

North London

Sub-regional Transport Plan

2016 update

Enter >



Introduction

Sub-regional Transport Plans (SRTP) for North London

The sub-regional process is an ongoing programme, enabling TfL to work closely with boroughs to address strategic issues, progress medium-longer term priorities and also respond to changing circumstances.

When the North Sub-Regional Transport Plan was first developed in 2010 it helped to translate the Mayor’s Transport Strategy (MTS) goals, challenges and outcomes at a sub-regional level.

It was agreed with boroughs that while all MTS challenges must be considered across London, and addressed locally through Local Implementation Plans (LIPs), there were some which would benefit from having a concerted effort at a sub-regional level.

Consequently, the challenges of improving air quality, reducing CO₂ emissions and achieving the targets for – and desired results from – an increase in the mode share of cycling and walking were all identified as challenges for all sub-regions. In addition, five other challenges were identified and agreed specifically for the north sub-region.

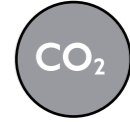
Challenges in every sub-region



Improve air quality to meet and exceed legal requirements and ensure health benefits for Londoners



Transform the role of cycling and walking in the sub-region



Meet CO2 targets

North London-specific challenges



Facilitate and respond to growth, especially in Brent Cross/Cricklewood and the Upper Lee Valley



Relieve crowding on the public transport network



Manage highway congestion and make more efficient use of the road network



Enhance connectivity and the attractiveness of orbital public transport



Improve access to key locations and jobs and services

Introduction

Sub-regional Transport Plans (SRTP) for North London

The focus of this year's plans

Since 2010, the North sub-region has seen significant change. Population growth has been faster than expected, placing greater demand on the transport network. The sub-region needs to increase its rate of housing delivery to cope with a growing population, with effective transport links critical to achieve this. The way that people travel has changed too, with growing demand for rail and cycling in particular.

As we now have a new Mayor, we will now need to prepare a new London Plan and a new Mayor's Transport Strategy, with a new set of objectives and priorities for London. To inform this process, we will need to update our understanding of the medium to longer-term challenges for London and the sub-regions.

This is the key purpose of this year's Sub-Regional Transport Plans – to provide a comprehensive update on the 'Story of Growth' for each sub-region.

This 'story' includes a comprehensive analysis of recent population and employment growth, changes in travel behaviour and areas where the transport network will have to change to cope with the challenge of future growth.

This updated Story of Growth for each sub-region has the following purpose:

- As a tool to help engage Boroughs in the preparation of the new Mayors Transport Strategy, particularly in the development of new priorities and projects;
- To help Boroughs to develop their own priorities for transport investment, including the development of their LIPS;
- To inform Borough's spatial planning activities, including updates to Local Plans;
- To assist TfL in developing priorities for business planning.

Projects and schemes

Previous updates to the Sub-Regional Transport Plan included a look forward to identify the potential projects and schemes that could be delivered to address the sub-region's transport challenges.

However, unlike previous years, we are now in a unique environment where TfL will have a new funding settlement, as well as the recent arrival of a new Mayor who will have his own priorities about how to allocate the available funding. It is therefore not appropriate to assume that all transport schemes recently considered will fit with the new Mayor's priorities. For this reason, there is no map or list of projects in this year's plans.

There has, of course, been significant engagement with Boroughs and sub-regions during the past year to identify key priorities for investment, and to inform the development of major schemes. This process will continue, particularly as part of the preparation of the new MTS, informed by the information set out in this document.

How to use this document

This document contains a series of figures and supporting text in order to convey the Story of Growth within the sub-region, which is the key focus of this year's Sub-Regional Transport Plans. The document has been designed to enable the reader to navigate between this content using the interactive buttons on each page.

Orientation within a chapter

The progress bar shows you in which chapter and on which page within a chapter you currently are

Previous, Next and Home

Click the respective button to go to either the previous or the next page, or back to 'Home'.



Home

Navigate to either chapter from the home page by clicking onto the chapter image or title.

Buttons

Click on buttons to see all graphs and maps within a page.



Contents

Story of Growth

Click on any of the six categories below to explore how the sub-region has changed, is expected to change, and the implications for how the transport network needs to adapt to reflect this.



Population >



Employment >



Mode and movement >



Network capacity and connectivity >



Liveability >



Future growth >

Population >



London's population has been increasing much faster than previously anticipated, increasing the demand for travel

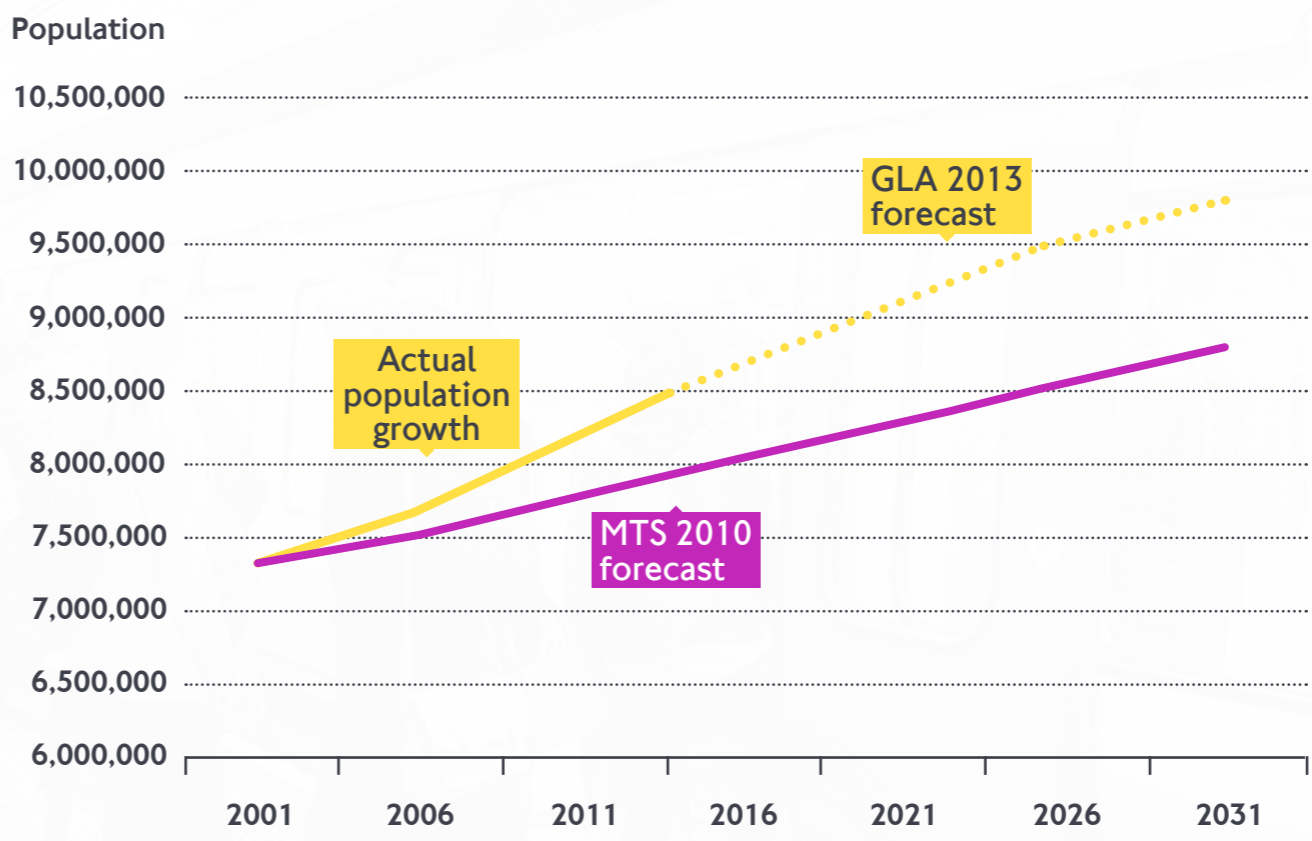
The current Mayors Transport Strategy (2010) was developed using population projections which underestimated the true level of population growth across London. The rate of population growth, and therefore the number of daily trips that are made, has been approximately twice the level which the MTS was based upon.

This much faster rate of growth means that the demand for transport is already much higher today than forecast, with crowding and congestion a serious issue across many parts of the network.

In order to maintain quality of life and support economic growth across the Capital, it will be necessary to bring forward investment in the capacity of the transport network much sooner than forecast in the MTS, to enable people to get to work, businesses to access their customers and suppliers, and residents to access local services without experiencing significant overcrowding on public transport and congestion on the city's highways.

In 2011 London had **420,000** more people than expected in earlier estimates

London population growth – forecast vs actual



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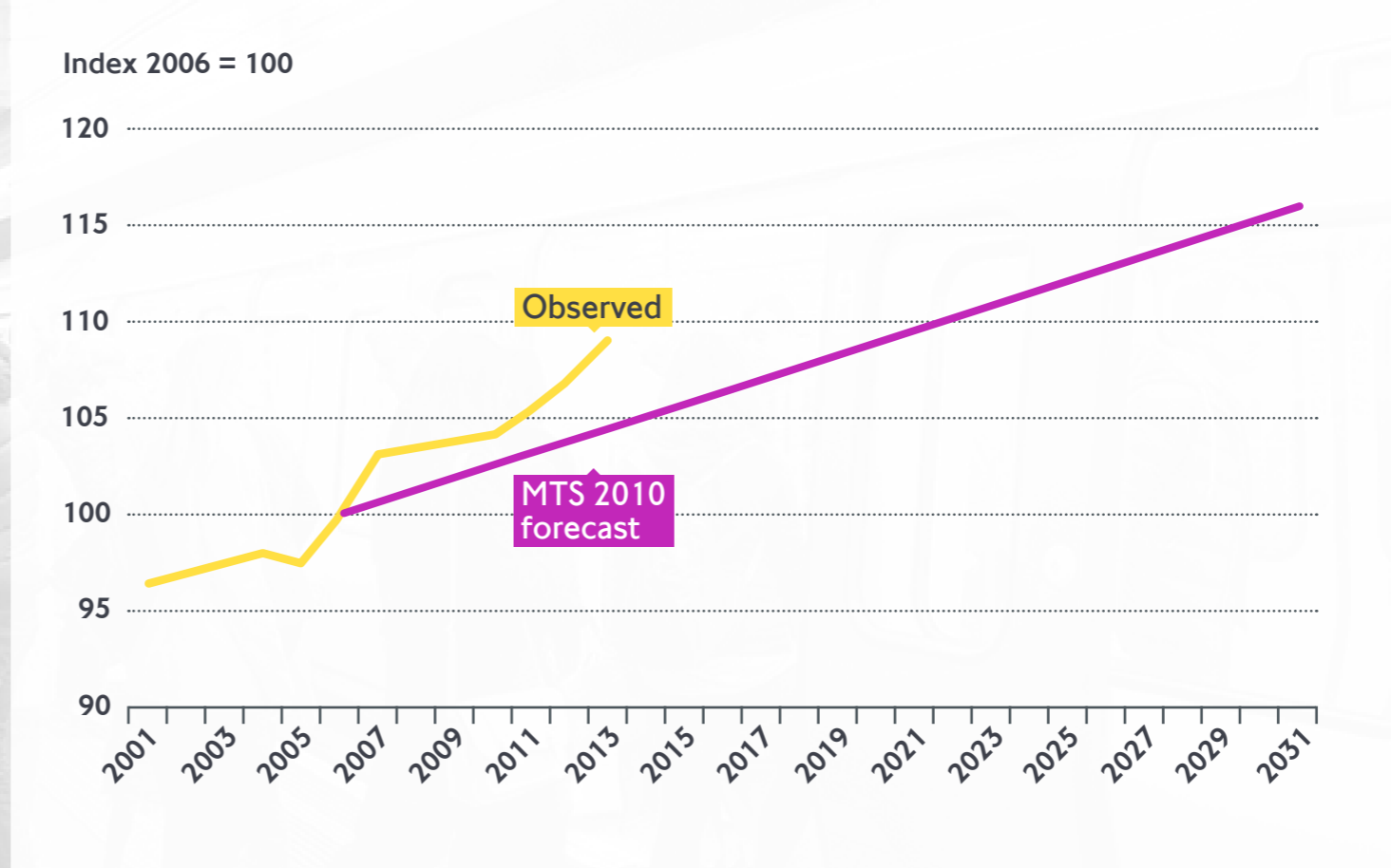
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The growth in trips made has been **twice as high** as that expected since the 2010 Mayors Transport Strategy

London trip growth – forecast vs actual



Some areas have seen very high levels of population growth, placing strain on certain parts of the network

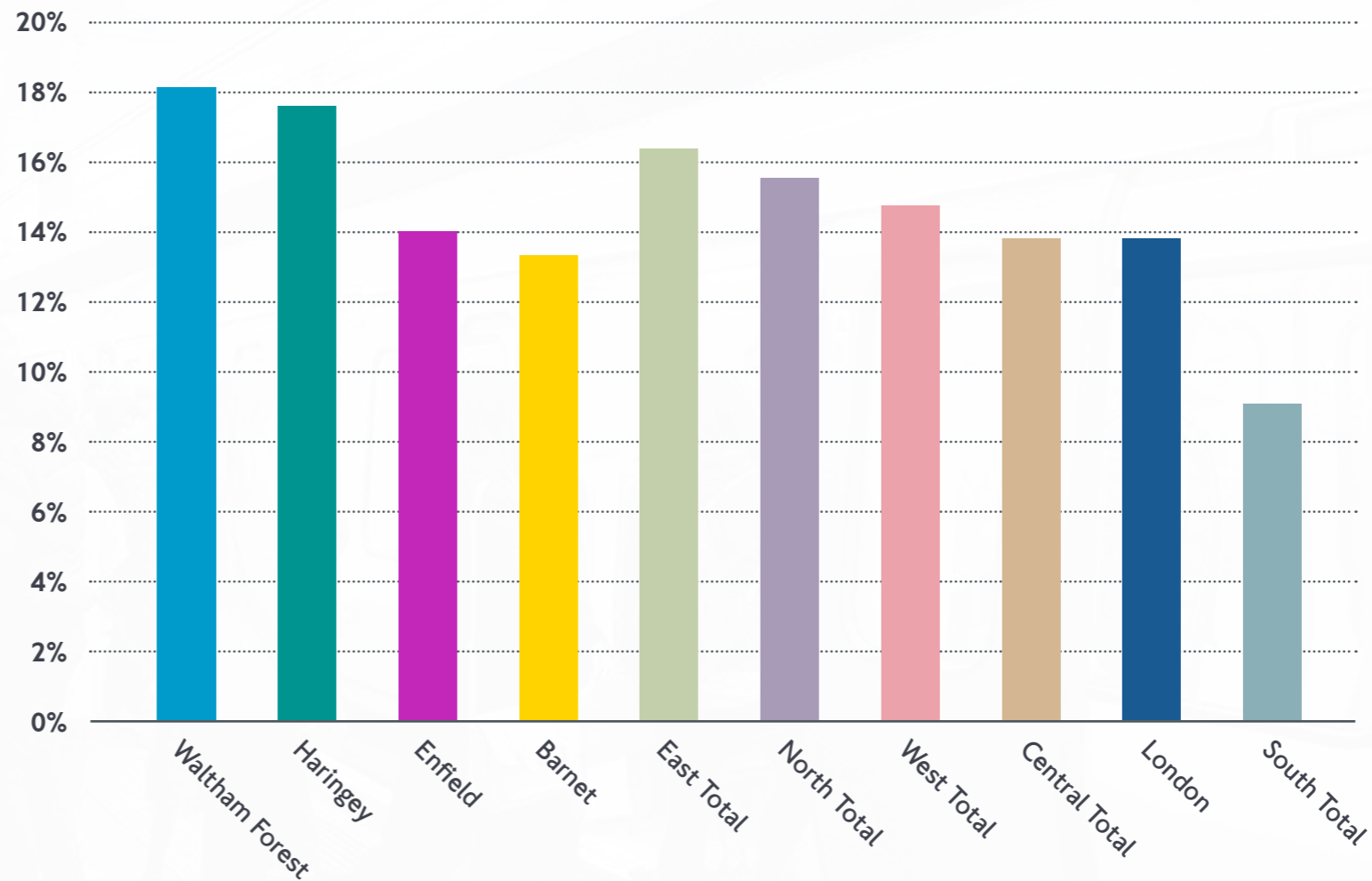
Population growth in north London has exceeded the London average, with growth in all Boroughs in excess of 13% between 2001 and 2011. The rate of growth has been faster than previously forecast, generating additional demand for transport above that expected in the Mayors Transport Strategy.

In terms of absolute growth, the southern parts of Waltham Forest, much of the Upper Lea Valley in Enfield, and western Barnet have seen large increases, driving growth in the demand for public transport in particular (as set out in the Mode and Movement section).

Growth has been higher than expected at Walthamstow, Leyton, Wood Green and in the Upper Lea Valley, but has been lower than anticipated in the western areas of Barnet, where significant development opportunities exist. This is expected to change as the pace of development in many of these key regeneration areas increases.

The sub-region's population is **9% higher** than expected in earlier estimates

Population growth 2001 – 2011



Population growth 2001 – 2011



Absolute population growth 2001 – 2011



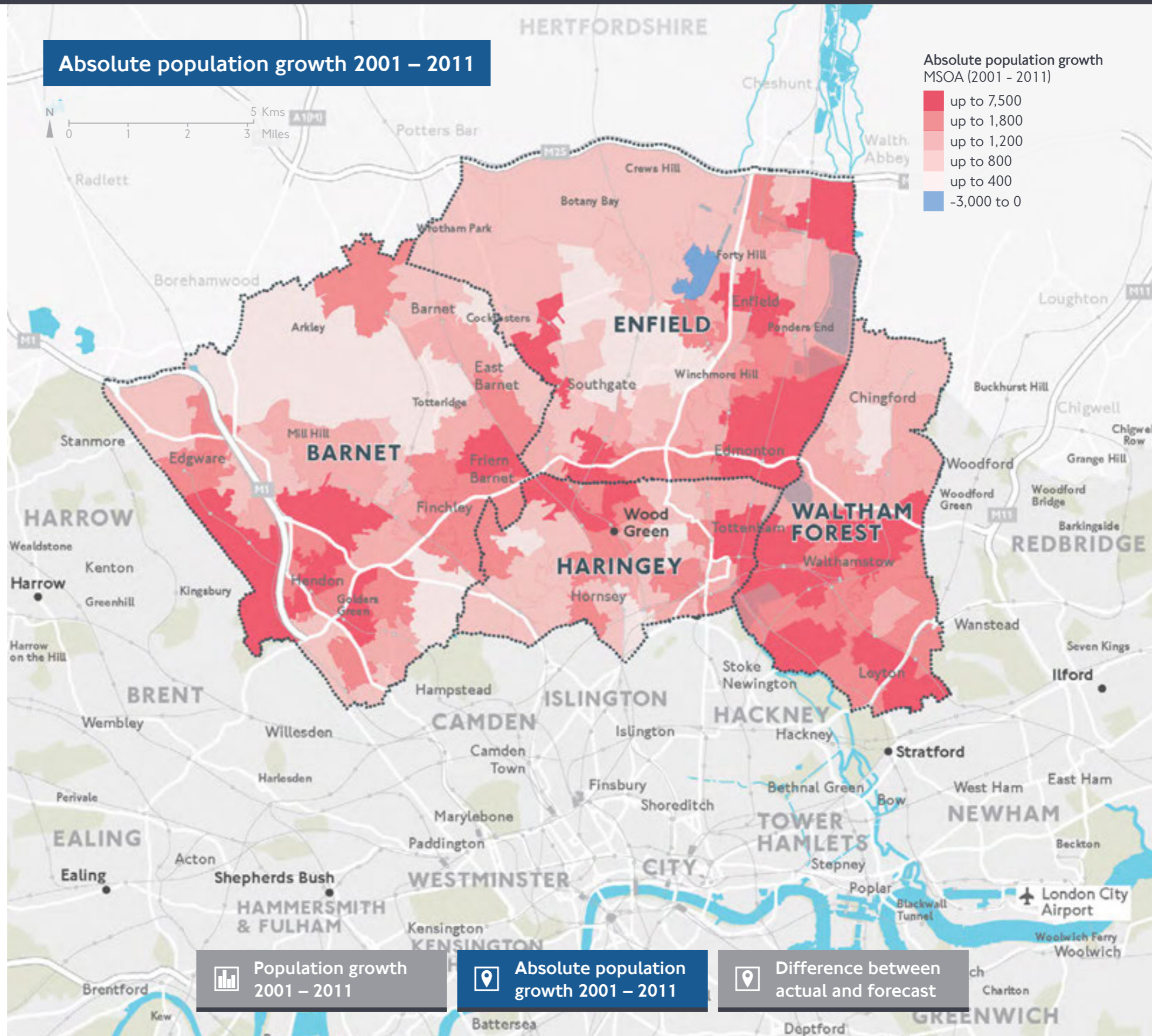
Difference between actual and forecast

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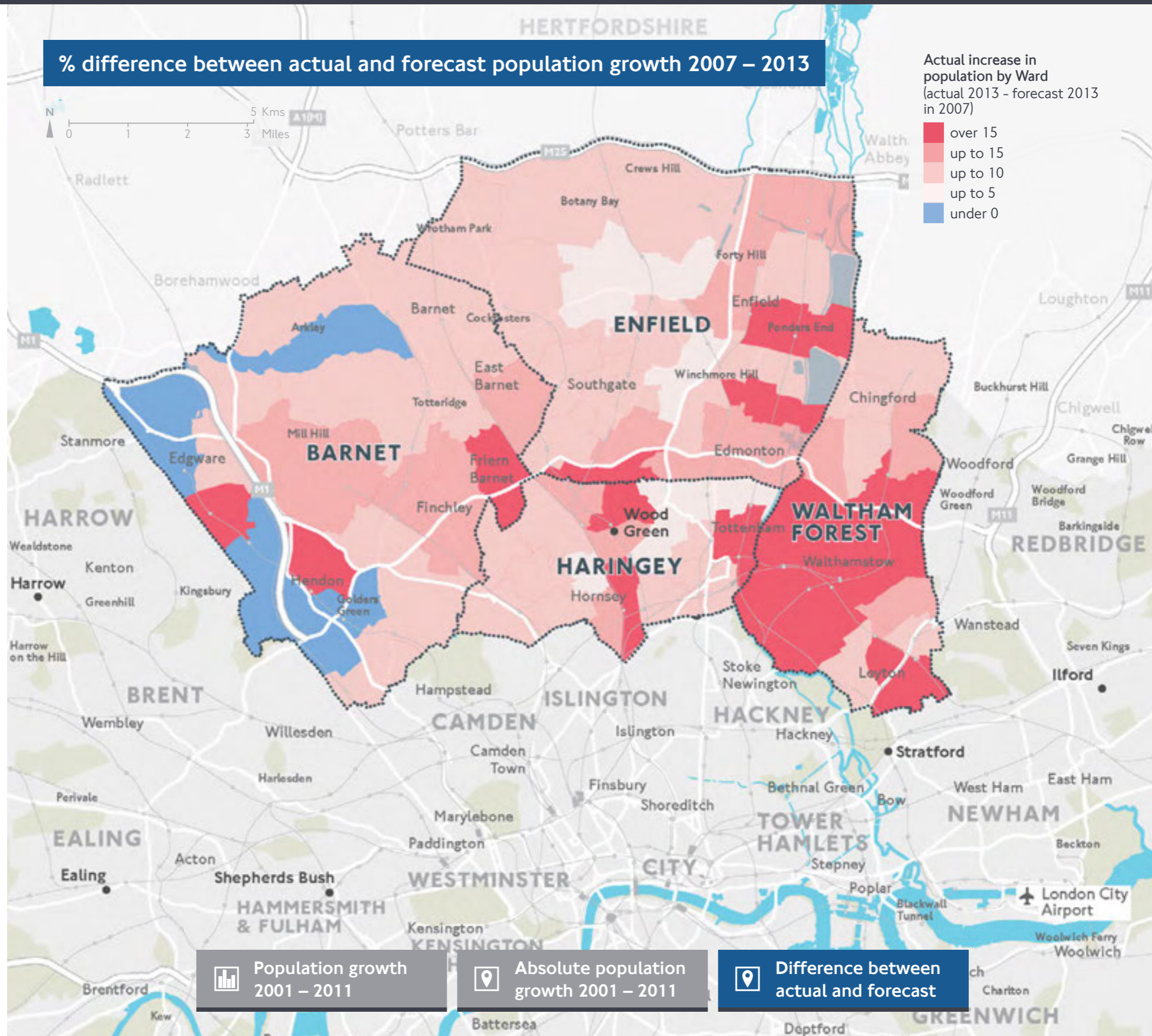


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Housing has failed to keep up with population growth, increasing household size

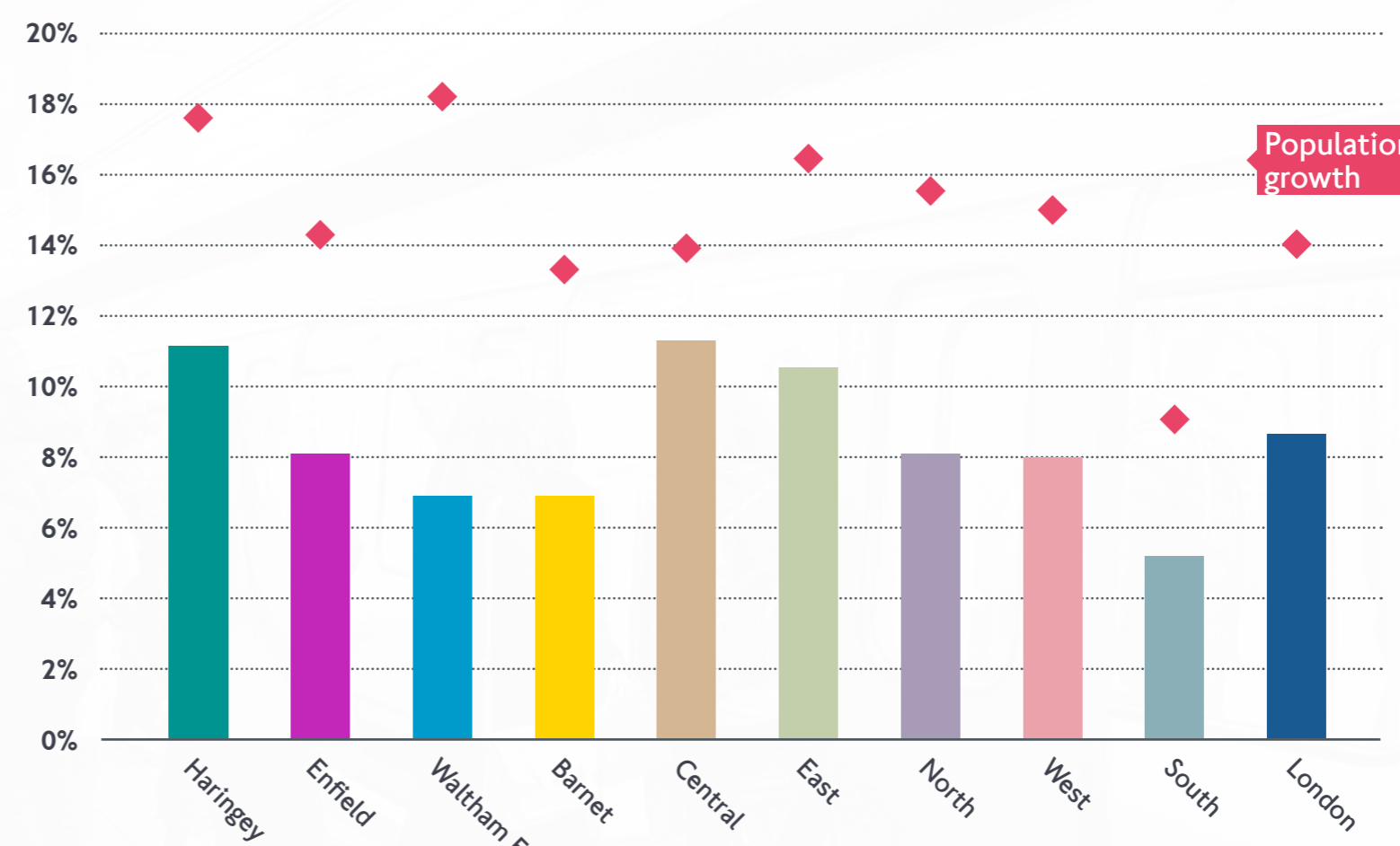
Across London, the average number of people per household started to increase after 2001 for the first time since the 1950s, which is a direct result of the supply of housing failing to keep up with the rate of population growth. Increasing the rate of housing delivery across the sub-region will be key to addressing affordability issues, reducing overcrowding and maintaining London's competitiveness. Transport connectivity and capacity is becoming increasingly important to unlocking new homes, and is something which is now a key consideration in the assessment of future transport investment decisions.

Whilst the sub-region's population has grown at 16%, the growth in the number of homes has been just half that, resulting in the second largest increase in average household size of any sub-region in London.

Haringey has delivered the highest number of new homes, with lower levels of housing delivery in Barnet and Waltham Forest. There may be opportunities for future densification across all Boroughs in the sub-region, particularly around key transport nodes (considered further in the Future Growth section).

Population growth in the sub-region has been **twice the rate of housing growth**

Change in housing stock 2001 – 2011



Change in housing stock

Change in average household size

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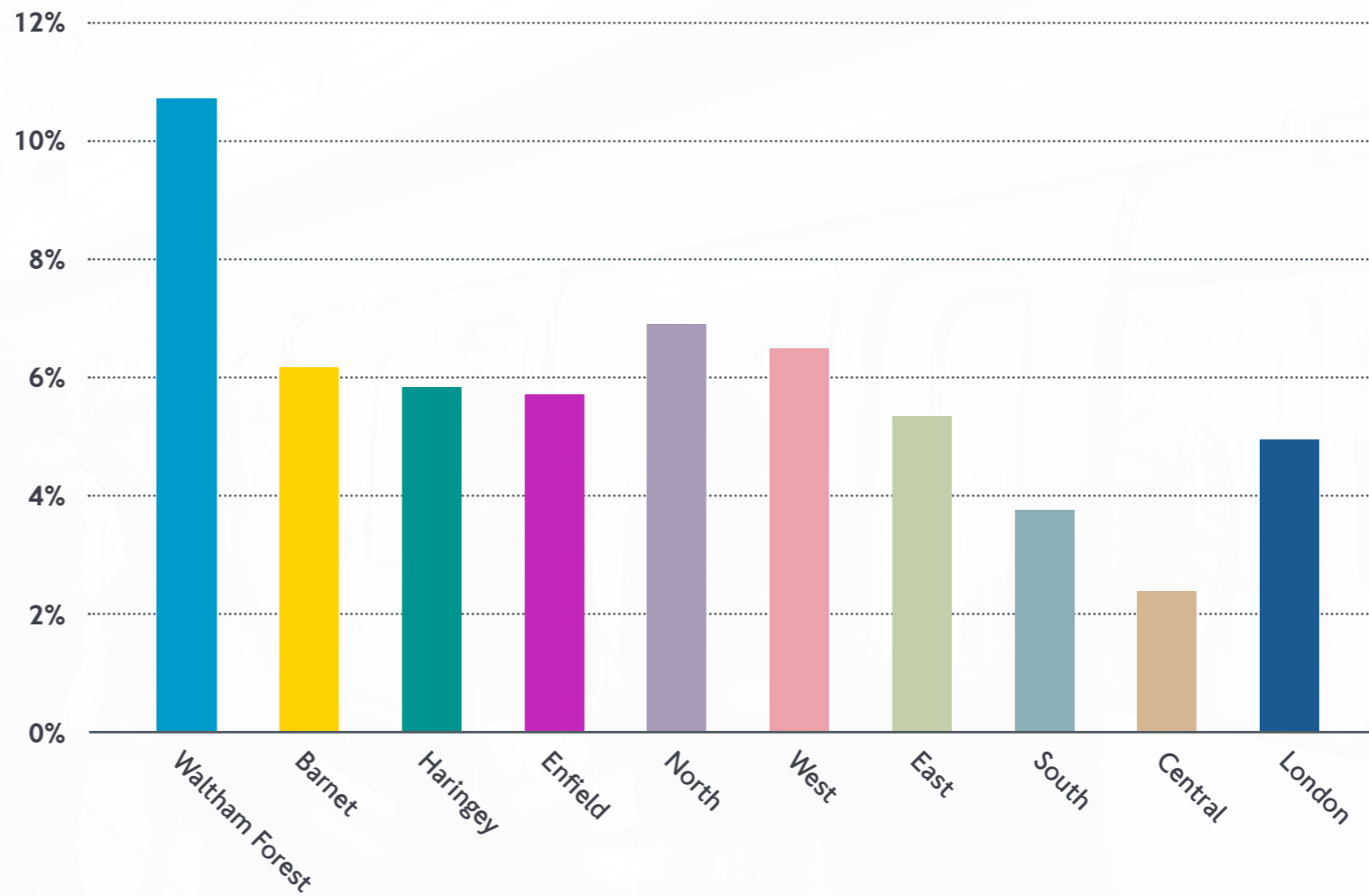
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Average household size has increased by **0.16 persons** across the sub-region

Change in average household size 2001 – 2011



Change in housing stock



Change in average household size

Most of the North's population live within areas where access to public transport could be improved

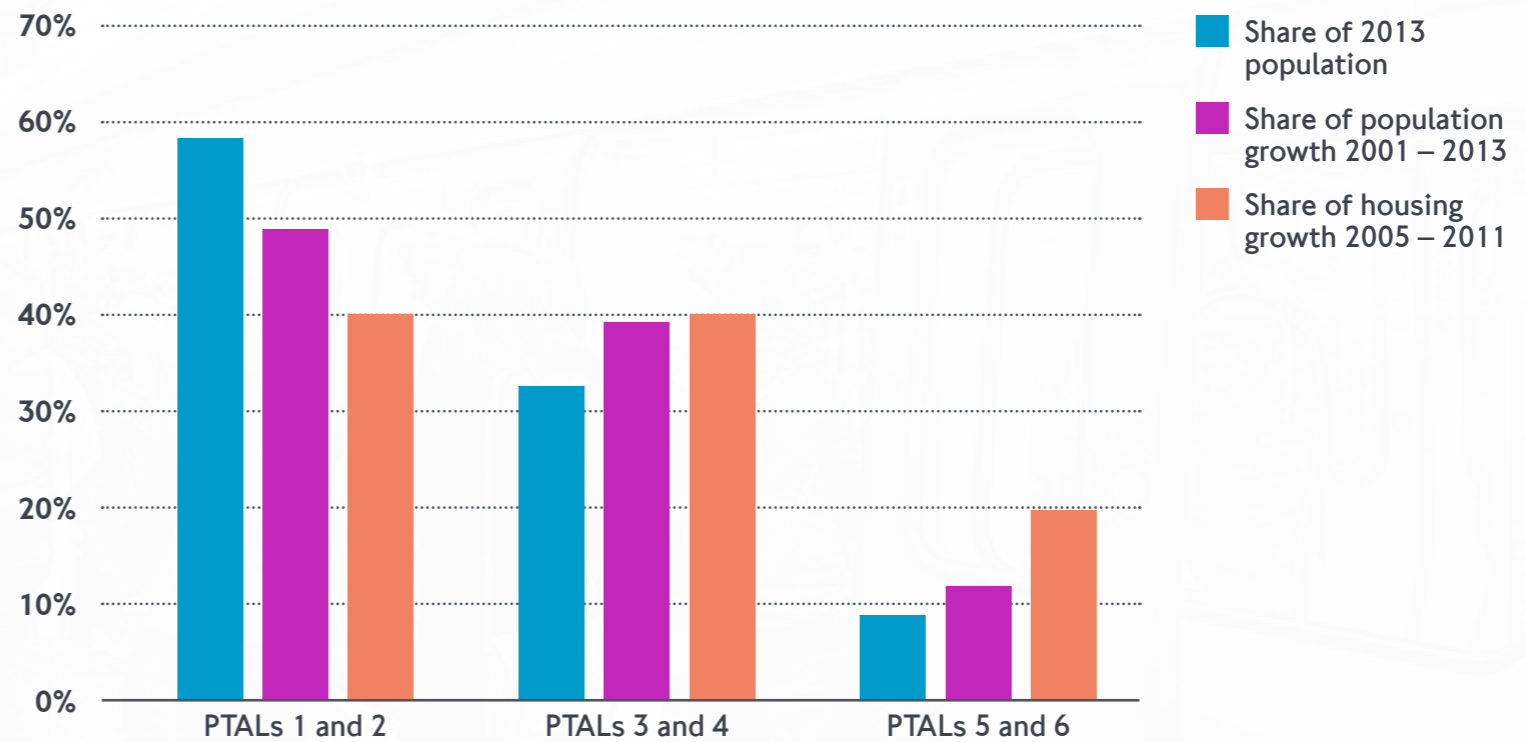
The majority of the sub-region's population live in areas where the Public Transport Accessibility Level (PTAL) is scored as 1 or 2. These are areas where connectivity by public transport is at its lowest. There is scope for the public transport network to be enhanced where it serves existing communities, to support mode shift away from the private car and support the movement of greater numbers of people, particularly as the population of the sub-region continues to grow.

Housing delivery in the sub-region has been slightly more focused on more accessible locations by public transport, although just 20% of all new development has come forward in the most accessible places. As the rate of housing delivery has been slower than the rate of population growth, it has not been possible to contain population growth solely within new development, so it has instead occurred across all parts of the sub-region, with the majority of growth occurring in PTALs 1 and 2.

By expanding the rate of housing delivery in more accessible public transport nodes, it will be easier to shape more sustainable travel behaviour, reduce highway congestion and support London's future economic growth.

58% of the sub-region's population live in PTALs 1 and 2

Share of population and growth by Public Transport Accessibility Level

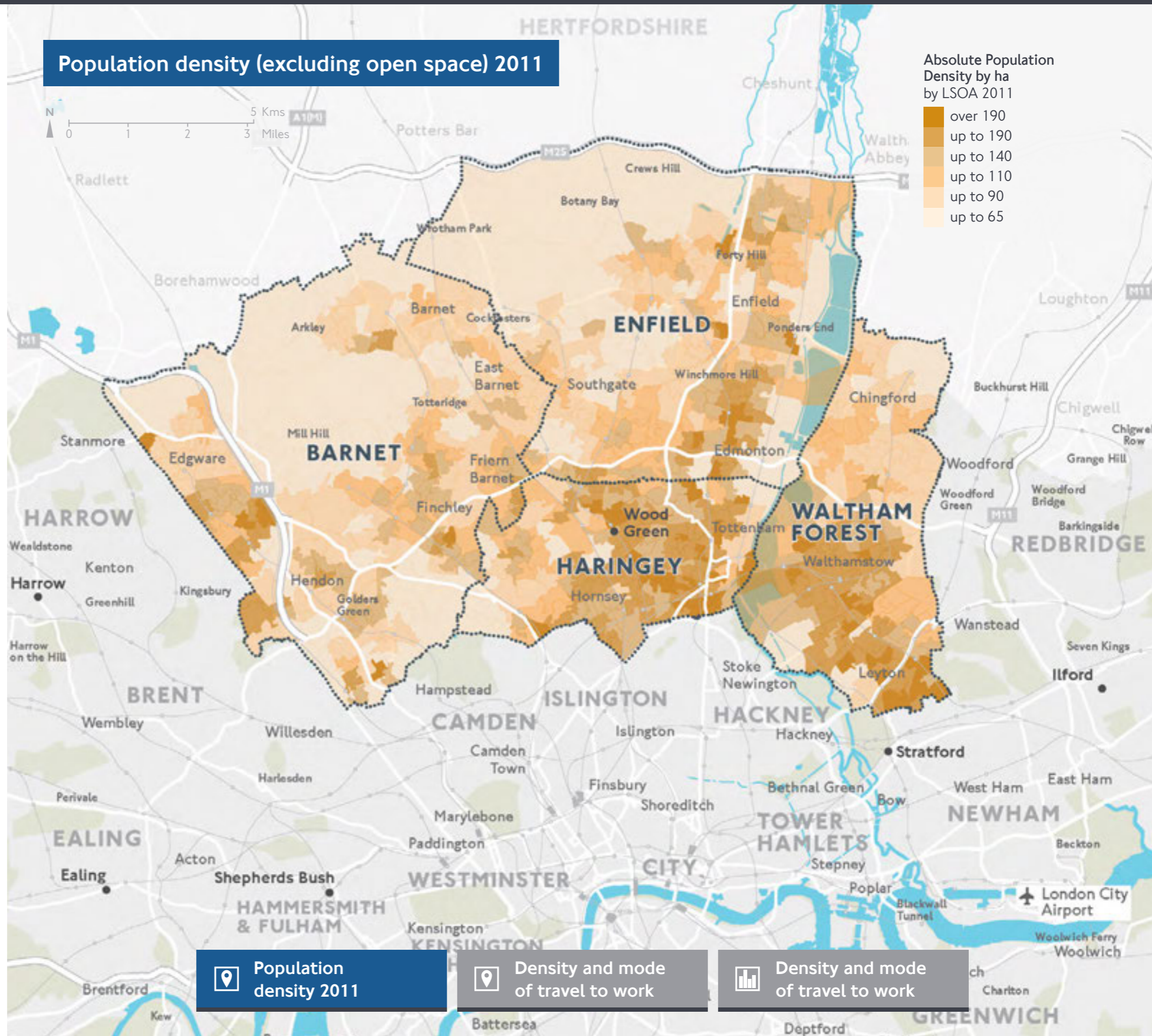


Increasing population density has driven higher levels of public transport use, with potential for further growth

Population density across the sub-region varies significantly from Haringey and southern Waltham Forest, which are more densely populated, to outer Barnet and Enfield, which contains large areas of lower density semi detached housing. There are also pockets of high population density around the Upper Lea Valley and on the Northern line corridor to Edgware.

Across London, there is a positive relationship between the density of development and propensity to travel by public transport, as denser areas typically have access to more extensive public transport access, and the costs of highway congestion are generally higher. As the population of the sub-region continues to densify, it will be necessary to further improve the public transport network to support growth and encourage continued mode shift away from private vehicles to reduce congestion.

There are some areas in the Upper Lea Valley and in western Barnet where the population density would be high enough to support a higher proportion of trips by public transport or active modes but private vehicles still form a high proportion of mode share. There is scope to improve the connectivity of the network in these locations to support the shift onto other modes.

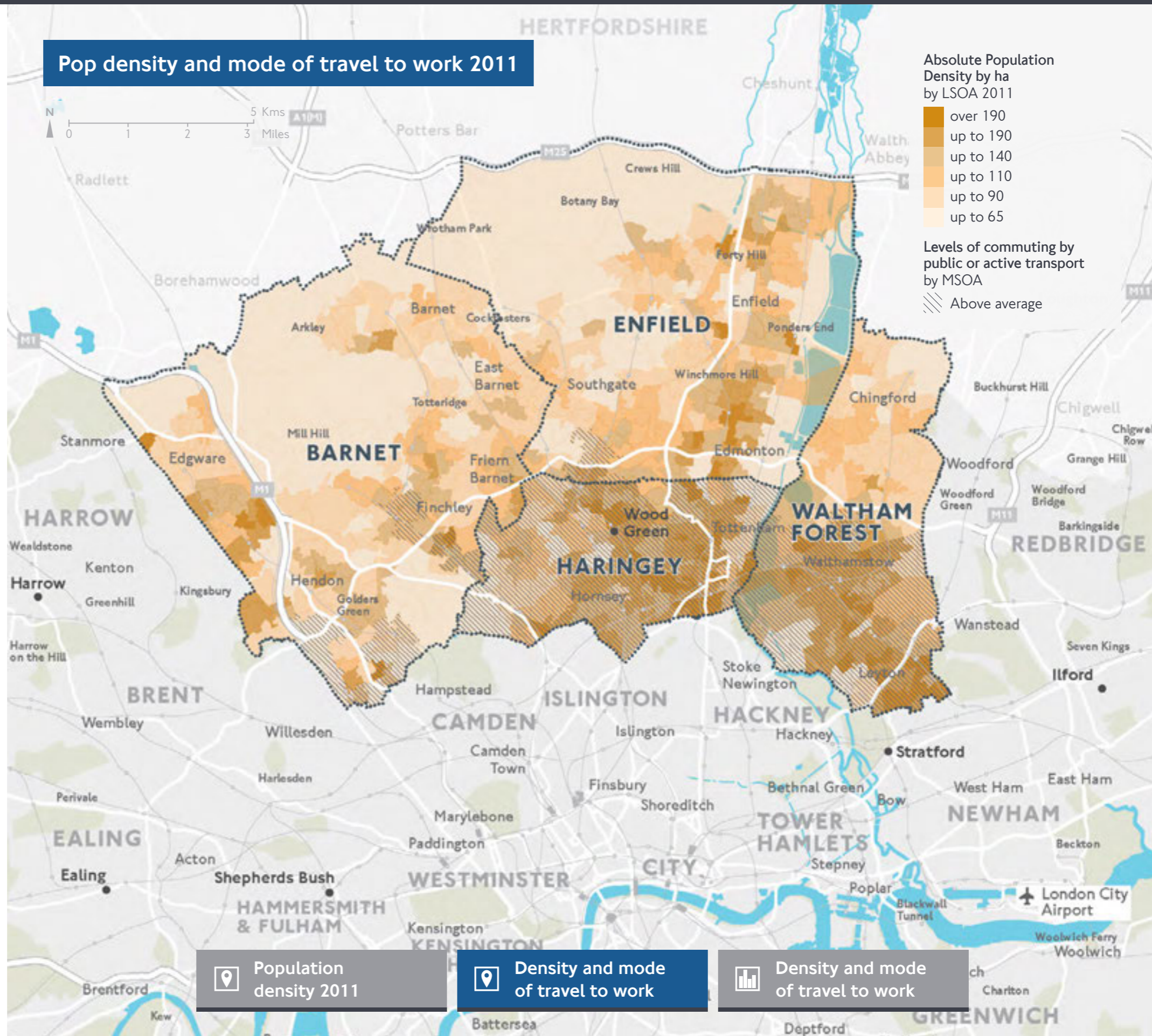


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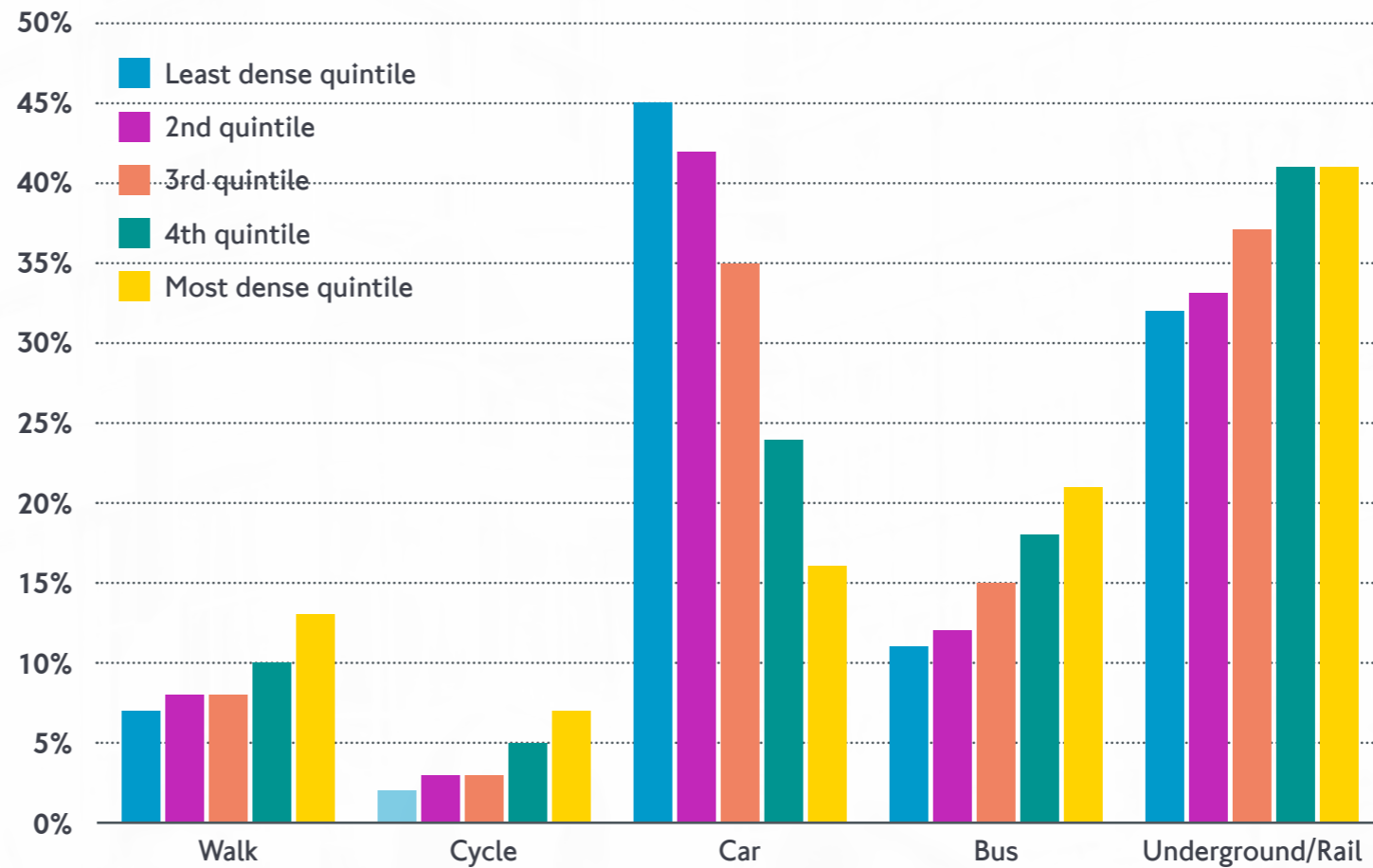
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People that live in London's most dense areas are **three times less likely** to travel to work by car

Population density and mode of travel to work 2011 – Greater London



Population density 2011



Density and mode of travel to work



Density and mode of travel to work

Employment >



London is the powerhouse economy of the UK, with strong employment growth and an increasing share of GVA

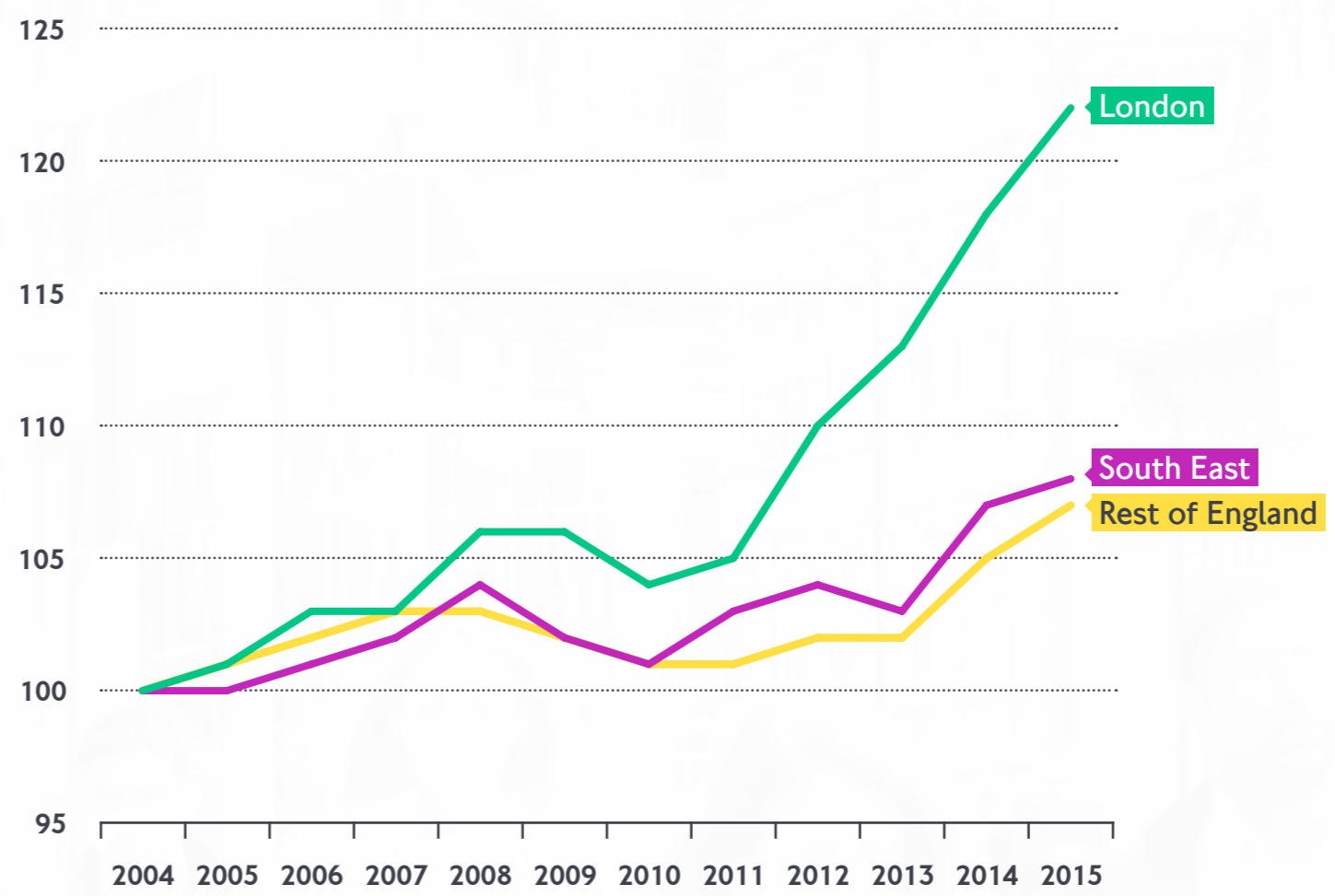
London has one of the most dynamic economies in the world, and is consistently rated as one of the premier World Cities which attracts significant flows of international capital, people and ideas. The Capital's employment growth since 2004 has consistently outstripped all other regions of the UK, with the rate of growth since 2011 nearly three times faster than that of England or the South East. As a result, London's share of England's Gross Value Added, which is a measure of economic output, has increased from 23% in 2001 to 26% in 2013.

As London's economy has continued to evolve, it has seen strong growth in high valued-added sectors such as professional and scientific activities, which includes activities as diverse as management consultancy, architecture, and research and development. These sectors are typically located in areas with the best public transport connectivity, and as they have grown, more people are travelling to work by public transport, particularly by rail.

Conversely, as sectors which are less well served by public transport, such as manufacturing, have contracted, the number of people driving to work has decreased. However, a significant number of jobs created have been in local services such as health and education. As these tend to be more local, with much of this employment in Outer London, the car and bus still play an important role in accessing these growing sectors.

Total workforce jobs have increased by over 1 million in London since 2004

Growth in workplace jobs 2004 – 2015



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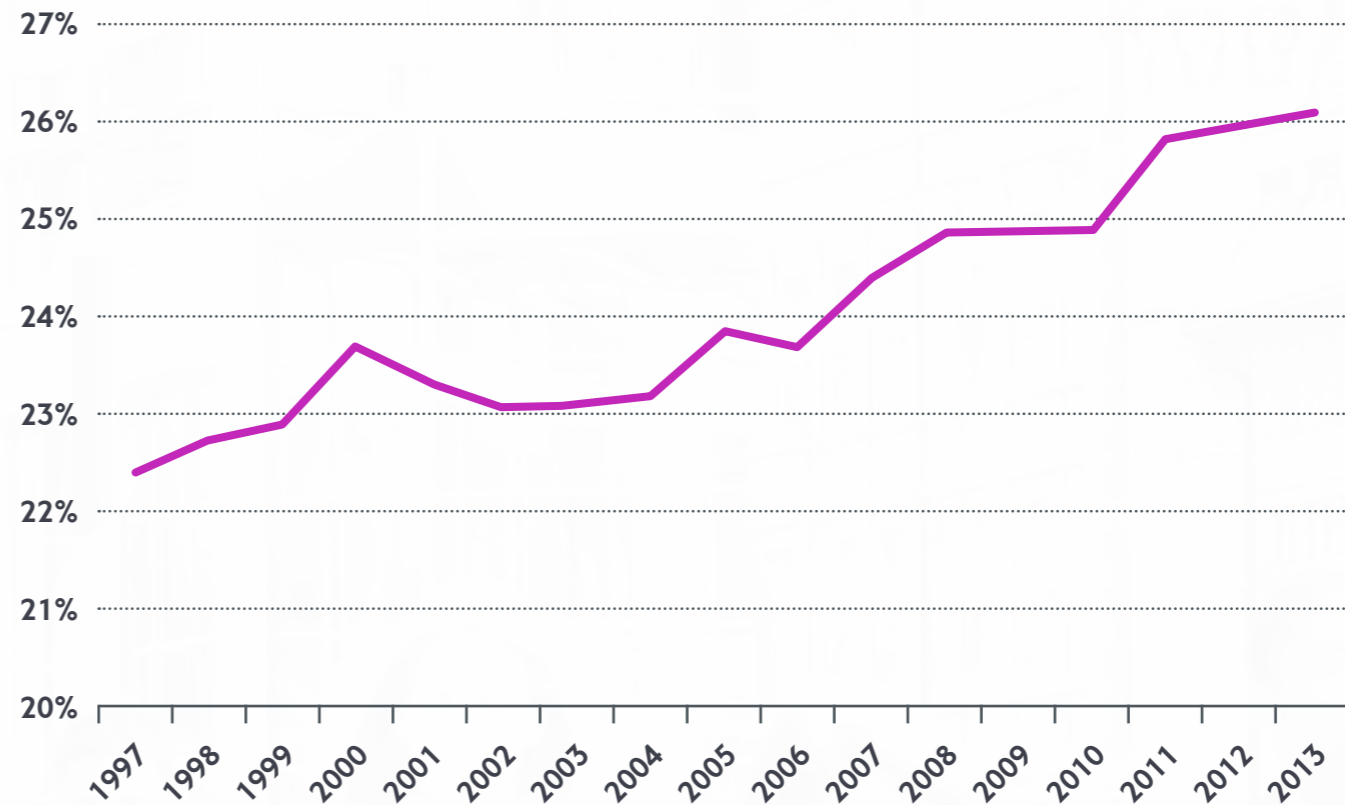
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London's Gross Value Added has increased by over 60% since 2003

London's share of Gross Value Added (GVA) 1997 – 2013



Growth in workplace jobs



London's share of (GVA) 1997-2013



Employment growth in London by sector

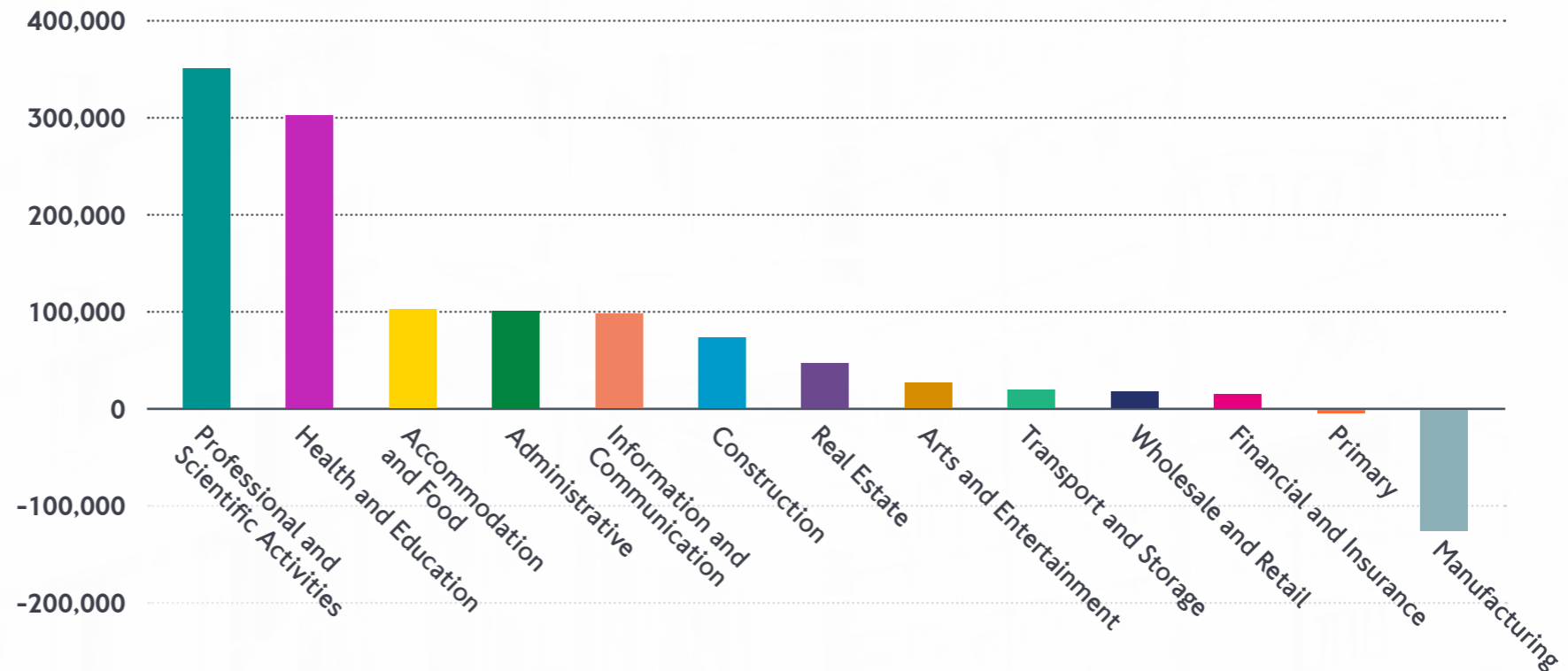
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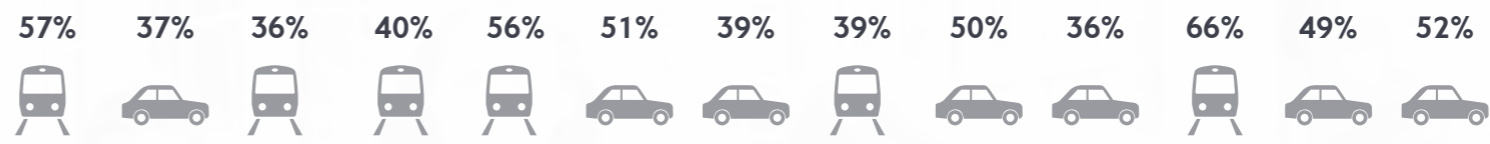
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Employment growth in London by sector 2004 – 2014



Most common modes to employment growth sectors



% of employment in PTALs 5 and 6

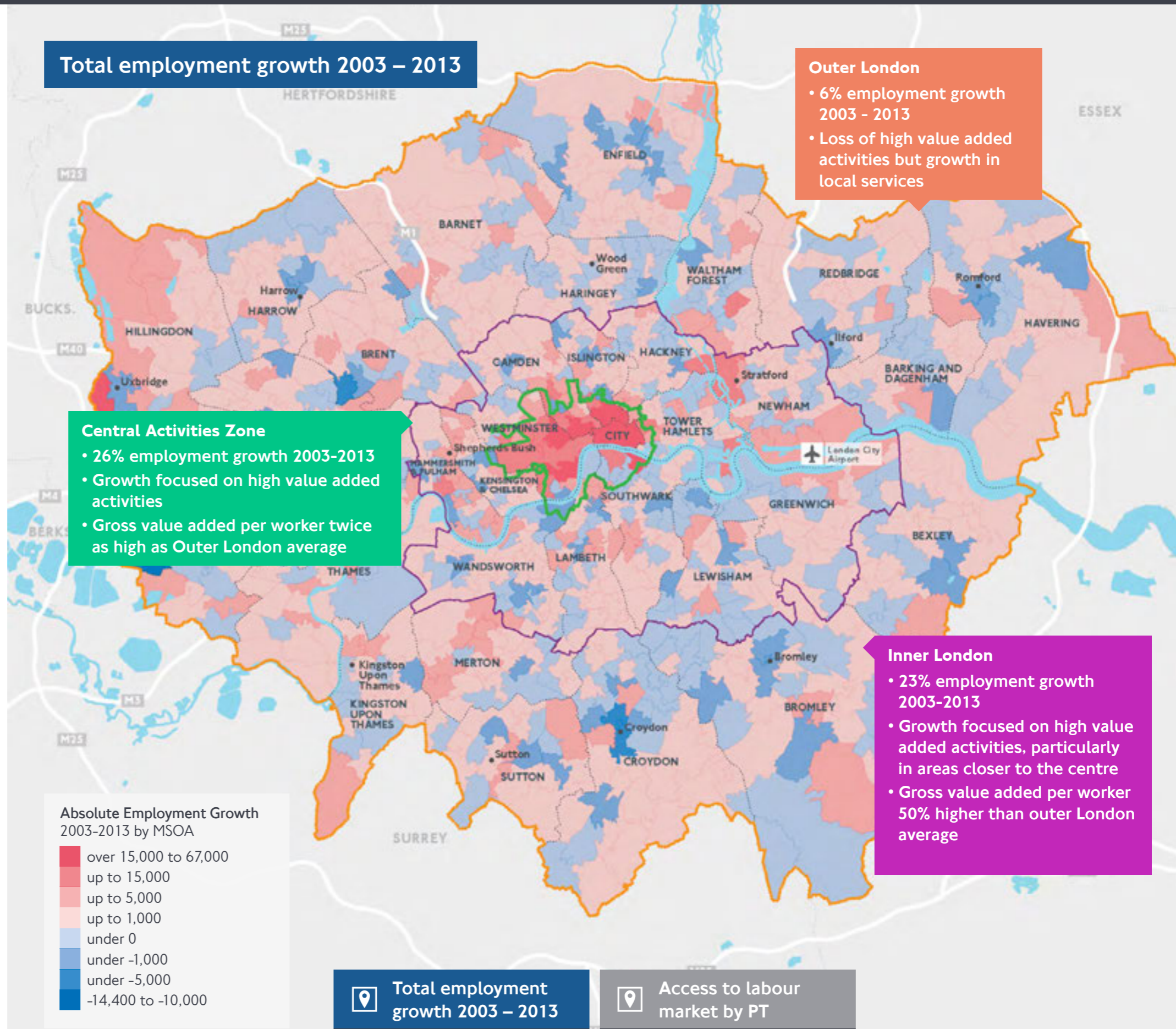


Employment growth has been focused on central and Inner London, which depends on excellent access by public transport

The excellent levels of transport connectivity required by high value sectors means that central London, which is the best connected part of the UK, is the most attractive part of the Capital for businesses. It is therefore the Central Activities Zone (CAZ) and locations on the edge of the CAZ within Inner London, which have seen the strongest employment growth, which is only been made possible by London's extensive rail network which allows access to over 3million people and thousands of businesses within 45 minutes by public transport.

As the density of businesses and employees increases, firms benefit from economies of agglomeration - they are in greater competition with each other, become more innovative, and are therefore more productive. Employees in central London are twice as productive as those in Outer London. By facilitating the movement of large volumes of commuters into the CAZ, public transport is therefore key to maintaining the city's competitiveness and World City status.

Conversely, as lower value office sectors have increasingly sought less expensive locations outside of the Capital, Outer London has become a less attractive place for businesses. Although there are a number of notable exceptions, most of the employment growth in Outer London has therefore been related to serving a growing population, including sectors such as health, education and retail with the car and bus remaining important modes to support these sectors.

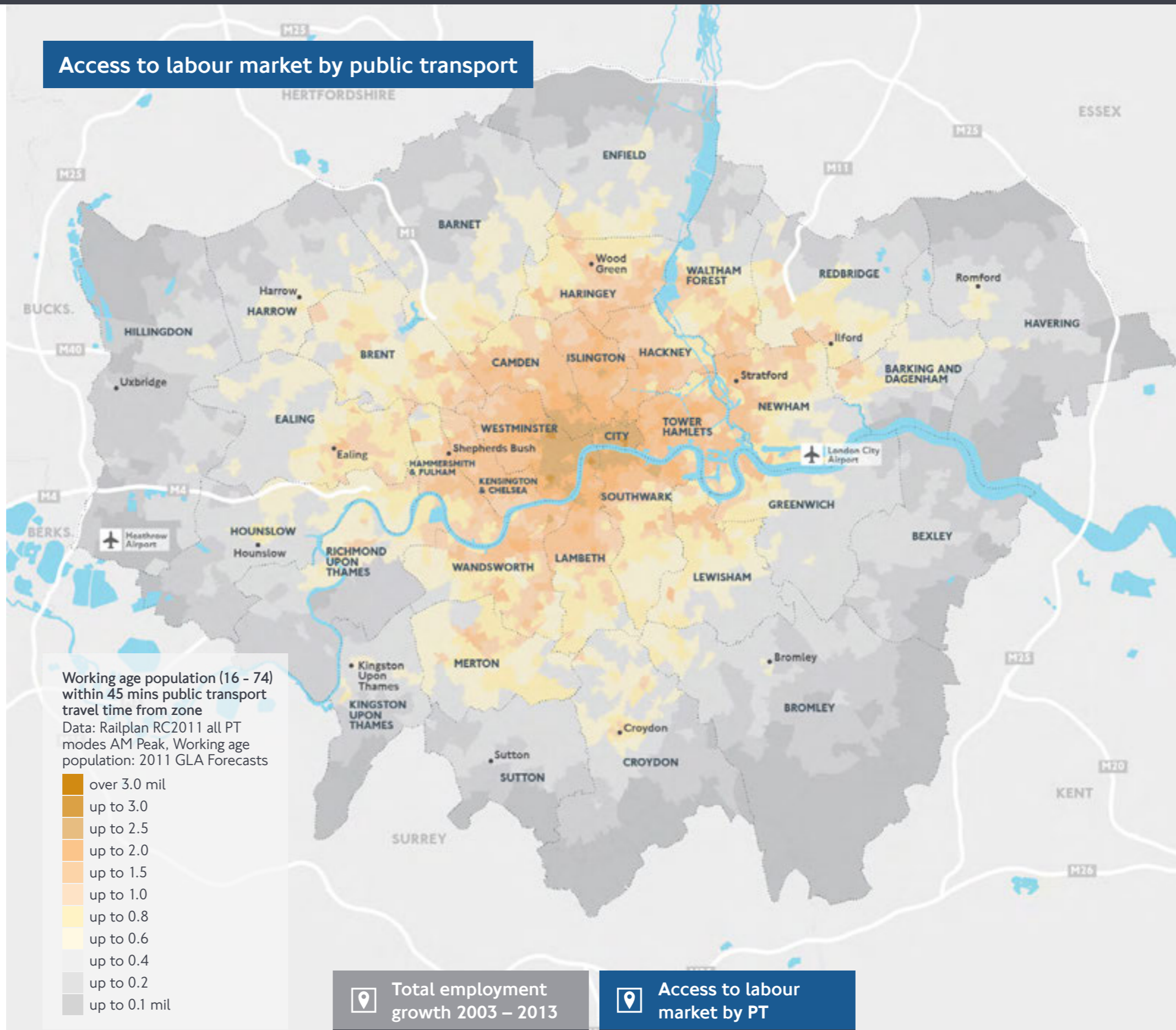


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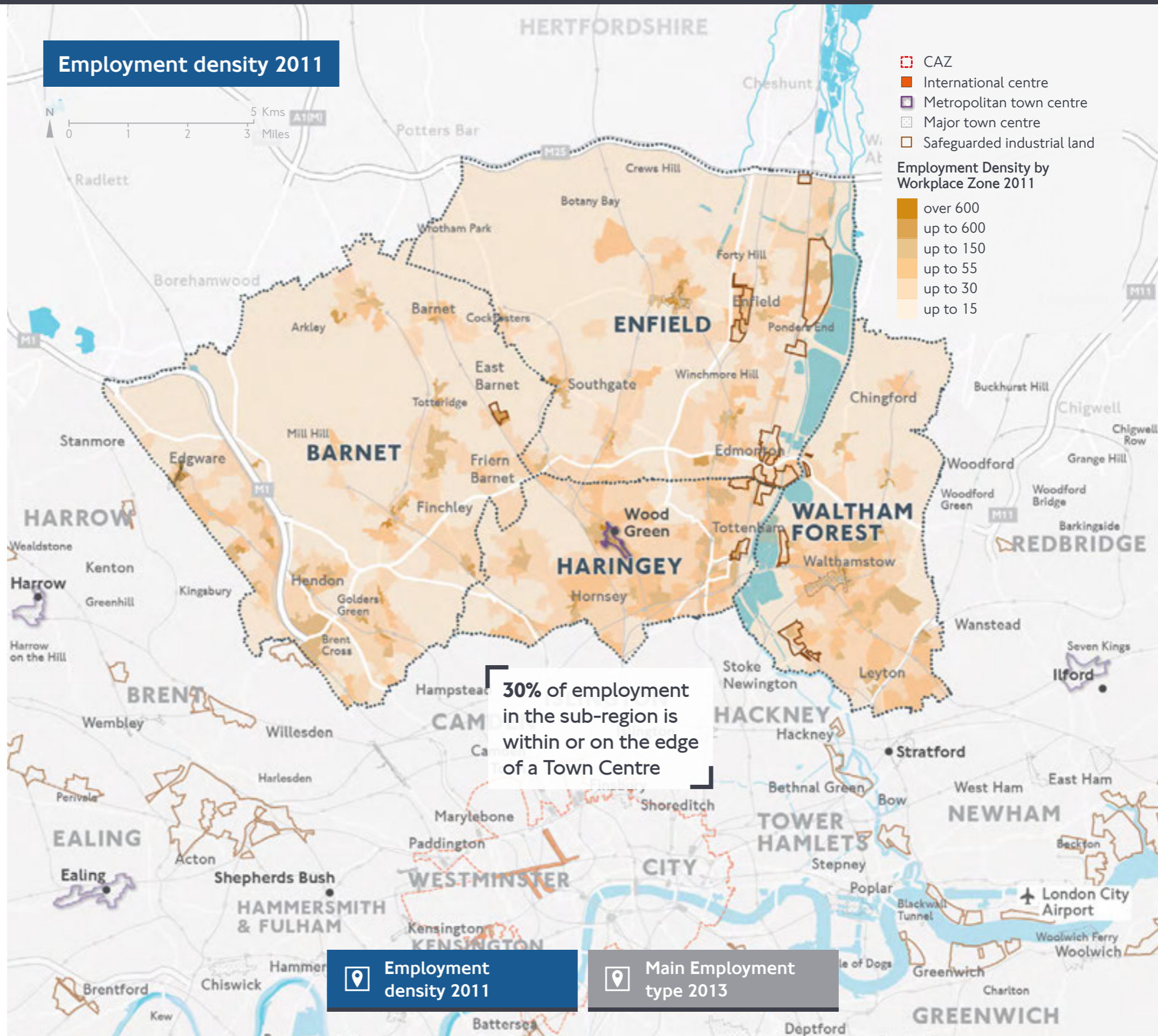


The North's town centres are key centres of employment, with jobs in local services now increasingly important

The North sub-region has a relatively diverse economy which supports a mix of local public services, retail, industrial activities and logistics and transport services. It is one of the few sub-regions where the manufacturing sector has been growing, albeit, relatively slowly, during the past 5 years.

Much of the retail, as well as some of the public services and office activity is located within the sub-region's town centres, whilst industrial and logistics businesses tend to be located in industrial estates, much of which are protected as Strategic Industrial Land.

These locations all depend on different types of transport provision, with town centres depending on buses, rail and car, and business and industrial parks relying on car as well as van and lorry movements. Maintaining the efficiency of these networks will be key to the future economic performance of the sub-region.

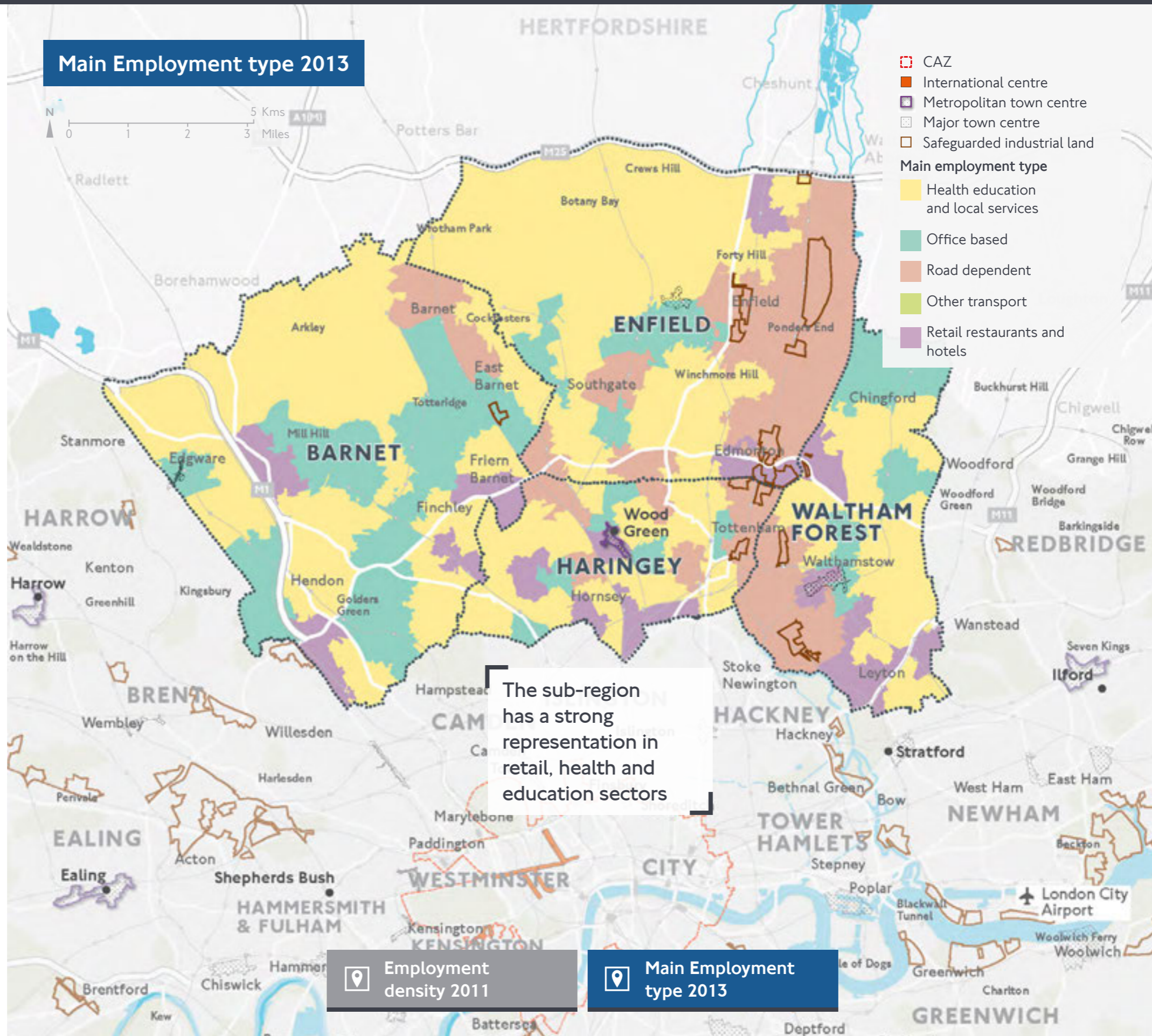


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📍 Employment density 2011

📍 Main Employment type 2013

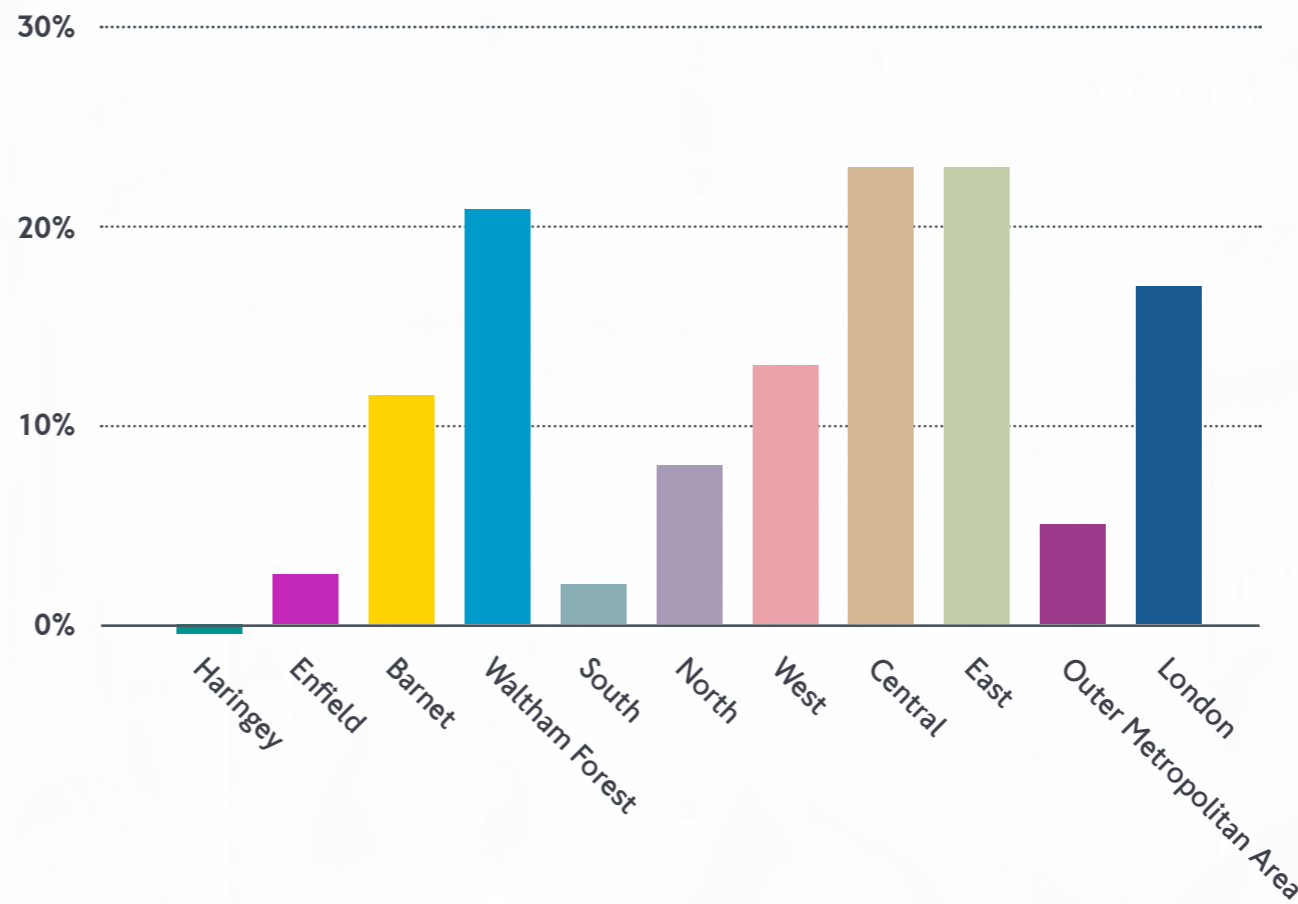
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Much of the employment growth in the sub-region has taken place in the least accessible areas by public transport. Those areas where there has been growth of at least 50 employees since 2003, with an average PTAL of two or less are shown in the map. These areas are spread throughout the sub-region, which has implications for future travel patterns and the ability of those without a car to access growing employment opportunities.

The rate of employment growth in the sub-region since 2003 has been **just half** of that in London

Employment growth 2003 – 2013

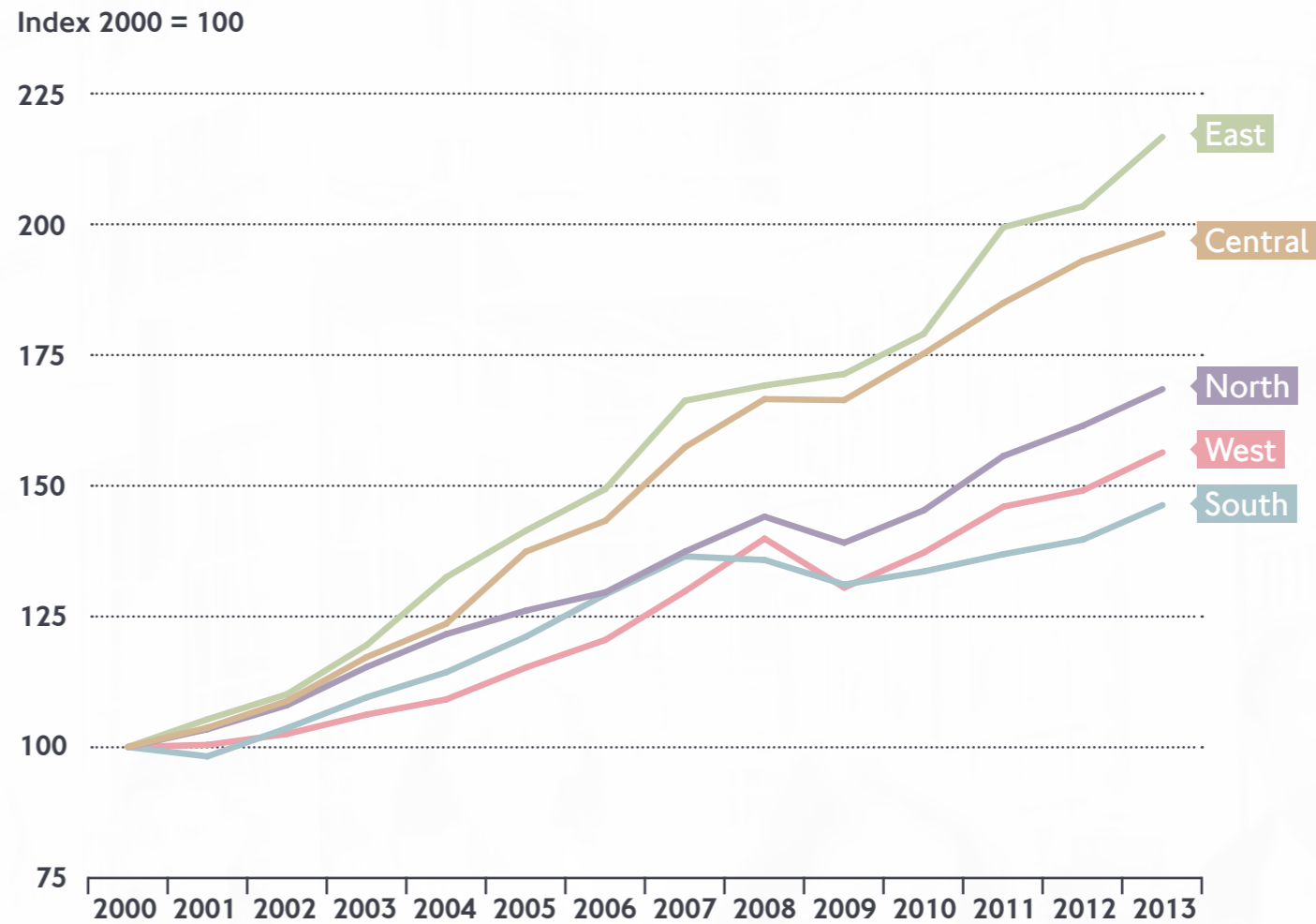


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Much of the employment growth in the sub-region has taken place in the least accessible areas by public transport. Those areas where there has been growth of at least 50 employees since 2003, with an average PTAL of two or less are shown in the map. These areas are spread throughout the sub-region, which has implications for future travel patterns and the ability of those without a car to access growing employment opportunities.

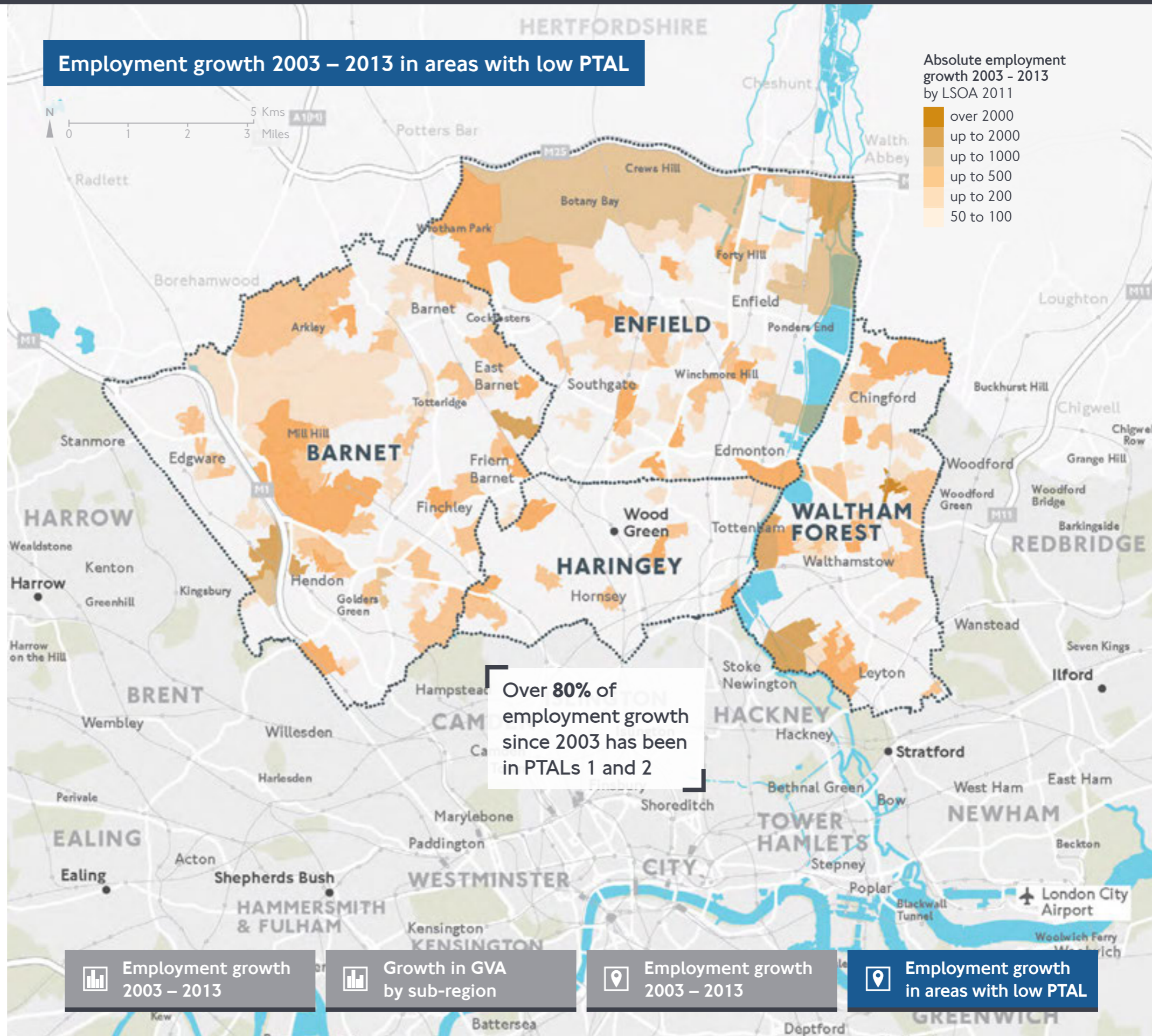
Growth in Gross Value Added (GVA) by sub-region



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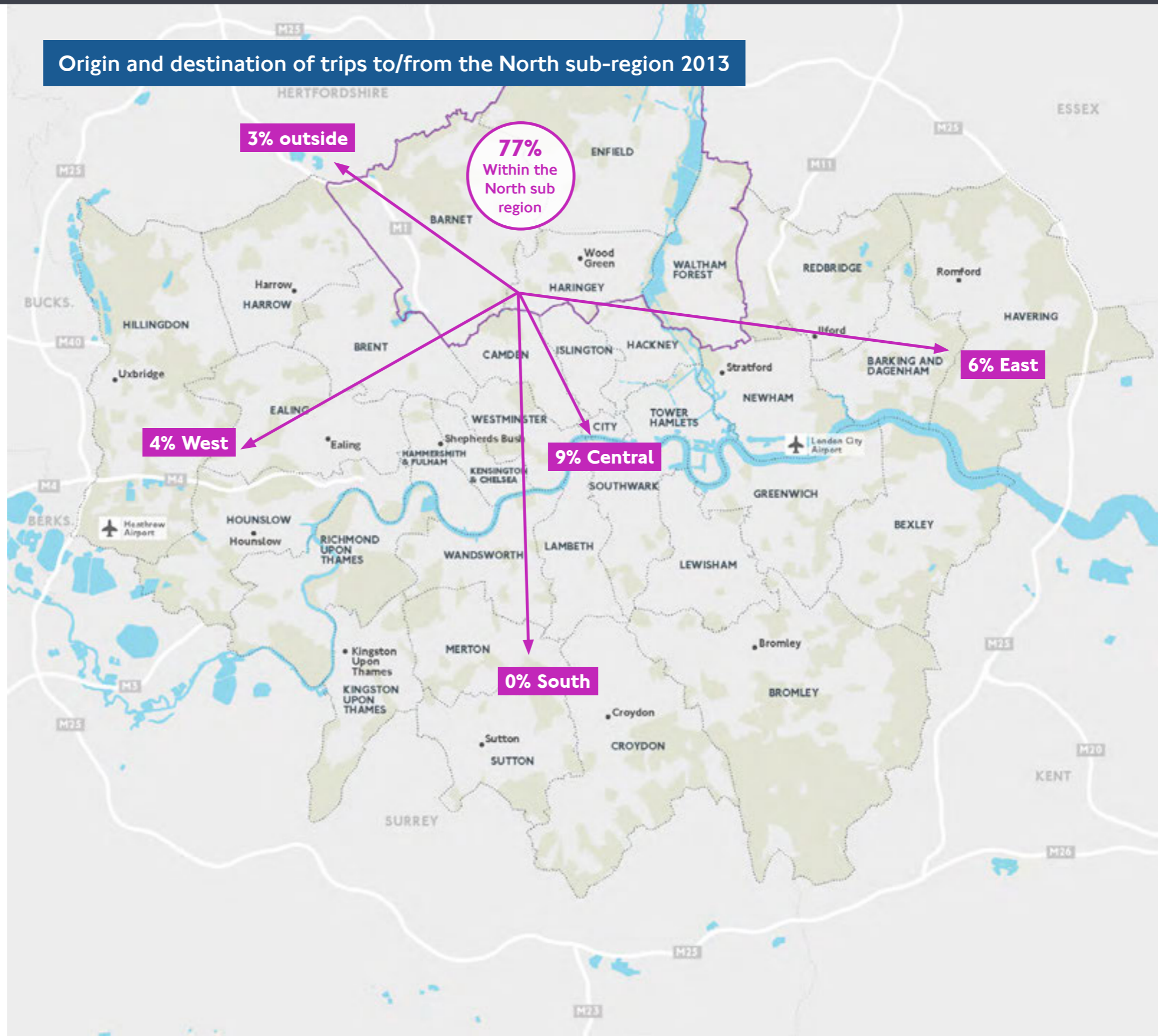
Mode and movement >



Most trips in the North start and finish within the sub-region

Although residents of North London make trips to many areas within and outside London, the majority of trips have both their origin and destination within the sub-region. Commuting trips are the most likely to be made outside North London, particularly to central London, whilst education, shopping and leisure trips are all much more likely to be internal to the sub-region. This reinforces the need to ensure a well functioning transport network that can support the huge range of local movements, particularly by bus, walking and cycling, as well as the need for a network that can support both orbital and radial movements.

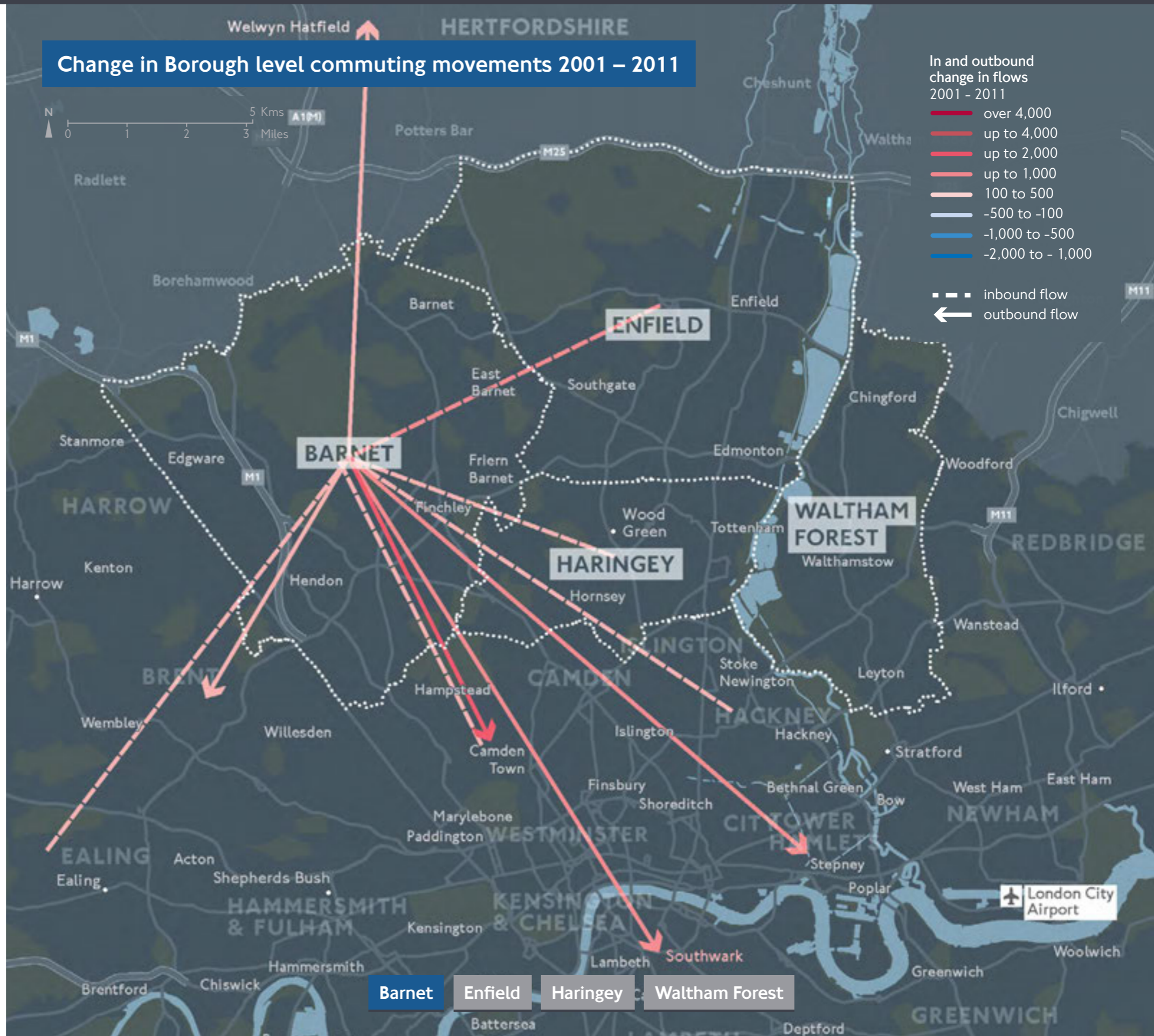
A relatively high proportion of trips to the East sub-region are made from the North, largely from residents of Waltham Forest and Harigney travelling to Canary Wharf.



More people are commuting into central and Inner Boroughs for work

As employment has increased rapidly within central and Inner London, and with lower levels of growth in Outer London, there has been an increase in people commuting towards more central areas, particularly from Haringey. Maintaining the capacity and frequency of public transport connections between the sub-region and central London will be important, both to support employment growth in the most productive part of the UK and also to enable North London's residents to access the huge range of employment opportunities that exist there.

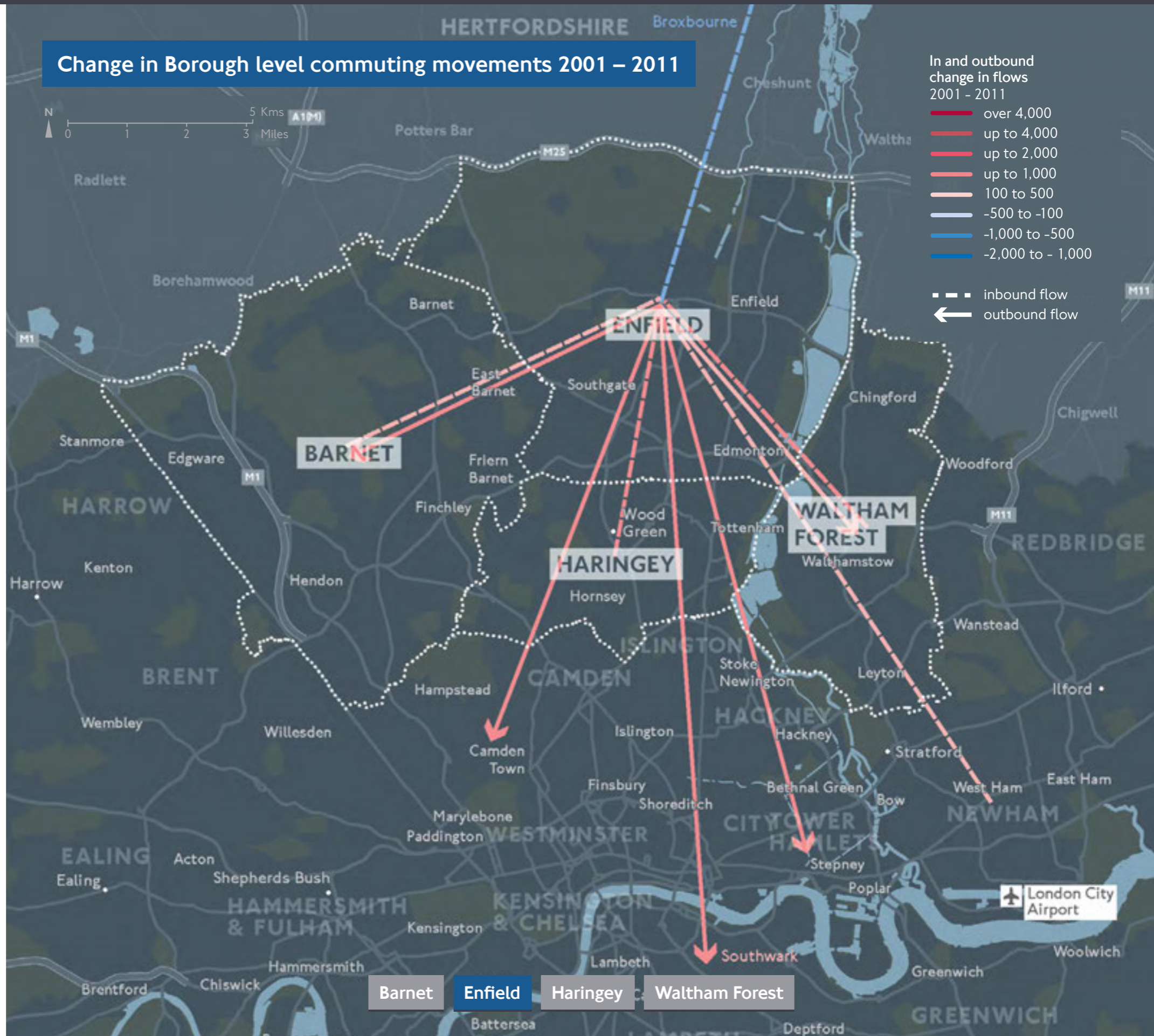
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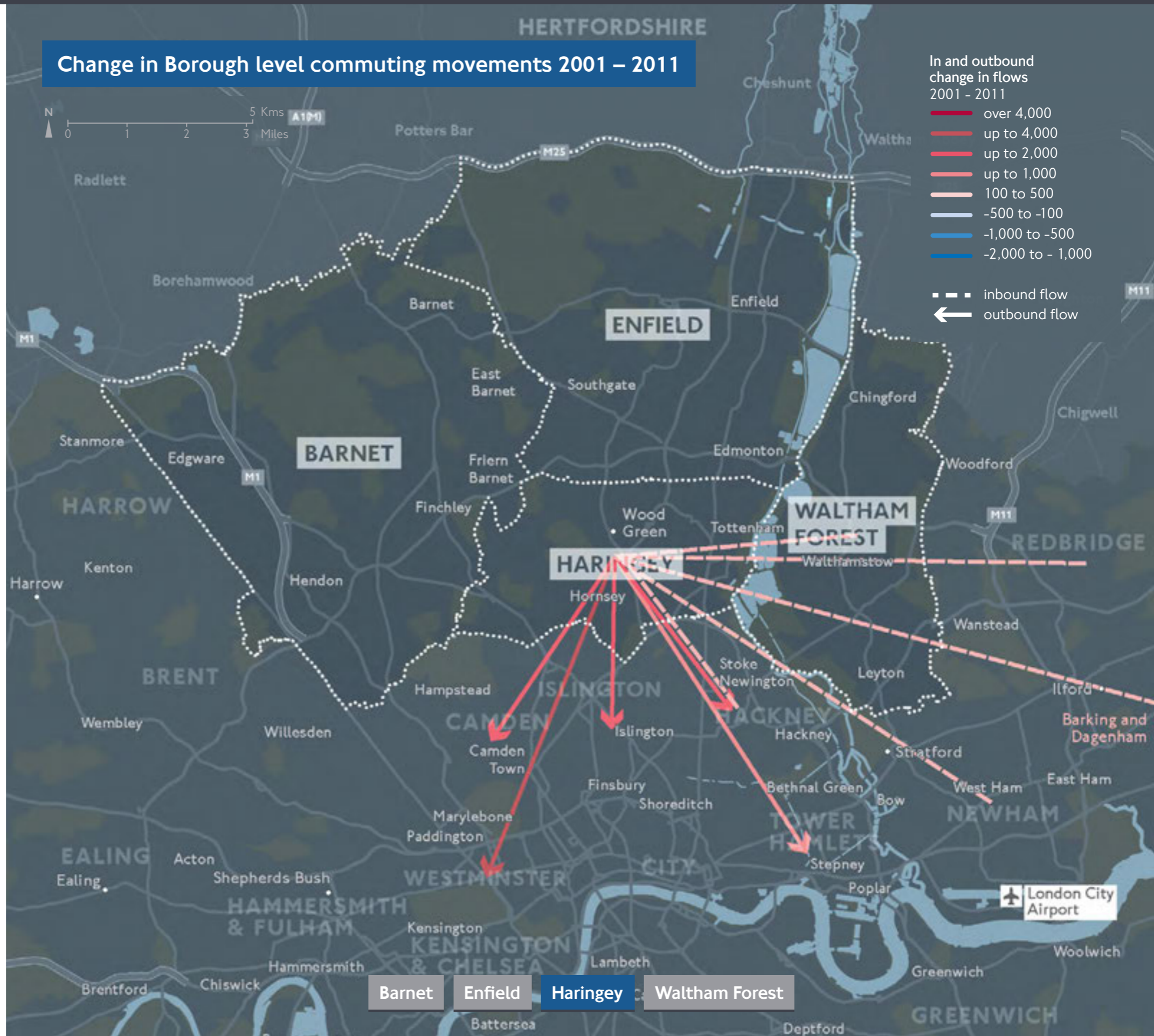
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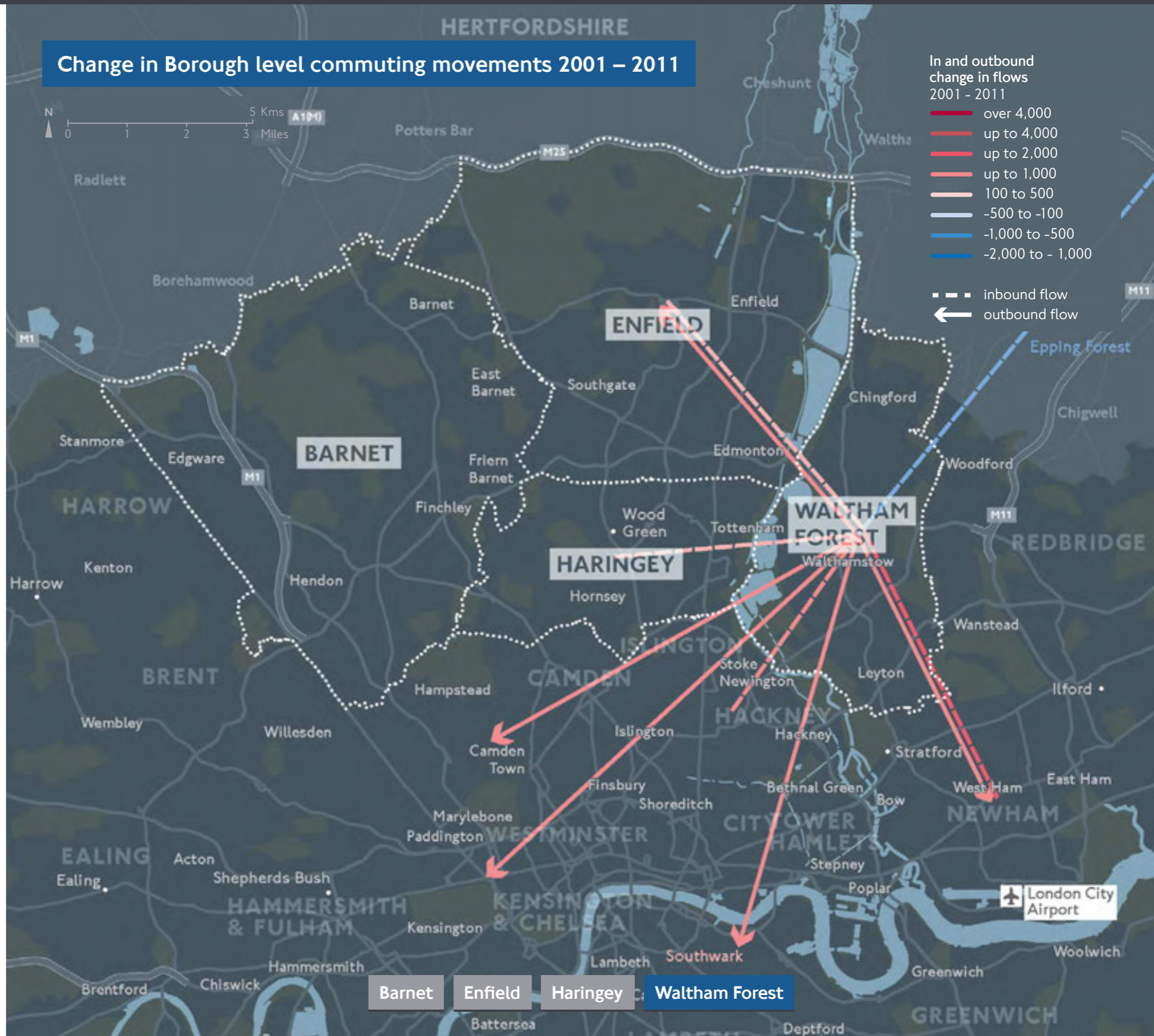
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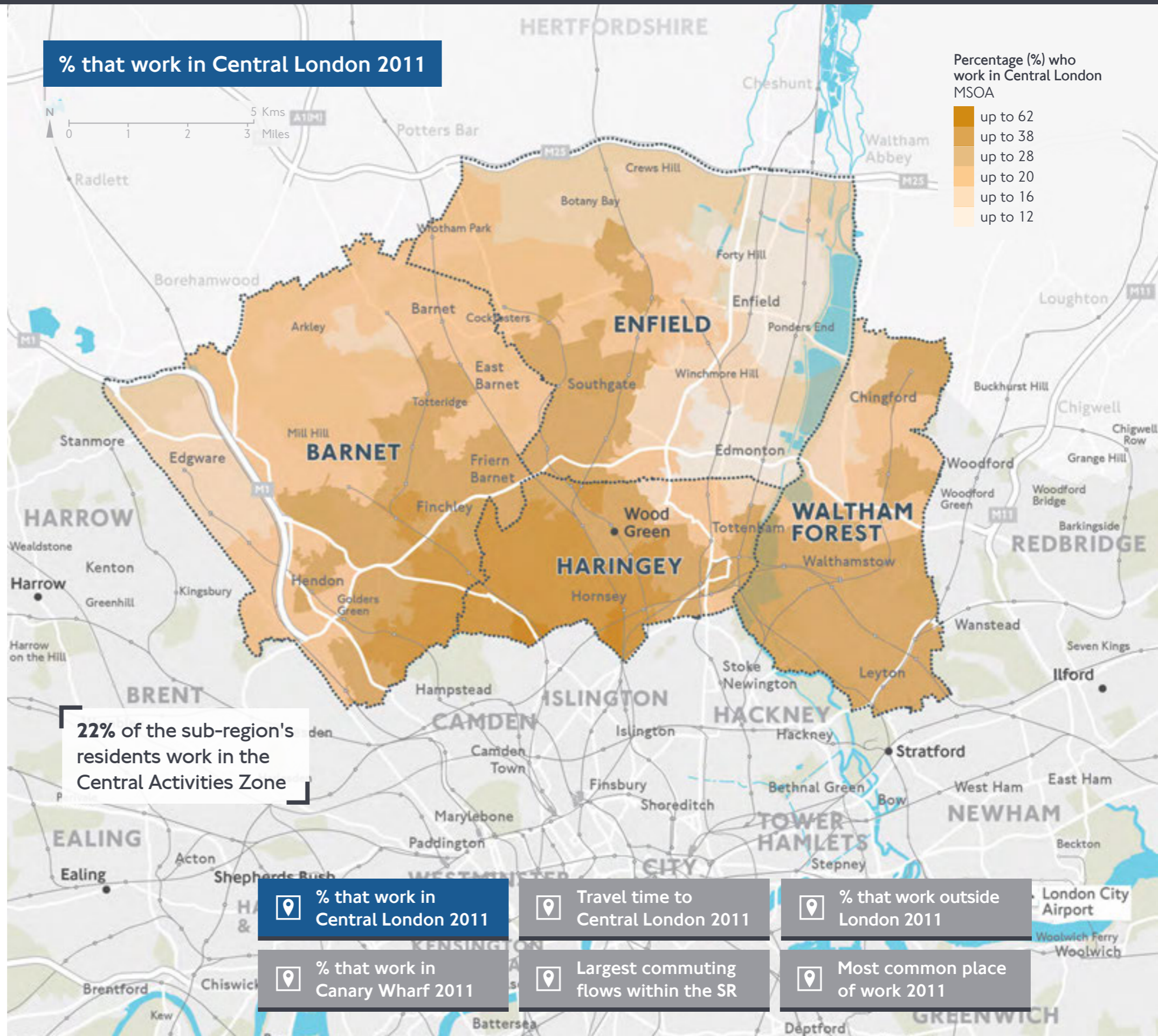
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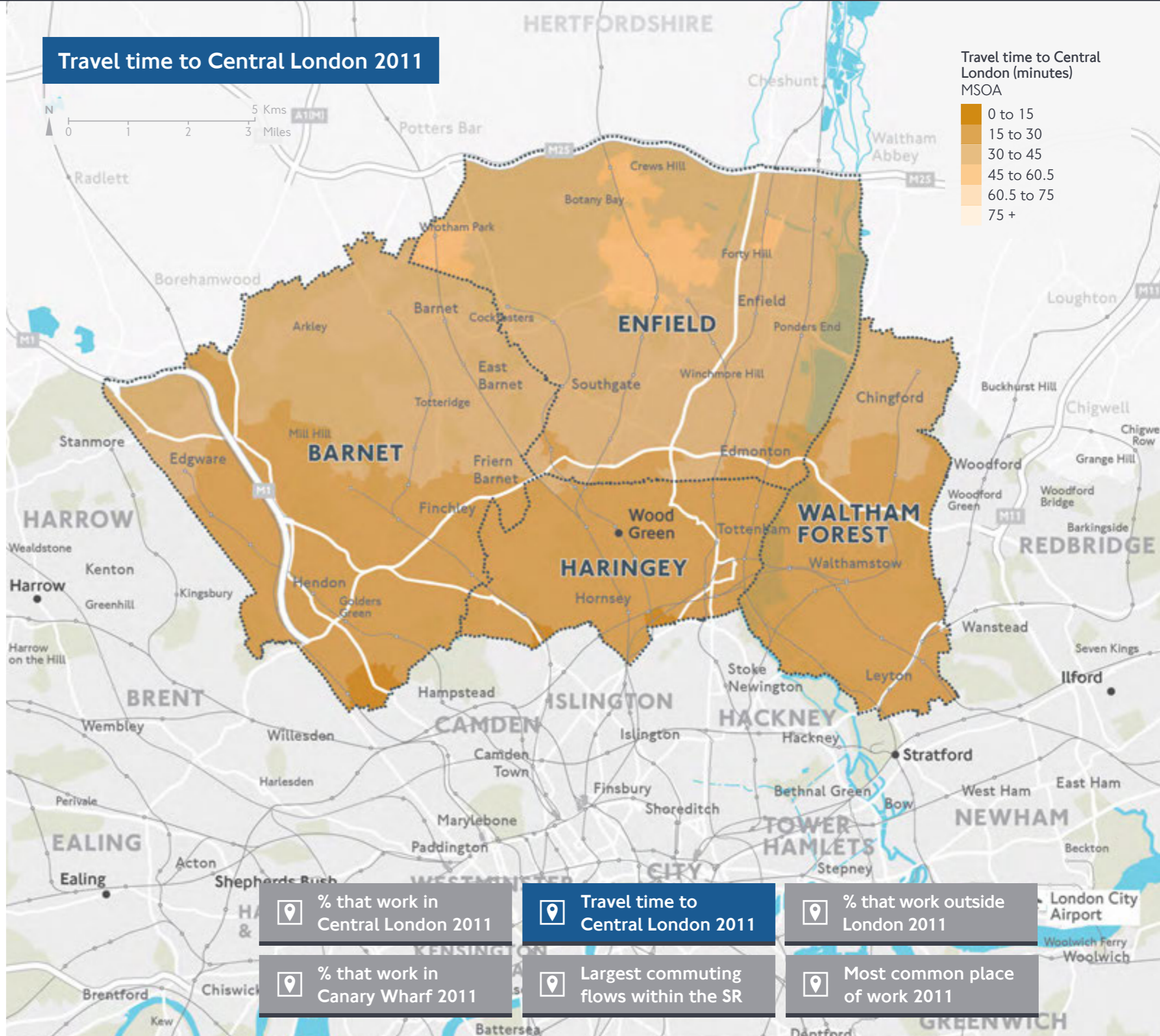
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📍 % that work in Central London 2011

📍 Travel time to Central London 2011

📍 % that work outside London 2011

📍 % that work in Canary Wharf 2011

📍 Largest commuting flows within the SR

📍 Most common place of work 2011

📍 London City Airport

📍 Woolwich Ferry
Woolwich

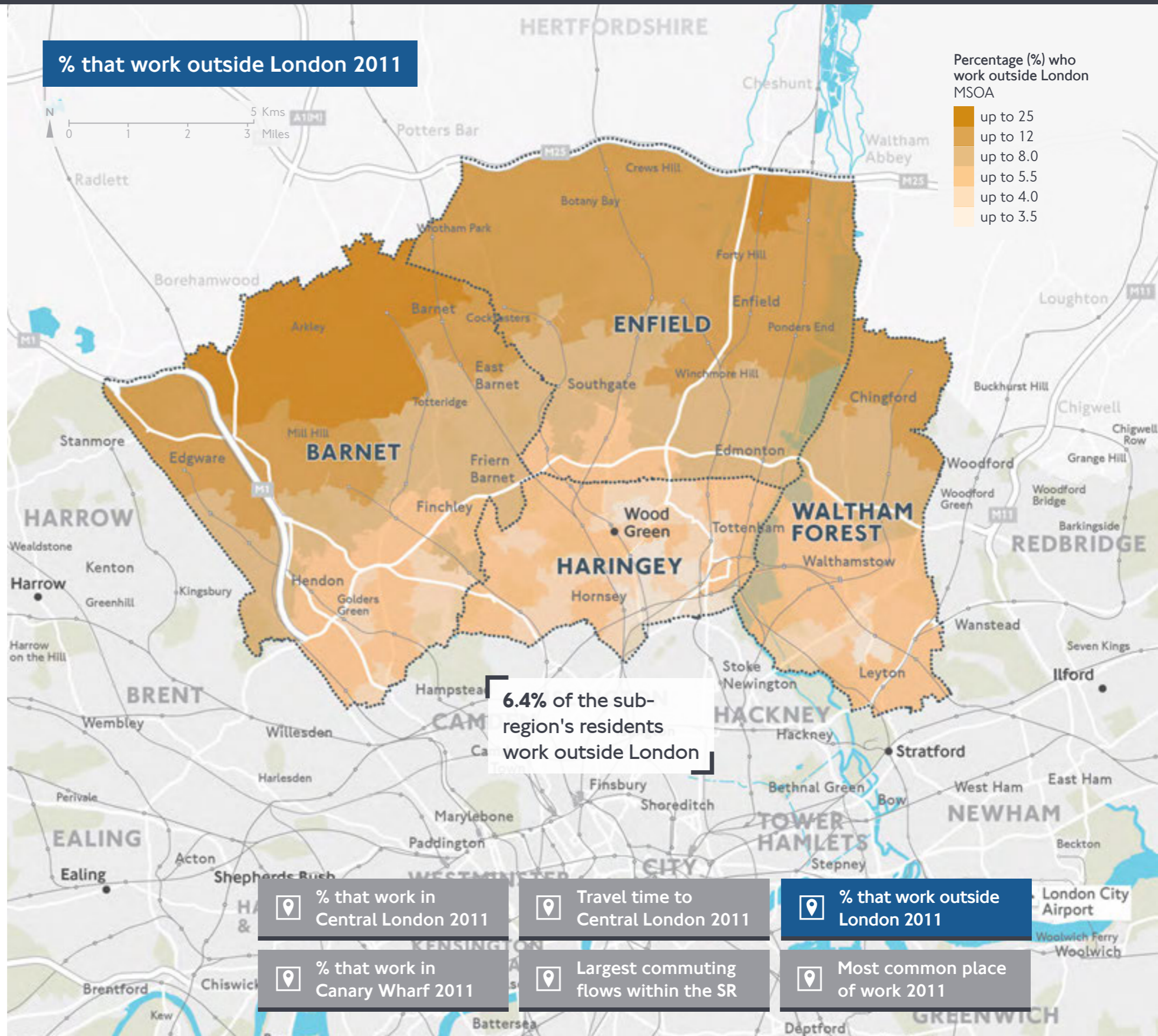
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% that work outside London 2011

Percentage (%) who work outside London MSOA

- up to 25
- up to 12
- up to 8.0
- up to 5.5
- up to 4.0
- up to 3.5

6.4% of the sub-region's residents work outside London

📍 % that work in Central London 2011	📍 Travel time to Central London 2011	📍 % that work outside London 2011	📍 London City Airport
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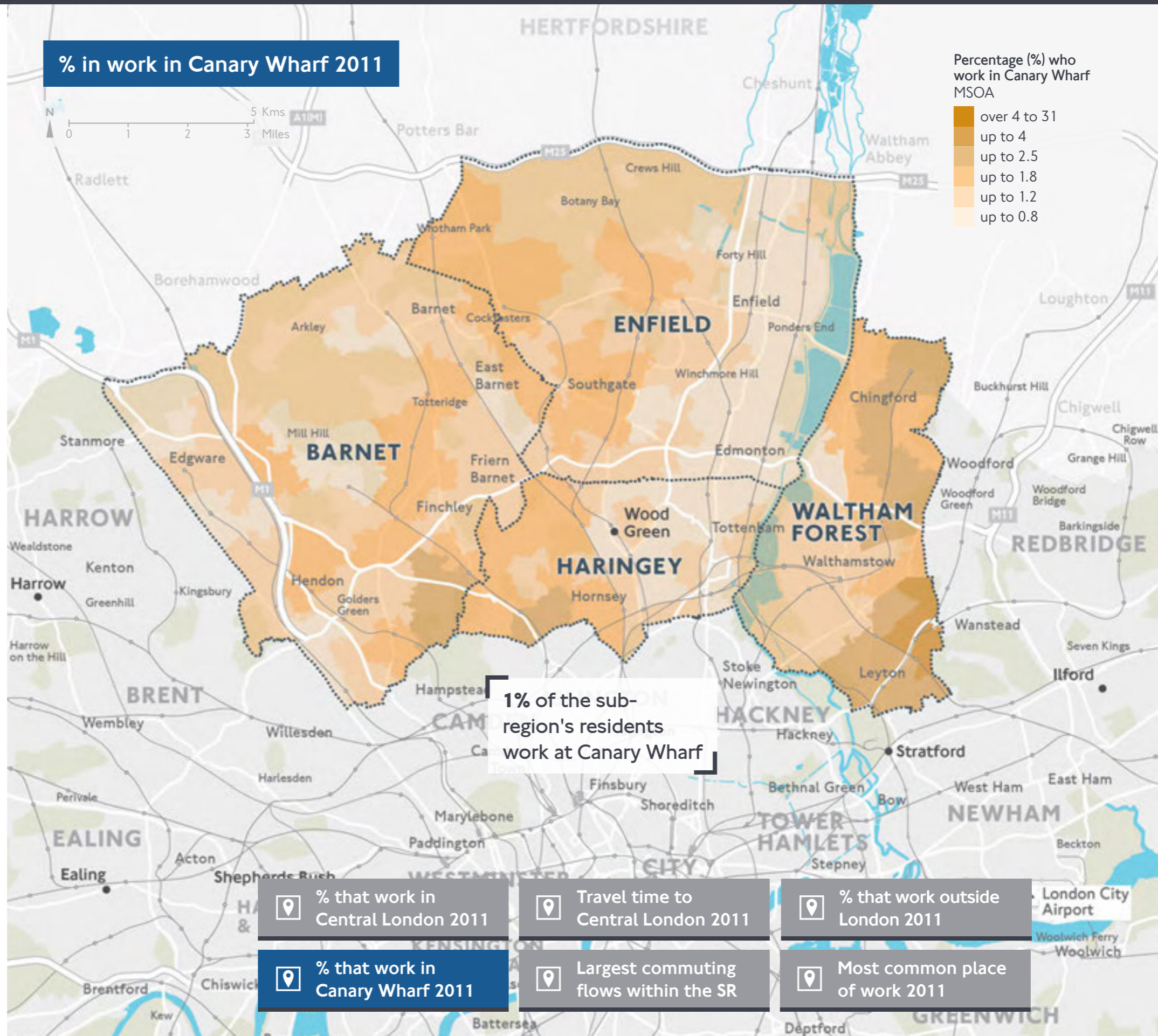
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% in work in Canary Wharf 2011

- Percentage (%) who work in Canary Wharf MSOA
- over 4 to 31
 - up to 4
 - up to 2.5
 - up to 1.8
 - up to 1.2
 - up to 0.8

1% of the sub-region's residents work at Canary Wharf

📍 % that work in Central London 2011	📍 Travel time to Central London 2011	📍 % that work outside London 2011
📍 % that work in Canary Wharf 2011	📍 Largest commuting flows within the SR	📍 Most common place of work 2011

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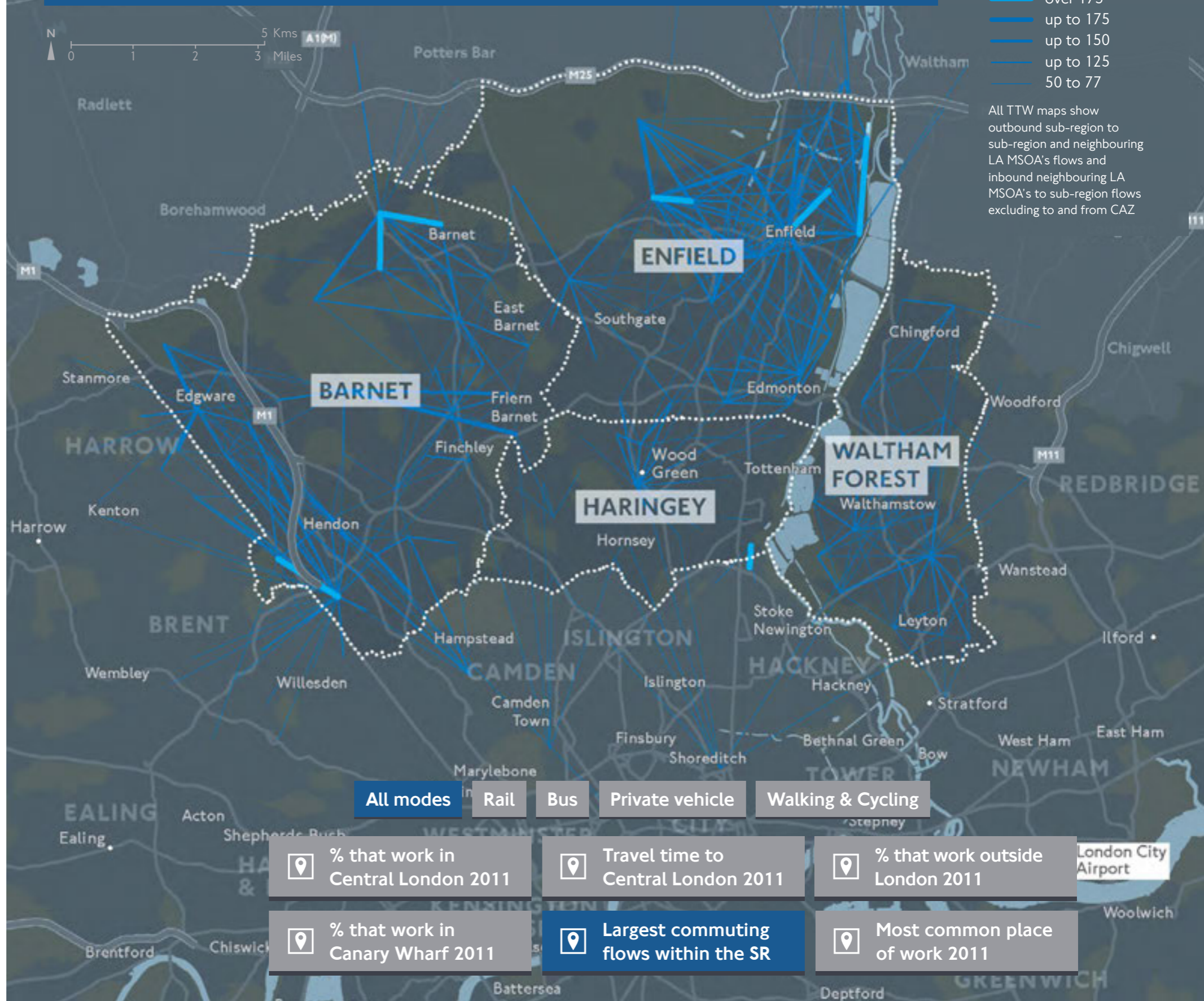
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Largest commuting flows within the sub-region and neighbouring Boroughs 2011



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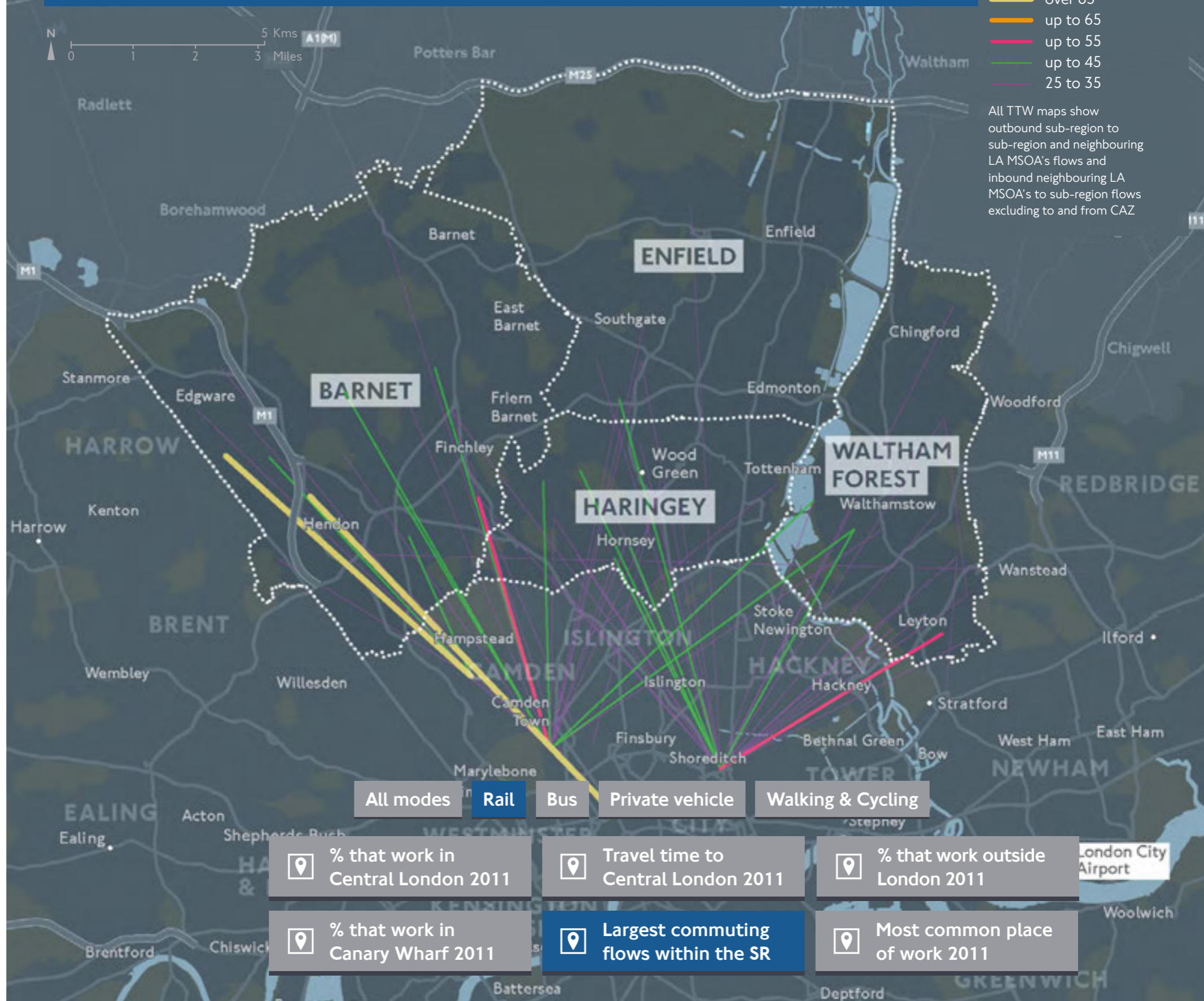
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Largest rail commuting flows within the sub-region and neighbouring Boroughs 2011



Number of journeys
 — over 65
 — up to 65
 — up to 55
 — up to 45
 — 25 to 35

All TTW maps show outbound sub-region to sub-region and neighbouring LA MSOA's flows and inbound neighbouring LA MSOA's to sub-region flows excluding to and from CAZ

All modes **Rail** Bus Private vehicle Walking & Cycling

% that work in Central London 2011
 Travel time to Central London 2011
 % that work outside London 2011
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Largest bus commuting flows within the sub-region and neighbouring Boroughs 2011



All modes Rail **Bus** Private vehicle Walking & Cycling

% that work in Central London 2011	Travel time to Central London 2011	% that work outside London 2011
% that work in Canary Wharf 2011	Largest commuting flows within the SR	Most common place of work 2011

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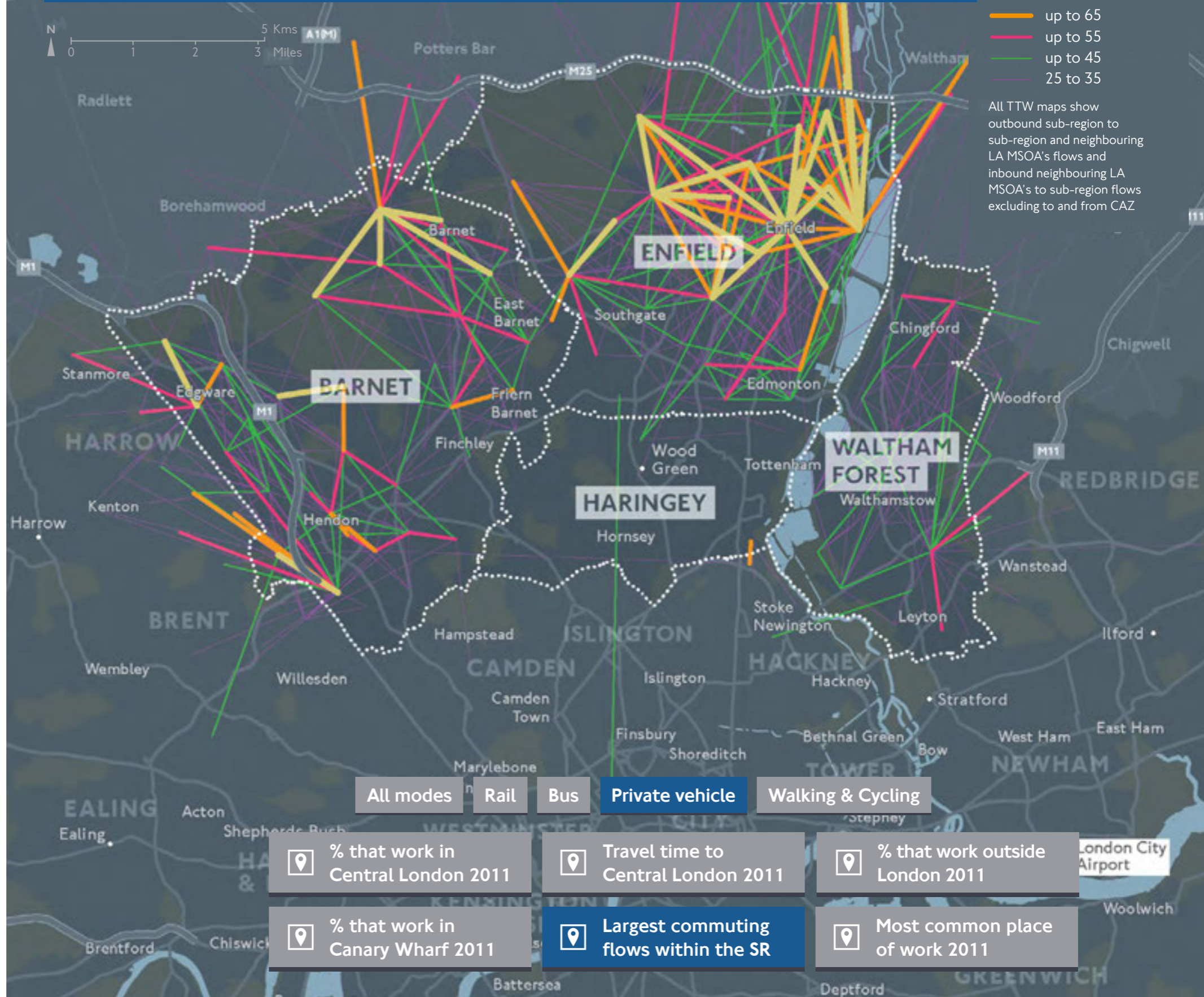
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Largest car commuting flows within the sub-region and neighbouring Boroughs 2011



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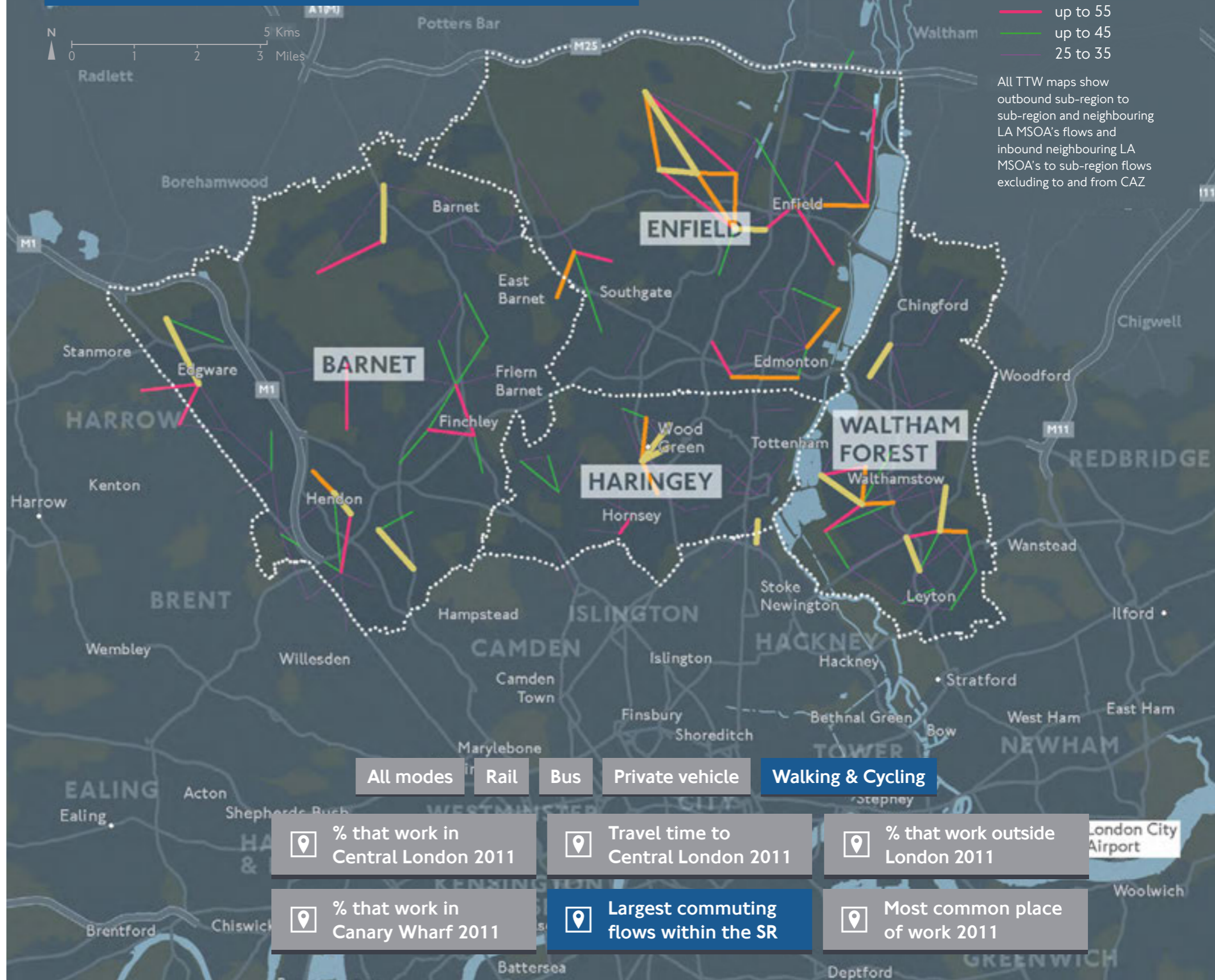
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Largest walking and cycling commuting flows within the sub-region and neighbouring Boroughs 2011



Number of journeys
 — over 65
 — up to 65
 — up to 55
 — up to 45
 — 25 to 35

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All modes Rail Bus Private vehicle **Walking & Cycling**

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% that work in Canary Wharf 2011	Largest commuting flows within the SR	Most common place of work 2011

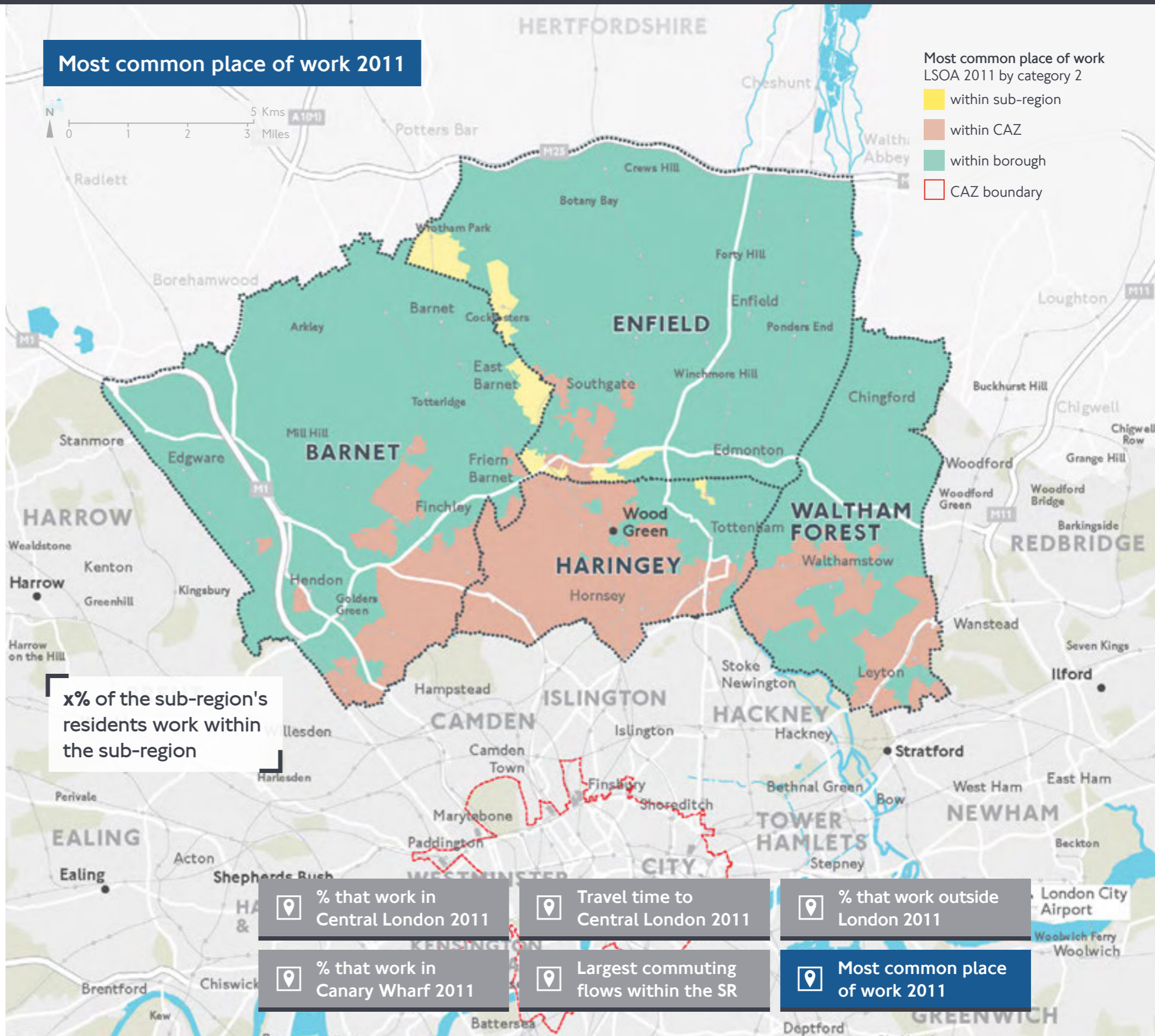
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More trips are being made by rail and bus across London as more people travel into central locations and the quality of service improves

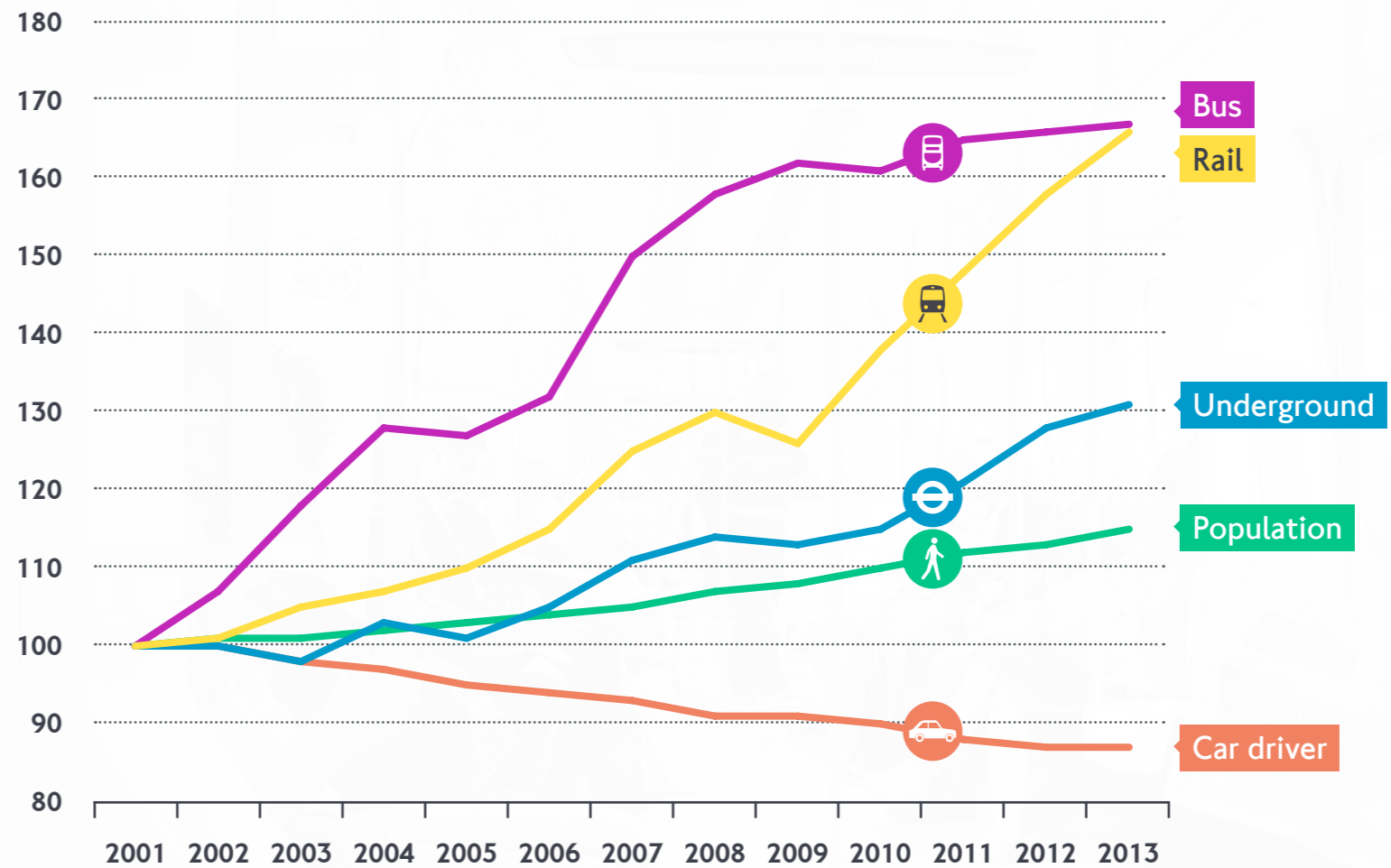
As employment has increasingly moved towards more central locations, which are typically most easily accessed by rail, there has been a strong growth in journeys made using National Rail and the Underground across London. Investment in service quality has also played a major part in this, with customer satisfaction levels across the Tube and London Overground now at historically high levels.

The number of journeys made by bus has also grown rapidly, particularly up to 2010 as significant investment in the network was made during the previous decade to increase frequency, reliability and service quality, although the number of trips by bus has now remained stable in recent years

Conversely, the number of trips made using the private car has fallen during the same period, as people have switched to public transport and active travel modes. The largest shift has been within Central and Inner London, although Outer London has also seen a decline in car use too. Further analysis of the reasons behind this is available in TfL's Drivers of Demand study: <https://tfl.gov.uk/cdn/static/cms/documents/drivers-of-demand-for-travel-in-london.pdf>.

Growth in total journey stages by mode 2001 – 2013: Greater London

Index 2000 = 100



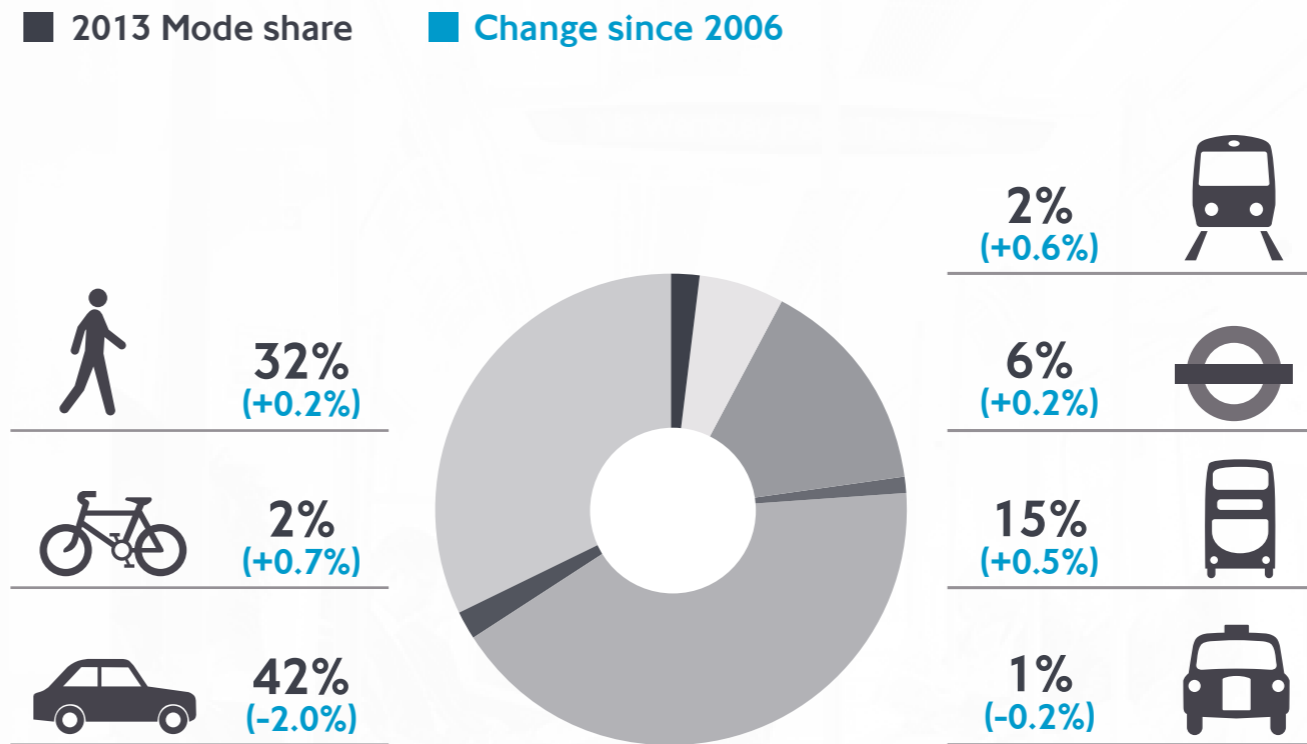
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The changes in mode share across North London follow a similar pattern to that of London as a whole, although there are some notable differences. The sub-region has a high share of trips made by car, with 42% of all journeys made using this mode. However, the reduction in car mode share is the largest of any sub-region apart from Central, driven by Haringey and Waltham Forest, which saw declines of 5.2% and 4% respectively, whilst Barnet's mode share by car actually increased by 1.7%.

The sub-region has seen a small increase in the share of trips made by rail and Underground. The share of National Rail trips, at 2%, is the lowest of any sub-region, which reflects the somewhat limited connectivity of the network, which is instead better served by the Underground instead. Waltham Forest has seen the largest increase in mode share by Underground and rail, probably as a result of more people commuting in central London from here.

Bus mode share has also continued to increase, particularly in Barnet and Waltham Forest.

Mode share 2013

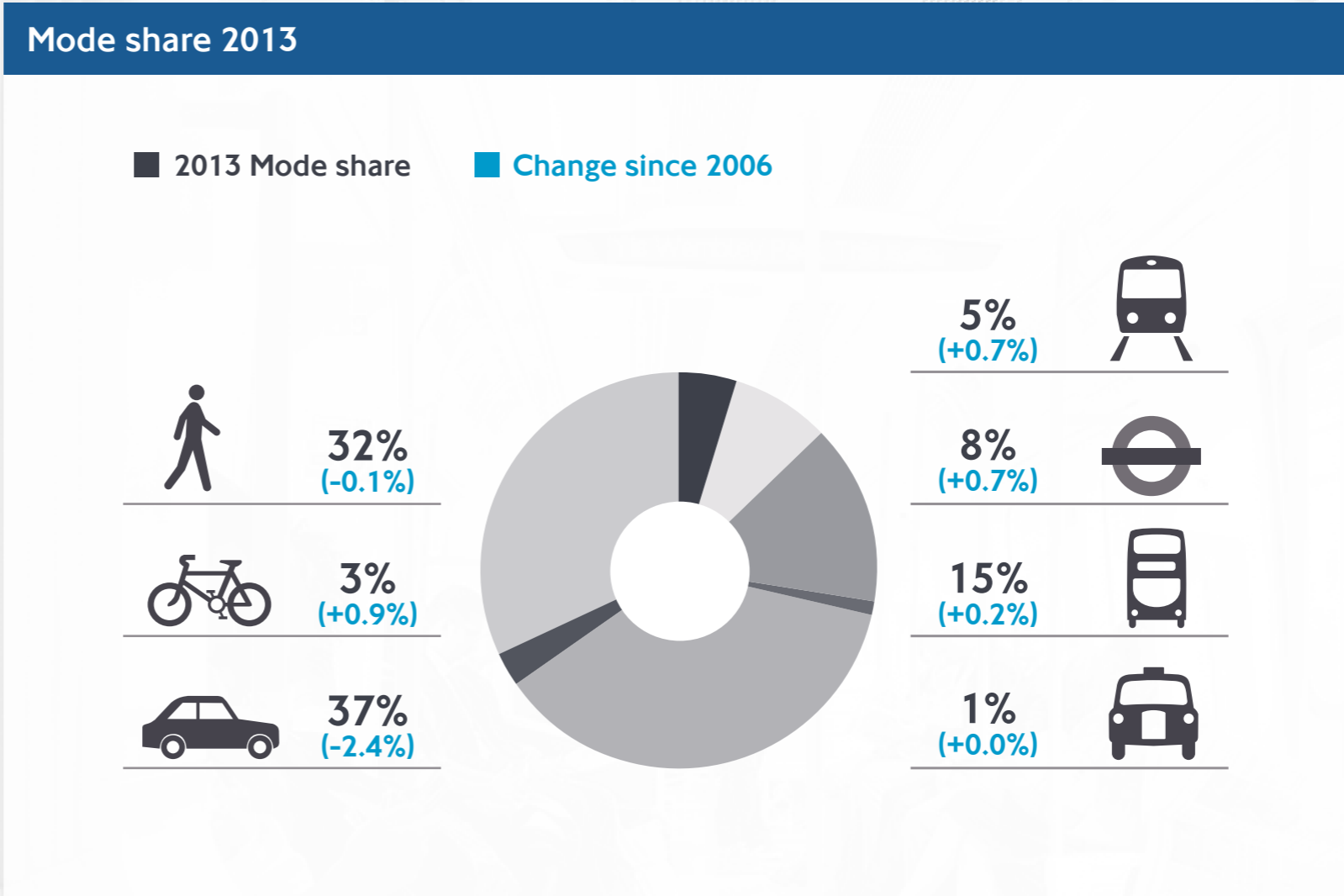


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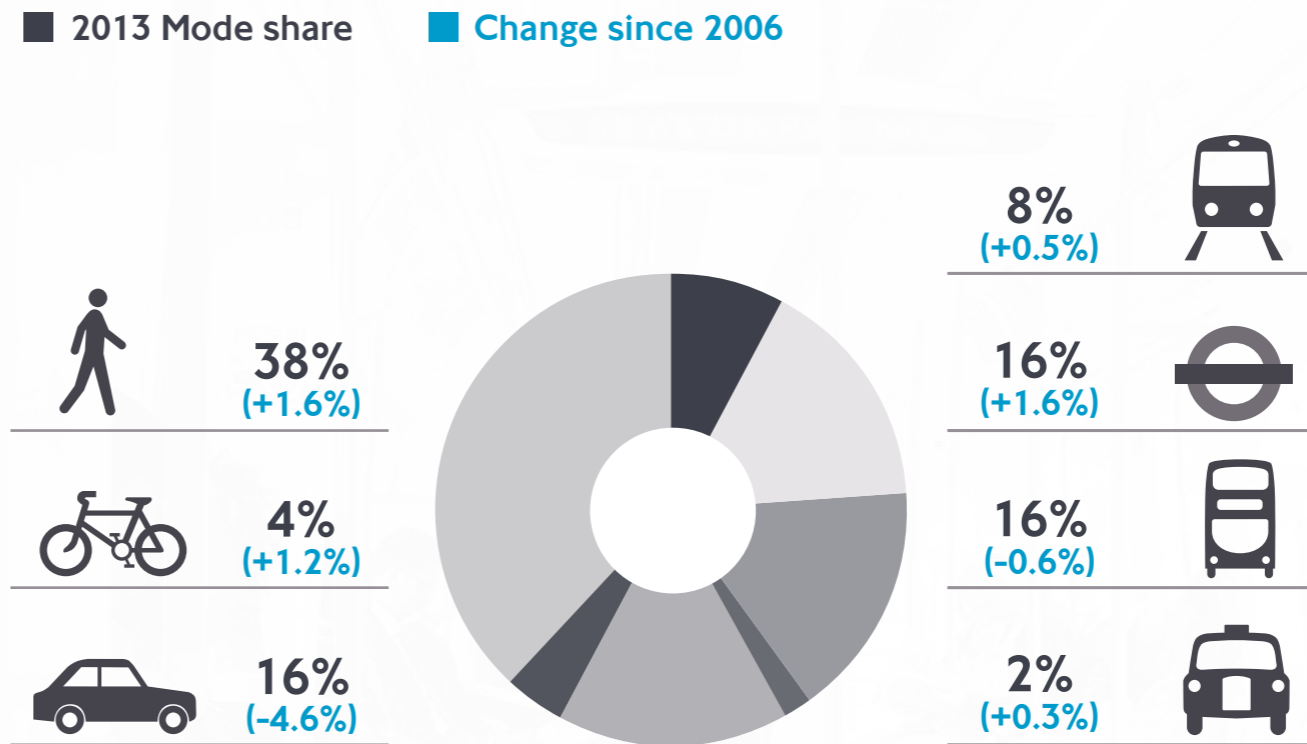
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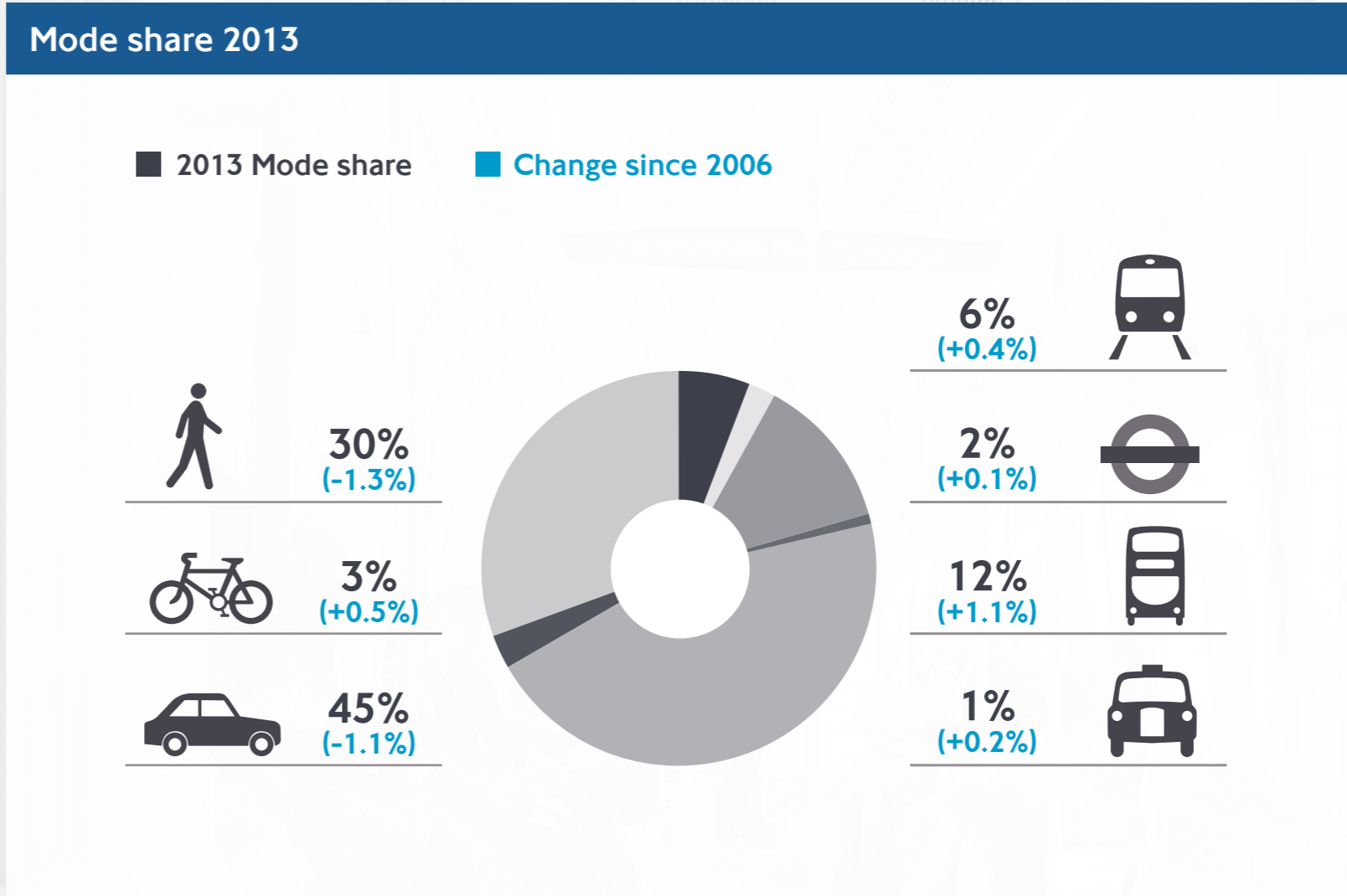


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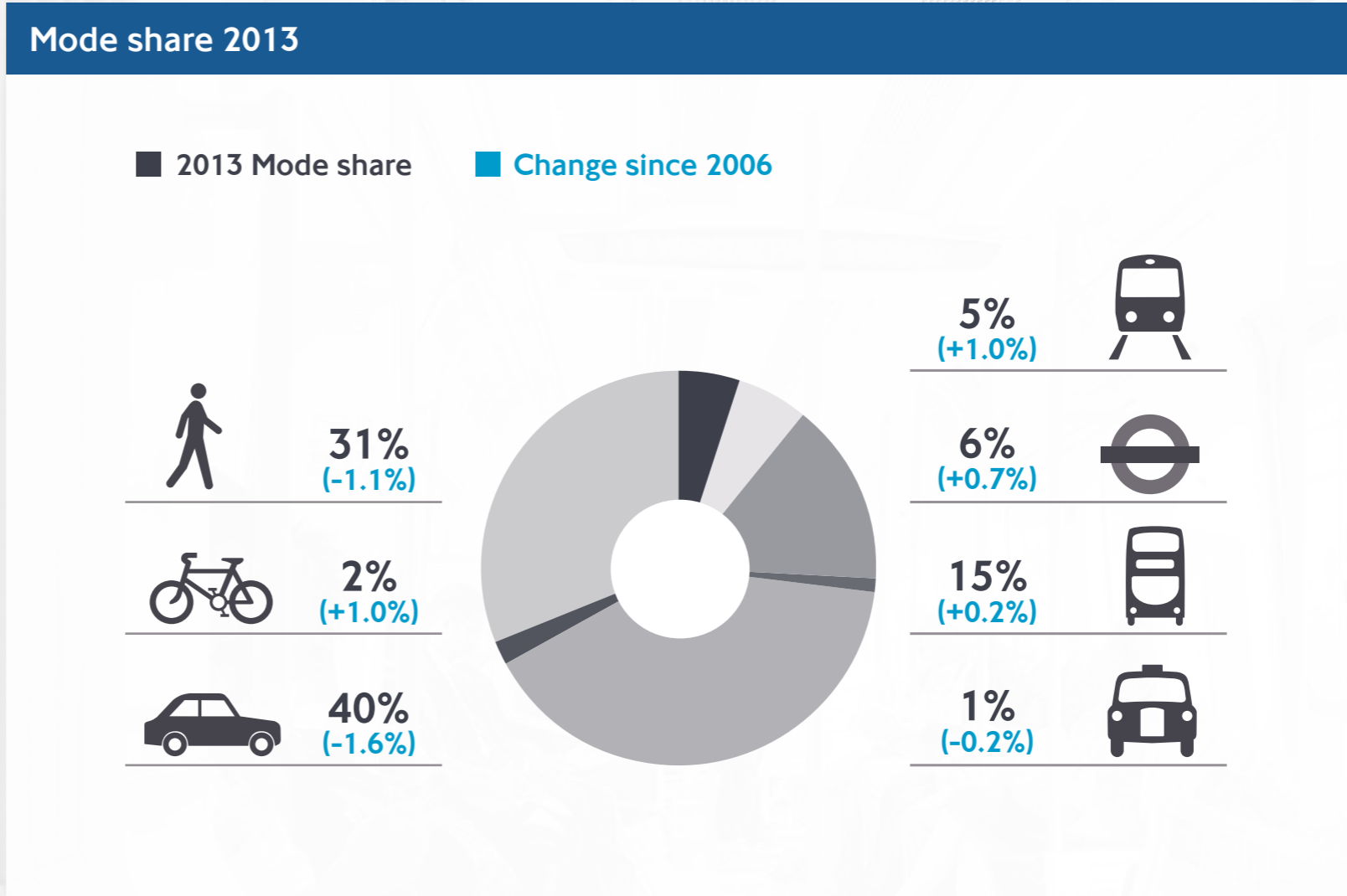


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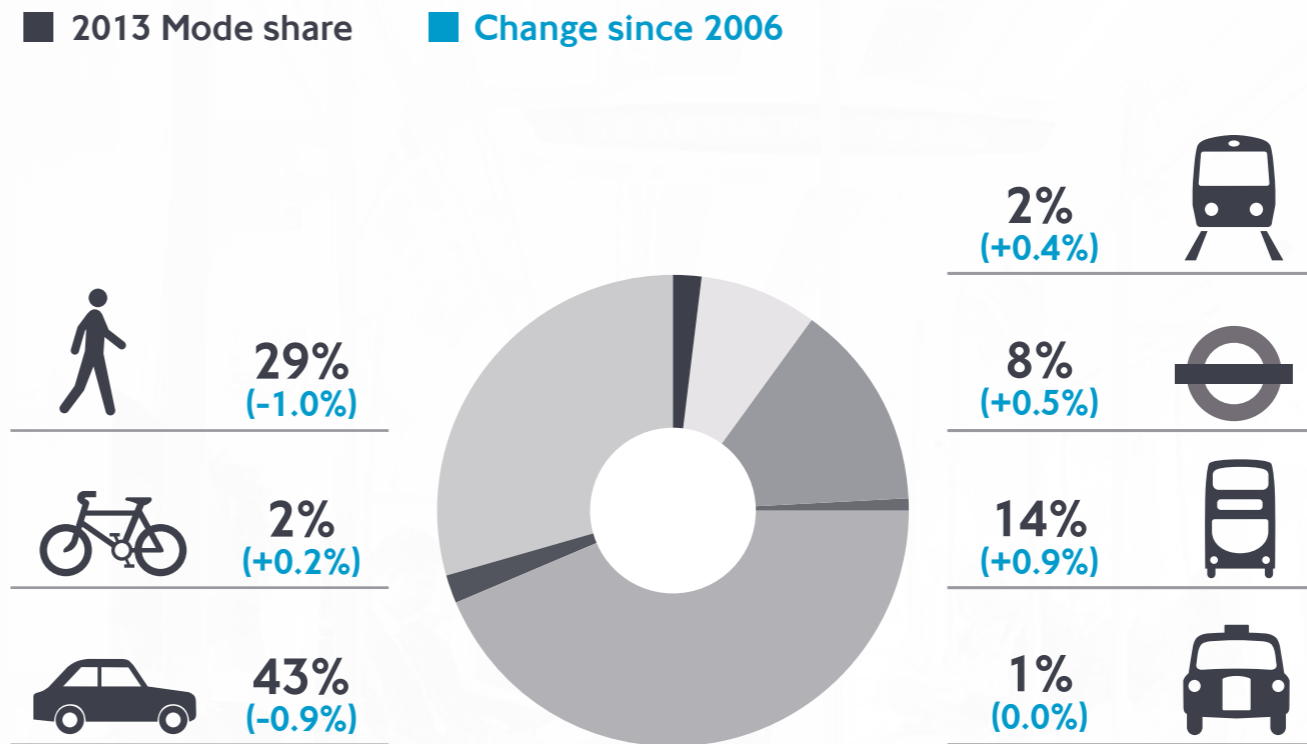
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The sub-region has seen a small increase in the share of trips made by rail and Underground. The share of National Rail trips, at 2%, is the lowest of any sub-region, which reflects the somewhat limited connectivity of the network, which is instead better served by the Underground instead. Waltham Forest has seen the largest increase in mode share by Underground and rail, probably as a result of more people commuting in central London from here.

Bus mode share has also continued to increase, particularly in Barnet and Waltham Forest.

Mode share 2013

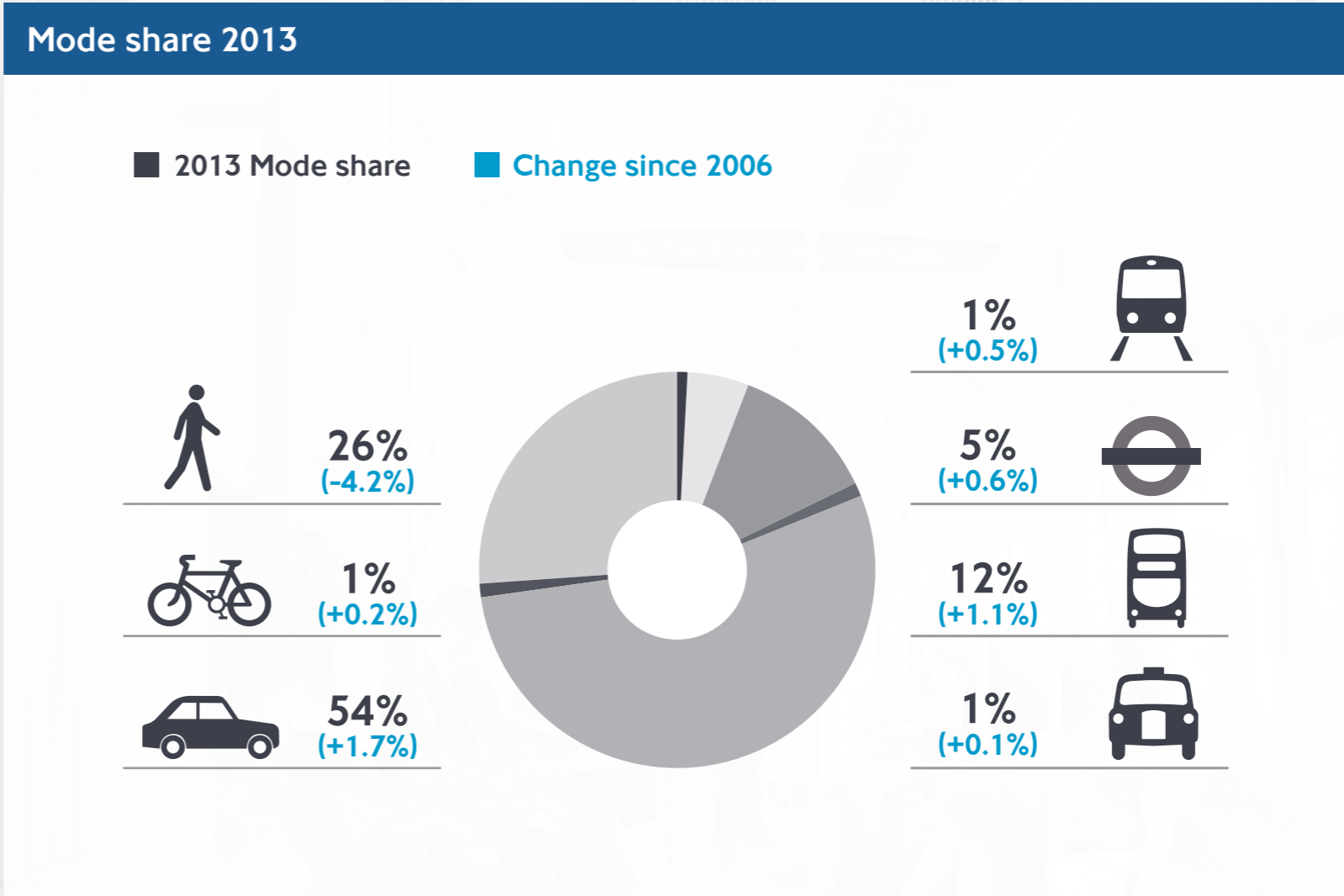


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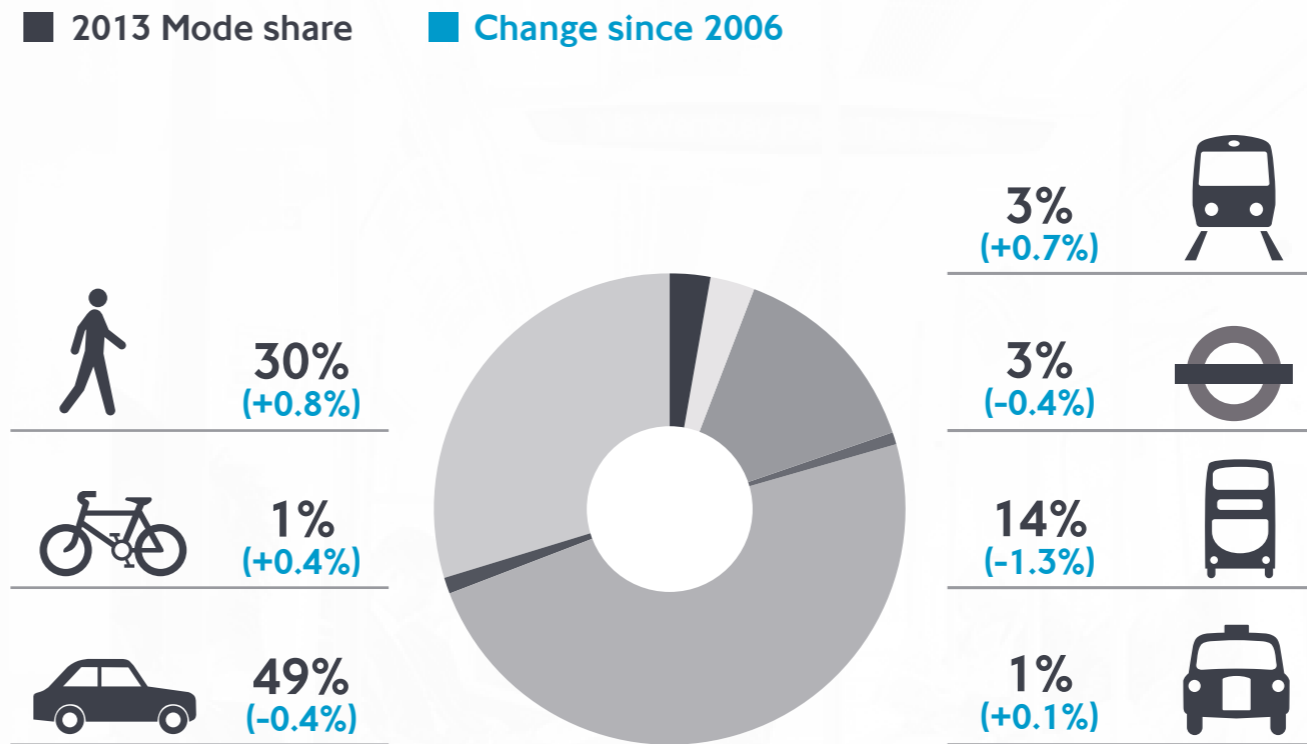
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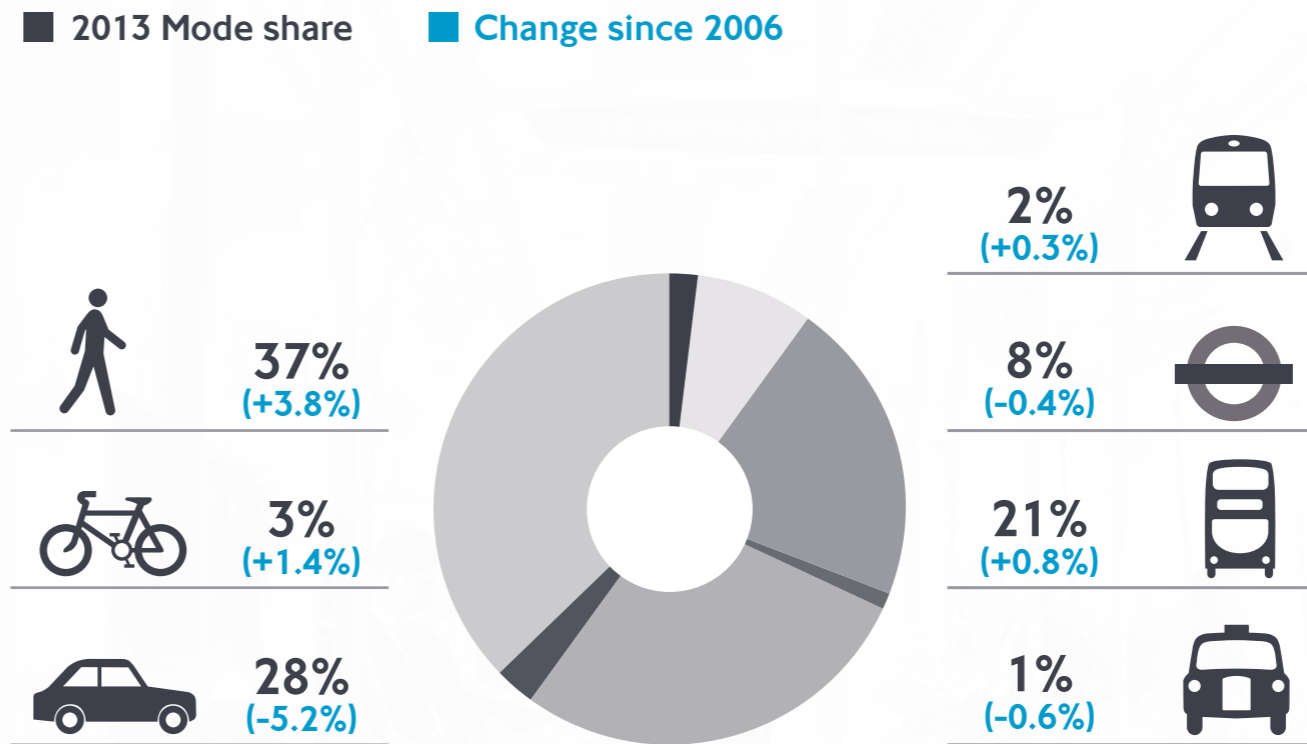
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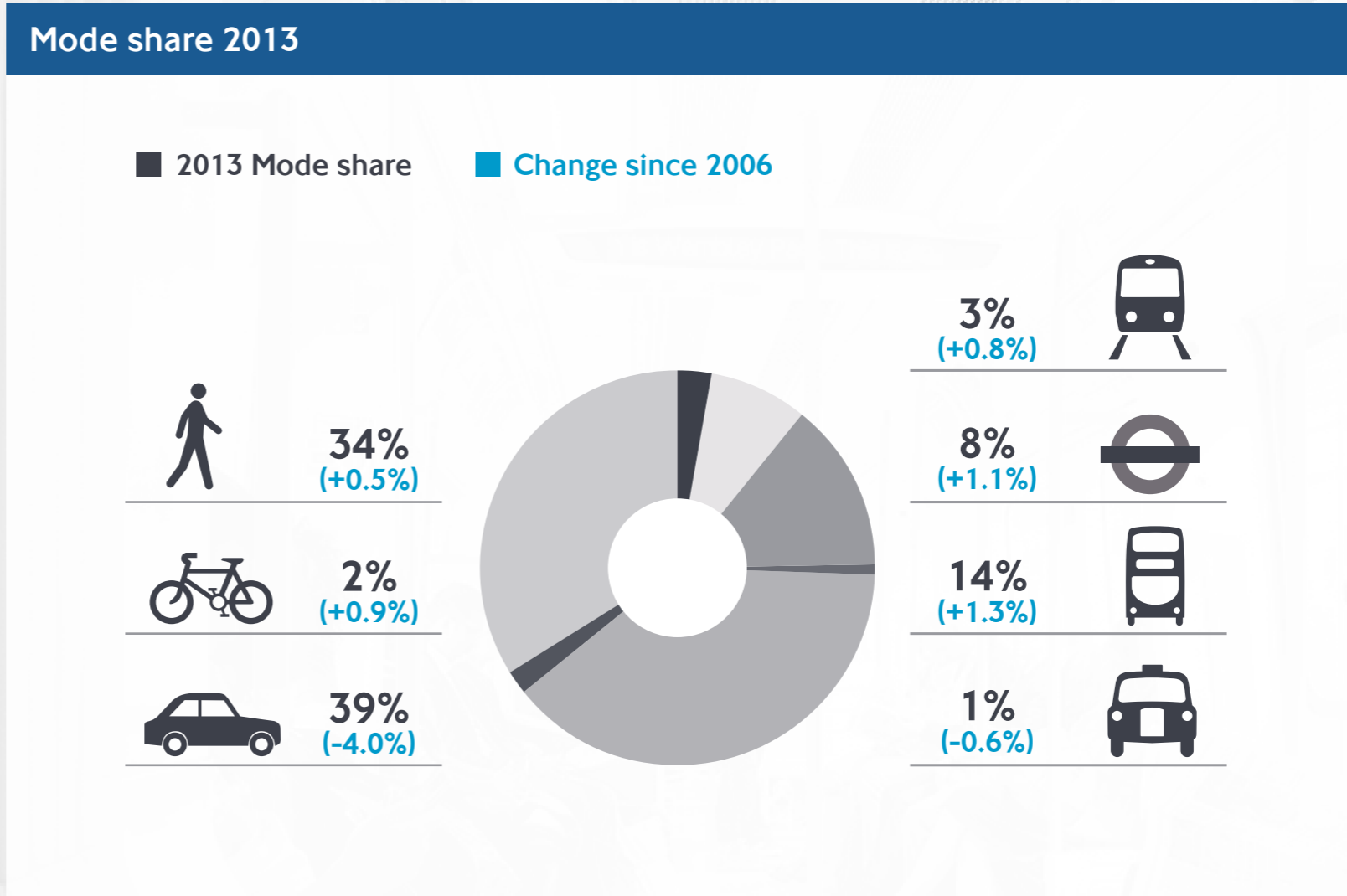


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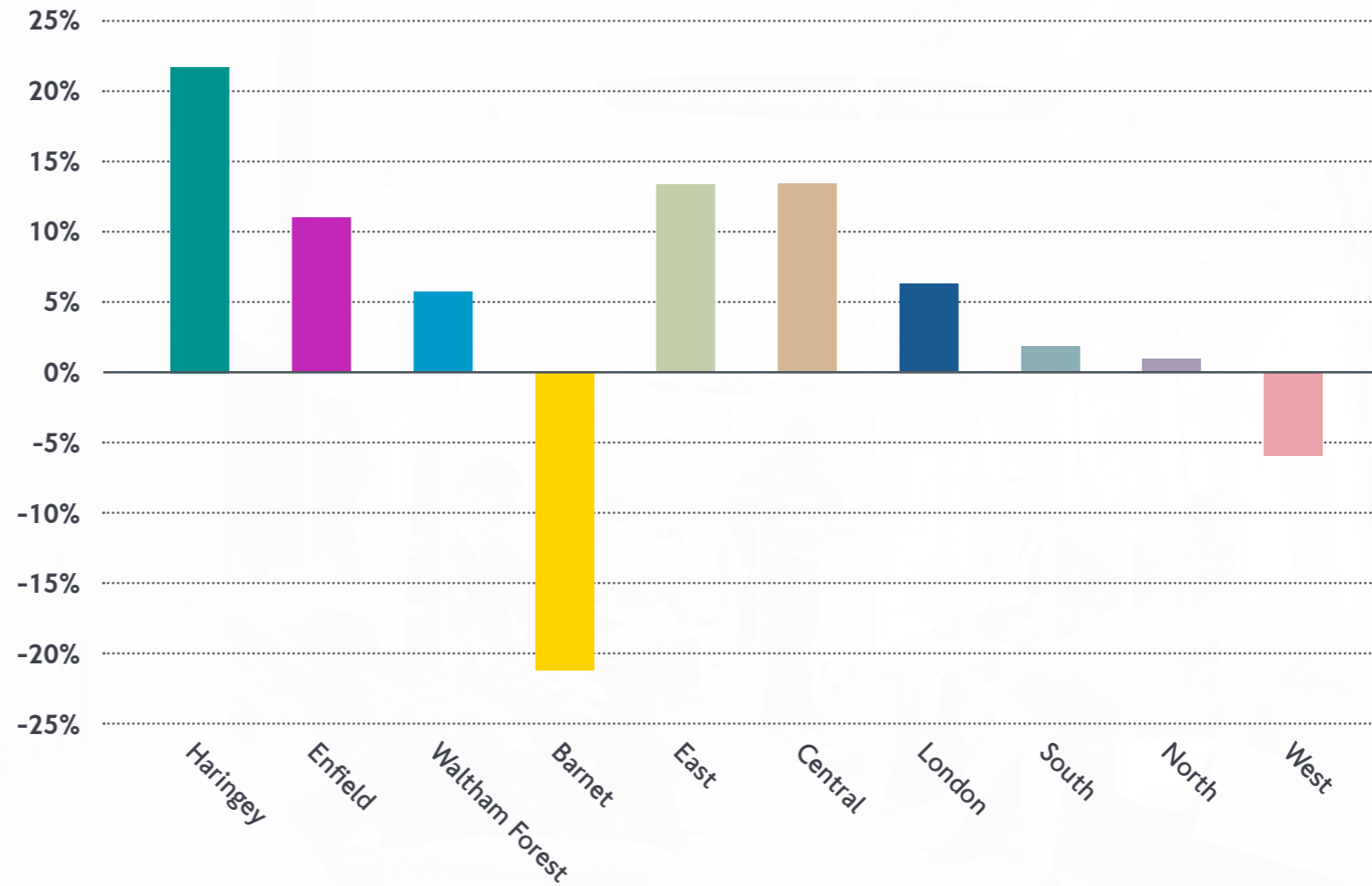
The sub-region has seen strong growth in cycling, but not so with walking

The North has seen strong growth in the number of cycling trips, rising by 83% since 2007, largely driven by Enfield and Barnet.

However, walking trips grew much more slowly, at just 1% compared to 6% for London as a whole, with a decline in walking trips in Barnet of 22%, balanced out by strong growth in Haringey of 22%.

Enabling the sub-region's residents to make their journeys by cycling and walking will be key to reducing highway congestion as the population continues to grow. Key to this will be the provision of an extensive network of cycle routes to allow simpler and safer access to and around London and local town centres.

Change in walking trips 2007/08 – 2012/13



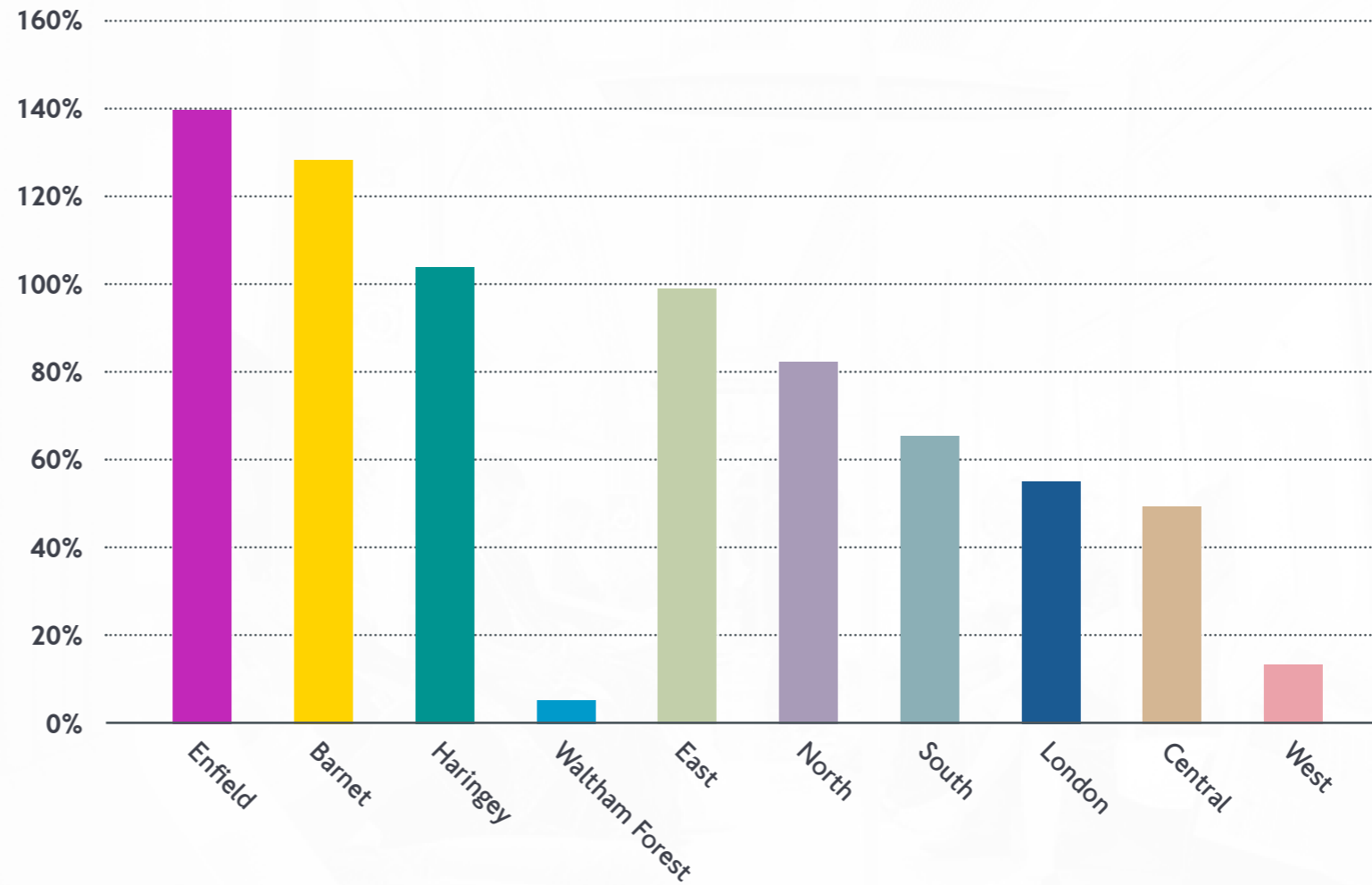
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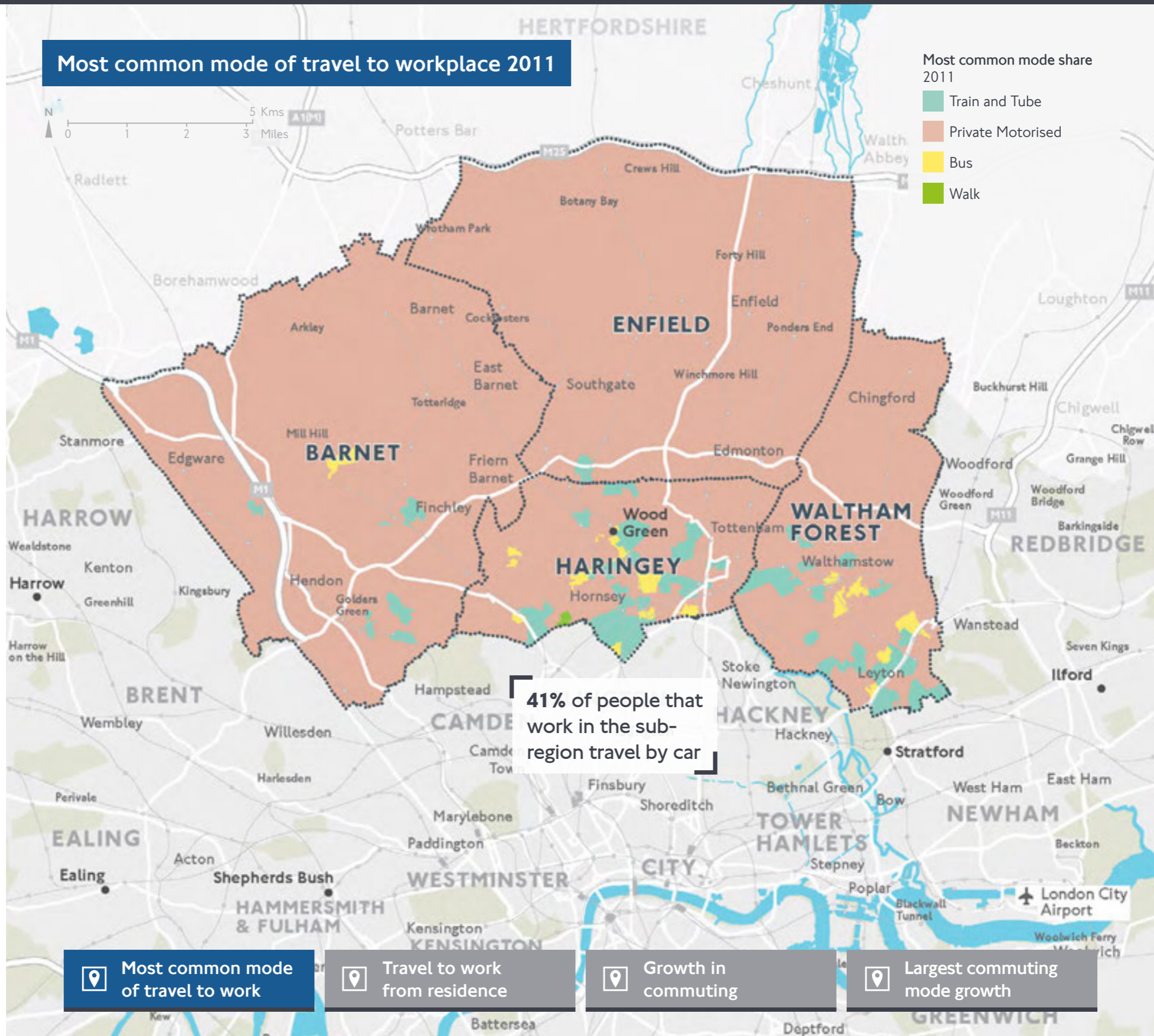


Car is still the dominant mode used to travel to work in the sub-region, although bus and train are playing a larger role

The car is still the dominant mode used to travel to work across much of the sub-region. Most people travel to workplaces in North London by car, although some significant areas of Haringey and southern Waltham Forest, are reached by bus or train (including Underground). As residents of the sub-region often travel into central London for work, residence based mode shares are greater for rail, particularly within more central locations, but also close to Underground stations, where large numbers of people work in central London.

There has been strong growth in the number of journeys to work by train and Tube, particularly along key radial rail corridors such as the Picadilly line. There has also been a strong growth in bus journeys, particularly in the Upper Lea Valley, and between Hendon to Edgware.

The number of commuting trips by car has decreased across parts of North London, particularly in more central locations such as Haringey and southern Waltham Forest, although there has been growth in other parts, notable around Mill Hill, Chingford and parts of Enfield.



Most common mode of travel to workplace 2011

- Most common mode share 2011
- Train and Tube
 - Private Motorised
 - Bus
 - Walk

41% of people that work in the sub-region travel by car

Most common mode of travel to work

Travel to work from residence

Growth in commuting

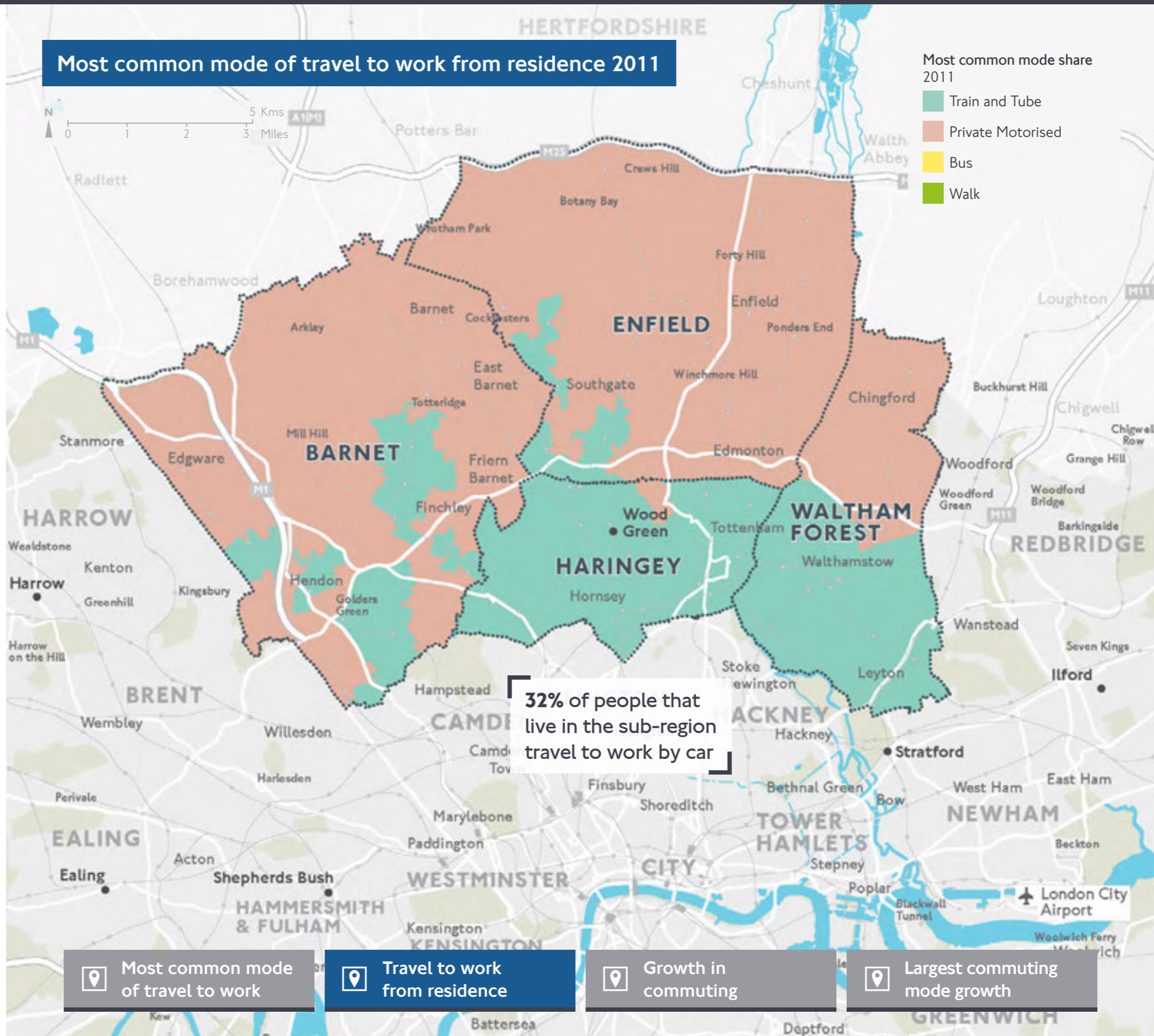
Largest commuting mode growth

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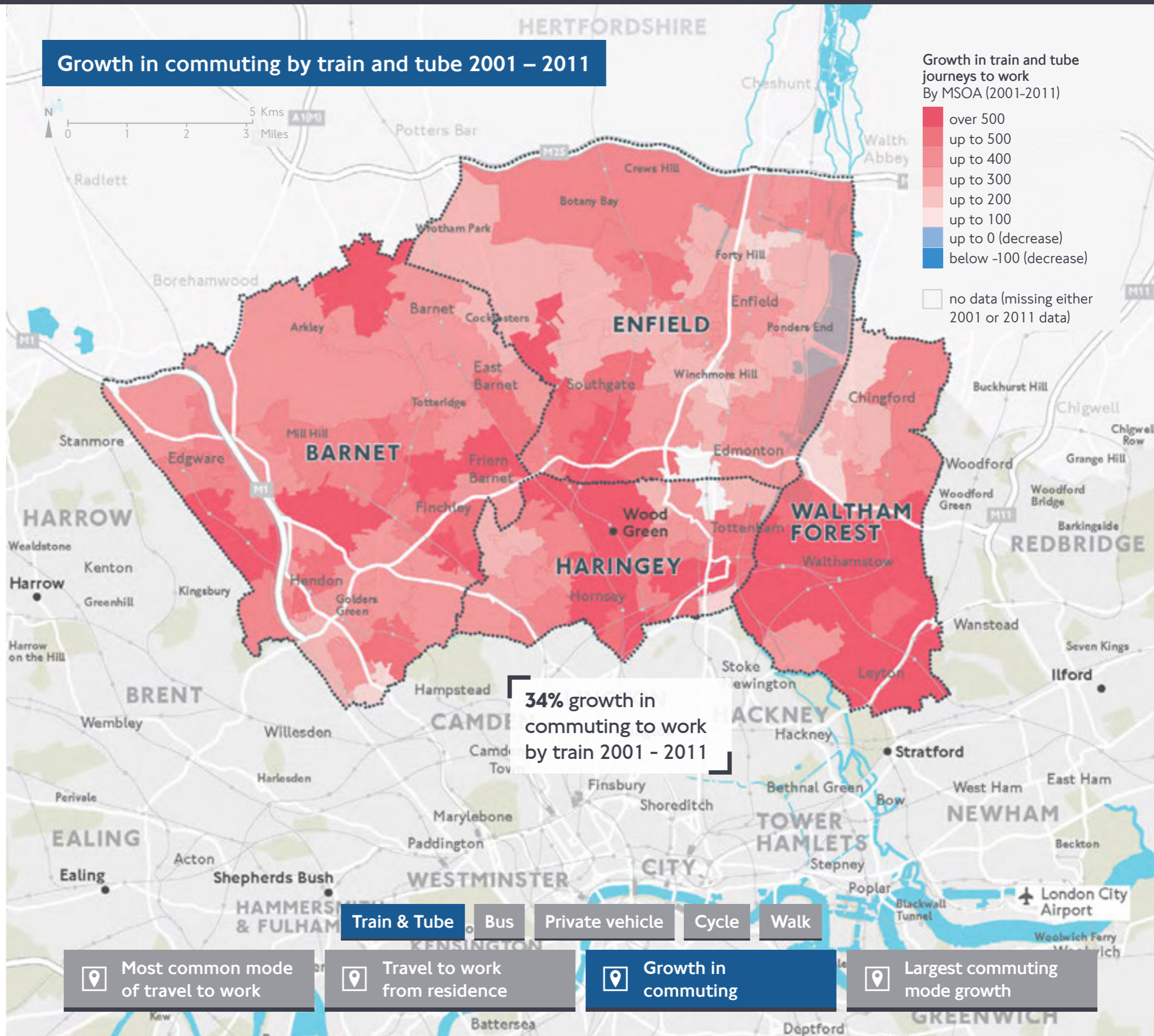


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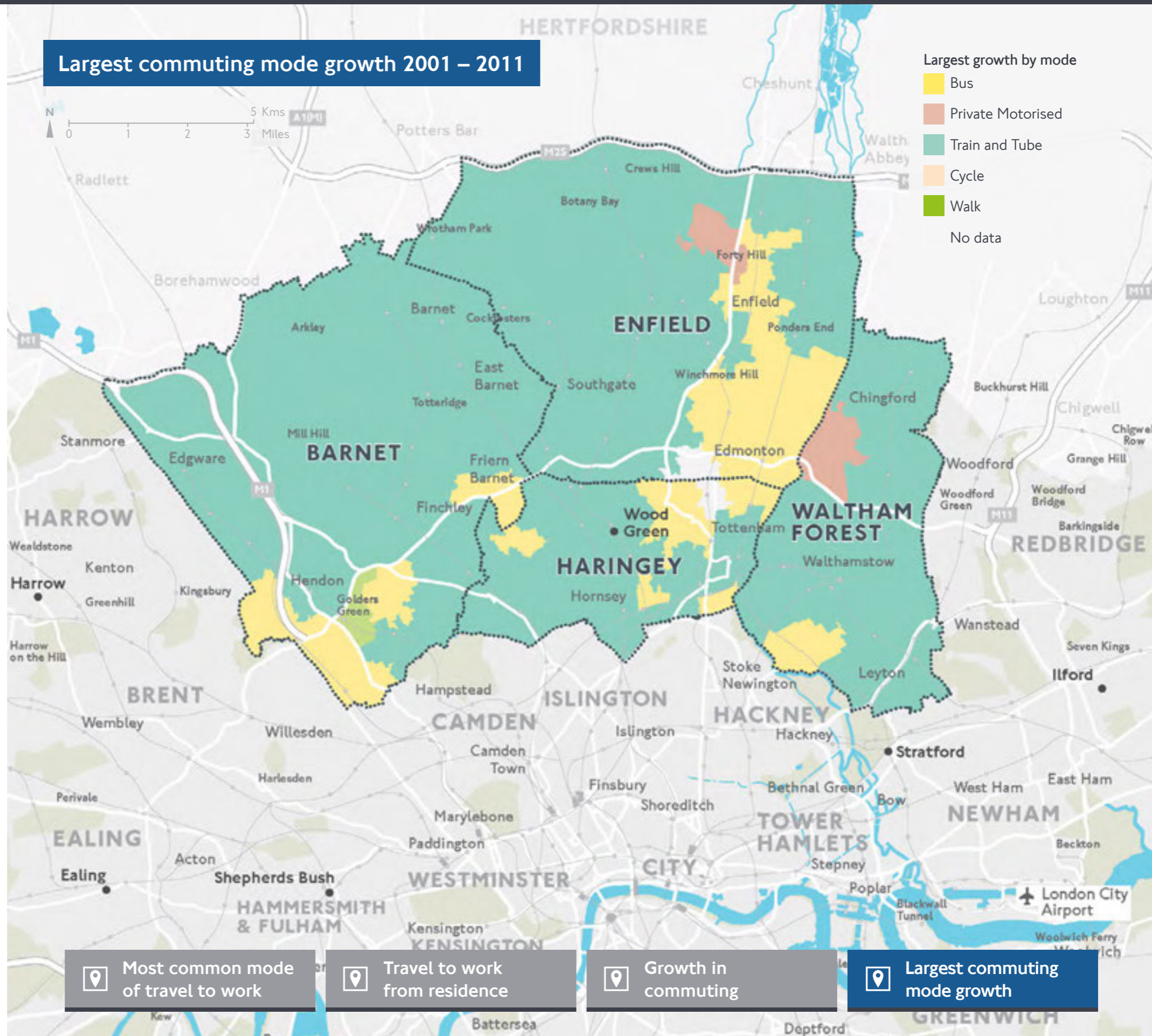


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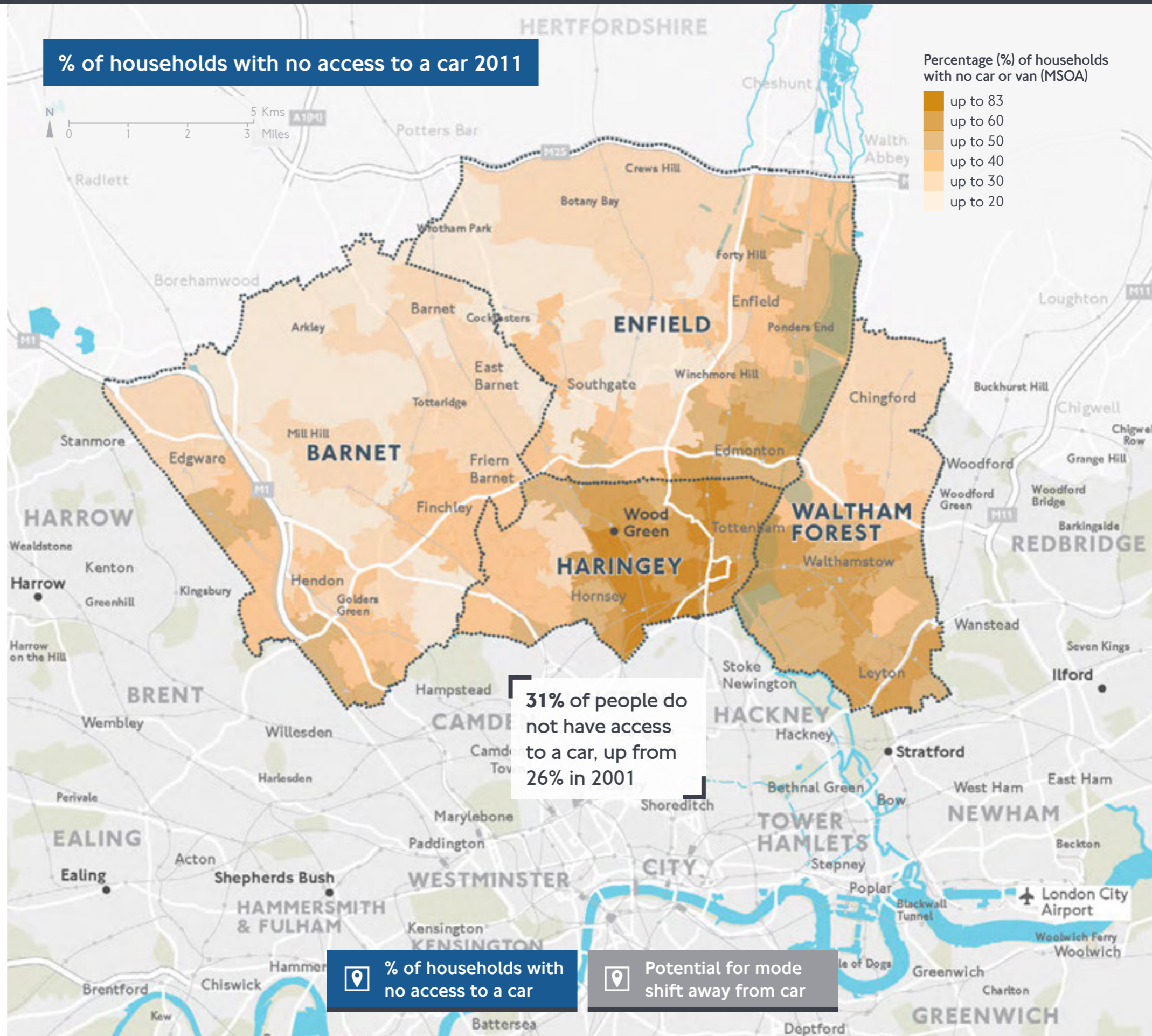
Car availability is declining as people switch modes. Potential exists for further mode shift, particularly in more denser areas

Levels of car ownership vary quite significantly across the sub-region. Haringey and southern Waltham Forest have the lowest levels of car ownership, with more than half of residents not owning a car, primarily due to their more central location, greater availability of public transport services and limited space allocated to parking.

Southern parts of the Upper Lea Valley, particularly Edmonton, also have relatively low levels of car ownership, mostly in areas with good access to public transport. Car ownership levels are highest in Barnet.

As residents have switched to public transport, car ownership levels have declined across all Boroughs, but particularly in Haringey and Waltham Forest, which have seen the greatest mode shift to bus and rail.

There is still significant potential for further mode shift away from the car, particularly in Haringey and Waltham Forest. Further details on the methodology used to estimate the potential for mode shift are available from TfL.



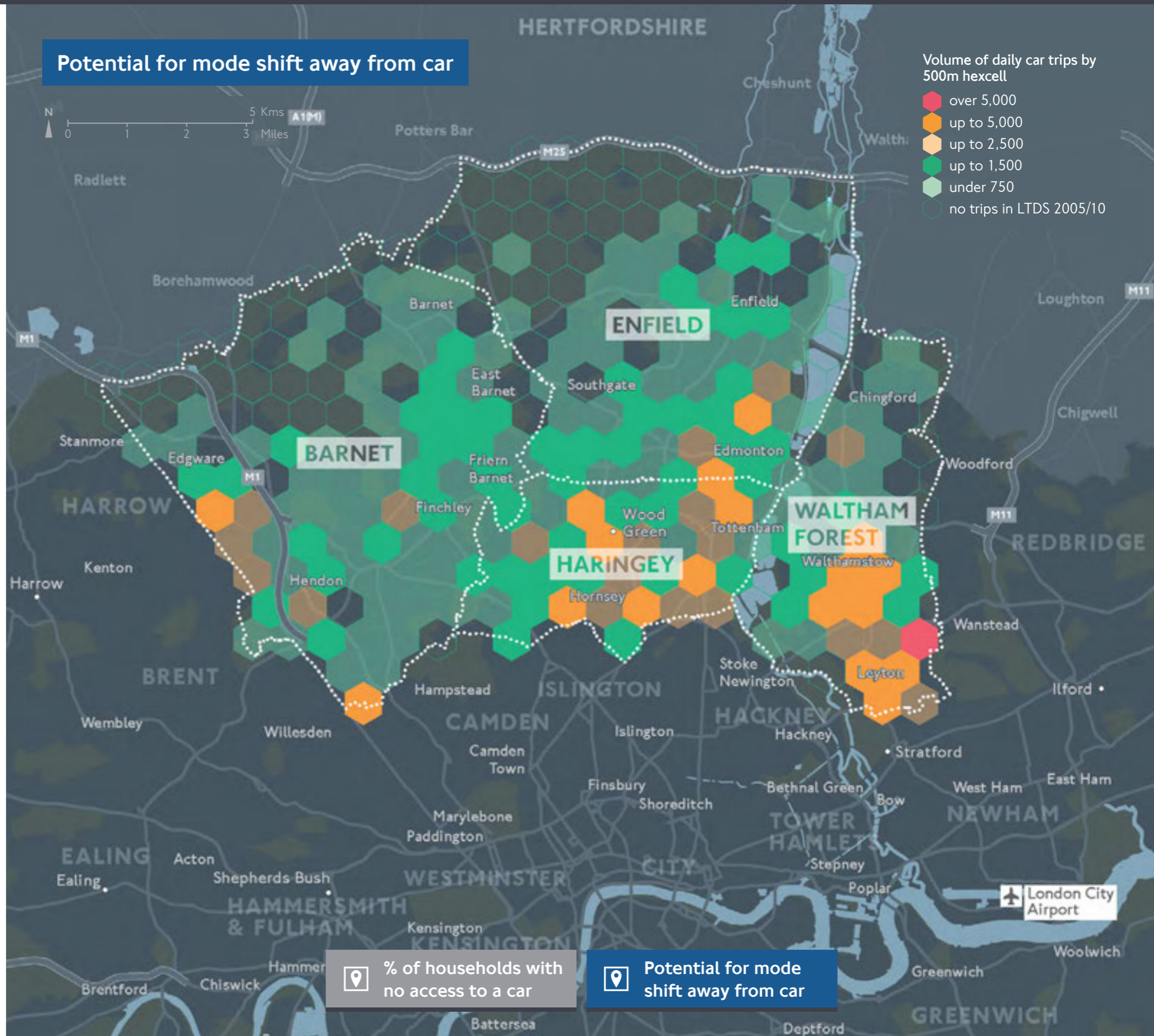
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Network capacity and connectivity >



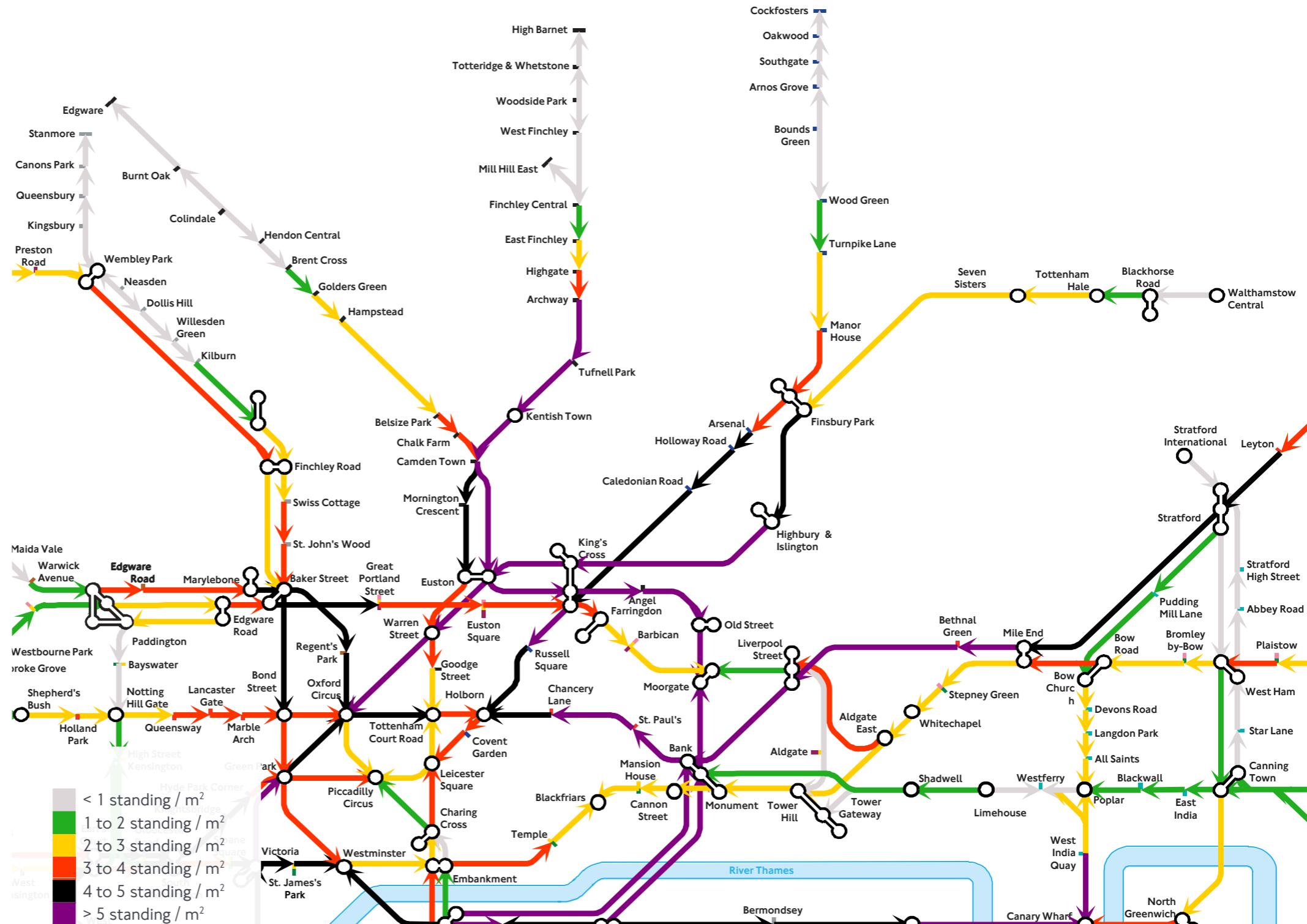
Although there is sufficient capacity on the rail network at present, low frequency services on National Rail lines may hold back growth

North London is generally well served by the London Underground network. Crowding levels are generally low within much of the sub-region, but increase as trains approach central London on the Northern, Victoria and Piccadilly lines.

There are a number of radial National Rail routes in the sub-region, with crowding levels relatively low for suburban stopping services. However, the Gospel Oak to Barking orbital line suffers from significant crowding.

National Rail services generally do not provide as frequent a service as the Underground. Frequency is a key component of the overall perception of the quality of service and low levels of frequency can make an area seem less connected, therefore restricting the potential for future housing and employment growth. Improving the frequency and quality of service of National Rail lines will be key to maximising the growth potential of the sub-region.

Underground and DLR crowding 2011



Underground and DLR crowding 2011

National Rail crowding 2011

Station frequency 2015

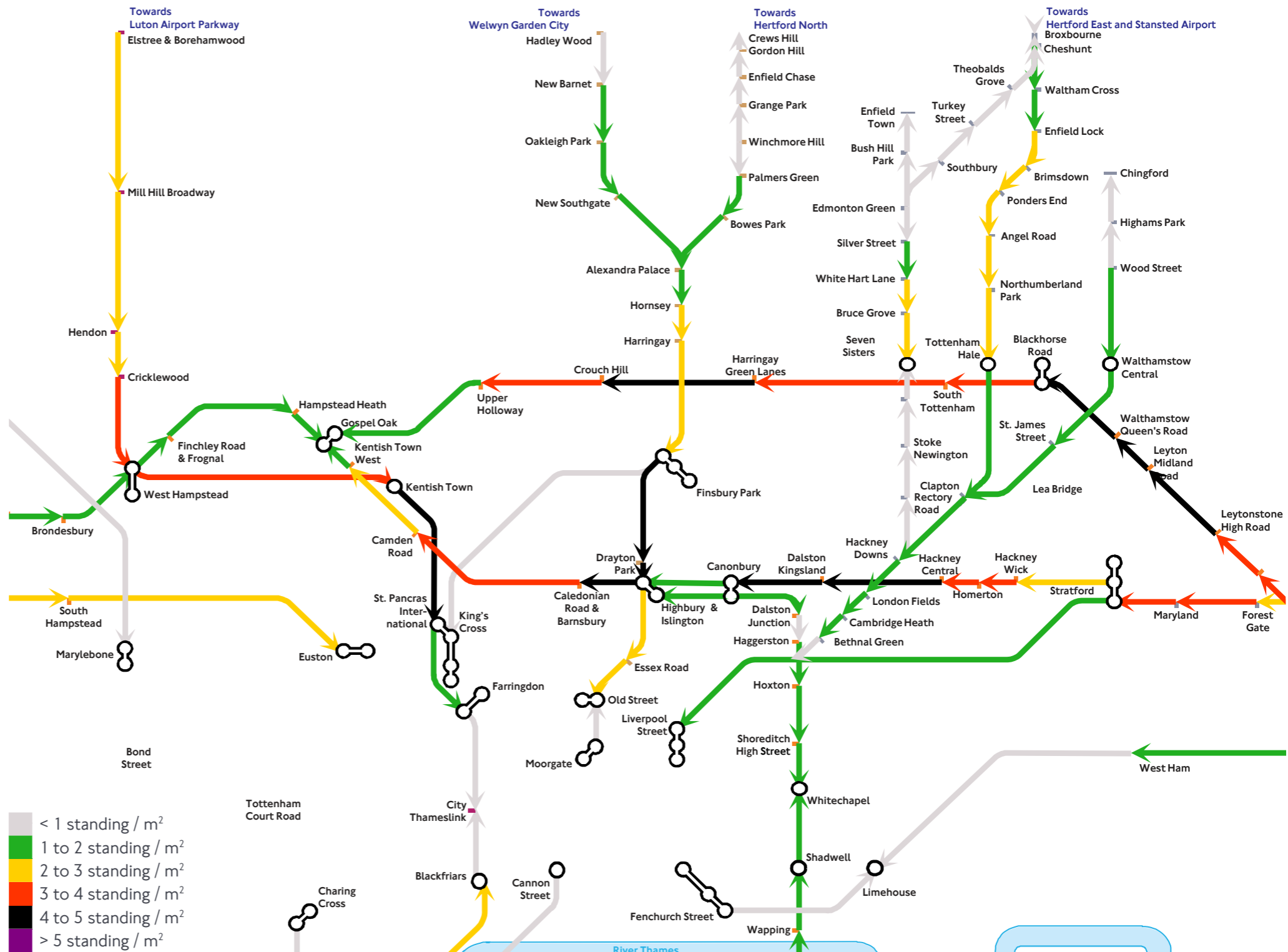
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National Rail crowding 2011



- < 1 standing / m²
- 1 to 2 standing / m²
- 2 to 3 standing / m²
- 3 to 4 standing / m²
- 4 to 5 standing / m²
- > 5 standing / m²

Underground and DLR crowding 2011

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Station frequency 2015

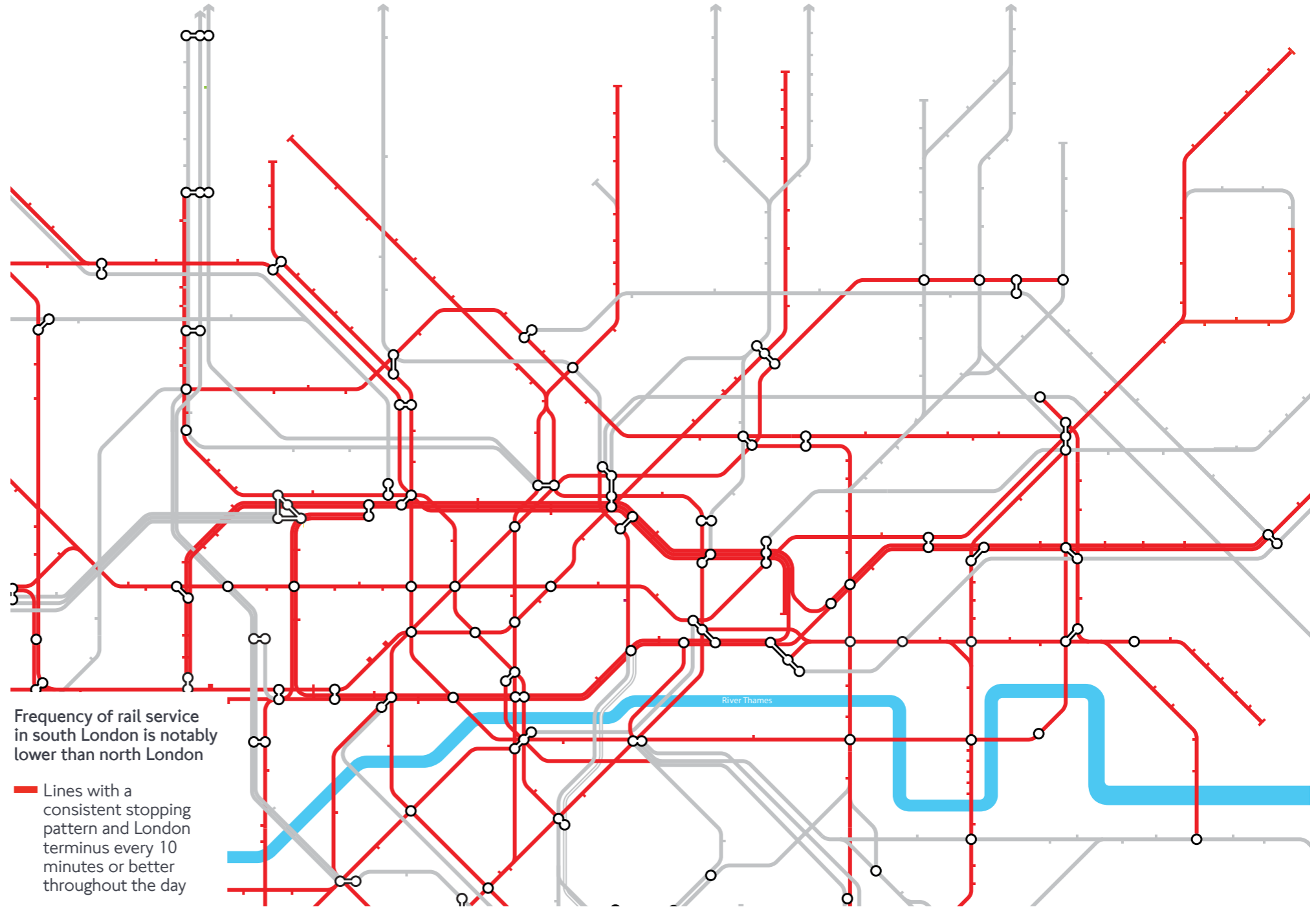
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Station frequency 2015



Frequency of rail service in south London is notably lower than north London

— Lines with a consistent stopping pattern and London terminus every 10 minutes or better throughout the day

— Lines with an inconsistent or infrequent (less often than every 10 minutes) stopping pattern throughout the day

Underground and DLR crowding 2011

National Rail crowding 2011

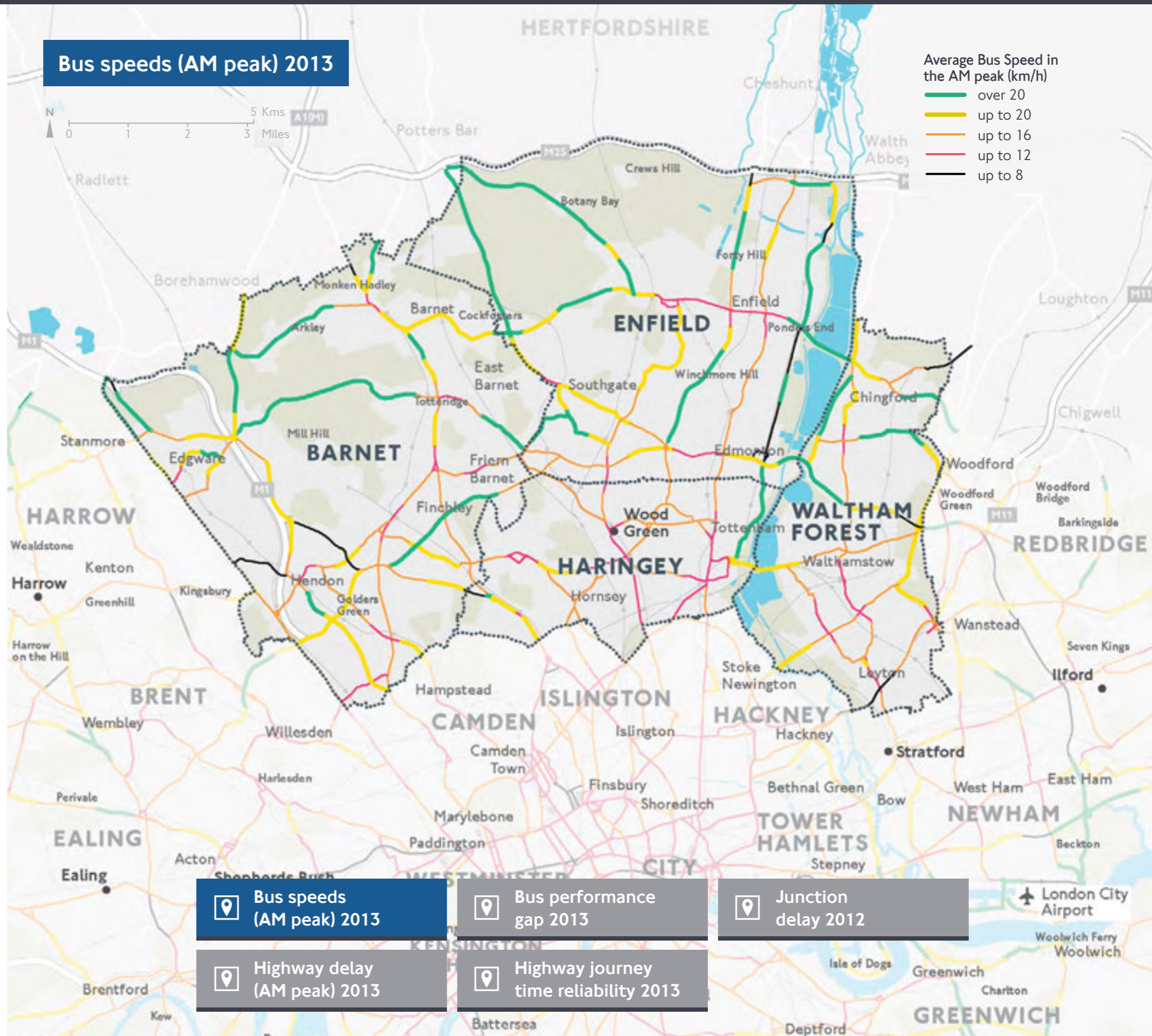
Station frequency 2015

Increasing congestion has decreased journey time reliability at key locations, and has increased bus wait times

Highway delays and congestion are a significant problem across the sub-region and affect access to a number of key radial and orbital routes. This may constrain employment growth in these locations, as congestion and poor journey time reliability adds costs to business operations and restricts accessibility to potential customers and suppliers. Continued employment and population growth have meant that congestion has increased in recent years.

Over the past ten years excess wait time for high-frequency buses has continued to fall (and is now just over a minute on average). However, bus wait times have begun to increase during the past two years, largely as a result of congestion. Whilst bus speeds are lowest towards central London there are a number of orbital routes corridors in the North, particularly along the North Circular where they are also slow.

As London continues to grow there is a need to ensure that appropriate measures are taken to maintain attractive and reliable bus services.



Bus speeds (AM peak) 2013

- Average Bus Speed in the AM peak (km/h)
- over 20
 - up to 20
 - up to 16
 - up to 12
 - up to 8

📍 Bus speeds (AM peak) 2013

📍 Bus performance gap 2013

📍 Junction delay 2012

📍 Highway delay (AM peak) 2013

📍 Highway journey time reliability 2013

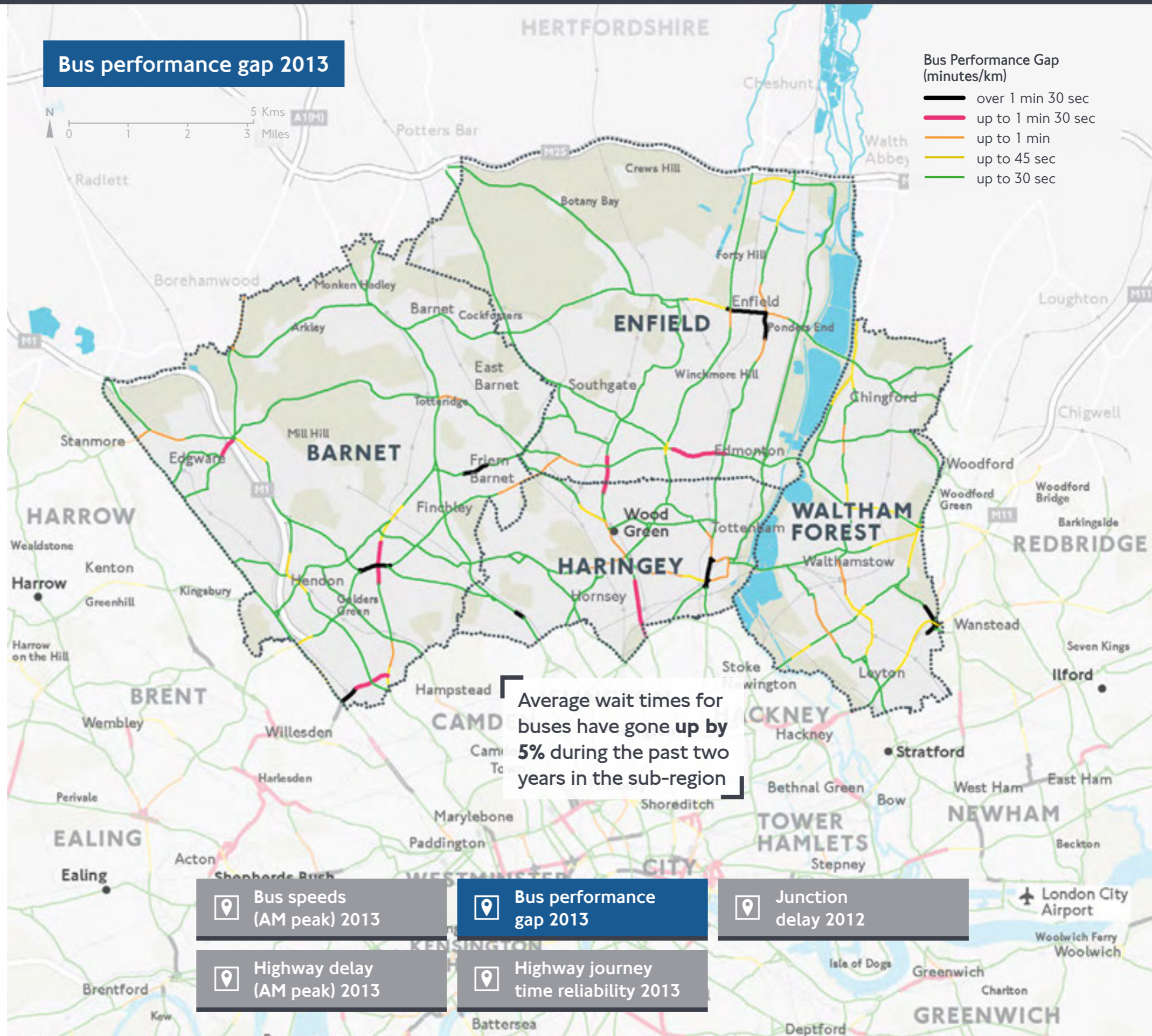
✈️ London City Airport

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Bus performance gap 2013

- Bus Performance Gap (minutes/km)
- over 1 min 30 sec
 - up to 1 min 30 sec
 - up to 1 min
 - up to 45 sec
 - up to 30 sec

Average wait times for buses have gone up by **5%** during the past two years in the sub-region

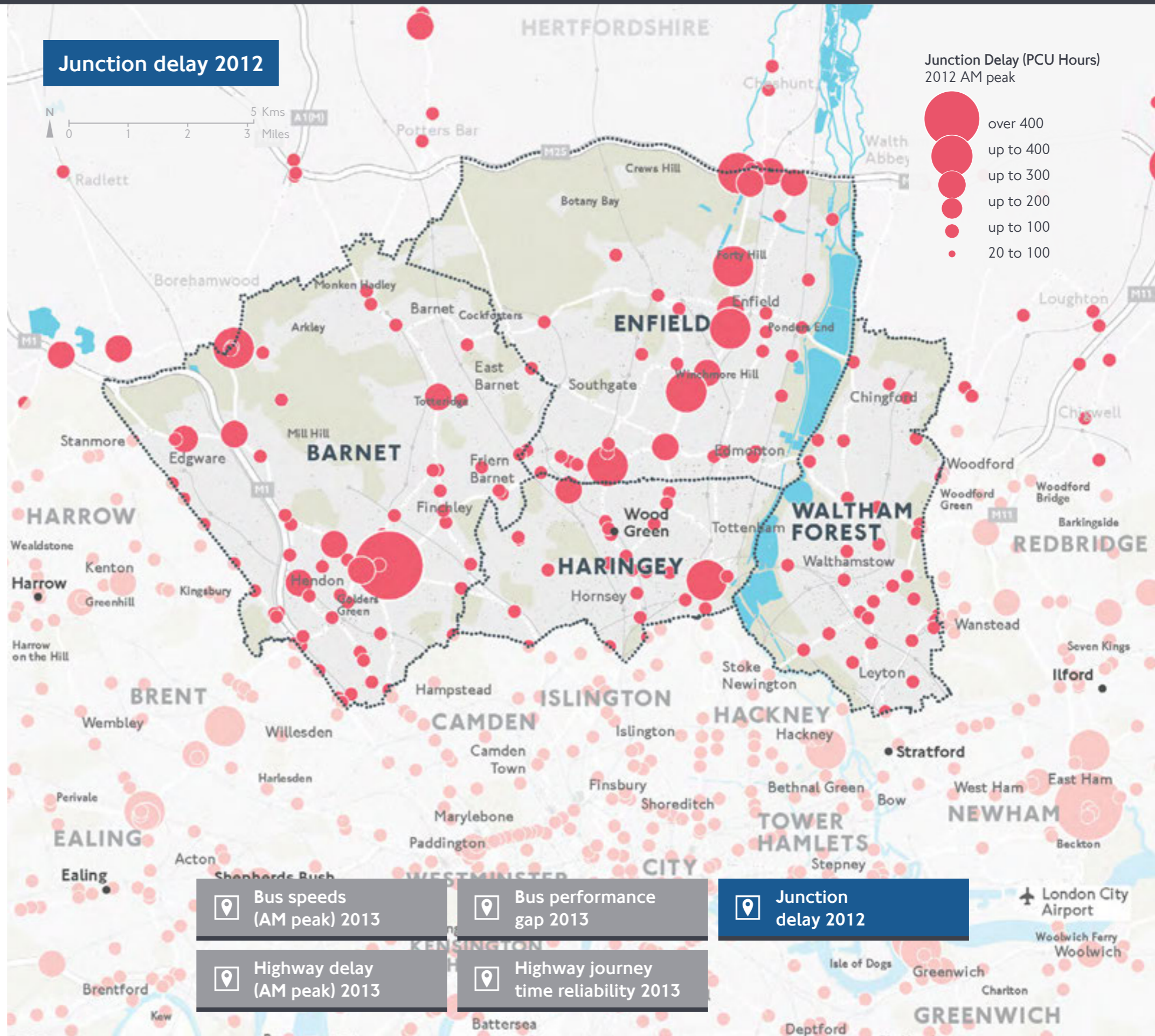
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Junction delay 2012

Junction Delay (PCU Hours) 2012 AM peak

- over 400
- up to 400
- up to 300
- up to 200
- up to 100
- 20 to 100

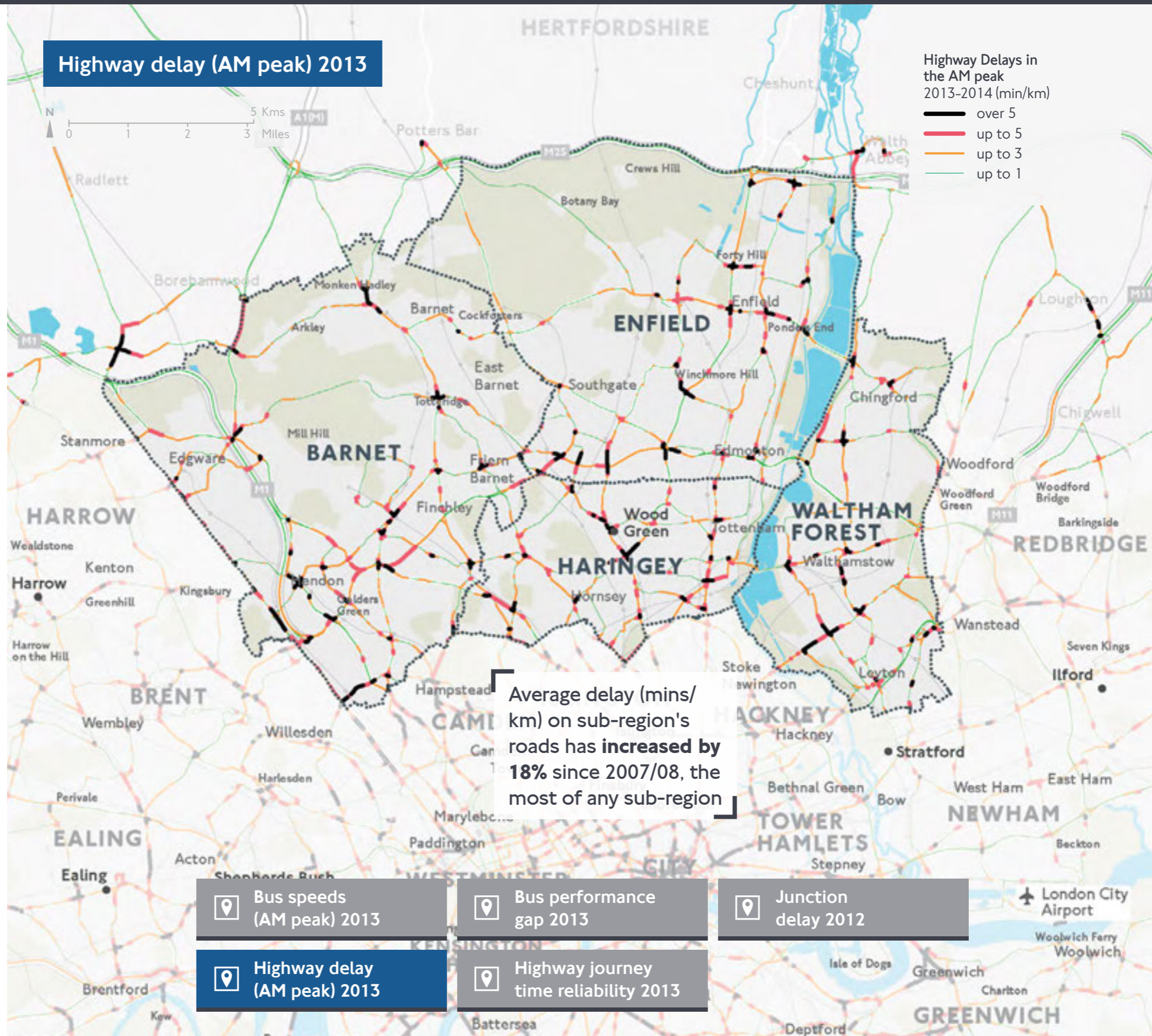
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Highway delay (AM peak) 2013

Highway Delays in the AM peak 2013-2014 (min/km)

- over 5
- up to 5
- up to 3
- up to 1

Average delay (mins/km) on sub-region's roads has **increased by 18%** since 2007/08, the most of any sub-region

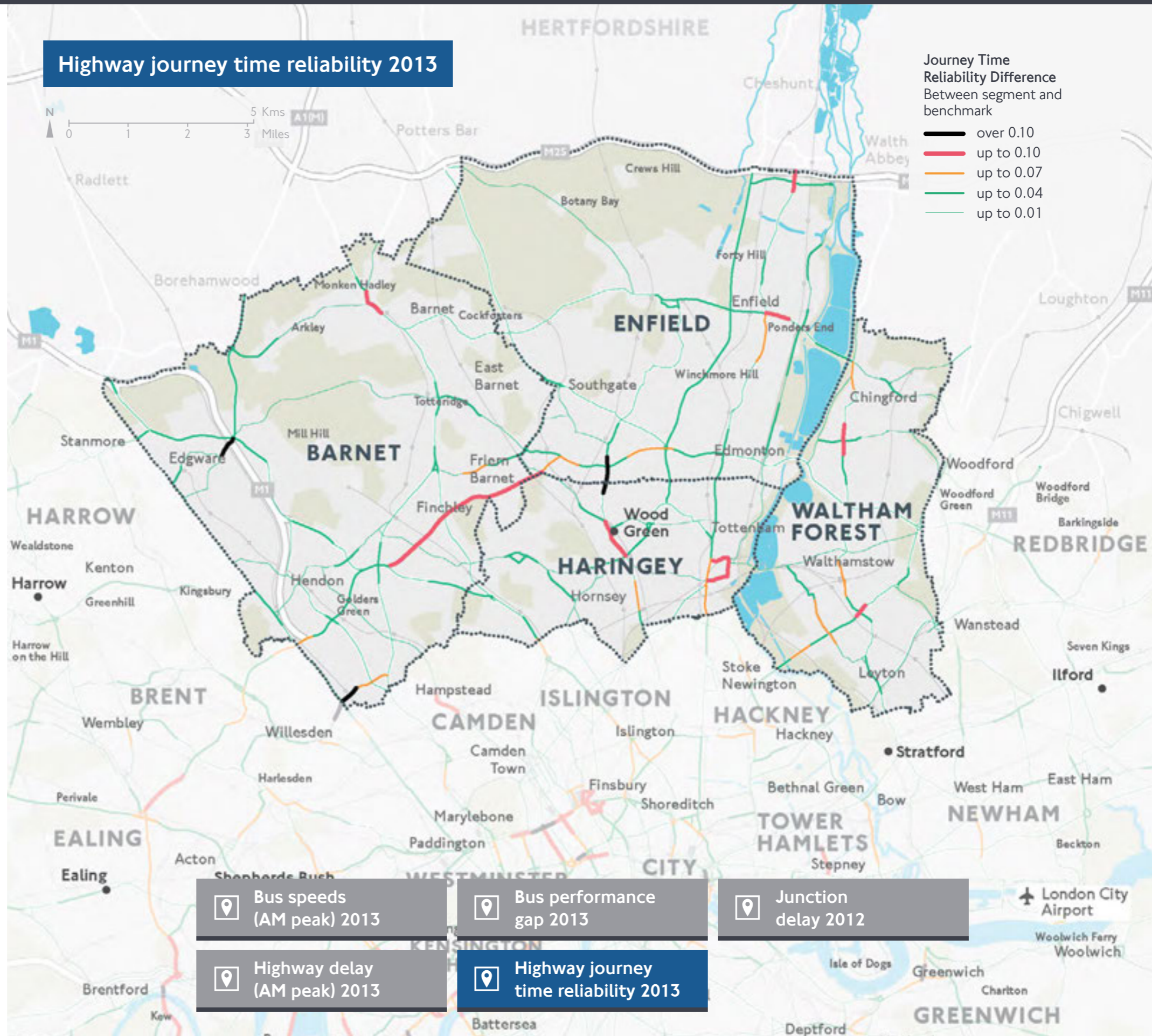
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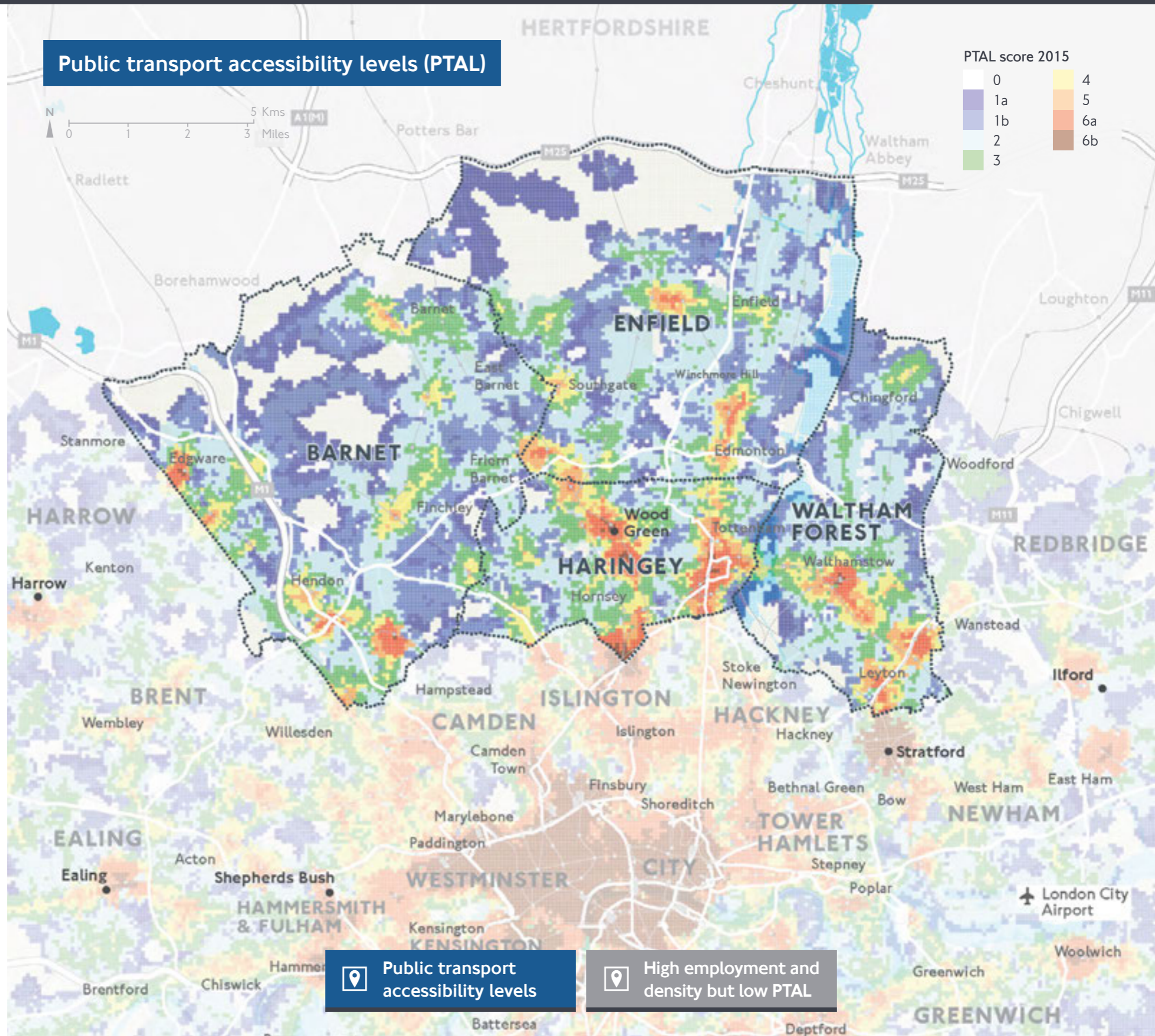
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Some areas need improvements in public transport connectivity to support high levels of activity

Public Transport Accessibility Levels (PTALs) are based on the combination of the walk distance to the nearest public transport service and the wait time for that service. The extensive bus network plays a fundamental role in providing public transport connectivity throughout the sub-region, including orbital journeys and journeys to town centres, with rail supporting largely radial journeys.

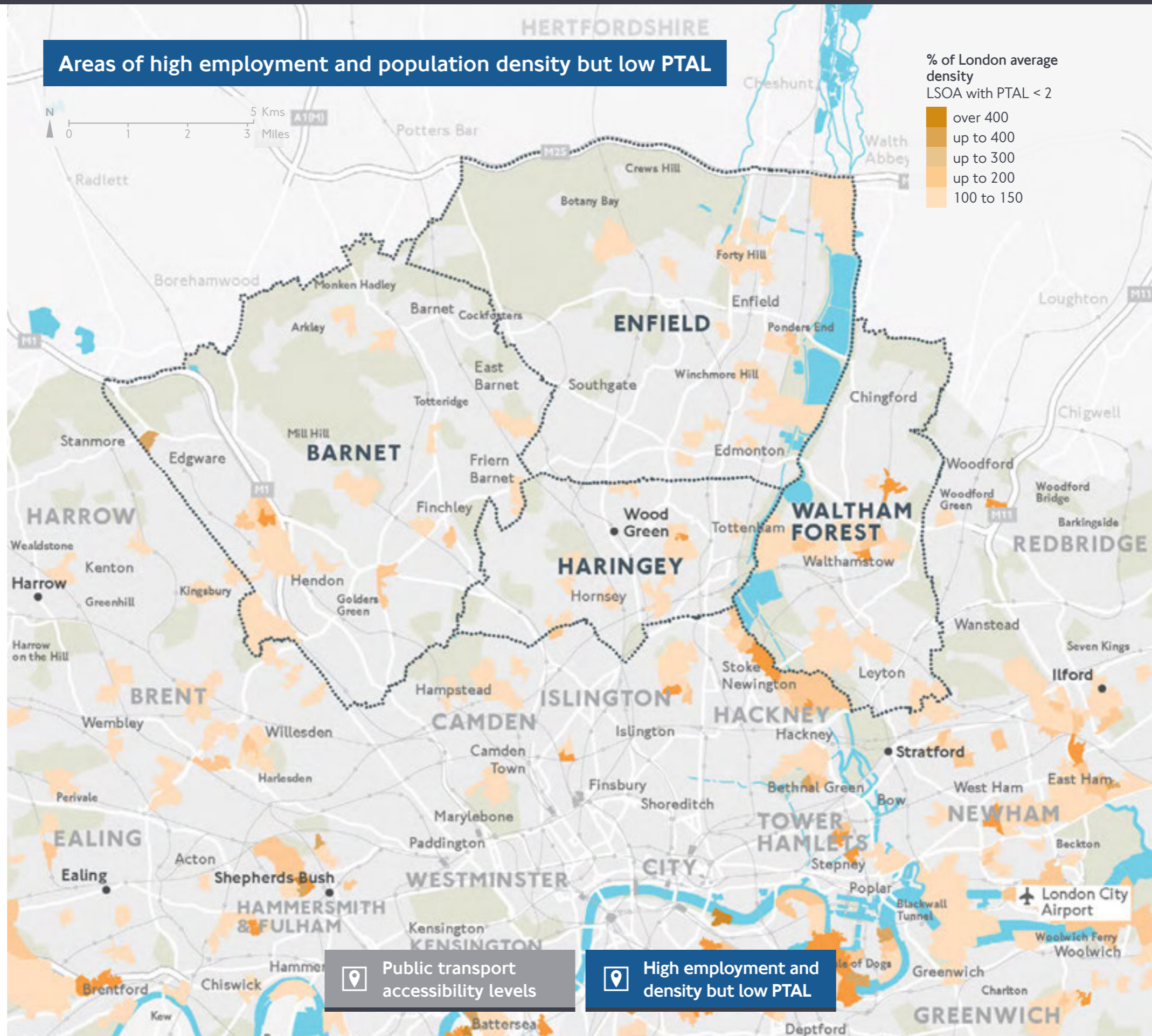
Poor accessibility levels are located throughout the region but are particularly prominent in parts of Barnet and Enfield. There are some areas where total population and employment density is higher than would usually be expected for the PTAL level. These include parts of Walthamstow and Colindale. There may be opportunities to enhance public transport accessibility here, to enable faster journeys for those that already use bus and rail, and to encourage further mode shift away from the car and reduce congestion.



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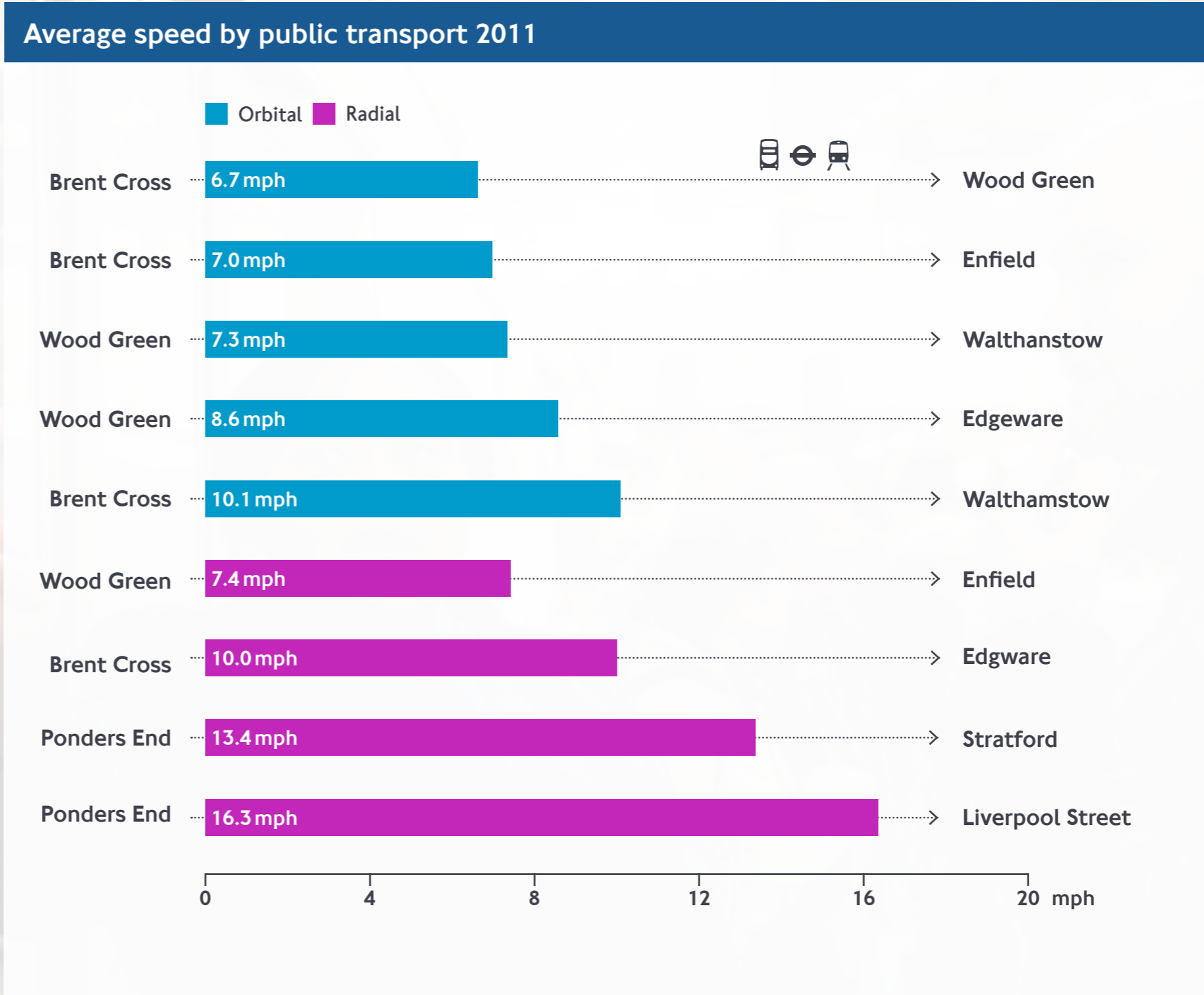


Radial public transport movements are typically rail based and quicker than orbital movements

Radial movements by public transport are typically faster than orbital movements, with cars providing quicker journey times for this type of trip. This is likely to be a key reason as to why cars are the dominant mode in the North.

Enhancing orbital connectivity, and connectivity between key centres in particular, will be key to ensuring the sub-region remains competitive and can support future employment growth.

Most public transport journeys, and those made by rail based modes in particular, will see small reductions in total journey time between 2011 and 2031 as a result of committed investment. However, journey times by car are expected to increase as a result of growing congestion.



Average speed by public transport 2011

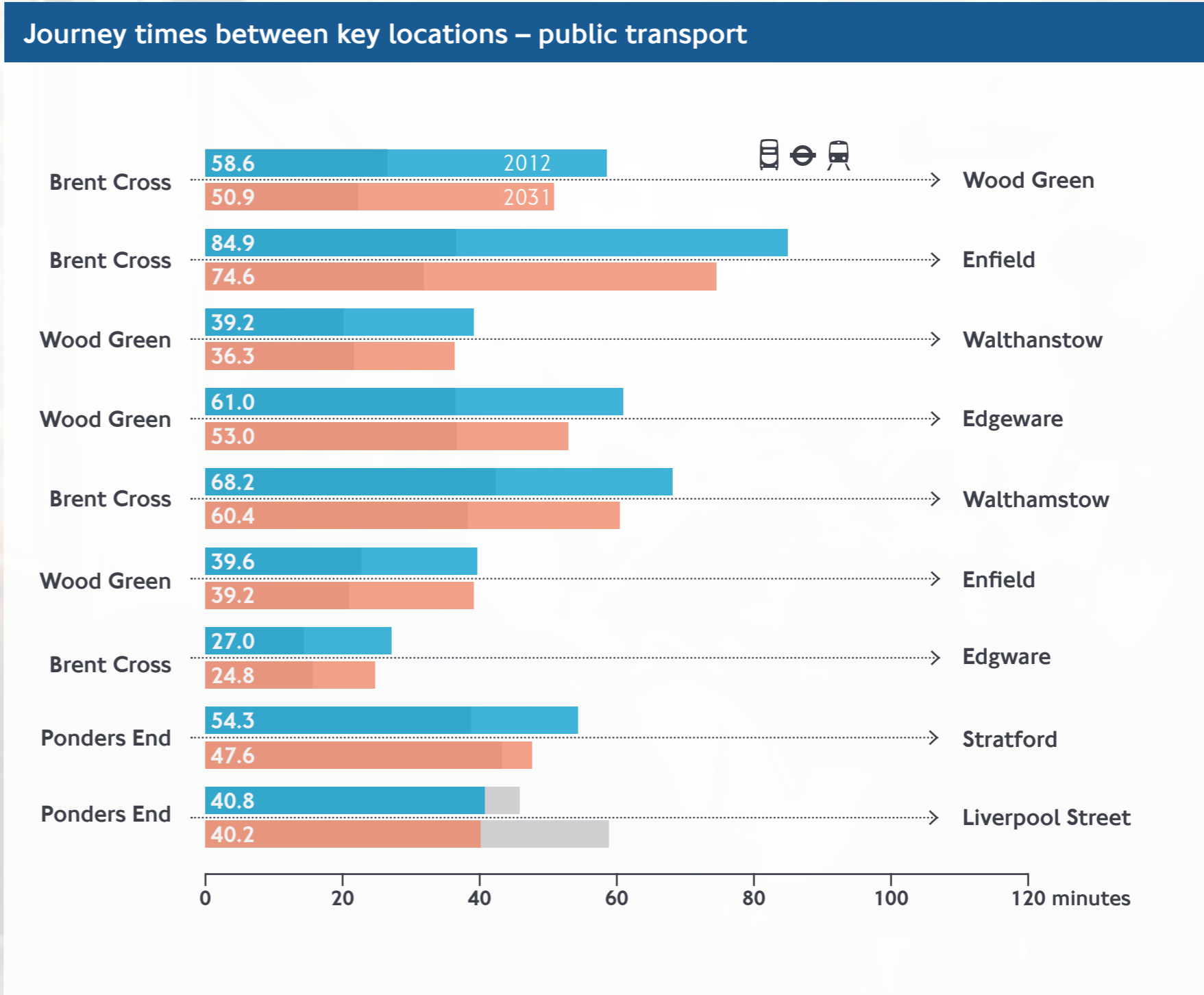
Journey times between key locations

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Public Transport Drive

Average speed by public transport 2011

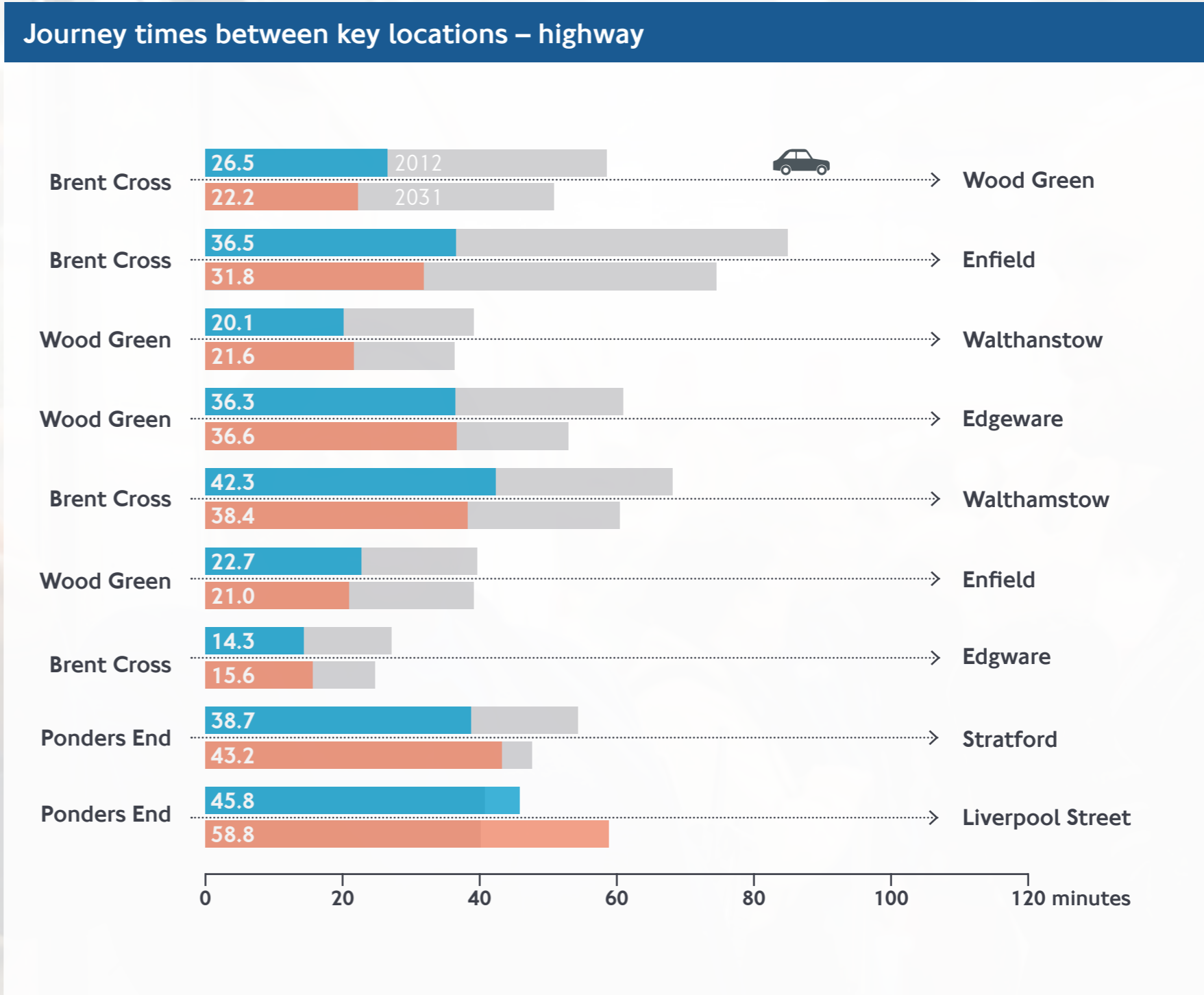
Journey times between key locations

Radial public transport movements are typically rail based and quicker than orbital movements

Radial movements by public transport are typically faster than orbital movements, with cars providing quicker journey times for this type of trip. This is likely to be a key reason as to why cars are the dominant mode in the North.

Enhancing orbital connectivity, and connectivity between key centres in particular, will be key to ensuring the sub-region remains competitive and can support future employment growth.

Most public transport journeys, and those made by rail based modes in particular, will see small reductions in total journey time between 2011 and 2031 as a result of committed investment. However, journey times by car are expected to increase as a result of growing congestion.



Public Transport **Drive**

Average speed by public transport 2011

Journey times between key locations

Liveability >



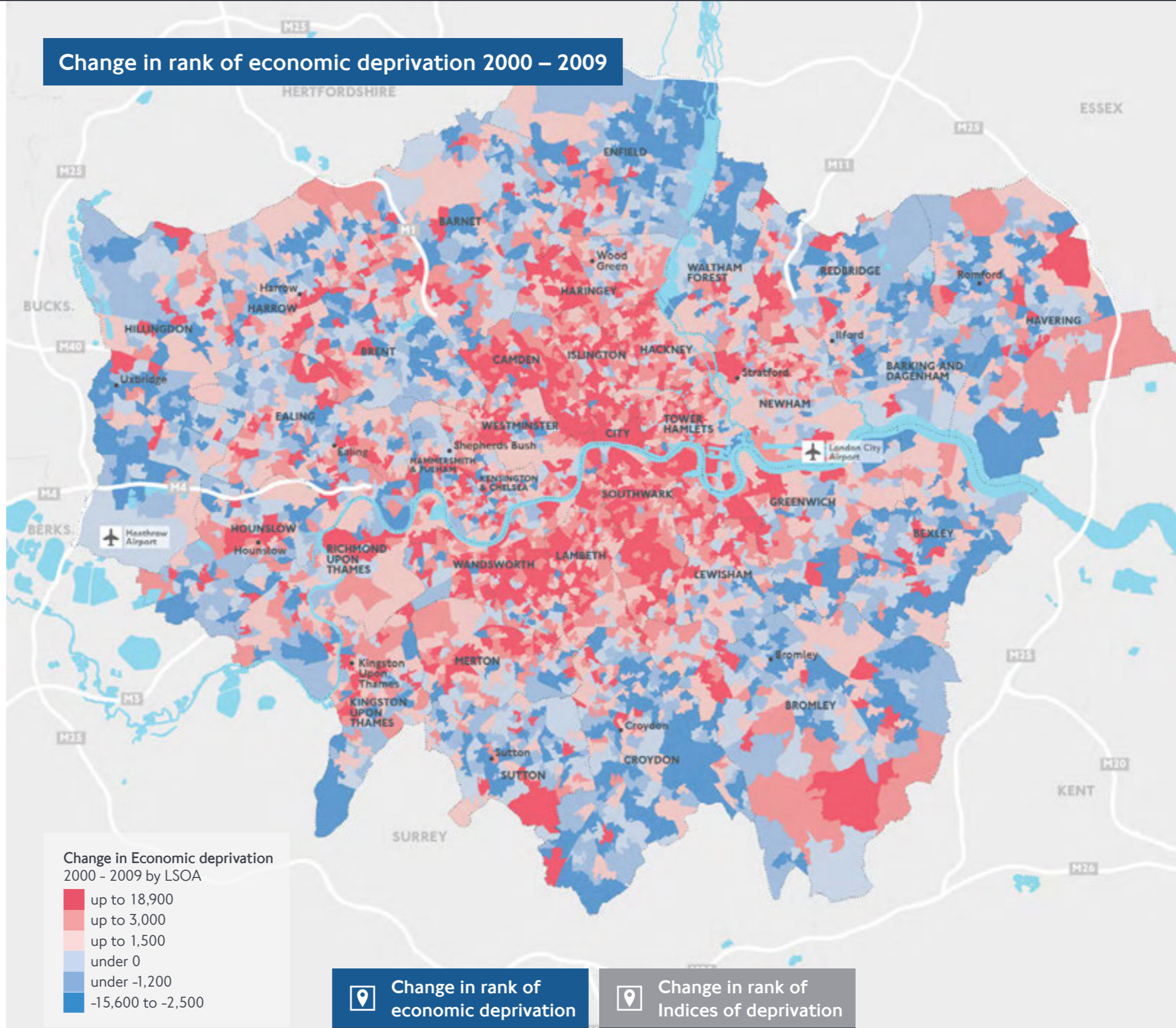
Outer London has seen an increase in relative deprivation

The pattern of deprivation in London is changing, with Inner London becoming less deprived and Outer London becoming more deprived in relative terms. The reasons for this are complex, but include an influx of well qualified, high earning people into Inner London, as well as housing affordability pressures pushing less affluent groups into Outer London.

Changing patterns of deprivation mean that the Upper Lea Valley, as well as northern Waltham Forest and parts of Barnet, have become relatively more deprived.

These changes are likely to impact on the demand for travel as people from less affluent socio-economic groups traditionally tend to travel more by bus than rail or Tube, with trips also typically more local.

Change in rank of economic deprivation 2000 – 2009



Change in Economic deprivation 2000 - 2009 by LSOA

- up to 18,900
- up to 3,000
- up to 1,500
- under 0
- under -1,200
- 15,600 to -2,500

Change in rank of economic deprivation

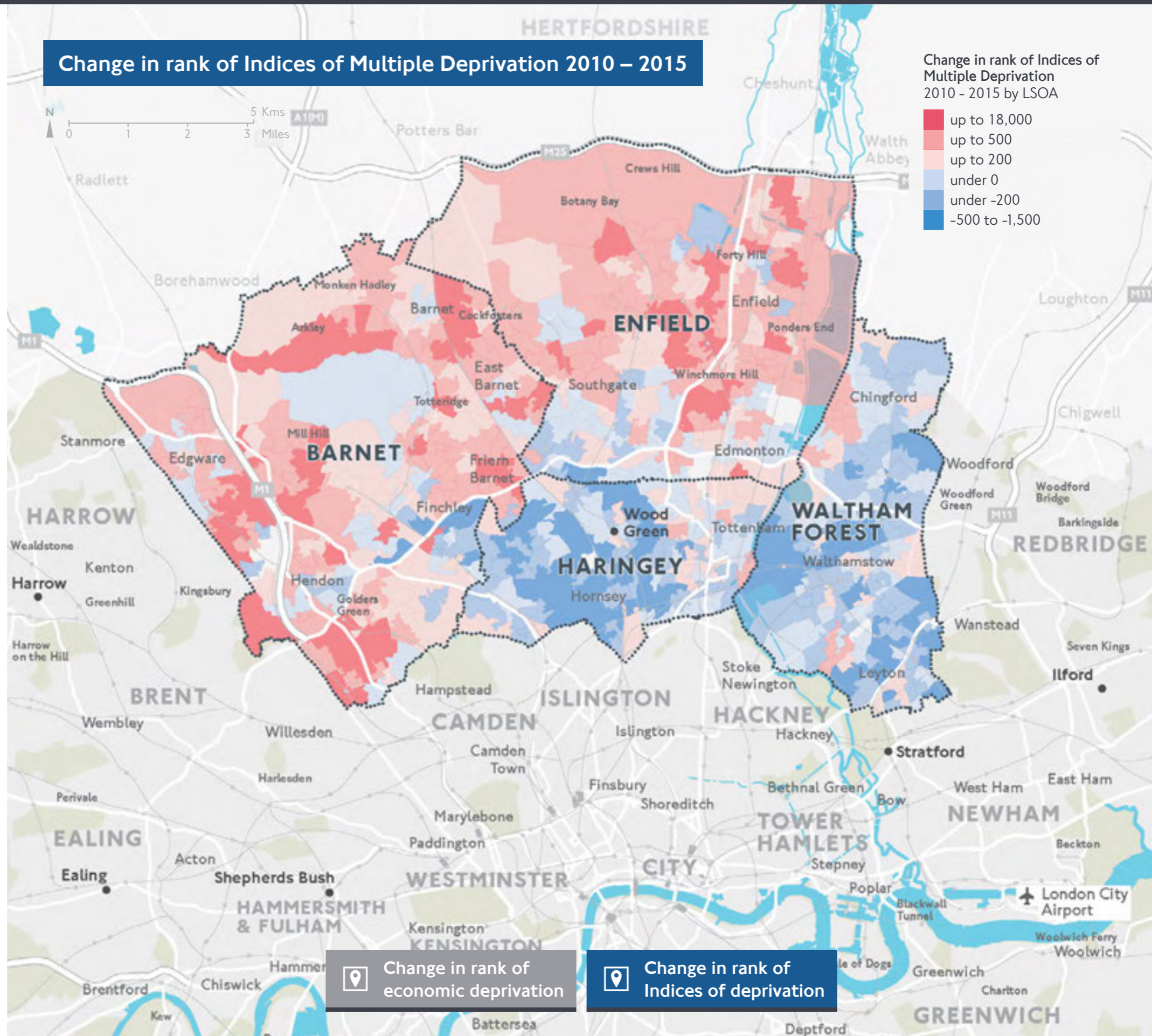
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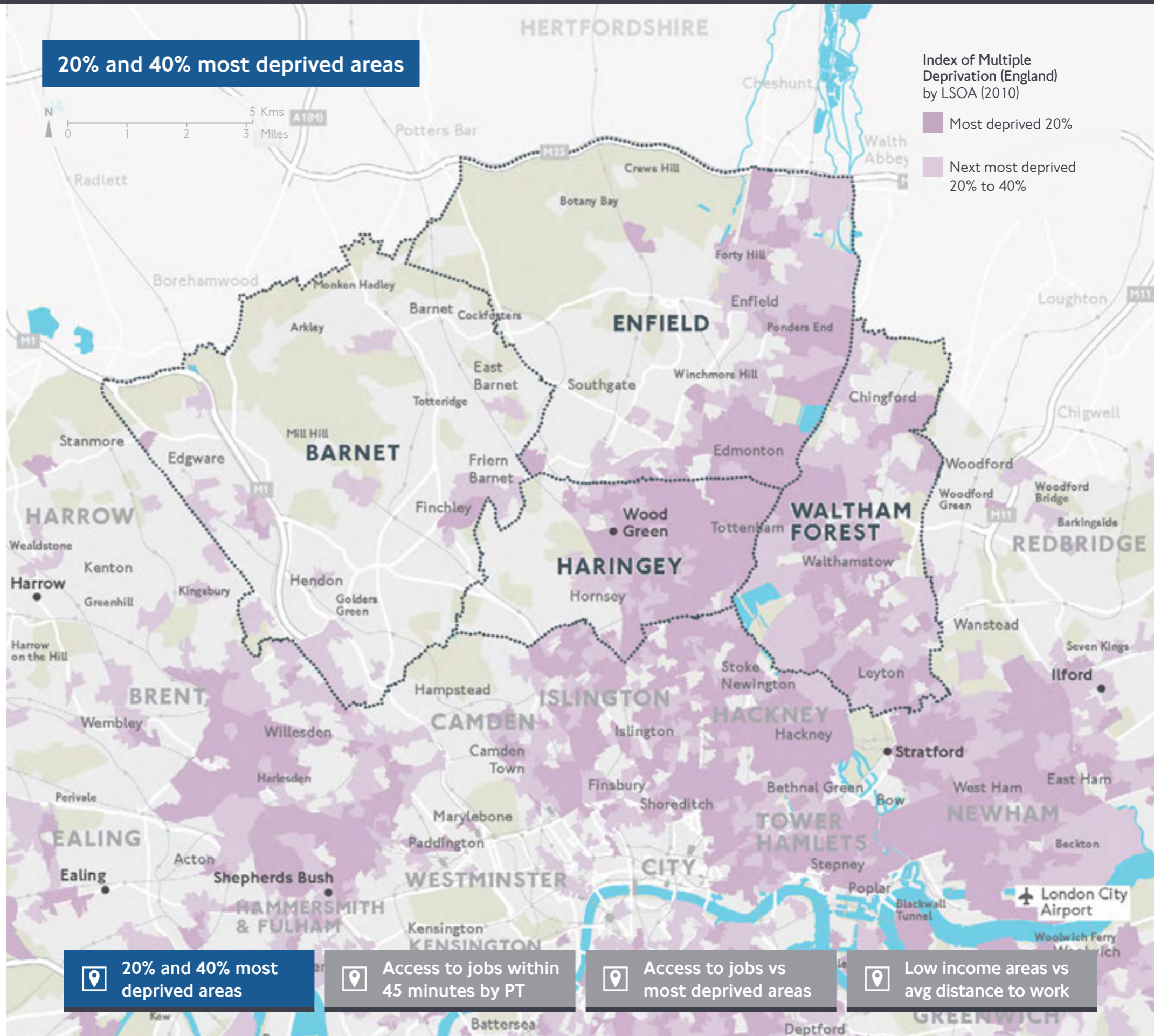


There are a number of deprived areas in the sub-region where access to jobs could be improved

North London contains some of the most deprived areas in England, with particular concentrations across the east of the sub-region, and only small pockets in Barnet.

Ensuring that residents of deprived areas have sufficient access to a range of suitable employment opportunities is key to tackling deprivation. At present, a large proportion of the sub-region's most deprived areas have access to fewer jobs by public transport within 45 minutes. This is particularly the case in the Upper Lea Valley and northern Waltham Forest.

Affordability of transport is also a key issue to ensure equality of access to employment opportunities. Most of the sub-region's residents with the lowest incomes live in the Upper Lea Valley. There are parts of northern Enfield where incomes are low and high proportions of people travel more than 10km to work, with costs for these journeys also likely to be higher.

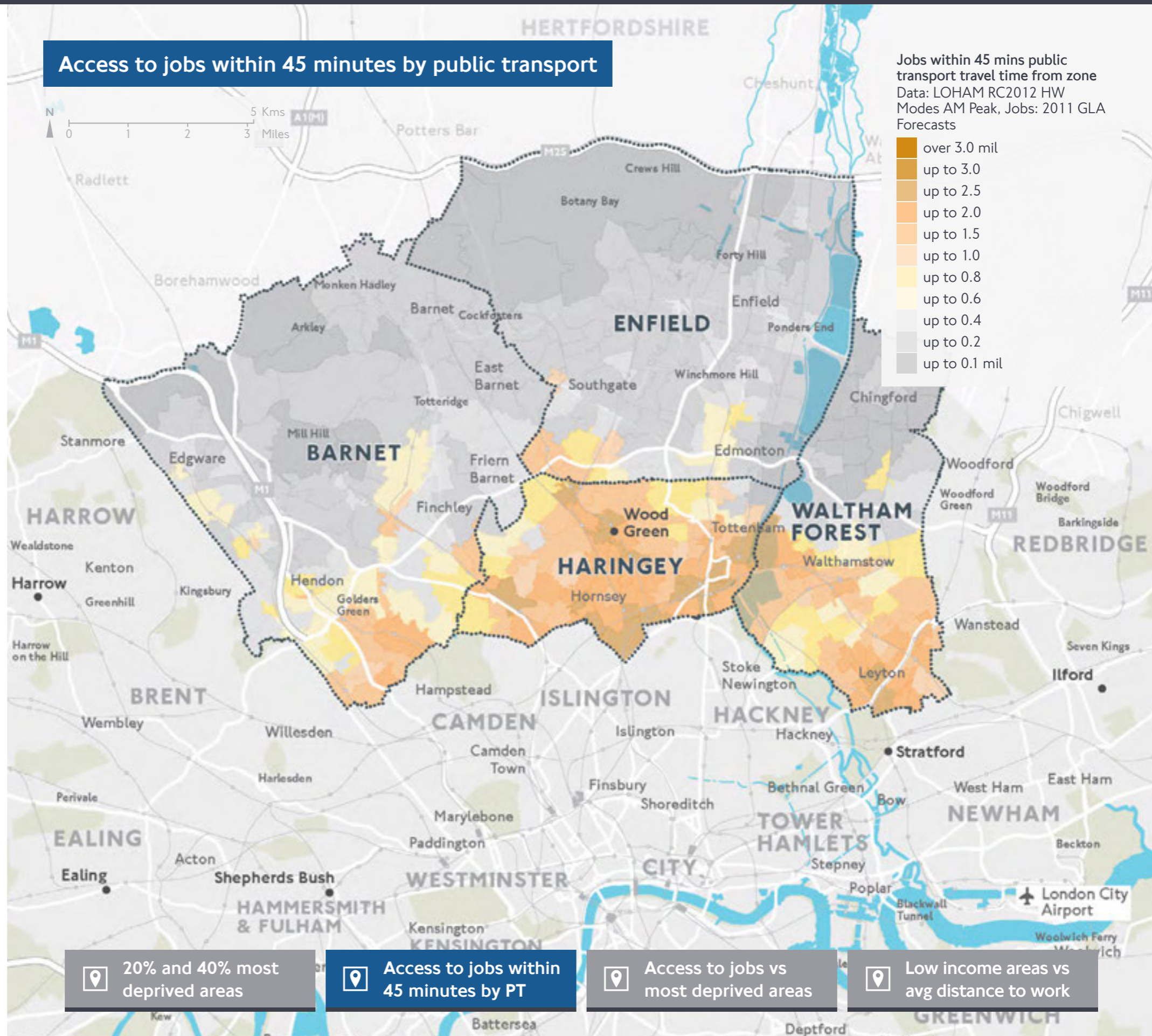


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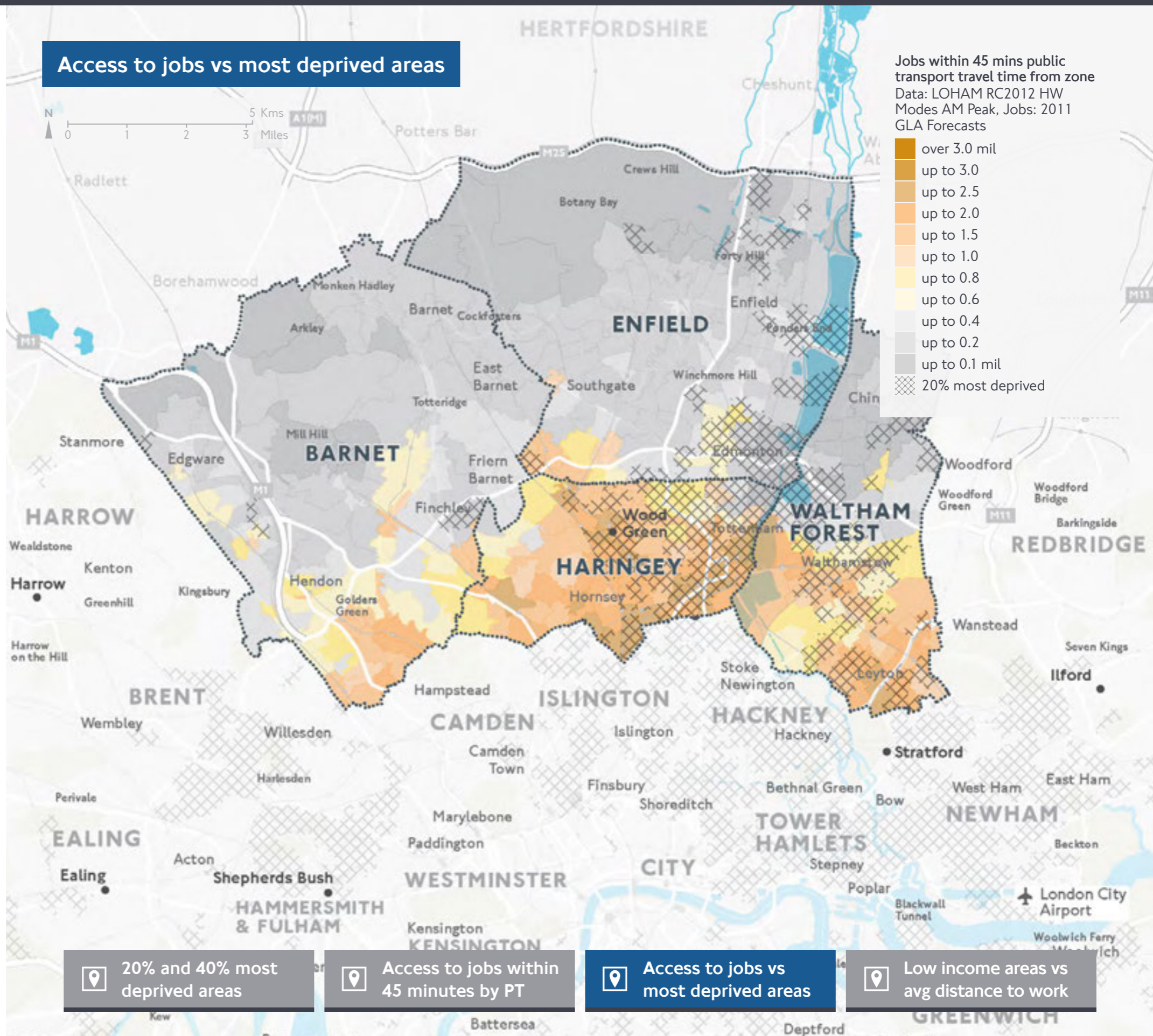


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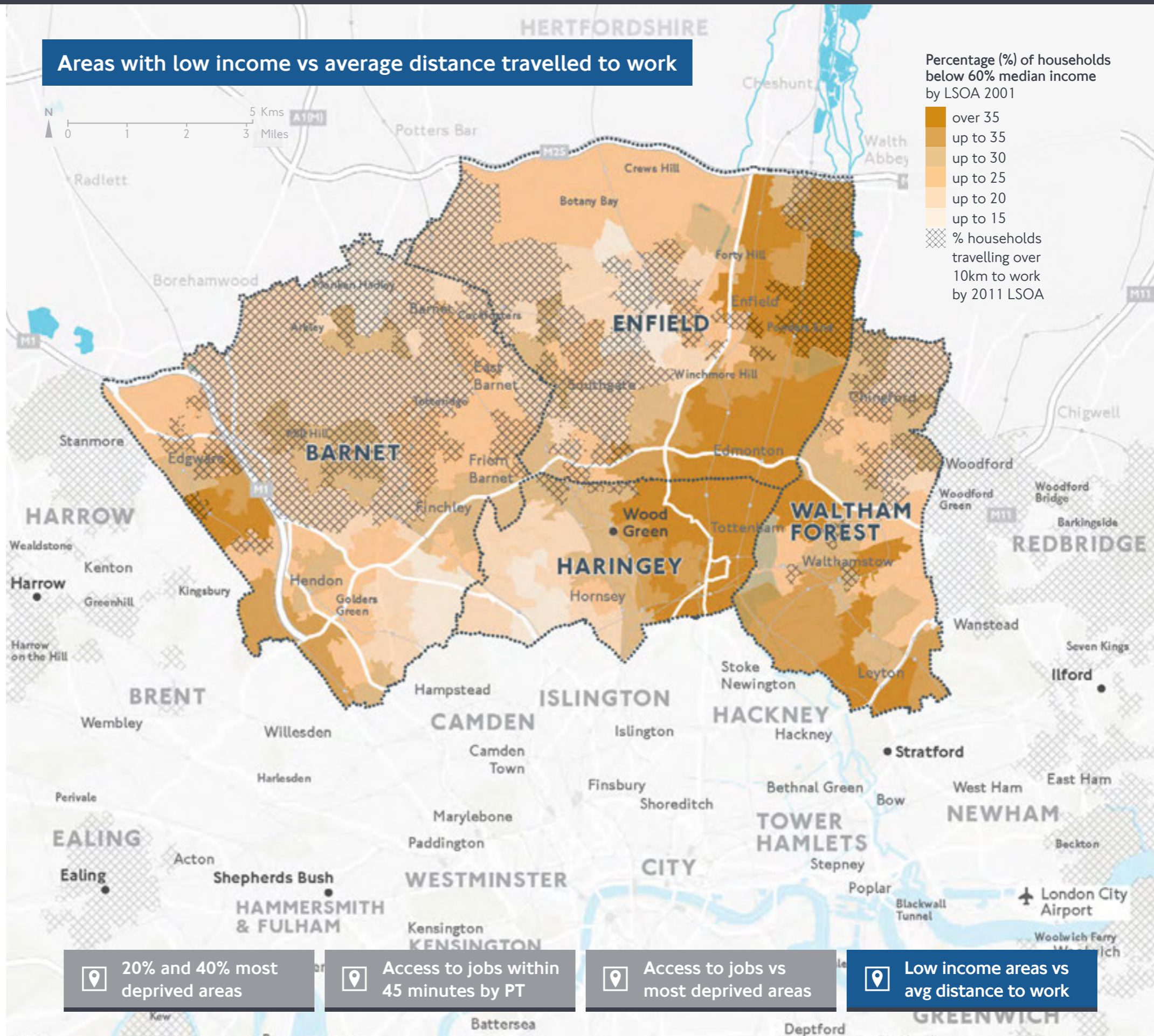
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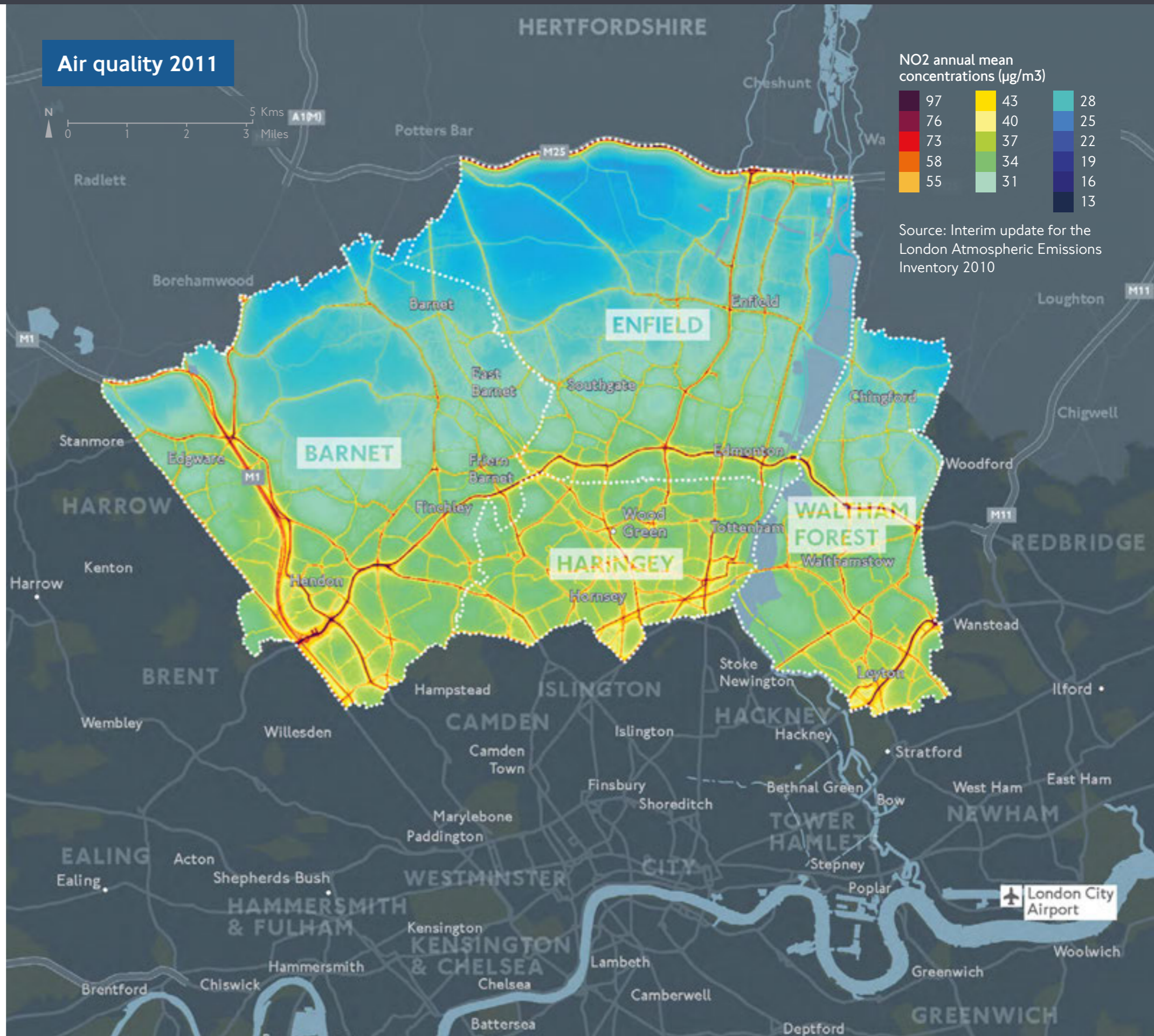
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Areas with low income vs average distance travelled to work



Air quality in the sub-region is an issue which affects the health of its residents

The North sub-region suffers from poor air quality in some areas. Air quality is generally poorest around major road corridors such as the North Circular, A10, A12 and M1. Air quality is also generally poorer within the south of the sub-region, closer to central London, than other parts where the highway network is less dense. Tackling poor air quality, including reducing harmful emissions from motorised vehicles, will have significant health benefits for residents of the sub-region.



Safety on the network has been improving but more needs to be done on key routes

Significant improvements in road safety have been achieved in London during the last 15 years. However, there is still scope for further improvement. In 2013, Barnet suffered more fatalities than any other borough in the sub-region. Each borough had at least one fatality. Incidences of serious injury were also evenly spread across the sub-region along major highway corridors.

Where there is evidence of clusters of accidents occurring consideration should be given to implementing local road safety schemes. The majority of KSIs occurred on 30mph 'A' roads in the North sub-region, although there were also some on the local highway network. While reductions in speed limits are generally not appropriate for these roads, there could be scope for targeted enforcement and public information campaigns to improve awareness and behaviour across all road users.

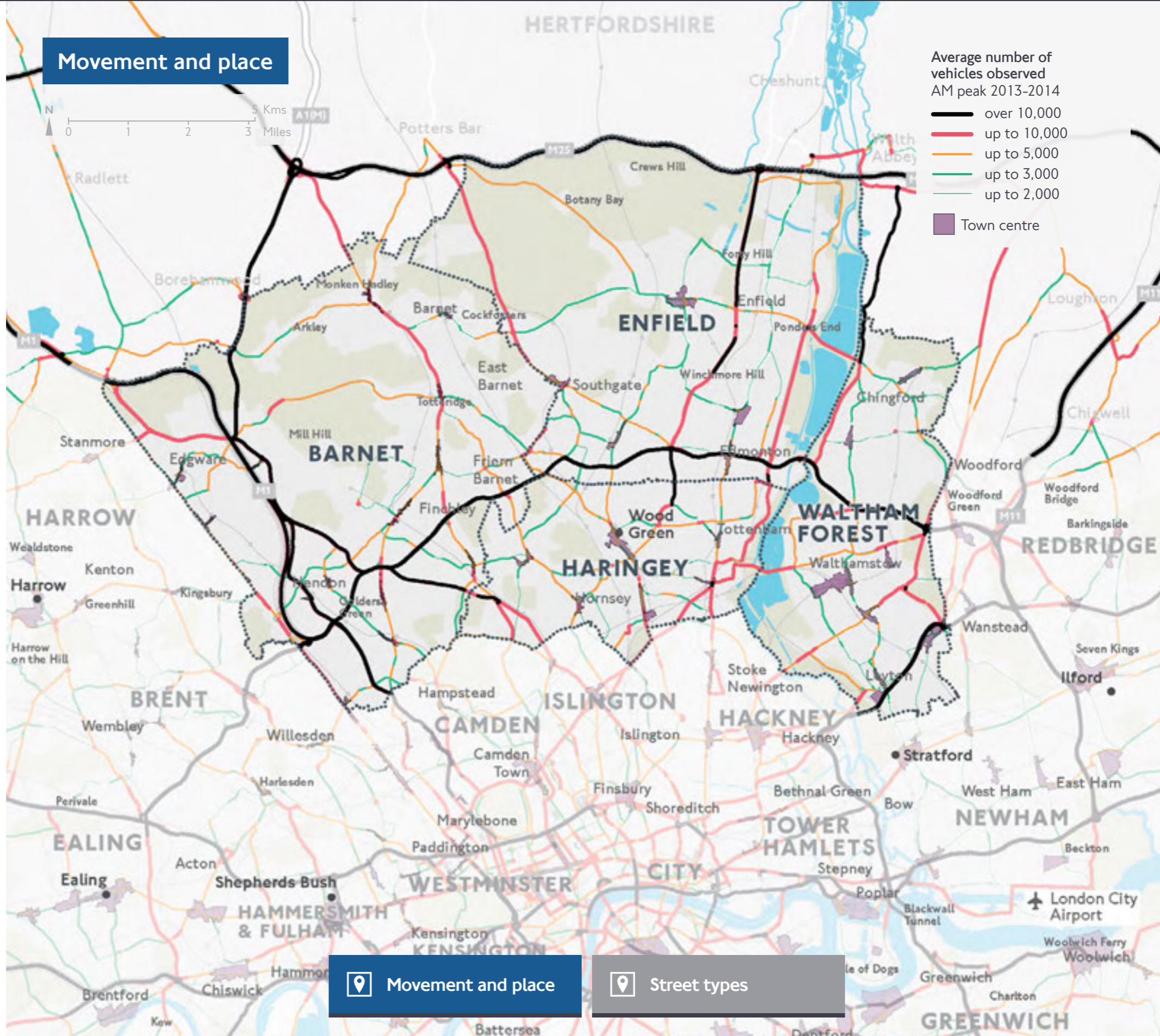


The sub-region needs to balance efficient movement with quality of place

The sub-region's streets perform a wide range of movement functions from roads carrying very high volumes and mixed of vehicular traffic and people to streets which only have a local movement function.

But the sub-region's streets also perform a wide variety of functions which are specific to the quality of place. These include living and functioning and are equally as important to movement. They have an impact economically as well as on quality of life of local residents.

Many of the sub-region's main 'A' roads carry significant flows of traffic, in particular the A10 through the boroughs of Enfield and Haringey, and the North Circular through Barnet, Enfield and Waltham Forest. Some of these roads pass through town centre locations where quality of place is very important, including Tottenham and Finchley. Managing and mitigating the impact of heavy flows of traffic on these places will be important to maintain the attractiveness and viability of the retail and service offer here.

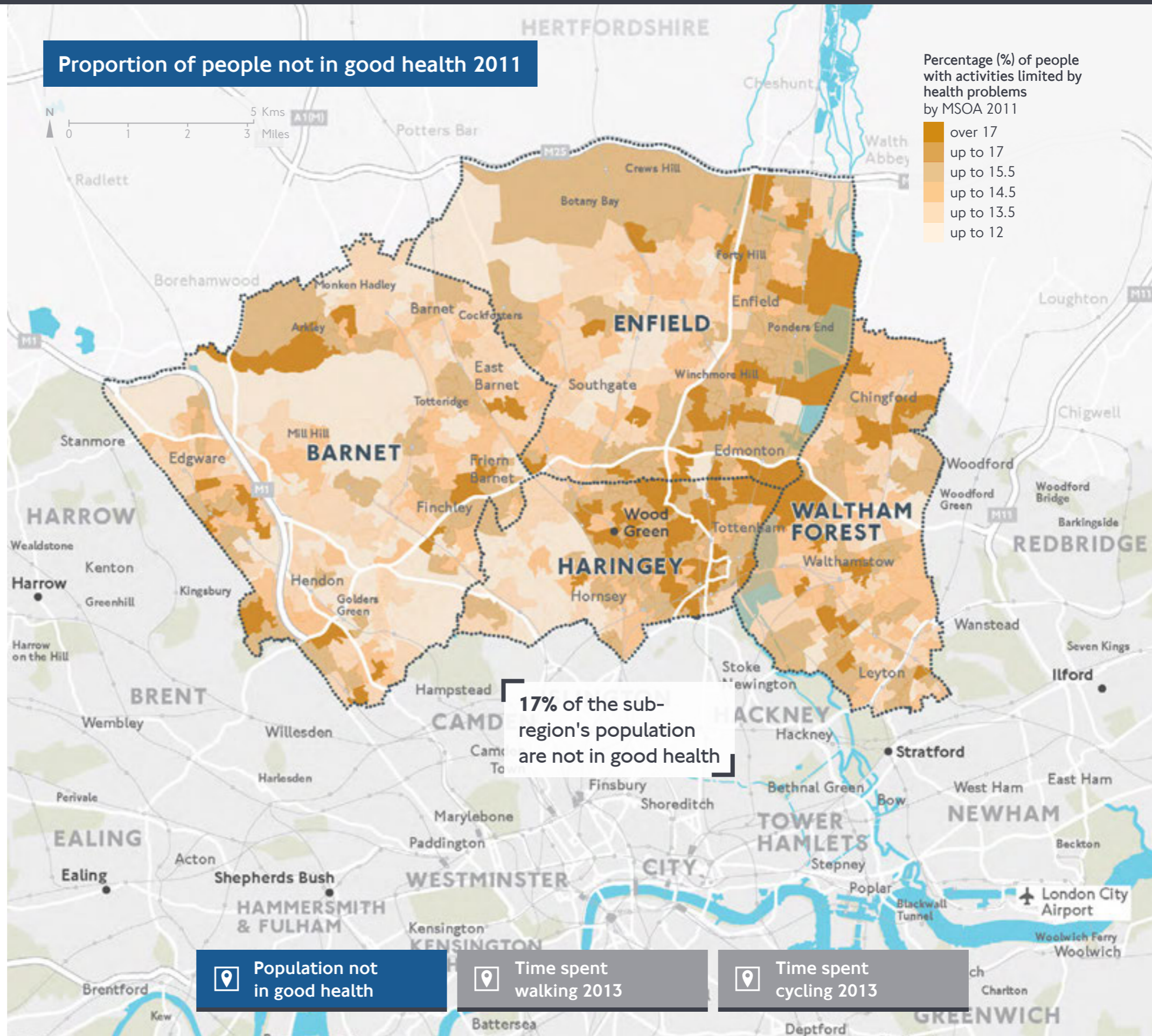


There is significant potential to increase active travel to address health issues across the sub-region

London's transport system plays an important role in people's health by providing access to jobs, education, services and leisure, all of which are essential for a healthy, fulfilling life. It also provides access to healthcare. But the biggest role of transport in health is to help people stay active and prevent a wide range of illnesses including heart disease, stroke, depressions, type 2 diabetes and some cancers. TfL is taking a whole-street approach to improving health in London, to make them good for health and attractive places to spend time. Further details of the whole street approach can be found in TfL's 'Improving the health of Londoners' transport action plan: <http://content.tfl.gov.uk/improving-the-health-of-londoners-transport-action-plan.pdf>.

Overall more residents in the east of the sub-region tend to describe themselves as not being in good health than in any of the other boroughs in the sub-region, which correspond with concentrations of deprivation here too.

There is significant scope to improve levels of physical activity across the sub-region, and therefore improve health. Providing a safe environment to support the growth of trips on these modes will be important to supporting the health of the North London's residents.

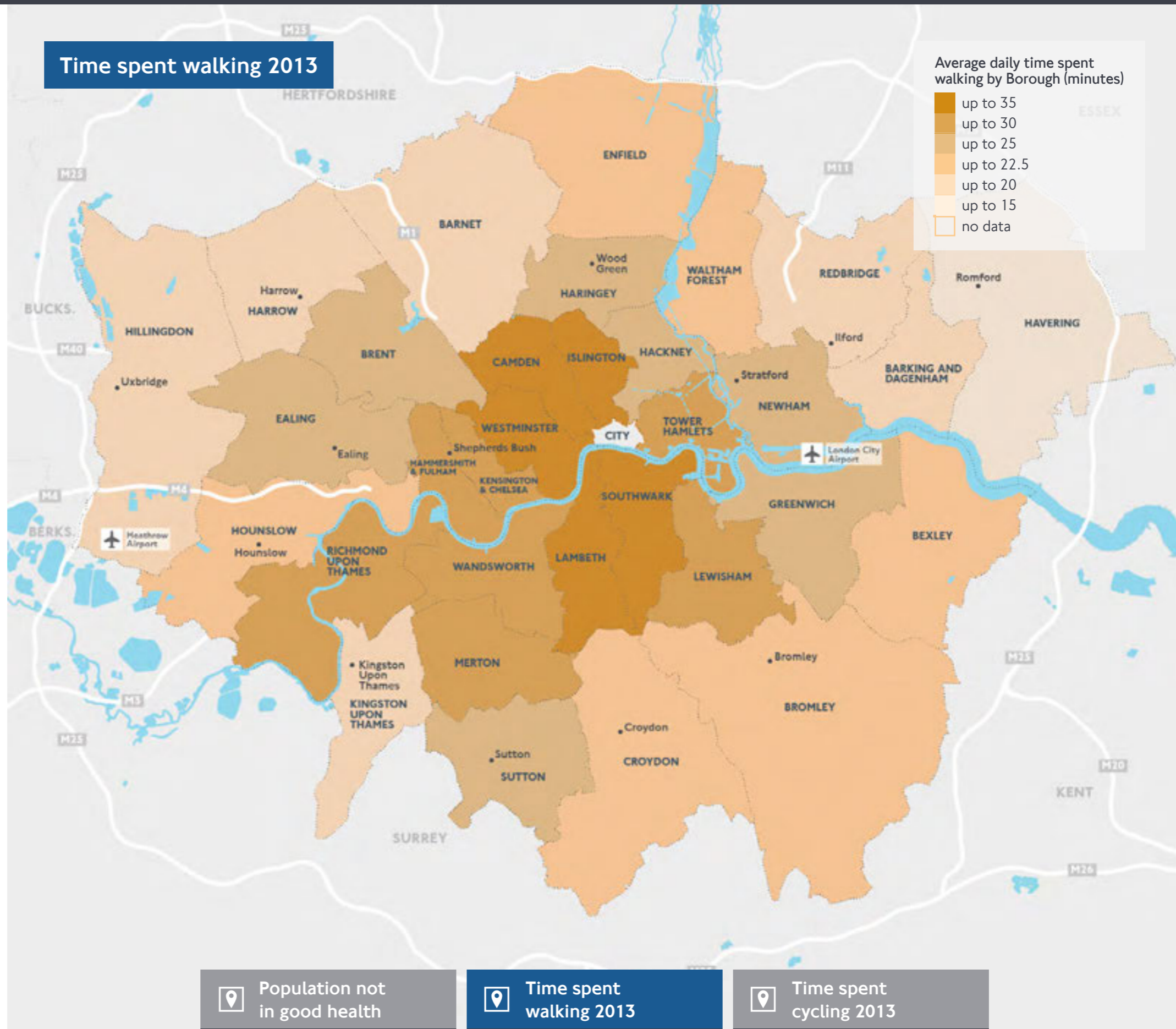


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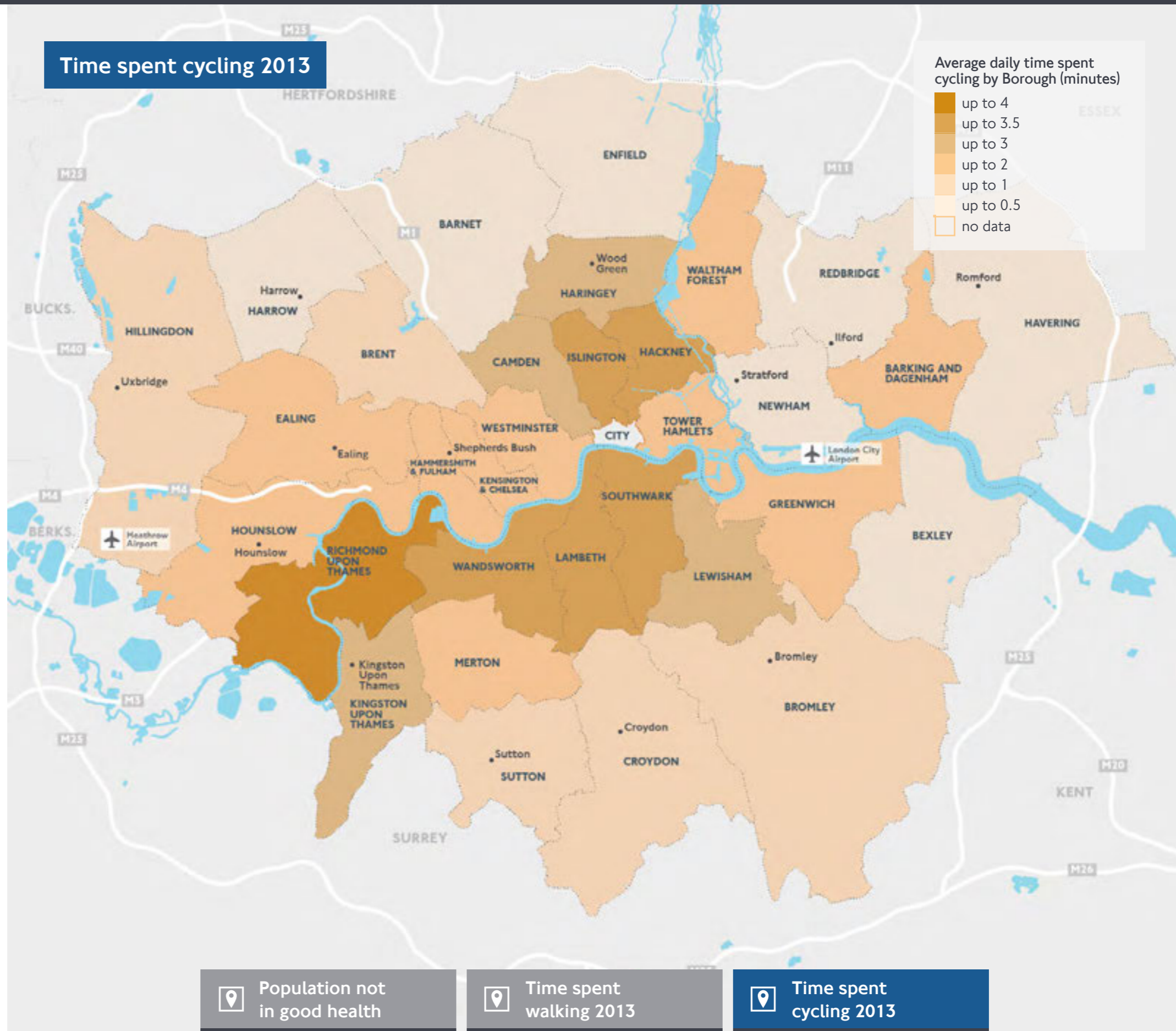


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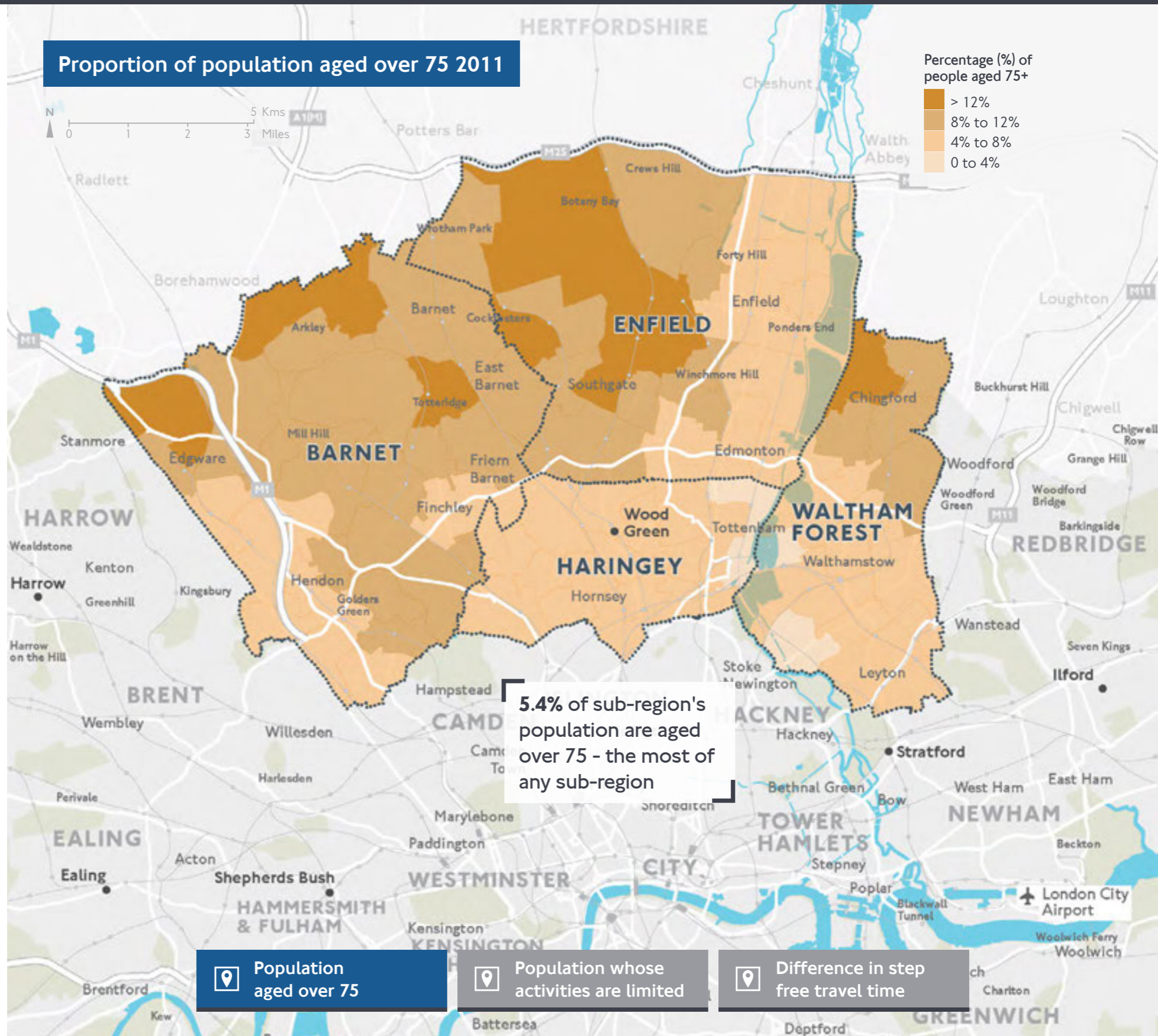


Travel times on the step free network have improved but more needs to be done

As London's population ages, its transport network will need to adapt to allow more people with mobility impairment to access services. Parts of outer Barnet and Enfield have a high proportion of older people, where public transport accessibility is not particularly extensive. There are also high concentrations of people whose day to day activities are limited, particularly in Wood Green and northern Waltham Forest.

Other residents may have problems accessing the transport network due to mobility issues and a corresponding lack of step-free access. In north Enfield in particular, a lack of step-free access increases journey times for those with mobility needs. Consideration should be given to implementing measures which could help to rectify this.

Physical accessibility involves the design and layout of all the main component parts of the transport network; vehicles, stations and streets. Improving one of these alone however is likely to produce little benefit and all three need to be addressed simultaneously to have significant impacts.

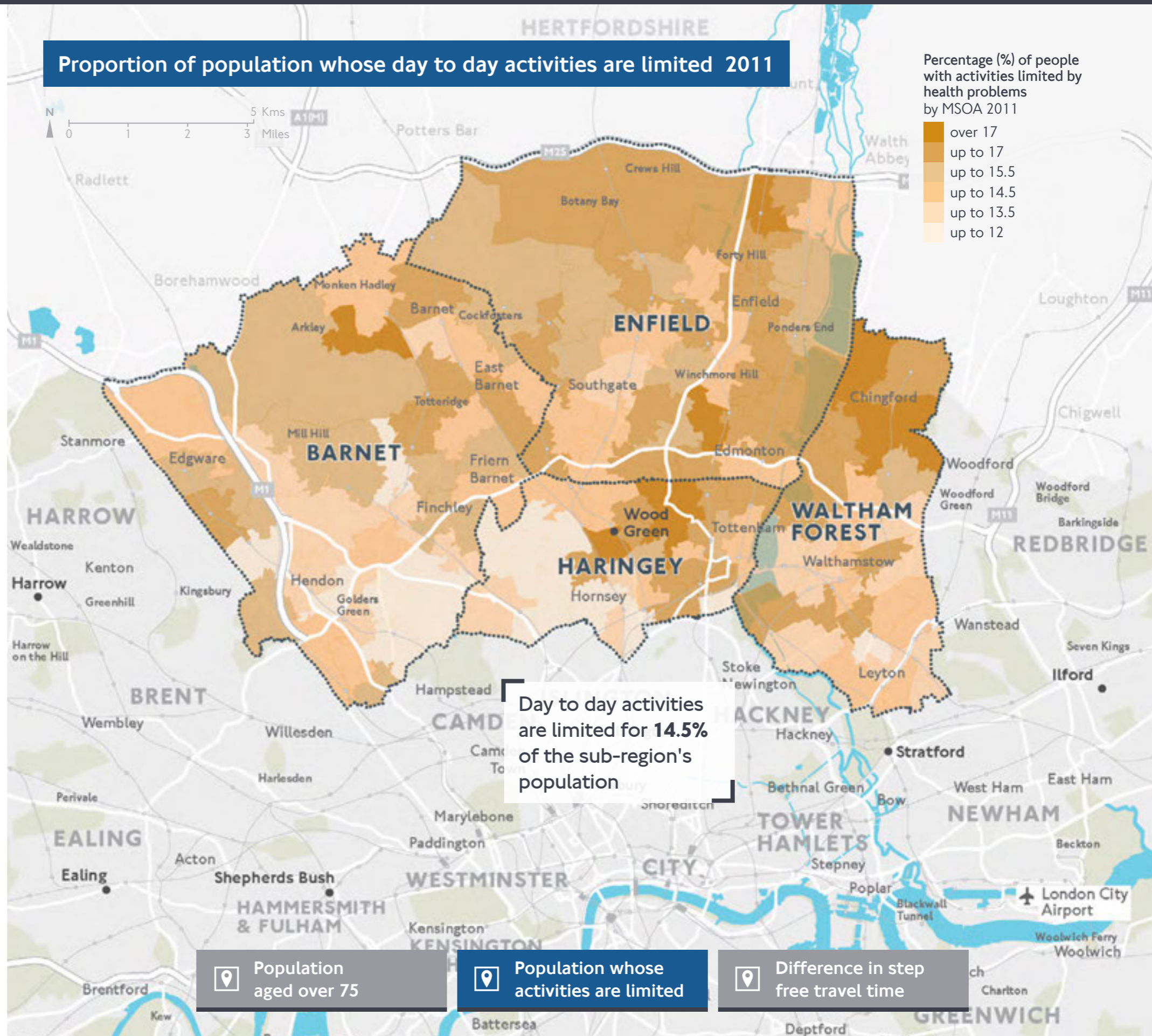


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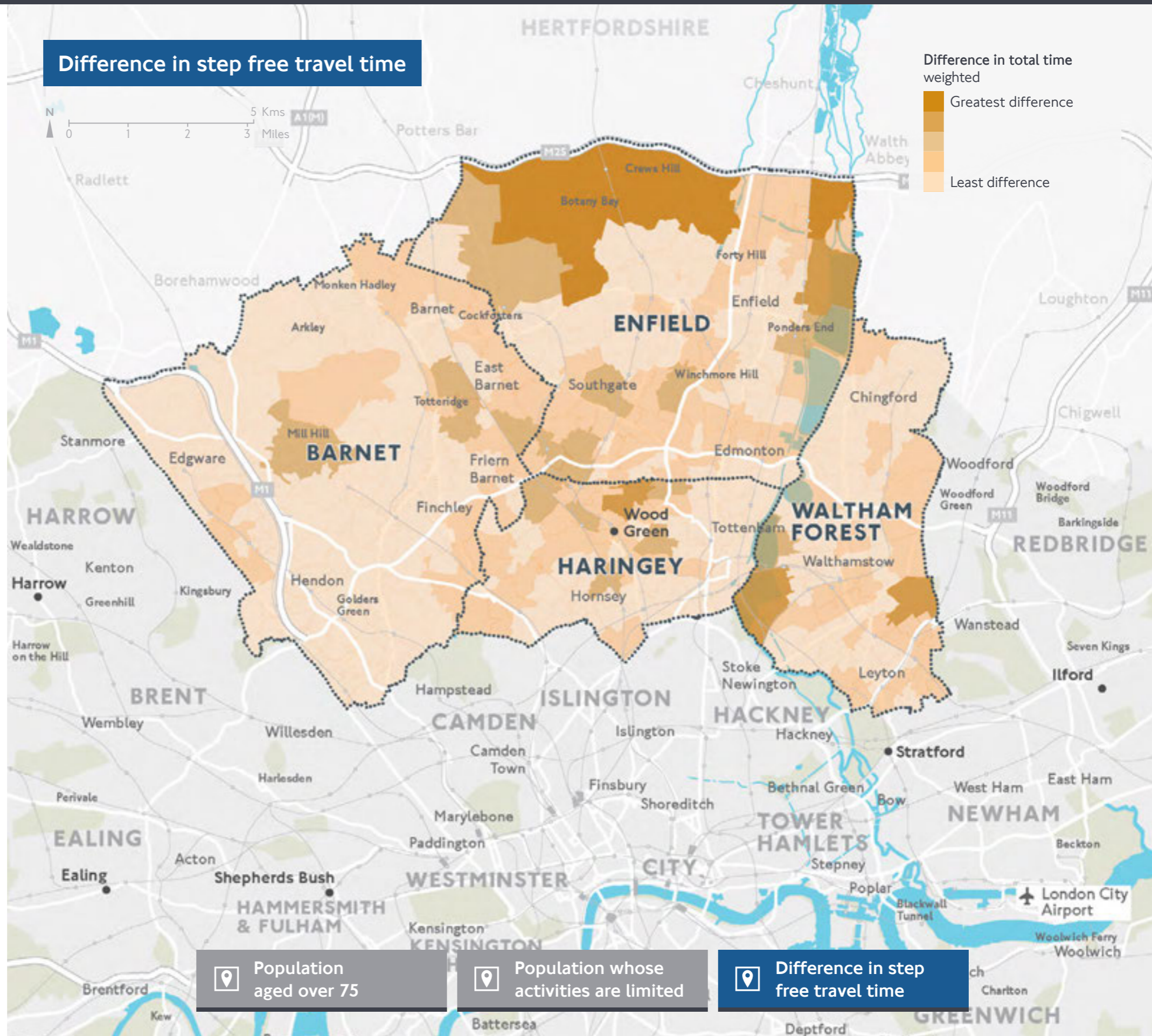


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Future growth >

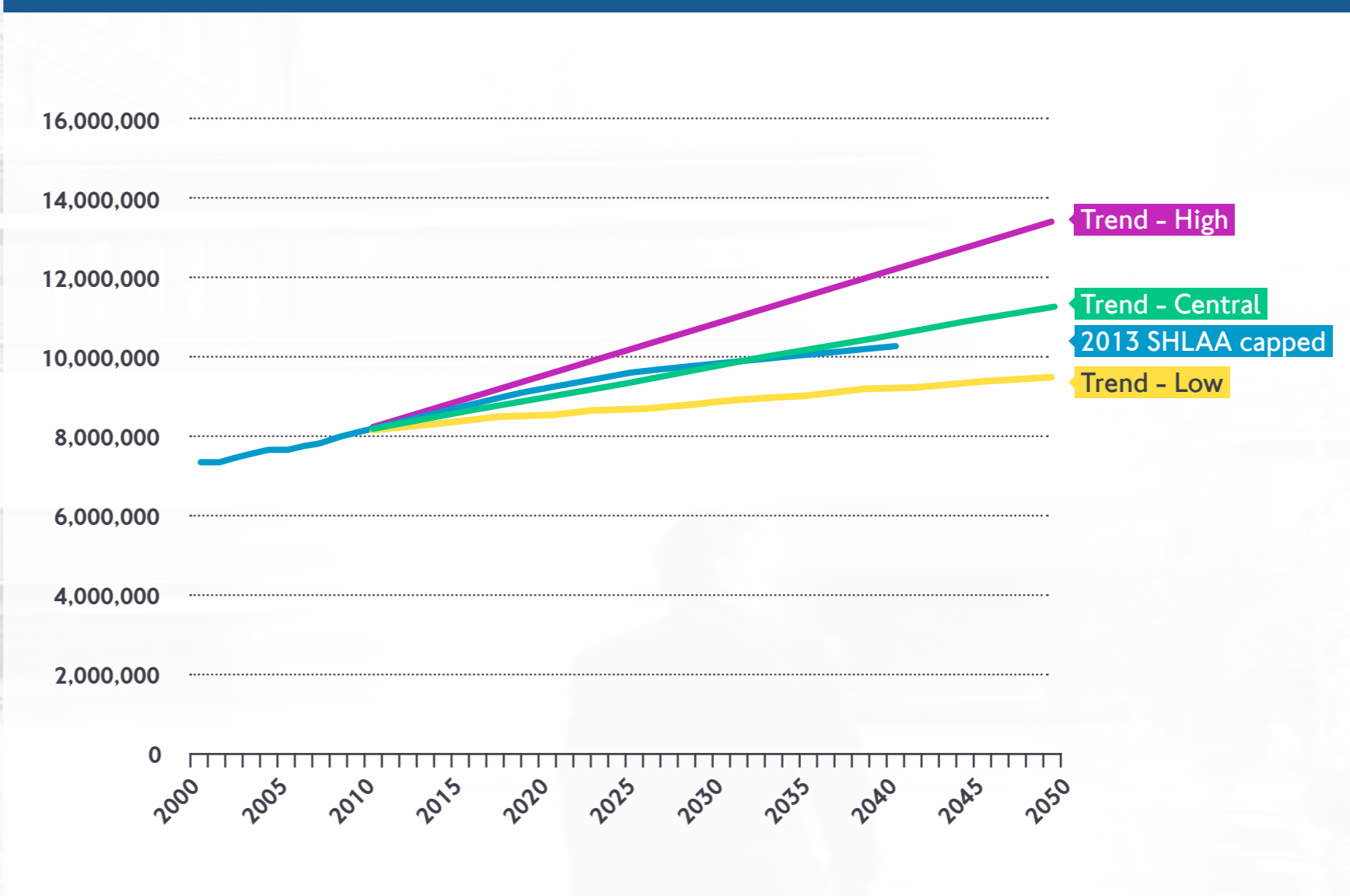


London's population will continue to grow, generating more demand for transport

Population projections which informed the Further Alterations to the London Plan estimate that the Capital's population will increase to almost 10 million by 2030. Further projections produced to inform the London Infrastructure Plan 2050 estimate that the population will continue to grow to almost 11.5 million by 2050. This will only be possible if sufficient infrastructure, particularly transport infrastructure, is delivered to support what will be a much larger and denser city compared to today.

Despite previous predictions of homeworking and technology reducing the need to travel, trip rates have remained stable for many years. While there may be some more flexible working, individual trip rates are likely to remain fairly stable and, with increasing population, overall the number of trips are expected to increase. This would mean an increase of 35-40% in the number of trips under the central population projection by 2050, with an increase in public transport trips of about 70% compared to today.

London's future population growth



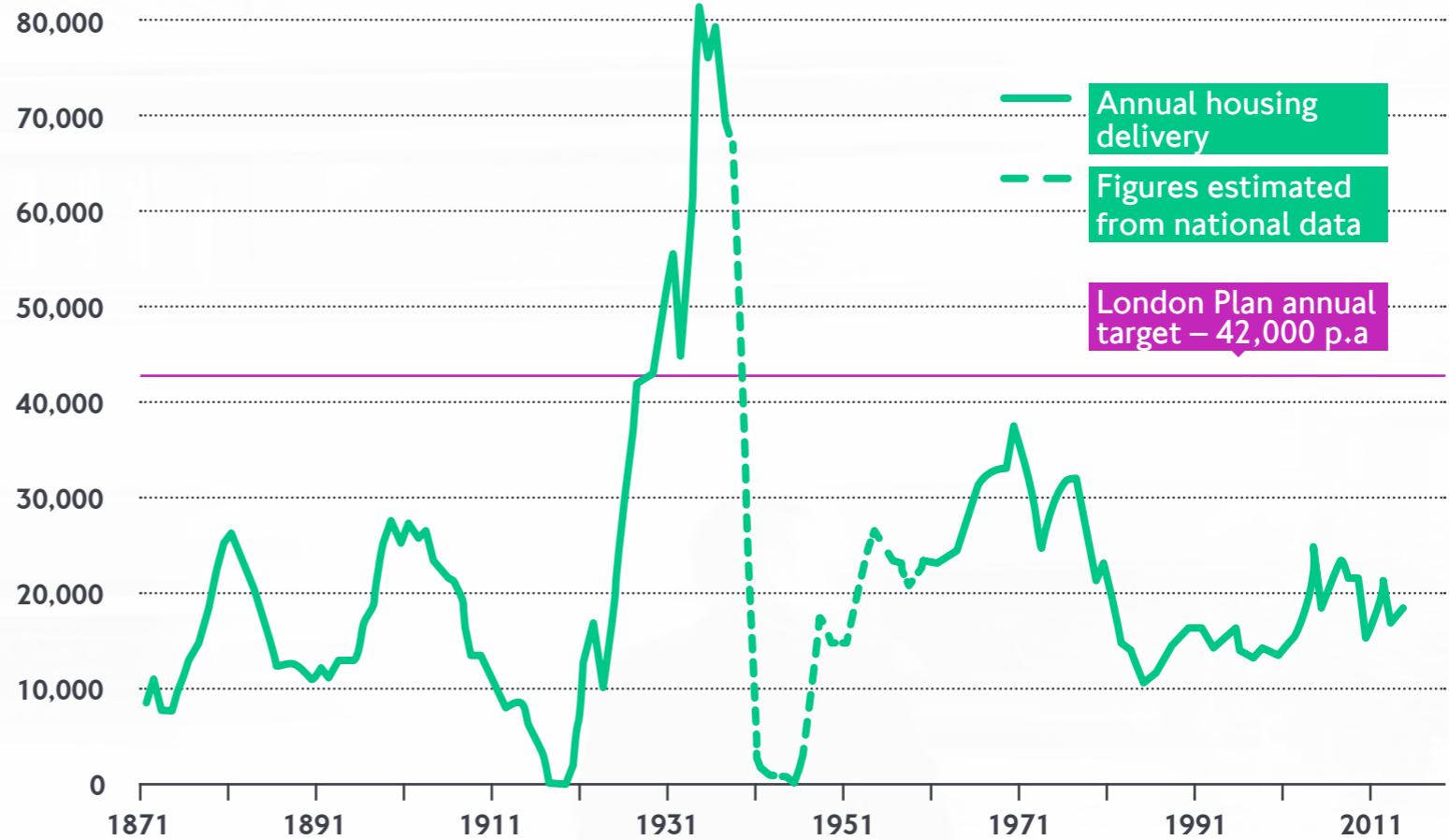
Insufficient levels of housing are a risk to London's competitiveness. Transport is key to unlocking new homes

In order to cater for London's rapidly growing population, the GLA estimates that the city will need 49,000 housing units a year. However, just half this rate is currently being delivered across the city. The only time that London has ever built more than 49,000 units was in the interwar period, although during this time London did not have a planning system or a Greenbelt to manage growth.

The shortage of housing has been a key factor in rising prices, with low levels of affordability driving overcrowding, restricting locational choice and causing concern from businesses who believe that it is constraining the labour market and hurting London's competitiveness.

Good transport connectivity, as well as frequency and quality of service are key drivers in unlocking housing. Accessible places are more attractive, attract higher prices and therefore increase the viability of housing development. Investment in the existing network, as well as extensions to the network, can help to unlock significant levels of housing.

Delivery of housing units vs current London wide housing target



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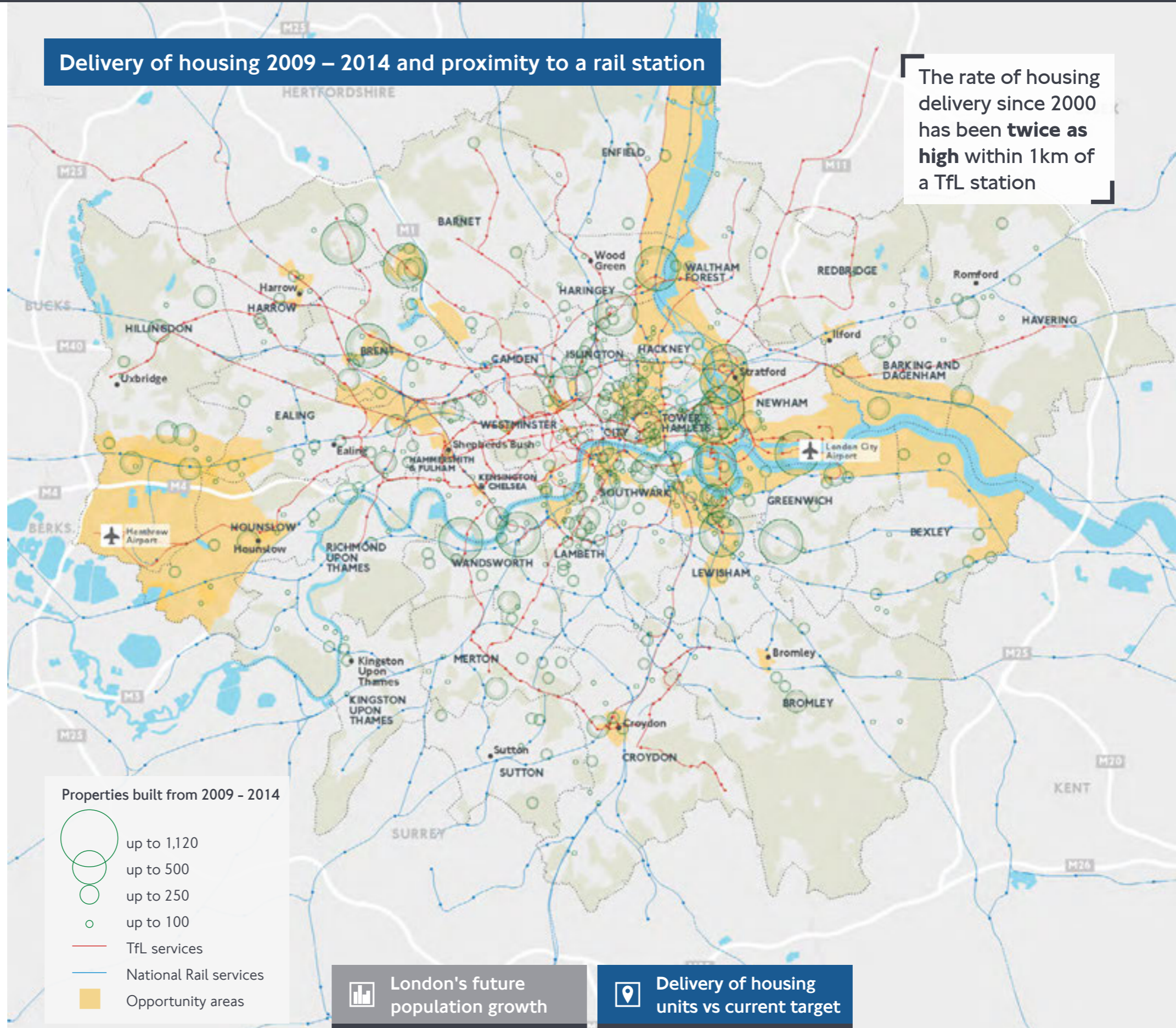
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Delivery of housing 2009 – 2014 and proximity to a rail station

The rate of housing delivery since 2000 has been **twice as high** within 1km of a TfL station



Properties built from 2009 - 2014

- up to 1,120
- up to 500
- up to 250
- up to 100
- TfL services
- National Rail services
- Opportunity areas

London's future population growth

Delivery of housing units vs current target

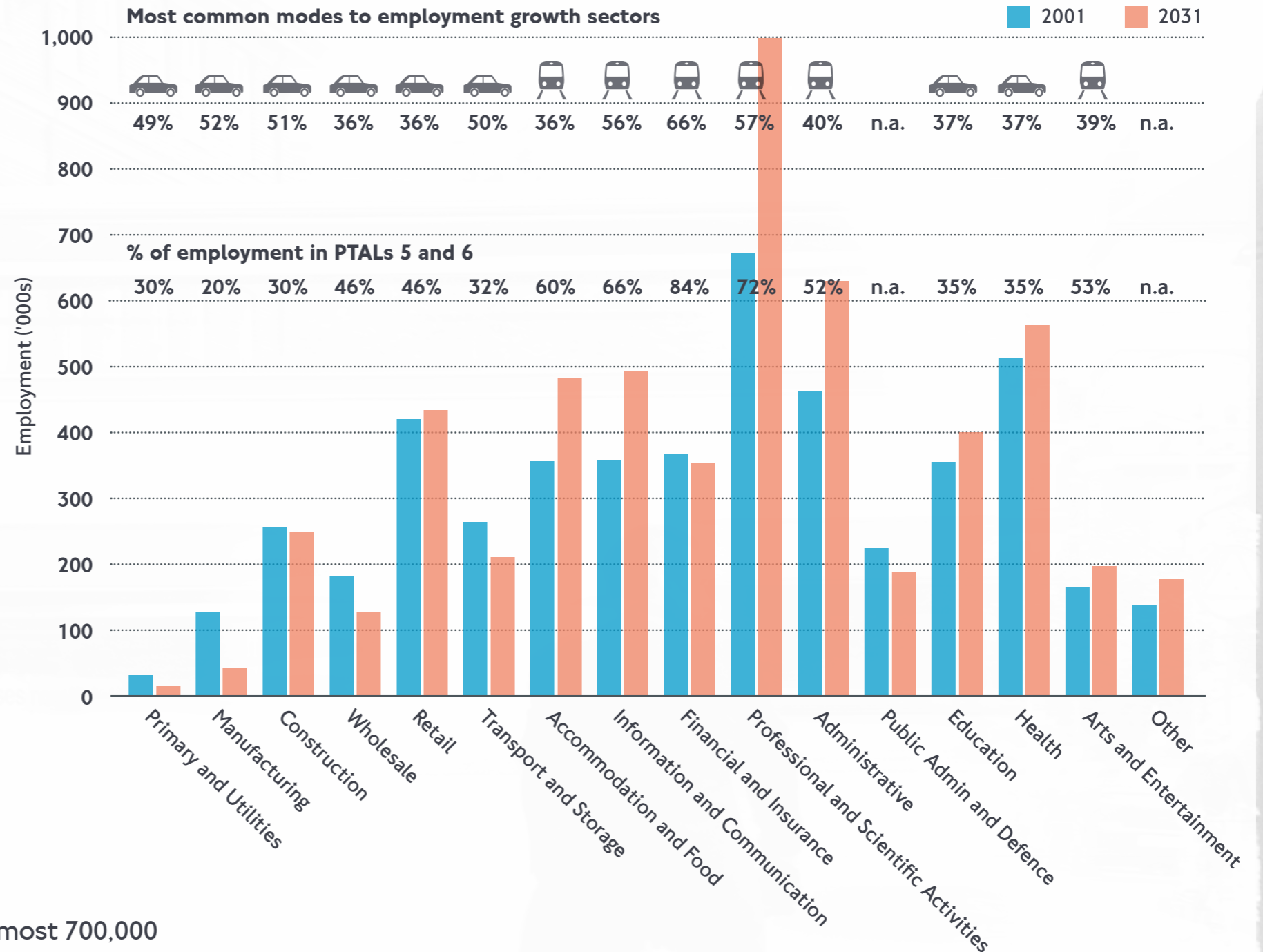
Future employment growth in office based sectors will increase demand for rail based modes

London's strong employment growth is expected to continue, with a 14% increase in employment across all sectors to 2031. Growth is expected to continue in office based sectors, including professional and scientific activities, whilst employment in manufacturing, transport, wholesale and construction will decline.

As office based sectors are increasingly seeking the most accessible locations by public transport, particularly in Central London, demand for public transport modes is likely to increase. It will be important to ensure there is sufficient capacity on the network to serve these growing sectors, and support London's economic growth.

Most of the sectors which are expected to contract are typically access by car, which could continue to push down commuting to work by car. The decline of these sectors also has the potential to free up land for housing or other land uses for more intensive development.

Change in employment sectors in London 2011 – 2031



Almost 700,000 additional jobs in London by 2031

The sub-region's population will continue to grow, along with its housing need

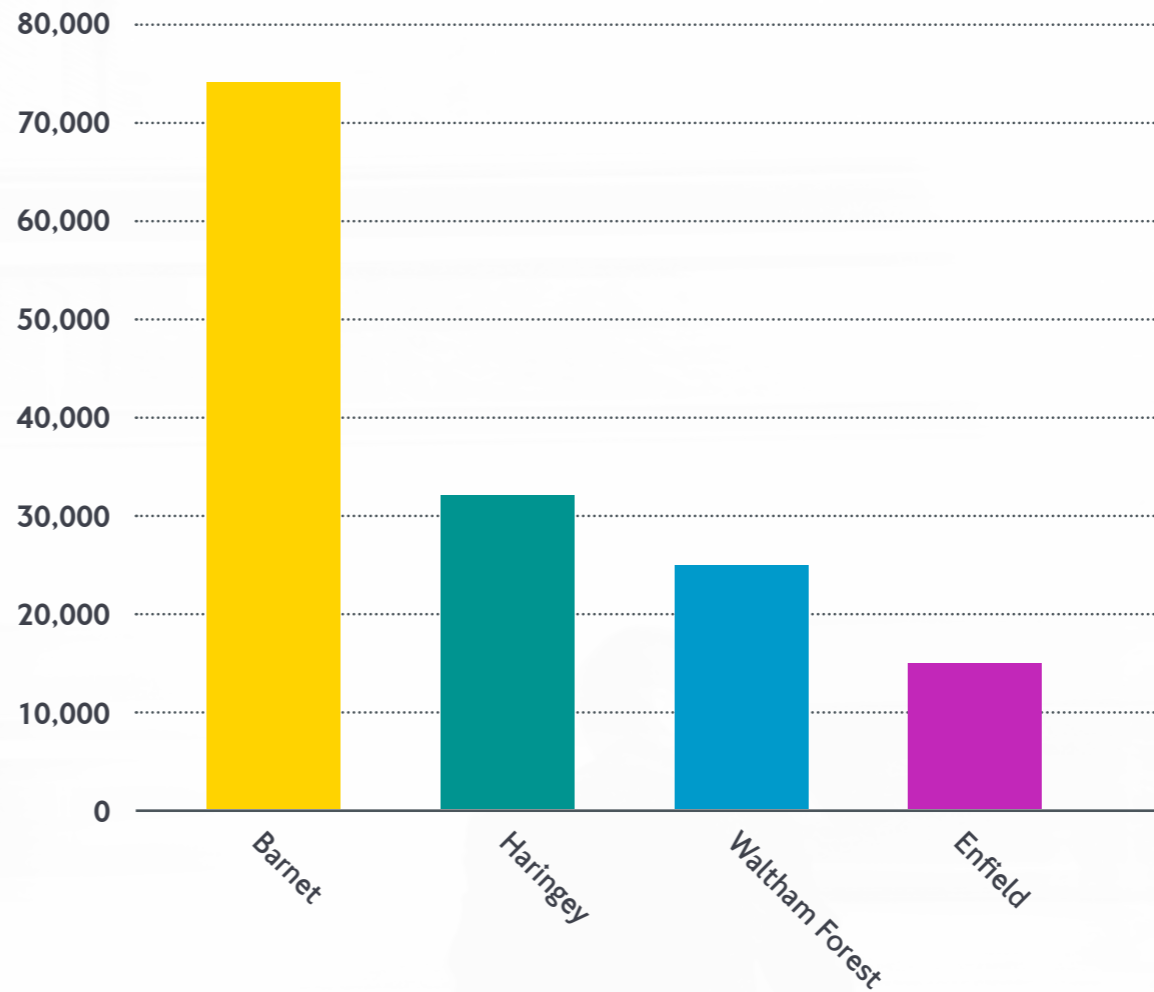
Population projections which informed the Further Alterations to the London Plan estimate that the population of the sub-region will grow by an additional 147,000 people between 2011 and 2031, with some boroughs expected to see significantly higher levels of growth than others.

Barnet has significant potential for housing growth, and is therefore expected to see the greatest population increase. At the other end of the scale, population growth in Enfield, where there is little housing development planned, is expected to be relatively low.

Rates of housing delivery will need to increase in all Boroughs in the sub-region if London Plan housing targets are to be met, particularly Barnet and Haringey, with a well functioning transport network key to achieving this.

147,000 additional people in the sub-region by 2031

Population growth 2011 – 2031



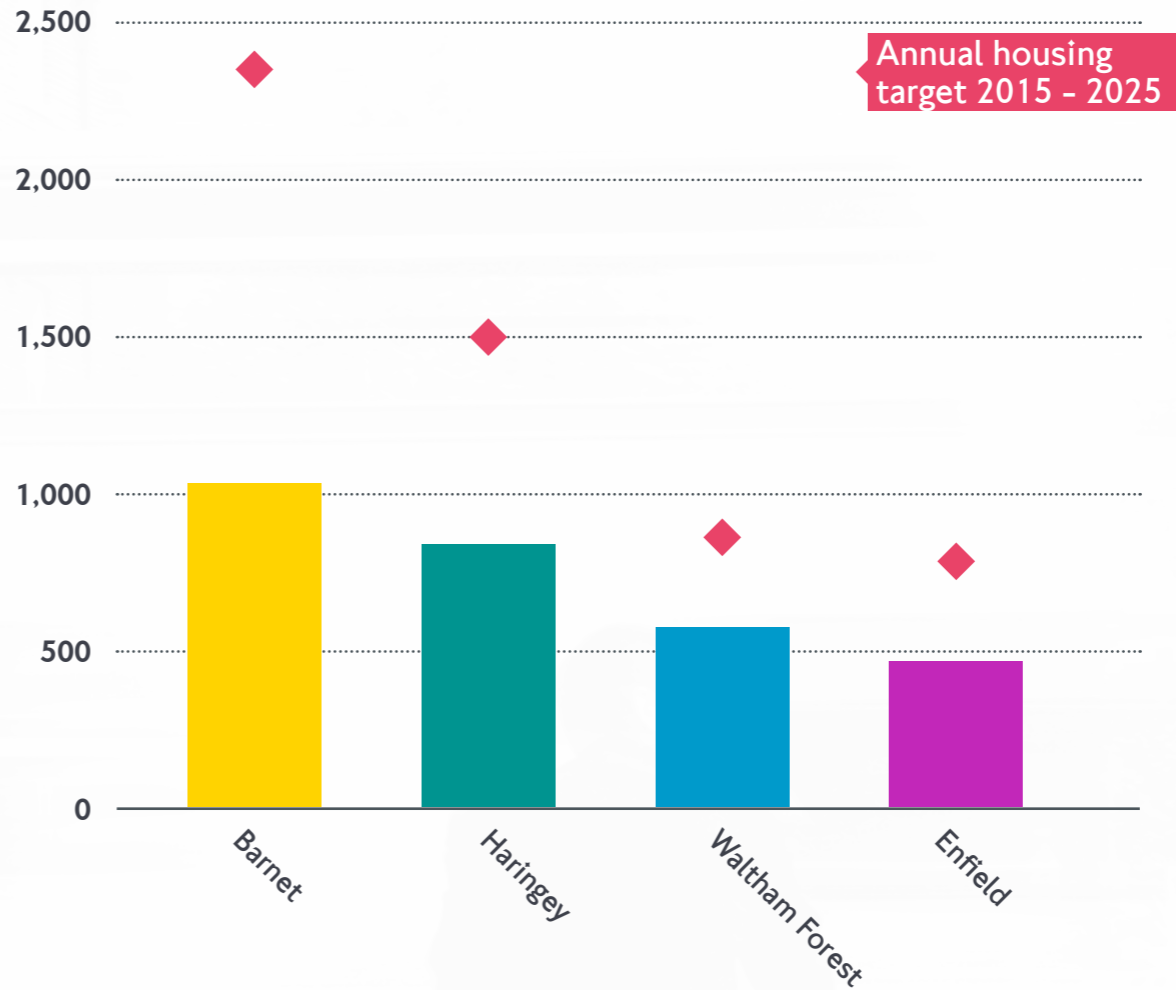
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Annual housing delivery 2004 – 2014



London's future population growth

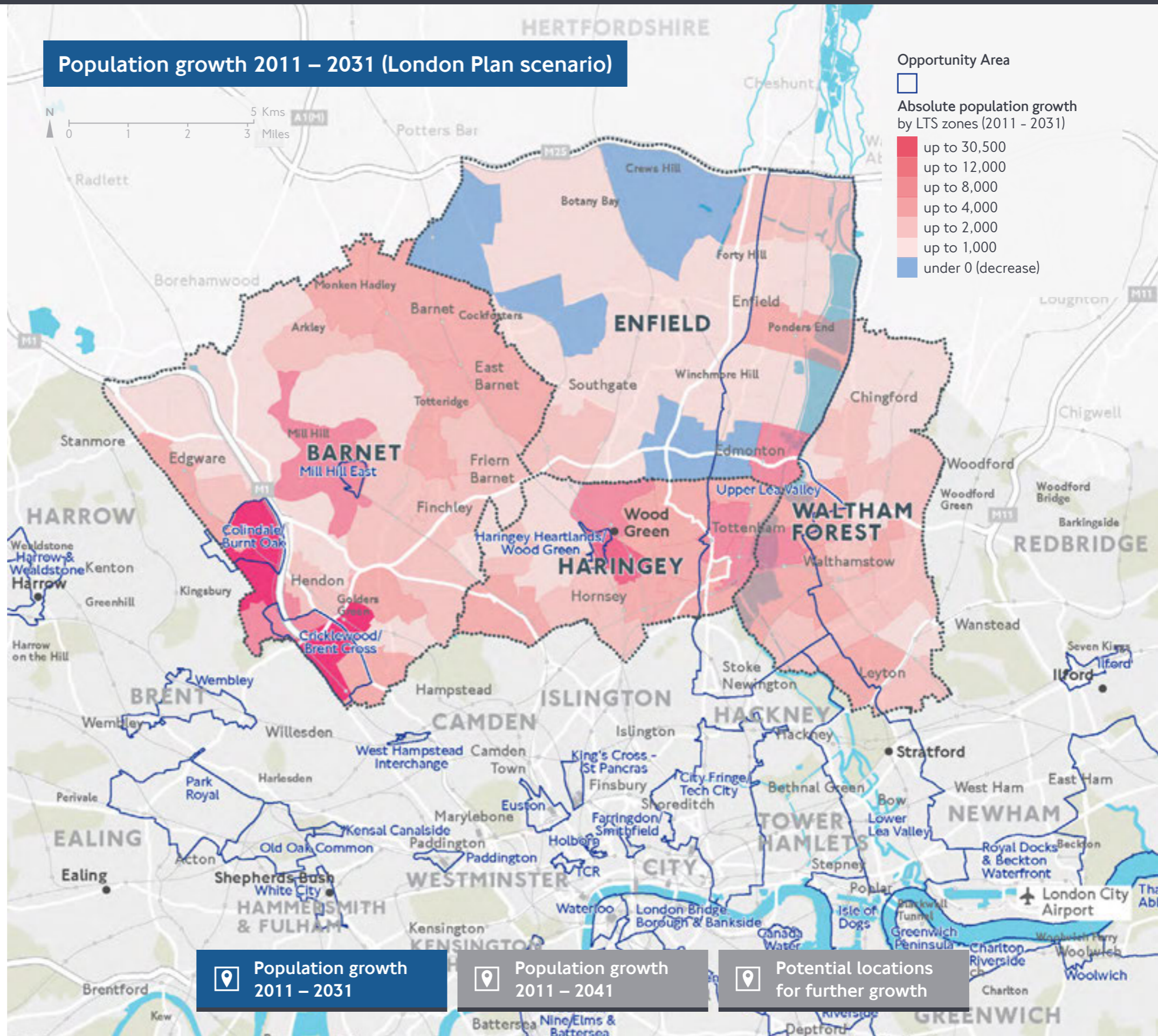
Delivery of housing units vs current target

There is potential to support higher levels of population growth than currently being planned for

The Further Alterations to the London Plan identified opportunities for significant housing growth at Cricklewood/Brent Cross, Colindale, Wood Green and the Upper Lea Valley. Maintaining the capacity and connectivity of the transport network will be key to unlcoking these growth sites. Other locations throughout the sub-region will also see housing growth from conversions, infill and smaller development schemes.

There is also significant potential for higher levels of growth than those set out in the Further Alterations to the London Plan, particularly at locations already well served by transport infrastructure and at places where significant improvements are planned. In particular there is potential for .higher growth than that planned along the Upper Lea Valley and at New Southgate, as a result of Crossrail 2.

Denser levels of development could also come forward around station locations, subject to addressing wider planning policy objectives.



Population growth 2011 – 2031 (London Plan scenario)

Population growth 2011 – 2031

Population growth 2011 – 2041

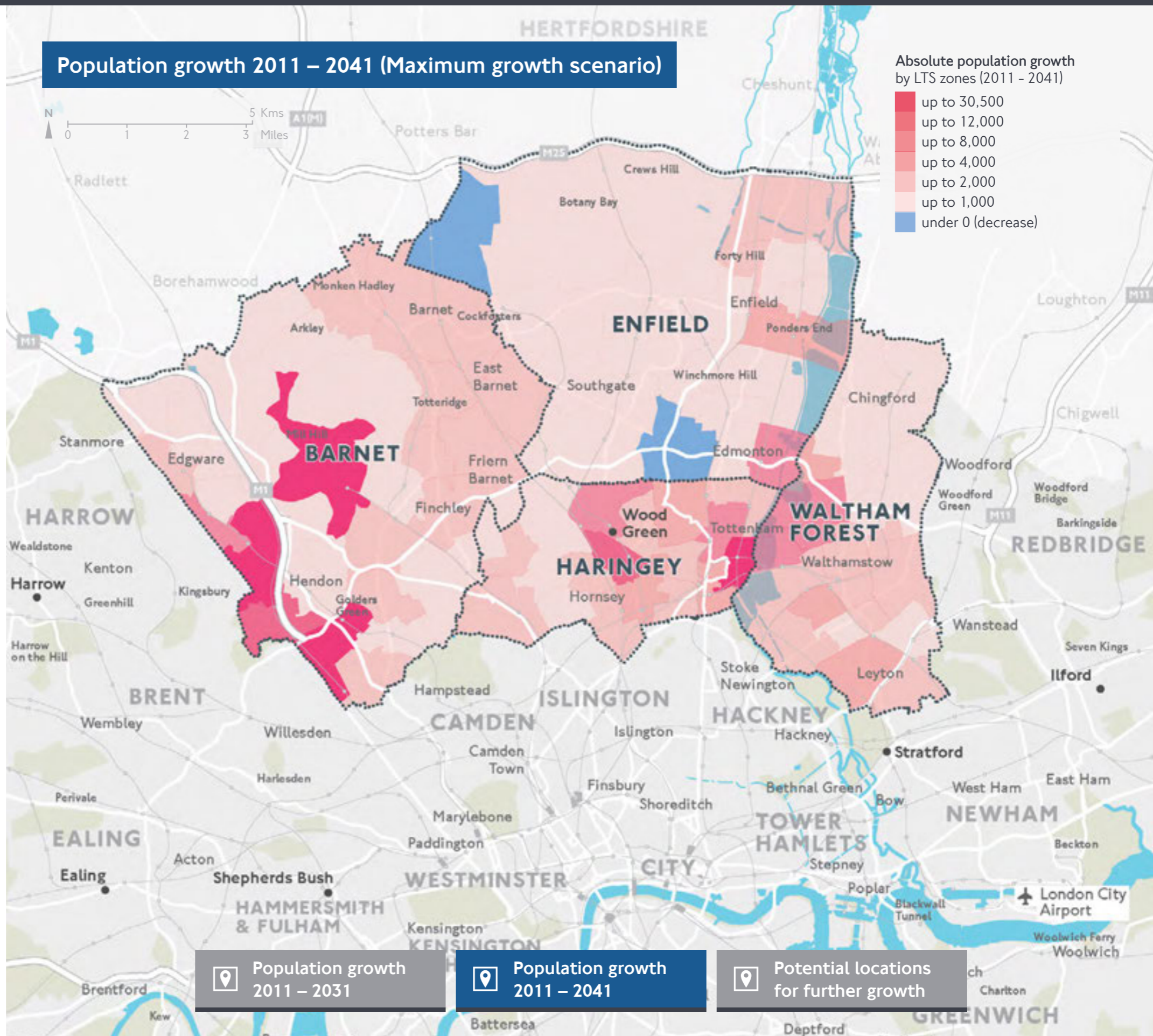
Potential locations for further growth

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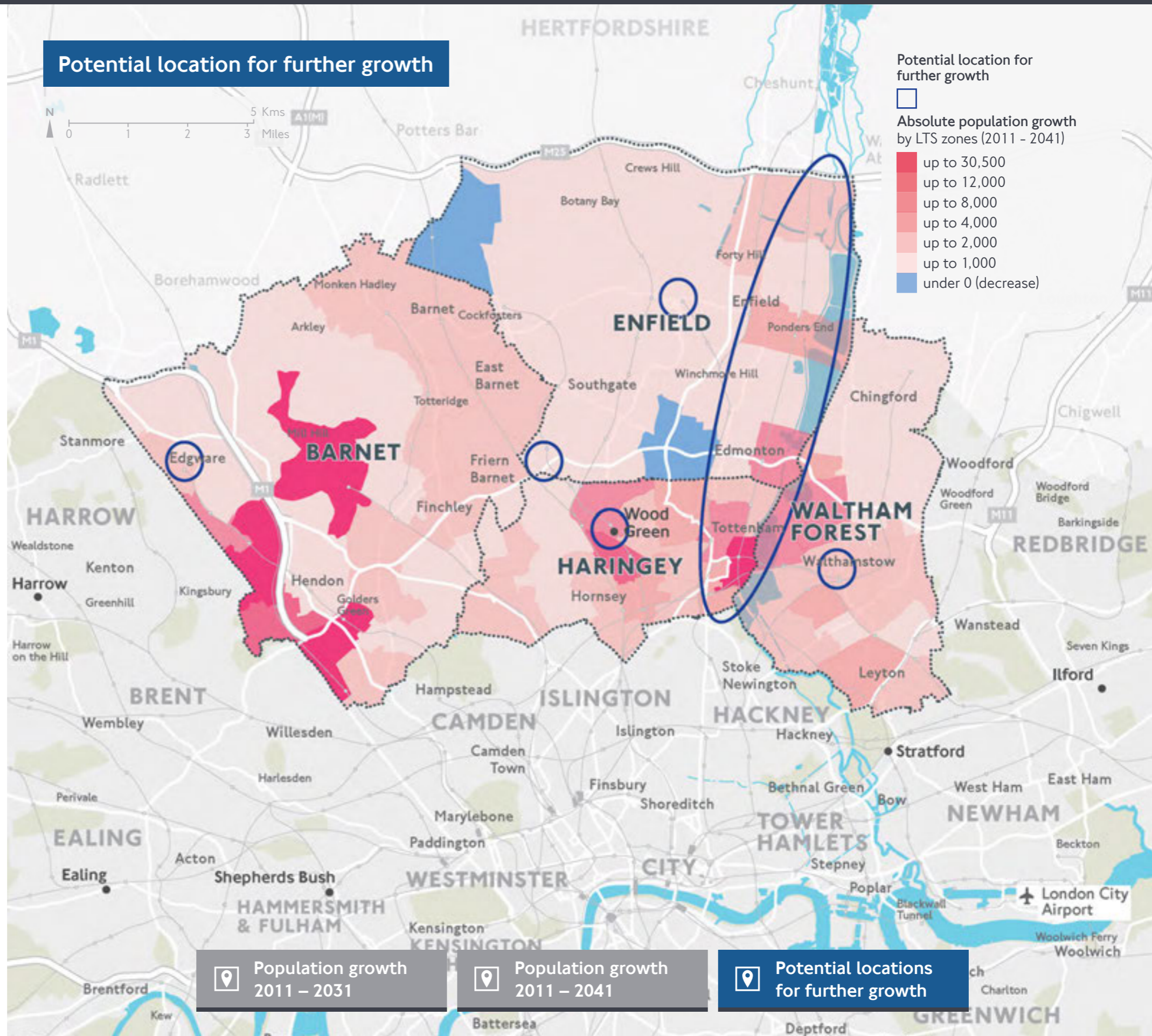


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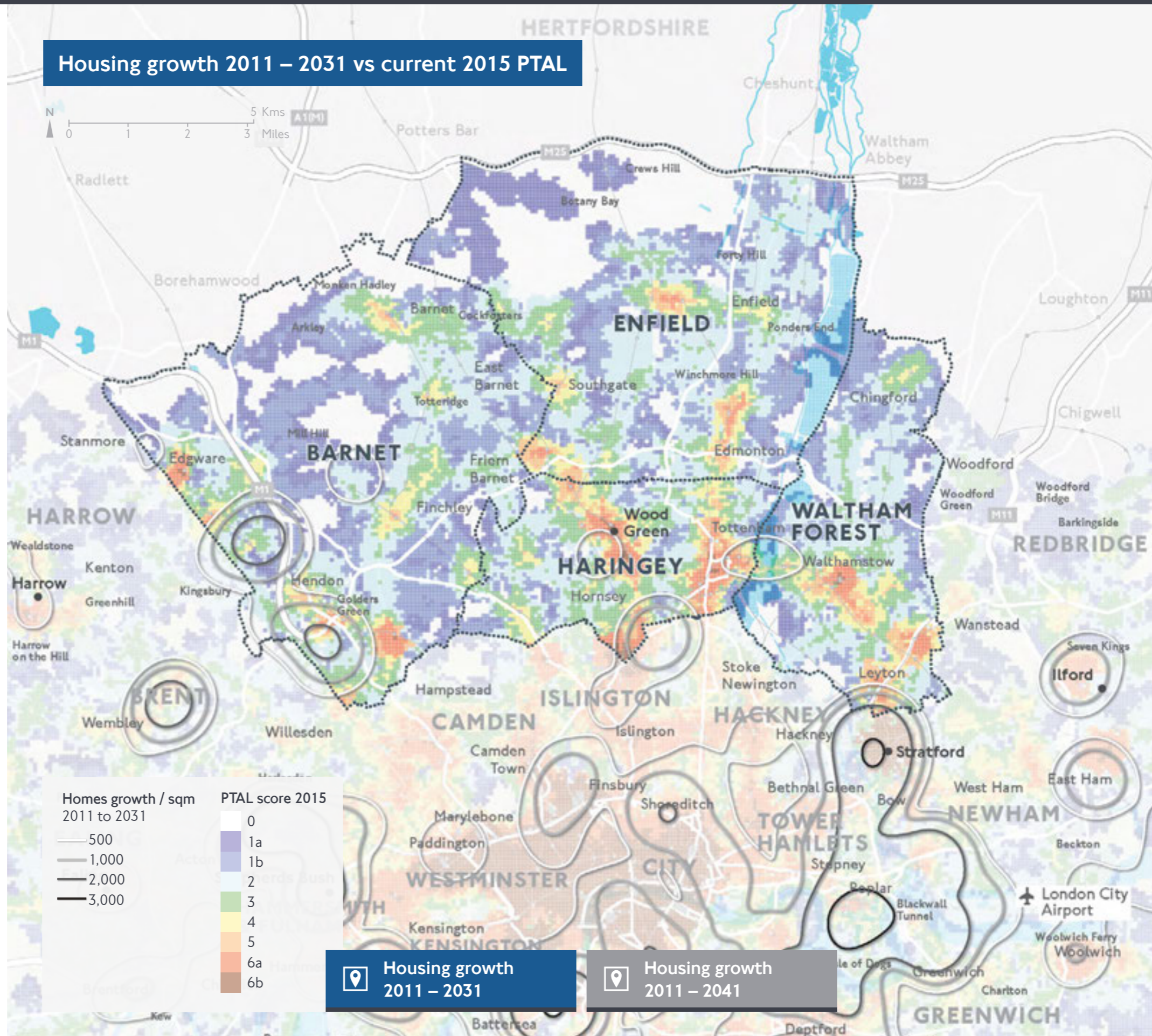
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Some major growth locations will need better public transport connectivity to unlock development

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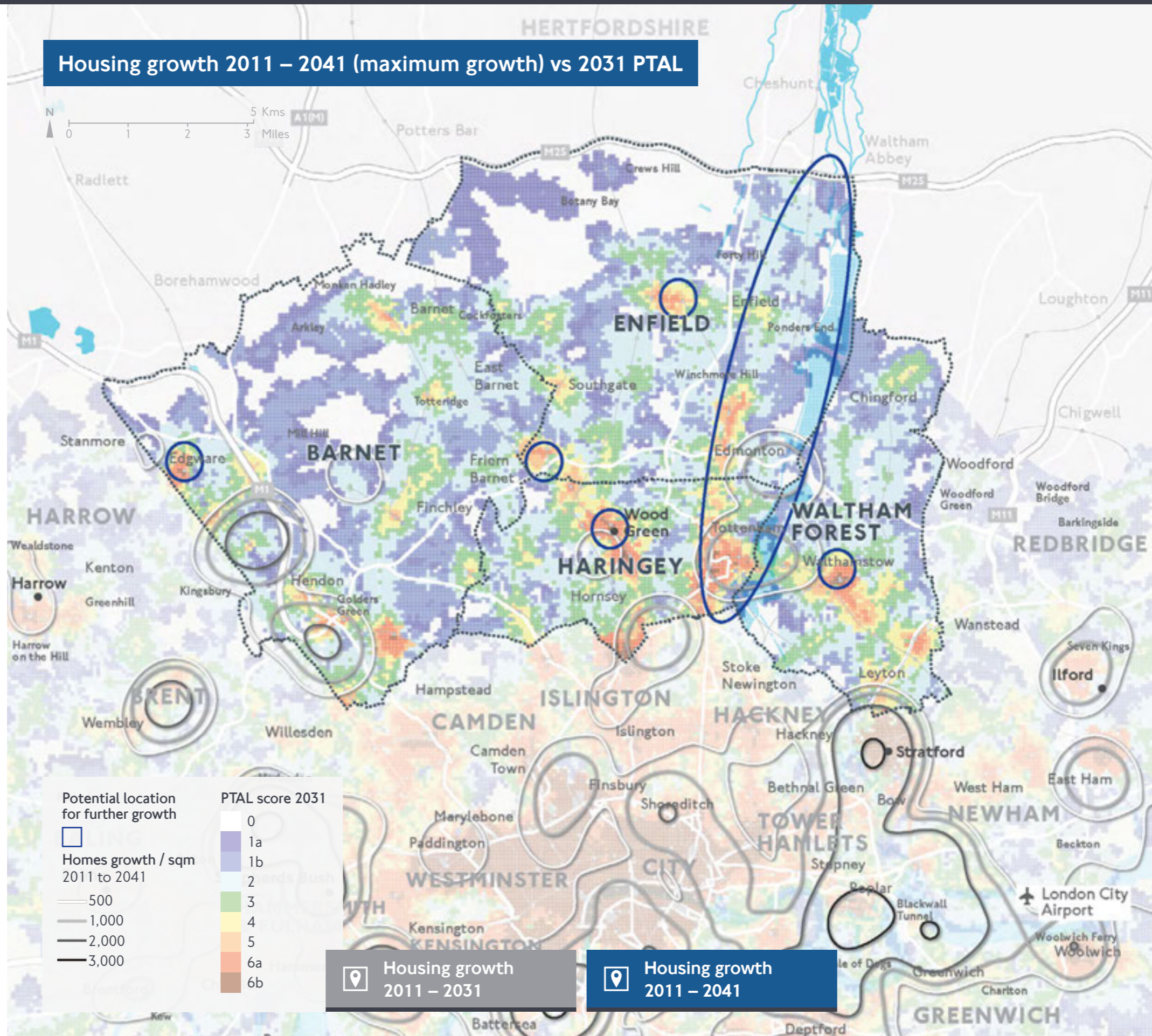
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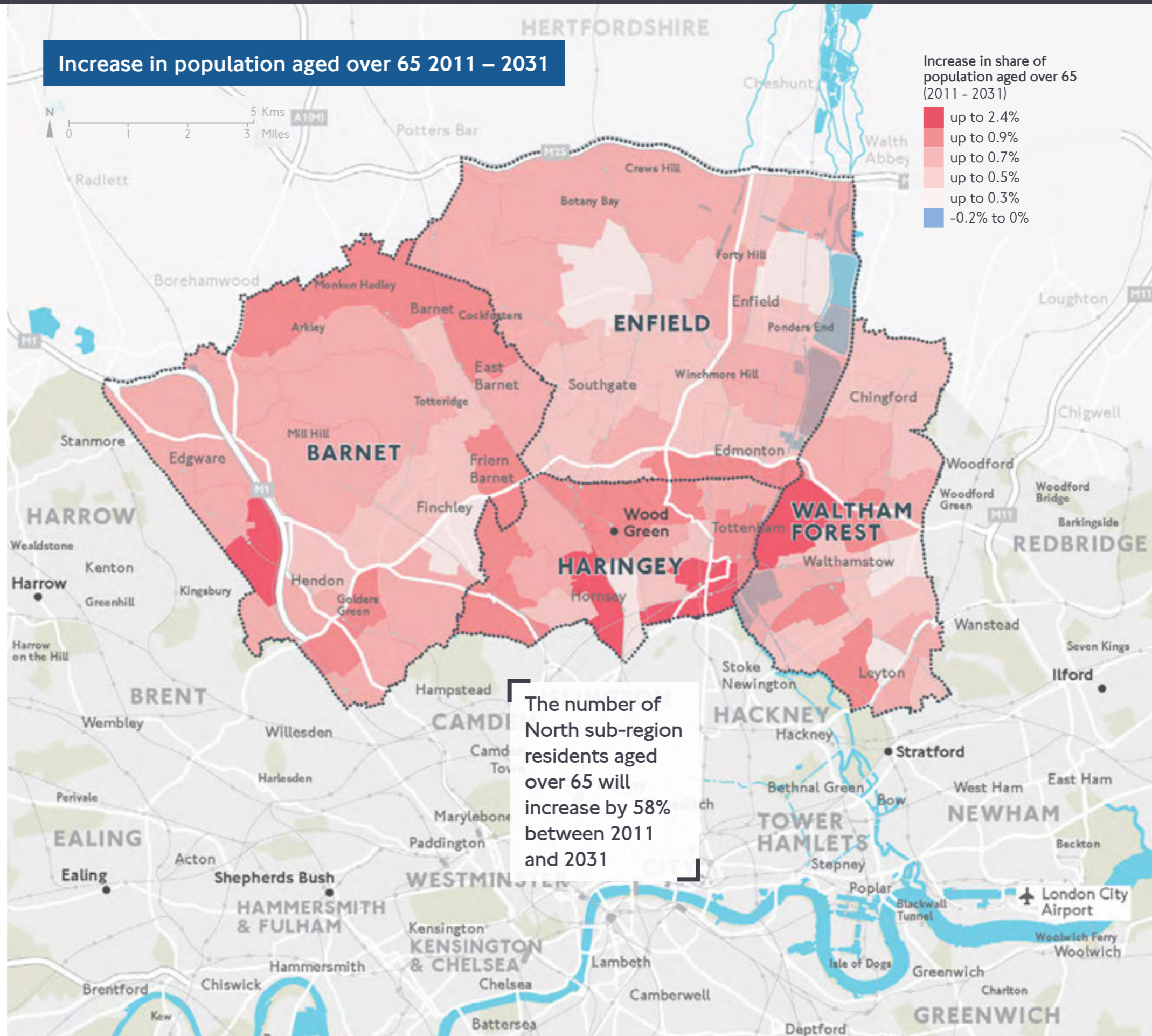
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The proportion of older people will increase, generating more demand for an accessible transport network

The number of people aged over 65 is expected to increase by 77,000 between 2011 and 2031, with the greatest increase in the share of the population at Hornsey, Colindale and Blackhorse Road.



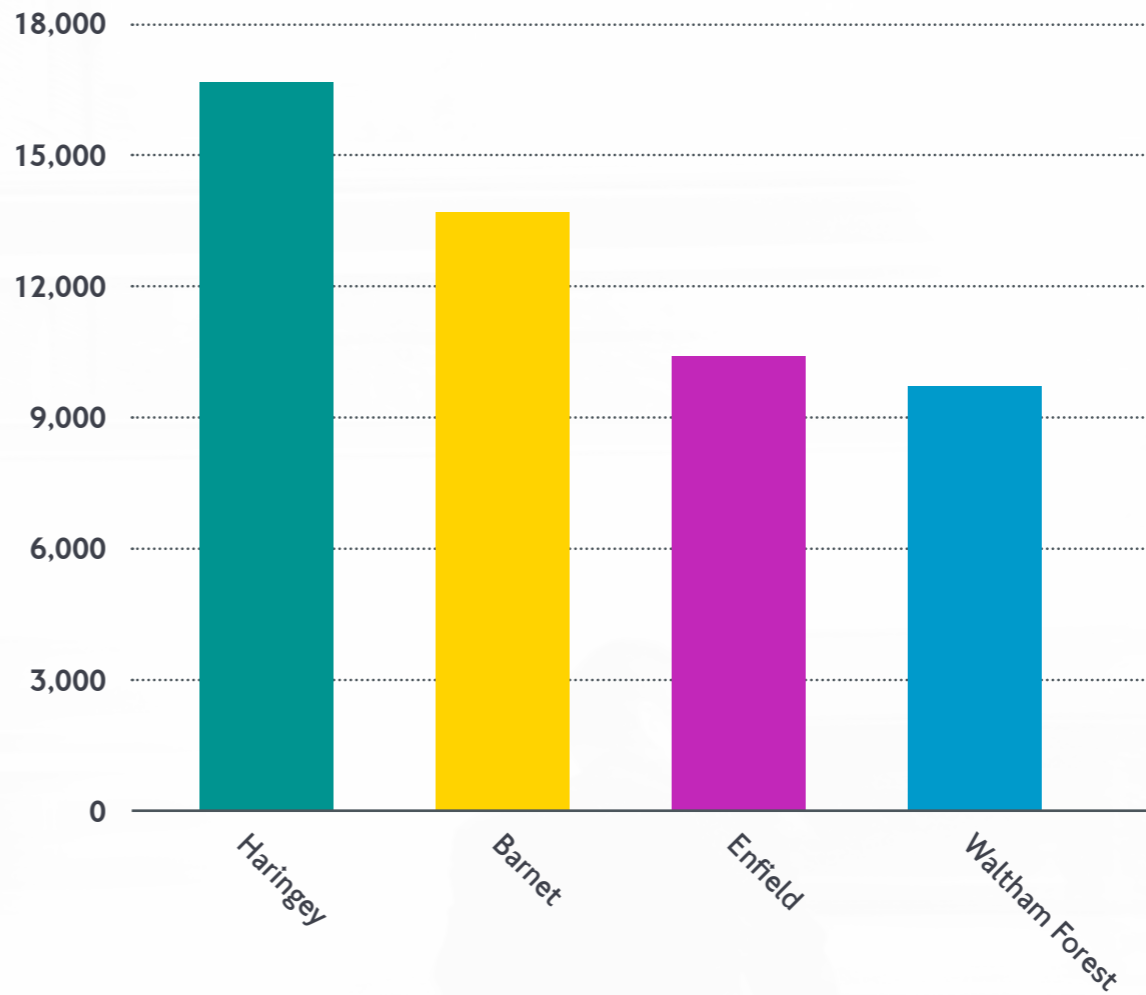
There is potential to support higher levels of employment growth at key transport nodes

The Further Alterations to the London Plan identified that employment could grow by 13% between 2011 and 2031 in the sub-region. The Plan also identified opportunities for employment floorspace growth at Wood Green, the Upper Lea Valley and Cricklewood/Brent Cross. Maintaining the capacity and connectivity of the transport network, as well as providing new links, will be key to unlocking these growth sites. Other locations throughout the sub-region will also see employment growth through redevelopment and the expansion of existing businesses.

Retail floorspace in the sub-region's town centres is also expected to grow, with most of the growth expected to occur at the larger centres of Wood Green and Enfield Town, and smaller District Centres expected to contract. Although not yet classified as a 'town centre', and so not shown in the figures here, there are plans to increase the amount of retail floorspace at Brent Cross Shopping Centre by over 50,000sq.m

51,000 more jobs in the sub-region by 2031

Employment growth 2011 – 2031



Employment growth 2011 – 2031



Employment growth 2011 – 2031

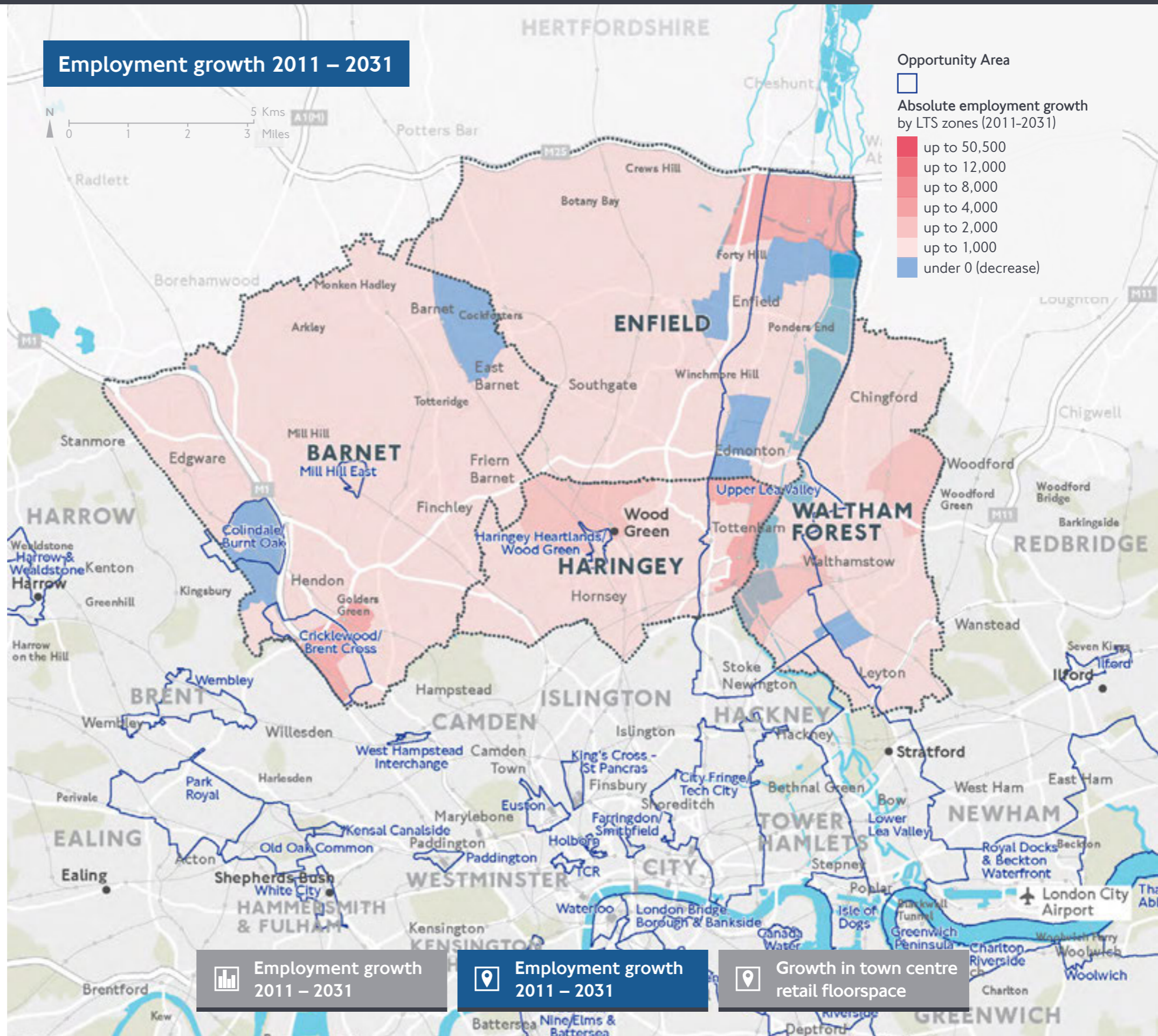


Growth in town centre retail floorspace

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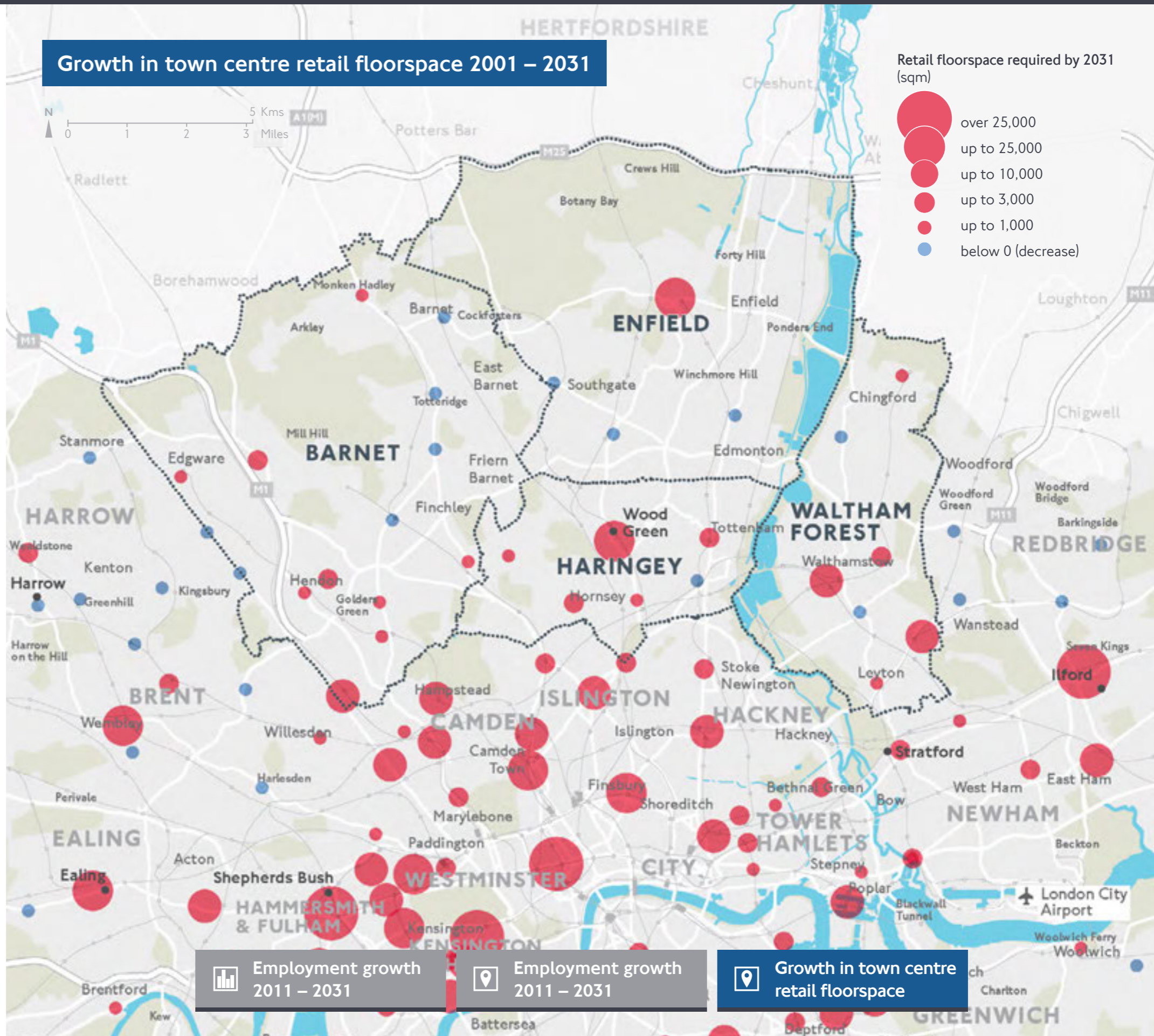
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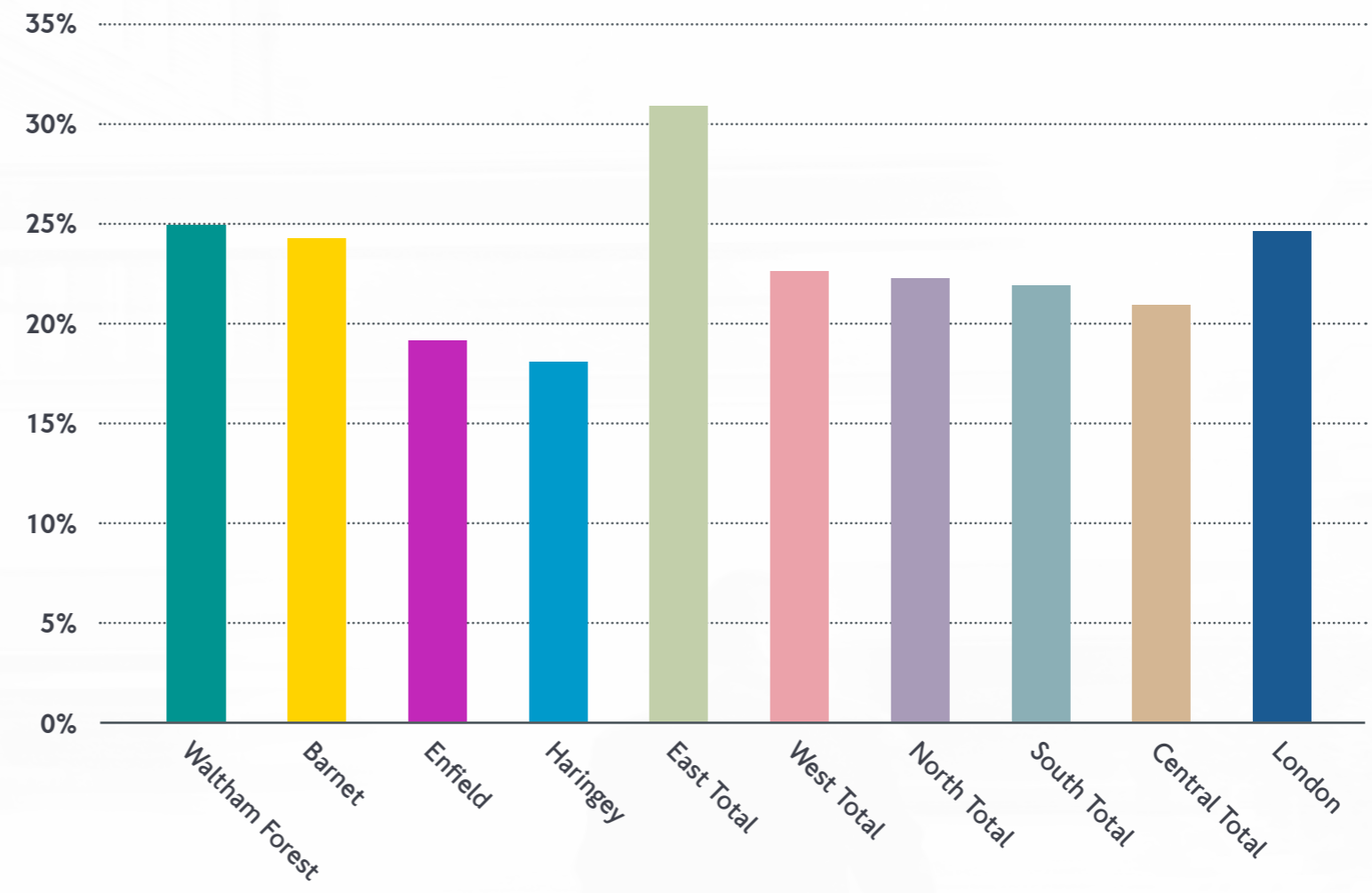


The number of vans on the highway network will continue to grow

The logistics sector plays a key role in supporting London's economy, providing vital support to commercial activities through the delivery of goods. Online commerce is expected to continue growing, in part contributing to an estimated 23% increase in demand for vans on the sub-region's roads.

Vehicle kms by van expected to increase by **23%** by 2031

Growth in van vehicle kms 2011 – 2031



Public transport mode share will continue to increase, but only if capacity is increased to accommodate growth

Based on the continuation of recent trends, mode share of public transport and active travel modes will increase as mode share for car falls. Much of this change is expected to come about from new residents, whose travel patterns are often different to existing residents. Boroughs will therefore need to take action to encourage mode shift amongst existing travellers too. In order to achieve this shift to more sustainable modes there will need to be considerable behavioural change in addition to investment in infrastructure. Measures to encourage a shift away from car could include smarter travel initiatives and measures to turn walking and cycling potential into reality. Other measures still allow access to services without having to travel as far, for example through better use of IT and freight consolidation.

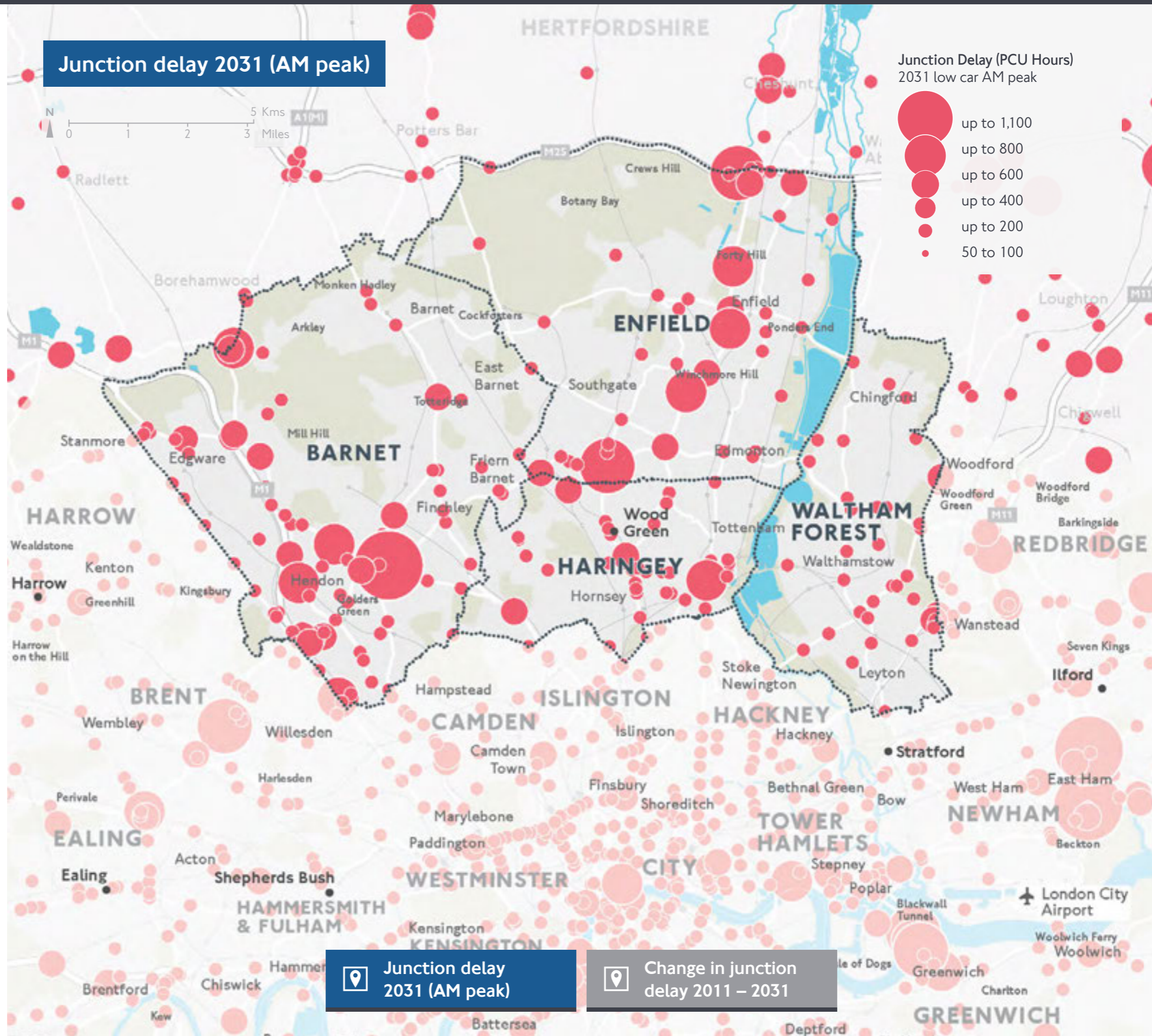
Mode shift 2011 – 2031



Highway congestion will get worse without many more people switching to alternative modes

Under current forecasts, whilst car mode share will fall, population and employment growth mean there will be an increase in the number of cars using the highway network in the sub-region, resulting in increased congestion. This could constrain economic growth, lower quality of life for existing residents and prevent the sub-region from fulfilling its growth potential. Particular locations where congestion is expected to be most significant are the A406, with pinch points at Henlys Corner and Bounds Green, the A10, with pinch points at Soutbury Road, Caterhatch Lane and Bullsmoor Lane and the A5 from Brent Cross to Cricklewood.

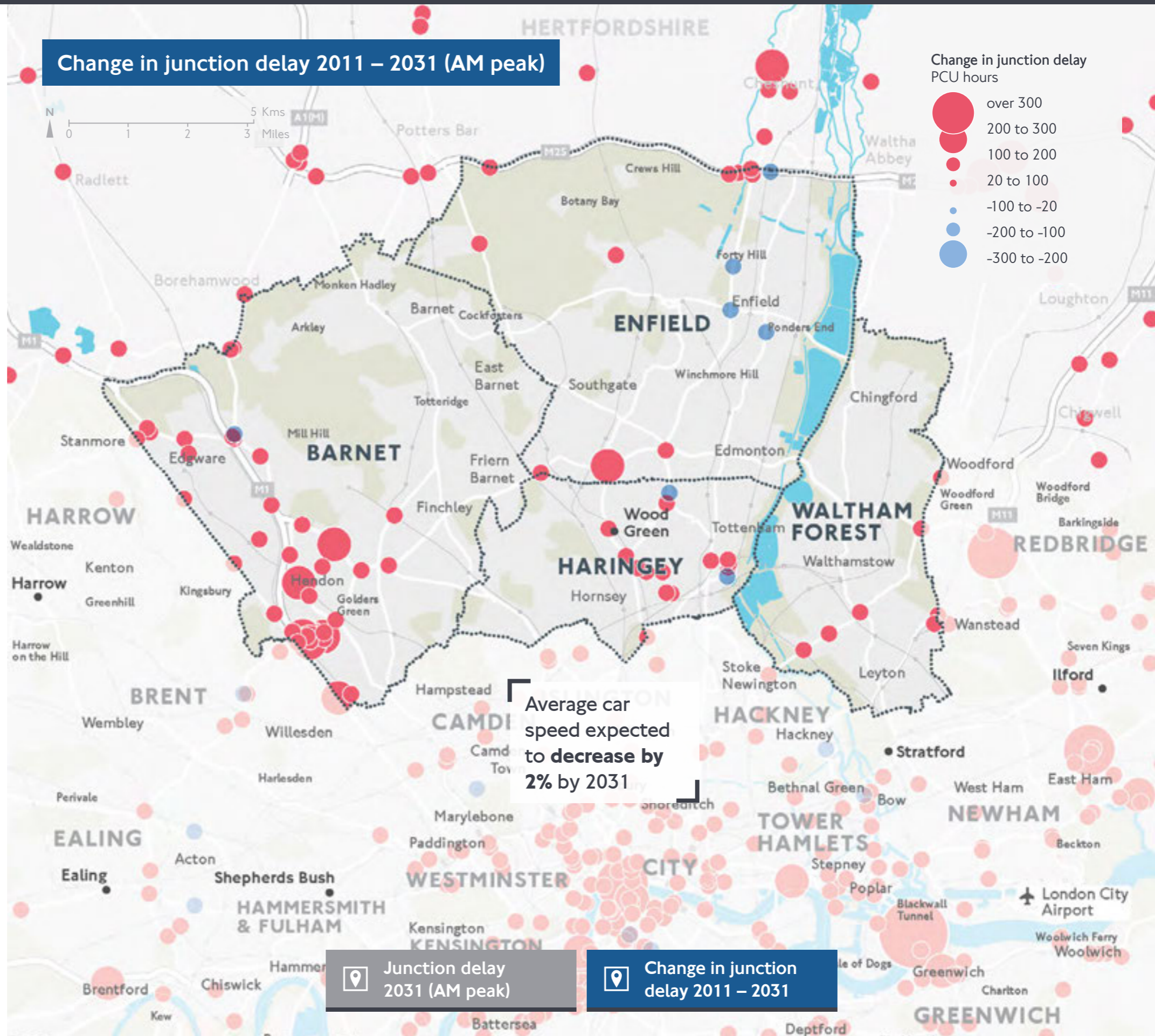
Continued efforts to support mode shift away from motorised highway modes, as well as measures to optimise the operation of the highway network, will be required to tackle these issues.



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Change in junction delay 2011 – 2031 (AM peak)

Average car speed expected to decrease by 2% by 2031

📍 Junction delay 2031 (AM peak)

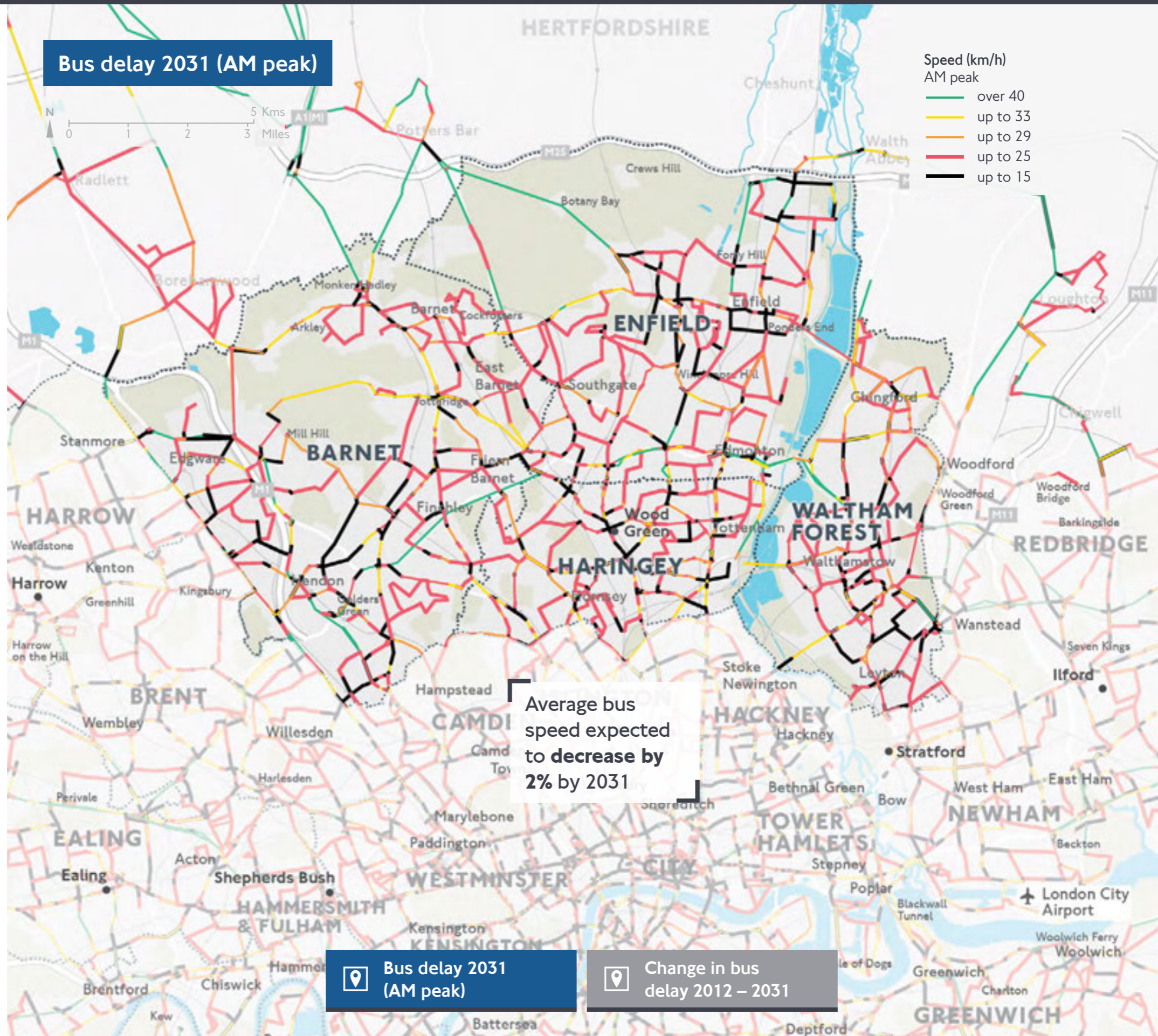
📍 Change in junction delay 2011 – 2031

Increased levels of congestion will slow bus services, which are a vital element of the public transport network in the sub-region

London's strong employment growth is expected to continue, with a 14% increase in employment across all sectors to 2031. Growth is expected to continue in office based sectors, including professional and scientific activities, whilst employment in manufacturing, transport, wholesale and construction will decline.

As office based sectors are increasingly seeking the most accessible locations by public transport, particularly in Central London, demand for public transport modes is likely to increase. It will be important to ensure there is sufficient capacity on the network to serve these growing sectors, and support London's economic growth.

Most of the sectors which are expected to contract are typically access by car, which could continue to push down commuting to work by car. The decline of these sectors also has the potential to free up land for housing or other land uses for more intensive development.



Bus delay 2031 (AM peak)

Average bus speed expected to decrease by 2% by 2031

Bus delay 2031 (AM peak)

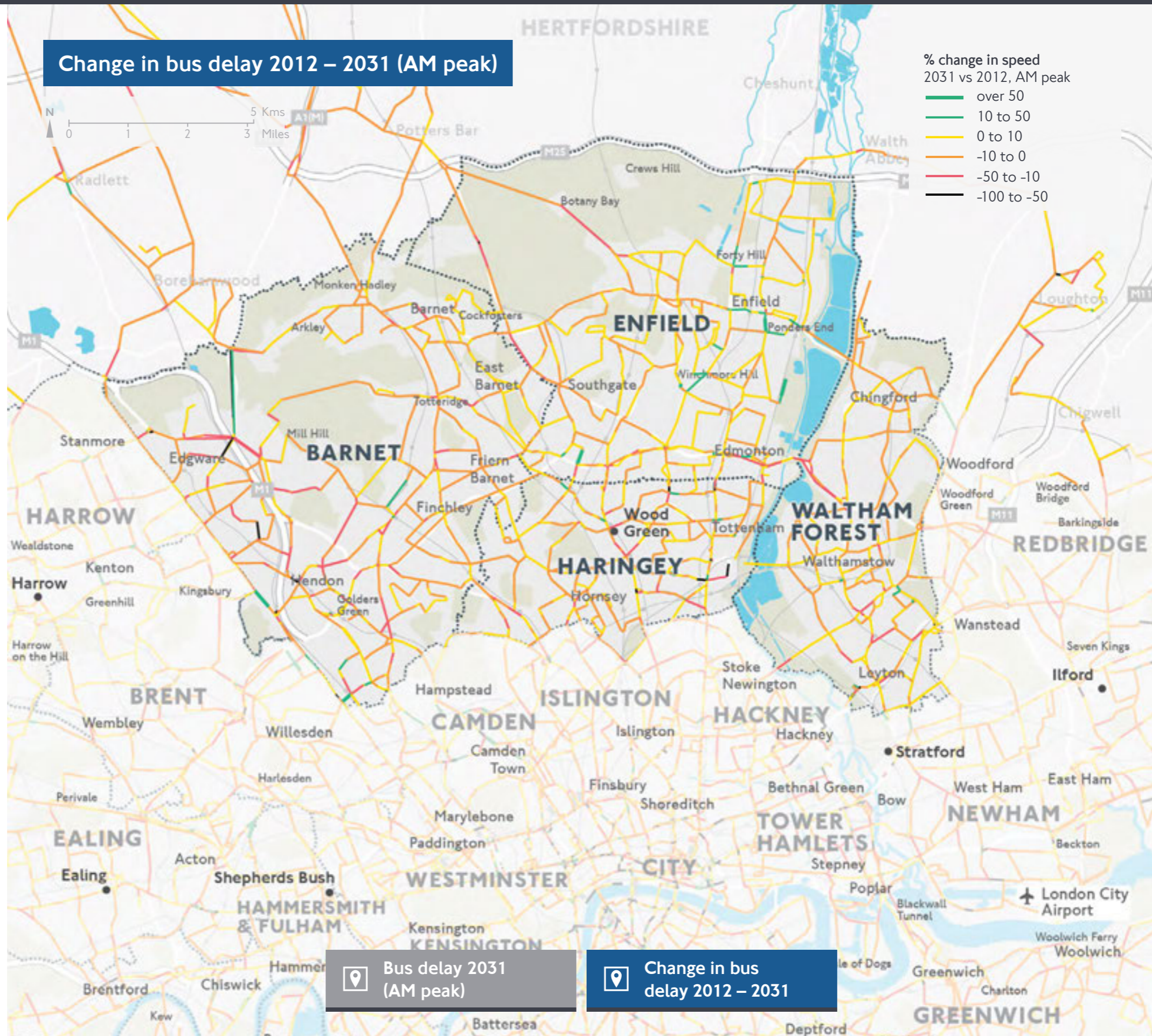
Change in bus delay 2012 – 2031

Increased levels of congestion will slow bus services, which are a vital element of the public transport network in the sub-region

For many people, buses provide the main means to access their local jobs, schools, shops and services across the sub-region. But as highway congestion increases, this could have the result of reducing average bus speeds without measures to further prioritise bus operations.

This also needs to be set against an anticipated increase in overall bus demand, driven by increasing levels of population and employment growth, in the sub-region. Services will need to respond to changes in demand through the process of continuing consultation and review, with new or expanded services desirable, particularly to serve growth areas.

Any measures to maintain bus reliability and journey times will need to be designed to complement measures for pedestrians, cyclists, smoother traffic flows and the urban realm.

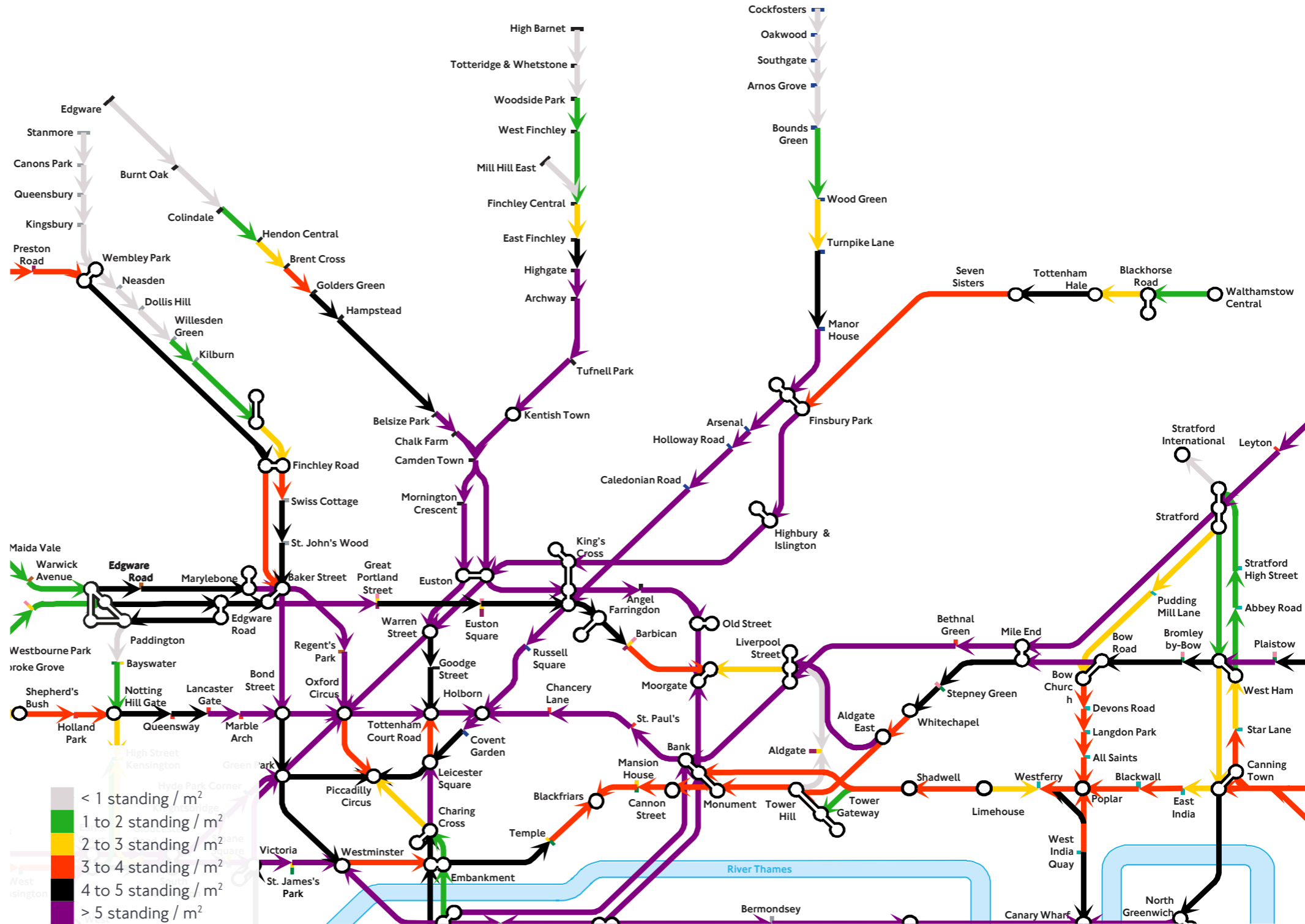




Without investment in the rail network, many lines will be at capacity, constraining growth

As the sub-region's population continues to grow, and as its residents increasingly use rail based modes to access growing employment opportunities across London, the demand for rail and Underground trips will increase significantly. Without investment, this will mean sections of both the Underground and National Rail network will be over capacity by 2031. The Northern, Picadilly and Victoria lines will all be over capacity approaching central London. The Gospel Oak to Barking Line will be over capacity, with parts of the West Anglia and Great Northern lines also very crowded. Without investment, this will restrict the number of people that can access jobs and services from, to and within the sub-region, harming quality of life and constraining growth.

Underground and DLR crowding 2031 without investment



Underground and DLR crowding 2031

National Rail crowding 2031

Change in UG and DLR crowding

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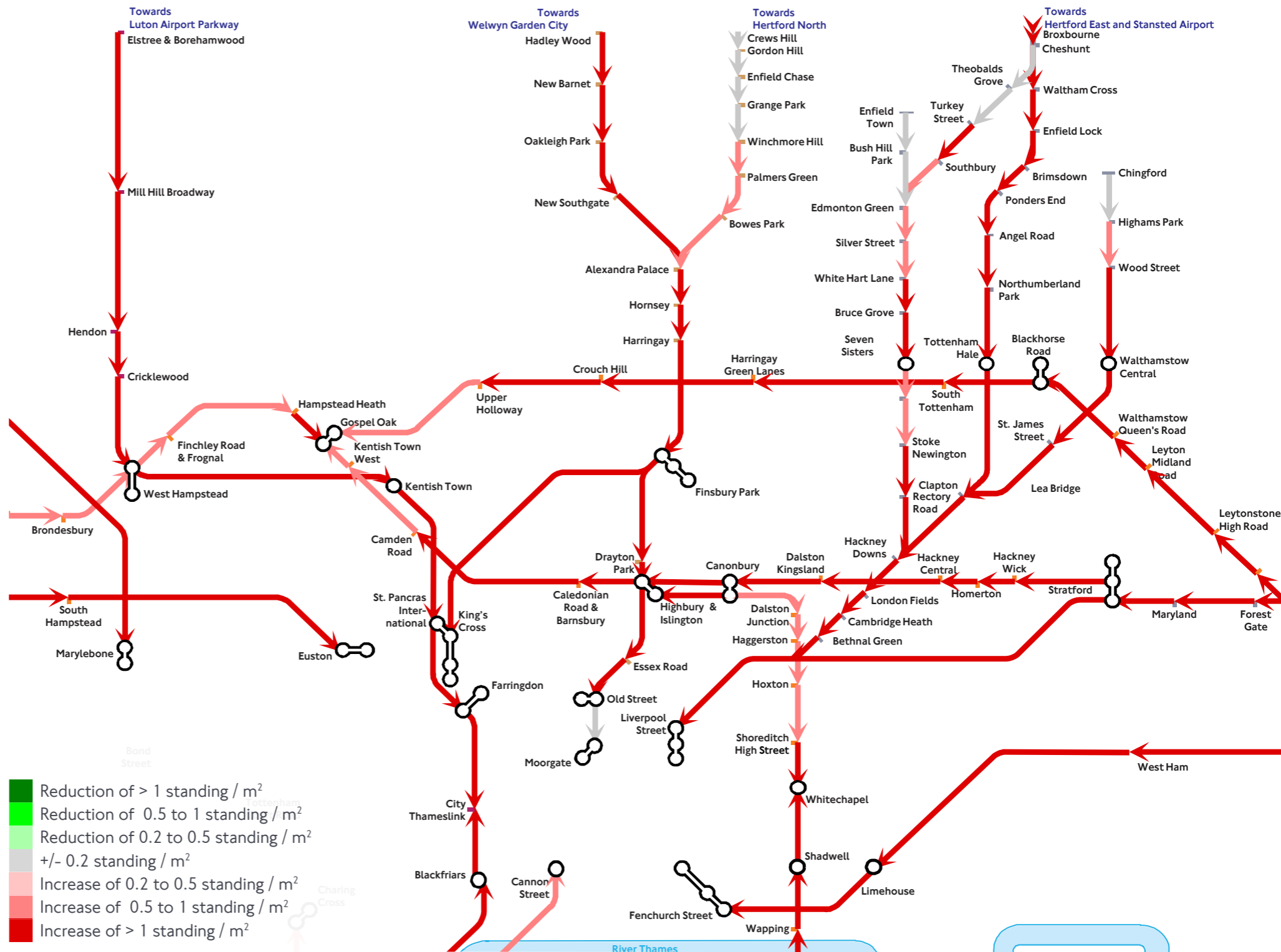
Change in Underground and DLR crowding 2031 without investment



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Change in National Rail crowding 2031 without investment



Underground and DLR crowding 2031

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With planned levels of investment in the rail network, there will be sufficient capacity to support growth to 2031

In order to address the forecast increase in demand for rail, both TfL and Network Rail have committed to investment which will increase the capacity of rail lines serving the sub-region. This investment will bring estimated crowding down to levels similar to those experienced today. However, this still means that, despite funded interventions, crowding will worsen on a number of lines, including from Barking to Gospel Oak, from Enfield Lock to Tottenham Hale and along much of the Great Northern line.

Underground and DLR crowding with investment as per 2015 business plan



Underground and DLR crowding 2031

National Rail crowding 2031

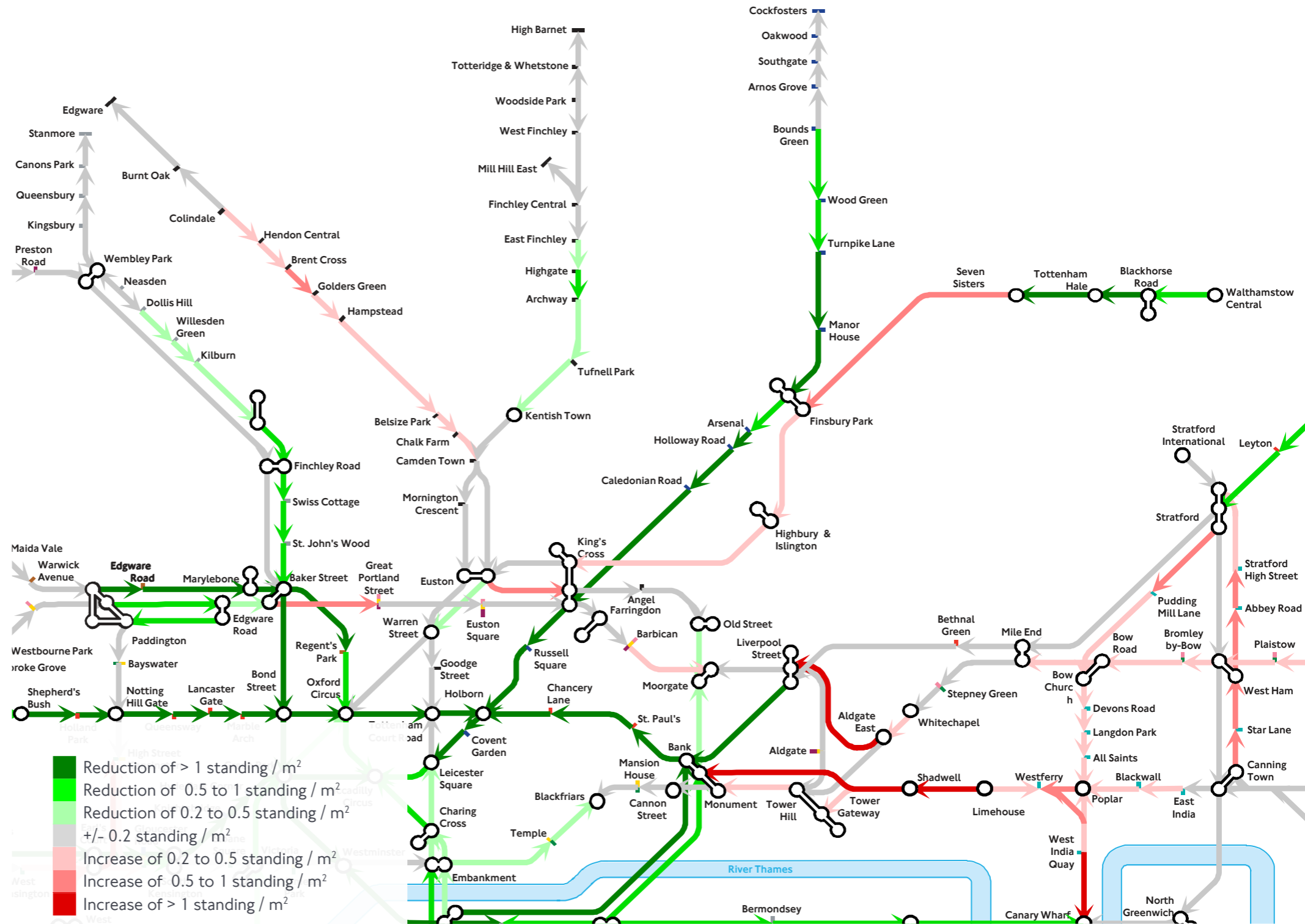
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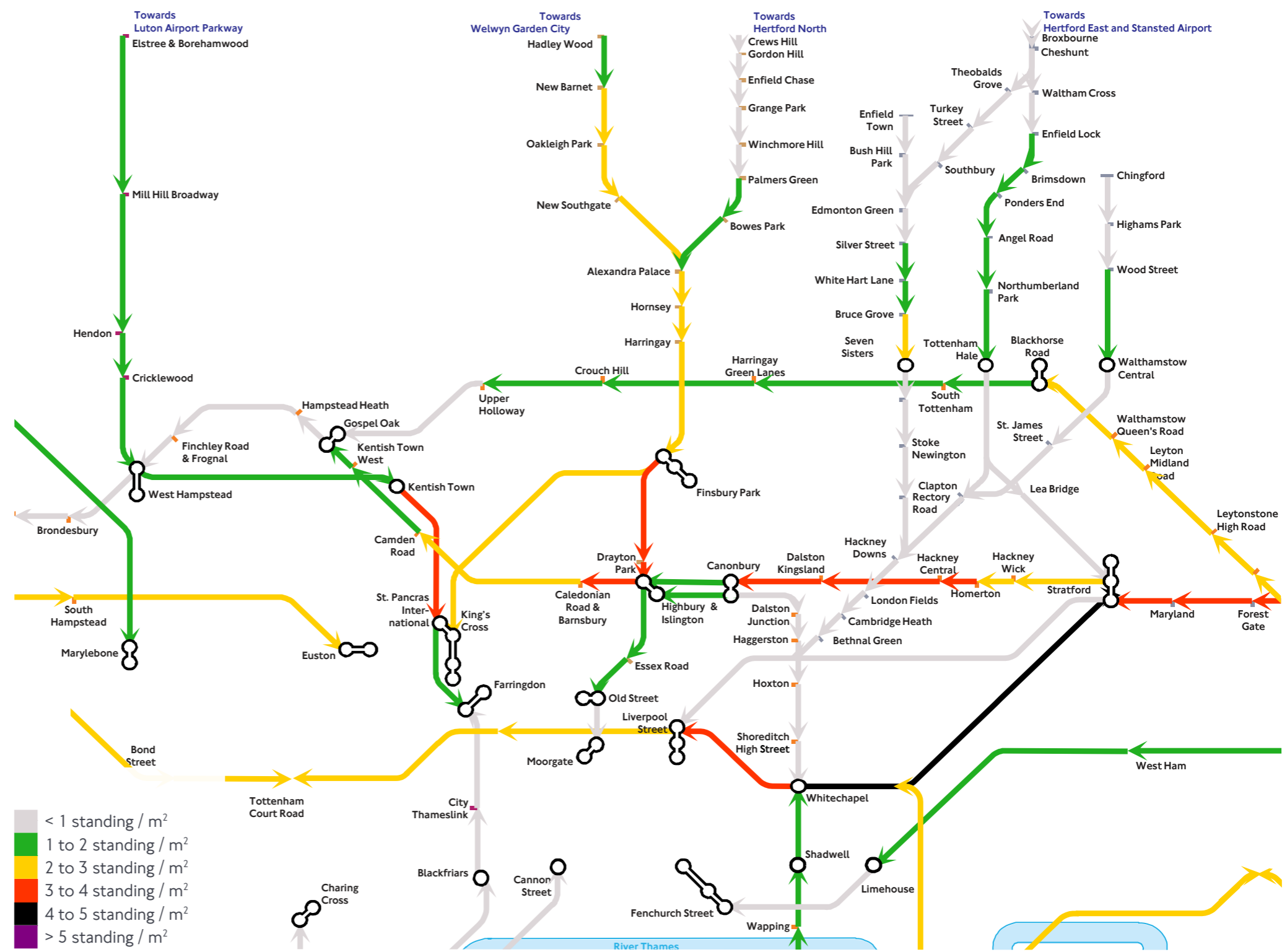
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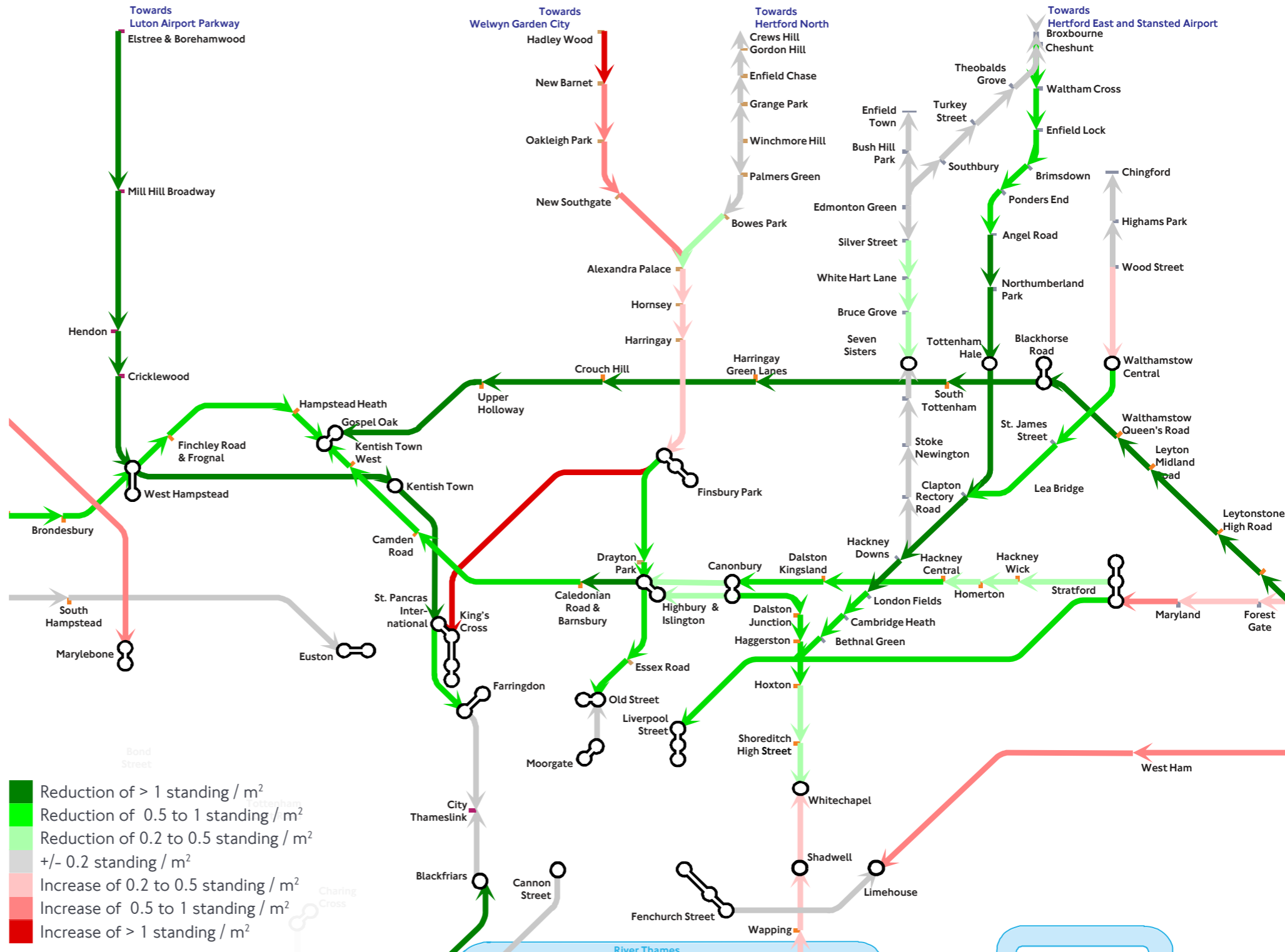
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Change in National Rail crowding 2031 with investment



- Reduction of > 1 standing / m²
- Reduction of 0.5 to 1 standing / m²
- Reduction of 0.2 to 0.5 standing / m²
- +/- 0.2 standing / m²
- Increase of 0.2 to 0.5 standing / m²
- Increase of 0.5 to 1 standing / m²
- Increase of > 1 standing / m²

But further investment on the rail network above that already committed will be required to support higher levels of growth

Once higher levels of growth to 2041 are taken into account, crowding is expected to worsen along the Edgware branch of the Northern line, as well as from Seven Sisters on the Victoria line. Crowding will also become much worse on the Great Northern Line. These estimates do not include the significant potential levels of growth which could be unlocked by Crossrail 2 in the Upper Lea Valley.

Underground and DLR crowding 2041 with investment as per 2015 business plan



Underground and DLR crowding 2041

National Rail crowding 2041

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Change in Underground and DLR crowding 2011 – 2041 with investment as per 2015 business plan



Underground and DLR crowding 2041

National Rail crowding 2041

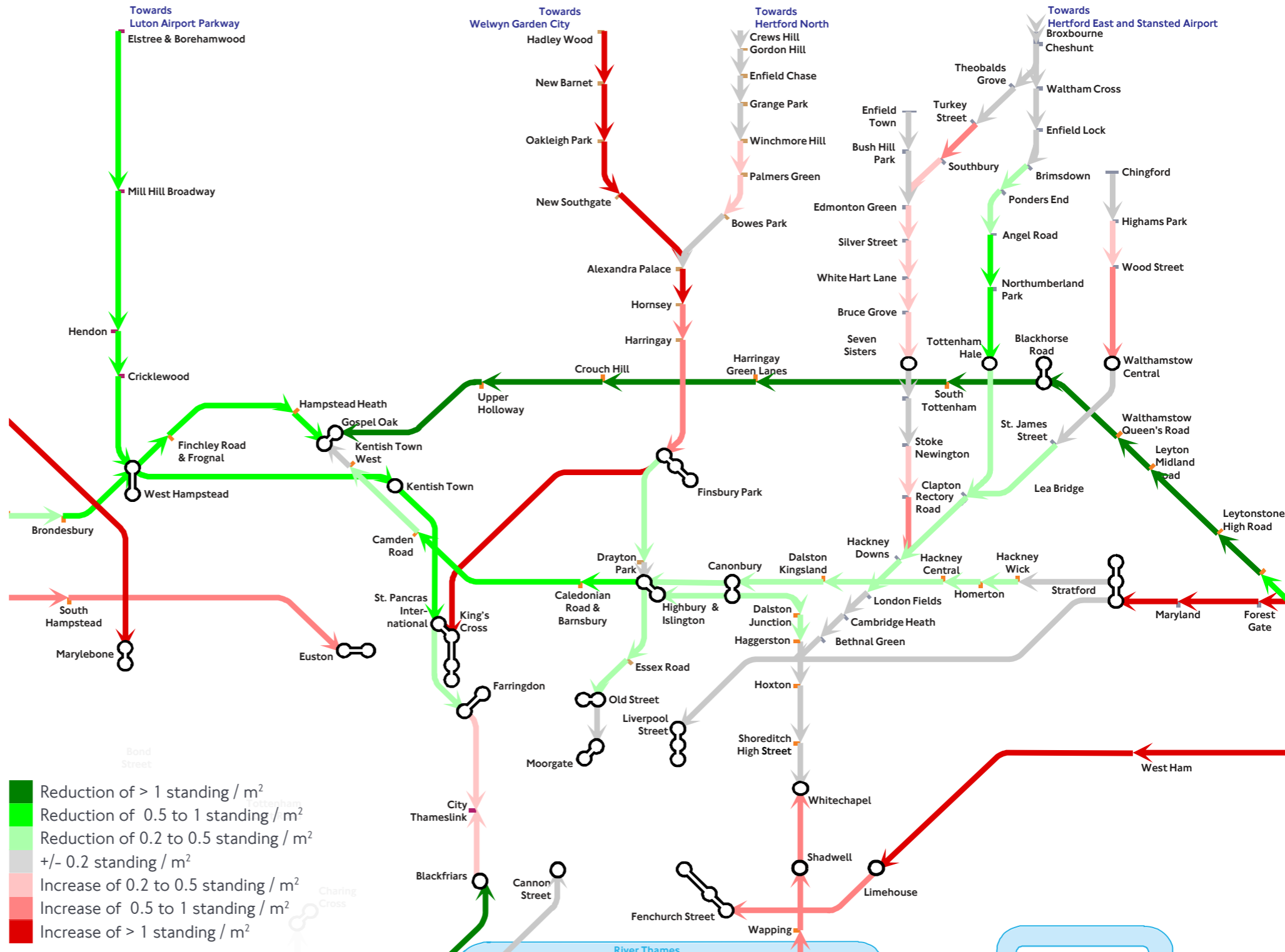
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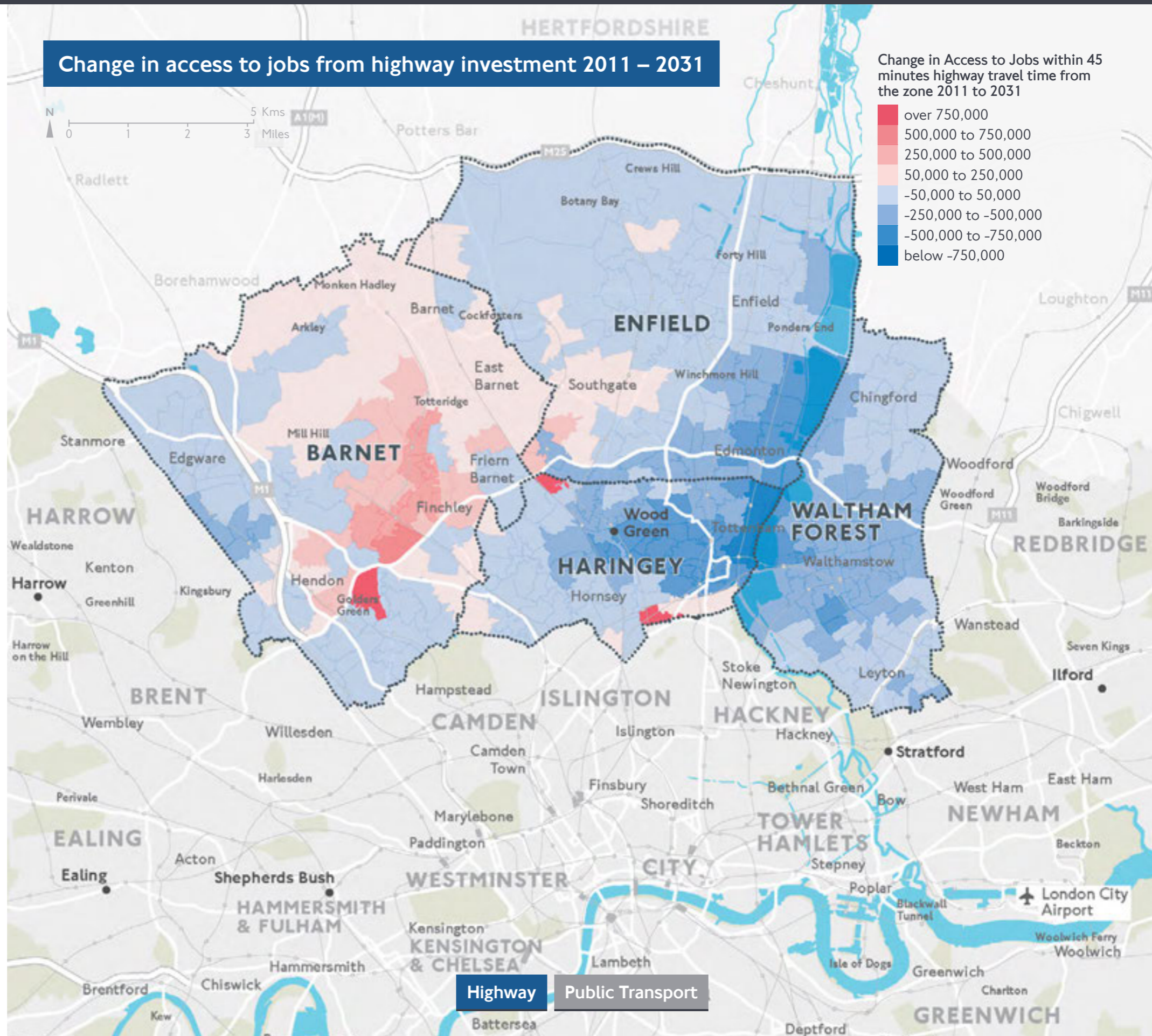
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Change in National Rail crowding 2011 – 2041 with investment



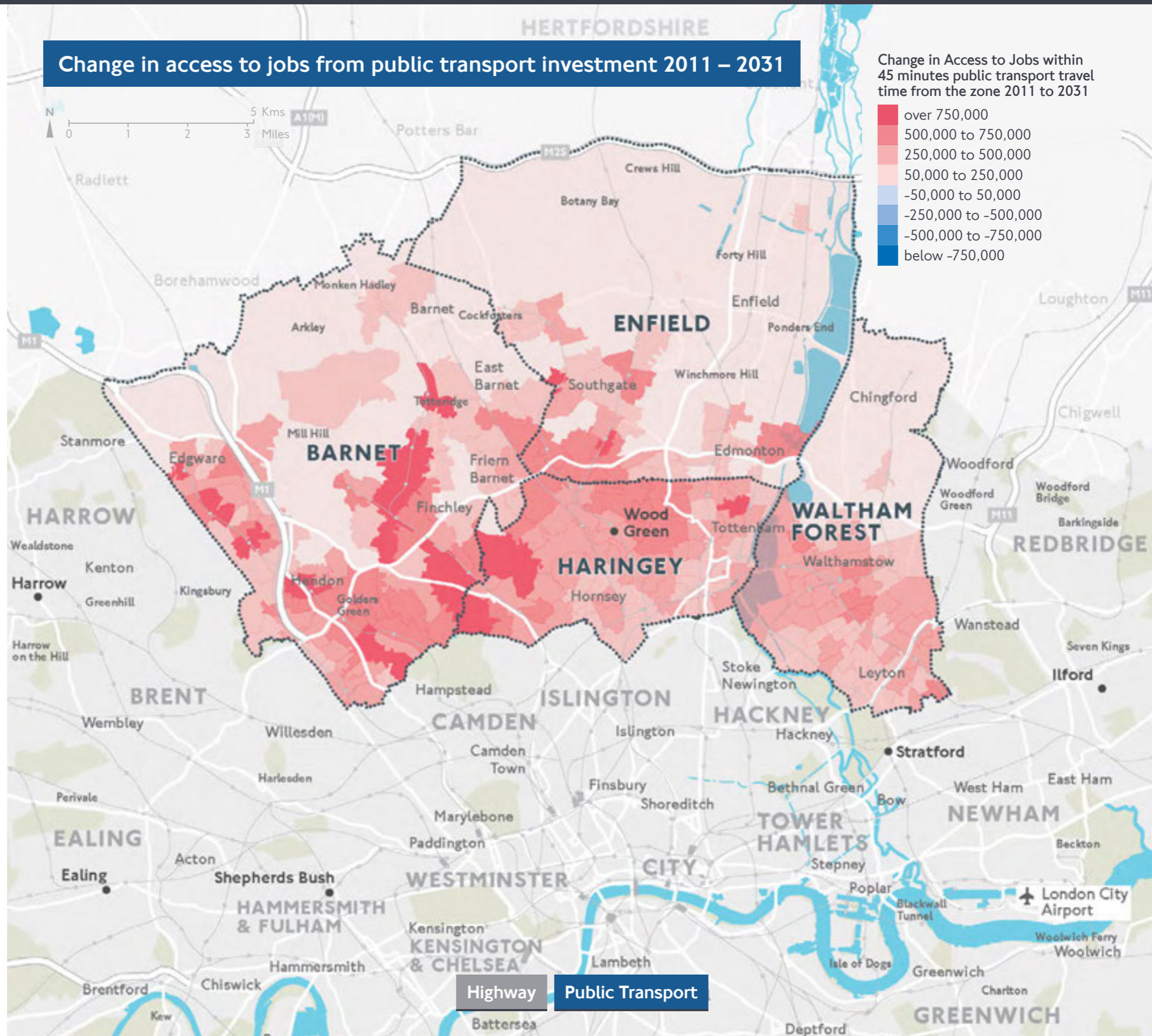
The number of jobs accessible by public transport will increase, although congestion will reduce access to jobs by car in some areas

Committed investment in the Underground network will result in increased frequency and capacity that will mean residents of the sub-region will be able to access a greater number of jobs by public transport within a 45 minute travel time. However, due to forecast increases in highway congestion, fewer jobs will be accessible within 45 minutes by car. This means that residents of places which do not have good access to the Underground network, such as the Upper Lea Valley, are at a disadvantage. This is also where deprivation is also greatest within the sub-region. Measures to improve public transport access, such as improvements to National Rail lines and bus priority measures will be required to ensure residents of these areas have the greatest possible range of employment opportunities, and maintain the attractiveness of these areas for future growth.



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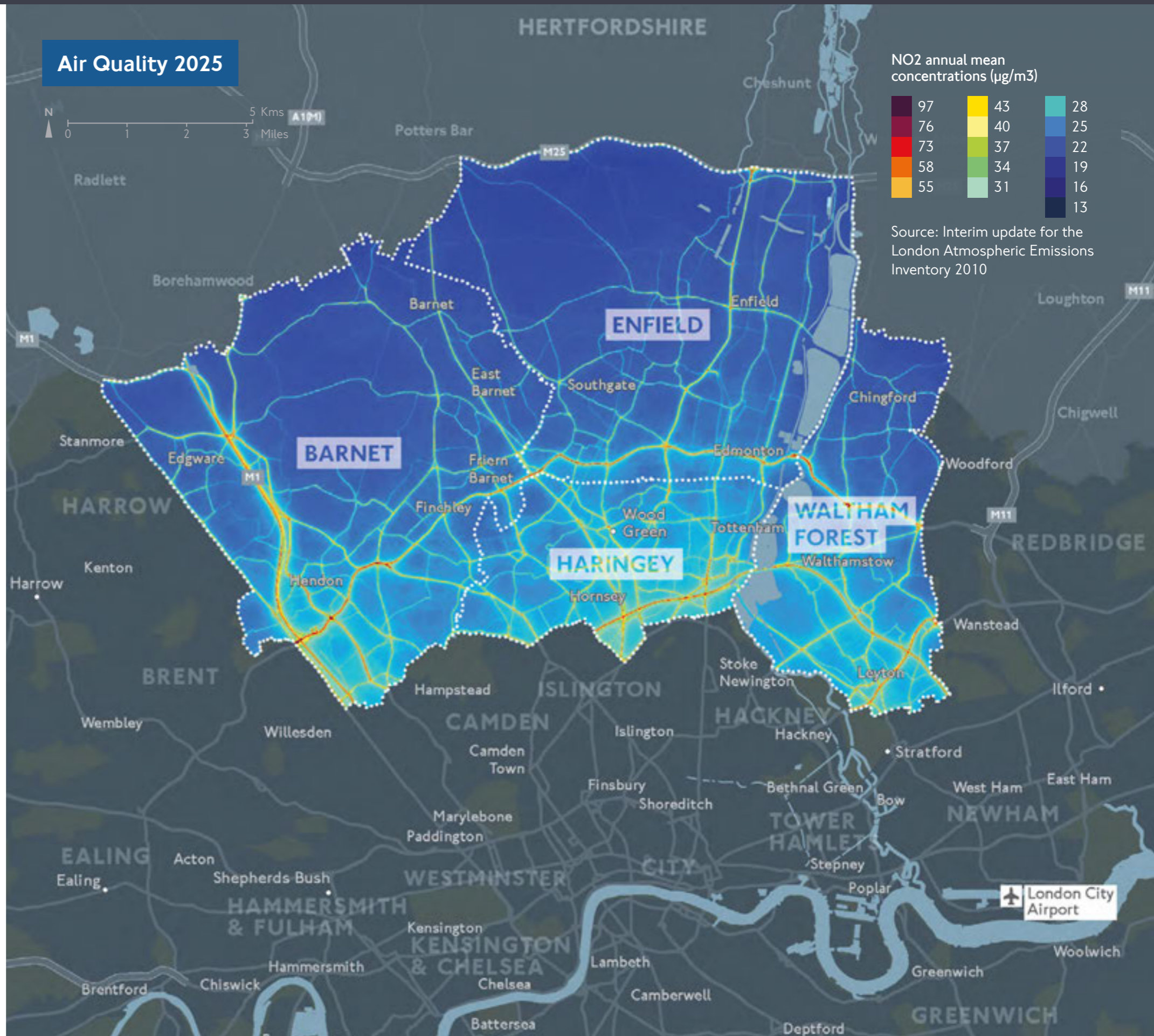
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Air quality is expected to improve with technology, but more will need to be done

Although harmful emissions from vehicles are expected to reduce as vehicles become more efficient, growth and development in the sub-region presents challenges in terms of balancing air quality management with economic and transport objectives. Measures to restrict harmful emissions from motorised vehicles, particularly within along the major road corridors of the North Circular, A10 and A5, will be required to improve air quality and improve the health of Londoners.





North London Sub-Regional Transport Plan

Story of Growth - 2016 Update

Maps

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