,100                       |
| Leisure floorspace (sq.m)    | 11,900 to 15,700                                | 250 to 300                         |
| Industrial floorspace (sq.m) | 52,500 to 68,100                                | 750 to 1,000                       |

Source: Atkins

**Table 53. Development Impacts at PMA Level – Scenario 2**

|                                  | Residential (units) |                | Office (sq.m)    |                   | Retail (sq.m)  |                 | Leisure (sq.m) |                  | Industrial (sq.m) |                  |
|----------------------------------|---------------------|----------------|------------------|-------------------|----------------|-----------------|----------------|------------------|-------------------|------------------|
|                                  | 2013 - 2020         | 2020 - 2030    | 2013 - 2020      | 2020 - 2030       | 2013 - 2020    | 2020 - 2030     | 2013 - 2020    | 2020 - 2030      | 2013 - 2020       | 2020 - 2030      |
| Canada Water & Rotherhithe       |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Rest of Southwark                |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Deptford New Cross               |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Lewisham & Catford               | 340 to 400          | 250 to 340     |                  |                   |                |                 |                |                  |                   |                  |
| Rest of Lewisham                 |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Greenwich Peninsula and Charlton | 3,500 to 4,000      |                |                  |                   |                |                 |                |                  |                   |                  |
| Woolwich                         | 740 to 860          | 2,000 to 2,750 |                  |                   |                |                 |                |                  |                   |                  |
| Thamesmead                       |                     | 1,050 to 1,400 |                  |                   |                | 1,700 to 2,300  |                | 1,700 to 2,300   |                   |                  |
| Rest of Greenwich                |                     | 450 to 600     |                  |                   |                |                 |                |                  |                   |                  |
| Erith and Belvedere              |                     |                |                  |                   |                | 1,300 to 1,700  |                | 1,300 to 1,700   |                   |                  |
| Rest of Bexley                   | 400 to 460          | 400 to 530     |                  |                   |                | 1,500 to 3,500  |                | 2600 to 3,500    |                   |                  |
| Isle of Dogs                     |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Rest of Tower Hamlets            |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Lower Lea Valley                 |                     |                | 5,400 to 6,300   | 66,000 to 90,000  |                |                 |                |                  |                   |                  |
| Royal Docks                      |                     | -120 to -170   | 4,800 to 5,600   | 15,700 to 21,000  | 7,300 to 8,500 | 5,000 to 6,500  | 1,300 to 1,500 | 5,000 to 6,700   | 7,500 to 9,000    | 3,800 to 5,300   |
| Rest of Newham                   |                     |                |                  | 1,300 to 1,700    |                |                 |                |                  | 9,000 to 10,000   |                  |
| Barking                          |                     |                |                  |                   |                |                 |                |                  |                   | 3,000 to 4,000   |
| Barking Riverside                |                     |                |                  | 3,000 to 3,800    |                |                 |                |                  |                   | 25,000 to 34,000 |
| Rest of B&D                      |                     |                |                  |                   |                |                 |                |                  |                   | 4,200 to 5,800   |
| London Riverside                 |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Rest of Havering                 |                     |                |                  |                   |                |                 |                |                  |                   |                  |
| Study Area                       | 5,000 to 5,700      | 4,000 to 5,500 | 10,200 to 11,900 | 86,000 to 117,000 | 7,300 to 8,500 | 9,500 to 14,000 | 1,300 to 1,500 | 10,600 to 14,200 | 16,500 to 19,000  | 36,000 to 49,100 |

## Scenario 3: Silvertown + Gallions Ferry

8.40. Scenario 3 has similar development impacts to Scenario 2 with the following exceptions:

- The improvements in connectivity from Gallions Ferry mean that Thamesmead and North Bexley become slightly more attractive for residential development. A number of medium sized sites in Thamesmead are likely to benefit in particular;
- Additional retail and leisure, and a limited amount of office floorspace, may also come forward in Thamesmead town centre, Abbey Wood and Erith.
- Woolwich also becomes slightly more attractive for retail uses, although the impact is relatively marginal.

**Table 54. Summary of Development Impacts - Scenario 3**

| Floorspace Type              | Increase over Reference Case 2013 - 2030 | Estimated population / jobs |
|------------------------------|--|-----------------------------|
| Residential units            | 10,300 to 12,800                         | 23,700 to 29,400            |
| Office floorspace (sq.m)     | 96,200 to 128,400                        | 8,000 to 10,700             |
| Retail floorspace (sq.m)     | 24,200 to 31,200                         | 1,200 to 1,600              |
| Leisure floorspace (sq.m)    | 14,500 to 19,200                         | 300 to 400                  |
| Industrial floorspace (sq.m) | 52,500 to 68,100                         | 750 to 950                  |

**Table 55. Development Impacts at PMA Level – Scenario 3**

|                                  | Residential (units) |                | Office (sq.m)    |                   | Retail (sq.m)  |                  | Leisure (sq.m) |                  | Industrial (sq.m) |                  |
|----------------------------------|---------------------|----------------|------------------|-------------------|----------------|------------------|----------------|------------------|-------------------|------------------|
|                                  | 2013 - 2020         | 2020 - 2030    | 2013 - 2020      | 2020 - 2030       | 2013 - 2020    | 2020 - 2030      | 2013 - 2020    | 2020 - 2030      | 2013 - 2020       | 2020 - 2030      |
| Canada Water & Rotherhithe       |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Rest of Southwark                |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Deptford New Cross               |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Lewisham & Catford               | 340 to 400          | 250 to 340     |                  |                   |                |                  |                |                  |                   |                  |
| Rest of Lewisham                 |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Greenwich Peninsula and Charlton | 3,500 to 4,000      |                |                  |                   |                |                  |                |                  |                   |                  |
| Woolwich                         | 740 to 860          | 2,900 to 3,900 |                  |                   |                | 3,400 to 4,600   |                |                  |                   |                  |
| Thamesmead                       |                     | 1,400 to 1,900 |                  |                   |                | 3,800 to 5,200   |                | 3,000 to 4,000   |                   |                  |
| Rest of Greenwich                |                     | 450 to 600     |                  |                   |                |                  |                |                  |                   |                  |
| Erith and Belvedere              |                     |                |                  |                   |                | 2,100 to 2,900   |                | 2,600 to 3,500   |                   |                  |
| Rest of Bexley                   | 400 to 460          | 400 to 530     |                  |                   |                | 2,600 to 3,500   |                | 2600 to 3,500    |                   |                  |
| Isle of Dogs                     |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Rest of Tower Hamlets            |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Lower Lea Valley                 |                     |                | 5,400 to 6,300   | 66,000 to 90,000  |                |                  |                |                  |                   |                  |
| Royal Docks                      |                     | -120 to -170   | 4,800 to 5,600   | 15,700 to 21,000  | 7,300 to 8,500 | 5,000 to 6,500   | 1,300 to 1,500 | 5,000 to 6,700   | 7,500 to 9,000    | 3,800 to 5,300   |
| Rest of Newham                   |                     |                |                  | 1,300 to 1,700    |                |                  |                |                  | 9,000 to 10,000   |                  |
| Barking                          |                     |                |                  |                   |                |                  |                |                  |                   | 3,000 to 4,000   |
| Barking Riverside                |                     |                |                  | 3,000 to 3,800    |                |                  |                |                  |                   | 25,000 to 34,000 |
| Rest of B&D                      |                     |                |                  |                   |                |                  |                |                  |                   | 4,200 to 5,800   |
| London Riverside                 |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Rest of Havering                 |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Study Area                       | 5,000 to 5,700      | 5,200 to 7,100 | 10,200 to 11,900 | 86,000 to 116,500 | 7,300 to 8,500 | 16,900 to 22,700 | 1,300 to 1,500 | 13,200 to 17,700 | 16,500 to 19,000  | 36,000 to 49,100 |



## Scenario 4: Silvertown + Gallions Bridge

8.41. Scenario 4 has the biggest development impacts of all crossing options consider as part of this work. We estimate the following impacts in addition to those set out in Scenario 2:

- The step change in connectivity to Thamesmead and Bexley raises land values significantly, introducing the prospect of comprehensive redevelopment of underutilised land and industrial sites. These sites are likely to be redeveloped for housing, with small elements of retail and some office, with potential for higher quality flexible industrial units;
- There would be a significant positive benefit to the Royal Docks, especially the eastern side, which would have direct links from south east London and Kent. This is likely to encourage development to come forward more quickly and to unlock sites that are currently not considered viable due to a lack of demand;
- Barking Riverside would benefit slightly, with some industrial sites coming forward and a small amount of retail as a result of marginal improvements in access to customers and improved resilience of the local road network.
- Woolwich would benefit significantly, with potential for some office and retail development.

**Table 56. Summary of Development Impacts – Scenario 4**

| Floorspace Type              | Increase over Reference Case 2013 - 2030 | Estimated population / jobs |
|------------------------------|--|-----------------------------|
| Residential units            | 18,400 to 23,800                         | 42,300 to 54,700            |
| Office floorspace (sq.m)     | 210,200 to 286,200                       | 17,500 to 23,900            |
| Retail floorspace (sq.m)     | 46,600 to 61,600                         | 2,300 to 3,100              |
| Leisure floorspace (sq.m)    | 22,900 to 30,700                         | 450 to 600                  |
| Industrial floorspace (sq.m) | 95,600 to 118,000                        | 1,400 to 1,700              |

**Table 57. Development Impacts at PMA Level – Scenario 4**

|                                  | Residential (units) |                  | Office (sq.m)    |                    | Retail (sq.m)  |                  | Leisure (sq.m) |                  | Industrial (sq.m) |                    |
|----------------------------------|---------------------|------------------|------------------|--------------------|----------------|------------------|----------------|------------------|-------------------|--------------------|
|                                  | 2013 - 2020         | 2020 - 2030      | 2013 - 2020      | 2020 - 2030        | 2013 - 2020    | 2020 - 2030      | 2013 - 2020    | 2020 - 2030      | 2013 - 2020       | 2020 - 2030        |
| Canada Water & Rotherhithe       |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Rest of Southwark                |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Deptford New Cross               |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Lewisham & Catford               | 340 to 400          | 250 to 340       |                  |                    |                |                  |                |                  |                   |                    |
| Rest of Lewisham                 |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Greenwich Peninsula and Charlton | 3,500 to 4,000      |                  |                  |                    |                |                  |                |                  |                   |                    |
| Woolwich                         | 740 to 860          | 3,000 to 3,900   |                  | 3,400 to 4,600     |                | 4,200 to 5,700   |                |                  |                   | 7,600 to 10,200    |
| Thamesmead                       |                     | 1,400 to 2,000   |                  | 7,000 to 9,200     |                | 9,000 to 12,000  |                | 4,200 to 5,800   |                   | 14,000 to 19,000   |
| Rest of Greenwich                |                     | 450 to 600       |                  |                    |                |                  |                |                  |                   |                    |
| Erith and Belvedere              |                     | 7,600 to 10,300  |                  | 13,000 to 17,000   |                | 10,000 to 14,000 |                | 3,000 to 4,000   | 53,000 to 62,000  | -60,000 to -80,000 |
| Rest of Bexley                   | 500 to 550          | 700 to 1,000     |                  | 2,600 to 3,500     |                | 6,000 to 8,000   |                | 5,600 to 7,500   |                   | 11,000 to 15,000   |
| Isle of Dogs                     |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Rest of Tower Hamlets            |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Lower Lea Valley                 |                     |                  | 5,400 to 6,300   | 100,000 to 140,000 |                |                  |                |                  |                   |                    |
| Royal Docks                      |                     | -120 to -170     | 4,800 to 5,600   | 67,000 to 91,000   | 7,300 to 8,500 | 5,000 to 6,500   | 1,300 to 1,500 | 5,000 to 6,700   | 7,500 to 9,000    | 17,000 to 23,000   |
| Rest of Newham                   |                     |                  |                  | 4,000 to 5,200     |                |                  |                |                  | 9,000 to 10,000   | 4,300 to 5,800     |
| Barking                          |                     |                  |                  |                    |                | 3,000 to 4,000   |                | 3,800 to 5,200   |                   | 3,000 to 4,000     |
| Barking Riverside                |                     |                  |                  | 3,000 to 3,800     |                | 2,100 to 2,900   |                |                  |                   | 25,000 to 34,000   |
| Rest of B&D                      |                     |                  |                  |                    |                |                  |                |                  |                   | 4,200 to 5,800     |
| London Riverside                 |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Rest of Havering                 |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Study Area                       | 5,100 to 5,800      | 13,300 to 18,000 | 10,200 to 11,900 | 200,000 to 274,300 | 7,300 to 8,500 | 39,300 to 53,100 | 1,300 to 1,500 | 21,600 to 29,200 | 69,500 to 81,000  | 26,100 to 36,800   |

## Scenario 5: Silvertown + Belvedere Ferry

8.42. Scenario 5 has similar development impacts to Scenario 2 with the following exceptions:

- The improvements in connectivity from Belvedere Ferry mean that Thamesmead and North Bexley in particular become slightly more attractive for residential development. The Havering section of London Riverside may also see some small amounts of additional housing growth;
- Additional retail and leisure floorspace, and a limited amount of office floorspace, may also come forward in Erith, Rainham and Thamesmead.
- Woolwich also becomes slightly more attractive for retail uses, although the impact is relatively marginal.

**Table 58. Summary of Development Impacts – Scenario 5**

| <b>Floorspace Type</b>       | <b>Increase over Reference Case 2013 - 2030</b> | <b>Estimated population / jobs</b> |
|------------------------------|---|------------------------------------|
| Residential units            | 11,300 to 15,000                                | 26,000 to 34,300                   |
| Office floorspace (sq.m)     | 100,000 to 133,000                              | 8,300 to 11,100                    |
| Retail floorspace (sq.m)     | 25,900 to 33,500                                | 1,300 to 1,700                     |
| Leisure floorspace (sq.m)    | 14,500 to 19,200                                | 300 to 400                         |
| Industrial floorspace (sq.m) | 55,500 to 72,100                                | 800 to 1,000                       |

**Table 59. Development Impacts at PMA Level – Scenario 5**

|                                  | Residential (units) |                | Office (sq.m)    |                   | Retail (sq.m)  |                  | Leisure (sq.m) |                  | Industrial (sq.m) |                  |
|----------------------------------|---------------------|----------------|------------------|-------------------|----------------|------------------|----------------|------------------|-------------------|------------------|
|                                  | 2013 - 2020         | 2020 - 2030    | 2013 - 2020      | 2020 - 2030       | 2013 - 2020    | 2020 - 2030      | 2013 - 2020    | 2020 - 2030      | 2013 - 2020       | 2020 - 2030      |
| Canada Water & Rotherhithe       |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Rest of Southwark                |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Deptford New Cross               |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Lewisham & Catford               | 340 to 400          | 250 to 340     |                  |                   |                |                  |                |                  |                   |                  |
| Rest of Lewisham                 |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Greenwich Peninsula and Charlton | 3,500 to 4,000      |                |                  |                   |                |                  |                |                  |                   |                  |
| Woolwich                         | 740 to 860          | 2,900 to 3,900 |                  |                   |                | 3,400 to 4,600   |                |                  |                   |                  |
| Thamesmead                       |                     | 1,400 to 1,900 |                  | 1,700 to 2,300    |                | 3,800 to 5,200   |                | 3,000 to 4,000   |                   |                  |
| Rest of Greenwich                |                     | 450 to 600     |                  |                   |                |                  |                |                  |                   |                  |
| Erith and Belvedere              |                     | 1,000 to 1,300 |                  | 1,700 to 2,300    |                | 2,100 to 2,900   |                | 2600 to 3,500    |                   |                  |
| Rest of Bexley                   | 400 to 460          | 700 to 1,000   |                  |                   |                | 2,600 to 3,500   |                | 2,600 to 3500    |                   |                  |
| Isle of Dogs                     |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Rest of Tower Hamlets            |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Lower Lea Valley                 |                     |                | 5,400 to 6,300   | 66,000 to 90,000  |                |                  |                |                  |                   |                  |
| Royal Docks                      |                     | -120 to -170   | 4,800 to 5,600   | 15,700 to 21,000  | 7,300 to 8,500 | 5,000 to 6,500   | 1,300 to 1,500 | 5,000 to 6,700   | 7,500 to 9,000    | 3,800 to 5,300   |
| Rest of Newham                   |                     |                |                  | 1,300 to 1,700    |                |                  |                |                  | 9,000 to 10,000   |                  |
| Barking                          |                     |                |                  |                   |                |                  |                |                  |                   | 3,000 to 4,000   |
| Barking Riverside                |                     |                |                  | 3,000 to 3,800    |                |                  |                |                  |                   | 25,000 to 34,000 |
| Rest of B&D                      |                     |                |                  |                   |                |                  |                |                  |                   | 4,200 to 5,800   |
| London Riverside                 |                     | 200 to 320     |                  |                   |                | 1,700 to 2,300   |                |                  |                   | 3,000 to 4,000   |
| Rest of Havering                 |                     |                |                  |                   |                |                  |                |                  |                   |                  |
| Study Area                       | 4,500 to 5,700      | 6,800 to 9,200 | 10,200 to 11,900 | 89,400 to 121,100 | 7,300 to 8,500 | 18,600 to 25,000 | 1,300 to 1,500 | 13,200 to 17,700 | 16,500 to 19,000  | 39,000 to 53,100 |

## Scenario 6: Silvertown + Belvedere Bridge

8.43. Scenario 6 has similar impacts to Scenario 4 with the exception of the following:

- Although there is clearly a step change in connectivity to Thamesmead and Bexley, the change in access to jobs is smaller than in Scenario 4. This means that smaller industrial and underutilised sites in Bexley are likely to come forward, but larger industrial estates are likely to remain in their current use;
- The reduced demand for transfer of industrial uses to residential means that total industrial employment is highest in this option;
- There would be a positive benefit to the Royal Docks, especially the eastern side, which would have direct links from south east London and Kent. This is likely to encourage development to come forward more quickly and to unlock sites that are currently not considered viable due to a lack of demand;
- Barking Riverside would benefit the most in this option, with some industrial sites coming forward and a small amount of retail as a result of improvements in access to customers and improved resilience of the local road network.

**Table 60. Summary of Development Impacts – Scenario 6**

| Floorspace Type              | Increase over Reference Case 2013 - 2030 | Estimated population / jobs |
|------------------------------|--|-----------------------------|
| Residential units            | 17,300 to 22,000                         | 39,800 to 50,600            |
| Office floorspace (sq.m)     | 161,000 to 216,000                       | 13,400 to 18,000            |
| Retail floorspace (sq.m)     | 39,800 to 52,500                         | 2,000 to 2,600              |
| Leisure floorspace (sq.m)    | 22,400 to 30,000                         | 450 to 600                  |
| Industrial floorspace (sq.m) | 137,000 to 172,000                       | 2,000 to 2,500              |

**Table 61. Development Impacts at PMA Level – Scenario 6**

|                                  | Residential (units) |                  | Office (sq.m)    |                    | Retail (sq.m)  |                  | Leisure (sq.m) |                  | Industrial (sq.m) |                    |
|----------------------------------|---------------------|------------------|------------------|--------------------|----------------|------------------|----------------|------------------|-------------------|--------------------|
|                                  | 2013 - 2020         | 2020 - 2030      | 2013 - 2020      | 2020 - 2030        | 2013 - 2020    | 2020 - 2030      | 2013 - 2020    | 2020 - 2030      | 2013 - 2020       | 2020 - 2030        |
| Canada Water & Rotherhithe       |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Rest of Southwark                |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Deptford New Cross               |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Lewisham & Catford               | 340 to 400          | 250 to 340       |                  |                    |                |                  |                |                  |                   |                    |
| Rest of Lewisham                 |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Greenwich Peninsula and Charlton | 3,500 to 4,000      |                  |                  |                    |                |                  |                |                  |                   |                    |
| Woolwich                         | 740 to 860          | 2,000 to 2,800   |                  | 2,500 to 3,500     |                | 3,400 to 4,600   |                |                  |                   |                    |
| Thamesmead                       |                     | 1,000 to 1,400   |                  | 5,100 to 7,000     |                | 5,000 to 7,000   |                | 3400 to 4,600    |                   | 8,500 to 11,500    |
| Rest of Greenwich                |                     | 450 to 600       |                  |                    |                |                  |                |                  |                   |                    |
| Erith and Belvedere              |                     | 5,600 to 7,500   |                  | 10,000 to 14000    |                | 5,500 to 7,500   |                | 2,500 to 3,500   | 53,000 to 62,000  | -21,000 to -28,000 |
| Rest of Bexley                   | 500 to 550          | 400 to 530       |                  | 1,700 to 2,300     |                | 3,800 to 5,200   |                | 3,800 to 5,200   |                   |                    |
| Isle of Dogs                     |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Rest of Tower Hamlets            |                     |                  |                  |                    |                |                  |                |                  |                   |                    |
| Lower Lea Valley                 |                     |                  | 5,400 to 6,300   | 82,000 to 110,000  |                |                  |                |                  |                   |                    |
| Royal Docks                      |                     | -120 to -170     | 4,800 to 5,600   | 41,000 to 56,000   | 7,300 to 8,500 | 5,000 to 6,500   | 1,300 to 1,500 | 5,000 to 6,700   | 7,500 to 9,000    | 3,900 to 5,300     |
| Rest of Newham                   |                     |                  |                  | 1,300 1,700        |                |                  |                |                  | 9,000 to 10,000   |                    |
| Barking                          |                     |                  |                  |                    |                | 3,000 to 4,000   |                | 3,000 to 4,000   |                   | 3,000 to 4,000     |
| Barking Riverside                |                     | 1,100 to 1,500   |                  | 3,000 to 3,800     |                | 2,100 to 2,900   |                |                  |                   | 50,000 to 69,000   |
| Rest of B&D                      |                     |                  |                  |                    |                |                  |                |                  |                   | 4,200 to 5,800     |
| London Riverside                 | 1,550 to 1,700      |                  |                  |                    |                |                  |                |                  |                   | 11,000 to 15,000   |
| Rest of Havering                 |                     |                  |                  |                    |                | 4,700 to 6,300   |                | 3,400 to 4,600   |                   |                    |
| Study Area                       | 6,600 to 7,500      | 10,700 to 14,500 | 10,200 to 11,900 | 150,900 to 204,100 | 7,300 to 8,500 | 32,500 to 44,000 | 1,300 to 1,500 | 21,100 to 28,600 | 76,900 to 89,600  | 59,600 to 82,600   |

## Summary

- 8.44. Table 62 shows that Scenario 4 creates the biggest development impacts, with a total additional gross impact of 18,400 – 23,800 residential units and 375,000 – 497,000sq.m of commercial floorspace by 2030.

**Table 62. Gross development impacts to 2030 – all Scenarios**

|                              | Scenario 2           | Scenario 3           | Scenario 4            | Scenario 5            | Scenario 6            |
|------------------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Residential units            | 9,000 to<br>11,200   | 10,300 to<br>12,800  | 18,400 to<br>23,800   | 11,300 to<br>15,000   | 17,300 to<br>22,000   |
| Office floorspace (sq.m)     | 96,200 to<br>128,400 | 96,200 to<br>128,400 | 210,200 to<br>286,200 | 100,000 to<br>133,000 | 161,000 to<br>216,000 |
| Retail floorspace (sq.m)     | 16,800 to<br>22,500  | 24,200 to<br>31,200  | 46,600 to<br>61,600   | 25,900 to<br>33,500   | 39,800 to<br>52,500   |
| Leisure floorspace (sq.m)    | 11,900 to<br>15,700  | 14,500 to<br>19,200  | 22,900 to<br>30,700   | 14,500 to<br>19,200   | 22,400 to<br>30,000   |
| Industrial floorspace (sq.m) | 52,500 to<br>68,100  | 52,500 to<br>68,100  | 95,600 to<br>118,000  | 55,500 to<br>72,100   | 137,000 to<br>172,000 |

## Net additional impacts

- 8.45. To estimate net additional impacts of employment from the development scenarios set out in this Chapter, we have used the approach set out in the English Partnerships Additionally Guide 2008. This involves identifying:

- Leakage: which is the proportion of jobs in the study area that are expected to be taken by people living outside the area;
- Displacement: which is the proportion of floorspace growth identified which has resulted in reduced floorspace elsewhere; and
- Economic multiplier effects: which is further economic activity associated with the additional local income and supplier purchases from the development impacts identified above.

## Leakage

- 8.46. We consider that the overall level of displacement is likely to be ‘medium’ (25%) as identified within the English Partnerships Additionally Guide 2008. This is because this study has shown that a relatively high proportion of jobs are filled from persons living outside the study area.

## Displacement

- 8.47. We consider that the overall level of displacement is likely to be ‘low’ (25%) as identified within the English Partnerships Additionally Guide 2008. This is because this study has shown that there is high demand for a range of floorspace types, with poor transport connectivity a key constraint to growth. The area is therefore demand constrained. The river crossings are key to unlocking latent demand rather than shifting existing demand from one part of London (or the South East) to another.

## Multiplier effects

- 8.48. We consider that the employment multiplier will lie between the 1.1 composite multiplier at the neighbourhood level and the 1.5 multiplier at the regional level identified in the EP guide. This is because the Study has been undertaken at the sub-regional level, although we expect there to be relatively strong local supply linkages for businesses in the area due to the critical mass of activity. We have therefore assumed a multiplier of 1.3 for employment.

- 8.49. For residential uses, the GLA has published research that shows that for every 1,000 residents, 230 jobs are supported in the local area in public services and retail amongst other sectors.

## Results

- 8.50. Using the above approach, the total net employment impacts for each Scenario are shown in Table 63 below.

**Table 63. Total net employment from development impacts**

|   | <b>Scenario 2</b>           | <b>Scenario 3</b>           | <b>Scenario 4</b>           | <b>Scenario 5</b>           | <b>Scenario 6</b>           |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Gross jobs  | 9,850 to<br>13,100          | 10,250 to<br>13,650         | 21,650 to<br>29,300         | 10,700 to<br>14,200         | 17,850 to<br>23,700         |
| Adjustment for leakage<br>(-10%)                        | 7,400 to 9,800              | 7,700 to<br>10,200          | 16,200 to<br>22,000         | 8,000 to<br>10,700          | 13,400 to<br>18,000         |
| Adjustment for<br>displacement (-25%)                   | 5,500 to 7,400              | 5,800 to<br>7,700           | 12,200 to<br>16,500         | 6,000 to<br>8,000           | 10,000 to<br>13,300         |
| <b>Net jobs, including<br/>multiplier effects (1.3)</b> | <b>7,200 to 9,600</b>       | <b>7,500 to<br/>10,000</b>  | <b>15,800 to<br/>21,400</b> | <b>7,800 to<br/>10,400</b>  | <b>13,000 to<br/>17,300</b> |
| Population  | 20,700 to<br>25,800         | 23,700 to<br>29,400         | 42,300 to<br>54,700         | 26,000 to<br>34,300         | 39,800 to<br>50,600         |
| Jobs from population<br>growth                          | 4,800 to 5,900              | 5,500 to<br>6,800           | 9,700 to<br>12,600          | 6,000 to<br>7,900           | 9,200 to<br>11,600          |
| <b>Total net jobs</b>                                   | <b>12,000 to<br/>15,500</b> | <b>13,000 to<br/>16,800</b> | <b>25,500 to<br/>34,000</b> | <b>13,800 to<br/>18,300</b> | <b>22,200 to<br/>28,900</b> |



## 9. Summary and Conclusions

### Introduction

- 9.1. This Chapter provides a summary of the key findings of this work and identifies the wider economic impacts for London and the Study Area.

### Key Findings

- **All crossing options will result in a net beneficial impact in terms of access to jobs, the labour supply and consumers.** Scenario 2, which has the smallest connectivity benefit, will provide an average increase in access to 64,000 jobs across the Study Area. This figure is almost doubled under Scenario 4.
- **Scenario 4 – Silvertown + Gallions Bridge, creates the biggest overall net improvement in connectivity,** improving journey times between both sides of the River and creating a step change in the number of jobs, consumers and the workforce that can be accessed to/from Thamesmead and North Bexley;
- **Development impacts are maximised under Scenario 4,** which results in a gross impact of 18,400 – 23,800 additional residential units and additional 375,000 – 497,000sq.m of commercial floorspace by 2030 (above the reference case).
- **Land owners are expected to see a rise in development value** as improved connectivity facilitates increased demand. Chapter 3 identifies that there is a clear relationship between connectivity and land value in London. Areas that stand to see the largest changes in connectivity, such as Thamesmead and North Bexley in Scenario 4, will see the biggest absolute rise in land value;
- **Business density is estimated to increase** in the Study Area under each of the crossing option scenarios compared to the Reference Case. Under the reference case, employment is expected to be concentrated largely within existing agglomerations, such as Canary Wharf. We estimate the improved connectivity will unlock locations such as Thamesmead, the eastern Royal Docks and Barking, and provide a greater share of local employment;
- **Greater access to employment opportunities can help to combat high levels of unemployment and deprivation.** River crossings will increase road access to jobs, creating greater choice for workers and opening up new opportunities for local residents. The ratio of employment to population will increase under the river crossing scenarios when compared with the Reference Case.
- **Improved connectivity and resilience of the highway network can help support the growing cluster of distribution and green industries in East London.** Demand for good quality distribution premises has been growing around the A13 and A2, and is being partly driven by the new London Gateway port at Tilbury. Expansion of highway capacity is key to supporting this cluster, as well as the emerging green cluster in London Riverside;
- **Improved river crossings will enhance the image of the Study Area** and give confidence to inward investors that the public sector is prepared to invest for the long term. Chapter 3 identified how improvements to the sense of place created by transport investment can have a significant effect on growth;
- **River crossings will play a strategic role in addressing London’s housing crisis,** facilitating housing growth in an area where overcrowding is the highest in the UK.

**Table 64. Summary of changes to connectivity and development impacts**

|  | Scenario 2 -<br>Silvertown Only | Scenario 3 -<br>Silvertown +<br>Gallions Ferry | Scenario 4 -<br>Silvertown +<br>Gallions Bridge | Scenario 5 -<br>Silvertown<br>Tunnel +<br>Belvedere Ferry | Scenario 6 -<br>Silvertown<br>Tunnel +<br>Belvedere<br>Bridge |
|--|---------------------------------|--|---|---|---|
| <b>Connectivity impacts</b>  |                                 |  |   |   |   |
| Average change in access to jobs (absolute)  | 64,264                          | 77,189   | 112,623   | 67,663  | 90,908  |
| Average change in access to jobs (%)   | 5.20%                           | 6.30%  | 9.10%   | 5.50%   | 7.40%   |
| Average change in access to labour supply (absolute)                                       | 38,266                          | 56,072   | 105,090   | 57,845  | 100,837   |
| Average change in access to labour supply (%)  | 3.50%                           | 5.10%  | 9.50%   | 5.20%   | 9.10%   |
| Average change in access to other businesses (absolute)                                    | -535                            | 1,019  | 5,477   | 406   | 3,167   |
| Average change in access to other businesses (%)   | -0.30%                          | 0.50%  | 2.70%   | 0.20%   | 1.50%   |
| Average change in access to consumers (absolute)   | 28,490                          | 50,635   | 133,756   | 44,771  | 122,156   |
| Average change in access to consumers (%)  | 1.80%                           | 3.20%  | 8.40%   | 2.80%   | 7.70%   |
| <b>Potential development Impacts (additional development above Reference Case to 2030)</b> |                                 |  |   |   |   |
| Housing units supported  | 9,000 to 11,200                 | 10,300 to 12,800                               | 18,400 to 23,800                                | 11,300 to 15,000  | 17,300 to 22,000  |
| Resident population  | 20,700 to 25,800                | 23,700 to 29,400                               | 42,300 to 54,700                                | 26,000 to 34,300  | 39,800 to 50,600  |
| Office floorspace  | 96,200 to<br>128,400            | 96,200 to<br>128,400                           | 210,200 to<br>286,200                           | 100,000 to<br>133,000                                     | 161,000 to<br>216,000   |
| Retail floorspace  | 16,800 to 22,500                | 24,200 to 31,200                               | 46,600 to 61,600                                | 25,900 to 33,500  | 39,800 to 52,500  |
| Leisure floorspace   | 11,900 to 15,700                | 14,500 to 19,200                               | 22,900 to 30,700                                | 14,500 to 19,200  | 22,400 to 30,000  |
| Industrial floorspace  | 52,500 to 68,100                | 52,500 to 68,100                               | 95,600 to<br>118,000                            | 55,500 to 72,100  | 137,000 to<br>172,000   |
| Permanent jobs (gross)   | 9,850 to 13,100                 | 10,250 to 13,650                               | 21,650 to 29,300                                | 10,700 to 14,200  | 17,850 to 23,700  |
| <b>Permanent jobs (net)</b>  | <b>7,200 to 9,600</b>           | <b>7,500 to 10,000</b>                         | <b>15,800 to 21,400</b>                         | <b>7,800 to 10,400</b>                                    | <b>13,000 to 17,300</b>                                       |
| Permanent jobs (from residential growth)   | 4,800 to 5,900                  | 5,500 to 6,800                                 | 9,700 to 12,600                                 | 6,000 to 7,900  | 9,200 to 11,600   |
| <b>Total permanent jobs (net)</b>  | <b>12,000 to 15,500</b>         | <b>13,000 to 16,800</b>                        | <b>25,500 to 34,000</b>                         | <b>13,800 to 18,300</b>                                   | <b>22,200 to 28,900</b>                                       |

# Appendices

# Appendix A. Crossing Charging Assumptions

## A.1. Crossing charging assumptions

Table 65 shows a summary of the charging rates that would be applied to all (non ferry) crossing options. These would apply to all 'do something' scenarios (Scenarios 2 – 6).

Table 66 shows the charging rates that would be applied to the Dartford Crossing under all scenarios, including the reference case (Scenario 1).

All assumptions have been provided by TfL.

**Table 65. Crossing Charging Assumptions – Silvertown Tunnel, Blackwall Tunnel, Gallions Bridge and Belvedere Crossing**

| Time                      | Car   | Large Goods Vehicle | Other Goods Vehicle |
|---------------------------|-------|---------------------|---------------------|
| AM northbound peak        | £2.50 | £3.30               | £5.59               |
| PM southbound peak        | £2.50 | £3.30               | £5.59               |
| Interpeak both directions | £1.25 | £1.65               | £2.80               |
| AM southbound peak        | £1.25 | £1.65               | £2.80               |
| PM northbound peak        | £1.25 | £1.65               | £2.80               |

Source: TfL

**Table 66. Crossing Charging Assumptions – Dartford Crossing**

| Time                      | Car   | Large Goods Vehicle | Other Goods Vehicle |
|---------------------------|-------|---------------------|---------------------|
| AM northbound peak        | £2.50 | £3.30               | £5.59               |
| PM southbound peak        | £2.50 | £3.30               | £5.59               |
| Interpeak both directions | £2.50 | £3.30               | £5.59               |
| AM southbound peak        | £2.50 | £3.30               | £5.59               |
| PM northbound peak        | £2.50 | £3.30               | £5.59               |

Source: TfL

# Appendix B. List of Consultation Undertaken

## B.1. List of Consultation Undertaken

Table 67 provides a summary of all consultation undertaken with stakeholders as part of this study

**Table 67. Consultation undertaken with stakeholders**

| Stakeholder                          | Date of meeting                 | Person(s) representing  |
|--------------------------------------|---------------------------------|---|
| London Borough of Southwark          | 20 <sup>th</sup> September 2013 | Tim Cutts – Team Leader Planning Policy   |
| London Borough of Lewisham           | 10 <sup>th</sup> February 2014  | Claire Gray, Policy Planner, Simon Moss, Transport Policy and Development Manager   |
| London Borough of Greenwich          | 19 <sup>th</sup> September 2013 | Mike Hows, Assistant Director Planning, Tim Jackson, Assistant Director, Highways and Transportation                          |
| London Borough of Bexley             | 23 <sup>rd</sup> September 2013 | Jane Richardson – Deputy Director Strategic Planning and Regeneration, Peter Ellershaw, Seb Salom                             |
| London Borough of Tower Hamlets      | 10 <sup>th</sup> September 2013 | Chris Horton, Project Co-ordinator, Peter Farnham, Strategic Planner  |
| London Borough of Newham             | 18 <sup>th</sup> September 2013 | Deirdra Armsby, Head of Planning, Murray Woodburn, Jo Negrini – Director, Strategic Regeneration                              |
| London Borough of Barking & Dagenham | 19 <sup>th</sup> September 2013 | Daniel Pope, Group Manager, Development & Planning, Timothy Martin  |
| London Borough of Havering           | 9 <sup>th</sup> April 2014      | Martyn Thomas, Development and Transport Planning Manager   |
| Greater London Authority (Land)      | November 5 <sup>th</sup> 2013   | Micheal Payton – Development Officer  |
| Peabody Homes / Tilfen Land          | 24 <sup>th</sup> October 2014   | Stephen Howlett – CEO<br>Daniel Hill – Head of Regeneration   |
| Galliard                             | 31 <sup>st</sup> March 2014     | Scott Bailey – Head of Planning   |
| Ballymore                            | 22 <sup>nd</sup> April 2014     | Peter Halpenny - Director   |
| Cory Environmental                   | 18 <sup>th</sup> November 2013  | Andy Pike - Director  |
| London First                         | 29 <sup>th</sup> May 2013       | David Leam – Policy Director<br>Will McKee – Chairman Tilfen Land<br>Mark Jenkinson – Siemens<br>Richard Reid – Chairman KPMG |

# Appendix C. How Transport Facilitates Development

## C.1. How Transport Facilitates Economic Growth

A wealth of empirical research and academic studies – including the UK government’s Eddington Study – shows a strong correlation between transport and economic activity. There is consensus that transport can affect the rate of growth in GDP and the generation of trade and FDI, notwithstanding that the precise causality and scale is debated<sup>42</sup>. Eddington<sup>43</sup> summarised the way in which transport can facilitate economic growth:

- Time savings and reliability improvements increase **business efficiency** for business travellers, freight and logistics. A 5% reduction in travel time for business travel on the road network in Great Britain could generate around £2.5bn of cost savings – some 0.2% of GDP.
- Transport improvements can expand labour market catchments, improve job matching and enable business to business interactions. This is known as transport’s ability to **support clusters and agglomeration** of economic activity. Transport is most effective in doing this where it improves connectivity in highly productive urban areas. These effects diminish after 45 minutes of travel (the typical ‘commuter’ catchment). This suggests that this type of impact can be measured by, amongst other things, **the change in access to businesses and the size of the labour market** resulting from a transport intervention.
- Transport can also have the effect of **expanding labour markets** and making them function more efficiently, by increasing the accessibility to jobs, meaning that workers are better able to move into different forms of employment and take jobs where they will be more productive. Again, this can be measured by **the change in access to the size of the labour market** resulting from a transport intervention.
- Furthermore, it **increases competition** by opening up new markets and expanding trade areas. This suggests that this type of impact can be measured by, amongst other things, **the change in access to potential customers and businesses** resulting from a transport intervention.
- Investment in transport can **make locations more attractive to inward investment**, both domestic and foreign. It does this by supporting both a successful and thriving business environment but also through ensuring a good quality of life for residents. These sorts of effects are difficult to quantify but survey evidence regularly supports the theory that investors consider transport linkages when choosing where to invest. This highlights the need to consider the wider economic, political and quality of life aspects of development decisions.
- New or enhanced transport infrastructure **may enable some sites to be brought forward for development** which would not otherwise have been possible. This largely relates to sites which were previously inaccessible before the transport intervention.

## C.2. Different firms are affected in different ways by changes to transport

SACTRA<sup>44</sup> highlights a key aspect of changes to transport: that some firms stand to benefit more from reductions in the costs of staff movement than in goods transport (eg, service companies compared with manufacturing firms). This is also related to mode choice, with service companies

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<sup>42</sup> London, Britain and the World: Transport Links for Economic Growth London First 2012

<sup>43</sup> The Eddington Transport Study: Main Report 2006.

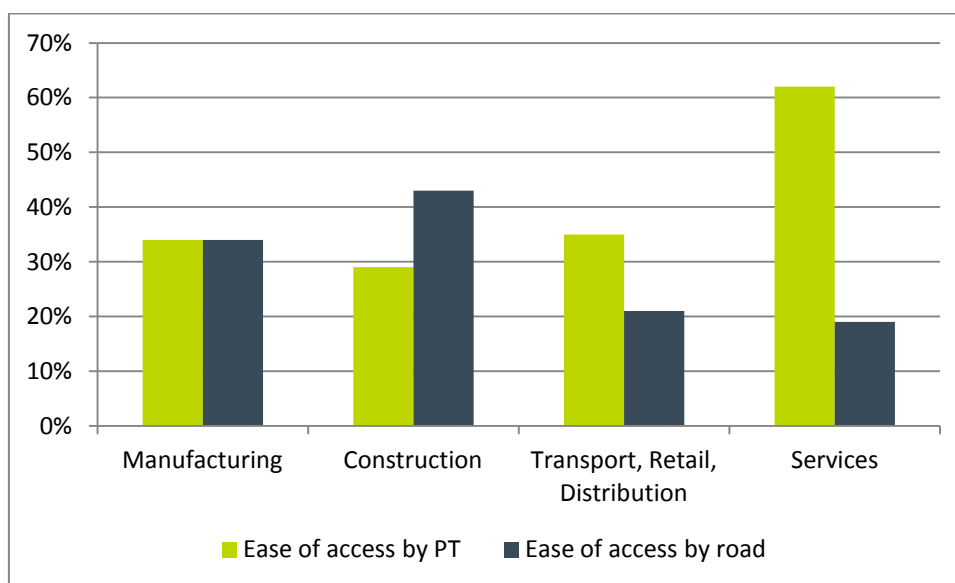
<sup>44</sup> Standing Advisory Committee for Trunk Road Appraisal Final Report 1999

more likely to value access to public transport to facilitate interaction through business travel, whereas manufacturing firms will value road transport to distribute bulk goods.

Furthermore, some firms are more sensitive to changes in the accessibility of the available labour force, especially high skilled employees in high value occupations, who are prepared to travel further for work, often to specialised clusters such as the City of London or Canary Wharf, and generally by public transport.

The key message here is that different types of firms place differing levels of importance on road connectivity, and will respond in different ways to changes in road connectivity. These findings are verified by a recent business survey conducted for TfL in the study area<sup>45</sup> which identifies that the ease of access to public transport was the top benefit of the current location of service sector businesses; whereas ease of access by road was the most important for the construction sector.

**Figure 56. Top benefits of current business location by sector in East London**



Source: WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014

This is also supported by an analysis of the relationship between mode of travel to work and the employee sector at a ward level, which shows a strong correlation between the propensity to travel to work by car and the proportion of the labour force that work within particular sectors, especially manufacturing and construction (see Appendix D for more details).

This means that changes to highway accessibility are likely to affect particular sectors, such as construction and manufacturing, more profoundly than sectors which rely on public transport, such as business services.

Having said this, it is also important to note that business location is just as important, if not more so, than business sector when looking at sensitivity to road connectivity. For example, whilst just 5% of commuting trips for those employed in financial and business services from Tower Hamlets are made by car, this figure rises to 30% in Bexley (See Appendix D), largely as a result of the poorer quality public transport network available in Outer London. Analysis of sensitivity to road based connectivity therefore needs to be considered by sector and geography.

<sup>45</sup> WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014

### **C.3. Reliability is increasingly important, especially for particular sectors**

In addition to the importance of costs and journey time, journey reliability also matters. It is estimated that for motorway widening schemes the total value of reliability benefits are in the order of an additional 50% above the value of total time savings benefits<sup>46</sup>.

Journey reliability is becoming an increasingly important requirement for many transport users. The significance of reliability increases as transport systems become more congested, as it deteriorates disproportionately as congestion increases. Eddington highlights the following evidence of the importance of reliability on particular sectors:

- Reliability is particularly important to certain business sectors, such as those dealing in perishable goods or those that rely upon Just In Time (JIT) delivery. The rapid growth of the express delivery sector in the UK in recent years demonstrates the importance that some businesses attach to predictable and time-critical deliveries. A CBI survey noted that 84% of new economy firms would be very badly affected if next day delivery services to or from the UK were no longer available, with 93% saying that orders would be lost because of longer delivery times.
- Freight movement more generally could be better managed through improved reliability, which would allow reductions in inventories and optimisation of vehicle use.
- Reliability is also highly valued by business travellers and commuters. The CBI's 2005 survey found that 47% of companies depended upon a significant number of staff commuting long distances and could therefore lose significant working time if transport links were unreliable. Predictable transport services are important to commuters as well, whose quality of life can be adversely affected by irregular journeys and the stress of being late.

These findings are again supported by a recent business survey conducted for TfL in the study area<sup>47</sup> which identified that poor predictability of cross-river journey times is a particular issue to businesses:

- Two thirds of firms consider that poor reliability of cross-river travel acts as a constraint on (or disruption to) their business to an extent; and
- 44% of firms think predictability of journey times are poor or very poor, against 12% who regard it as good or very good. This is of most concern to firms in Greenwich and Bexley.

Changes in the resilience and reliability of the transport network in East London as a result of improved River Crossings could therefore have significant economic benefits above and beyond the value of time savings benefits, and should therefore be considered alongside measures of connectivity when assessing the overall impact on the attractiveness of a location for development.

### **C.4. Overstretched transport can constrain economic success**

Eddington notes that economic success can itself generate a higher demand for transport, and where there is a lack of adequate capacity, transport can start to constrain that success. Potential productivity benefits from growing London in the early twentieth century were lost, due to the absence of adequate passenger transport infrastructure hindering realisation of even the most cautious forecast population growth of the city. Eddington goes on to state that this suggests that there would be significant benefits from government reacting quickly to address transport demand when growth is identified. As an illustration of the potential costs to the UK economy, it is estimated by DfT's National Transport Model that eliminating existing congestion on the road network (relative to free flow conditions) would be worth some £7-8 billion of GDP per annum.

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<sup>46</sup> Eddington Transport Study 2006

<sup>47</sup> WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014



We consider that the overstretched nature of the existing transport network is indeed a constrained to economic success in East London. Chapter 4 considers the constraints to cross river movement and its impacts on limiting labour market and retail catchments.

This is again supported by the recent business survey conducted for TfL in the study area<sup>48</sup> which identified that around a third of all businesses agreed that the lack of crossing options across the Thames, and the constrained and congested nature of the existing limited crossings, is a barrier to the development of their business. 49% of businesses in Greenwich agreed with this statement, with 47% in Newham and 40% in Bexley. Significantly, if a river crossing investment package was to be implemented, two thirds of firms anticipate that more business would come from the other side of the river.

## **C.5. Improvements in connectivity can make sites more attractive for development, raise land values and increase development densities**

As set out above, Eddington clearly identifies that improvements to transport connectivity can expand labour markets and access to customers, therefore enhancing the attractiveness of a location to a particular set of users. In the absence of prohibitive costs such as for decontamination, and a supportive planning policy environment, the commercial property market reacts and demand increases for sites that have improved accessibility. Because the supply of land is virtually fixed, increased demand leads to higher prices. Higher prices in turn lead to higher density developments and a move towards higher value end uses.

A report produced for the GLA by ARW/Symonds<sup>49</sup> set out an explanatory model of the relationship between transport infrastructure and regeneration. The model starts with public policy objectives which direct infrastructure investment so improving accessibility in an area.

This in turn enhances demand for land and property, increasing land values which in turn drive higher densities. The result is that on any given site there will be more housing and more employment space leading to increased local income and expenditure. This then has the dual effect of benefiting local businesses and so further enhancing demand for land and property and also directly achieving policy objectives.

The simple link between transport connectivity and development is again noted by Eddington, who states that the creation of the transport network has had a major influence on the UK's economic geography. He notes that the development of the strategic road network played a key role in the relocation of new, light industries, attracted by market access and new clusters. This was especially the case in the South East and is evident in the new industrial districts created around outer London, for example, those close to the A406 (North Circular)<sup>50</sup>.

This model for how improvements in connectivity can bring forward growth and development is also validated by the business survey conducted for TfL in the Study Area<sup>51</sup> which shows that 50% of businesses expect to recruit additional staff as a result of the investment in improved river crossings. Whilst some firms will be able to expand their workforce within their existing premises, others may have to find larger premises to accommodate their growing business. This increased demand for premises and floorspace will push up land values and enable developers to deliver new floorspace to meet the increase in demand.

Our analysis shows that there is a relatively strong correlation between access to jobs (as one measure of connectivity)<sup>52</sup> and the value of house prices per sq.m at the London wide level, which further verifies the model shown in Figure 57. Figure 59 shows that the accessibility to jobs by road is greatest in central London and towards the west and south west of London, with property prices also highest in these locations (Figure 58). When the average access to jobs by

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<sup>48</sup> WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014

<sup>49</sup> Thames Crossings – The Regeneration Case Social and Economic Impacts, Final Report 2002

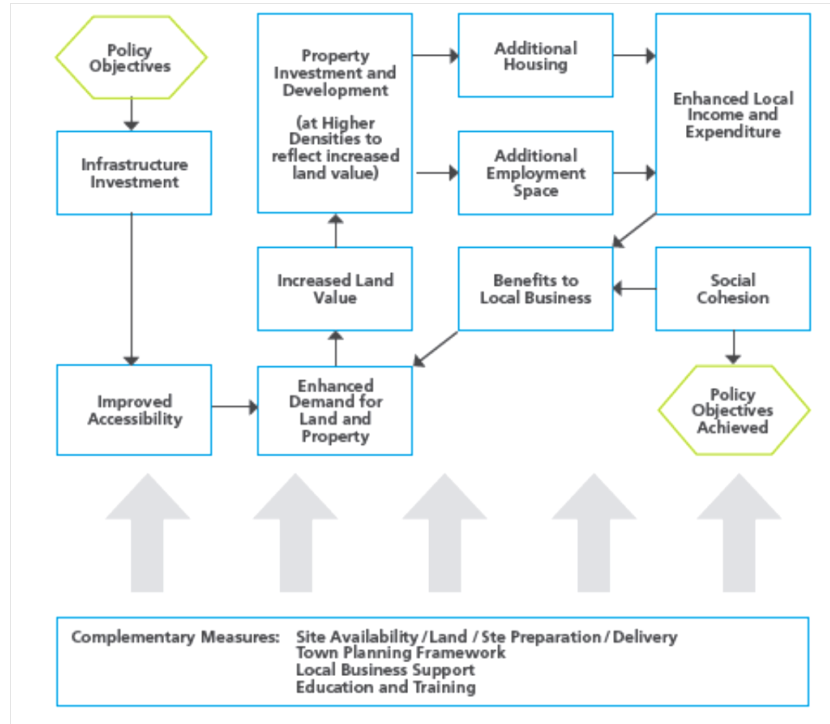
<sup>50</sup> Eddington Transport Study 2006

<sup>51</sup> WSP/IFF East London River Crossings – Business Survey (Interim Report) March 2014

<sup>52</sup> For more on how the 37 minute catchment was chosen see Chapter 7

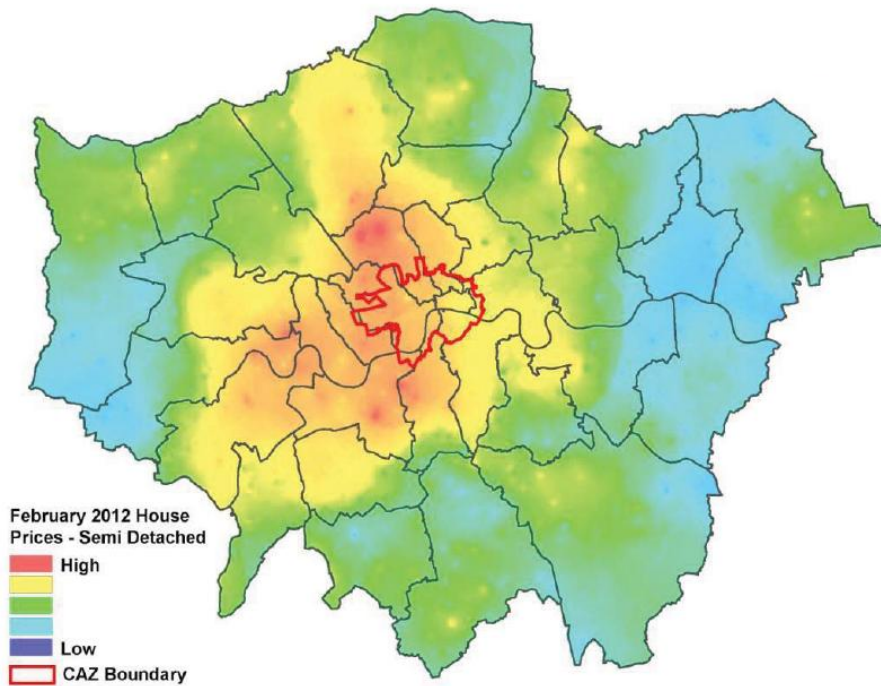
road is compared with average property price per sq.m at the Borough level (Figure 60), it is clear there is a positive relationship between the two.

**Figure 57. Model of relationship between transport and regeneration**



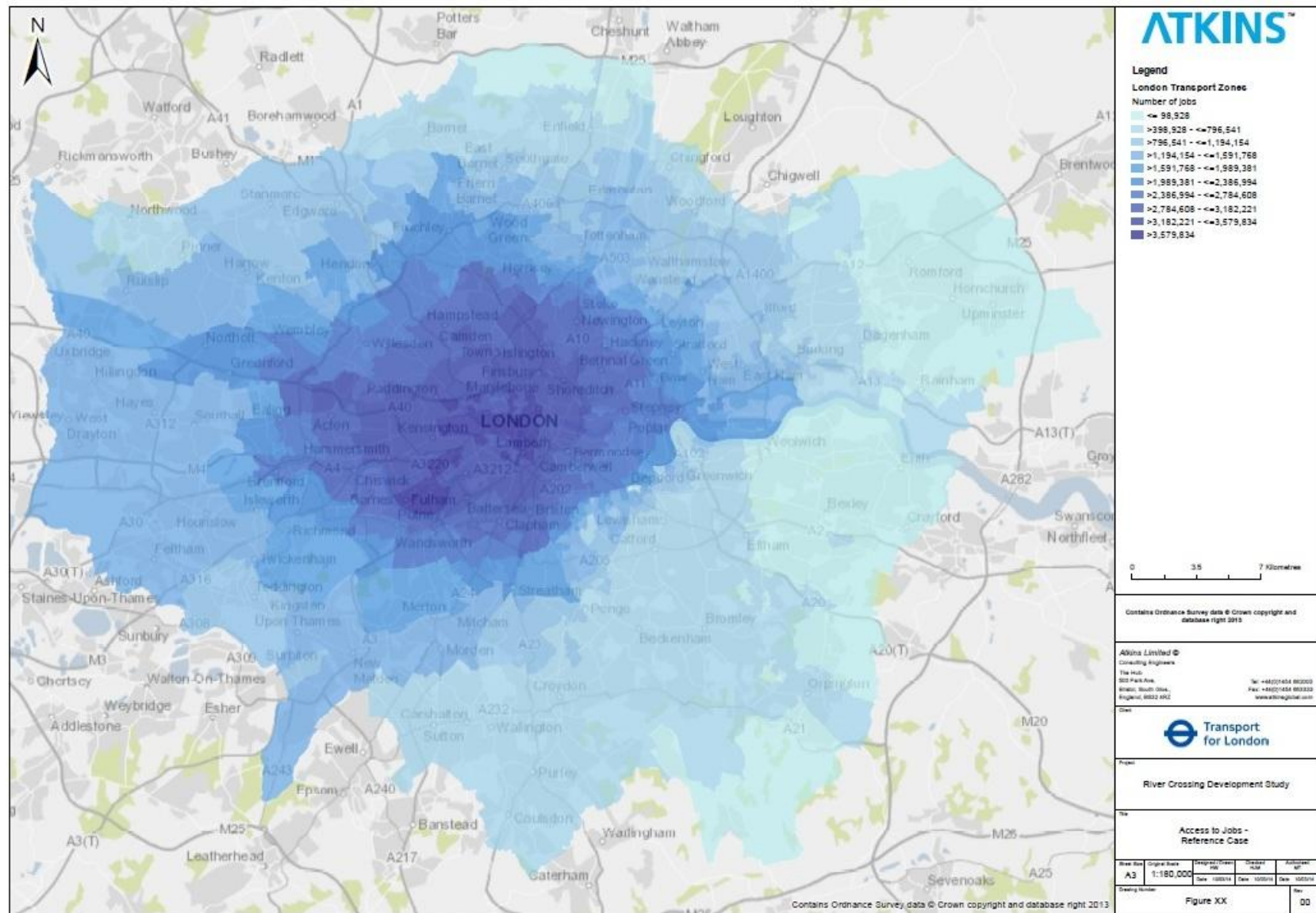
Source: Thames Crossings – The Regeneration Case Social and Economic Impacts, Final Report 2002

**Figure 58. Average semi detached house price 2012**



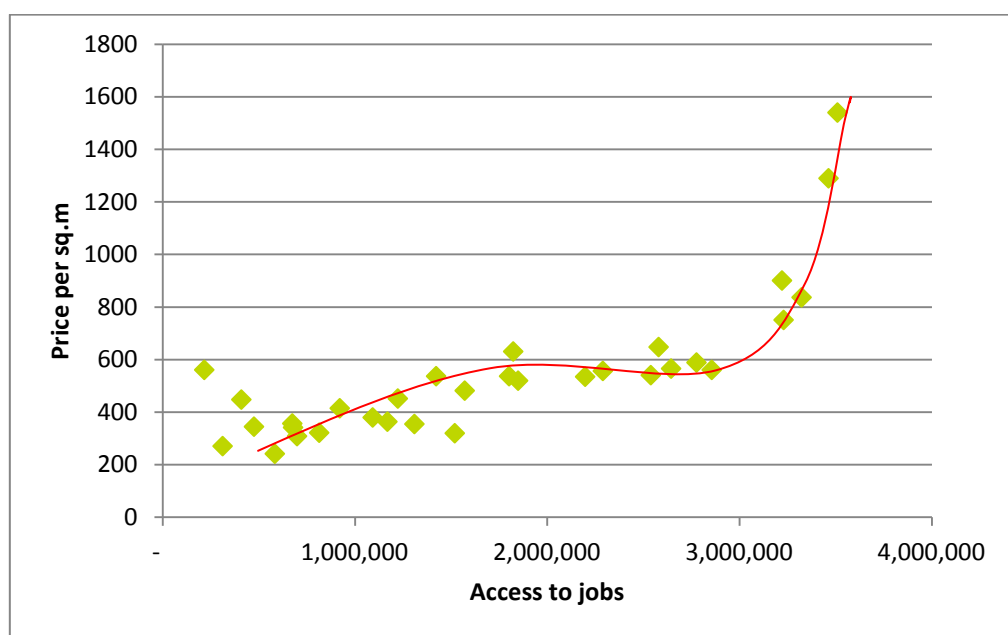
Source: Economic Impact of Gallions Reach Crossings, PBA 2013

Figure 59. Number of jobs accessible within 37 minutes drive by Transport Zone in London



Source: Atkins analysis of TfL accessibility data

**Figure 60. Relationship between house prices (per sq.m) and access to jobs in London – Borough level**



Source: TfL data/Zoopla per per sq.m data

The model shown in Figure 57 suggests that an increase in land and property values resulting from better levels of connectivity will lead to higher densities of development. Analysis of the statistical relationship between connectivity and the density of employment and population (which can both be considered as proxies for the density of development) has found that there is indeed a strong correlation between the two (see Appendix G). In other words, the greater the degree of connectivity, the higher the density of employment and population – although population density falls away in highly accessible central areas due to be crowded out by commercial and employment uses.

The evidence therefore suggests that an increase in connectivity facilitated by improvements to river crossings can therefore result in an increase in the attractiveness of the area, generating additional demand for commercial floorspace and homes and causing property prices to rise. It is this premise that forms the basis for how improved River Crossings might positively affect the development potential in the Study Area. Measuring changes to connectivity resulting from each crossing option is therefore key to the development of future growth scenarios.

## **C.6. Transport investment can also improve the image of an area, generating growth not necessarily linked purely to changes in connectivity**

Transport can also generate greater investor confidence in a location, providing a physical demonstration of long term public sector investment and reducing the perception of risk to private investors.

Consultation with developers as part of this work identified that the perception of accessibility and connectivity is more important than an objectively measured figure. Developers stated that many sites in the east of the Study Area are perceived as very inaccessible by road, even though they may actually be better located in relative terms than other places.

The benefit of improved cross river links offers the prospect of knitting together parts of East London, which are currently perceived to be inaccessible, to provide greater links to jobs, homes, services and entertainment, and therefore an improved perception of the quality of place. When considered alongside the demonstration of significant public sector investment from investment in

a crossing, developers indicated that this could make them reconsider sites which currently ‘too risky’.

## C.7. Transport is a necessary, but not sufficient, factor for growth

Eddington notes that, whilst transport can play an important role in facilitating growth, transport infrastructure alone does not create economic potential. In particular, it is widely accepted that the positive effects of transport investment, and its magnitude, are conditional on certain external pre-conditions complementing any transport provision, namely: stable macroeconomic conditions; the availability of skilled labour; and a favourable environment for business investment to drive output growth.

Previous studies (for example into the impact of the Jubilee Line Extension) have identified significant potential for regenerative impacts from major transport infrastructure schemes, subject to a number of other conditions<sup>53</sup>:

- The infrastructure provides genuine additionality in transport access – the area is not currently easily accessible anyway;
- The area contains a mix of uses for which transport provides a significant stimulus – certain employment uses and tourism and the potential for higher residential density;
- It is undertaken with the grain of the market and preferably in a location which already has some regeneration activity and market interest; and
- It is co-ordinated with other public investment and has a favourable public policy, including planning, framework.

In these circumstances investment in transport infrastructure can provide positive regeneration benefits, across the economic cycle, in terms of job creation/location and inward investment. This is supported by work by Hall and Marshall<sup>54</sup> that found transport infrastructure to be a necessary but not sufficient condition for regeneration in areas where:

- There is a lack of transport infrastructure generally;
- The new infrastructure provides a significant step change in accessibility such as a river estuary crossing where previously separate economic systems merge (even in ‘advanced’ transport networks);
- There are bottlenecks in ‘advanced’ transport networks.

This supports Eddington’s conclusions that transport interventions in advanced countries such as the UK should be focused on improving the performance of the existing network, particularly where capacity is stretched, as demonstrated, for instance, through congestion or unreliability, through small improvements that can have large economic impacts.

We consider that East London is an area where there is a dynamic and growing economy with a significant degree of skilled labour (see Chapter 5 for more on this), and that this will require further investment in transport infrastructure to support the increased demand for movement. However, there is a clear bottleneck in the current provision of River Crossings, highlighted by the fact that significant congestion is evident on the approaches to the limited number of road crossings (see Chapter 4 for further details). A step change in accessibility caused by a major increase in capacity would therefore meet the conditions set out by Hall and Marshall to facilitate positive regeneration benefits.

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<sup>53</sup> The Thames Gateway Bridge Regeneration Statement 2004

<sup>54</sup> Independent Transport Commission – The Effects of the 10 Year Plan 2002

# Appendix D. Influences on Commuting Mode

## D.1. Introduction

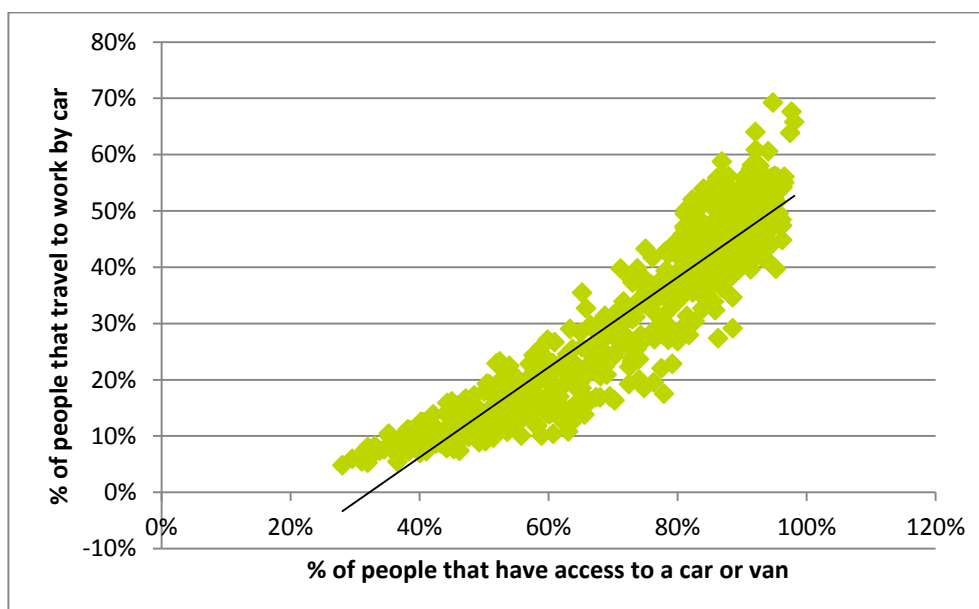
This section considers the range of influences on mode of travel to work, with a specific focus on car travel. This analysis is important to understand how improvements in road connectivity might affect the attractiveness of locations for businesses in relation to their labour force, as well as residential location decisions in terms of their access to different types of jobs.

## D.2. Car ownership and propensity to travel by car

Smith<sup>55</sup> identifies that the most significant socio-economic factor in influencing travel patterns is usually car ownership. Car owners invest in their vehicles financially (with purchase costs greatly exceeding running costs in current ownership structures) and to a varying extent behaviourally and psychologically, and therefore make use of their cars once purchased. Non-car owners in contrast are clearly much more restricted in terms of car availability and subsequently use. The decision to own a car is in turn interrelated with residential and workplace location decisions, as well as individual and household socio-economic factors.

This finding is confirmed by our analysis of the relationship between the proportion of employees who have access to a car and the proportion of employees who drive to work for all wards in London (see Figure 61). Although there is a small degree of variation, the basic finding is that households owning fewer cars tend to have a lower propensity to drive to work and a high propensity to travel to work by public transport and non-motorised modes.

Figure 61. Relationship between proportion of people with access to car and proportion that travel to work by car 2011



Source: 2011 Census

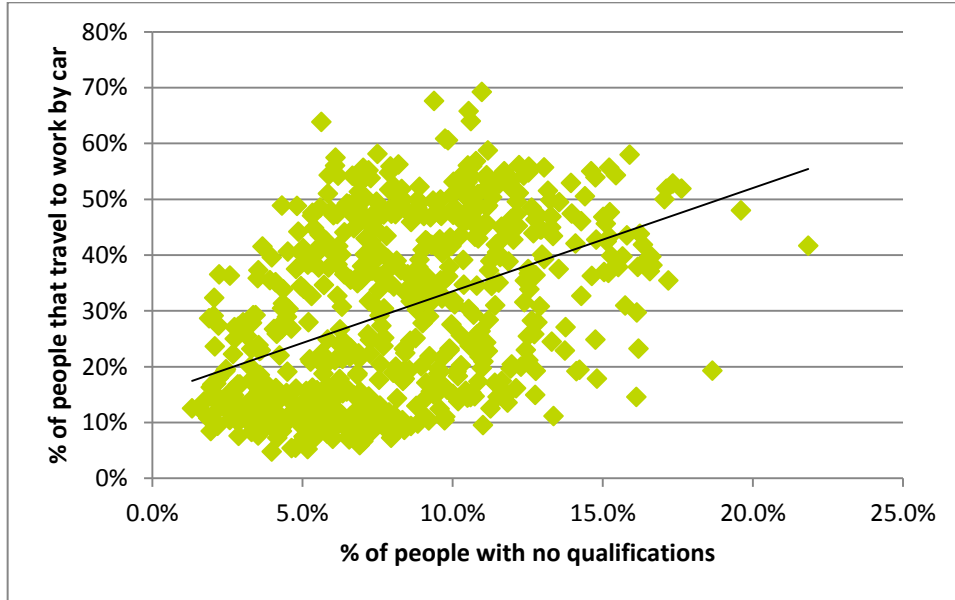
## D.3. Qualifications and propensity to travel by car

Figures 62 to 64 show the relationship between the proportion of employees who drive to work and highest level of qualification held for all wards in London. The basic finding is that employees

<sup>55</sup> Polycentricity and Sustainable Urban Form – Duncan Alexander Smith 2011

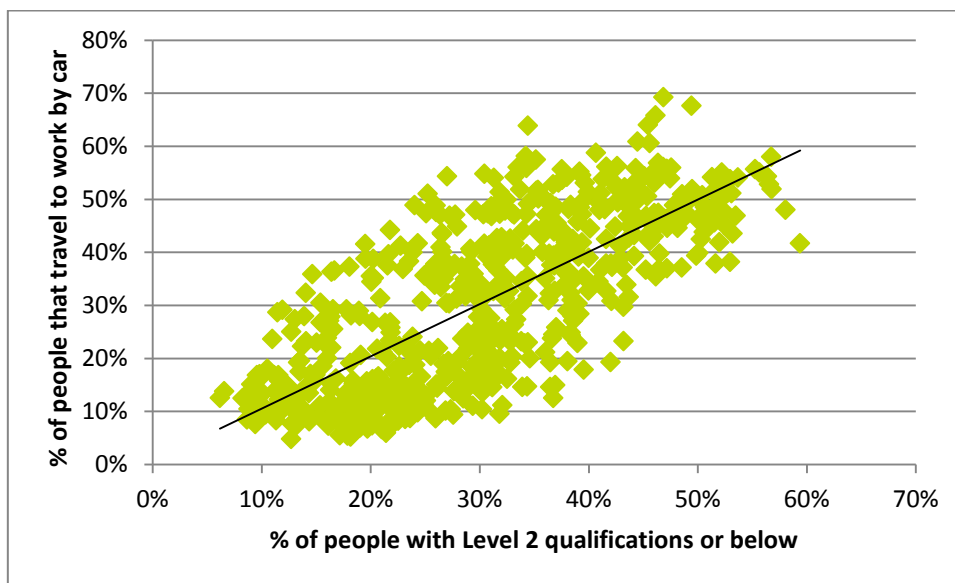
with lower levels of qualifications are more likely to drive to work compared to those with high qualifications. This is likely to be linked to the type and location of employment, with higher qualified employees more likely to be based in higher value sectors, located in denser clusters in central London which are more accessible by public transport.

**Figure 62. Relationship between proportion of people with no qualifications proportion of people that travel to work by car**



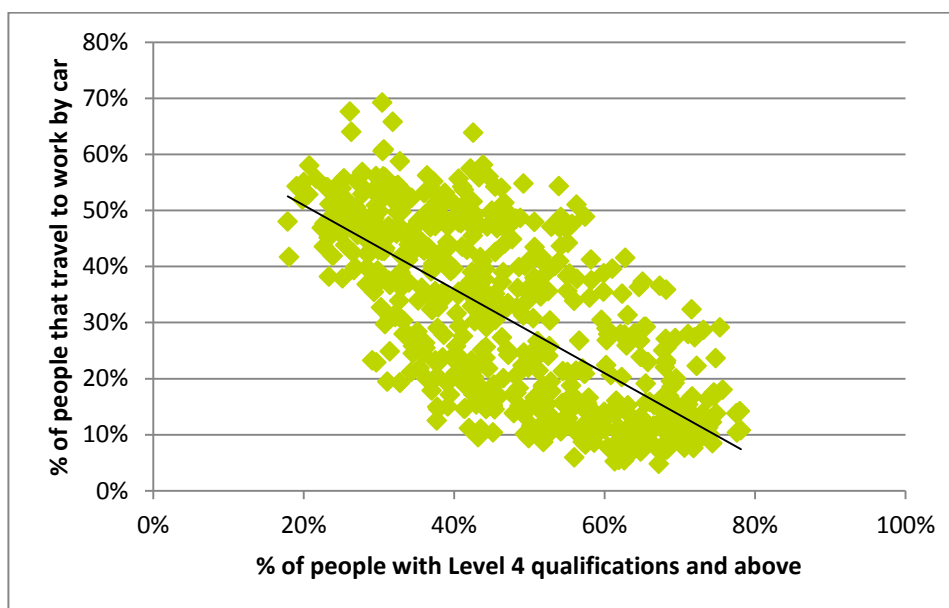
Source: 2011 Census

**Figure 63. Relationship between proportion of people with Level 2 qualifications or below and proportion of people that travel to work by car**



Source: 2011 Census

**Figure 64. Relationship between proportion of people with Level 4 qualifications and above and proportion of people that travel to work by car**



Source: 2011 Census

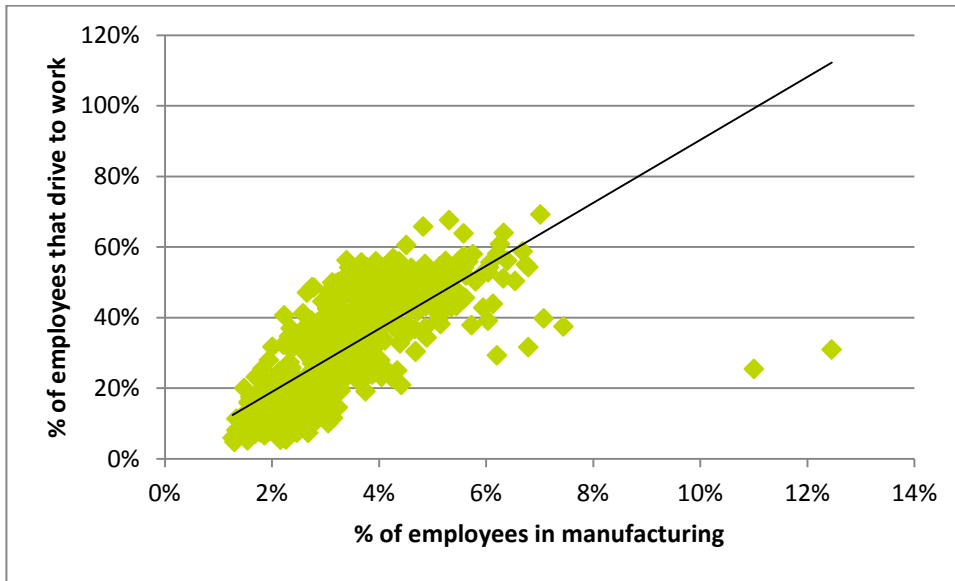
## D.4. Employment sector and propensity to travel by car

Figures 65 to 70 show the relationship between the proportion of employees who drive to work and the sector of employment for all wards in London. The key findings are that:

- The manufacturing sector displays a relatively high degree of correlation with the proportion of employees that drive to work – with the higher the number of people employed in manufacturing in a ward, the higher the likelihood of travel to work by car;
- The construction sector also displays a relatively high degree of correlation with the proportion of employees that drive to work – with the higher the number of people employed in construction in a ward, the higher the likelihood of travel to work by car;
- The distribution and retail sector does not have a particularly strong correlation between the proportion of employees that drive to work and the number that work in this sector. However, despite there being a high degree of variation, the relationship is slightly positive, with the higher the number of people employed in retail and distribution in a ward, the higher the likelihood of travel to work by car;
- The transport and communication sector is similar to the distribution and retail sector in that, although there is a slightly positive correlation between the proportion employed in the sector and the propensity to travel to work by car, the degree of variability is very high.
- The financial and real estate sector displays a relatively high degree of correlation with the proportion of employees that drive to work – however, there is a clear negative relationship with the higher the number of people employed in finance and real estate in a ward, the lower the likelihood of travel to work by car (and therefore the higher the likelihood of travel to work by public transport or non motorised modes);
- The public sector displays a relatively high degree of correlation with the proportion of employees that drive to work – with the higher the number of people employed in the public sector in a ward, the higher the likelihood of travel to work by car;

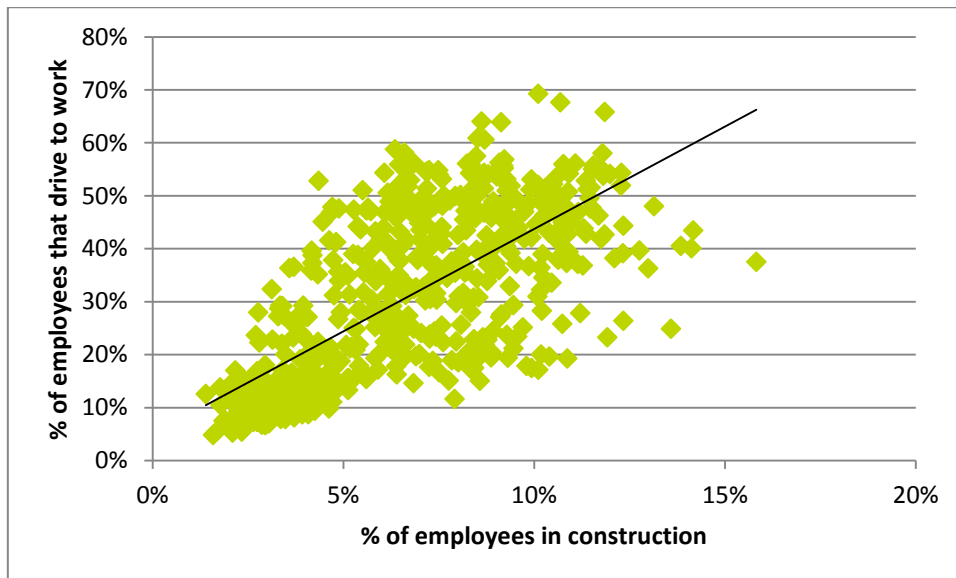


**Figure 65. Relationship between proportion of employees in manufacturing sector and proportion of people that travel to work by car**



Source: 2011 Census

**Figure 66. Relationship between proportion of employees in construction sector and proportion of people that travel to work by car**



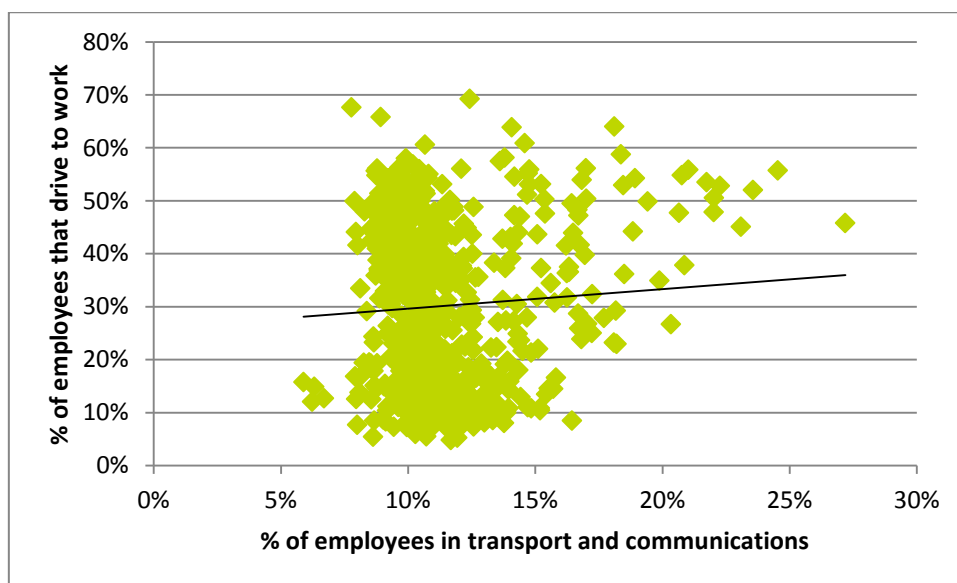
Source: 2011 Census

**Figure 67. Relationship between proportion of employees in retail, distribution and hotels sector and proportion of people that travel to work by car**



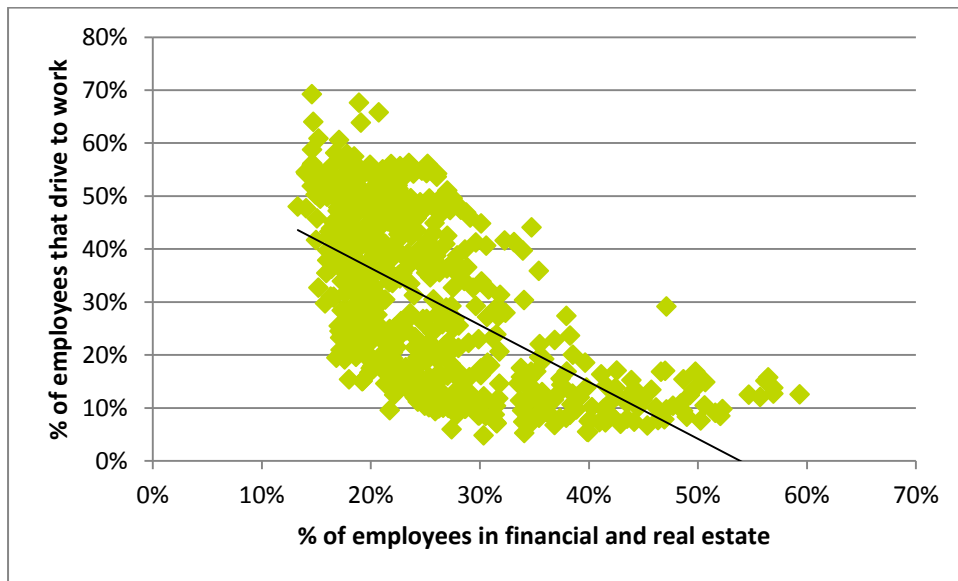
Source: 2011 Census

**Figure 68. Relationship between proportion of employees in transport and communications sector and proportion of people that travel to work by car**



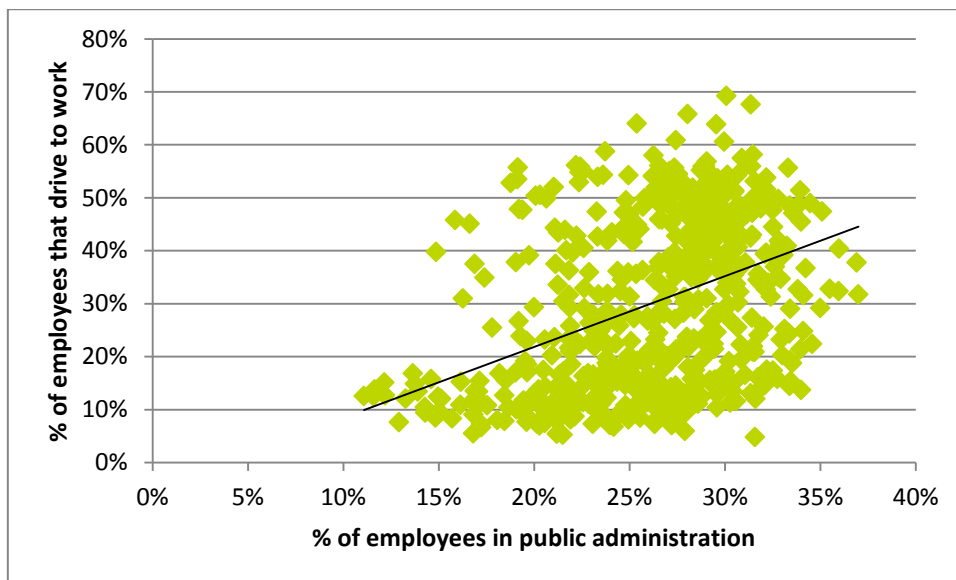
Source: 2011 Census

**Figure 69. Relationship between proportion of employees in financial and real estate sector and proportion of people that travel to work by car**



Source: 2011 Census

**Figure 70. Relationship between proportion of employees in public administration sector and proportion of people that travel to work by car**



Source: 2011 Census

## D.5. Accessibility of residence/destination

Smith<sup>56</sup> identifies that a key factor influencing mode choice is the accessibility of the residence and destination. This can be inferred by the difference in the proportion that travel to work by car between sector and the Borough of residence of the employee. Table 68 shows that, although there are clear differences in the propensity to travel to work by car between sectors (as set out above) the biggest differences are between the residence of employee.

<sup>56</sup> Polycentricity and Sustainable Urban Form – Duncan Alexander Smith 2011

Locations that are highly accessible by public transport (such as Southwark and Tower Hamlets) are related to low rates of travel to work by car, with less accessible locations, such as Bexley and Havering, related to higher levels.

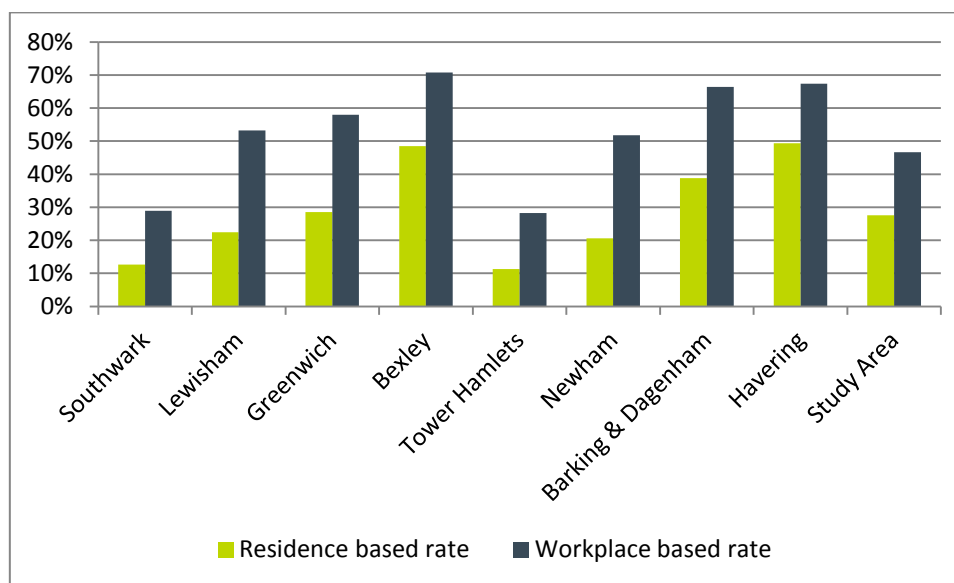
Figure 71 also shows that there is a clear difference between the accessibility of an employee's place of residence, compared to their place of work. Journeys to work that start from the study area (the residence based rate) are only undertaken by car by 28% of employees, where as journeys to work that finish in the study area are undertaken by car by 46% of employees. This reflects the large numbers of people who commute by public transport from the study area into central London, where as journeys to work to the study area are more likely to be car, especially from destinations outside of Greater London.

**Table 68. Proportion of employees that commute to work by car – by sector and Borough**

| Borough            | Total | Manufacturing | Construction | Distribution, hotels and restaurants | Transport and communication | Financial, real estate and professional | Public administration | Other |
|--------------------|-------|---------------|--------------|--------------------------------------|-----------------------------|---|-----------------------|-------|
| Southwark          | 13%   | 26%           | 29%          | 11%                                  | 17%                         | 7%                                      | 16%                   | 11%   |
| Lewisham           | 22%   | 38%           | 41%          | 20%                                  | 23%                         | 13%                                     | 27%                   | 18%   |
| Greenwich          | 28%   | 47%           | 45%          | 27%                                  | 30%                         | 16%                                     | 34%                   | 25%   |
| Bexley             | 49%   | 64%           | 62%          | 50%                                  | 46%                         | 30%                                     | 55%                   | 46%   |
| Tower Hamlets      | 11%   | 27%           | 25%          | 13%                                  | 16%                         | 5%                                      | 15%                   | 9%    |
| Newham             | 21%   | 39%           | 26%          | 16%                                  | 33%                         | 13%                                     | 23%                   | 17%   |
| Barking & Dagenham | 39%   | 56%           | 48%          | 35%                                  | 48%                         | 26%                                     | 39%                   | 34%   |
| Havering           | 49%   | 71%           | 63%          | 50%                                  | 50%                         | 29%                                     | 55%                   | 49%   |
| Study Area         | 28%   | 50%           | 45%          | 25%                                  | 31%                         | 15%                                     | 32%                   | 23%   |
| London             | 29%   | 49%           | 47%          | 28%                                  | 32%                         | 18%                                     | 34%                   | 24%   |

Source: 2011 Census

**Figure 71. Proportion of employees that travel to work by car – residence vs workplace (2001)**

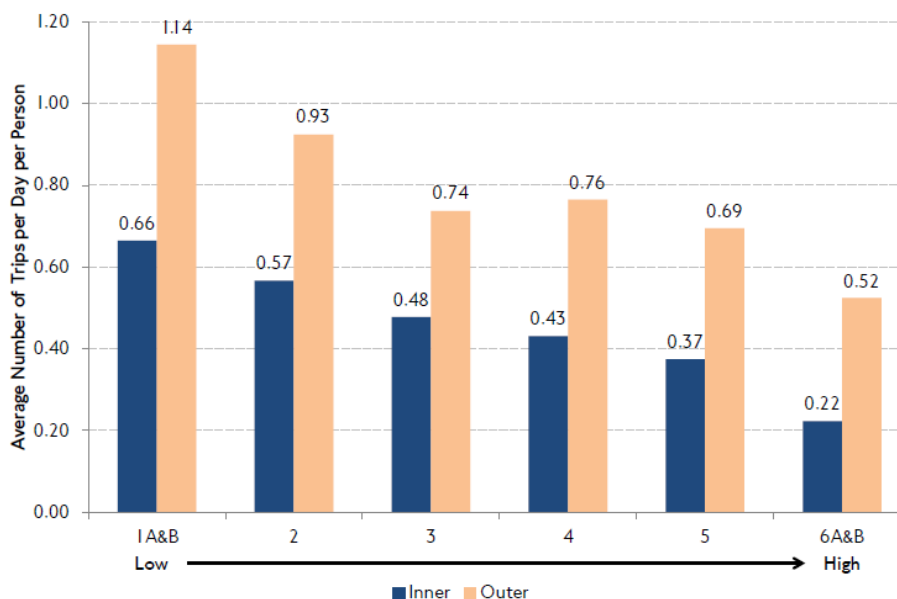


Source: 2011 Census

The Roads Task Force also found that there is a strong relationship between car use and access to public transport; with car use rising as public transport accessibility falls (as measured by the Public Transport Accessibility Level (PTAL)).

Car (as driver) trip rates are higher on average in outer than inner London at each PTAL level, but notably car driver trip rates are lower amongst residents of those parts of outer London with the best public transport access than residents of parts of inner London with the least good access to public transport – 0.52 car driver trips per person per day in parts of outer London with a PTAL score of 6 compared to 0.66 car driver trips per person per day in parts of inner London with a PTAL score of 1.

**Figure 72. Car use by accessibility to public transport**



Source: Roads Task Force – Technical Note 14

## D.6. Roads’ contribution to connectivity in London

Key to understanding road use is the role that roads play in providing connectivity into, out of and within London. The Roads Task Force found that access to roads in London is almost universal – in the sense that virtually all locations are within a very short walking distance of the nearest road. Once on the road network, it is possible to navigate to, or send goods to, an almost infinite number of other locations, provided of course one has access to a suitable vehicle.

London’s comprehensive bus network operates on public roads, although only a small proportion of the total road network length is directly served by bus routes. Taxis and licensed minicabs also operate on roads, travelling between arbitrary pairs of locations ‘on demand’.

In contrast, London’s rail-based public transport network performs a similar role in facilitating strategic level accessibility, although it is less suited to short-distance and freight trips, and provision and route choice is much more concentrated spatially.

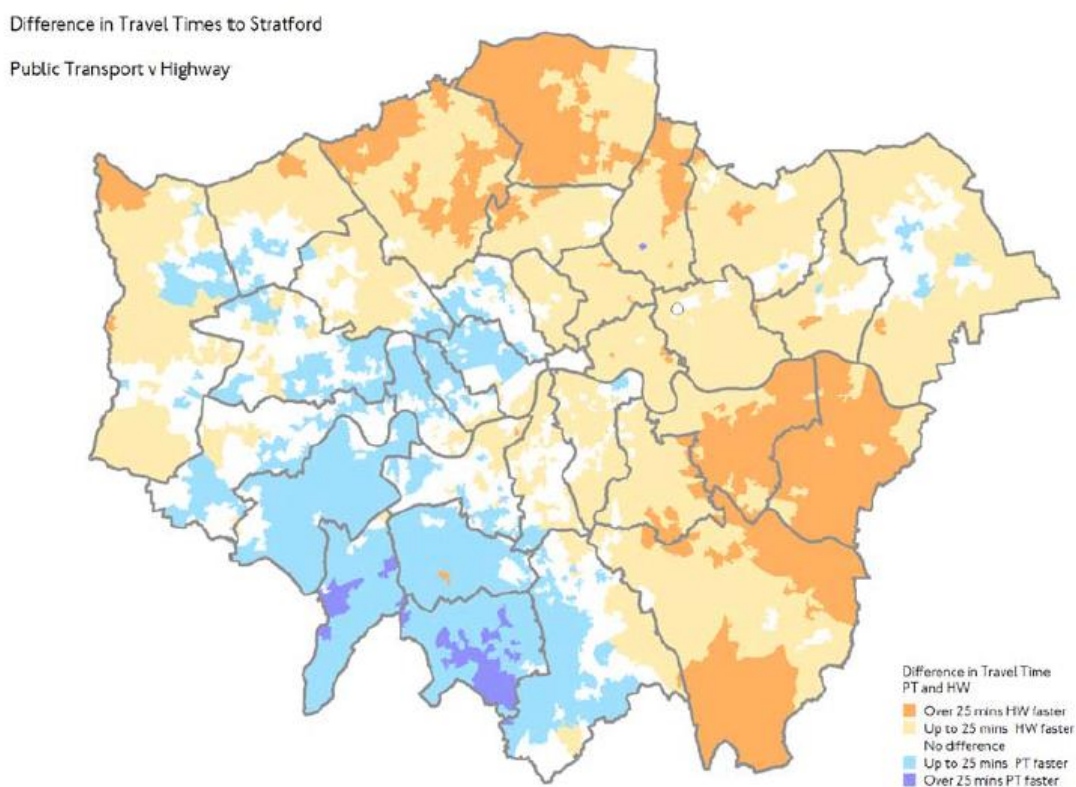
The Roads Task Force undertook an analysis which compared journey times by public transport and by car to key destinations in London. From this analysis, it was able to make the following observations about the roads’ contribution to connectivity in London:

- The road network provides a more uniformly-concentric and ‘predictable’ level of accessibility compared to public transport. It tends to be faster for more local journeys and journeys between pairs of locations not directly served by public transport. It is also faster for journeys on an east-west axis through the City of London.

- Public transport tends to provide faster journeys than road for longer radial journeys to/from the centre, journeys between pairs of points that are directly served, and for longer-distance journeys.
- Patterns of accessibility to/from locations in inner and outer London reflect first and foremost the geography of the public transport networks. Journey times from places on direct links to these locations are almost always faster by public transport. Journey times to places not served directly are almost always faster by road.

These observations are illustrated by the difference in travel time to Stratford by car and public transport (Figure 73). In most parts of London, with the exception of the centre and much of the south west, Stratford is reached more quickly by the car rather than public transport. This is important for this work, as it shows that the car remains the quickest way to access most parts of the study area, especially for radial journeys.

**Figure 73. Travel times to Stratford – car vs public transport**



## D.7. Conclusions

The analysis of influences on commuting mode suggests the following:

- The accessibility of residential and destination locations by public transport is the biggest influence on mode choice. Unsurprisingly, locations that are highly accessible by public transport have high rates of travel to work by public transport and therefore low rates of travel by car. Residential locations that are highly accessible by public transport also see strong positive relationships to public transport mode choice.
- The road network provides a more uniformly-concentric and 'predictable' level of accessibility compared to public transport. It tends to be faster for more local journeys and journeys between pairs of locations not directly served by public transport.

- Public transport tends to provide faster journeys than road for longer radial journeys to/from the centre, journeys between pairs of points that are directly served, and for longer-distance journeys.
- Car ownership is also a key determinate of mode choice, with car owners more likely to drive to work. However, the decision to own a car is highly likely to be linked to residential location and employment choice.
- The manufacturing and construction sectors are most likely to have a higher proportion of the workforce that travel to work by car. This is likely to be linked to the fact that businesses in these sectors are more likely to be based in less central locations where land is cheaper and access to the strategic road network is more important. These locations are inherently less well served by public transport and therefore require a higher rate of travel to work by car.

# Appendix E. Sensitivity of Floorspace Types to Road based Connectivity

## E.1. Introduction

This section sets out an assessment of the sensitivity of each floorspace type to road based connectivity. It draws upon the literature review of the importance of road based connectivity to businesses (Chapter 3) and a range of secondary data, as well as TfL's own modelling of accessibility by road and by car, to derive a summary score for each land use type and each Property Market Area (PMA).

## E.2. Indicators used derive road based sensitivity

The indicators used to derive road based sensitivity are:

### Residential

- Average PTAL Score;
- Proportion of population that travel to work (from the PMA) on road based modes (2011 Census); and
- Difference in number of jobs accessible by road compared to number of jobs accessible by public transport (including rail).

### Office

- Average PTAL Score;
- Proportion of population that travel to work (to the PMA) on road based modes (2001 Census);
- Difference in number of economically active population accessible by road compared to number of economically active population accessible by public transport (including rail) – this is a proxy for the size of the labour market catchment;
- Difference in number of the number of businesses accessible by road compared to number of businesses accessible by public transport (including rail) – this is a proxy for the size of potential business to business customers and potential suppliers;

### Retail and leisure

- Average PTAL Score;
- Proportion of population that travel to work (to the PMA) on road based modes (2001 Census);
- Difference in total adult population accessible by road compared the total adult population accessible by public transport (including rail) – this is a proxy for the size of the potential retail/leisure catchment;

### Industrial

- Average PTAL Score;
- Proportion of population that travel to work (to the PMA) on road based modes (2001 Census);



- Difference in number of economically active population accessible by road compared to number of economically active population accessible by public transport (including rail) – this is a proxy for the size of the labour market catchment;
- Difference in number of the number of businesses accessible by road compared to number of businesses accessible by public transport (including rail) – this is a proxy for the size of potential business to business customers and potential suppliers;
- It should be noted that given the importance of road connectivity to almost all industrial operations, all PMAs have been given a score of ‘high’ for industrial uses.

### E.3. Assessment of road based sensitivity by floorspace type

Table 69. Road Based Sensitivity – Residential

| Property Market Area             | PTAL | % of people that travel to work on road based modes | Difference in access to jobs between PT and Road | Total sensitivity to changes in road based connectivity |
|----------------------------------|------|---|--|---|
| Canada Water & Rotherhithe       | 3.8  | 39%   | Low  | Low   |
| Rest of Southwark                | 4.8  | 57%   | Low  | Low   |
| Deptford New Cross               | 3.8  | 51%   | High   | Medium  |
| Lewisham & Catford               | 4.7  | 45%   | Medium   | Low   |
| Rest of Lewisham                 | 3.7  | 49%   | Medium   | Medium  |
| Greenwich Peninsula and Charlton | 4.0  | 42%   | Low  | Low   |
| Woolwich                         | 4.0  | 57%   | Low  | Medium  |
| Thamesmead                       | 3.0  | 63%   | Low  | High  |
| Rest of Greenwich                | 3.0  | 54%   | Medium   | Medium  |
| Erith and Belvedere              | 2.6  | 66%   | High   | High  |
| Rest of Bexley                   | 2.5  | 68%   | High   | High  |
| Isle of Dogs                     | 3.4  | 40%   | Low  | Low   |
| Rest of Tower Hamlets            | 5.4  | 46%   | Low  | Low   |
| Lower Lea Valley                 | 4.3  | 38%   | Medium   | Low   |
| Royal Docks                      | 3.1  | 40%   | High   | Medium  |
| Rest of Newham                   | 3.9  | 46%   | High   | Medium  |
| Barking                          | 4.7  | 48%   | Medium   | Low   |
| Barking Riverside                | 2.6  | 61%   | High   | High  |
| Rest of B&D                      | 2.8  | 66%   | Medium   | High  |
| London Riverside                 | 2.2  | 73%   | High   | High  |
| Rest of Havering                 | 2.5  | 67%   | Medium   | High  |

**Table 70. Road Based Sensitivity - Office**

| Property Market Area             | PTAL | % of people that travel to PMA by road | Difference in access to econ active population between PT and road | Difference in access to businesses between PT and road | Total sensitivity in changes to road based connectivity |
|----------------------------------|------|--|--|--|---|
| Canada Water & Rotherhithe       | 3.8  | 69%                                    | Low  | Low  | Low   |
| Rest of Southwark                | 4.8  | 48%                                    | Low  | Low  | Low   |
| Deptford New Cross               | 3.8  | 75%                                    | Low  | Low  | Low   |
| Lewisham & Catford               | 4.7  | 79%                                    | Medium   | Medium   | Medium  |
| Rest of Lewisham                 | 3.7  | 72%                                    | High   | Medium   | Medium  |
| Greenwich Peninsula and Charlton | 4.0  | 81%                                    | Medium   | Medium   | Medium  |
| Woolwich                         | 4.0  | 86%                                    | Medium   | High   | Medium  |
| Thamesmead                       | 3.0  | 81%                                    | Medium   | Medium   | High  |
| Rest of Greenwich                | 3.0  | 75%                                    | High   | High   | High  |
| Erith and Belvedere              | 2.6  | 85%                                    | High   | Medium   | High  |
| Rest of Bexley                   | 2.5  | 84%                                    | High   | High   | High  |
| Isle of Dogs                     | 3.4  | 36%                                    | Low  | Low  | Low   |
| Rest of Tower Hamlets            | 5.4  | 47%                                    | Low  | Low  | Low   |
| Lower Lea Valley                 | 4.3  | 71%                                    | Low  | Low  | Medium  |
| Royal Docks                      | 3.1  | 76%                                    | High   | Medium   | Medium  |
| Rest of Newham                   | 3.9  | 68%                                    | Low  | Low  | Low   |
| Barking                          | 4.7  | 76%                                    | Medium   | Medium   | Medium  |
| Barking Riverside                | 2.6  | 88%                                    | High   | High   | High  |
| Rest of B&D                      | 2.8  | 80%                                    | Medium   | High   | High  |
| London Riverside                 | 2.2  | 86%                                    | High   | High   | High  |
| Rest of Havering                 | 2.5  | 82%                                    | Medium   | High   | High  |

**Table 71. Road Based Sensitivity – Retail and Leisure**

| Property Market Area             | PTAL | % of people that travel to PMA by road | Difference in access to adult population between PT and road | Total sensitivity by road based connectivity |
|----------------------------------|------|--|--|--|
| Canada Water & Rotherhithe       | 3.8  | 69%                                    | Low  | Low  |
| Rest of Southwark                | 4.8  | 48%                                    | Low  | Low  |
| Deptford New Cross               | 3.8  | 75%                                    | Low  | Low  |
| Lewisham & Catford               | 4.7  | 79%                                    | Medium   | Low  |
| Rest of Lewisham                 | 3.7  | 72%                                    | High   | Medium                                       |
| Greenwich Peninsula and Charlton | 4.0  | 81%                                    | High   | Medium                                       |
| Woolwich                         | 4.0  | 86%                                    | Low  | Low  |
| Thamesmead                       | 3.0  | 81%                                    | Low  | Medium                                       |
| Rest of Greenwich                | 3.0  | 75%                                    | High   | High   |
| Erith and Belvedere              | 2.6  | 85%                                    | Medium   | High   |
| Rest of Bexley                   | 2.5  | 84%                                    | High   | High   |
| Isle of Dogs                     | 3.4  | 36%                                    | Medium   | Low  |
| Rest of Tower Hamlets            | 5.4  | 47%                                    | Low  | Low  |
| Lower Lea Valley                 | 4.3  | 71%                                    | Medium   | Medium                                       |
| Royal Docks                      | 3.1  | 76%                                    | High   | High   |
| Rest of Newham                   | 3.9  | 68%                                    | Low  | Medium                                       |
| Barking                          | 4.7  | 76%                                    | Medium   | Low  |
| Barking Riverside                | 2.6  | 88%                                    | High   | High   |
| Rest of B&D                      | 2.8  | 80%                                    | Medium   | High   |
| London Riverside                 | 2.2  | 86%                                    | High   | High   |
| Rest of Havering                 | 2.5  | 82%                                    | Medium   | High   |

**Table 72. Road Based Sensitivity – Industrial**

| Property Market Area             | PTAL | % of people that travel to PMA by road | Difference in access to economically active pop between PT and road | Difference in access to businesses between PT and road | Total sensitivity by road based connectivity |
|----------------------------------|------|--|---|--|--|
| Canada Water & Rotherhithe       | 3.8  | 69%                                    | Low   | Low  | High   |
| Rest of Southwark                | 4.8  | 48%                                    | Low   | Low  | High   |
| Deptford New Cross               | 3.8  | 75%                                    | Low   | Low  | High   |
| Lewisham & Catford               | 4.7  | 79%                                    | Medium  | Medium   | High   |
| Rest of Lewisham                 | 3.7  | 72%                                    | High  | Medium   | High   |
| Greenwich Peninsula and Charlton | 4.0  | 81%                                    | Medium  | Medium   | High   |
| Woolwich                         | 4.0  | 86%                                    | Medium  | High   | High   |
| Thamesmead                       | 3.0  | 81%                                    | Medium  | Medium   | High   |
| Rest of Greenwich                | 3.0  | 75%                                    | High  | High   | High   |
| Erith and Belvedere              | 2.6  | 85%                                    | High  | Medium   | High   |
| Rest of Bexley                   | 2.5  | 84%                                    | High  | High   | High   |
| Isle of Dogs                     | 3.4  | 36%                                    | Low   | Low  | High   |
| Rest of Tower Hamlets            | 5.4  | 47%                                    | Low   | Low  | High   |
| Lower Lea Valley                 | 4.3  | 71%                                    | Low   | Low  | High   |
| Royal Docks                      | 3.1  | 76%                                    | High  | Medium   | High   |
| Rest of Newham                   | 3.9  | 68%                                    | Low   | Low  | High   |
| Barking                          | 4.7  | 76%                                    | Medium  | Medium   | High   |
| Barking Riverside                | 2.6  | 88%                                    | High  | High   | High   |
| Rest of B&D                      | 2.8  | 80%                                    | Medium  | High   | High   |
| London Riverside                 | 2.2  | 86%                                    | High  | High   | High   |
| Rest of Havering                 | 2.5  | 82%                                    | Medium  | High   | High   |

# Appendix F. Post Evaluation of Similar Road Improvement Schemes

## F.1. Introduction

This section provides a summary of the key labour market and development impacts of three key road schemes with relevance to the East London River Crossings package:

- The Severn Bridge;
- The Humber Bridge; and
- The Dartford Crossing.

We refer to post evaluation studies where available, specifically for the Severn Bridge and the Humber Bridge, and analyse secondary data on employment and housing growth for the Dartford Crossing.

## F.2. Severn Bridge

### Summary of scheme and connectivity improvements

The original Severn Bridge crossing opened on 8 September 1966 and provided a motorway-standard road link across the Severn Estuary between England and Wales. The nearest direct alternative crossing is the Severn Tunnel, a railway tunnel built in the late 19th century. The nearest road route involved a detour via Gloucester, over 40Km further up the Severn. The construction of the Bridge reduced journeys between the two sides of the estuary by up to 80km and by up to two hours travelling time (or possibly more, under congested conditions).

An additional motorway bridge, known as the second Severn Crossing, was opened in the mid 1990s. This crosses the estuary a few kilometres to the south of the 1966 bridge. Following the opening of the new bridge, the adjoining motorway network was reorganised so that the designated M4 London to South Wales Motorway uses the new bridge, with the older bridge now carrying the parallel M48. The bridge therefore became an integral part of the strategic road network connecting the south west of England and southern Wales.

The objectives of the original Severn crossing were to provide better access between Wales and southern England, allowing for industrial diversification and reduced dependence of Wales on the coal mining industry. The second Severn crossing also provides additional congestion relief for the M4 / M5 interchange.

### Evidence of labour market impacts

There is no quantitative evidence about the impact of the Severn Crossing on the labour market catchment area. Whilst there are likely to be some benefits for commuters, it was reported in the earlier studies that the overall impact was not considered to be significant. This situation was later confirmed in studies examining the impact of the second Severn Crossing. However, anecdotal evidence from Local Planning Authorities<sup>57</sup> suggests that there was an additional demand for housing in Gwent from an increase in people commuting to Bristol or Newport, suggesting that the labour market catchment was increased overall.

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<sup>57</sup> Welsh Office (1980): M4/A55 study: the effects of major road investment schemes in Wales. Welsh Office Planning Services, Cardiff.

## Evidence of inward investment and development impacts

The first quantitative assessment relating to longer term impacts were provided in a study undertaken by Cambridge Economic Consultants (CEC) in 1986 which provided an overall estimate of economic changes<sup>58</sup>. It was estimated that within the 20 years following the opening of the bridge, it was estimated that it had generated 3,825 jobs within indigenous industries. In addition, the study identified that a number of non-indigenous industries had relocated to the south Wales area which brought additional employment opportunities to the region (see below). The most significant increase in jobs was expected in the manufacturing and tourism sectors. It should be noted that this study also took into account the impact of improved M4 therefore not all jobs could be attributed solely to the bridge.

Although the opening of the bridge appeared to bring a number of new industries and subsequently jobs to the region, the study also identified a loss in distribution jobs as a result of improved efficiencies from the opening of the crossing, ranging from 2,000 – 3,000 jobs in the short term to 4,000 – 5,000 in the long term.

Early surveys undertaken by Cleary and Thomas and reported by Davis<sup>59</sup>, suggest that there had not been a significant relocation of factories as a result of the opening of the Severn crossings. However, both regions either side of the bridge did become more attractive as locations for new manufacturing investment. It was also reported that there were better linkages within individual firms – most notably between factories in south Wales and head offices in southern England. The overall conclusion was that the crossing had improved prospects for industry in Wales without affecting industries in south west England.

With regards to distribution firms and those with higher vehicle operating costs, it was identified that there had been a significant increase in the number of firms operating across the estuary. However, as a result of the improved transport efficiencies, a number of redundancies were made within the distribution sector, which in part offset the benefit of additional job creation within the sector.

These trends were consistent with the findings in the CEC study which reported businesses responses to the benefits of the scheme in the context of improved accessibility and the crossing as a determining factor in deciding to locate or enhance their business within the region. It was found that south Wales appeared to have attracted between 9,000 and 12,000 jobs in firms not previously located within the region. As stated above, it is unlikely that all of these jobs can be directly related to the Severn Crossing as the study also took into account the impact of the M4 motorway opening, although the crossing would have contributed to them and undoubtedly acted as a catalyst for the wider investment in the strategic road network.

The PIEDA study into the second Severn crossing found that the second crossing was a potential influence on further companies in their decision to relocate to the area.

In total, it is estimated that the original crossing constructed in 1966 contributed to a total of between 23,940 to 34,140 jobs over the 20 years since its construction. It was estimated that this relates to an increase in economic activity and employment in industrial south Wales of about 4%. Furthermore, the crossing may have contributed to the delivery of between 6,128 and 8,739 additional housing units per annum (see Table 73). However, the methodology for estimating additional dwellings is uncertain.

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<sup>58</sup> Cambridge Economic Consultants (1987): Case studies of the role of infrastructure projects in local and regional economic development. Unpublished report to the Department of Transport.

<sup>59</sup> Report prepared by David Simmons Consultancy Ltd on behalf of Department of the Environment, Transport and the Regions in response to a Specification issued on 22 December 1999

**Table 73. Summary of Employment and Housing Impacts of Severn Bridge**

| <b>Impact</b>   | <b>Short term (5 years)</b> | <b>Maximum impact (20 years)</b> |
|---|-----------------------------|----------------------------------|
| Direct jobs in operation and maintenance of infrastructure                          | 105                         | 105                              |
| Net additional jobs in manufacturing industry                                       | 8,000 to 10,000             | 12,000 to 18,000                 |
| Net additional jobs in tourism  | 3,000 to 4,000              | 6,000 to 7,000                   |
| Change in location of wholesale and retail distribution and other consumer services | -2,000 to -3,000            | -4,000 to -5,000                 |
| <b>Total</b>  | <b>11,800 to 14,400</b>     | <b>18,300 to 26,100</b>          |
| Long term impact on employment in housebuilding, public services and infrastructure |                             | 5,640 to 8,040                   |
| <b>Total employment generated</b>   |                             | <b>23,940 to 34,140</b>          |
| <b>Total additional houses built per annum (over 10 years)</b>                      |                             | <b>6,128 to 8,739</b>            |

Source: Cambridge Economic Consultants in OECD

### Other evidence of economic impacts

The potential impact of the Second Severn Crossing was found to be positive for companies in south Wales with 52% of companies responding believing access to their suppliers would be improved and 59% believing access to their customers would be improved. (PIEDA, 1992)<sup>60</sup>.

The opening of the first Severn Crossing resulted in significant cost savings for businesses operating between south Wales and southern England as a result of reduced travel and subsequent operating costs. It is reported by Cleary and Thomas<sup>61</sup> that there were also additional perceived benefits, in terms of transport time and costs as a result of avoiding congestion within the Gloucestershire area. However, the Welsh Office study which was undertaken in 1980<sup>62</sup>, 14 years after the opening of the first crossing suggests that over time, the travel efficiency benefits were reduced as a result of disruption resulting from motorway and bridge repairs and intermittent disruption as a result of high winds.

## F.3. Humber Bridge

### Summary of scheme and connectivity improvements

The Humber Bridge, opened in 1981 is a road bridge constructed over the Humber Estuary which linking the north and south banks of the Humber. The Humber Bridge does not form part of the motorway network and does not form part of the long distance highway network.

Before the bridge was constructed, the port and industrial clusters on the north and south bank of the estuary acted independently of one another, with transport networks focused on east-west links, connecting the ports and industrial clusters within established industrial towns and cities. Away from the industrial areas, there were concentrations of predominantly agricultural industries with some tourist activity on the coast.

During the lead in to the construction of the bridge, wider government investment in the highway network within the region was focused on the continuing improvement of east-west links along

<sup>60</sup> Reported in DTZ/PIEDA Consulting 2006

<sup>61</sup> Cleary, E J and R E Thomas (1973): The economic consequences of the Severn Bridge and its associated motorways. Bath University Press, Bath.

<sup>62</sup> Welsh Office (1980): M4/A55 study: the effects of major road investment schemes in Wales. Welsh Office Planning Services, Cardiff.

both banks of the Humber Estuary. These east –west links were connected north-south by motorway and strategic highway network links further inland. The Humber Bridge was not seen as part of the strategic network improvements but as an enabling large-scale infrastructure project which would act as a catalyst on both sides of the Estuary and helping to meet resultant local transport requirements.

Following its construction, the Humber Bridge offered significant savings in travel distance and time between the two banks of the estuary, particularly between the major towns and settlements. Travel times between Hull and Grimsby or Immingham were cut from 71.5 miles to 25.8 miles. However, the time and distance savings associated with the arrival of the bridge need to be considered within the context of the bridge's role in improving local transport access, rather than the wider strategic network. Although the bridge proved to be an attractive link for local users travelling between the banks of the Estuary and surrounding area, the wider connectivity facilitated by the east-west motorway network and interchange with key north-south routes (such as A1 and M1) provided a more reliable, faster and toll free options between major destinations west of the bridge.

The poor advantages offered by the bridge in terms of increased connectivity beyond the immediate vicinity of the Humber Estuary itself, was reflected by the relatively low usage compared to expected forecasts. Shortly after opening, the daily vehicle movements across the bridge fell to 4,000 before increasing to up to 10,000 in 1984, significantly lower than the forecast 24,000 vehicle movements per day, which was associated with large scale economic and demographic expansion of Humberside for which the bridge was seen in part as a catalyst. Current bridge usage was reported at approximately 7 million vehicles or approximately 19,000 vehicles a day in 2012/2013<sup>63</sup>. This is still significantly below the 24,000 forecasted daily movements during the planning stage.

### **Evidence of labour market impacts**

Following its opening, research suggests that the Humber Bridge has not lead to any significant changes in employment, despite the fact that there have been opportunities for companies to increase their existing market areas and increase penetration of new markets.

A survey commissioned by the Chambers of Commerce as part of studies into the impact of tolls of the Humber Bridge showed that the tolls make it difficult for businesses in the Humber area to recruit both suitably qualified staff and new businesses (around 45% of those surveyed stated that the tolls impacted negatively in terms of staff and new business recruitment)<sup>64</sup>, with many potential workers limiting their job search area due to the cost of the tolls. Approximately 25% of those surveyed believed the tolls create staff retention problems suggesting that this was a consequence of high tolls. The evidence suggests that the wage differential between the north and South Bank would need to be as high as £1,700 before tax each year to make it worthwhile to take up a job on the other side of the estuary, and fill vacant positions. The Toll Impact Assessment report also suggests that a reduction in the toll would have positive benefits in relation to the long term self employed. The impact of toll costs on the movement and flexibility of the workforce is exacerbated by the limited travel to work areas within the Humber city region and the fact that the bridge is part local transport improvements rather than an integrated part of the strategic road network.

Looking at specific sectors, evidence suggests<sup>65</sup> that for transport dependent industries such as the haulage industry, a number of firms responded to the opening of the bridge in a way which had an overall neutral or negative impact on related labour markets. Although the opening of the Humber bridge allowed access to the new markets (particularly on the north and south banks of the estuary) as well as the expansion of existing market areas, the opening and subsequent reduced opening times also allowed businesses to rationalise their vehicle fleets and undertake internal reorganisation which led to the closure or relocation of some depots.

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<sup>63</sup> HUMBER BRIDGE MANAGEMENT REPORT 2012-2013

<sup>64</sup> Humber Bridge Tolls Impact Assessment: Colin Buchanan 2008

<sup>65</sup> Mackie. P and Simon D (1986) Do road projects benefit industry? – a case study of the Humber Bridge



The Phase 2 Humber Impact Study<sup>66</sup> concludes that the reduction or elimination of tolls has the potential to enhance agglomeration of industries within the Humber area, which would have positive benefits relating to the attractiveness of the Humber area and economically active population. Improving accessibility in this way is considered to enhance the ability for industry agglomerations to recruit to higher level positions and improve mobility for the higher level work force (approximately a quarter of the economically active population), contributing to the wider economic development of the sub-region.

The geographical limitations of travel to work areas and the cost of tolls on the Humber Bridge suggest that the bridge toll is a barrier to supporting and developing labour markets within the city region. The limited labour market and unattractive commuting costs levied by the toll appears to restrict the development of the labour market and does little to facilitate the synergies, flexibility and availability of labour pools which are fundamental to supporting agglomeration and economic development of the city region. It is not clear how far the limitations are related specifically to the toll with modelling and appraisal work undertaken by Aecom on behalf of the DfT<sup>67</sup> suggests that there would not be a large step change in traffic using the bridge or alternative routes.

### **Evidence of inward investment**

Existing research confirms that there is some evidence to suggest that investment decisions are adversely influenced by the tolls, and evidence was cited that distribution centres had chosen alternative locations outside the area 'at least in part because of the toll expense<sup>68</sup>'. 20% of firms surveyed in relation to the toll impact stated that the tolls limited their choice of suppliers (thereby impacting upon supply chain agglomeration benefits across the Hull and Humber Ports City Region). Furthermore, it was considered that a reduction in the toll would have beneficial impacts for supply chains and new markets and therefore investment would be increased following the elimination or reduction in the tolls.

Following the enactment of the Humber Bridge Act 2013 on 15 January 2014, the Humber Bridge Board now have new powers to help promote the economic development of the Humber region, including the power to borrow money against the bridge. In the long term, this could mean that direct upfront investment could be made within the Humber sub-region which would help encourage wider inward investment within the city-region. The board also now have powers to reduce tolls which could be used to incentivise companies to locate to the region and thereby having an indirect impact on investment within the city region.

### **Evidence of development impacts**

There is no clear evidence as to the direct impact that the opening of the Humber Bridge had on development opportunities within the area. However, available research suggests that the tolls, in part act as a barrier to realising opportunities in land development around the bridge itself and elsewhere within the city-region<sup>69</sup>.

For example, potential development land on the South Bank has been identified as a key factor in establishing a competitive economy within the City Region's economy, albeit the workforce on the South Humber Bank is relatively small. Conversely firms operating on the North Humber Bank are considered to have access to a larger workforce in Hull and East Riding, but attractive land for development is more difficult to find. There is therefore an imbalance between the labour force and development opportunities, an issue that is exacerbated by the tolling issue as set out above. The Phase 2 impact study identifies that there are potentially 553,000 residents (435,000 of which are considered to be economically active) across both the North and South Bank who could contribute towards the local workforce or considered customers, if barriers were removed, improving the attractiveness for investment and development.

The tolls have therefore been seen as a barrier to realising this development potential, particularly as workers are deterred from commuting to the South Humber Bank by the cost of crossing the bridge. The Phase 2 Humber Impact Study (2009) concludes that the reduction or

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<sup>66</sup> Colin Buchanan 2009 Humber Bridge Impact Study Phase 2 Report – Version 3

<sup>67</sup> Humber Bridge Tolls Modelling and Appraisal Study (2010)

<sup>68</sup> Colin Buchanan (2008) Humber Bridge Tolls Impact Assessment: Final Report.

<sup>69</sup> SQW (2008) SHB: review of current position, options, proposed way forward and action plan. A report to Yorkshire Forward

elimination of the toll would have positive benefits in relation to planned or proposed development projects across different sectors, including office / start up businesses, ports activities and manufacturing / distribution. The majority of benefits can be associated with direct cost savings for business, making it more attractive to bring forward developments which are likely to have a greater attractiveness to employees or existing / future customer base. This has most recently been demonstrated by the promotion of the 'Bridgehead' development on the northern side of the Bridge which in part was brought forward in 2011 as a result of the planned reduction in toll costs which have now come into effect.

Furthermore, the Humber Bridge Board, following the enactment of the Humber Bridge Act (2013) could use their new powers relating to borrowing against the bridge to invest directly in development schemes adjacent to the bridge which could act as a catalyst for wider development projects within the region, though this remains to be seen.

## **Other evidence of economic impacts**

In relation to the wider economic benefits of the Humber Bridge it appears that any benefits have been relatively localised and constrained to the city-region.

From the available evidence, it appears that the wider improvements to the east-west motorway links and interchanges with the north-south strategic network have had a more significant impact on the wider functional economic area than the bridge itself. The Phase 2 Humber Impact Study demonstrated further that the potential wider economic benefits have been restricted by the existence of a toll on the bridge, a situation which appears to have been exacerbated by the geographical limitations of the region and suitability of the surrounding local road network to capitalise from the benefits of a new crossing. The economic impact assessment prepared by North East Lincolnshire confirms that the high toll cost has been a barrier realising economic opportunities across the wider city-region and beyond. However, this issue may in part been addressed following a reduction in tolls in 2012, which saw an additional ~500,000 vehicles using the bridge, though there is not yet any evidence to support this.

Previous surveys carried out into the commercial vehicle usage across the bridge and reported by the OECD indicate that from a business perspective, opportunities to improve the business catchment of the Humber Bridge are limited for the reasons set out above. A small number of local businesses surveyed not long after the bridge opening, appeared to use the bridge to access local business on either side of the Estuary, or in a limited number of cases (in relation to businesses on the north bank), accessing wider markets within southern Lincolnshire and East Anglia. The most significant positive benefits of the bridge opening have been identified as the re-routing of traffic within this catchment area, and time savings which have been used productively for other operational requirements.

However, benefits of the bridge within some sectors such as the distribution and road transportation industry have been constrained by external factors affecting delivery schedules, which have minimised the benefits that the bridge could have in increasing productivity and increase in number of vehicle movements and demonstrate the need to consider or assess the benefits of any new crossing within the wider context.

## **F.4. Dartford Bridge**

### **Summary of scheme and connectivity improvements**

The original Dartford Crossing consisted of a road tunnel linking Dartford in the south with Thurrock in the north. The west tunnel opened in 1963m with the east tunnel opened in 1980.

Following the completion of the M25 in 1985, which dramatically increased demand for the crossing, the Dartford Bridge, which effectively doubled the capacity of the crossing, was opened in 1991.

The Dartford Crossing has particular parallels with the proposed Silvertown Crossing in that both schemes are about expanding existing capacity and both relate to areas undergoing a significant amount of economic restructuring.

### Evidence of labour market impacts

Table 74 shows that change in commuting trips across the River Thames between 1991, when the bridge was not yet operational<sup>70</sup> and 2001, by which time the bridge had been in operation for 10 years. The table shows that there has been a significant increase in total trips across the Thames from most local authorities in the vicinity<sup>71</sup> of the bridge, with a particular increase in trips from Essex and east London going south. Havering saw an increase in trips south of the River by 170% and Thurrock by 132%.

It is not known whether the much higher increase in commuting trips going south over the River is a result of a higher relative change in connectivity (which appears unlikely given that the bridge effectively doubled capacity in both directions) or because it allowed places south of the River such as Dartford, which had smaller economies than those north of the River, to become more competitive and create more jobs (see next section).

**Table 74. Change in commuting trips 1991 - 2001**

|           | Change in trips going North of River Thames | Change in trips going South of River Thames |
|-----------|---|---|
| Bexley    | <b>67.6%</b>                                | 32.5%                                       |
| Havering  | 11.8%                                       | <b>169.7%</b>                               |
| Thurrock  | 25.4%                                       | <b>131.9%</b>                               |
| Dartford  | <b>52.6%</b>                                | 26.2%                                       |
| Gravesham | <b>-1.4%</b>                                | 19.5%                                       |

Source: Census 1991 and 2001

### Evidence of inward investment and development impacts

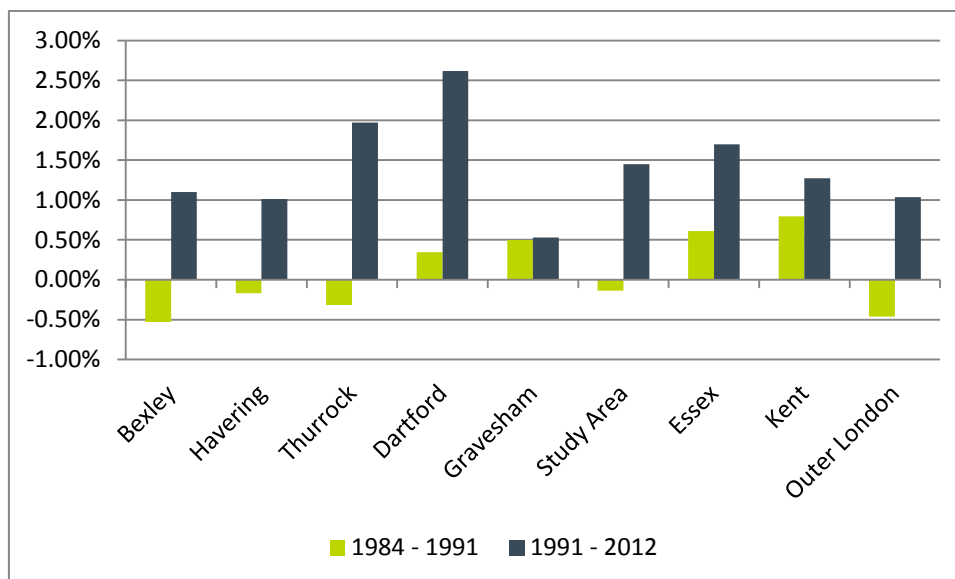
We are not aware of any qualitative evidence on inward investment and development impacts resulting from the Dartford Crossing. Instead we have used historic employment data, which goes back as far as 1984 at the local authority level, as well as Census data, to measure the change in employment and dwelling growth before and after the crossing became operational.

Figure 74 shows that the employment growth rate for the five authority study area was -0.1% in the seven years between 1984 and 1991, which then increased significantly to 1.4% per annum in the period 1991 – 2012 after the bridge was opened. Thurrock and Dartford, the two authorities which the bridge directly links, have seen the greatest increase in employment growth, at 2% and 2.6% respectively.

<sup>70</sup> The Dartford Bridge Opened in October 1991, where as the Census was taken in May 1991

<sup>71</sup> This area has been defined to cover a similar geographical extent to that of the River Crossing Study Area

**Figure 74. Total Employment Growth Before and After Dartford Crossing**



Source: Census of Employment/ABI/BRES

However, employment as a whole grew more strongly during 1991-2012 in Essex, Kent and Outer London, so the change in employment in the crossing study area should be measured against this wider growth. To do this, we have compared annual employment growth in each authority against the sub-region it sits within. So Havering and Bexley are compared against Outer London, Thurrock against Essex, and Dartford and Gravesham against Kent. The Study Area is compared against Outer London, Essex and Kent in aggregate.

Table 75 shows that the crossing study area has seen an annual growth rate which is 21% above that of the wider Outer London, Essex and Kent region during the period since the bridge was opened. This compares to a growth rate 138% below that of the wider region in the period from 1984 to when the bridge was opened (Table 76).

Dartford has seen significant employment growth in the period since the bridge opened, at over twice the rate of the wider region. Thurrock also saw some strong growth, at 16% above the Essex rate. However, Bexley and Gravesham recorded growth rates which were below their respective sub-regions, which might suggest that, although the net effect of the bridge on employment has been positive, there has been some displacement of growth from these locations to Dartford, which is likely to have seen the biggest positive change in connectivity from the bridge.

**Table 75. Difference in Compound Annual Employment Growth Rates (CAGR) 1991 – 2012 between Borough and Sub-Regional Average**

| Area              | CAGR - Borough | CAGR – Sub-Regional average | CAGR - Absolute Difference | CAGR % difference |
|-------------------|----------------|-----------------------------|----------------------------|-------------------|
| Bexley            | 1.10%          | 1.27%                       | -0.17%                     | -13.5%            |
| Havering          | 1.01%          | 1.04%                       | -0.02%                     | -2.2%             |
| Thurrock          | 1.97%          | 1.70%                       | 0.27%                      | 16.1%             |
| Dartford          | 2.62%          | 1.27%                       | 1.34%                      | 105.7%            |
| Gravesham         | 0.53%          | 1.27%                       | -0.74%                     | -58.3%            |
| <b>Study Area</b> | <b>1.45%</b>   | <b>1.20%</b>                | <b>0.25%</b>               | <b>21.2%</b>      |

Source: Census of Employment/ABI/BRES

**Table 76. Difference in Compound Annual Employment Growth Rates (CAGR) 1984 – 1991 between Borough and Regional Average**

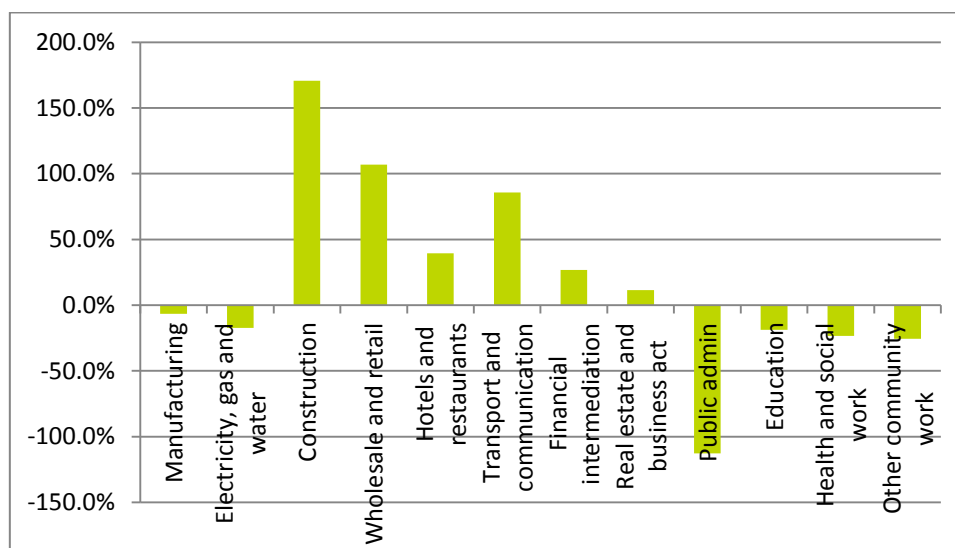
| Area              | CAGR - Borough | CAGR – Sub - Regional average | CAGR - Absolute Difference | CAGR % difference |
|-------------------|----------------|-------------------------------|----------------------------|-------------------|
| Bexley            | -0.53%         | -0.46%                        | -0.07%                     | -15.1%            |
| Havering          | -0.17%         | -0.46%                        | 0.29%                      | -63.8%            |
| Thurrock          | -0.32%         | 0.61%                         | -0.93%                     | -152.1%           |
| Dartford          | 0.35%          | 0.79%                         | -0.45%                     | -56.2%            |
| Gravesham         | 0.50%          | 0.79%                         | -0.29%                     | -37.2%            |
| <b>Study Area</b> | <b>-0.14%</b>  | <b>-0.06%</b>                 | <b>-0.08%</b>              | <b>-138.3%</b>    |

Source: Census of Employment/ABI/BRES

Figure 75 shows the difference in employment growth rates by sector across the crossing study area (again compared with the Outer London, Kent and Essex growth rates). The figure shows that the construction sector has seen growth over two and half times that of the comparison area, with wholesale and retail also growing twice as fast. Manufacturing does not appear to have been affected to a significant degree, with public sector activities seeing an overall decline relative the wider area – although this is unlikely to be due to the crossing. Although affected in a more limited way, office based sectors (financial intermediation and renting, real estate & business activities) have seen some above average growth in this period compared with the wider area.

Table 77 shows that Dartford has seen the biggest increase in growth in office based sectors. This trend appears to have continued in recent years with recent floorspace data from the Valuation Office also showing that office growth in the authority has been four times that of Essex during 2000 to 2012<sup>72</sup>

**Figure 75. % Difference in growth rate compared to wider region 1991 – 2008**



Source: ABI

<sup>72</sup> Atkins analysis of VOA floorspace data 2012

**Table 77. Difference in absolute CAGR 1991 – 2008 by Borough and Sector**

|   | Bexley | Havering | Thurrock | Dartford | Gravesham | Study Area |
|---|--------|----------|----------|----------|-----------|------------|
| Manufacturing                             | 2.2%   | 0.9%     | -1.2%    | -1.2%    | -1.3%     | 0.2%       |
| Electricity, gas and water supply         | 6.9%   | 0.1%     | 0.7%     | -4.2%    | -9.1%     | 1.2%       |
| Construction                              | 1.3%   | 2.8%     | -0.7%    | 7.3%     | -0.1%     | 2.4%       |
| Wholesale/retail trade; repair, etc       | -0.3%  | -0.3%    | 3.4%     | 3.8%     | -2.4%     | 1.1%       |
| Hotels and restaurants                    | 0.0%   | 2.4%     | 0.3%     | 4.8%     | -1.0%     | 1.2%       |
| Transport, storage and communication      | 0.2%   | -0.7%    | 0.3%     | 1.8%     | 4.0%      | 0.6%       |
| Financial intermediation                  | -2.5%  | -0.1%    | -0.9%    | 4.9%     | -1.3%     | -0.6%      |
| Real estate, renting, business activities | 1.2%   | -0.9%    | 0.3%     | 1.7%     | -0.3%     | 0.4%       |
| Public admin/defence; social security     | 1.0%   | -2.7%    | 1.7%     | -2.2%    | -1.6%     | -0.4%      |
| Education                                 | -0.7%  | -1.5%    | 1.2%     | -0.1%    | -0.4%     | -0.5%      |
| Health and social work                    | 0.6%   | 0.0%     | -1.0%    | -1.7%    | -0.6%     | -0.4%      |
| Other community, social/personal service  | -0.4%  | -0.7%    | -1.4%    | -2.1%    | 0.4%      | -0.7%      |

Source: ABI

We can also compare the annual rate of dwelling growth in the crossing study area with that of the wider area (Table 78). Overall it appears that the rate of dwelling growth across the crossing study area has been below that of the wider Essex, Kent and Outer London area. However, rates of growth at both Thurrock and Dartford have been significantly above that of the wider area and are significantly above those experienced before the bridge opened (see Table 79).

**Table 78. Difference in Compound Annual Dwelling Growth Rates (CAGR) 1991 – 2011 between Borough and Sub-Regional Average**

|                   | CAGR Borough | CAGR Sub-Region | Absolute Difference | % Difference |
|-------------------|--------------|-----------------|---------------------|--------------|
| Bexley            | 0.4%         | 0.6%            | -0.2%               | -37.3%       |
| Havering          | 0.4%         | 0.6%            | -0.2%               | -33.7%       |
| Thurrock          | 1.1%         | 0.9%            | 0.2%                | 27.9%        |
| Dartford          | 1.2%         | 0.9%            | 0.3%                | 34.3%        |
| Gravesham         | 0.6%         | 0.9%            | -0.3%               | -36.4%       |
| <b>Study Area</b> | <b>0.6%</b>  | <b>0.7%</b>     | <b>-0.1%</b>        | <b>-9.9%</b> |

Source: Census 1991 and 2011

**Table 79. Difference in Compound Annual Dwelling Growth Rates (CAGR) 1981 - 1991 between Borough and Sub-Regional Average**

|            | CAGR Borough | CAGR Sub-Region | Absolute Difference | % Difference |
|------------|--------------|-----------------|---------------------|--------------|
| Bexley     | 1.3%         | 1.2%            | 0.1%                | 9.3%         |
| Havering   | 0.8%         | 1.2%            | -0.4%               | -30.8%       |
| Thurrock   | 1.6%         | 2.0%            | -0.4%               | -18.5%       |
| Dartford   | 1.6%         | 1.9%            | -0.3%               | -13.7%       |
| Gravesham  | 1.2%         | 1.9%            | -0.7%               | -36.8%       |
| Study Area | 1.2%         | 1.5%            | -0.2%               | -15.7%       |

Source: Census 1981 and 1991

## F.5. Conclusions

The review of the three major river crossings built in the UK has demonstrated that there is the potential for a number of economic benefits to be secured from the construction of a new river crossing.

The review suggests that:

- Improved connectivity from river crossings can impact significantly on employment growth, with the authorities in close proximity to the Dartford Crossing seeing growth rates of 20% above those of the wider sub-region, and the Severn Crossing increasing economic activity in South Wales by 4%;
- Analysis of the spatial distribution of the Dartford crossing employment impacts suggests that these are most likely to be felt in authorities directly linked by the new crossing (in this case Dartford and Thurrock). However, there may be some displacement effects with new employment choosing to locate closer to the crossing at the expense of other authorities in reasonable proximity to the crossing;
- Analysis of the impacts on particular sectors from the Dartford crossing suggests that the construction, retail and distribution sectors are most likely to benefit from the improved road connectivity, although smaller scale positive impacts on office based sectors are also possible too. This conforms with recent analysis on the importance of road based connectivity in East London by sector conducted for TfL (see Chapter 3);
- The impact of new crossings on housing growth is less certain, and is much more aligned to local authority planning policy. However, analysis from the Dartford Crossing suggests that dwelling growth rates in both Thurrock and Dartford have been above the regional averages by 28% and 34% respectively since the crossing opened. The Severn Bridge also appears to have generated significant housing growth of up to 8,800 dwellings per annum

However, the review also demonstrates that connectivity and accessibility improvements are only one element which can affect economic performance, and there are a number of external factors which can also have a significant influence on the economic competitiveness and there are a number of other factors which should be considered as part of an integrated approach to providing a new river crossing.

The review demonstrates that other factors which can impact on the economic and development impact of new crossings include:

- Wider market factors which could influence investment decisions and operational efficiencies from the scheme ;

- The degree of integration of any new crossing with the wider local and strategic transport network; and
- The degree of integration of the scheme more widely with strategic regeneration and development objectives – using the scheme as a catalyst to bring forward wider regeneration opportunities at both the local and sub-regional level;



# Appendix G. Relationship between road connectivity and density in London

## G.1. Introduction

Against a background of increasing centralisation of London employment over the last 20 years and growing appreciation of the role of density and agglomeration in promoting economic growth, a number of studies have focused on how transport investment can facilitate the dynamics of agglomeration.

This section of the report reviews research undertaken for the GLA by Volterra which establishes a link between transport connectivity and employment and population density. We then present our own analysis of the relationship between connectivity and a range of socio-economic variables in London.

## G.2. Volterra Report<sup>73</sup>

In 2004, Volterra were commissioned by TfL to examine the potential impact on employment and population in London of the Thames Gateway Bridge (TGB); specifically, how changes in accessibility may affect the population's ability to access jobs and employers' ability to access the labour market.

The project emphatically *does not provide forecasts* of future employment and population after the completion of the crossing, but identifies figures for changes in *potential* employment and population i.e: the level of population or employment which could be sustained by changes in transport infrastructure independently of other factors contributing to an area's habitability or economic success. Results are presented for the Boroughs of Greenwich and Newham individually and collectively for the Boroughs of Barking and Dagenham, Bexley, Hackney, Havering, Lewisham, Redbridge, Tower Hamlets and Waltham Forest.

The method Volterra employed uses a standard statistical technique known as 'clustering', 757 London wards according to their employment, population and accessibility characteristics. The accessibility and employment and population densities deemed typified by these classes (clusters) are then used to derive a relationship between an overall index of accessibility and employment and population densities. This is achieved by means of a piecewise linear regression.

Accessibility is measured by the number of people/jobs which can access or be accessed by an area by a particular mode of transport within a given time interval. The analysis uses accessibility data outputted by Transport for London's LTS model to quantify accessibility.

The details of the data set available on a ward basis for the year 2001, used for the ward classification, are as follows:

- Employment density
- Population density
- Number of people able to access the ward by highway within 45 minutes
- Number of people able to access the ward by public transport within 45 minutes
- Number of jobs accessible to people in the ward by highway within 45 minutes

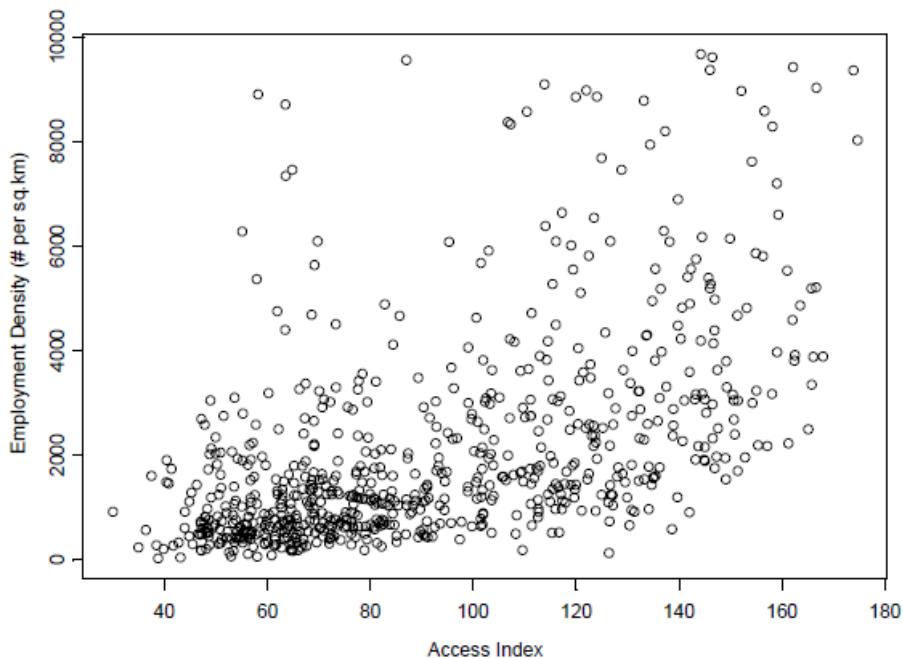
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<sup>73</sup> Impact of Potential Employment and Population of Thames Gateway Boroughs of the Thames Gateway Bridge 2004

- Number of jobs accessible to people in the ward by public transport within 45 minutes

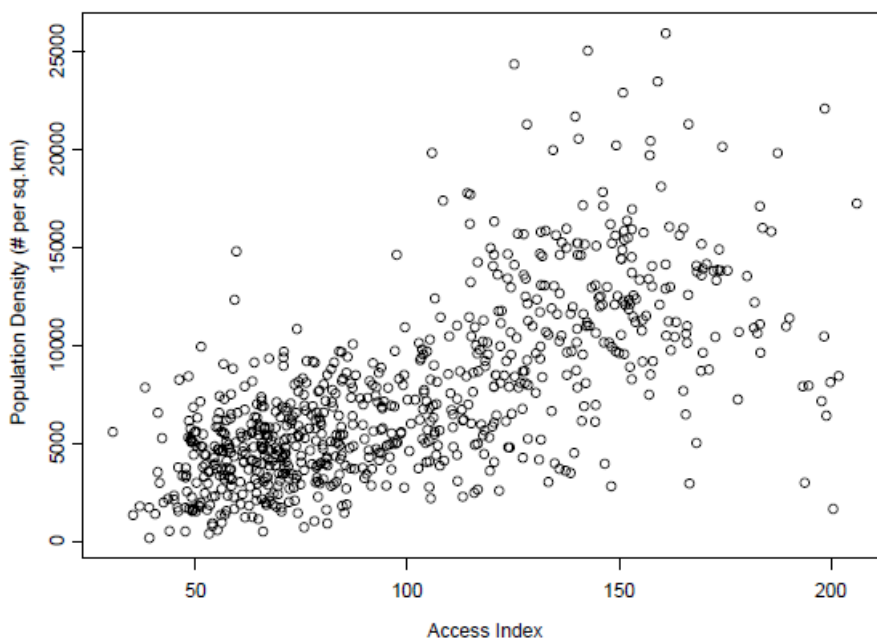
Figures 76 and 77 show the relationship between the overall index of accessibility and employment and population density for each ward, as identified by the Volterra work.

**Figure 76. 2001 employment density against overall index of accessibility of study area wards**



Source: Impact on Potential Employment and Population of Thames Gateway Boroughs of the Thames Gateway Bridge – Technical Report  
Note: Employment density range limited to <10,000 for clarity, 71 wards omitted

**Figure 77. 2001 population density against overall index of accessibility study area wards**

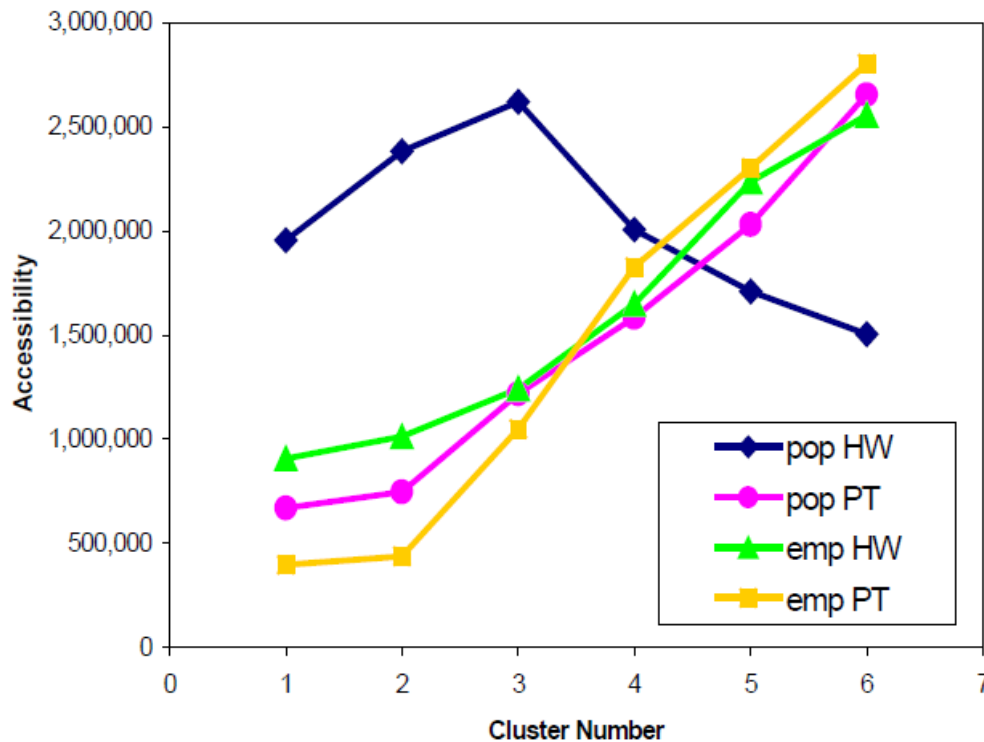


Source: Impact on Potential Employment and Population of Thames Gateway Boroughs of the Thames Gateway Bridge – Technical Report  
Note: Excludes 25 wards in City of London

The worked noted that the accessibility index has a strong positive correlation with both employment and population density, with the exception of a small group of wards in Central London with very high accessibility but low population density. These wards are primarily in the financial district, in and around the City of London.

This data was then subject to a statistical classification method called 'clustering, which categorises objects according to their similarity with respect to a given number of variables (in this case accessibility and density). Six clusters were chosen based on the fact that a reasonable number of clusters are needed for the regression and the fact that the clusters need a differentiated geographical. The results of the clustering, with respect to accessibility, are shown in Figure 78 below.

**Figure 78. Variation of accessibility variables for cluster centres**



Source: Impact on Potential Employment and Population of Thames Gateway Boroughs of the Thames Gateway Bridge – Technical Report  
Note: Excludes 25 wards in City of London

Using the access/density curves shown in Figure 78, the work then applied expected changes in accessibility resulting from the TGB (both with and without Crossrail) to derive estimates of the total impact on employment and population density, as illustrated in Table 80. The work estimates that the increased connectivity resulting from the TGB could result in an additional 34,600 jobs and 72,500 people.

**Table 80. Employment and population potential impact of TGB, with and without Crossrail**

| <b>Borough</b>                      | <b>TGB<br/>Employment<br/>Impact, No<br/>Crossrail</b> | <b>TGB<br/>Employment<br/>Impact, With<br/>Crossrail</b> | <b>TGB<br/>Population<br/>Impact, No<br/>Crossrail</b> | <b>TGB<br/>Population<br/>Impact, with<br/>Crossrail</b> |
|-------------------------------------|--|--|--|--|
| Greenwich                           | 6,600  | 10,500   | 16,000   | 26,100   |
| Newham                              | 7,100  | 8,000  | 13,400   | 11,900   |
| Other Thames Gateway<br>Boroughs    | 20,900   | 27,700   | 43,500   | 56,800   |
| <b>Thames Gateway Sub<br/>Total</b> | <b>34,600</b>  | <b>46,200</b>  | <b>72,500</b>  | <b>94,800</b>  |

Source: Impact on Potential Employment and Population of Thames Gateway Boroughs of the Thames Gateway Bridge – Technical Report

# Appendix H. Cross River Movements

## H.1. Introduction

This section presents a summary of cross river movements in the study area and the severity of the 'barrier effect' resulting from the River Thames.

## H.2. History of the River Thames as a barrier to movement

The River Thames provided the essential means by which London was linked to the rest of the world, allowing it to develop as a great trading city. At the same time, it has always acted as a natural barrier to travel between north and south within the city.

There are significant differences in the size/scale of the river across London and this has helped to dictate the historic pattern of crossing points. In west London, there are frequent bridges across the Thames, as the bridges need to take no account of large ships, and can therefore have low clearances above the river, and frequent piers, making construction relatively simple and low cost.

However, downstream of London Bridge, the river becomes gradually wider, and a right of navigation for large ships exists, adding very significant barriers to construction of bridges. There are only two bridges downstream of London Bridge, Tower Bridge and the Queen Elizabeth II bridge at Dartford, which had to be built with 54 metres of clearance above high water, and is consequently a very large (and expensive) structure.

There are two tunnelled road crossings, the Rotherhithe tunnel and Blackwall tunnel, the latter of which has two tunnel bores.

The larger width of the River requires a higher maximum clearance for navigation purposes in East London. At the Vauxhall Bridge, the bridge is low, with a maximum clearance at high water of 5.6 metres. The bridge has five arches with a width of 45 metres. By comparison, the previously proposed Thames Gateway Bridge in east London had to allow 50 metres air draft above high water, and a span of 270 metres.

The difference in navigational clearance requirements illustrates the much greater difficulty, and therefore cost, in providing river crossings in east London compared with west London. This has meant that the River Thames acts as far more of a barrier to business and people movement in East London compared to West London.

## H.3. The London Travel Demand Survey

The London Travel Demand Survey (LTDS) is an annual household travel survey of London residents which includes 8,000 households across the city. The database covers the period from 2005 to 2011 and therefore represents the most up to date source of travel to work movements (the latest Census travel to work information is still only available to 2001), as well as the only source of data on leisure and shopping trips across the city.

TfL have undertaken analysis of data which comprises the boroughs of Newham, Barking & Dagenham, Havering, Redbridge, City of London, Westminster and Tower Hamlets (located north of the Thames) and the boroughs of Bexley, Bromley, Greenwich, Lewisham and Southwark (located south of the Thames). A separate analysis has been undertaken which looks at travel patterns in the west London boroughs of the Hammersmith & Fulham, Kensington & Chelsea, Lambeth, Wandsworth, Westminster, Ealing, Hounslow, Kingston upon Thames, Merton and Richmond, with City of London and Tower Hamlets also included as major travel destinations.

The analysis aims to understand the extent to which travel in these boroughs might be constrained by the presence of the river and the limited options available for travelling across the river, allowing a comparison to be undertaken between east and west London.

## H.4. Analysis of the 'barrier effect'

Using the latest data from the London Travel Demand Survey, Tables 81 and 82 compare the number of inter and intra borough trips within East and West London.

Table 81 shows that there are almost 70% more cross river trips in West London when compared to East London (a total of 566,000 trips in West London compared to 322,000 in East London). However, this includes all trips that cross the river in Central London, where there are more opportunities to cross the river and a higher proportion of trips are made by public transport.

When we exclude trips into central London (Table 82), we find that cross river trips in East London total just 33,900, or just 0.6% of all trips that originate in this part of London. This is against 313,700 trips that cross the river in West London – 10 times the figure in East London, and is a clear demonstration of the level of the difference in cross river connectivity between the two locations.

**Table 81. Summary of all inter and intra borough trips in East London and West London (Average daily trips 2005 – 2011)**

|                      | East London                               |        | West London                               |        |
|----------------------|---|--------|---|--------|
|                      | Number of inter and intra - borough trips | %      | Number of inter and intra - borough trips | %      |
| Entirely north       | 2,751,300                                 | 54.6%  | 2,881,800                                 | 55.0%  |
| Entirely south       | 1,962,300                                 | 39.0%  | 1,792,700                                 | 34.2%  |
| North-south crossing | 160,000                                   | 3.2%   | 284,800                                   | 5.4%   |
| South-north crossing | 162,500                                   | 3.2%   | 281,600                                   | 5.4%   |
| Total cross river    | 322,500                                   | 6.4%   | 566,400                                   | 10.8%  |
| Total                | 5,036,100                                 | 100.0% | 5,240,900                                 | 100.0% |

Source: LTDS

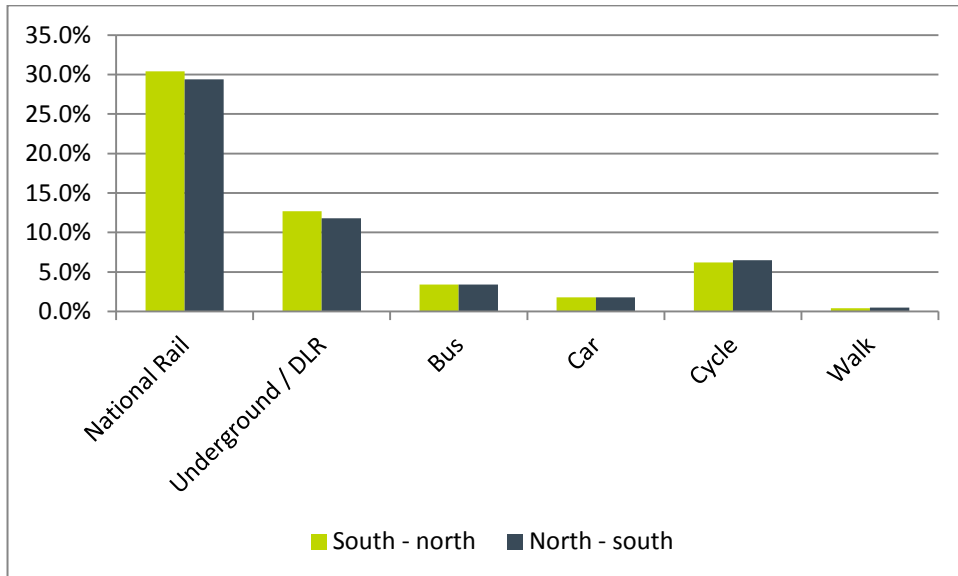
**Table 82. Comparison of all inter and intra borough trips in East London and West London – excluding Central London (Average daily trips 2005 – 2011)**

|                      | East London                               |       | West London                               |       |
|----------------------|---|-------|---|-------|
|                      | Number of inter and intra - borough trips | %     | Number of inter and intra - borough trips | %     |
| Entirely north       | 1,543,500                                 | 30.6% | 1,830,600                                 | 34.9% |
| Entirely south       | 1,582,300                                 | 31.4% | 1,792,700                                 | 34.2% |
| North-south crossing | 17,000                                    | 0.3%  | 150,900                                   | 2.9%  |
| South-north crossing | 16,900                                    | 0.3%  | 162,800                                   | 3.1%  |
| Total cross river    | 33,900                                    | 0.6%  | 313,700                                   | 6.0%  |
| Total                | 3,159,700                                 | 62.7% | 3,937,000                                 | 75.1% |

Source: LTDS

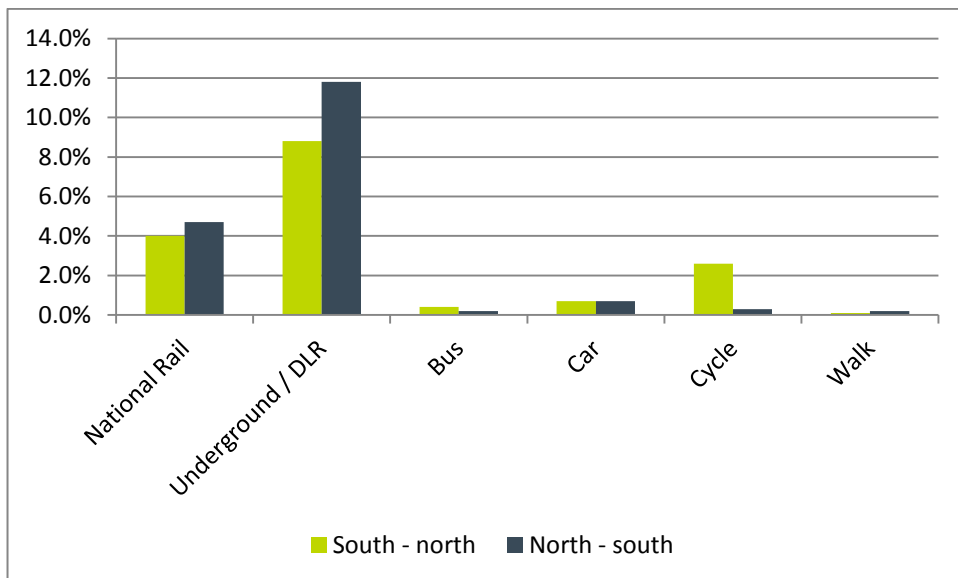
Figure 79 shows that cross river trips in East London are overwhelmingly made by public transport, with car trips as a proportion of all cross river trips standing at just 2%. This reflects the availability of cross river transport in East London. Figure 80 shows that cross river trips that exclude Central London are much more likely to be by Underground or the DLR than other modes, given the current availability of the public transport network in the Study Area. Trips into Central London are much more likely to take place by National Rail (including Overground) given the availability of radial National Rail routes.

**Figure 79. Cross river trips in East London (including travel to/from Central London) as % of total study area travel by mode**



Source: LTDS. National Rail includes Overground

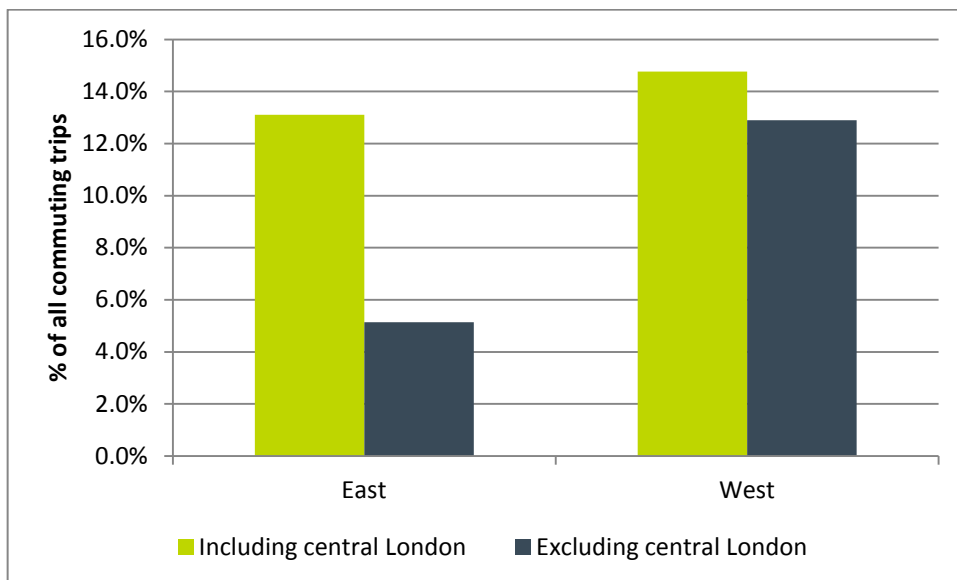
**Figure 80. Cross river trips in East London (excluding travel to/from Central London) as % of total study area travel by mode**



Source: LTDS. National Rail includes Overground

Figure 81 shows the difference in commuting trips that cross the River Thames between East and West London. Whilst there is a slight difference in the number of cross river commuting trips that include central London, journeys that do not include central London are much more common in West London than in the east.

**Figure 81. Percentage of all commuting trips that cross the River Thames**

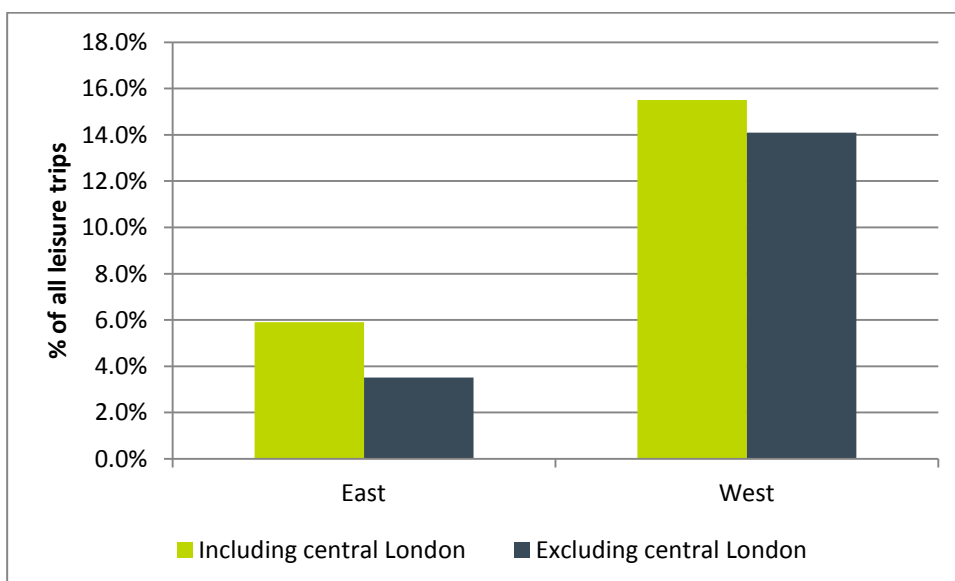


Source: LTDS

The barrier effect is also clearly evident for both leisure and shopping trips too. Figures 82 and 83 show that the proportion of leisure trips that involve crossing the River Thames is about two and a half times as high in West London when compared to the east, when including central London, and almost four times as high when excluding it.

Furthermore, the percentage of shopping trips in the west that cross the River Thames is about five times that of the East, and about 20 times that when excluding central London.

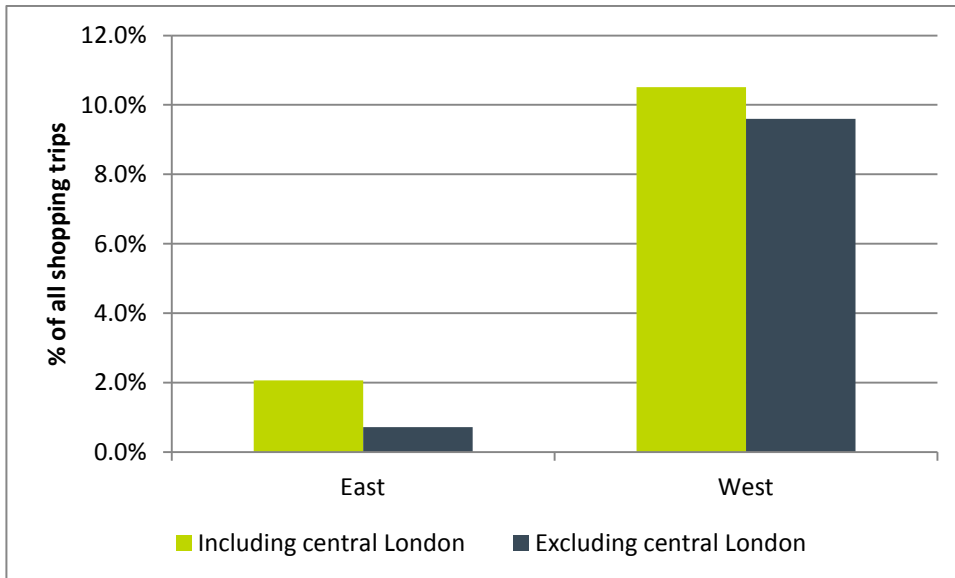
**Figure 82. Percentage of all leisure trips that cross the River Thames**



Source: LTDS



**Figure 83. Percentage of all shopping trips that cross the River Thames**



## H.5. Conclusions

- The London Travel Demand Survey (LTDS) represents the most up to date source of travel to work movements (the latest Census travel to work information is still only available to 2001), as well as the only source of data on leisure and shopping trips across the city;
- The data clearly shows the barrier effect of the River Thames, with the proportion of total cross river trips almost twice that in West London compared to East London, and about ten times greater when trips to Central London are included;
- The barrier effect is evident for all types of trips. Cross river commuting trips that do not go to central London are about three times those in West than in East London, with leisure trips five times and shopping trips 20 times greater in the West compared to the East.

# Appendix I. Mode Share by Borough

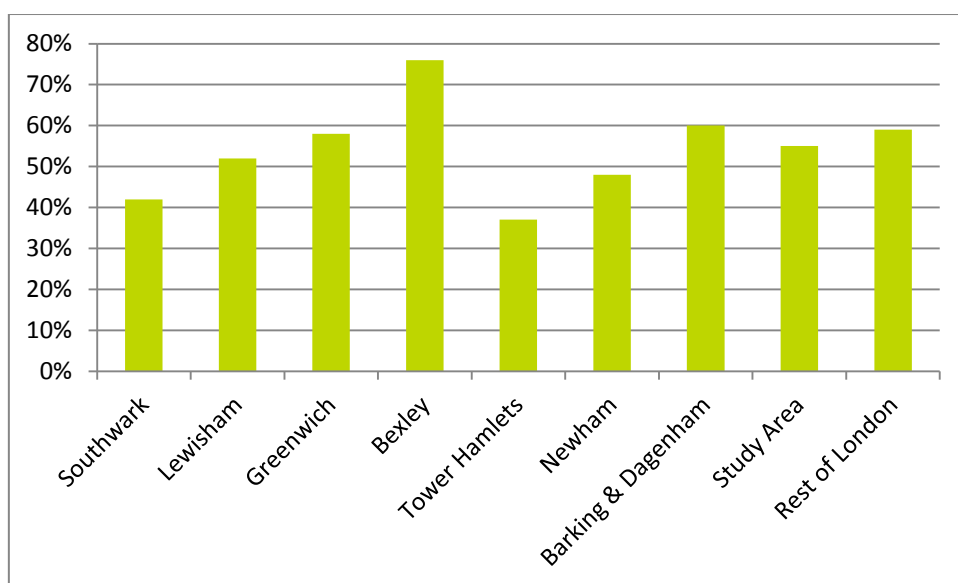
## I.1. Introduction

This section provides a summary of commuting mode share at a Borough level, comparing changes between 2001 and 2011 and highlighting the importance of road based modes within the Study Area.

## I.2. Mode Share

Figure 84 shows that four study area boroughs have car and van ownerships below the London household average, all of which are in Inner London where opportunities to access public transport are greater. Bexley has a particular high proportion of households with access to at least one car or an, with 76.3%, the sixth highest rate of all London boroughs.

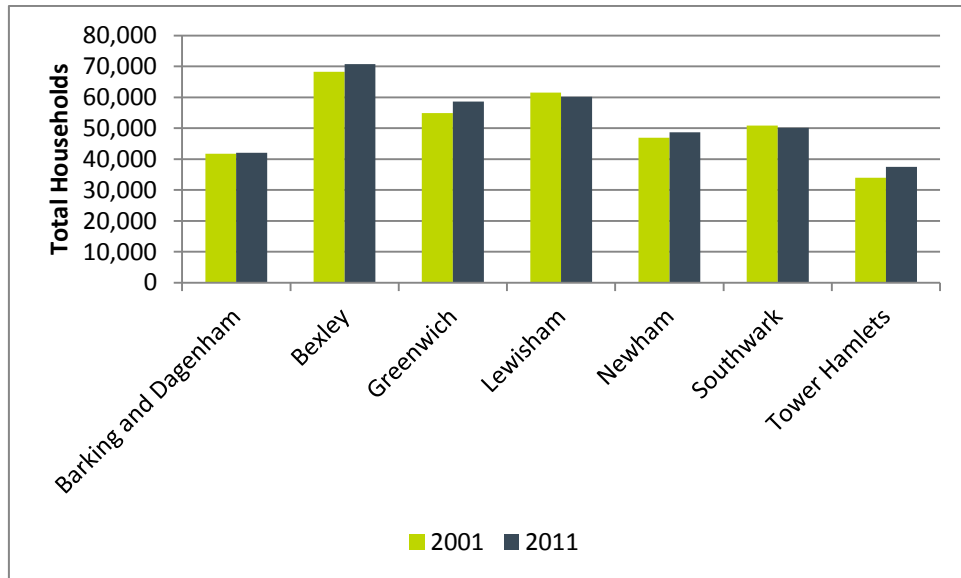
**Figure 84. Households with at least one car or van 2011**



Source: Census

Figure 85 shows that a greater number of households across all Boroughs, with the exception of Lewisham and Southwark, now have access to a car or van when compared to 2001. Across the study area, just under 368,000 households had at least one car or van in 2011, an increase of 9,640 households since 2001 (+2.7%), exceeding the average increase across London (+1.3%). More significant increases were evident in Tower Hamlets (+10.4%), Greenwich (+6.7%) and Bexley (+3.6%).

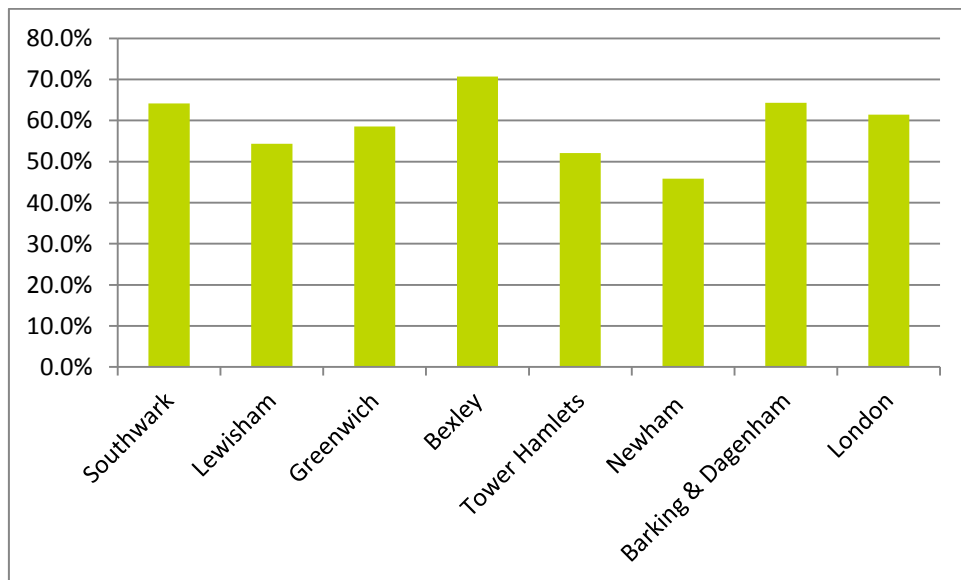
**Figure 85. Total Households with access to a car**



Source: Census

Commuting by road (which includes walking, cycling, taxis, bus trips as well as private vehicle use) remains important across the Study Area. Over 70% of Bexley residents commute to work by road. Barking and Dagenham also has a high percentage of road commuters (62%), as does Southwark, although this is largely a result of high bus usage rather than private transport use. Newham (43%) and Tower Hamlets (51%) have proportionally fewer residents commuting by road to work.

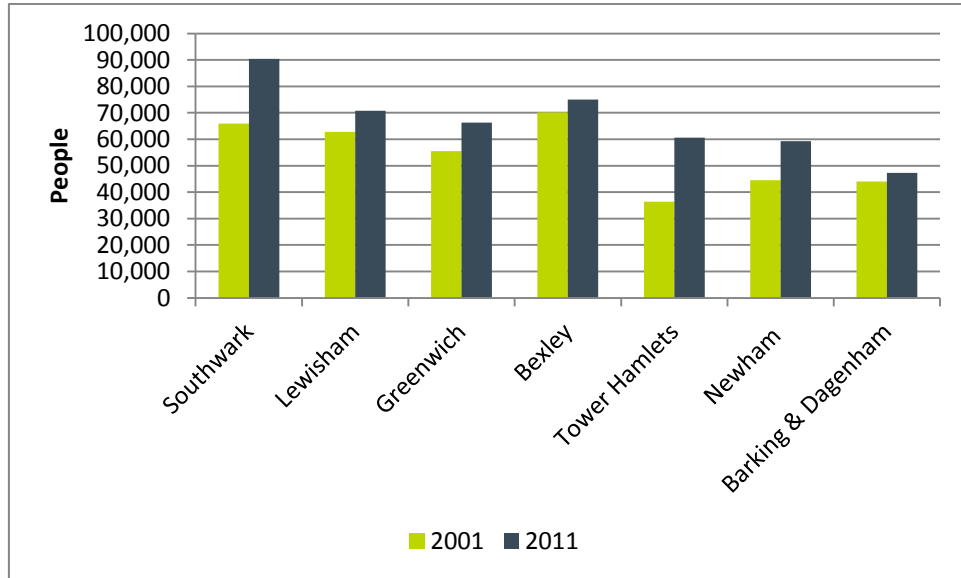
**Figure 86. Proportion of people travelling to work by road 2011**



Source: Census

Nearly 469,000 residents commute by road, an increase of 90,000 since 2001. All Boroughs have seen an increase in commuting by road, with Southwark, Tower Hamlets and Newham recorded the highest levels of growth, driven by strong population growth.

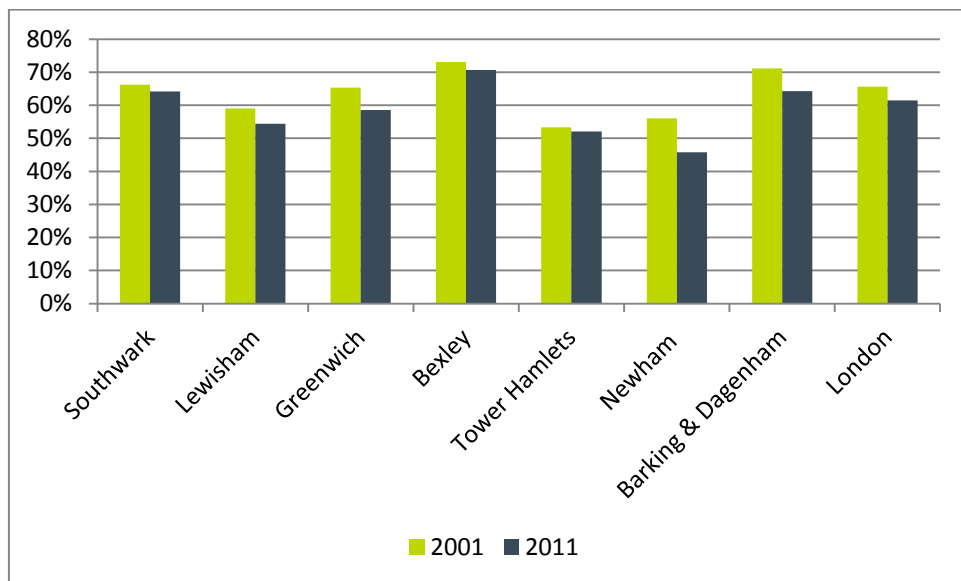
**Figure 87. Study Area Residents Commuting by Road**



Source: Census

Figure 88 shows that, although the proportion of commuting by road has fallen in all Boroughs, the proportion still stands at between 50% and 70%. Between 2001 and 2011 the percentage of commutes made by road fell by 2.3% in England and Wales, 3.7% in London excluding the study area and 6.0% in the Study Area.

**Figure 88. Percentage of Resident Commutes by Road**



Source: Census

### I.3. Summary

Commuting by road is still a very important method of travel to work. Indeed, it is the majority commuting mode in all Boroughs in the Study Area within the exception of Newham. The number of people commuting by road has risen sharply over the past ten years as the population has increased, generating additional demand for highway space and for more effective links between growing economic and residential areas.

# Appendix J. Travel to Work Analysis

## J.1. Introduction

This section presents a summary of travel to work movements to and from the Study Area, using the 'Property Market Area' (PMA) as the unit of analysis. All data is sourced from the 2001 Census Travel to Work dataset which still remains the most recent data available at a sub-local authority level at the time of writing.

The tables are presented on the following pages

## J.2. Summary

The analysis of travel to work data at the PMA level shows further clear evidence of the barrier effect of the River Thames, including:

- Commuting trips from PMAs north of the River to those south of the River range from just 2% in the Rest of Havering, to 5% on the Isle of Dogs, where cross river public transport is more accessible (specifically the DLR);
- Commuting trips from PMAs south of the River to those north of the River range from just 4% in the rest of Bexley to 9% in Canada Water & Rotherhithe, again where public transport is more accessible (specifically the Jubilee Line).
- When considering commuting trips only by road based modes (car, taxi, bus, walking and cycling), the total share of trips from the north of the River falls to between 1% (in Rest of Havering) and 4% (in Isle of Dogs and parts of Newham)
- When considering commuting trips only by road based modes, the total share of trips from the south of the River falls to between 3% (in most of Lewisham) and 7% (in Canada Water & Rotherhithe again).

There are also some important differences in terms of the PMA's relationships to other local authorities that need to be factored into the consideration of how improved cross river connectivity will impact on particular areas:

- PMAs in Barking & Dagenham and Havering show strong relationships with Kent, with PMAs in Bexley showing strong relationships with Kent;
- PMA's closer to central London unsurprisingly show strong relationships with this part of London

**Table 83. TTW Movements – All Modes**

| Area of Workplace |                                  | Area of Residence          |                   |                    |                    |                  |                                  |          |            |                   |                     |                |                |                       |                  |             |                |         |                   |             |                  |                  |  |
|-------------------|----------------------------------|----------------------------|-------------------|--------------------|--------------------|------------------|----------------------------------|----------|------------|-------------------|---------------------|----------------|----------------|-----------------------|------------------|-------------|----------------|---------|-------------------|-------------|------------------|------------------|--|
|                   |                                  | South of River             |                   |                    |                    |                  |                                  |          |            |                   |                     |                | North of River |                       |                  |             |                |         |                   |             |                  |                  |  |
|                   |                                  | Canada Water & Rotherhithe | Rest of Southwark | Deptford New Cross | Lewisham & Catford | Rest of Lewisham | Greenwich Peninsula and Charlton | Woolwich | Thamesmead | Rest of Greenwich | Erith and Belvedere | Rest of Bexley | Isle of Dogs   | Rest of Tower Hamlets | Lower Lea Valley | Royal Docks | Rest of Newham | Barking | Barking Riverside | Rest of B&D | London Riverside | Rest of Havering |  |
| South of River    | Canada Water & Rotherhithe       | 17%                        | 1%                | 2%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Rest of Southwark                | 14%                        | 34%               | 12%                | 8%                 | 9%               | 6%                               | 5%       | 5%         | 6%                | 4%                  | 4%             | 3%             | 3%                    | 3%               | 2%          | 2%             | 2%      | 1%                | 1%          | 2%               | 1%               |  |
|                   | Deptford New Cross               | 1%                         | 1%                | 19%                | 2%                 | 2%               | 1%                               | 1%       | 1%         | 1%                | 1%                  | 0%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Lewisham & Catford               | 1%                         | 1%                | 4%                 | 22%                | 6%               | 2%                               | 2%       | 2%         | 2%                | 1%                  | 1%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Rest of Lewisham                 | 1%                         | 1%                | 5%                 | 8%                 | 24%              | 3%                               | 2%       | 2%         | 4%                | 1%                  | 2%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Greenwich Peninsula and Charlton | 0%                         | 0%                | 1%                 | 1%                 | 1%               | 21%                              | 5%       | 4%         | 3%                | 2%                  | 1%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Woolwich                         | 1%                         | 0%                | 1%                 | 1%                 | 1%               | 7%                               | 32%      | 11%        | 6%                | 6%                  | 3%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Thamesmead                       | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 2%                               | 4%       | 22%        | 2%                | 4%                  | 1%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Rest of Greenwich                | 1%                         | 0%                | 2%                 | 2%                 | 2%               | 7%                               | 6%       | 4%         | 25%               | 2%                  | 3%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Erith and Belvedere              | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 1%                               | 2%       | 3%         | 1%                | 24%                 | 4%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
|                   | Rest of Bexley                   | 0%                         | 0%                | 1%                 | 1%                 | 1%               | 2%                               | 4%       | 6%         | 4%                | 15%                 | 37%            | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |  |
| North of River    | Isle of Dogs                     | 5%                         | 2%                | 2%                 | 2%                 | 2%               | 3%                               | 2%       | 1%         | 2%                | 1%                  | 1%             | 29%            | 5%                    | 5%               | 5%          | 3%             | 2%      | 2%                | 2%          | 2%               | 2%               |  |
|                   | Rest of Tower Hamlets            | 3%                         | 2%                | 2%                 | 2%                 | 2%               | 2%                               | 1%       | 1%         | 2%                | 1%                  | 1%             | 9%             | 32%                   | 12%              | 6%          | 7%             | 4%      | 4%                | 4%          | 3%               | 3%               |  |
|                   | Lower Lea Valley                 | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 1%       | 1%         | 0%                | 0%                  | 0%             | 2%             | 2%                    | 23%              | 7%          | 6%             | 3%      | 2%                | 2%          | 1%               | 1%               |  |
|                   | Royal Docks                      | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 1%         | 0%                | 0%                  | 0%             | 1%             | 0%                    | 2%               | 23%         | 3%             | 2%      | 2%                | 2%          | 1%               | 1%               |  |
|                   | Rest of Newham                   | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 1%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 1%             | 1%                    | 6%               | 9%          | 29%            | 5%      | 3%                | 3%          | 2%               | 2%               |  |
|                   | Barking                          | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%             | 0%                    | 1%               | 1%          | 1%             | 21%     | 5%                | 4%          | 2%               | 1%               |  |
|                   | Barking Riverside                | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%             | 0%                    | 1%               | 1%          | 2%             | 7%      | 27%               | 7%          | 6%               | 2%               |  |
|                   | Rest of B&D                      | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%             | 0%                    | 0%               | 1%          | 1%             | 5%      | 9%                | 26%         | 4%               | 3%               |  |
|                   | London Riverside                 | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 1%      | 3%                | 2%          | 27%              | 2%               |  |
|                   | Rest of Havering                 | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%             | 0%                    | 0%               | 1%          | 1%             | 5%      | 7%                | 9%          | 16%              | 44%              |  |
| Study Area        | North Study Area                 | 9%                         | 4%                | 5%                 | 5%                 | 4%               | 7%                               | 5%       | 5%         | 6%                | 4%                  | 4%             | 42%            | 42%                   | 51%              | 54%         | 52%            | 55%     | 63%               | 60%         | 64%              | 61%              |  |
|                   | South Study Area                 | 35%                        | 39%               | 47%                | 46%                | 46%              | 52%                              | 62%      | 60%        | 53%               | 61%                 | 56%            | 5%             | 4%                    | 4%               | 4%          | 4%             | 3%      | 2%                | 2%          | 3%               | 2%               |  |
| Other             | Central London                   | 38%                        | 32%               | 27%                | 27%                | 25%              | 26%                              | 17%      | 18%        | 23%               | 17%                 | 18%            | 41%            | 37%                   | 25%              | 23%         | 24%            | 19%     | 15%               | 14%         | 15%              | 17%              |  |
|                   | Other Inner London               | 11%                        | 16%               | 12%                | 11%                | 10%              | 7%                               | 6%       | 6%         | 6%                | 4%                  | 4%             | 6%             | 9%                    | 9%               | 8%          | 7%             | 5%      | 4%                | 3%          | 2%               | 3%               |  |
|                   | Other Outer London               | 5%                         | 6%                | 7%                 | 9%                 | 13%              | 5%                               | 6%       | 5%         | 8%                | 5%                  | 8%             | 3%             | 5%                    | 8%               | 8%          | 11%            | 14%     | 11%               | 15%         | 7%               | 8%               |  |
|                   | Essex                            | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 1%         | 1%                | 1%                  | 1%             | 1%             | 1%                    | 1%               | 1%          | 1%             | 3%      | 4%                | 4%          | 9%               | 9%               |  |
|                   | Kent                             | 1%                         | 0%                | 1%                 | 1%                 | 1%               | 2%                               | 3%       | 3%         | 3%                | 6%                  | 8%             | 0%             | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 1%               | 0%               |  |
|                   | Other                            | 1%                         | 1%                | 1%                 | 1%                 | 1%               | 1%                               | 1%       | 1%         | 1%                | 1%                  | 1%             | 1%             | 1%                    | 1%               | 1%          | 1%             | 0%      | 1%                | 1%          | 1%               | 1%               |  |

**Table 84. TTW Movements – Road based**

| Area of Workplace |                                  | Area of Residence          |                   |                    |                    |                  |                                  |          |            |                   |                     |                |              |                       |                  |             |                |         |                   |             |                  |                  |
|-------------------|----------------------------------|----------------------------|-------------------|--------------------|--------------------|------------------|----------------------------------|----------|------------|-------------------|---------------------|----------------|--------------|-----------------------|------------------|-------------|----------------|---------|-------------------|-------------|------------------|------------------|
|                   |                                  | South of River             |                   |                    |                    |                  |                                  |          |            |                   |                     | North of River |              |                       |                  |             |                |         |                   |             |                  |                  |
|                   |                                  | Canada Water & Rotherhithe | Rest of Southwark | Deptford New Cross | Lewisham & Catford | Rest of Lewisham | Greenwich Peninsula and Charlton | Woolwich | Thamesmead | Rest of Greenwich | Erith and Belvedere | Rest of Bexley | Isle of Dogs | Rest of Tower Hamlets | Lower Lea Valley | Royal Docks | Rest of Newham | Barking | Barking Riverside | Rest of B&D | London Riverside | Rest of Havering |
| South of River    | Canada Water & Rotherhithe       | 19%                        | 1%                | 4%                 | 1%                 | 1%               | 1%                               | 0%       | 0%         | 1%                | 0%                  | 0%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Rest of Southwark                | 25%                        | 35%               | 16%                | 10%                | 11%              | 5%                               | 4%       | 4%         | 5%                | 3%                  | 3%             | 2%           | 2%                    | 2%               | 1%          | 1%             | 1%      | 1%                | 1%          | 1%               | 0%               |
|                   | Deptford New Cross               | 2%                         | 1%                | 17%                | 4%                 | 3%               | 2%                               | 1%       | 1%         | 1%                | 1%                  | 1%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Lewisham & Catford               | 1%                         | 1%                | 7%                 | 26%                | 10%              | 3%                               | 3%       | 3%         | 4%                | 1%                  | 1%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Rest of Lewisham                 | 2%                         | 2%                | 8%                 | 14%                | 26%              | 5%                               | 4%       | 3%         | 6%                | 1%                  | 2%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Greenwich Peninsula and Charlton | 1%                         | 0%                | 2%                 | 2%                 | 1%               | 21%                              | 7%       | 6%         | 5%                | 3%                  | 2%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Woolwich                         | 1%                         | 0%                | 2%                 | 2%                 | 2%               | 13%                              | 34%      | 16%        | 9%                | 8%                  | 4%             | 0%           | 0%                    | 0%               | 1%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Thamesmead                       | 0%                         | 0%                | 0%                 | 1%                 | 0%               | 3%                               | 5%       | 20%        | 3%                | 6%                  | 2%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Rest of Greenwich                | 1%                         | 1%                | 3%                 | 4%                 | 3%               | 12%                              | 8%       | 5%         | 25%               | 3%                  | 4%             | 0%           | 0%                    | 1%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
|                   | Erith and Belvedere              | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 1%                               | 2%       | 5%         | 1%                | 23%                 | 5%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               | 0%               |
| Rest of Bexley    | 0%                               | 0%                         | 1%                | 1%                 | 1%                 | 4%               | 6%                               | 9%       | 7%         | 21%               | 41%                 | 0%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 0%               |                  |
| North of River    | Isle of Dogs                     | 2%                         | 1%                | 1%                 | 1%                 | 1%               | 2%                               | 1%       | 1%         | 2%                | 1%                  | 1%             | 41%          | 7%                    | 5%               | 4%          | 2%             | 1%      | 1%                | 1%          | 1%               | 1%               |
|                   | Rest of Tower Hamlets            | 4%                         | 2%                | 1%                 | 1%                 | 1%               | 2%                               | 1%       | 1%         | 1%                | 1%                  | 15%            | 39%          | 17%                   | 6%               | 7%          | 3%             | 3%      | 2%                | 2%          | 2%               | 1%               |
|                   | Lower Lea Valley                 | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 1%                               | 1%       | 1%         | 1%                | 0%                  | 0%             | 4%           | 3%                    | 24%              | 12%         | 10%            | 3%      | 2%                | 2%          | 1%               | 1%               |
|                   | Royal Docks                      | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 1%                               | 1%       | 1%         | 0%                | 0%                  | 0%             | 1%           | 1%                    | 4%               | 23%         | 6%             | 4%      | 3%                | 2%          | 2%               | 1%               |
|                   | Rest of Newham                   | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 1%                               | 1%       | 1%         | 0%                | 0%                  | 0%             | 1%           | 1%                    | 10%              | 16%         | 32%            | 6%      | 3%                | 3%          | 2%               | 2%               |
|                   | Barking                          | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%           | 0%                    | 1%               | 1%          | 1%             | 20%     | 6%                | 5%          | 2%               | 1%               |
|                   | Barking Riverside                | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 1%       | 1%         | 0%                | 1%                  | 0%             | 0%           | 0%                    | 1%               | 2%          | 3%             | 12%     | 28%               | 10%         | 8%               | 3%               |
|                   | Rest of B&D                      | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%           | 0%                    | 1%               | 1%          | 1%             | 8%      | 12%               | 25%         | 5%               | 4%               |
|                   | London Riverside                 | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 0%             | 0%           | 0%                    | 0%               | 0%          | 0%             | 2%      | 4%                | 2%          | 26%              | 3%               |
|                   | Rest of Havering                 | 0%                         | 0%                | 0%                 | 0%                 | 0%               | 0%                               | 0%       | 0%         | 0%                | 0%                  | 1%             | 1%           | 0%                    | 1%               | 1%          | 1%             | 6%      | 8%                | 13%         | 22%              | 52%              |
| Other             | North Study Area                 | 7%                         | 4%                | 3%                 | 3%                 | 3%               | 6%                               | 5%       | 5%         | 5%                | 4%                  | 4%             | 64%          | 51%                   | 64%              | 66%         | 64%            | 67%     | 71%               | 66%         | 71%              | 70%              |
|                   | South Study Area                 | 52%                        | 42%               | 59%                | 64%                | 57%              | 70%                              | 74%      | 71%        | 66%               | 72%                 | 66%            | 4%           | 4%                    | 4%               | 4%          | 3%             | 2%      | 2%                | 2%          | 2%               | 1%               |
| Other             | Central London                   | 21%                        | 28%               | 17%                | 9%                 | 9%               | 8%                               | 6%       | 6%         | 6%                | 5%                  | 4%             | 15%          | 28%                   | 11%              | 9%          | 9%             | 5%      | 4%                | 4%          | 4%               | 3%               |
|                   | Other Inner London               | 11%                        | 18%               | 12%                | 10%                | 10%              | 5%                               | 5%       | 5%         | 5%                | 3%                  | 3%             | 6%           | 9%                    | 8%               | 6%          | 6%             | 3%      | 3%                | 2%          | 2%               | 2%               |
|                   | Other Outer London               | 5%                         | 6%                | 6%                 | 12%                | 18%              | 6%                               | 6%       | 6%         | 12%               | 6%                  | 10%            | 5%           | 5%                    | 10%              | 11%         | 15%            | 19%     | 14%               | 19%         | 8%               | 10%              |
|                   | Essex                            | 1%                         | 0%                | 0%                 | 0%                 | 0%               | 1%                               | 0%       | 1%         | 1%                | 1%                  | 1%             | 2%           | 1%                    | 1%               | 2%          | 2%             | 4%      | 5%                | 5%          | 12%              | 12%              |
|                   | Kent                             | 1%                         | 0%                | 1%                 | 1%                 | 2%               | 3%                               | 4%       | 5%         | 4%                | 8%                  | 12%            | 1%           | 0%                    | 0%               | 0%          | 0%             | 0%      | 0%                | 0%          | 1%               | 0%               |
| Other             | 2%                               | 1%                         | 1%                | 1%                 | 1%                 | 1%               | 1%                               | 1%       | 1%         | 1%                | 1%                  | 2%             | 1%           | 1%                    | 1%               | 1%          | 0%             | 1%      | 1%                | 1%          | 1%               |                  |

# Appendix K. Socio-Economic Profile of Study Area

## K.1. Introduction

Fundamental to the successful development of scenarios to investigate the scale and type of development which transport investment could facilitate is a comprehensive understanding of the key economic drivers and characteristics of the Study Area and the wider functional region it sits within.

This section provides a review of the past performance of floorspace delivery within the Study Area and identifies the strategic drivers for long term growth. This chapter includes an analysis of:

- Factors affecting the demand for residential units, including projections of population and household growth, affordability and past rates of housing delivery;
- The future demand for industrial, office and retail uses, drawing on an analysis of sectoral change, past rates of delivery and projections undertaken at the London-wide level;
- A summary profile of the future demand for land use within specific neighbourhood areas in each Borough.

A summary of the findings of this Chapter is included in Chapter 5 as key informant of the floorspace scenario development.

## K.2. Population and Demand for Residential Units

### **Strong population growth has outstripped household growth during the last 10 years**

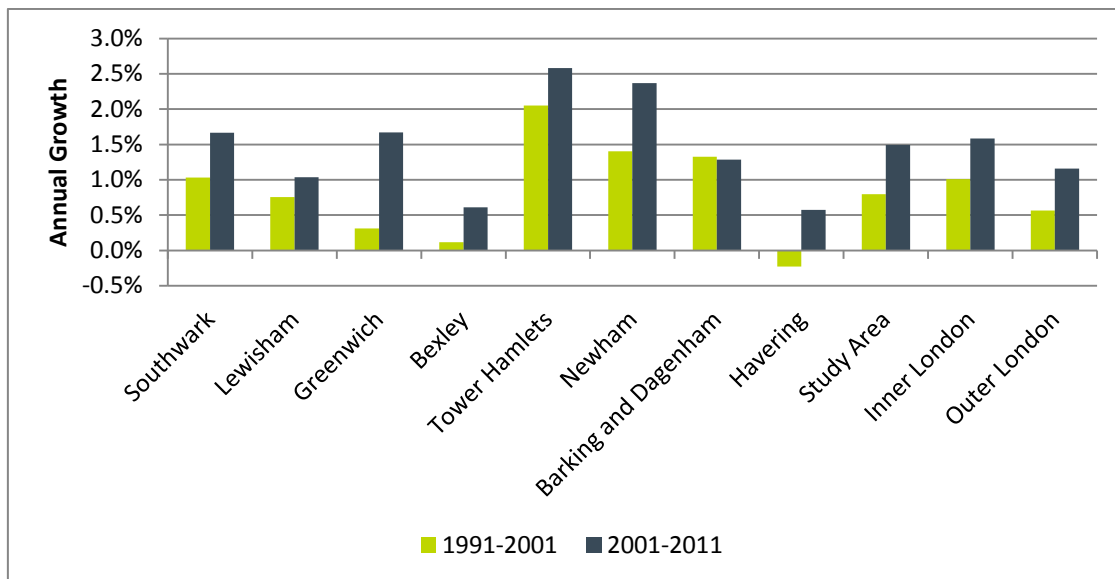
Figure 89 demonstrates that population growth has averaged 1.6% per annum in the Study Area between 2001 and 2011, which is consistent with the high rate of growth recorded in Inner London, and above that of Outer London at 1.2%. Within the study area, both Tower Hamlets and Newham have seen very high levels of growth in the past 10 years at 2.6% and 2.8% respectively, which are driven both by migration and an increased birth rate<sup>74</sup>. By contrast, population growth in Bexley was much slower at just over 0.5%, which is a lower rate than London as a whole. Population growth accelerated quickly during the period 2001-2011, with growth 50% above that recorded in the period 1991-2001 in the Study Area.

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<sup>74</sup> Analysis of ONS Data on Natural Population Change by Borough 2001-2011



**Figure 89. Population Growth 1991-2011**

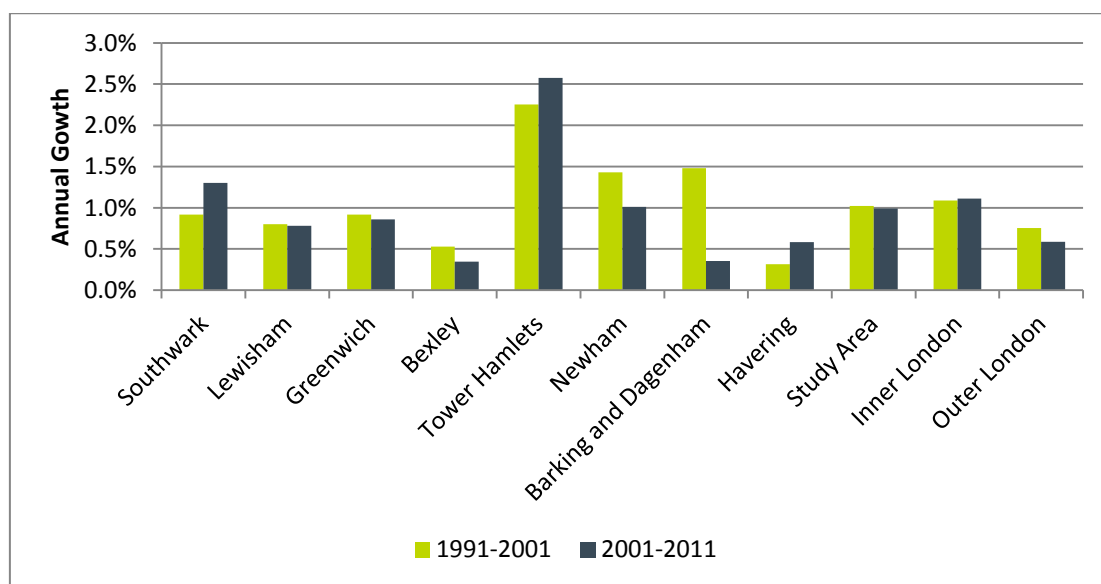


Source: ONS Census

Figure 90 shows that, despite population growth of 1.6% during the period 2001-2011, household growth in the study area was just over 1.0%. The fact that household growth has been slower than population growth has led to a significant increase in average household size, contrary to the decades long trend of falling household size previously driven by an increase in single person households and single person older households living longer. The drivers for the much lower rates of household formation than previous years are still being debated, but are likely to be due a result of the rising cost of home ownership and rents (as a result of the imbalance between high demand and lack of supply – see next section) driving higher average household sizes for economic reasons, rather than a change in cultural preferences or other social drivers.

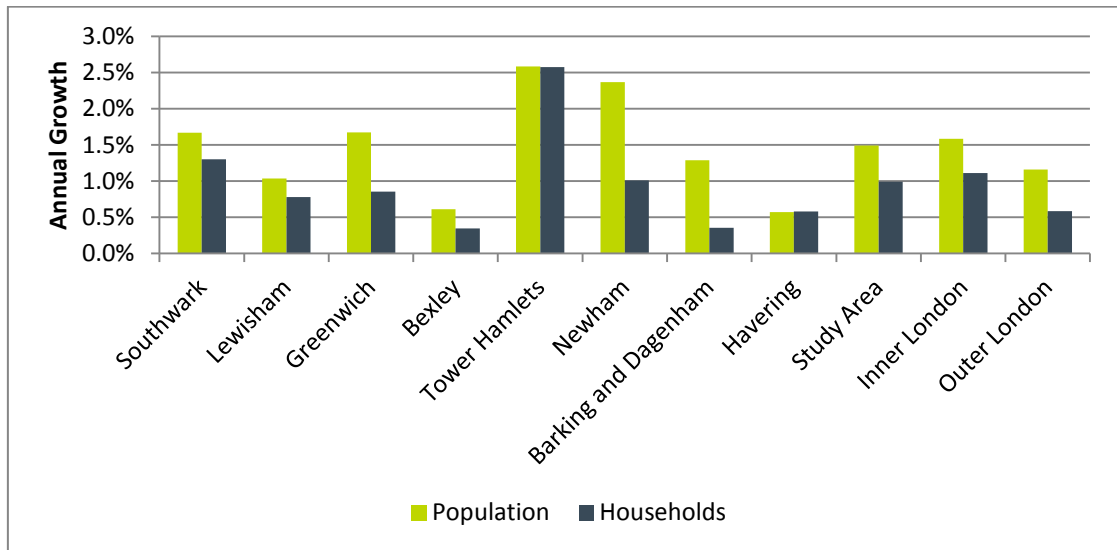
Figure 91 demonstrates that the difference between household and population growth is greatest in Newham, which now has one of the highest average household sizes in the UK. By contrast, Tower Hamlets is the only authority where the growth in households kept up with the growth in population, probably as a result of the large number of new units built in the Borough during this period.

**Figure 90. Household Growth 1991-2011**



Source: ONS Census

**Figure 91. Comparison between household and population growth 2001-2011**

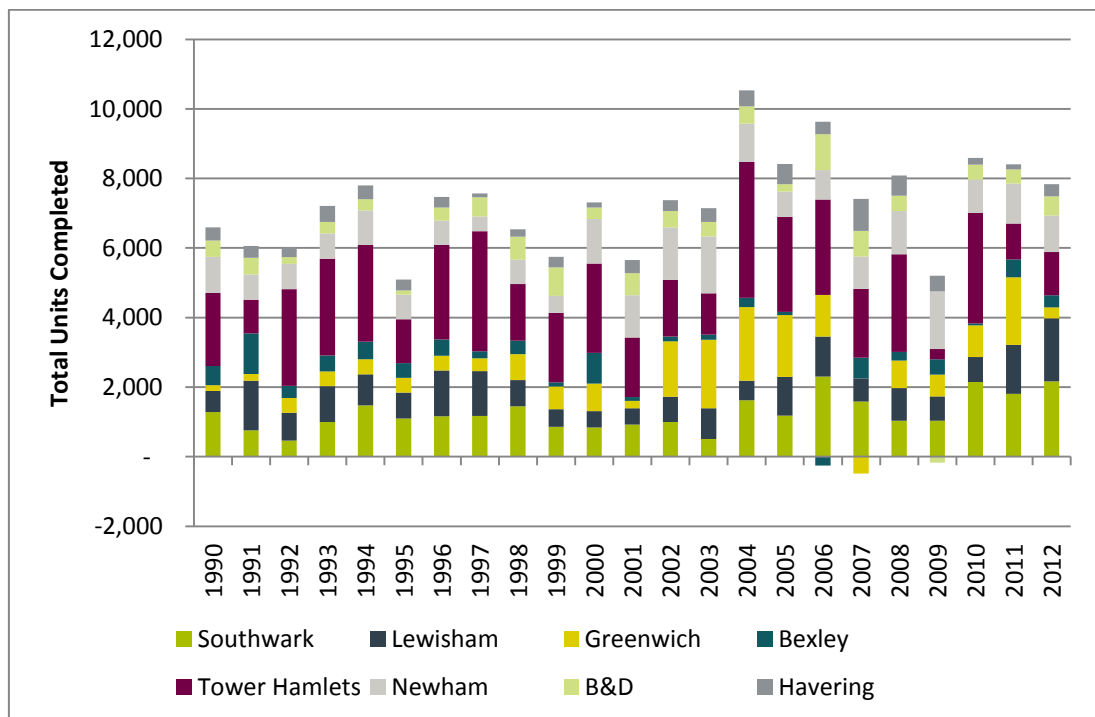


Source: ONS Census

**The delivery of housing units has failed to meet London Plan targets over the past 10 years, especially in more eastern Boroughs of the Study Area**

Figure 92 illustrates the number of net housing completions in each borough for the period 1990-2012. Over the twenty-two year period illustrated, the Study Area has increased total housing completions from around 6,000 per year from 1990 to 2002, to around 8,000 per year up until 2010. Southwark averaged 1,300 units per year, and Tower Hamlets 2,200 per year, which is substantially higher than Bexley at 370 and Havering at 380 units per year.

**Figure 92. Net housing completions 1990-2012**



Source: London Plan Monitoring Reports and Annex 5B of Outer London Commission Final Report

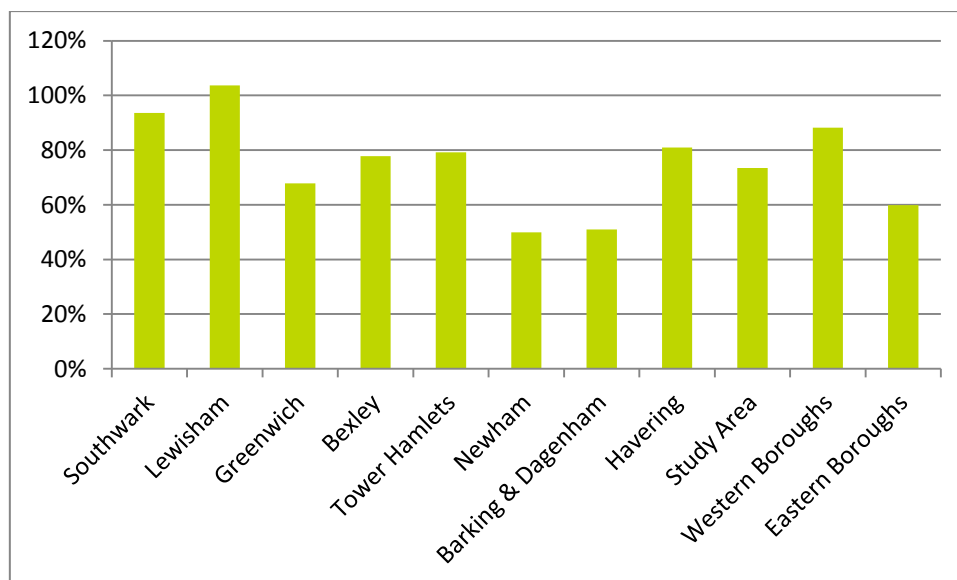
Table 85 shows the housing targets for each borough during the past 10 years, whilst Figure 93 illustrates the proportion of the target that was met for each Borough during this period. The figure shows that 74% of the housing target was met for the Study Area as a whole. However, western boroughs in the Study Area, defined here as Southwark, Lewisham and Tower Hamlets, met 88% of their collective housing target, whilst, eastern boroughs in the Study Area, defined here as Greenwich, Bexley, Newham, Barking & Dagenham and Havering, met a much lower 60% of their housing target. This highlights the difference between physical development capacity, which is the key informant of the housing target, and the actual ability to deliver, which is influenced by a wide range of issues related to market demand and physical and planning constraints on sites.

**Table 85. Housing Targets 2004 - 2013**

| Borough            | 2004 - 2006 - London Plan 2004 | 2007 - 2010 - Early Alterations to London Plan 2006 | 2011 - 2012 - London Plan 2011 |
|--------------------|--------------------------------|---|--------------------------------|
| Southwark          | 1,480                          | 1,630   | 2,005                          |
| Lewisham           | 870                            | 975   | 1,105                          |
| Greenwich          | 800                            | 2,010   | 2,595                          |
| Bexley             | 280                            | 345   | 335                            |
| Tower Hamlets      | 2,070                          | 3,150   | 2,885                          |
| Newham             | 890                            | 3,510   | 2,500                          |
| Barking & Dagenham | 510                            | 1,190   | 1,065                          |
| Havering           | 350                            | 535   | 970                            |
| Total              | 7,250                          | 13,345  | 13,460                         |

Source: London Plan 2004, Early Alterations to London Plan 2006, London Plan 2011

**Figure 93. Proportion of housing targets delivered 2003 – 2012**



Source: London Plan 2004, Early Alterations to London Plan 2006, London Plan 2011, London Plan Monitoring Reports

## The Study Area would have to more than double its recent delivery of housing units in order to meet the recently increased London Plan housing targets

Table 86 demonstrates the new annual housing targets for the period 2015-2025, as set out in the Further Alterations to the London Plan (FALP) 2014, alongside the annual rate of delivery during the past 10 years. The table shows that a significant increase in the delivery of units is required if the Boroughs are to meet the increased targets set out in the FALP. The study area as a whole will need to increase recent rates of delivery by more than two times (110%) to meet the targets, with the eastern Boroughs required to increase delivery by 153%. However, there is no precedent to show this could be achievable from the past 22 years of housing delivery.

**Table 86. Housing Targets 2014 – 2024 vs rate of delivery 2003 - 2012**

|                    | FALP Annual Housing Target 2015 - 2025 | Annual Delivery 2003 - 2012 | % increase required to meet target |
|--------------------|--|-----------------------------|------------------------------------|
| Southwark          | 2,736                                  | 1,540                       | 78%                                |
| Lewisham           | 1,385                                  | 994                         | 39%                                |
| Greenwich          | 2,685                                  | 1,115                       | 141%                               |
| Bexley             | 446                                    | 247                         | 81%                                |
| Tower Hamlets      | 4225                                   | 2,110                       | 100%                               |
| Newham             | 3024                                   | 1,129                       | 168%                               |
| Barking & Dagenham | 1,236                                  | 455                         | 172%                               |
| Havering           | 1,170                                  | 443                         | 164%                               |
| Study Area         | 16,907                                 | 8,034                       | 110%                               |
| Western Boroughs   | 8,346                                  | 4,645                       | 80%                                |
| Eastern Boroughs   | 8,561                                  | 3,389                       | 153%                               |

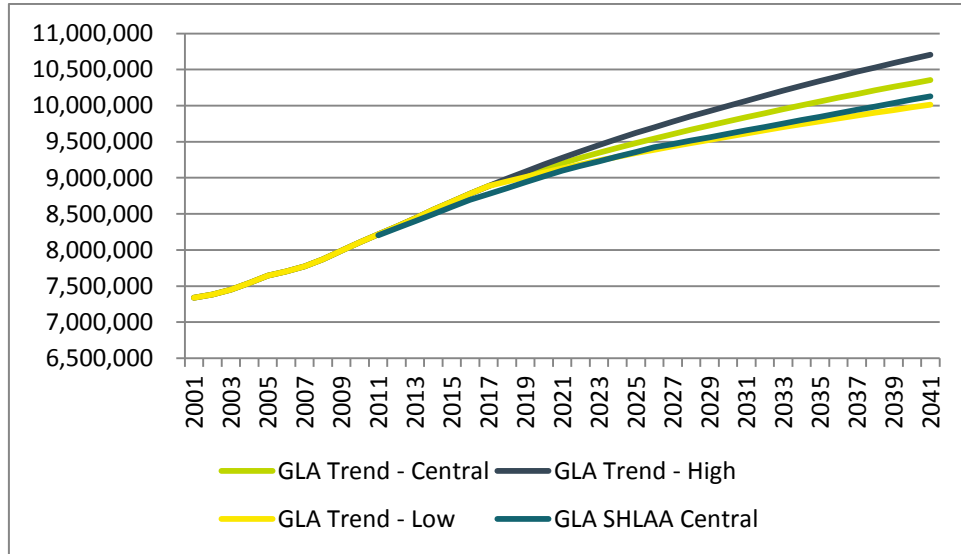
Source: Further Alterations to London Plan 2014, London Plan Monitoring Reports

## Population projections predict continued strong growth across the Study Area and may even underestimate the potential

Population projections are produced for London and its constituent boroughs by the Greater London Authority (GLA). The projections are based on past trends and take into account natural change and migration. The GLA also produce a set of projections which constrain growth according to the latest available information on development capacity, as set out within the London-wide Strategic Housing Land Availability Assessment (SHLAA).

Figure 94 shows the range of population projections for London. The Figure illustrates that the difference between the GLA's high growth scenario and the low growth scenario is almost 750,000 people by 2041. Crucially, once the issue of housing capacity is taken into account as part of the projection constrained by housing capacity (SHLAA Central), the total population in 2041 is reduced by over 225,000 people against the Central Trend based scenario. This suggests that London does have the potential to grow at a faster rate than the capacity of its development sites will allow.

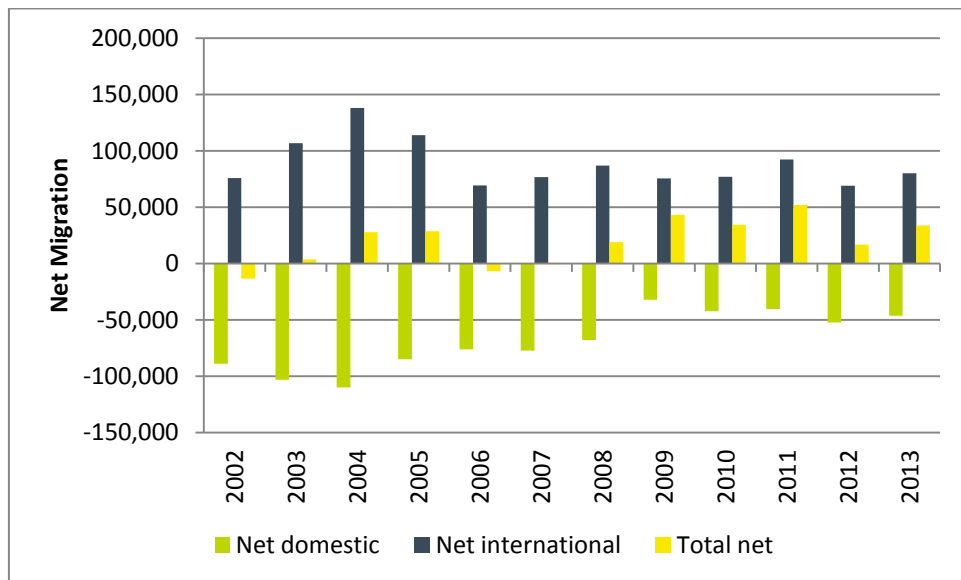
**Figure 94. London-wide population projections**



Source: GLA

Although in the recent past it has been migration that has been the biggest component of population growth, the GLA’s projections assume that natural change will remain high and that net migration will turn negative. This means that future population growth scenarios are not dependent on high levels of migration, and could therefore be even higher if net migration remains positive. However, as Figure 93 shows, London has seen total net migration of almost 20,000 people per year in the period 2002 – 2013, driven largely by high rates of net international migration, so the GLAs projections could turn out to be on the low side.

**Figure 95. Total Net Migration 2001 - 2012**



Source: GLA Population Projections 2013

Table 87 shows the additional population within each borough for the period 2011-2031 according to the range of different projections produced by the GLA. The table shows that, under the GLA SHLAA scenario, the study area could have an additional 520,000 people in the period 2011 – 2031, which would be a significant driver of retail expenditure and employment linked to local services.

However, when the GLA SHLAA 2012 scenario, which constrains growth according to available development sites, is compared with the GLA trend based 2012 scenario, it is evident that the study area borough's are assumed to have excess development capacity to fulfil population growth at trend level. The difference is particularly pronounced in Greenwich, which would grow by 49,000 people to 2031 if the trajectory followed past trends, but has development capacity to accommodate an estimated 90,000 people. In contrast, the GLA trend projection of 31,000 additional population for Bexley is higher than the SHLAA capacity projections by 12,000 people.

**Table 87. Population Increase 2011-2031**

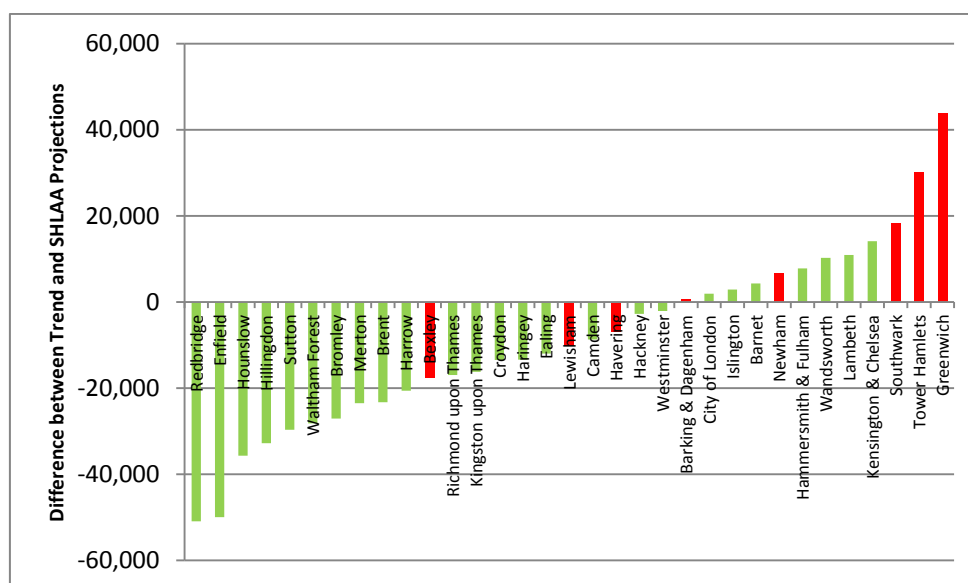
| Borough            | 2011 Population | GLA Trend - Central | GLA Trend - High | GLA Trend - Low | GLA SHLAA Central |
|--------------------|-----------------|---------------------|------------------|-----------------|-------------------|
| Southwark          | 289,361         | 52,989              | 61,233           | 44,912          | 80,199            |
| Lewisham           | 277,525         | 56,014              | 63,990           | 48,196          | 49,648            |
| Greenwich          | 255,483         | 49,137              | 56,230           | 42,184          | 90,073            |
| Bexley             | 233,002         | 31,489              | 37,767           | 25,341          | 18,905            |
| Tower Hamlets      | 256,685         | 85,567              | 93,041           | 78,226          | 115,141           |
| Newham             | 311,912         | 93,872              | 101,549          | 86,325          | 104,071           |
| Barking & Dagenham | 187,418         | 66,939              | 72,521           | 61,460          | 62,034            |
| Havering           | 238,281         | 45,514              | 52,112           | 39,048          | 44,153            |
| Total              | 2,049,667       | 481,522             | 538,444          | 425,691         | 564,224           |

Source: GLA

### The Study Area needs to generate higher levels of net migration in order to fulfil its potential for growth

Figure 96 illustrates that it is largely those boroughs in the east of London, including many within the Study Area, where the GLA's development capacity scenario is projected to surpass the trend based scenario. In summary, the Study Area Boroughs have large areas of developable land and that are expected to accommodate London's rising population over the next twenty years, so capacity is greater than trend levels of growth. In order to fulfil the level of potential for population growth, the Study Area will have to have levels of net migration that are higher than those seen in the past. This will require creating places that people want to move to which offer a high quality of life with good access to jobs and services.

**Figure 96. Difference between SHLAA and Trend Population Projections to 2031**

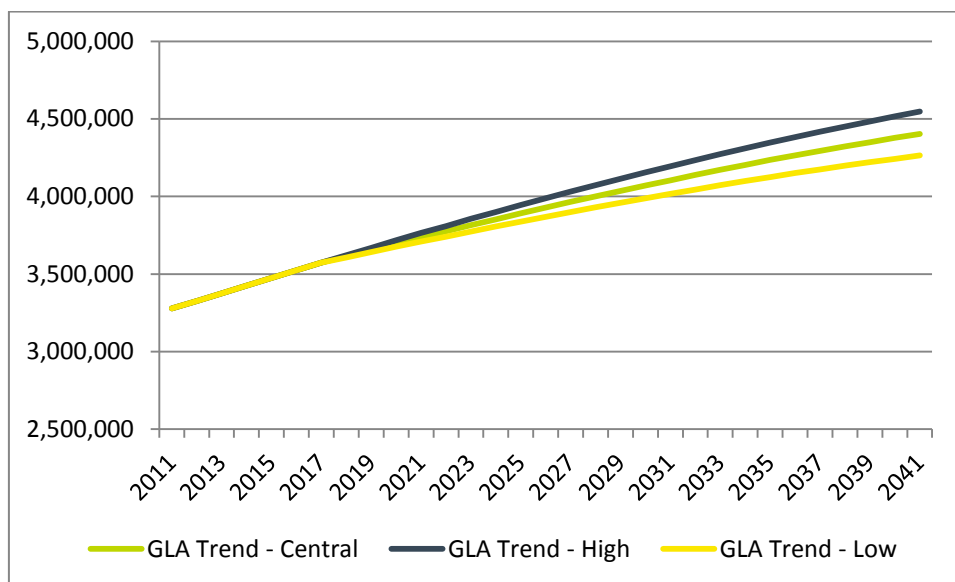


Source: GLA

## Household projections also show growth is expected to continue

Figure 97 illustrates that the number of households is expected to increase across London by 1.125million in the period 2011-2041 under the Central Trend scenario. However, this will only be achievable if the capital is able to deliver sufficient additional housing units to support this growth. Much will depend on the Study Area boroughs delivering housing units above previous levels to secure this level of growth.

**Figure 97. London wide household projections**



Source: GLA

Table 88 shows the additional households within each borough for the period 2011-2031 according to the projections produced by the GLA. The table shows that the Study Area is expected to see growth of 252,500 households in the Central Trend based scenario, which will be led by growth in Tower Hamlets and Newham.

**Table 88. Household projections 2011-2031**

| Borough            | GLA Trend - Central | GLA Trend - High | GLA Trend - Low |
|--------------------|---------------------|------------------|-----------------|
| Southwark          | 29,588              | 33,073           | 26,172          |
| Lewisham           | 30,222              | 33,559           | 26,947          |
| Greenwich          | 27,798              | 30,637           | 25,013          |
| Bexley             | 17,865              | 20,276           | 15,501          |
| Tower Hamlets      | 47,026              | 50,315           | 43,797          |
| Newham             | 46,170              | 48,960           | 43,425          |
| Barking & Dagenham | 30,394              | 32,519           | 28,308          |
| Havering           | 23,350              | 20,822           | 18,342          |
| Total              | 252,413             | 270,161          | 227,505         |

Source: GLA

In summary, the Study Area boroughs could see significant population and household growth over the next twenty years, driven by a combination of natural change and migration, if past trends continue. However, the level of growth could be significantly higher than past trends if the considerable capacity for housing can be unlocked. Improving access to jobs and services from the Study Area boroughs will be key to achieving this.

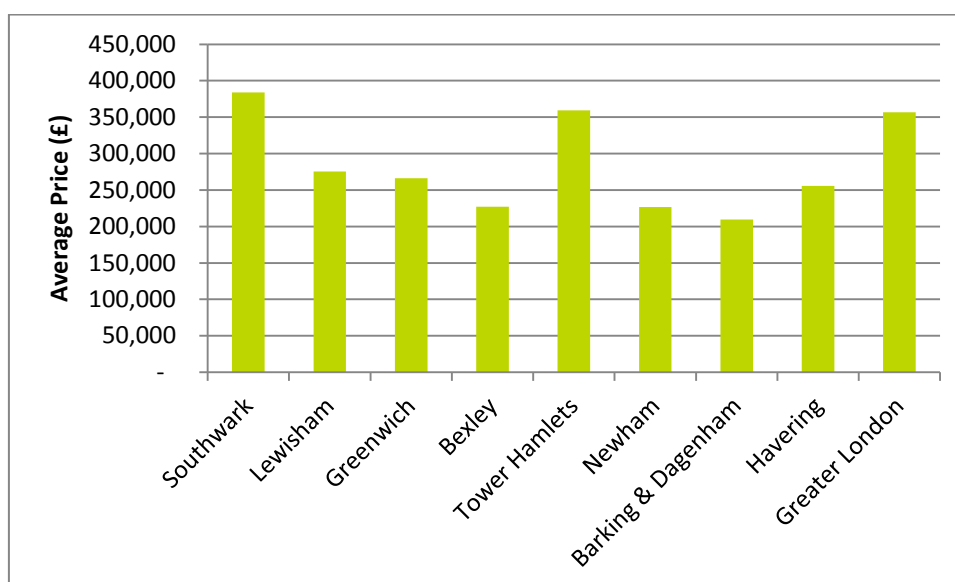
Of course, household projections are based on long-run trends related to household size and formation and do not take into account wider factors which influence the demand for housing such as access to finance and income. The actual future demand for housing within the study area will depend upon the interaction of these demographic variables with the approach to planning in each local authority, the strength of the local and regional economy, as well as house prices, affordability and quality of life, which are considered below.

### Property prices are higher in areas closer to central London where access to jobs and services is better

Figure 96 shows the average house price for all units sold in the Study Area in 2012. The figure shows that average prices in most of the Study Area are much lower than Greater London as a whole, with only Southwark and Tower Hamlets now on a par with the capital wide figure.

Average property prices are generally much higher towards the west of the Study Area which is closer to central London. However, as illustrated in Figure 99, there are considerable differences in average prices at a neighbourhood level, with large areas of north Bexley and north east Greenwich, which have very low average property prices, as well as much of Barking & Dagenham, which is the cheapest borough in London.

Figure 98. Average property price 2012



Source: GLA

### The Study Area has seen strong house price growth driven by fast rising levels of demand but a low supply. House prices have risen more quickly in areas closer to central London

Table 89 shows that house price growth has been relatively strong in the inner London Boroughs of Southwark, Lewisham and Tower Hamlets during the past 14 years where data is available. This is likely to be a direct result of the strong increase in demand, illustrated by the rapid increase in population, combined with a much lower increase in the supply of new units (see above), resulting in high average household sizes and an increase in property prices. Both Newham and Barking & Dagenham were hit particularly hard by the onset of recession, with property price growth since 2009 also relatively weak, along with Bexley, when compared to other Inner London Boroughs.



**Table 89. House price inflation (annual growth rate)**

| <b>Borough</b>       | <b>1998 - 2008</b> | <b>2008-2009</b> | <b>2009-2012</b> |
|----------------------|--------------------|------------------|------------------|
| Southwark            | 11.9%              | -10.9%           | 5.9%             |
| Lewisham             | 12.1%              | -12.4%           | 4.1%             |
| Greenwich            | 10.7%              | -11.7%           | 3.1%             |
| Bexley               | 10.0%              | -12.5%           | 1.9%             |
| Tower Hamlets        | 11.0%              | -12.6%           | 3.7%             |
| Newham               | 12.4%              | -15.8%           | 2.2%             |
| Barking and Dagenham | 11.3%              | -18.4%           | 1.2%             |
| Havering             | 10.2%              | -12.0%           | 2.1%             |
| London               | 10.4%              | -8.9%            | 5.1%             |

Source: Land Registry

Figure 99. Median Property Price 2012

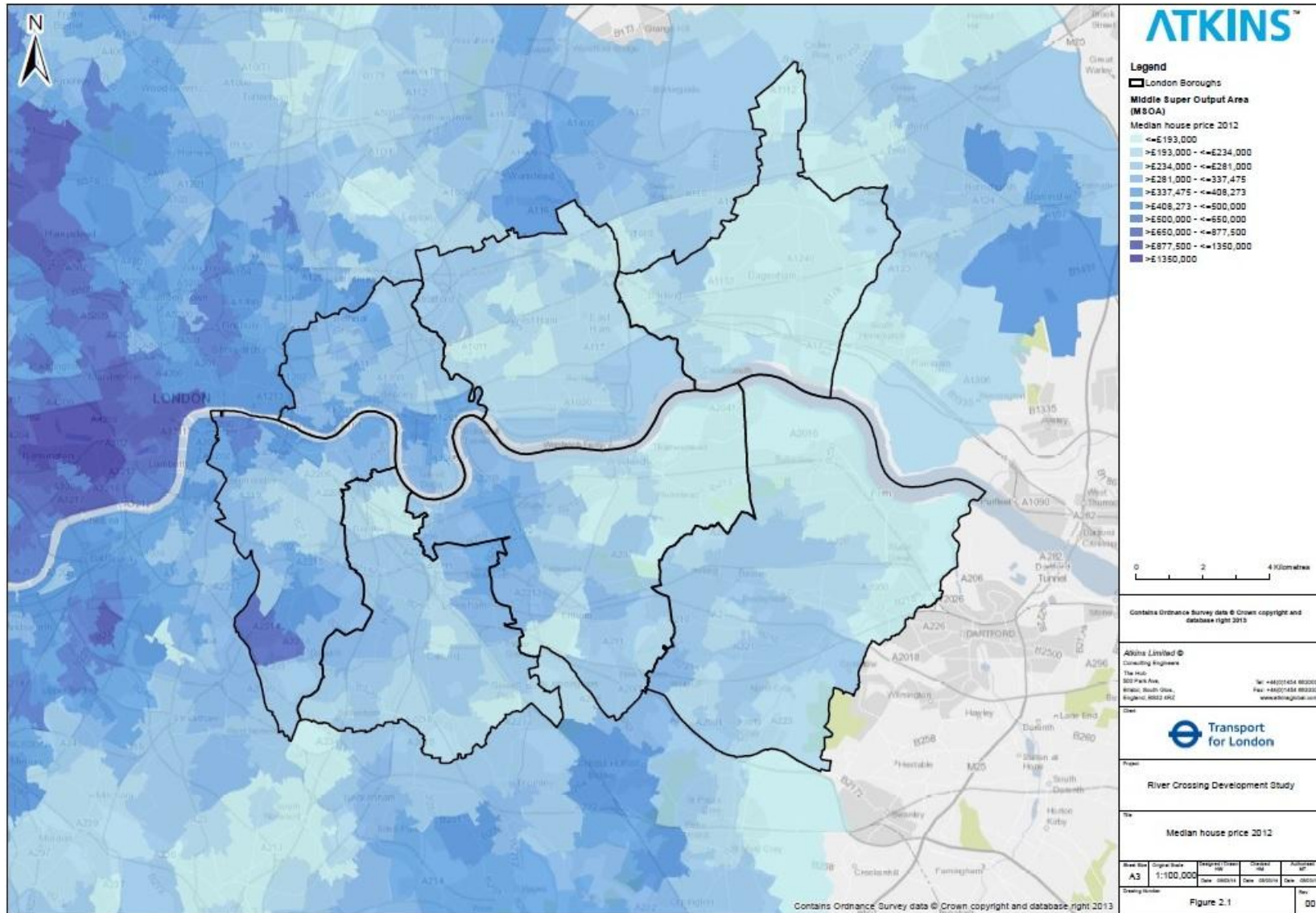


Table 90 shows that private residential monthly rental values have increased rapidly in the period 2011-2013. Rents have gone up by nearly 30% in Greenwich, which indicates strong underlying demand, compared with Bexley where the increase has been just 6.3%.

**Table 90. Residential monthly rental values 2011 and 2013**

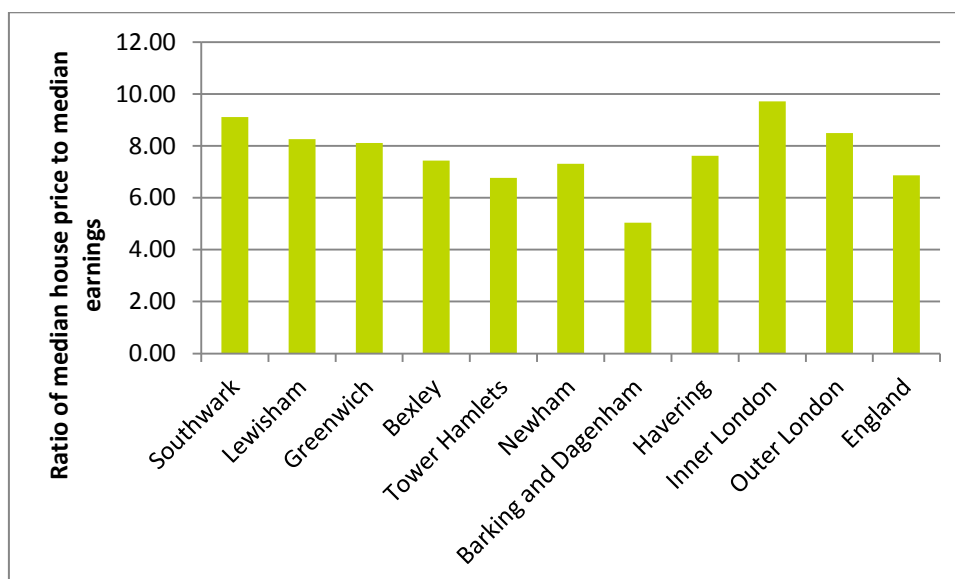
|                      | Q3 2011 (£) | Q3 2013 (£) | Change (£) | % Growth |
|----------------------|-------------|-------------|------------|----------|
| Southwark            | 1,200       | 1,350       | 150        | 12.5%    |
| Lewisham             | 850         | 950         | 100        | 11.8%    |
| Greenwich            | 850         | 1,100       | 250        | 29.4%    |
| Bexley               | 800         | 850         | 50         | 6.3%     |
| Tower Hamlets        | 1,300       | 1,517       | 217        | 16.7%    |
| Newham               | 900         | 1,096       | 196        | 21.8%    |
| Barking and Dagenham | 802         | 901         | 99         | 12.4%    |
| Havering             | 835         | 875         | 40         | 4.8%     |

Source: Valuation Office. Note: relates to all residential properties in the private rented sector

### East London is still relatively affordable in the London context

Figure 100 shows that the ratio of median house price to median earnings in all of the Study Area Boroughs is below that of Inner London and is even lower than the ratio for Outer London, with the exception of Southwark. The ratio of median house prices to median earnings is just over 5.0 in Barking & Dagenham which is by far the lowest in London. East London is therefore relatively affordable when set within the context of London as a whole.

**Figure 100. Ratio of median house price to median earnings 2012**



Source: DCLG

This widening differential in affordability, combined with the historic migration of families looking to move from Inner London to Outer London, where a greater range of larger properties exist, suggests that parts of the Study Area may see continued demand for residential units if it can address localised issues related to quality of life. The continued economic strength of Inner London (which is a recurring theme throughout this chapter), with its greater range of occupation types and higher average salaries, is likely to continue to act as a strong pull for households, who will make migration decisions based on value for money, commuting time to central London and perceived quality of life. When combined with the fact that commuting costs from towns in the South East are projected to continue rising above inflation, the Study Area Boroughs are likely to continue to be attractive as a residential location for families, if issues relating to quality of life, access to jobs and services can be resolved.

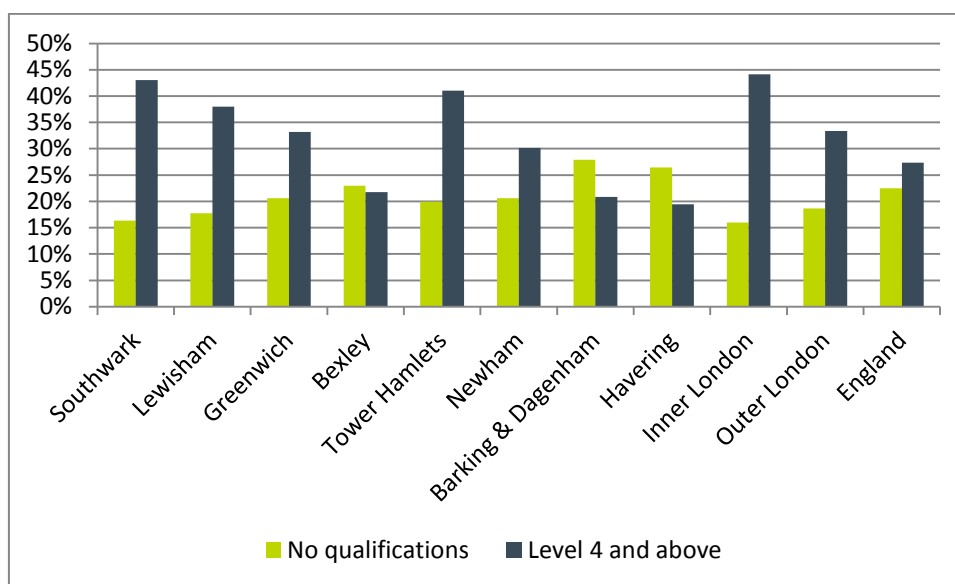
### K.3. Labour Market

#### Qualifications levels vary significantly, with Outer London Boroughs in the Study Area less well qualified than Inner London Boroughs

Figure 101 illustrates the proportion of the adult population according to qualifications achieved. When looking at the highest value qualifications (Level 4 and above): degrees, post graduate degrees and other high value professional qualifications, Bexley, Barking & Dagenham and Havering have populations that are less well qualified than Outer London or England, with all four inner London authorities in the study area also with less well qualified populations than the Inner London average.

The Outer London Commission (OLC)<sup>75</sup> reports that, in the London economy, the demand for work requiring low skills/qualifications has shrunk greatly and will continue to do so. The OLC also identifies that major employers have also cited the lack of skills in Outer London as a major constraining factor to future growth.

Figure 101. Qualifications 2011



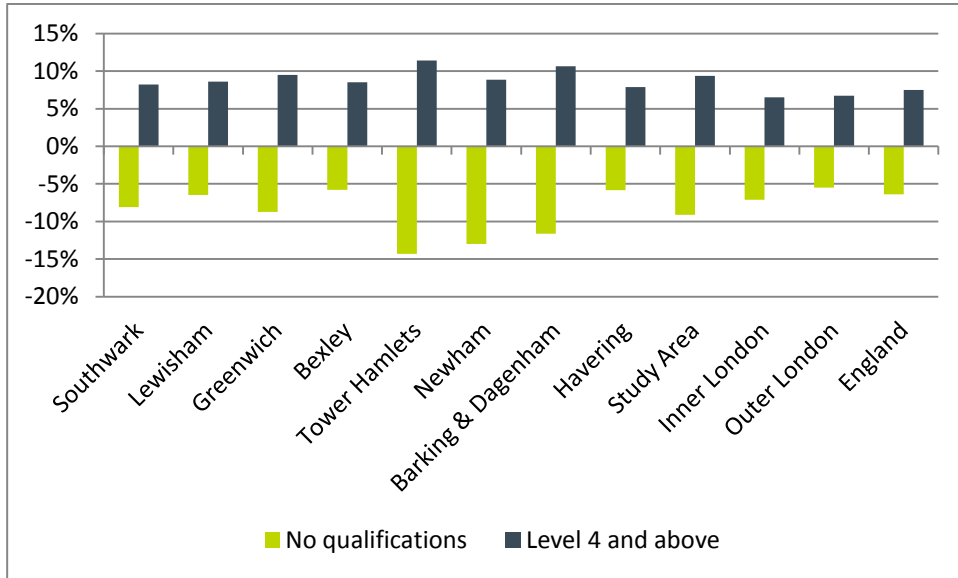
Source: Census 2011

#### However, Outer London Boroughs are catching up with Inner London quickly

Figure 102 illustrates that, although qualifications levels in many of the Outer London Boroughs of the Study Area are poorer than those in Inner London, they have seen the greatest levels of growth in those with the highest qualifications since 2001, and the greatest decline in the number with no qualifications. This is promising for future employment growth, and suggests that a greater number of highly qualified professionals are now starting to consider these Boroughs as viable places to live.

<sup>75</sup> Mayor's Outer London Commission Final Report, June 2010

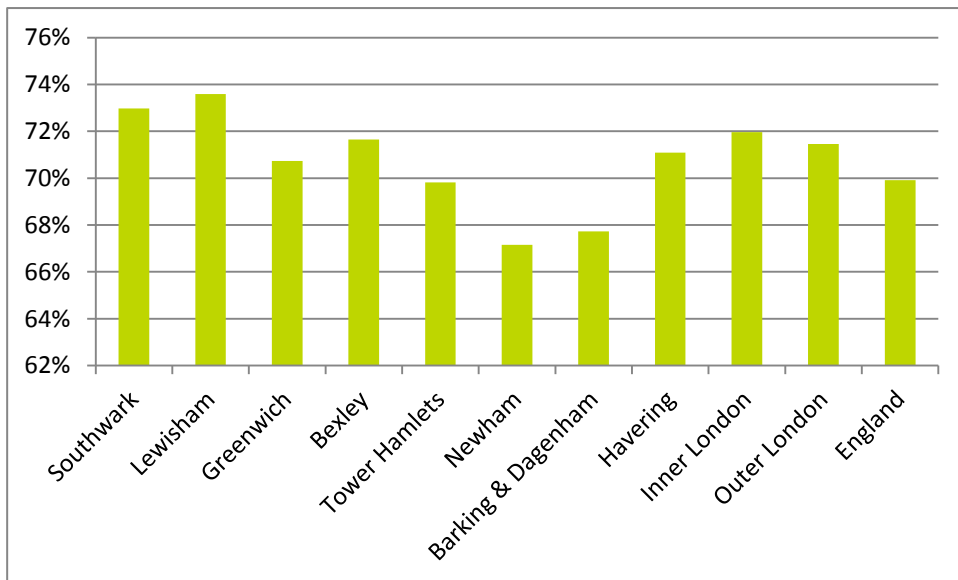
**Figure 102. Change in qualifications 2001 - 2011**



**There are relatively low levels of economic activity and high levels of unemployment in some Outer London Boroughs**

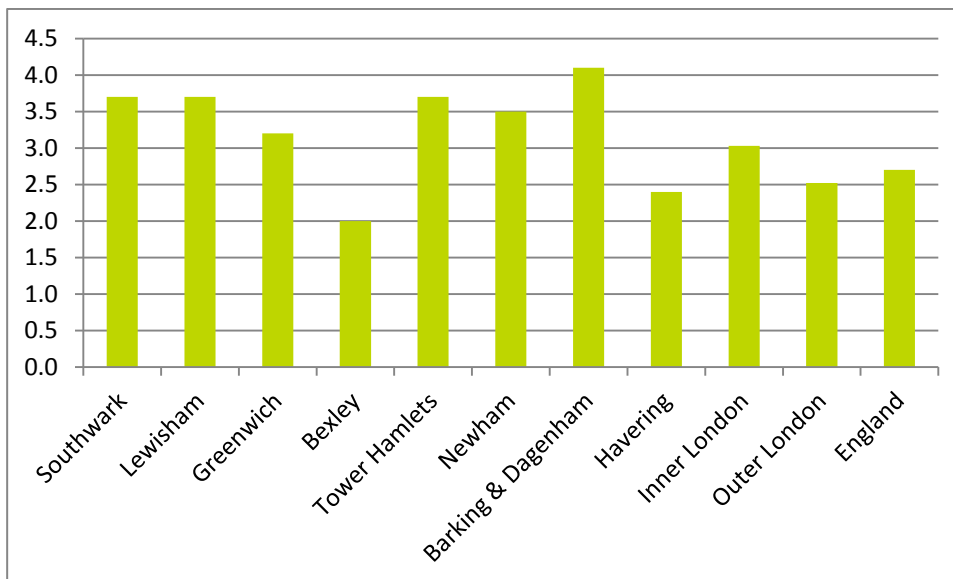
Both Southwark and Lewisham have a high proportion of economically active residents compared to the Inner London average. Newham and Barking & Dagenham have levels of economic activity well below that of either London or England, which could be unlocked by greater opportunities to participate in the workforce resulting from improvements to River Crossings. This is supported by Figure 103 and Figure 104, which shows that all local authorities in the Study Area, with the exception of Bexley and Havering, have above average levels of unemployment, including long term unemployment, when compared to London or England suggesting relatively high levels of capacity in the workforce to fill employment generated as a result of River Crossings.

**Figure 103. % Economically Active 2011**



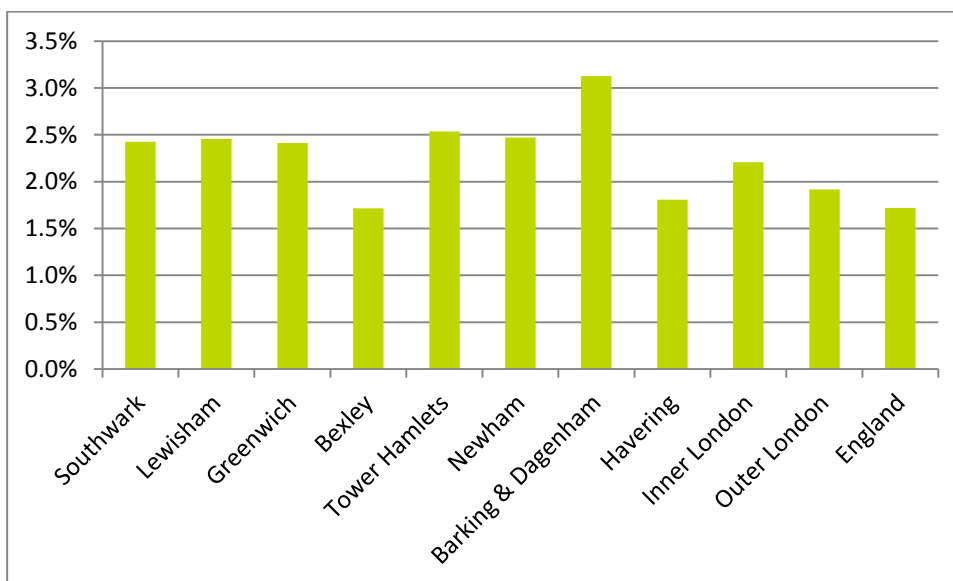
Source: Census 2011

**Figure 104. Claimant Count April 2014**



Source: Claimant Count

**Figure 105. Long term unemployed 2011**



Source: Census 2011

## K.4. Sectoral Mix

### Southwark and TH have high proportion of high value jobs – other Boroughs have high proportions of manufacturing and distribution

Table 91 illustrates the ratio of the size of each sector at the Borough level when compared to Greater London as a whole. A value of more than 1.0 means the sector is over-represented in the Borough when compared to London as a whole, and a value of less than 1.0 means it is underrepresented.

Inner London Boroughs, such as Southwark and Tower Hamlets have greater shares of employment in higher value sectors such as finance, high value business services and research and skills. There is still a high representation of manufacturing employment in many of the study area Boroughs, especially Bexley and Barking and Dagenham.

**Table 91. Employment Location Quotients 2012**

|                              | Southwark | Lewisham | Greenwich | Bexley | Tower Hamlets | Newham | Barking & Dagenham | Havering |
|------------------------------|-----------|----------|-----------|--------|---------------|--------|--------------------|----------|
| Manufacturing and Primary    | 0.43      | 0.91     | 1.35      | 2.90   | 0.48          | 1.39   | 5.33               | 1.86     |
| Distribution                 | 0.62      | 0.61     | 1.06      | 1.71   | 0.62          | 0.94   | 2.62               | 1.27     |
| Consumer Spending            | 0.72      | 0.96     | 1.15      | 1.06   | 0.50          | 1.34   | 0.95               | 1.18     |
| Media and Publishing         | 1.13      | 0.17     | 0.17      | 0.19   | 1.01          | 0.22   | 0.06               | 0.06     |
| Financial Services           | 0.51      | 0.18     | 0.12      | 0.19   | 3.84          | 0.15   | 0.16               | 0.37     |
| Property                     | 0.80      | 1.10     | 0.40      | 0.74   | 0.90          | 0.81   | 0.35               | 0.61     |
| High Value Business Services | 1.56      | 0.34     | 0.40      | 0.37   | 1.03          | 0.32   | 0.23               | 0.28     |
| Support Business Services    | 1.23      | 1.10     | 0.80      | 1.05   | 1.07          | 1.03   | 0.98               | 0.96     |
| City Building Blocks         | 0.93      | 1.21     | 1.36      | 1.60   | 0.57          | 1.33   | 1.42               | 1.69     |
| Research and Skills          | 1.38      | 1.58     | 1.13      | 0.58   | 0.82          | 0.80   | 0.23               | 0.26     |
| Health and Education         | 0.98      | 1.94     | 1.84      | 1.41   | 0.71          | 1.43   | 1.32               | 1.71     |
| Public Administration        | 1.43      | 1.20     | 1.40      | 0.96   | 0.63          | 1.54   | 1.28               | 0.80     |

## K.5. Total Employment Growth

### High rates of employment growth seen in Tower Hamlets, Southwark and Newham, stagnation in most other Boroughs in the Study Area

Table 92 shows the total employment growth in the period 2000-2012 for the Study Area Borough's. Further detail on employment growth by sector is provided in later sections of this Appendix. The table shows that the Study Area has experienced employment growth of 1.8% per annum during the past 12 years, which is above the rate seen in London and England. However, the vast majority of this growth has taken place in Tower Hamlets, which added 100,000 jobs, (62% of the Study Area total) mostly in Canary Wharf. Southwark, driven by an increase in jobs in the north of the Borough close to the City, and Newham, largely due to the regeneration of Stratford and the Olympics effects, also saw strong growth.

However, the performance in the remaining Boroughs has been generally poor, ranging from -0.2% per annum growth in Greenwich and Barking & Dagenham, which are still experiencing economic restructuring as manufacturing jobs continue to be lost, to 0.3% in Lewisham, which has a high dependency on the public sector (see above).

**Table 92. Absolute and annual employment growth 2000 - 2012**

| Area                 | 2000       | 2012       | Absolute growth | Annual Growth |
|----------------------|------------|------------|-----------------|---------------|
| Southwark            | 158,045    | 200,692    | 42,647          | 2.0%          |
| Lewisham             | 61,225     | 63,124     | 1,899           | 0.3%          |
| Greenwich            | 73,006     | 71,433     | -1,573          | -0.2%         |
| Bexley               | 65,757     | 67,555     | 1,798           | 0.2%          |
| Tower Hamlets        | 139,760    | 240,401    | 100,641         | 4.6%          |
| Newham               | 71,718     | 88,290     | 16,572          | 1.7%          |
| Barking and Dagenham | 50,554     | 49,309     | -1,245          | -0.2%         |
| Havering             | 75,434     | 76,352     | 918             | 0.1%          |
| Study Area           | 695,499    | 857,156    | 161,657         | 1.8%          |
| Inner London         | 2,359,860  | 2,835,485  | 475,625         | 1.5%          |
| Outer London         | 1,700,102  | 1,756,992  | 56,890          | 0.3%          |
| London               | 4,059,962  | 4,593,365  | 533,403         | 1.0%          |
| SE                   | 3,637,128  | 3,920,369  | 283,241         | 0.6%          |
| England              | 21,761,749 | 24,177,615 | 2,415,866       | 0.9%          |

Source: Annual Business Inquiry/BRES

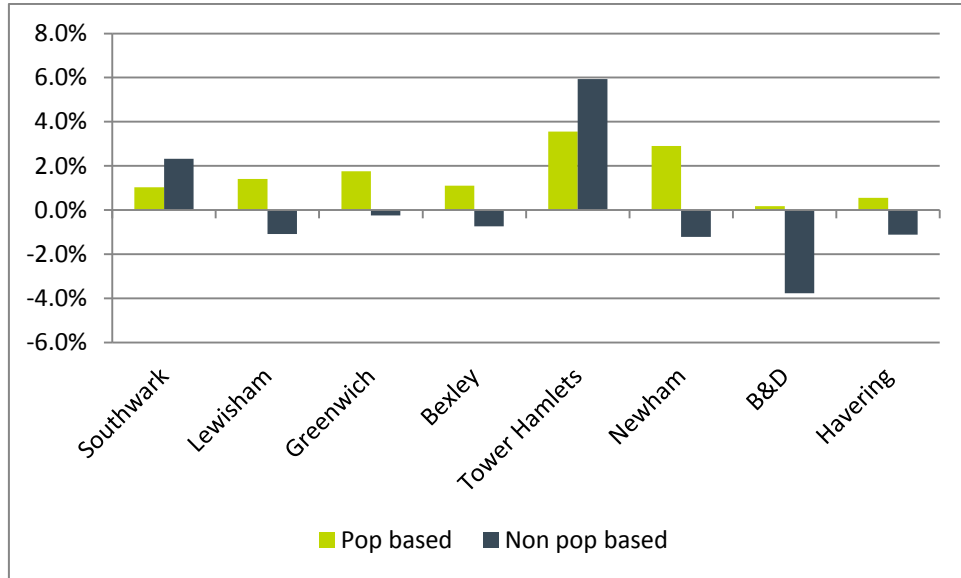
**In all Boroughs except Southwark and Tower Hamlets, employment growth has largely been in ‘population related’ sectors, masking a greater decline in other sectors**

Population related employment sectors are those which are required to support the needs of the local population, and can therefore be expected to grow as the population grows. Such sectors include retail, education and health. Non-population related sectors are those which choose to locate their business according to a broader range of factors, including access to a regional labour force, and access to national transport infrastructure, such as the Strategic Road Network and international airports.

Figure 106 illustrates that, between 2000 and 2008, non population related employment growth strongly in Southwark and Tower Hamlets, largely as a result of the expansion of financial and professional services sectors, but all other Boroughs saw a decline in this type of employment. This means that any gains in total employment in these Boroughs were entirely a result of the growth of population related employment as the local population expanded, exposing the underlying weakness of the economy in these areas. Non-population related employment has picked up again (since 2009) across most of the Study Area, although it is too early to say whether this is part of a wider trend, or a result of stronger growth coming off the back of recession.

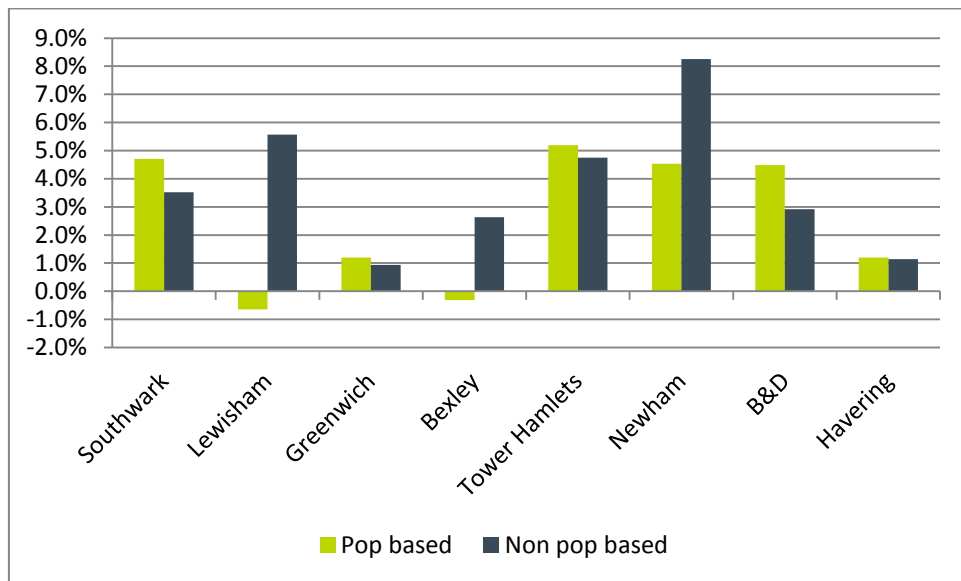


**Figure 106. Population vs non-population related employment growth 2000 - 2008**



Source: Annual Business Inquiry/BRES

**Figure 107. Population vs non-population related employment growth 2009 – 2012**



Source: Annual Business Inquiry/BRES

**Employment densities have only increased in Tower Hamlets and Southwark as more Study Area residents travel to these Boroughs and other parts of Central London for work**

Employment density is a measure of the number of jobs per person of working age. Table 93 demonstrates that, although most Boroughs in the Study Area have seen some total employment growth (see Table 92 above), the number of jobs per person has fallen in every Borough except Southwark and Tower Hamlets since 2000. This is further evidence of the structural change of London’s economy and the impact on commuting patterns, with residents of Outer London Boroughs more likely to travel into central London locations (such as Southwark and Tower Hamlets amongst others) for work with employment generation much lower in Outer London Boroughs.

**Table 93. Employment densities 2000 - 2012**

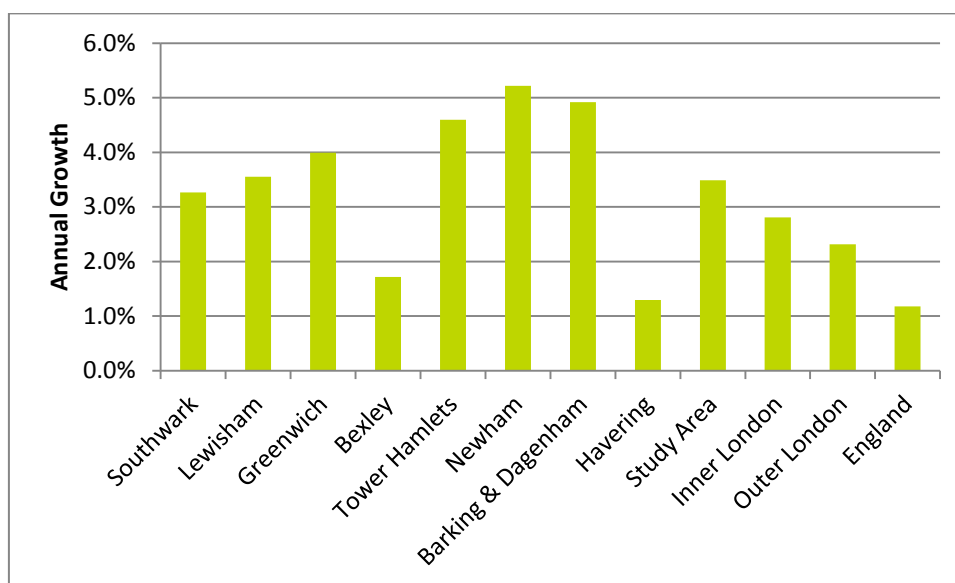
| Area               | 2000 | 2012 | Change 2000 - 2012 |
|--------------------|------|------|--------------------|
| Southwark          | 1.05 | 1.25 | 19%                |
| Lewisham           | 0.44 | 0.39 | -11%               |
| Greenwich          | 0.60 | 0.46 | -23%               |
| Bexley             | 0.55 | 0.53 | -4%                |
| Tower Hamlets      | 1.15 | 1.30 | 13%                |
| Newham             | 0.50 | 0.44 | -12%               |
| Barking & Dagenham | 0.56 | 0.46 | -18%               |
| Havering           | 0.63 | 0.56 | -11%               |
| London             | 0.95 | 0.92 | -3%                |
| Study Area         | 0.69 | 0.70 | 2%                 |

Source: NOMIS

### There has been relatively strong growth in the number of firms in the Study Area in recent years, indicating more favourable employment growth prospects in future

Although employment growth has been relatively poor in Boroughs such as Barking & Dagenham and Greenwich, these locations have actually seen strong growth in the number of firms based in these Boroughs (Figure 108). When looked at alongside the growth in the proportion of the working age population with the highest qualifications (Figure 102), this may suggest that the Outer London Boroughs in the Study Area could start to see stronger employment growth as these firms expand.

Figure 108. Annual growth rate in number of firms operating 2004 - 2012



Source: ONS

### GLA expects future employment growth expected to be much more modest than in recent years

Table 94 shows the projected level of employment growth for each Borough in the period 2011-2031, as set out in the Further Alterations to the London Plan 2014. These projections use a triangulation technique which considers past growth, transport accessibility and the capacity for growth. Figure 109 also illustrates the projected rate of growth against actual employment growth during 2000-2012. The total rate of employment growth is expected to slow significantly, from 1.8% per annum seen during 2000-2012, to 0.7% per annum during 2011-2031. This is largely because the projections assume that the significant growth in the financial sector will slow considerably, along with continued public sector retrenchment. As a result, Tower Hamlets is

expected to see much slower employment growth, although recent planning applications and the increased transport capacity facilitated by Crossrail suggests this may not be the case (see Chapter 6).

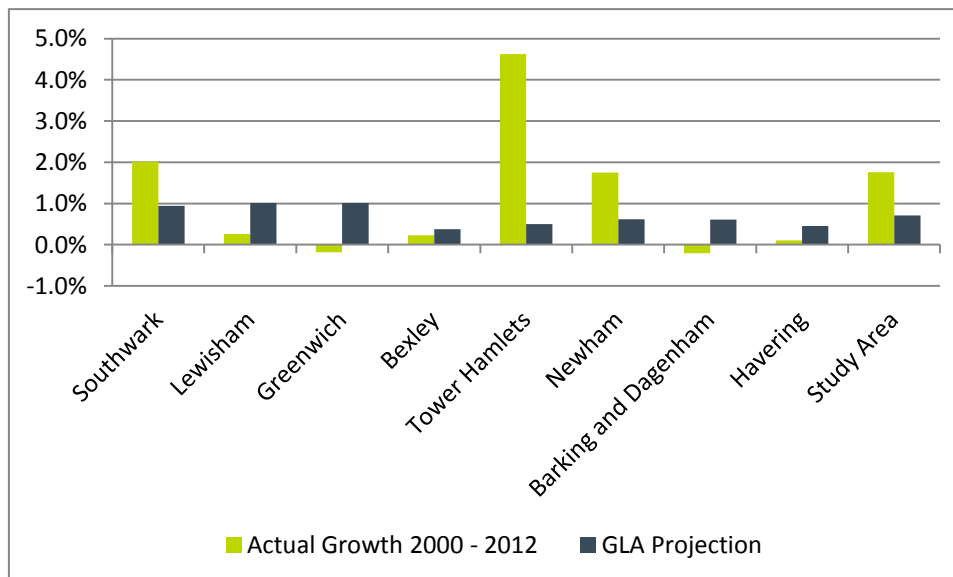
Both Lewisham and Greenwich are expected to see stronger growth than in the past, mainly as a result of the degree of capacity that exists in both authorities, but also because of public transport improvements to Greenwich through Crossrail. Barking & Dagenham is also expected to see stronger employment growth because of the degree of available capacity.

**Table 94. Absolute and annual projected employment growth (GLA) 2011 - 2031**

| Area                 | 2011    | 2031      | Absolute Increase | Annual Growth |
|----------------------|---------|-----------|-------------------|---------------|
| Southwark            | 242,130 | 292,000   | 49,870            | 0.9%          |
| Lewisham             | 72,722  | 89,000    | 16,278            | 1.0%          |
| Greenwich            | 79,282  | 97,000    | 17,718            | 1.0%          |
| Bexley               | 76,034  | 82,000    | 5,966             | 0.4%          |
| Tower Hamlets        | 246,061 | 272,000   | 25,939            | 0.5%          |
| Newham               | 86,658  | 98,000    | 11,342            | 0.6%          |
| Barking and Dagenham | 52,228  | 59,000    | 6,772             | 0.6%          |
| Havering             | 81,314  | 89,000    | 7,686             | 0.5%          |
| Study Area           | 936,429 | 1,078,000 | 141,571           | 0.7%          |

Source: Further Alterations to the London Plan 2014

**Figure 109. Comparison of recent annual employment growth (2000 – 2012) and projected annual employment growth (2011 – 2031)**



Source: Annual Business Inquiry/BRES, Further Alterations to the London Plan 2014

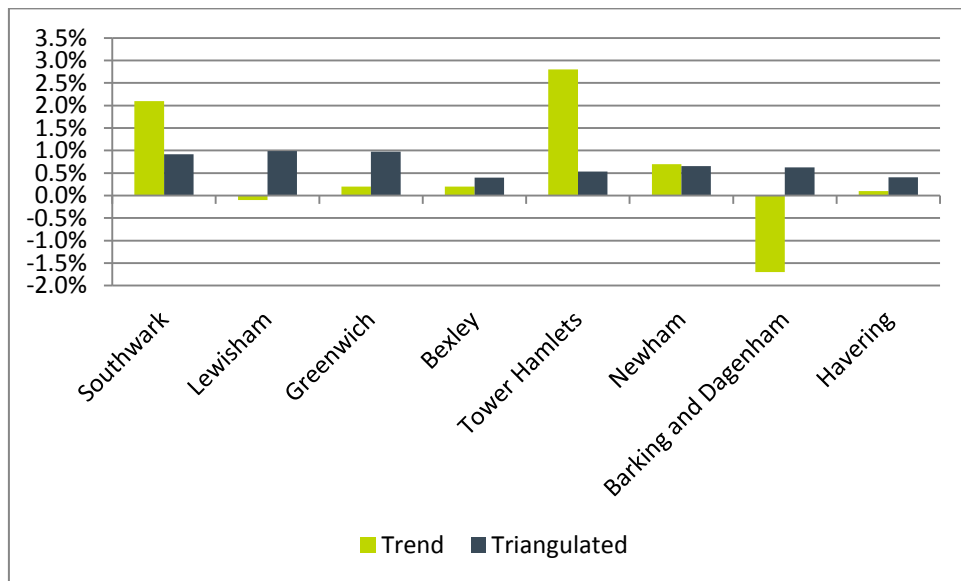
### However, the GLA's Trend based projections tell a more pessimistic story for the Outer London Boroughs in the Study Area

The GLA's triangulated projections (as shown above in Figure 109) assume that trend rates of growth will be altered by changes to public transport accessibility and the capacity of sites to accommodate employment growth. The GLA also produces trend based projections which simply project forward long terms rates of employment growth at the Borough level. Figure 108 shows that there are significant differences between the trend based projections and the triangulated

projections, with more easterly Boroughs expected to see a much higher rate of growth than that seen in the past, and growth slowing in Southwark and Tower Hamlets.

As set out above, this difference is largely due to the degree of available capacity in these Boroughs, with the triangulated projections assuming that these sites will be available and attractive enough to the market to support growth. However, the amount of capacity is not necessarily an indicator of future demand, especially if poor infrastructure and other constraints continue to make some sites less attractive for development. If the potential employment growth set out in the triangulated projections is to materialise, it is clear there will need to be a step change in the attractiveness of some sites in the more eastern Boroughs, to steer the path of growth away from its long term trend in Inner London locations.

**Figure 110. Comparison of GLA’s Trend based and Triangulated Employment Projections – Annual Growth 2011 - 2036**



Source: GLA London Labour Market Projections April 2013

**GLA’s employment projections by sector suggest many of the Study Area Boroughs have an over reliance on sectors that are expected to see a contraction in the long term**

The GLA also produce employment projections by sector at the London wide level. When these are compared against the sectoral make up of the Study Area Boroughs (defined by employment location quotients – see Table 91 above), it is clear that many Boroughs have an over reliance on sectors which are expected to decline over the next 25 years, especially within Greenwich, Bexley, Newham Barking & Dagenham and Havering.

**Table 95. GLA Employment Growth by Sector vs Employment quotient**

| Sector   | % Growth p.a 2011 - 2036 | Employment quotient – Borough:London |          |           |        |               |        |      |          |            |
|--|--------------------------|--------------------------------------|----------|-----------|--------|---------------|--------|------|----------|------------|
|  |                          | Southwark                            | Lewisham | Greenwich | Bexley | Tower Hamlets | Newham | B&D  | Havering | Study Area |
| Primary & utilities  | -3.3%                    | 0.45                                 | 0.78     | 3.16      | 4.48   | 0.38          | 3.30   | 2.41 | 2.33     | 1.57       |
| Manufacturing  | -5.2%                    | 0.42                                 | 0.97     | 1.44      | 2.91   | 0.50          | 1.43   | 5.31 | 1.97     | 1.29       |
| Construction   | -0.1%                    | 0.72                                 | 1.66     | 1.50      | 2.17   | 0.70          | 1.47   | 1.82 | 2.43     | 1.25       |
| Wholesale  | -1.8%                    | 0.57                                 | 0.78     | 0.84      | 1.79   | 0.57          | 0.91   | 2.39 | 1.42     | 0.92       |
| Retail   | 0.2%                     | 0.55                                 | 1.30     | 1.23      | 1.31   | 0.40          | 1.89   | 1.01 | 1.53     | 0.93       |
| Transportation and Storage                                     | -1.1%                    | 0.99                                 | 0.85     | 1.07      | 1.12   | 0.40          | 1.11   | 1.53 | 1.19     | 0.89       |
| Accommodation and food service activities                      | 1.5%                     | 0.77                                 | 0.70     | 1.01      | 0.70   | 0.72          | 1.24   | 0.51 | 0.75     | 0.80       |
| Information and Communication                                  | 1.5%                     | 1.10                                 | 0.34     | 0.52      | 0.38   | 1.29          | 0.30   | 0.23 | 0.27     | 0.79       |
| Financial and insurance activities                             | -0.2%                    | 0.51                                 | 0.18     | 0.12      | 0.18   | 3.84          | 0.15   | 0.16 | 0.37     | 1.30       |
| Professional, Real Estate, Scientific and technical activities | 2.0%                     | 1.51                                 | 0.49     | 0.34      | 0.43   | 0.85          | 0.42   | 0.23 | 0.31     | 0.77       |
| Administrative and support service activities                  | 1.5%                     | 1.27                                 | 1.10     | 0.72      | 1.05   | 1.09          | 0.78   | 0.87 | 0.95     | 1.04       |
| Public Admin and defence                                       | -1.0%                    | 1.44                                 | 1.20     | 1.39      | 0.95   | 0.63          | 1.53   | 1.28 | 0.80     | 1.09       |
| Education  | 0.6%                     | 1.06                                 | 2.10     | 1.97      | 1.46   | 0.78          | 1.58   | 1.45 | 1.35     | 1.27       |
| Health   | 0.5%                     | 1.03                                 | 1.79     | 1.59      | 1.15   | 0.72          | 1.16   | 0.89 | 1.61     | 1.11       |
| Arts, entertainment and recreation                             | 0.9%                     | 0.75                                 | 0.81     | 1.58      | 0.67   | 0.60          | 0.92   | 1.87 | 0.90     | 0.87       |
| Other services   | 1.3%                     | 1.35                                 | 0.73     | 0.81      | 0.66   | 0.42          | 0.96   | 0.71 | 0.80     | 0.81       |

## The expected distribution of employment and population growth could see job densities decreasing even further in Outer London Boroughs

Table 96 compares the difference between the GLA's trend based employment projections and the GLA's SHLAA based population projections. This is essentially a measure of how the working age population would change if each Borough's housing target was to be met, compared against what could happen to employment if past trends continue. The comparison shows that there would be almost 170,000 additional people living in the Boroughs of Newham, Barking & Dagenham and Havering against trend based employment growth of -500 jobs. This raises some important issues about the distribution of growth in the Study Area:

- If employment growth does continue to concentrate in central London and in Tower Hamlets (Canary Wharf), as per recent trends, the only housing sites that come forward in the Study Area are likely to be located close to very good public transport links that connect to these places. This questions the attractiveness and viability of other housing sites that are not so well connected to the existing (and future) public transport network;
- This potential distribution of employment and housing would put huge additional strain on the public transport network, leading to questions about whether employment growth could continue at such a pace in Southwark and Tower Hamlets without an accessible workforce, and whether housing development could come forward without an efficient public transport network to access jobs;
- If Boroughs are to meet their housing targets, and deliver the levels of population growth set out below, they therefore need to deliver a greater proportion of employment away from central London and Canary Wharf and into the Boroughs of Lewisham, Greenwich, Bexley, Newham, Barking & Dagenham and Havering.

**Table 96. Change in employment and working age population 2011 - 2036**

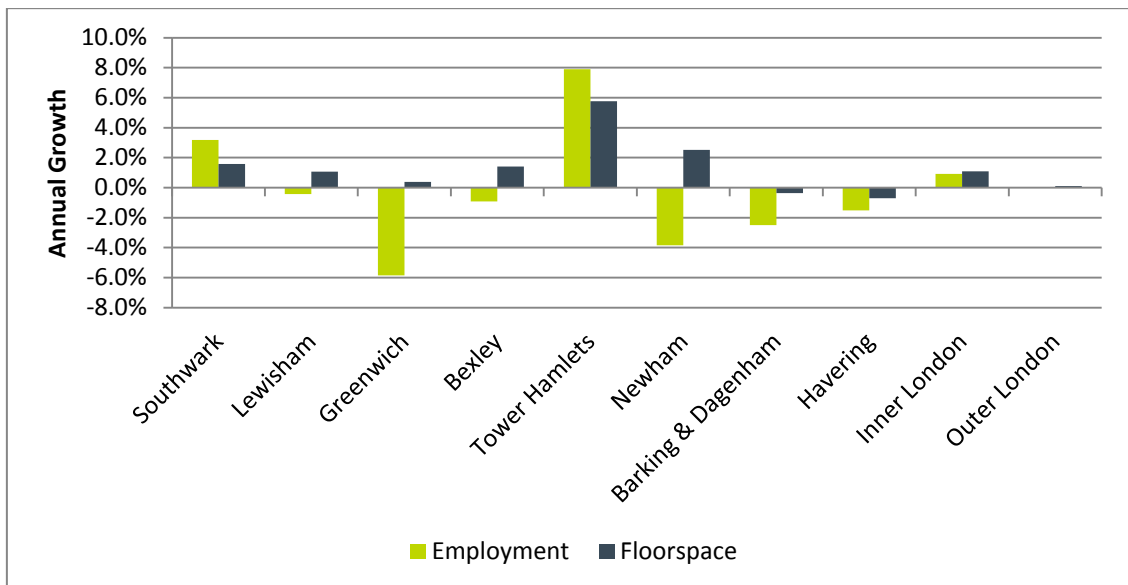
| Area                                     | Change in employment (Trend based) | Change in working age population (SHLAA based) | Difference |
|--|------------------------------------|--|------------|
| Southwark                                | 122,730                            | 66,879   | 55,851     |
| Lewisham                                 | - 1,380                            | 38,518   | - 39,898   |
| Greenwich                                | 4,240                              | 68,621   | - 64,381   |
| Bexley                                   | 2,910                              | 1,066  | 1,844      |
| Tower Hamlets                            | 230,330                            | 101,395  | 128,935    |
| Newham                                   | 13,980                             | 90,247   | - 76,267   |
| Barking & Dagenham                       | - 16,610                           | 51,280   | - 67,890   |
| Havering                                 | 2,130                              | 25,062   | - 22,932   |
| London                                   | 653,350                            | 1,062,733                                      | - 409,383  |
| Study Area                               | 358,330                            | 443,069  | - 84,739   |
| Northern Study Area                      | 229,830                            | 267,984  | - 38,154   |
| Southern Study Area                      | 128,500                            | 175,085  | - 46,585   |
| Northern Study Area except Tower Hamlets | - 500                              | 166,589  | - 167,089  |
| Southern Study Area except Southwark     | 5,770                              | 108,206  | - 102,436  |

## K.6. Office

### Structural change in the office market has meant demand in Outer London has collapsed

Figures 111 and 112 illustrate the change in office-based employment sectors and office floorspace growth during the period 2000-2011. The increase in office floorspace and jobs in Tower Hamlets since 2000 has been well in excess of any London Borough, driven by the expansion of Canary Wharf. In comparison, Lewisham, Greenwich, Bexley, Newham and Barking & Dagenham all saw a contraction in office employment in the period 2000-2008 whilst office employment was growing relatively strongly across Inner London. However, most of these Boroughs have now seen relatively strong growth in office sector employment since 2009, with the exception of Greenwich. Despite this, Greenwich saw the greatest % growth in net office floorspace in this period.

Figure 111. Office Employment and Floorspace Growth 2000-2008



Source: Annual Business Inquiry/VOA

Figure 112. Office Employment and Floorspace Growth 2009-2012



Source: Business Register and Employment Survey/VOA

In general, Figures 111 and 112 show that office employment and floorspace completions have been much stronger in Inner London than Outer London. Central to understanding the reasons behind this is an understanding of the structural changes that have taken place in the outer London office market over the past decade. The London Office Policy Review<sup>76</sup> sets out a number of reasons why office employment has declined in suburban office locations since the late-1980s:

- **Changes to property cost differential** A steep rental gradient from Central London in the past persuaded businesses to relocate to Outer London (and in many cases beyond), to reduce costs. This role of Outer London has been usurped by the emergence of campus-style schemes around the periphery of Central London, including Broadgate, London Bridge City, More London and Paddington: a new generation of high quality environments with better connectivity to the West End and City.
- **Changes to salary cost differential** In this too, the historic advantage of the suburbs has been upstaged. The Central London salary weighting has all but disappeared and back office functions are now more likely to be relocated to Bangalore or Glasgow than Outer London as advances in technology have eroded the need of physical proximity.
- **Changing work styles** Work styles have changed dramatically in response to technology and business priorities. One symptom of this is the virtual disappearance of the typing pool and large clerical, back office functions, staples of the suburban office market. Many such jobs have simply disappeared.
- **Falling public sector demand** Central and local government have both been key occupiers of suburban offices, but now there is real retrenchment and rationalisation, as the public sector cuts costs. This will lead to the redundancy of substantial tracts of suburban office space over the next few years.
- **Outmoded physical environment** The environmental quality of some locations is tired and poorly maintained, with office accommodation and other employment premises ill-suited to modern business needs, often due to being provided as lip service to planning requirements.

### **Speculative office development is only likely to take place in Central London, Canary Wharf and a limited number of town centres**

It is these structural changes to the office market that means that office based development and employment in much of outer London have not been closely related over at least two economic cycles (see Figures 111 and 112). This is partly because office based employment growth has not been sufficiently 'value added' to justify strategically significant new office development across outer London. The Outer London Commission<sup>77</sup> identified that, to be viable, such development typically required rentals of more than £25/£28 per sq ft (£270/£300 per sq.m) in historically 'normal' economic conditions, and more realistically £30 sq ft (£322 per sq.m). While these rents have been achieved in a relatively few, attractive locations (mainly in west London), demand to sustain them has not been sufficiently widespread to lead to extensive, structural rejuvenation of the outer London office stock. With most of the Study Area Boroughs currently at an estimated £100 per sq.m, (see Figure 113), speculative office development in these locations has been very limited. This position has been exacerbated by the scale of the existing stock in Outer London (7.1 million sq m or 25% of the London total office floorspace), most of which is available at significantly lower rents than those required to support new development.

However, the Borough wide figures mask spatial concentrations of high demand for offices, such as northern Southwark, Canary Wharf and some town centre locations, such as Stratford, to a lesser extent. Office development is therefore unlikely to come forward outside of these locations to a significant extent (at least from a purely market demand perspective – planning policy can still require office floorspace as a part of mixed use development, which is in effect part subsidised by the higher value residential uses).

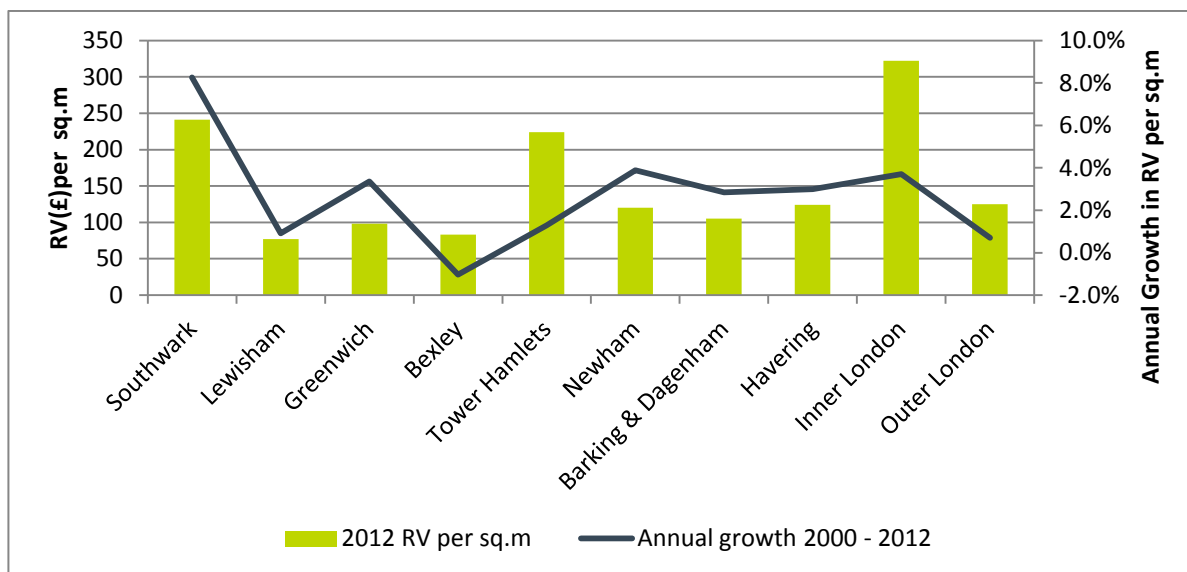
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<sup>76</sup> London Office Policy Review 2012: Ramidus Consulting Ltd for GLA

<sup>77</sup> Mayor's Outer London Commission Final Report, June 2010



**Figure 113. Average Rateable Value per sq.m - Office**



Source: London Office Policy Review

In some cases, these rents may not even be enough to justify investment for modernisation, or retention of the space in office use when faced with competition for scarce land resources from higher value development, especially housing. In addition, nearby parts of the wider southeast, especially towards the west, have offered competitive advantage to potential occupiers, providing modern new space at around the same rental threshold as might apply in outer London but with lower other business costs, especially those generated by labour market related factors.

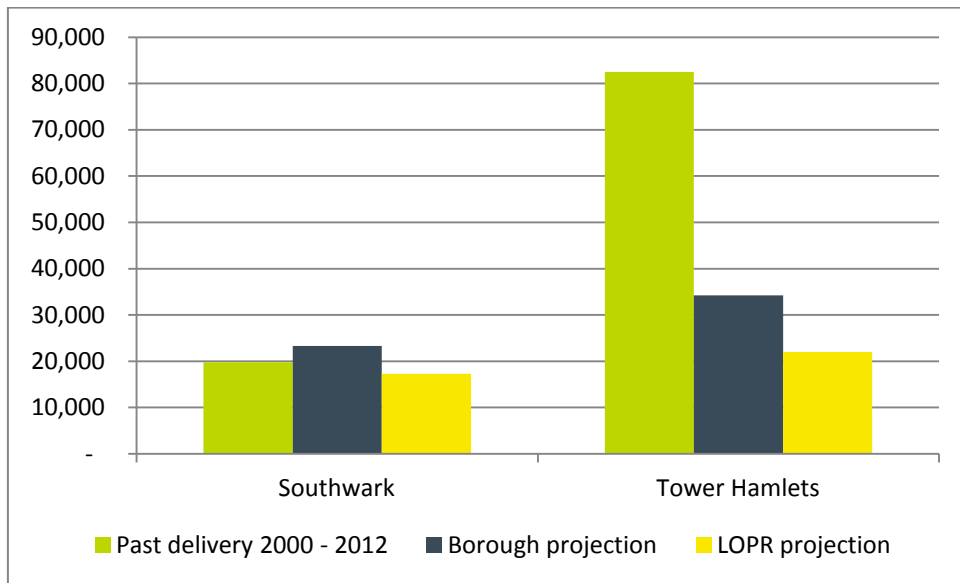
The outcome of these structural changes is illustrated by the fact that most Boroughs in the Study Area have seen a largely stagnant office market, adding very little additional stock since 2000 (see Figure 113).

By contrast, Southwark, and especially Tower Hamlets, have seen a significant degree of office floorspace and employment growth (Figure 111) as firms have sought central London locations. As a result, the vast majority of the office based growth in the Study Area has either taken place in Canary Wharf or north Southwark, although small amounts of office stock have come forward in parts of Newham.

### **There are considerable differences between GLA and Borough projections of future office demand**

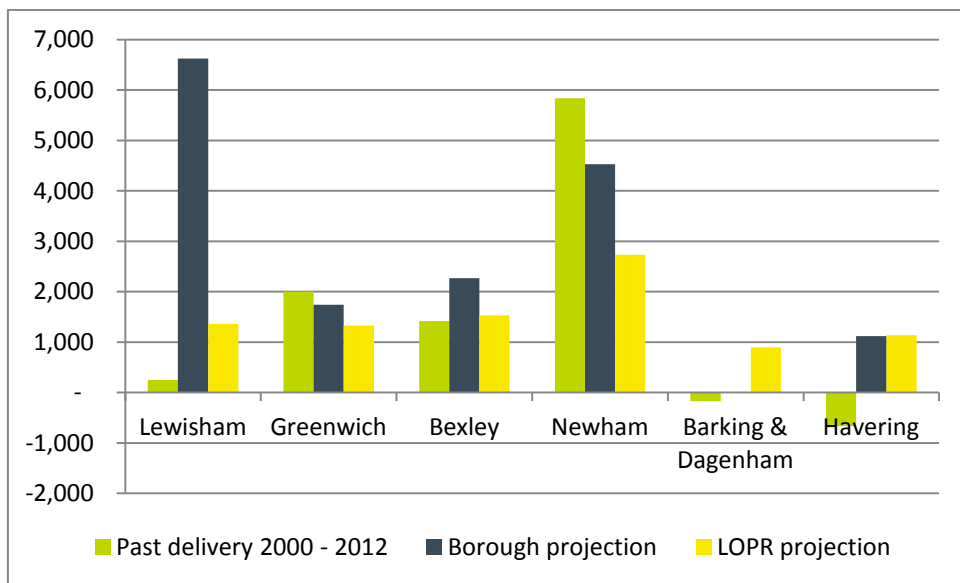
Figures 114 and 115 also illustrate the differences between the actual rates of delivery of office floorspace against the rate of projected growth during the next 20 years – comparing projections undertaken on behalf of the Boroughs and by the London Office Policy Review 2012. Whilst the estimates for Southwark are similar to past rates of delivery, Tower Hamlets is expected to slow the rate at which it adds new office stock; although this does not match the ambitious plans for office growth in this location (see Chapter 6). The estimates for the other boroughs are all relatively similar to past growth, with the exception of Lewisham, where the Borough projection is significantly above the London Office Policy Review projection and the very small rate of delivery seen in recent years.

**Figure 114. Average net office floorspace change per annum 2000-2012 vs annual office floorspace projection – Southwark and Tower Hamlets**



Source: VOA/Employment Land Reviews/London Office Policy Review

**Figure 115. Average net office floorspace change per annum 2000-2012 vs annual office floorspace projection – other boroughs in study area**



Source: VOA/Employment Land Reviews/London Office Policy Review

**Table 97. Office Floorspace Demand Projections**

|                    | Demand (Borough Estimates) | Period      | Borough - Annual requirement | LOPR 2011-2031 | LOPR - Annual requirement |
|--------------------|----------------------------|-------------|------------------------------|----------------|---------------------------|
| Southwark          | 419,864                    | 2008 - 2026 | 23,326                       | 345,259        | 17,263                    |
| Lewisham           | 132,460                    | 2006 - 2026 | 6,623                        | 27,224         | 1,361                     |
| Greenwich          | 27,819                     | 2012 - 2028 | 1,739                        | 26,576         | 1,329                     |
| Bexley             | 40,800                     | 2007 - 2025 | 2,267                        | 30,608         | 1,530                     |
| Tower Hamlets      | 684,947                    | 2006 - 2026 | 34,247                       | 440,123        | 22,006                    |
| Newham             | 95,130                     | 2006 - 2027 | 4,530                        | 54,687         | 2,734                     |
| Barking & Dagenham | No estimate                | N/A         | N/A                          | 17,967         | 898                       |
| Havering           | 14,520                     | 2005 - 2018 | 1,117                        | 22,804         | 1,140                     |

Source: Borough level Employment Land Reviews and London Office Policy Review 2012

## K.7. Retail

### Retail sector is undergoing structural change with influence of e-commerce and growth in destination shopping malls

London's town centre retailers face considerable challenges, many of which were identified by Mary Portas in her national review<sup>78</sup>. These include changing consumer behaviour; new forms of retailing, especially 'e-commerce' and car based, out of centre retail and leisure development; landlord expectations and leasing structures; inappropriate parking provision and management; and the complexities of land ownership and sometimes competing interests in the future of town centres. Changes in the demand for high street retail can be rapid and outcomes unpredictable in the medium term.

Experian's Town Centre Futures White Paper<sup>79</sup> states that UK consumers are struggling in the aftermath of one of the deepest and most prolonged recessions in recent history. Higher taxes, heavier indebtedness and tighter lending conditions will keep town centre spending more muted than in the previous two decades. Between 2014-18, growth in retail sales volumes is predicted to be weaker than during the past decade and slower than in the long and ultra-long (the period 1970-2010) term, reflecting overall economic weakness and more subdued growth in consumer lending than in recent decades.

However, the GLA's Draft Town Centres Supplementary Planning Guidance identifies that, while parts of London, and its associated network of town centres certainly do face some of the challenges identified by Mary Portas, the capital also has distinct strengths:

- it is unique in the scale and density of its population;
- in its wealth and growth prospects (little more than an eighth of the national population but over a fifth of its output);
- in the scale and density of the transport and other networks which serve it, reducing dependence on private cars;
- in its diversity, international connections and visitor base; and
- in its governance arrangements with a unique two tier structure which provides both a strategic perspective and coordination to address the issues facing town centres, and the flexibility for local borough and partnership action to tackle the varied local expressions of these.

Furthermore, whilst an increasing proportion of consumer expenditure on retail goods is being spent via the internet, the Experian Town Centre Futures White Paper estimates that only 18% of town centre catchments in London towards the end of this decade will contain a significant proportion of high propensity online shopping households, reflecting the markedly different

<sup>78</sup> The Portas Review: An independent review into the future of our high streets

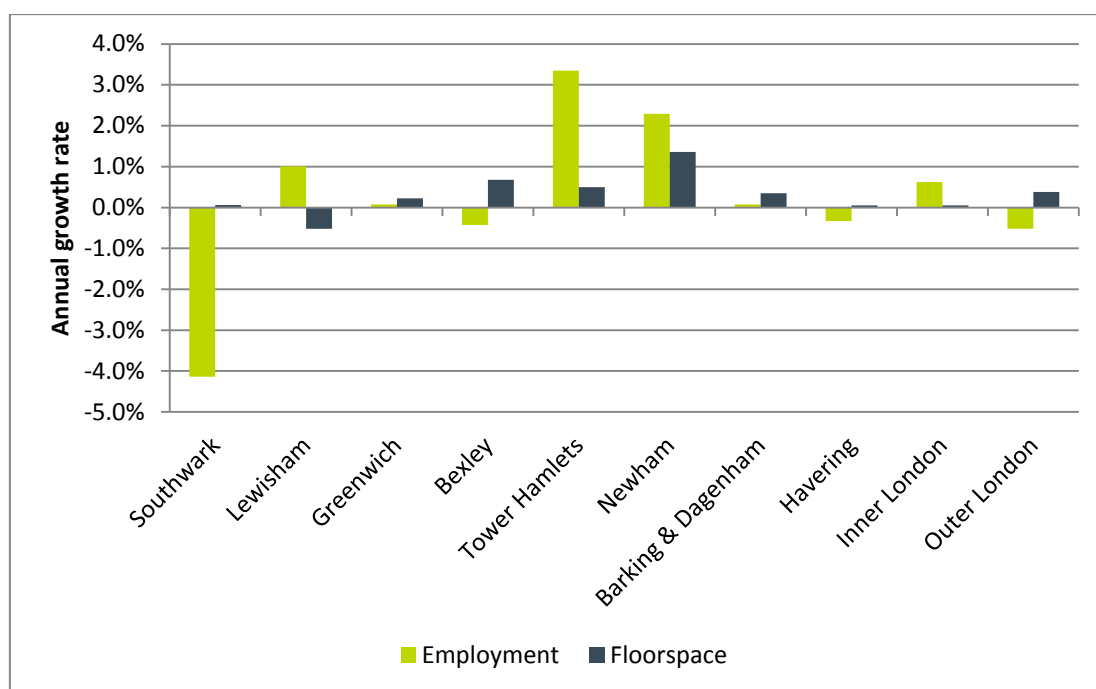
<sup>79</sup> Town Centre Futures 2020 White Paper, September 2012

consumer makeup of London and the fact that people have a great choice of shopping on their doorstep<sup>80</sup>.

### Retail employment has grown strongly in Tower Hamlets and Newham but stagnated in most other Boroughs

Figures 116 and 117 illustrate that the growth in retail floorspace and the growth in retail employment is now significantly out of step. Although some areas have experienced a decline in retail employment, retail floorspace has continued to grow as larger stores can support lower employment densities. This is particularly evident in Southwark where a significant decrease in retail employment has been accompanied by a slight rise in retail floorspace. Newham saw a significant rise in retail employment and floorspace, largely as a result of the opening of Westfield Stratford.

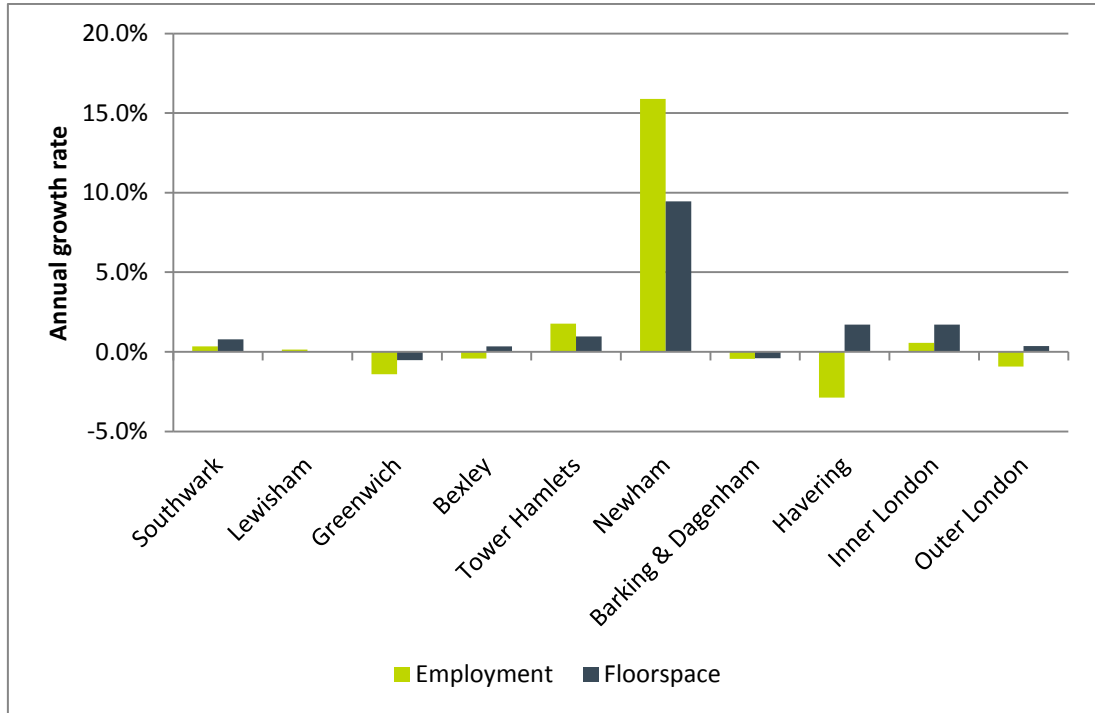
**Figure 116. Retail floorspace and employment growth 2000 - 2008**



Source: Annual Business Inquiry and VOA

<sup>80</sup> Town Centre Futures 2020 White Paper, September 2012

**Figure 117. Retail floorspace and employment growth 2009-2012**

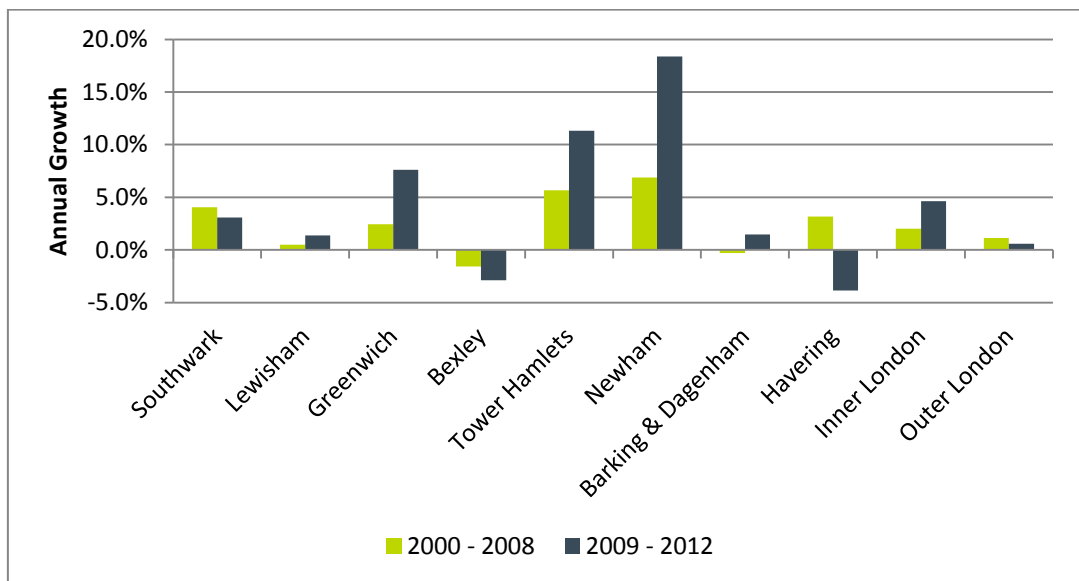


Source: Annual Business Inquiry and VOA

**The Study Area has seen strong growth in leisure employment, influenced by the 2012 London Olympic Games**

By contrast, employment in leisure has grown significantly since 2000, especially in Tower Hamlets and Newham, at rates well above the London average. This is likely to be partly a result of the growing evening economy in both Boroughs, although the increase demand for this sector may also have been partly driven by the 2012 Olympic and Paralympics Games.

**Figure 118. Annual Growth in leisure employment**

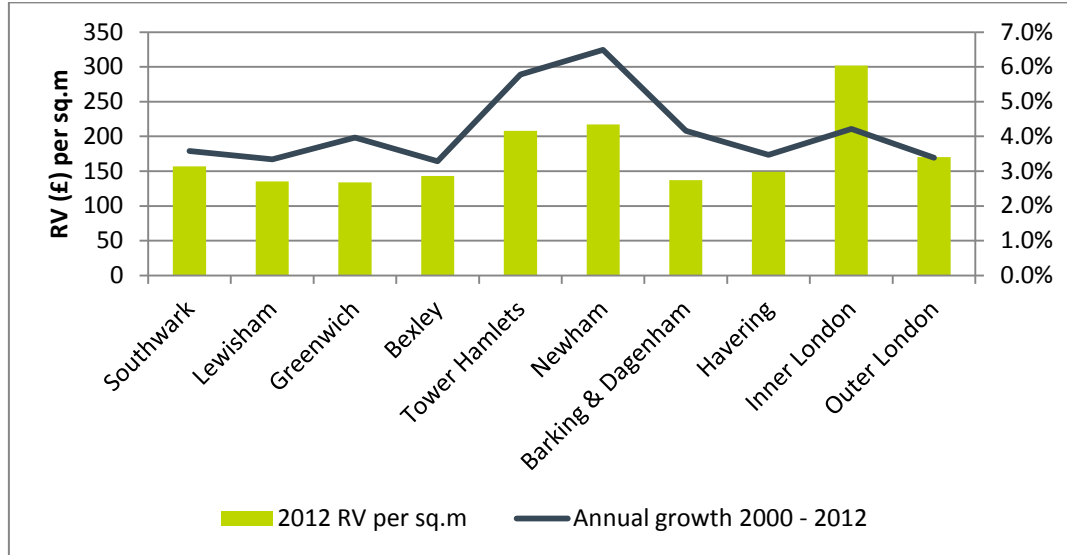


Source: Annual Business Inquiry and Business Register and Employment Survey

## Both retail values and the rate of retail floorspace expansion have been strongest in Tower Hamlets and Newham,

The relatively strong growth in retail employment in Tower Hamlets and Newham is also reflected in retail rents, which have also grown strongly in both Boroughs.

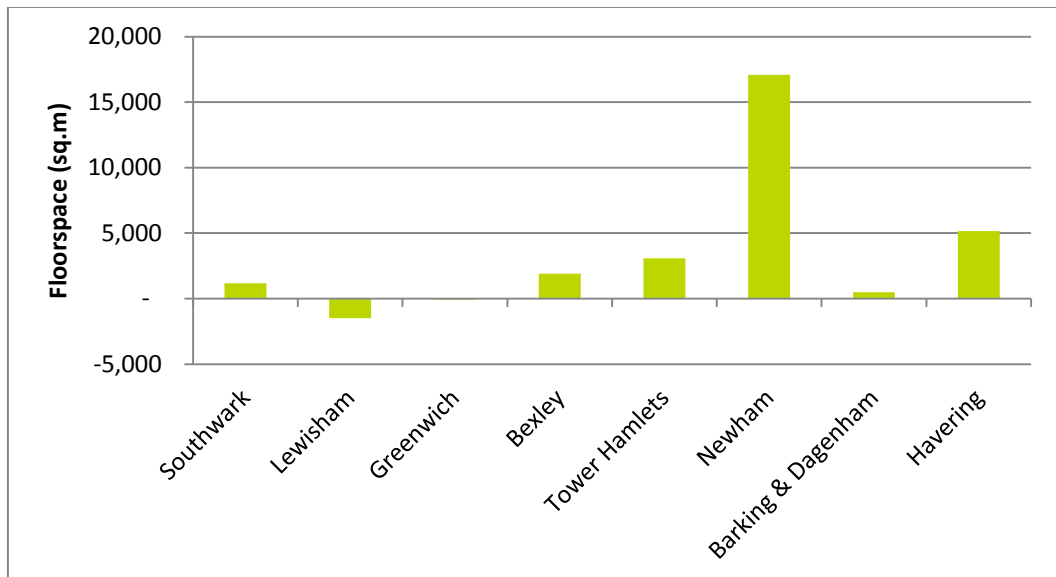
Figure 119. Average Rateable Value per sq.m - Retail



Source: VOA

The picture of change in net retail floorspace is mixed across the Study Area, with Newham seeing significant growth as a result of Westfield Stratford. Lewisham saw a net loss of floorspace, with Greenwich, Barking & Dagenham and Southwark also seeing relatively minor increases.

Figure 120. Net Retail floorspace change per annum 2000-2012



Source: VOA

## Retail floorspace growth is expected to be much lower in recent years as a result of structural change. Newham is expected to see strongest growth driven by population change

Based on GLA population projections the GLA's Consumer Expenditure and Comparison Goods Floorspace Need study (2013) looks to evaluate the probable levels of population and resultant demand in Greater London between 2011 and 2036 and assess how well the existing and pipeline retail floorspace will meet this demand.

The analysis concludes that substantially less additional retail floorspace will be needed in London than was expected from the previous study carried out in 2009, although at a London level a million square metres of additional space will still be needed. In part this is due to the continuing strong demand from tourism and commuters especially in central London.

The work looked at a variety of different retail growth scenarios, of which the most useful in the context of this work are:

- The No Development Scenario – identifies future retail floorspace projections based on the current distribution of floorspace and employee/population projections to assess distribution of demand; and
- The Pipeline Scenario - Pipeline developments are incorporated by including all retail developments under construction and known planning permissions and adding in the floorspace changes to the centres they are located in.

Table 98 illustrates the estimated gross (which means they do not take account of the availability of vacant retail floorspace) projections for additional retail floorspace for a range of productivity growth assumptions, at the Borough level. The table demonstrates that under the Base productivity scenarios, the Boroughs will need between 5,500sq.m (Barking & Dagenham) and 72,000sq.m (Newham) between 2011 and 2036. It should be noted that these projections are neutral on River Crossings – although because they are based on current retail catchments they would inherently assume that new river crossings do not factor in their scenarios.

**Table 98. Retail Floorspace Projections 2011-2036 No Development Scenario (Base Spend)**

|                    | Current Retail Floorspace (2012) | Gross floorspace projections |            |            |
|--------------------|----------------------------------|------------------------------|------------|------------|
|                    |                                  | Low 1.5%*                    | Base 1.9%* | High 2.5%* |
| Barking & Dagenham | 253,000                          | 12,289                       | 5,518      | -5,913     |
| Bexley             | 385,000                          | 41,829                       | 27,353     | 2,916      |
| Greenwich          | 385,000                          | 29,160                       | 12,521     | -15,567    |
| Havering           | 516,000                          | 70,130                       | 42,017     | -5,442     |
| Lewisham           | 423,000                          | 25,322                       | 10,934     | -13,356    |
| Newham             | 653,000                          | 113,078                      | 72,014     | 2,694      |
| Southwark          | 434,000                          | 41,283                       | 26,032     | 287        |
| Tower Hamlets      | 455,000                          | 76,036                       | 62,598     | 39,912     |
| Study Area         | 3,504,000                        | 409,127                      | 258,987    | 5,531      |

Source: GLA Consumer Spending Estimates \*Refers to level of annual productivity growth in retail units  
Note: negative figures represent an oversupply of current floorspace against the projected level of demand

Table 99 presents the study's Pipeline Scenario, which takes account of all major retail developments. Under this scenario, some Boroughs, such as Greenwich and Barking & Dagenham, do not need any further retail floorspace to come forward, whilst Tower Hamlets and Newham still require relatively large amounts of additional floorspace.

**Table 99. Retail Floorspace Projections 2011-2036 Pipeline Scenario (Base Spend)**

|                    | Current Retail Floorspace (2012) | Gross floorspace projections |            |            |
|--------------------|----------------------------------|------------------------------|------------|------------|
|                    |                                  | Low 1.5%*                    | Base 1.9%* | High 2.5%* |
| Barking & Dagenham | 253,000                          | -9,861                       | -16,633    | -28,063    |
| Bexley             | 385,000                          | 18,260                       | 3,783      | -20,654    |
| Greenwich          | 385,000                          | -3,240                       | -19,879    | -47,967    |
| Havering           | 516,000                          | 54,077                       | 25,963     | -21,495    |
| Lewisham           | 423,000                          | 9,122                        | -5,267     | -29,556    |
| Newham             | 653,000                          | 74,543                       | 33,479     | -35,842    |
| Southwark          | 434,000                          | 22,552                       | 7,301      | -18,444    |
| Tower Hamlets      | 455,000                          | 72,821                       | 59,382     | 36,696     |
| Study Area         | 3,504,000                        | 238,274                      | 88,129     | -165,325   |

Source: GLA Consumer Spending Estimates \*Refers to level of annual productivity growth in retail units  
Note: negative figures represent an oversupply of current floorspace against the projected level of demand

Tables 100 and 101 present the results of the retail projections at the town centre level. Bexleyheath and Barking are expected to see the highest levels of additional retail demand, taking into account spare capacity at existing centres like Stratford. Under the Pipeline Scenario (Table 99), many of the Study Area Town Centres need no additional retail space.

**Table 100. Floorspace projection 2011-2036 – Selected town centres – No development scenario**

| Town Centre         | Gross floorspace projection (sq.m) |
|---------------------|------------------------------------|
| Barking             | 9,648                              |
| Bexleyheath         | 10,197                             |
| Woolwich            | 820                                |
| Lewisham            | 857                                |
| Beckton Town Centre | 210                                |
| Canning Town        | 574                                |
| Stratford           | 3,399                              |
| Peckham             | 5,764                              |
| Canary Wharf        | 6,586                              |
| Hornchurch          | -1,639                             |
| Romford             | 50,052                             |
| Upminster           | -195                               |

Source: GLA Consumer Spending Estimates. Note: negative figures represent an oversupply of current floorspace against the projected level of demand



**Table 101. Floorspace projection 2011-2036 – Selected town centres – Pipeline scenario**

| Town Centre         | Gross floorspace projection (sq.m) |
|---------------------|------------------------------------|
| Barking             | 4,783                              |
| Bexleyheath         | 3,906                              |
| Woolwich            | -7,015                             |
| Lewisham            | -2,618                             |
| Beckton Town Centre | -383                               |
| Canning Town        | 131                                |
| Stratford           | 954                                |
| Peckham             | 1,986                              |
| Canary Wharf        | 4,165                              |
| Hornchurch          | -2,464                             |
| Romford             | 41,852                             |
| Upminster           | -1,516                             |

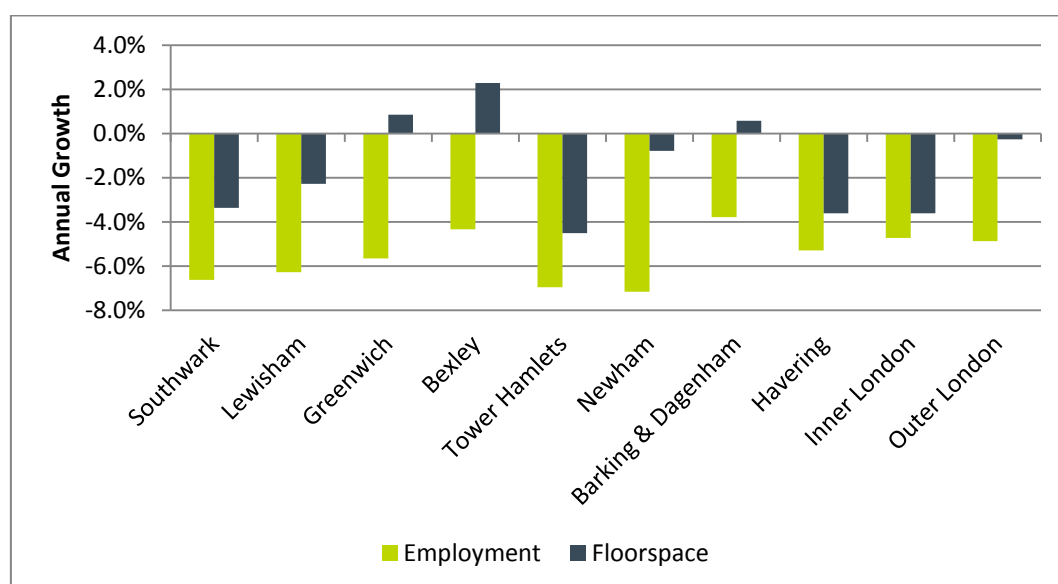
Source: GLA Consumer Spending Estimates. Note: negative figures represent an oversupply of current floorspace against the projected level of demand

## K.8. Industrial and logistics

### Industrial employment continues to fall sharply in all Boroughs, although some growth in net floorspace largely driven by logistics

Figures 121 and 122 illustrate that the Study Area has seen a significant collapse in industrial employment (defined here as both manufacturing and logistics). Employment in this sector fell from 80,300 in 2000 to 50,700 in 2008 alone (a decrease of 37%). Some Boroughs have seen a slight increase in industrial employment since 2009, although this is growth from a particularly low base which has been heavily depleted during the onset of recession. Figure 102 also shows that, despite some recent employment growth, the amount of industrial floorspace is still declining rapidly – which is likely to be due to the continued conversion of previously underutilised stock.

**Figure 121. Industrial and logistics employment and floorspace growth 2000-2008**



Source: Annual Business Inquiry/VOA

**Figure 122. Industrial and logistics employment and floorspace growth 2009-2012**

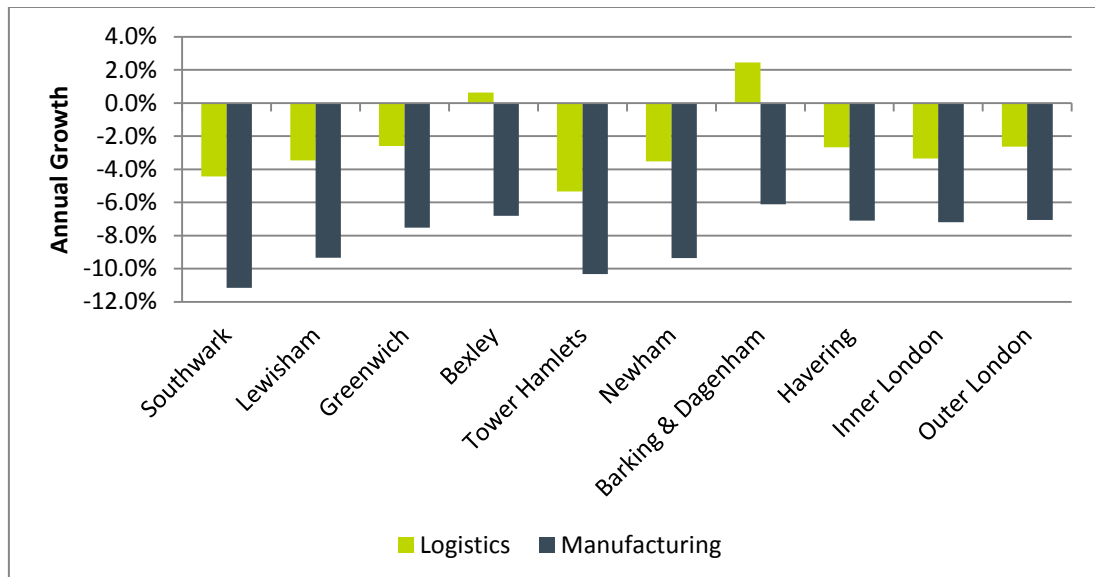


Source: Business Register and Employment Survey/VOA

Figure 121 shows that there is a clear difference between the change in logistics and manufacturing employment since 2000, with Bexley and Barking & Dagenham having seen some growth in logistics since 2000, and most Boroughs having seen an increase in logistics since 2009.

The GLA's Industrial Land Demand and Release work identified that some parts of the Study Area has developed as a significant location for large-scale warehouses and logistics facilities, notably along the A13 corridor, where a number of major new developments have been constructed over recent years, and south of the River, in places such as Belvedere and Erith.

**Figure 123. Industrial and logistics employment growth 2000 - 2008**



Source: Annual Business Inquiry

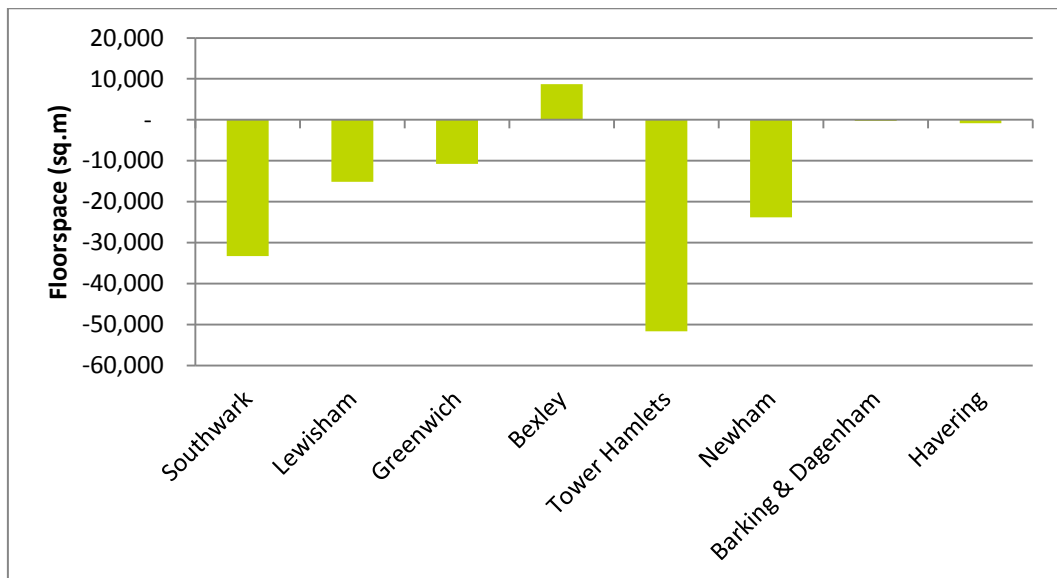
**Table 102. Industrial and logistics employment growth 2009 – 2012**



Source: Business Register and Employment Survey

The collapse in industrial employment is also clearly reflected in the net annual change in industrial floorspace, shown in Figure 124, where only Bexley has seen growth since 2000, largely driven by the growth in logistics.

**Figure 124. Annual Net change in industrial floorspace 2000 - 2012**



Source: VOA

### Only Greenwich and Bexley expected to see a net demand for industrial and warehousing land

The GLA’s projections of industrial land release estimate that most Boroughs in the Study Area will have an oversupply of industrial land in the period 2011-2031. Only Bexley and Greenwich are expected to require additional land, again driven by the growth in logistics and warehousing.

**Table 103. GLA projections of industrial and warehousing land 2011 - 2031**

| <b>Borough</b>     | <b>Industrial (ha)</b> | <b>Warehousing (ha)</b> | <b>Waste (ha)</b> | <b>Total demand (ha)</b> | <b>Surplus land (ha)</b> | <b>Net demand (ha)</b> |
|--------------------|------------------------|-------------------------|-------------------|--------------------------|--------------------------|------------------------|
| Barking & Dagenham | -37.9                  | 48.3                    | -15.7             | -7.8                     | 0                        | -7.8                   |
| Bexley             | -32.9                  | 62.4                    | -6                | 29.8                     | -33.8                    | -4.1                   |
| Greenwich          | -12.1                  | 25.4                    | 3.2               | 16.8                     | -16.8                    | 0                      |
| Havering           | -31.7                  | 26.3                    | -10.4             | -17.4                    | -56.8                    | -74.2                  |
| Lewisham           | -11.7                  | -3.3                    | -2.4              | -17.3                    | -5.5                     | -22.8                  |
| Newham             | -22.9                  | 1.3                     | -12.7             | -36.3                    | -95.2                    | -131.5                 |
| Southwark          | -17.7                  | -18.7                   | -1.4              | -37.7                    | 0                        | -37.7                  |
| Tower Hamlets      | -18.7                  | -10.7                   | 1.4               | -28                      | -1.6                     | -29.7                  |

Source: GLA

# Appendix L. Demand Analysis at PMA Level

## L.1. Introduction

This section presents an analysis of the market demand for each floorspace type at the Property Market Area level. The analysis draws upon a range of indicators to derive a summary score of the future demand for each floorspace type including:

- The growth in jobs/dwellings related to the particular floorspace type;
- Rents and the absolute amount of floorspace;
- The differential between industrial and other more valuable development types (such as residential);
- Other indicators related to quality of life including deprivation, crime and access to open space

## L.2. Results

The following tables present the summary of the demand analysis at the PMA level. The results are summarised at the end of Chapter 5 and have informed the scenario development process in Chapter 8.

Table 104. Demand for Residential Units by PMA

| Property Market Area             | Population                 |            | Population density 2011 (people per ha) | Dwellings                  |            | House prices      |  |                                | IMD - Rank of average rank (within London) |      |                | Living standards     |                                  | Summary of Relative Residential Demand |
|----------------------------------|----------------------------|------------|---|----------------------------|------------|-------------------|--|--------------------------------|--|------|----------------|----------------------|----------------------------------|--|
|                                  | Total Increase 2001 - 2011 | % Increase |   | Total Increase 2001 - 2011 | % Increase | Median(£)-2013(p) | % Change in house price 1995 - 2013 (Median) | Sales per 1,000 dwellings 2013 | 2007                                       | 2010 | Change in rank | Crime rate - 2012/13 | % area that is open space - 2012 |  |
| Canada Water & Rotherhithe       | 3,078                      | 13%        | 7,994                                   | 1,152                      | 10%        | 363,625           | 272%   | 54                             | 283  | 332  | 49             | 82.0                 | 38%                              | High                                   |
| Rest of Southwark                | 27,255                     | 12%        | 9,890                                   | 8,474                      | 8%         | 361,655           | 350%   | 28                             | 177  | 213  | 36             | 112.5                | 21%                              | High                                   |
| Deptford New Cross               | 2,009                      | 7%         | 8,989                                   | 798                        | 6%         | 226,250           | 275%   | 24                             | 97   | 112  | 16             | 96.9                 | 20%                              | Medium                                 |
| Lewisham & Catford               | 7,027                      | 18%        | 8,523                                   | 2,083                      | 12%        | 265,583           | 297%   | 35                             | 201  | 198  | - 3            | 114.5                | 21%                              | Medium                                 |
| Rest of Lewisham                 | 12,099                     | 7%         | 7,506                                   | 4,075                      | 5%         | 270,933           | 287%   | 32                             | 229  | 212  | - 17           | 78.4                 | 23%                              | Medium                                 |
| Greenwich Peninsula and Charlton | 5,336                      | 23%        | 4,375                                   | 1,823                      | 18%        | 376,750           | 399%   | 35                             | 183  | 227  | 44             | 103.3                | 33%                              | High                                   |
| Woolwich                         | 12,640                     | 30%        | 7,305                                   | 4,079                      | 23%        | 220,000           | 235%   | 21                             | 52   | 49   | - 4            | 88.1                 | 36%                              | Medium                                 |
| Thamesmead                       | 12,370                     | 31%        | 5,270                                   | 2,851                      | 18%        | 183,333           | 209%   | 17                             | 158  | 160  | 2              | 73.0                 | 49%                              | Low                                    |
| Rest of Greenwich                | 6,911                      | 6%         | 4,497                                   | 1,455                      | 3%         | 279,472           | 250%   | 35                             | 249  | 274  | 25             | 70.4                 | 38%                              | Medium                                 |
| Erith and Belvedere              | 4,883                      | 11%        | 3,117                                   | 1,254                      | 7%         | 176,869           | 193%   | 26                             | 321  | 305  | - 16           | 65.6                 | 49%                              | Low                                    |
| Rest of Bexley                   | 8,064                      | 5%         | 3,752                                   | 1,510                      | 2%         | 233,411           | 220%   | 33                             | 505  | 495  | - 10           | 49.0                 | 36%                              | Medium                                 |
| Isle of Dogs                     | 16,795                     | 65%        | 7,735                                   | 8,998                      | 73%        | 366,000           | 389%   | 44                             | 285  | 326  | 41             | 74.3                 | 39%                              | High                                   |
| Rest of Tower Hamlets            | 23,881                     | 17%        | 14,070                                  | 9,309                      | 16%        | 342,291           | 325%   | 30                             | 58   | 87   | 29             | 118.1                | 22%                              | High                                   |
| Lower Lea Valley                 | 18,748                     | 32%        | 7,037                                   | 5,710                      | 23%        | 261,178           | 282%   | 35                             | 17   | 26   | 9              | 129.0                | 17%                              | Medium                                 |
| Royal Docks                      | 11,577                     | 27%        | 3,682                                   | 3,314                      | 18%        | 229,125           | 271%   | 30                             | 65   | 57   | - 8            | 95.6                 | 39%                              | Medium                                 |
| Rest of Newham                   | 37,879                     | 21%        | 13,106                                  | 4,787                      | 7%         | 225,518           | 291%   | 17                             | 67   | 60   | - 6            | 83.4                 | 20%                              | Medium                                 |
| Barking                          | 5,438                      | 27%        | 10,516                                  | 1,365                      | 17%        | 160,250           | 180%   | 13                             | 96   | 111  | 15             | 134.6                | 20%                              | Low                                    |
| Barking Riverside                | 5,929                      | 12%        | 3,394                                   | 1,000                      | 5%         | 180,775           | 226%   | 22                             | 129  | 119  | - 10           | 87.1                 | 35%                              | Low                                    |
| Rest of B&D                      | 9,144                      | 10%        | 5,487                                   | 1,398                      | 4%         | 194,025           | 225%   | 22                             | 189  | 169  | - 20           | 77.1                 | 36%                              | Low                                    |
| London Riverside                 | 1,276                      | 5%         | 1,098                                   | 119                        | 1%         | 197,500           | 217%   | 25                             | 402  | 396  | - 7            | 74.7                 | 69%                              | Low                                    |
| Rest of Havering                 | 11,106                     | 6%         | 2,326                                   | 4,508                      | 5%         | 246,250           | 228%   | 32                             | 474  | 461  | - 13           | 66.4                 | 56%                              | Medium                                 |

Table 105. Demand for Office Floorspace by PMA

| Property Market Area             | Employment Growth |             |                 |      | Floorspace and rents   |                            | 2003 - 2012 Sector Growth (CAGR) |                    |          |                              |                     |                       | Summary of Relative Office Demand |
|----------------------------------|-------------------|-------------|-----------------|------|------------------------|----------------------------|----------------------------------|--------------------|----------|------------------------------|---------------------|-----------------------|-----------------------------------|
|                                  | Office 2003       | Office 2012 | Absolute growth | CAGR | Office Floorspace 2008 | Office rents per sq.m 2008 | Media and Publishing             | Financial Services | Property | High Value Business Services | Research and Skills | Public Administration |                                   |
| Canada Water & Rotherhithe       | 1,041             | 2,927       | 1,886           | 12%  | 10                     | 114                        | 16%                              | 8%                 | 1%       | 13%                          | 32%                 | -100%                 | Medium                            |
| Rest of Southwark                | 49,519            | 78,781      | 29,262          | 5%   | 1200                   | 111                        | -1%                              | -2%                | 9%       | 12%                          | 3%                  | 2%                    | High                              |
| Deptford New Cross               | 1,892             | 926         | - 966           | -8%  | 25                     | 91                         | 6%                               | -4%                | 3%       | -2%                          | 10%                 | -28%                  | Medium                            |
| Lewisham & Catford               | 5,654             | 4,422       | - 1,232         | -3%  | 69                     | 75                         | 3%                               | -15%               | 14%      | 2%                           | 25%                 | 0%                    | Medium                            |
| Rest of Lewisham                 | 5,301             | 5,770       | 469             | 1%   | 62                     | 74                         | 8%                               | -2%                | 3%       | 4%                           | 7%                  | -1%                   | Low                               |
| Greenwich Peninsula and Charlton | 1,174             | 1,342       | 168             | 1%   | 19                     | 58                         | 11%                              | -3%                | -7%      | 11%                          | 3%                  | 9%                    | Low                               |
| Woolwich                         | 4,985             | 3,338       | - 1,647         | -4%  | 92                     | 69                         | -10%                             | 0%                 | -2%      | 2%                           | -13%                | -4%                   | Low                               |
| Thamesmead                       | 708               | 1,434       | 726             | 8%   | 10                     | 65                         | 7%                               | 1%                 | 3%       | 8%                           | -26%                | -1%                   | Low                               |
| Rest of Greenwich                | 4,095             | 5,094       | 999             | 2%   | 52                     | 88                         | 3%                               | -1%                | -1%      | 5%                           | 2%                  | -1%                   | Low                               |
| Erith and Belvedere              | 1,549             | 1,340       | - 209           | -2%  | 14                     | 86                         | 1%                               | -8%                | -4%      | 0%                           | -12%                | -6%                   | Low                               |
| Rest of Bexley                   | 10,387            | 9,348       | - 1,039         | -1%  | 138                    | 86                         | 2%                               | -14%               | 9%       | 3%                           | 4%                  | 5%                    | Low                               |
| Isle of Dogs                     | 41,745            | 92,816      | 51,071          | 9%   | 1596                   | 201                        | -2%                              | 10%                | 13%      | 15%                          | 24%                 | 4%                    | High                              |
| Rest of Tower Hamlets            | 31,986            | 37,815      | 5,829           | 2%   | 709                    | 126                        | -5%                              | -1%                | 6%       | 11%                          | 5%                  | 0%                    | Medium                            |
| Lower Lea Valley                 | 7,881             | 7,660       | - 221           | 0%   | 151                    | 110                        | 2%                               | -5%                | 8%       | 13%                          | -2%                 | -2%                   | Low                               |
| Royal Docks                      | 1,062             | 3,318       | 2,256           | 13%  | 16                     | 131                        | -3%                              | 5%                 | 7%       | 12%                          | 12%                 | 20%                   | Medium                            |
| Rest of Newham                   | 6,408             | 5,361       | - 1,047         | -2%  | 83                     | 76                         | -2%                              | -11%               | 8%       | 2%                           | 2%                  | -1%                   | Low                               |
| Barking                          | 2,792             | 2,655       | - 137           | -1%  | 66                     | 87                         | -15%                             | -7%                | 12%      | 9%                           | 18%                 | -1%                   | Low                               |
| Barking Riverside                | 1,327             | 1,173       | - 154           | -1%  | 8                      | 81                         | 5%                               | 9%                 | 5%       | -6%                          | 10%                 | 11%                   | Low                               |
| Rest of B&D                      | 2,228             | 2,467       | 239             | 1%   | 28                     | 85                         | -11%                             | -10%               | 3%       | 5%                           | -20%                | 8%                    | Low                               |
| London Riverside                 | 468               | 651         | 183             | 4%   | 7                      | 65                         | -2%                              | 0%                 | 4%       | 3%                           | -24%                | -5%                   | Low                               |
| Rest of Havering                 | 13,934            | 10,485      | - 3,449         | -3%  | 160                    | 104                        | 3%                               | -8%                | 8%       | -3%                          | -5%                 | 4%                    | Low                               |

**Table 106. Demand for Retail and Leisure by PMA**

| Property Market Area             | Retail employment growth |      | Leisure employment growth |      | Floorspace and rents   |                            | Share of total employment   | Employment growth           | Summary of Retail & Leisure Demand |
|----------------------------------|--------------------------|------|---------------------------|------|------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------------|
|                                  | Absolute growth          | CAGR | Absolute growth           | CAGR | Retail Floorspace 2008 | Retail rents per sq.m 2008 | Consumers Spending their £s | Consumers Spending their £s |                                    |
| Canada Water & Rotherhithe       | -162                     | -2%  | -14                       | 0%   | 40                     | 127                        | 24%                         | -1%                         | High                               |
| Rest of Southwark                | 1820                     | 3%   | 2351                      | 4%   | 391                    | 109                        | 15%                         | 4%                          | High                               |
| Deptford New Cross               | 124                      | 2%   | 13                        | 1%   | 52                     | 108                        | 18%                         | -1%                         | Medium                             |
| Lewisham & Catford               | -105                     | 0%   | -7                        | 0%   | 184                    | 107                        | 19%                         | -3%                         | Medium                             |
| Rest of Lewisham                 | -35                      | 0%   | -51                       | 0%   | 181                    | 99                         | 21%                         | -1%                         | Medium                             |
| Greenwich Peninsula and Charlton | -327                     | -2%  | 714                       | 10%  | 108                    | 100                        | 35%                         | 1%                          | High                               |
| Woolwich                         | -161                     | -1%  | -41                       | -1%  | 107                    | 72                         | 14%                         | -2%                         | Low                                |
| Thamesmead                       | 524                      | 7%   | 154                       | 6%   | 49                     | 93                         | 21%                         | 1%                          | Low                                |
| Rest of Greenwich                | -241                     | -1%  | 768                       | 4%   | 136                    | 101                        | 28%                         | -1%                         | Medium                             |
| Erith and Belvedere              | -145                     | -1%  | -77                       | -3%  | 51                     | 101                        | 17%                         | 0%                          | Medium                             |
| Rest of Bexley                   | -74                      | 0%   | -54                       | 0%   | 295                    | 102                        | 23%                         | -1%                         | Medium                             |
| Isle of Dogs                     | 846                      | 5%   | 1547                      | 7%   | 80                     | 275                        | 6%                          | 7%                          | High                               |
| Rest of Tower Hamlets            | 1606                     | 5%   | 2643                      | 7%   | 320                    | 111                        | 16%                         | 4%                          | High                               |
| Lower Lea Valley                 | 4631                     | 10%  | 1592                      | 12%  | 126                    | 98                         | 28%                         | 9%                          | High                               |
| Royal Docks                      | 1379                     | 6%   | 581                       | 8%   | 125                    | 108                        | 24%                         | 6%                          | Medium                             |
| Rest of Newham                   | 603                      | 2%   | 773                       | 5%   | 260                    | 92                         | 25%                         | 2%                          | Low                                |
| Barking                          | -474                     | -3%  | -175                      | -4%  | 86                     | 106                        | 29%                         | 2%                          | Medium                             |
| Barking Riverside                | -177                     | -1%  | -113                      | -3%  | 53                     | 101                        | 14%                         | -2%                         | Low                                |
| Rest of B&D                      | -95                      | -1%  | -297                      | -4%  | 85                     | 96                         | 20%                         | -1%                         | Low                                |
| London Riverside                 | 58                       | 1%   | 93                        | 4%   | 28                     | 86                         | 19%                         | 2%                          | Low                                |
| Rest of Havering                 | -1622                    | -2%  | -486                      | -1%  | 459                    | 91                         | 25%                         | -1%                         | Low                                |



Table 107. Demand for Industrial by PMA

| Property Market Area             | Employment growth |               | Floorspace and rents       |                                |                               | Difference between warehouse and resi price per sq.m |              | 2013 Sector Share         |              |                           |                      | Growth 2003 - 2012 (CAGR) |              |                           |                      | Summary of Industrial Demand |
|----------------------------------|-------------------|---------------|----------------------------|--------------------------------|-------------------------------|--|--------------|---------------------------|--------------|---------------------------|----------------------|---------------------------|--------------|---------------------------|----------------------|------------------------------|
|                                  | Absolute growth   | Annual Growth | Industrial Floorspace 2008 | Industrial floorspace per sq.m | Warehouse rents per sq.m 2008 | Absolute difference                                  | % Difference | Manufacturing and Primary | Distribution | Support Business Services | City Building Blocks | Manufacturing and Primary | Distribution | Support Business Services | City Building Blocks |                              |
| Canada Water & Rotherhithe       | - 1,085           | -10%          | 20                         | 58.9                           | 64                            | 4,360  | 273%         | 0%                        | 5%           | 27%                       | 2%                   | -29%                      | 6%           | 13%                       | -1%                  | Low                          |
| Rest of Southwark                | - 10,925          | -5%           | 555                        | 209.4                          | 59                            | 5,071  | 346%         | 1%                        | 3%           | 14%                       | 8%                   | -10%                      | -1%          | 4%                        | -2%                  | Low                          |
| Deptford New Cross               | - 763             | -3%           | 167                        | 465.1                          | 52                            | 3,501  | 272%         | 6%                        | 5%           | 15%                       | 20%                  | -9%                       | -1%          | -7%                       | 6%                   | Low                          |
| Lewisham & Catford               | - 377             | -2%           | 23                         | 42.2                           | 52                            | 2,809  | 218%         | 1%                        | 1%           | 21%                       | 7%                   | -14%                      | -9%          | 7%                        | 3%                   | Low                          |
| Rest of Lewisham                 | - 3,559           | -6%           | 81                         | 30.8                           | 62                            | 3,165  | 203%         | 2%                        | 3%           | 8%                        | 9%                   | -4%                       | -1%          | -8%                       | -2%                  | Low                          |
| Greenwich Peninsula and Charlton | - 199             | -1%           | 174                        | 267.0                          | 50                            | 3,236  | 259%         | 4%                        | 6%           | 13%                       | 15%                  | -10%                      | -5%          | 0%                        | 6%                   | Medium                       |
| Woolwich                         | 635               | 2%            | 227                        | 301.9                          | 61                            | 2,139  | 141%         | 5%                        | 11%          | 10%                       | 9%                   | -4%                       | 13%          | 4%                        | 2%                   | Medium                       |
| Thamesmead                       | - 303             | -2%           | 63                         | 64.2                           | 54                            | 1,690  | 125%         | 5%                        | 4%           | 9%                        | 12%                  | -8%                       | 9%           | 1%                        | 2%                   | High                         |
| Rest of Greenwich                | 626               | 2%            | 52                         | 19.6                           | 65                            | 3,274  | 203%         | 1%                        | 2%           | 7%                        | 9%                   | -5%                       | -2%          | 3%                        | 5%                   | Medium                       |
| Erith and Belvedere              | 1,660             | 3%            | 377                        | 249.3                          | 52                            | 1,179  | 91%          | 12%                       | 19%          | 13%                       | 16%                  | -5%                       | 10%          | 12%                       | 5%                   | High                         |
| Rest of Bexley                   | - 2,615           | -2%           | 285                        | 58.0                           | 55                            | 1,704  | 123%         | 6%                        | 5%           | 12%                       | 11%                  | -4%                       | 0%           | 0%                        | 1%                   | Medium                       |
| Isle of Dogs                     | - 10,323          | -11%          | 46                         | 84.8                           | 68                            | 5,249  | 309%         | 0%                        | 1%           | 16%                       | 3%                   | -20%                      | 0%           | 15%                       | -6%                  | Low                          |
| Rest of Tower Hamlets            | - 6,390           | -6%           | 284                        | 237.0                          | 60                            | 5,237  | 348%         | 1%                        | 4%           | 7%                        | 5%                   | -6%                       | -2%          | -3%                       | -4%                  | Low                          |
| Lower Lea Valley                 | 622               | 1%            | 389                        | 356.4                          | 48                            | 3,079  | 257%         | 5%                        | 5%           | 15%                       | 16%                  | -7%                       | -5%          | 4%                        | 7%                   | Medium                       |
| Royal Docks                      | 1,180             | 2%            | 406                        | 272.0                          | 60                            | 2,345  | 157%         | 7%                        | 7%           | 16%                       | 12%                  | -3%                       | -1%          | 9%                        | 6%                   | Medium                       |
| Rest of Newham                   | - 3,025           | -7%           | 10                         | 5.9                            | 48                            | 2,537  | 210%         | 2%                        | 2%           | 9%                        | 4%                   | -7%                       | 1%           | 2%                        | -10%                 | Medium                       |
| Barking                          | 548               | 4%            | 58                         | 240.4                          | 44                            | 1,713  | 156%         | 1%                        | 5%           | 17%                       | 11%                  | -11%                      | 5%           | 2%                        | 4%                   | Medium                       |
| Barking Riverside                | - 682             | -1%           | 521                        | 319.6                          | 51                            | 1,475  | 116%         | 26%                       | 20%          | 10%                       | 13%                  | -3%                       | 0%           | 1%                        | 3%                   | High                         |
| Rest of B&D                      | - 597             | -1%           | 101                        | 53.0                           | 48                            | 1,502  | 125%         | 8%                        | 7%           | 10%                       | 9%                   | -3%                       | -2%          | 1%                        | 3%                   | High                         |
| London Riverside                 | - 21              | 0%            | 253                        | 106.5                          | 46                            | 1,418  | 123%         | 11%                       | 10%          | 11%                       | 22%                  | 1%                        | -4%          | 13%                       | 0%                   | High                         |
| Rest of Havering                 | - 2,183           | -1%           | 188                        | 20.7                           | 53                            | 1,842  | 139%         | 4%                        | 5%           | 11%                       | 12%                  | -4%                       | -1%          | -2%                       | 1%                   | High                         |

# Appendix M. Development Capacity Maps

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