

# Relationship between the South East and London

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## Task 3 The Relationship between the South East and London

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### A Commuting journeys by Mode





# 1 Introduction

## Overview

- 1.1 When key local stakeholders were consulted on the Economic Connectivity Review, it was highlighted by many that there was a need for a better understanding of the dynamics of the relationship between London and the Transport for the South East (TfSE) area
- 1.2 London's contribution to the UK economy is well in excess of the contribution of other regions in the UK. However, it does not function in isolation and its economic success relies on strong transport links with towns and cities outside of London, most importantly in the TfSE area.

## Approach

- 1.3 Through analysis of current and future transport data, spatial planning forecasts and review of the policies and schemes which will shape transport in the next thirty years, this report seeks to provide an overview of the current and possible future patterns of movement between London and the TfSE area and the potential implication of these for the development of the Transport Strategy. A strategic map of London and the TfSE area is presented in Figure 1.1.
- 1.4 To ensure alignment and consistency with previous work supporting the Transport Strategy, commentary and analysis within this report is structured around the Major Economic Hubs<sup>1</sup> and Strategic Corridors<sup>2</sup> which were identified as part of the Economic Connectivity Review<sup>3</sup>.

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<sup>1</sup> A Major Economic Hub is a contiguous area of relatively high population and employment density. It has a self-contained travel to work area and acts as a centre of employment for other surrounding settlements. Major Economic Hubs were identified through selection of built up areas with either a resident population of more than 50,000 or employment of more than 20,000. This is used as a proxy for the level economic activity in a contiguous urban area which would constitute an economic hub.

<sup>2</sup> The Strategic Corridors are a set of 22 of the most important corridors in the TfSE area. They were identified in the Economic Connectivity Review as the corridors which link Major Economic Hubs and support economic growth in the region.

<sup>3</sup> Source: Economic Connectivity Review, Transport for the South East, 2018

**Figure 1.1: Overview of the TfSE area and London**



#### 1.5 The report is split into four sections:

- **Current situation:** analysis of commuter flows from and to London and examination of current demand and capacity on the rail and highway network allows the identification of the key corridors, sectors and pinch points on the transport network, but also provides an indication of the significance of transport flows between the TfSE area and London.
- **Future situation:** bringing spatial planning forecasts and future rail crowding and highway congestion data together helps to show where population and jobs growth will take place and where capacity will be able to accommodate growth. This helps to prioritise further transport investigation and investment on the transport network linking the TfSE area and London.
- **Policies and schemes:** a review of the policies and schemes put forward and delivered by the Authorities responsible for planning and promoting transport investment in the TfSE area. These will be a key determinant of how transport between the TfSE area and London will change in the future.
- **Implications for the Transport Strategy for the South East:** bringing the analysis and key findings together and setting out what it means for the Transport Strategy.

## Summary of key findings

1.6 The analysis undertaken has allowed the following observations to be made.

- 84% of commuter trips from the TfSE area remain within the TfSE area and only 13% of commuting trips from the TfSE area are to London.
- The highest levels of rail trips into London start in the Major Economic Hubs which border Greater London such as Dartford, Woking and Slough.<sup>4</sup> The exceptions to this trend are areas with particularly fast journey times into London such as Brighton and Reading.
- As with Rail, the highest levels of highway demand into London is from areas which border Greater London, such as Elmbridge and Epsom and Ewell.
- The most significant levels of planned housing development within the TfSE area are in areas that are the greatest distance from Greater London.
- By 2026, rail demand on main radial rail routes into London will have grown significantly, it will be common for passengers boarding a train in the TfSE area to London to have to stand. Increases in capacity will be required to ensure that there is enough space for passengers travelling from the TfSE area to London to get a seat regardless of route or time of day.
- By 2041, without intervention, there will be almost no sections of all the arterial roads connecting London to the TfSE area, as well as the M25, where there will be sufficient capacity for growth in demand.

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<sup>4</sup> Greater London is the area highlighted in Figure 1.1, and consists of the area under the control of the Greater London Authority (GLA) It is the made up of the 32 London Boroughs and the City of London.

## 2 Current Situation

2.1 To understand the relationship between London and the TfSE area a number of current transport data sets have been reviewed and analysed. This section includes consideration of the following topics:

- labour market connectivity;
- rail demand and capacity; and
- highway demand and congestion.

### Labour Market Connectivity

#### All commuting

2.2 An analysis of commuting patterns shows that the vast majority of commuter journeys that originate in the TfSE area also end within the TfSE area.

2.3 Table 1.1 below shows that of all commuting by residents of the Transport for the South East (TfSE) area, more than four fifths (83.9%) stays within the TfSE area, one eighth (12.6%) is to London and just 3.5% is to the rest of the UK.

**Table 2.1: All commuting journeys from the TfSE area**

Destination	Total journeys originating in the TfSE area	
	Total	Percentage
TfSE Area	2,367,000	83.9%
London	355,000	12.6%
Rest of UK	98,000	3.5%

Source: Census Journey to Work Data

#### Commuting to/from Greater London

2.4 Figure 2.1 below shows the number of residents commuting from the TfSE area to Greater London at the Middle Super Output Area (MSOA) level<sup>5</sup>. Over 90% of commutes to Greater London are made by car or train and trips are relatively evenly split between these two modes –with 44% being made by car and 47% by train.

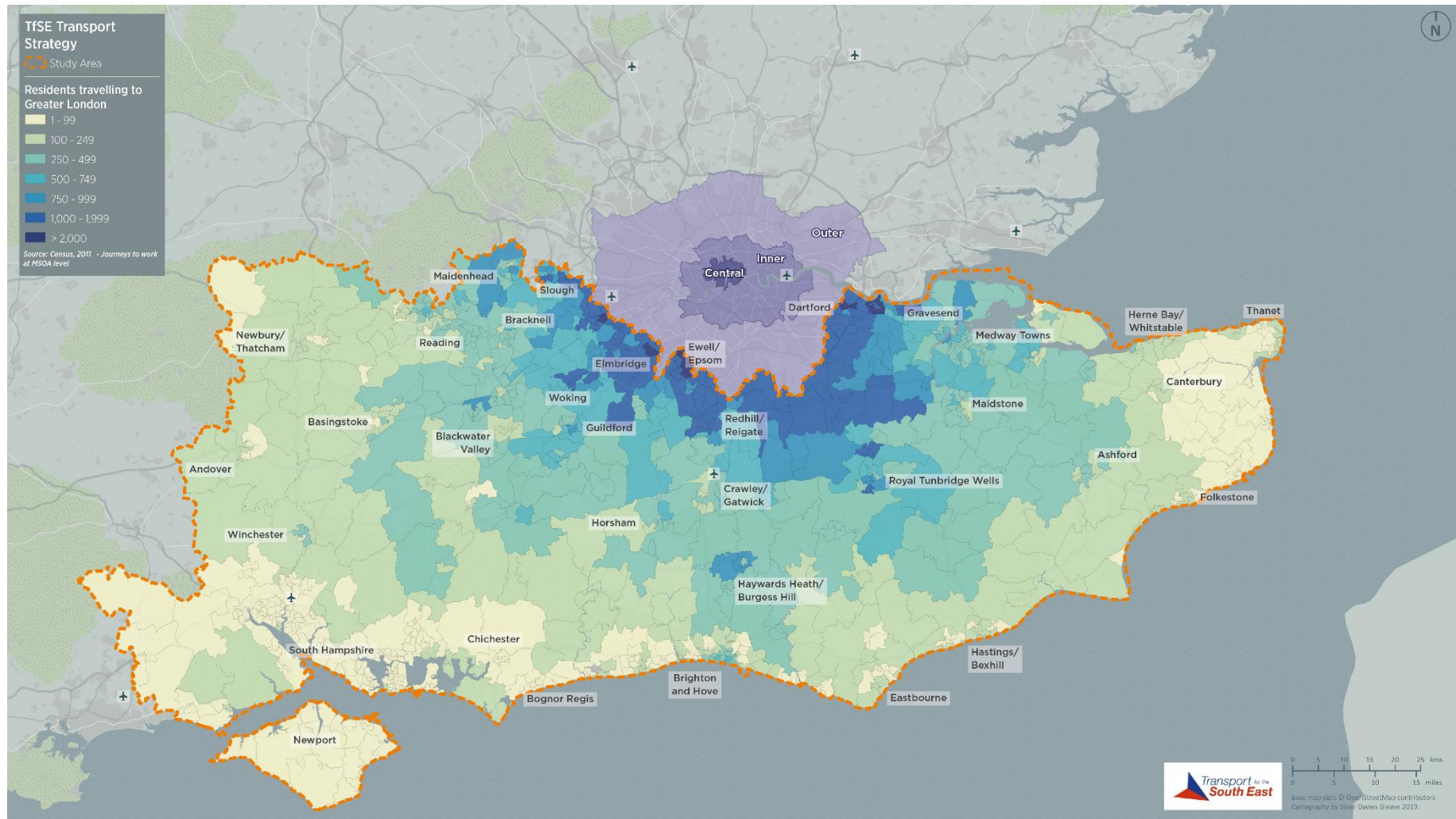
2.5 Few MSOAs in the TfSE area have more than 2,000 residents commuting into Greater London, and those MSOAs that do are situated on the boundary with Outer London, in areas such as Epsom and Dartford.

2.6 There is a general trend that as distance from Outer London increases, the number of residents in each MSOA travelling to Greater London decreases. However, there are areas

<sup>5</sup> MSOAs are a geographic area with a minimum population of 5,000 and maximum of 15,000.

further from London, such as Winchester, Haywards Heath/Burgess Hill and Royal Tunbridge Wells where a higher number of residents in the MSOAs commute to Greater London when compared to their surrounding rural areas. These locations are Major Economic Hubs, and typically have good strategic connectivity with fast journey times into Central London.

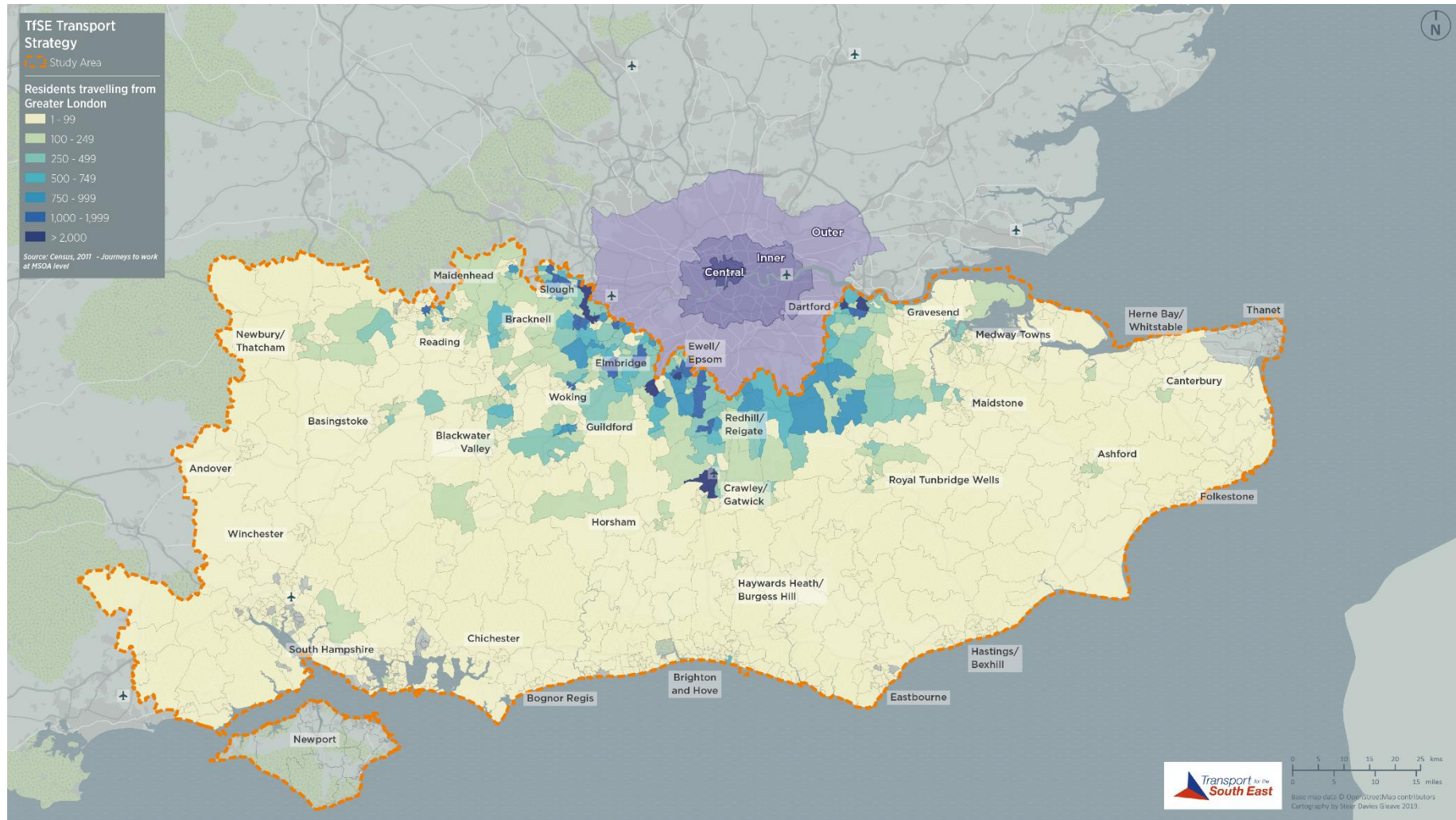
Figure 2.1: Residents travelling to Greater London



- 2.7 Figure 2.2 below shows the number of employees commuting from Greater London to the TfSE area at the MSOA level. As highlighted in Figure 1.10 over two thirds of commutes from Greater London are by car (67%), with rail accounting for over half of the remaining journeys.
- 2.8 Generally, the MSOAs within the TfSE area with the highest number of employees commuting out from Greater London are located on the boundary with Outer London. These include MSOAs in Slough, Epsom and Dartford. However, there are clusters of MSOAs further from the boundary with a higher number of employees commuting out from Greater London. Notably around Gatwick (there are two MSOAs with over 2,000 employees commuting from Greater London) but also Reading, Brighton & Hove, and Ashford. Gatwick, Reading and Brighton are locations where there is a concentration of economic activity in a specific sector. The Gatwick Diamond is home to many companies in the Professional Services sector, Brighton in Financial Services and Reading in IT services. This could explain why these locations have higher levels of commuting from London.



Figure 2.2: Employees travelling from Greater London





## Commuting to Outer London

- 2.9 Figure 2.4 below shows the number of residents commuting from the TfSE area to Outer London (defined in Figure 2.3) at the MSOA level. A high proportion of journeys to Outer London are made by car (80%) when compared to Inner and Central London where rail is the dominant mode.
- 2.10 Few MSOAs have more than 1,000 of their residents commuting to Outer London. Those which do sit along the boundary with Outer London in areas including Epsom and Staines-upon-Thames. Generally, the number of TfSE area residents commuting to Outer London declines as the distance from Outer London increases. However, there are some areas located further from London including Basingstoke and Ashford where more residents commute to Outer London in comparison to their surrounding MSOAs due to better connectivity and resultant shorter journey times.

Figure 2.3: Map of Outer London (as defined for the purposes of this report)

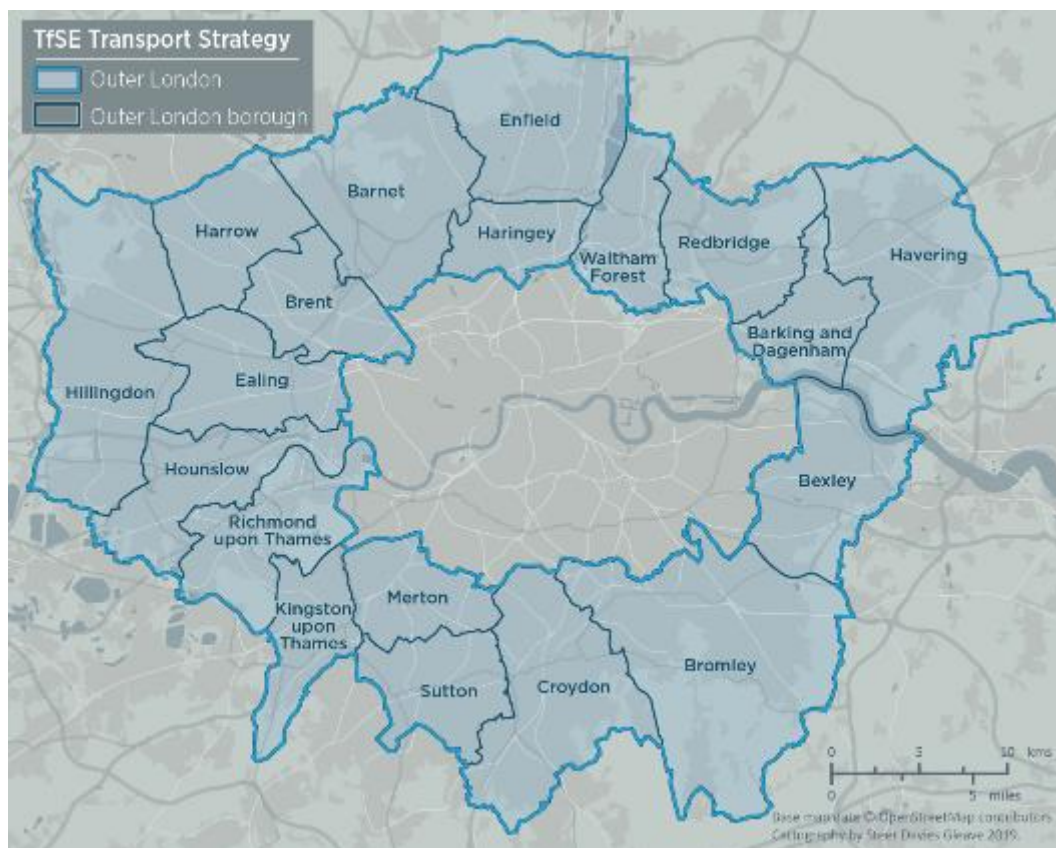
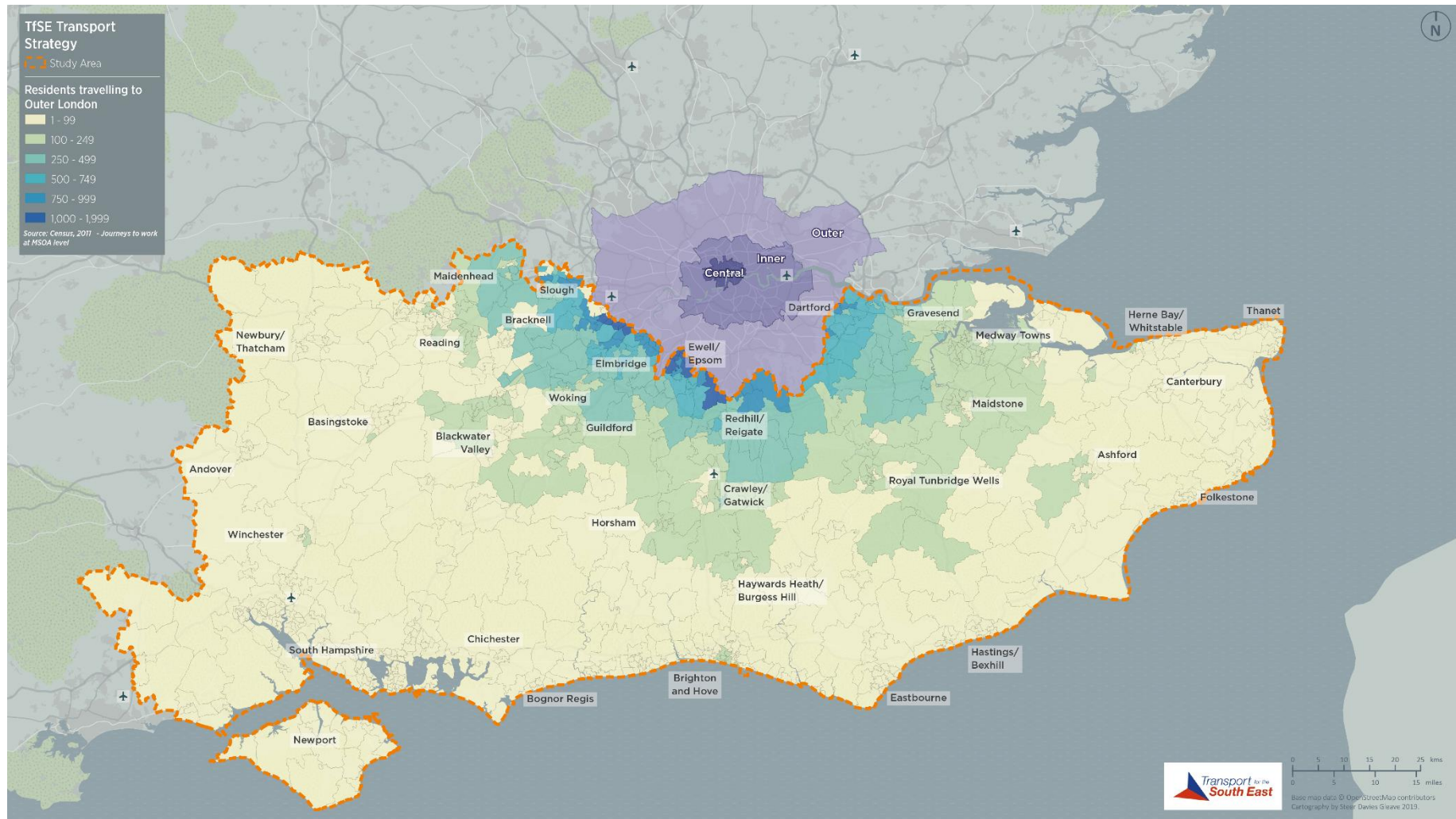


Figure 2.4: Residents travelling to Outer London



## Commuting to Inner London

- 2.11 Figure 2.6 shows the number of residents from the TfSE area commuting to Inner London (as defined in Figure 2.5) at the MSOA level. Over half of commuting journeys to Inner London are made by train (52%) and just over one-third by car (38%) - a notable increase and decrease respectively, compared to Outer London commutes. Fewer residents commute to Inner London than Outer London; no MSOA has over 750 residents commuting to Inner London and only three MSOAs have over 500 residents making this commute (all lie within Dartford, an area which is close, and relatively well connected to London). Whilst there is a general trend that the number of residents commuting to Inner London decreases as distance increases, in several areas further away from London (including Winchester, Brighton & Hove and Ashford), more residents commute to Inner London in comparison to their surrounding MSOAs.

**Figure 2.5: Map of Inner London (as defined for the purposes of this report)**

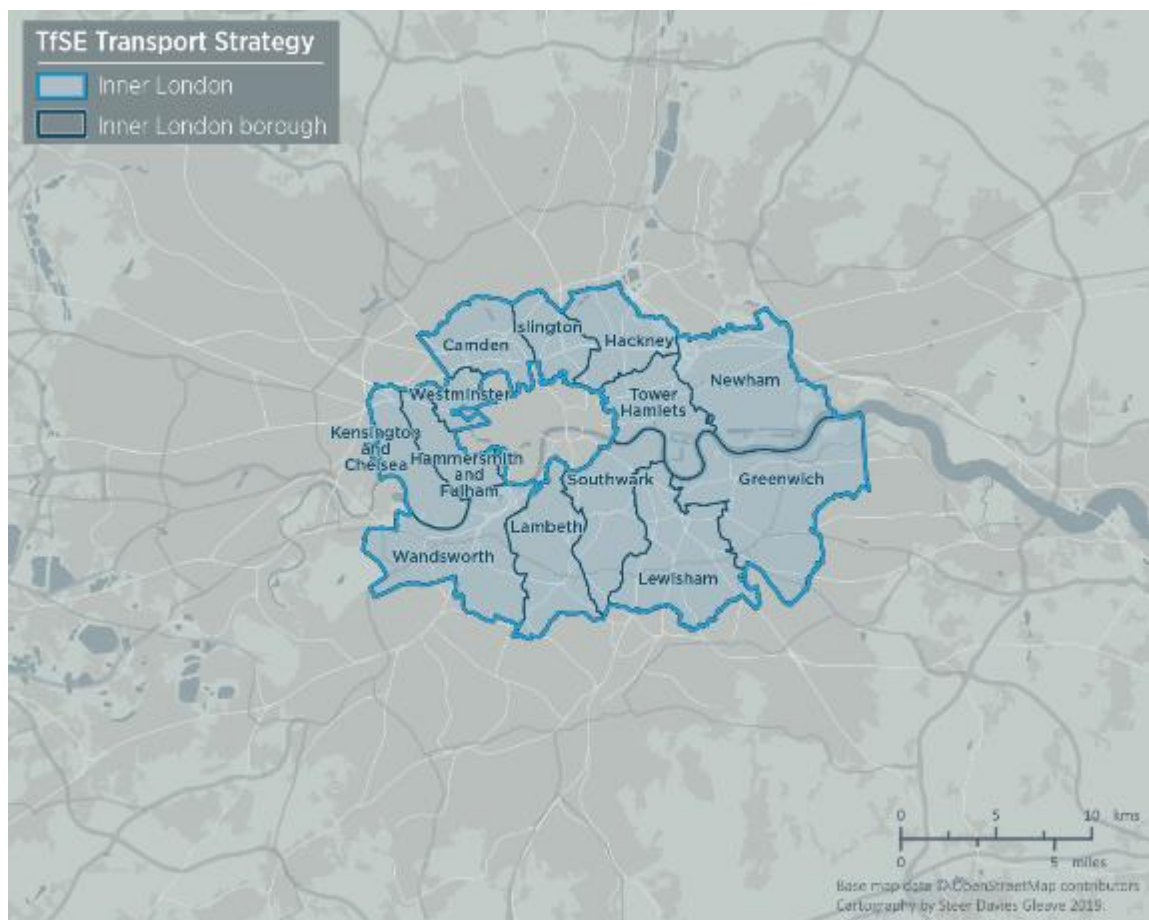
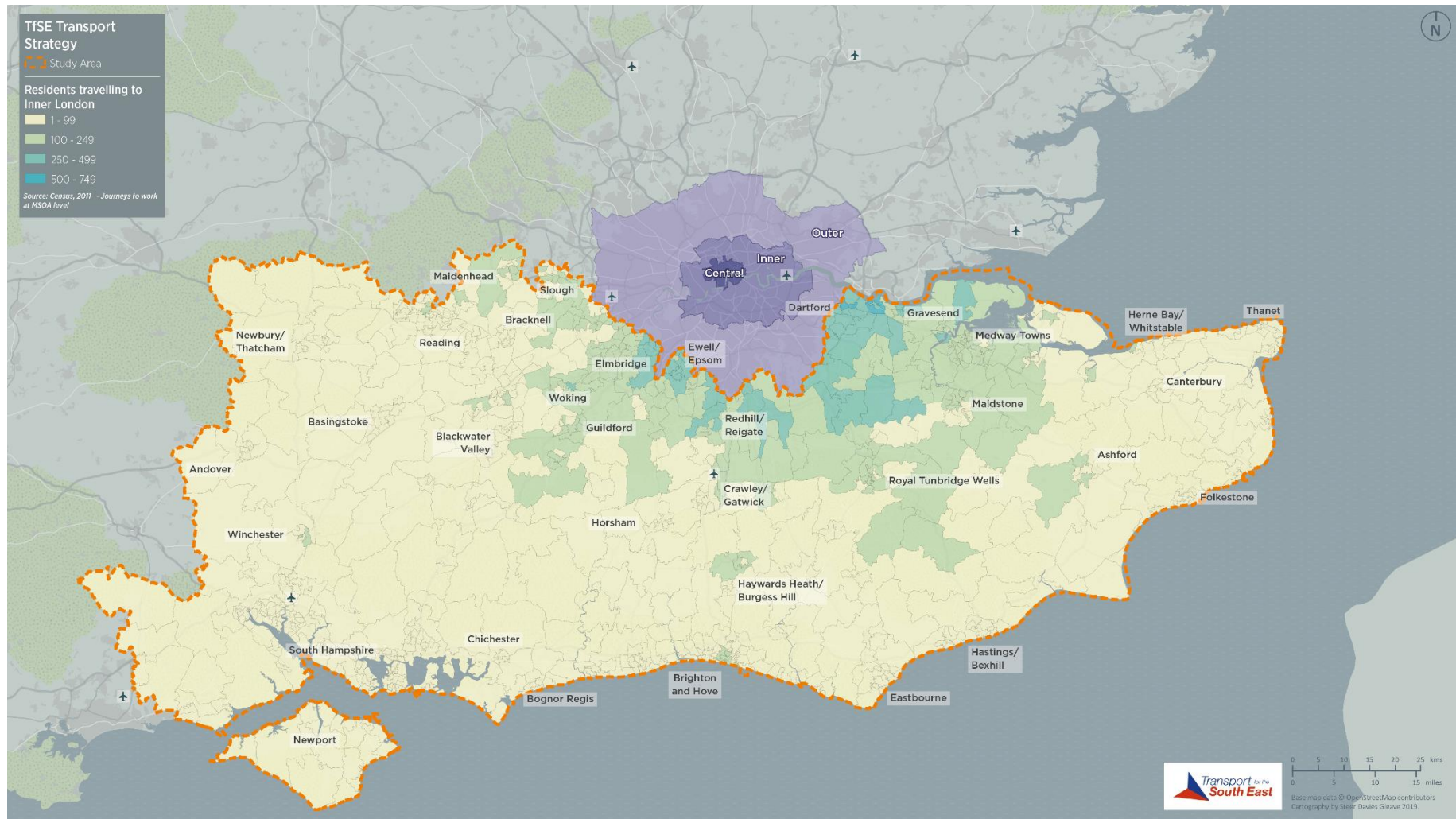




Figure 2.6: Residents travelling to Inner London



### Commuting to Central London

- 2.12 Figure 2.8 shows the number of residents within the TfSE area commuting to Central London (as defined by Figure 2.7) at the MSOA level. Compared to commuting journeys to Greater, Outer and Inner London, a greater proportion of journeys to Central London are made by train (83%), with car journeys accounting for only 9% of mode share. Only one MSOA, in Sevenoaks, has over 1,000 of its residents commuting to Central London. Overall, the catchment of journeys to Central London is similar to those to Outer and Inner London. In general, as distance from the outer London boundaries increases, the number of residents commuting to Central London decreases. There are a number of notable exceptions to this. For example, in the MSOAs south west of Gatwick, few residents commute to Central London compared to their surrounding MSOAs. This is likely to be due to Gatwick's draw for local residents as an employment hub.

Figure 2.7: Map of Central London as defined for the purposes of this report

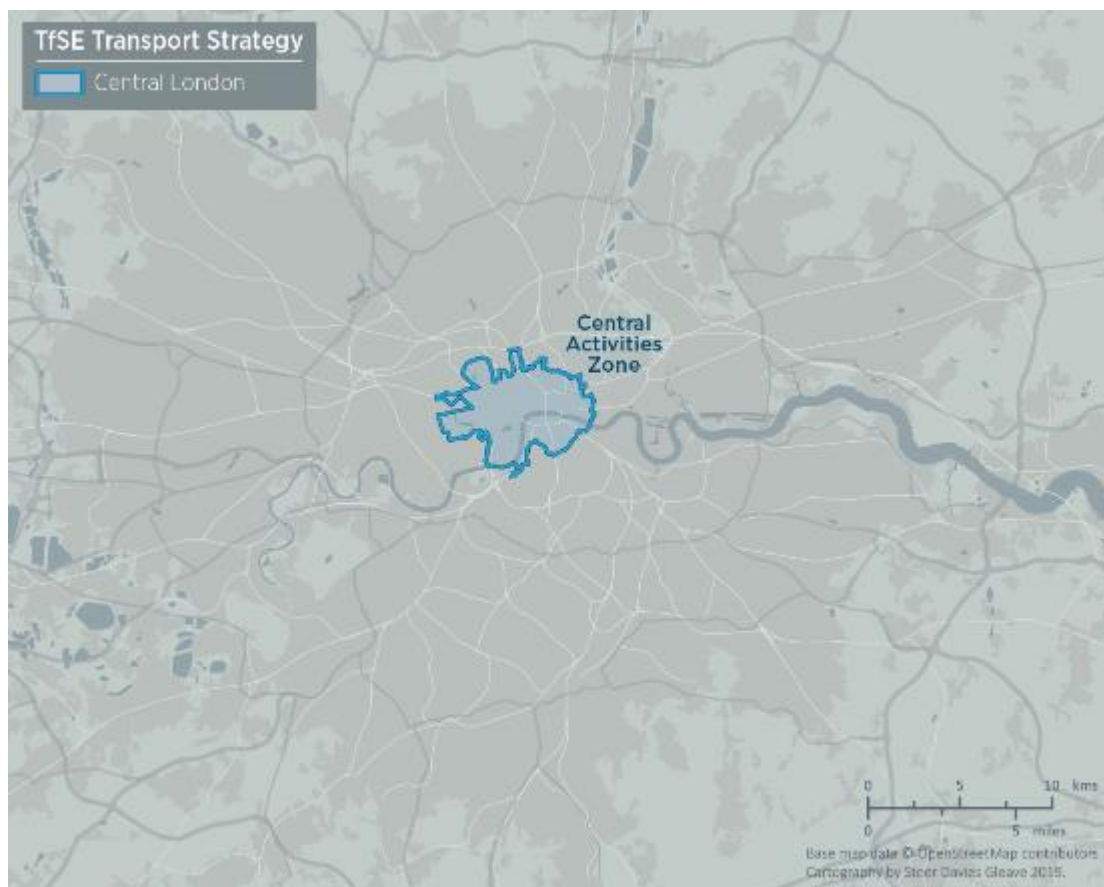


Figure 2.8: Residents travelling to Central London

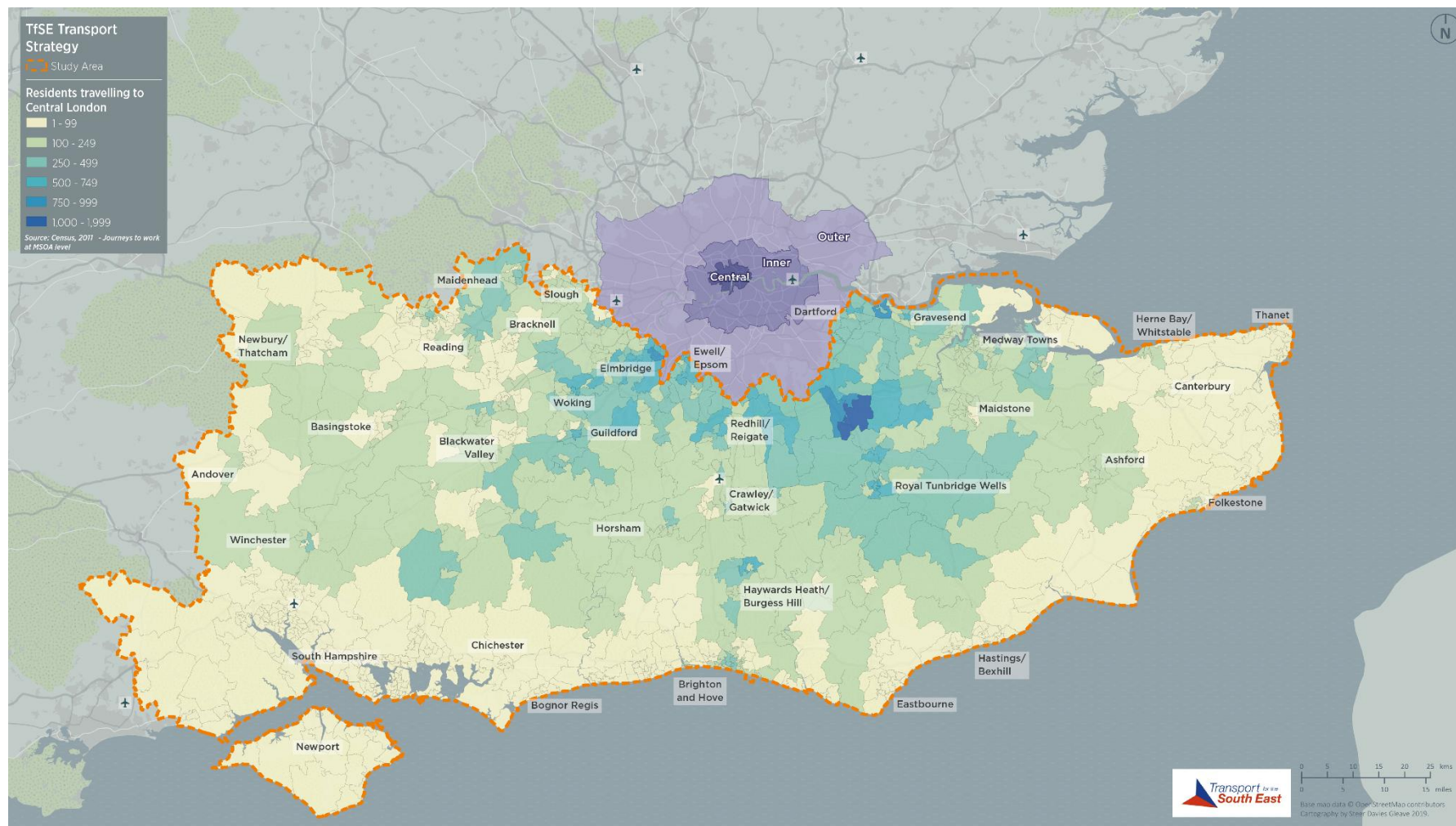
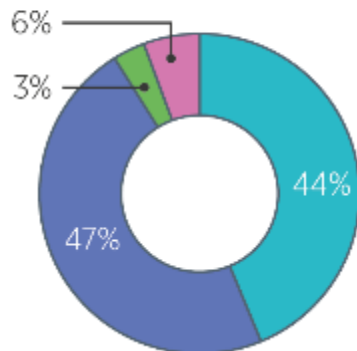


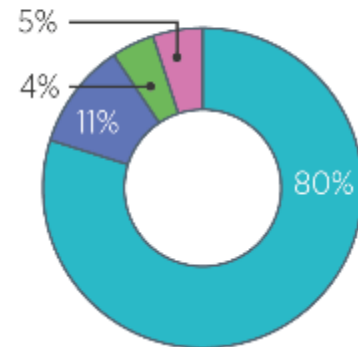


Figure 2.9: Mode share of trips to the London area

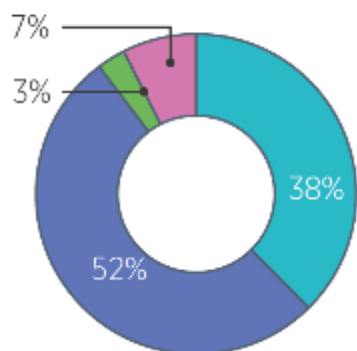
**Residents travelling to Greater London - mode share**



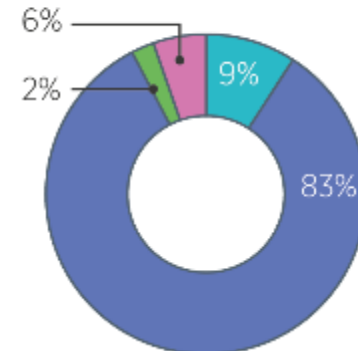
**Residents travelling to Outer London - mode share**



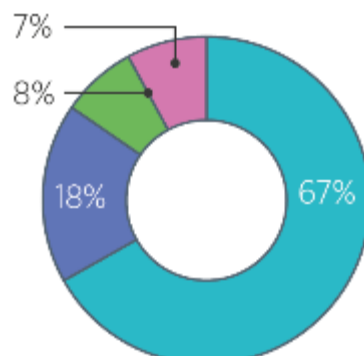
**Residents travelling to Inner London - mode share**



**Residents travelling to Central London - mode share**



**Residents travelling from Greater London - mode share**



### **TfSE Local Transport Authority journeys to/from London**

- 2.13 A detailed analysis of the number of residents travelling from the 16 Local Transport Authorities to Outer, Inner and Central London has been conducted, and the origin-destination matrix of this analysis is available in Appendix A, Figure 1.
- 2.14 The largest numbers of commuters to London come from Kent and Surrey, with totals of 134,199 and 90,127 people respectively. Surrey accounts for 46% and 51% of commutes to and from Outer London respectively, with the second largest contributor being Kent, which accounts for 19% and 17% of commuting journeys respectively. Surrey is also the largest contributor of journeys to and from Inner and Central London, followed by Kent. Isle of Wight, Portsmouth and Southampton Local Transport Authorities are the lowest contributors to commuting journeys of all origin-destination pairs, both contributing less than one percent of all journeys between the TfSE area and London.
- 2.15 For journeys by private car, Surrey accounts for the highest number of commuting journeys to Outer London (46%) and from London (Outer, Inner and Central). Commuting journeys to Kent from Inner and Central London exceed Surrey, accounting for 43% and 29% of journeys respectively. An origin-destination matrix table for journeys by car/taxi is available in Appendix A, Figure 2.
- 2.16 For all commuting journeys to/from Local Transport Authorities, with the exception of journeys from Berkshire - West Berkshire and Portsmouth, there are more commuting journeys to/from Outer London and fewest to/from Central London made by car, likely due to poorer connectivity and journey times into Central London by car compared to Outer London.
- 2.17 For commuting journeys by train, Surrey followed by Kent accounts for the highest number of commuting journeys to/from London. The opposite trend to car commutes to London (Outer, Inner and Central) occurs – fewer employees to Outer London commute by train compared to Central London. An origin-destination matrix for journeys conducted by train is available in Appendix A, Figure 3.
- 2.18 For journeys to London from all Local Transport Authorities in the TfSE area, there are more commutes made by train to Central London than Outer and Inner London. This is likely due to reasonably good connectivity and journey times for trips into Central London compared to Outer London where car journeys are favoured.
- 2.19 For journeys from London to the surrounding TfSE area by rail, there are lower numbers of individuals commuting from Inner and Central London than from Outer London, – with the exception of Hampshire, Brighton & Hove, Medway, Southampton and Berkshire – West Berkshire, where there are slightly more commuting journeys from Inner London than Outer London, due to there being good connectivity from the Inner London area via rail hubs like Clapham Junction and Paddington to the TfSE area.
- 2.20 In comparison to car and train commuting trips, very few journeys are made by bus or coach. Surrey accounts for the highest number of commutes by bus or coach, and about 90% of the trips from Surrey are to Outer London, with similarly high numbers from Outer London to Surrey – assuming that these are shorter distance bus trips rather than coach. Kent accounts for the highest number of commutes to and from Inner London and to Central London, followed by Medway to Inner and Central London. In addition to shorter distance bus trips between Kent and London, there are coach operators offering commuter services to Inner and Central London, to compete with relatively high cost High Speed One rail services from the



North Kent / Thameside area. A breakdown of the origin-destination matrix for journeys by bus/coach is available in Appendix A, Figure 4.

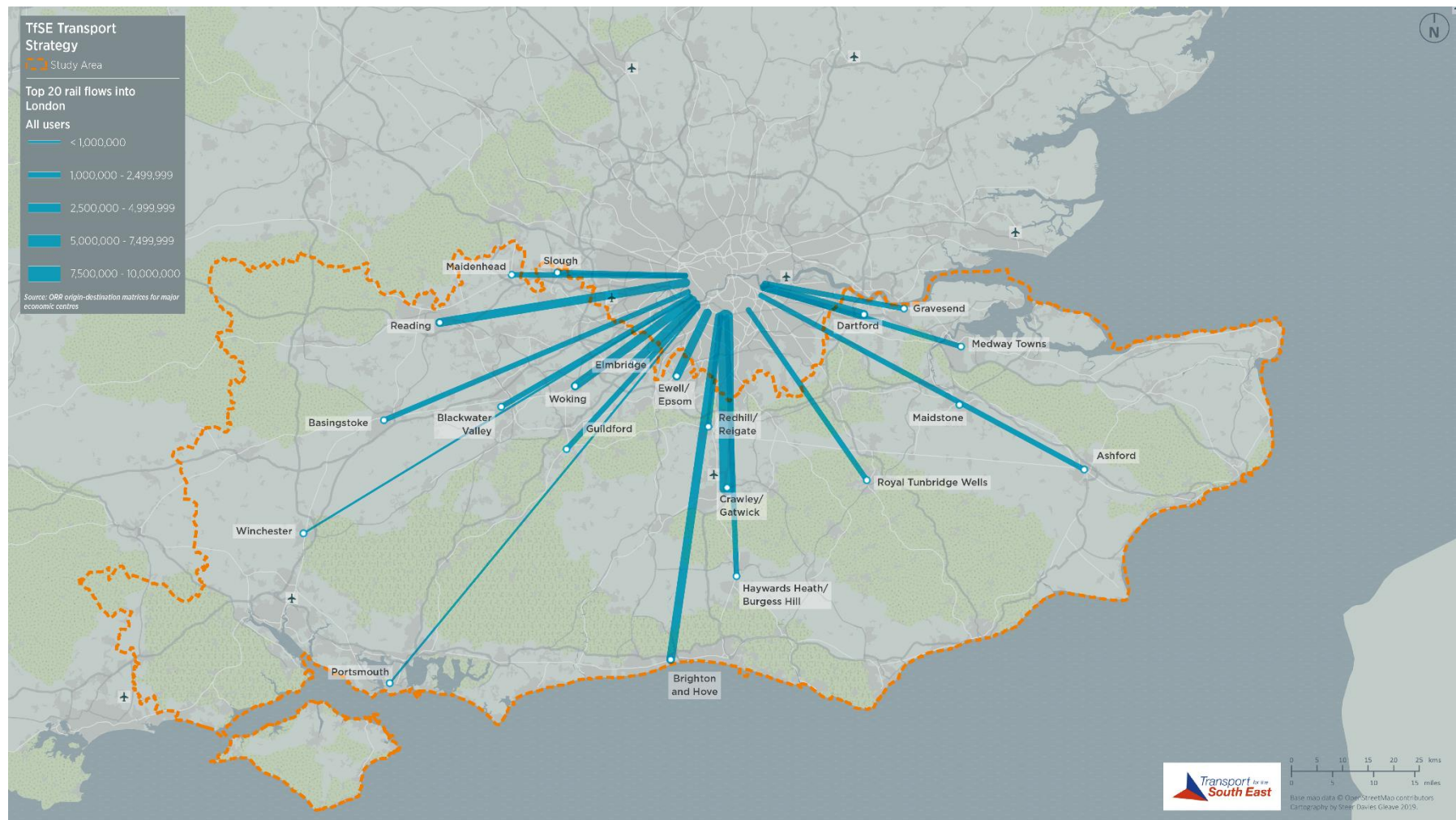
### **Rail demand and capacity**

- 2.21 The rail network across the TfSE area and London is central to the successful economic relationship between the two areas. This section provides a summary of the current patterns of rail activity in the TfSE area and London, including consideration of demand, overcrowding and passenger satisfaction levels.
- 2.22 A detailed examination of the rail demand in the TfSE area has been undertaken using the Office for Rail and Road's (ORR) GB Rail Origin Destination Matrix. The trips from all stations which serve each of the Major Economic Hubs have been aggregated to represent all rail travel to and from each Major Economic Hub. For example, four stations are located within the Slough economic hub, namely Taplow, Burnham, Slough and Langley.

#### **Passenger rail demand**

- 2.23 In order to show the level of demand for travel into London and the specific corridors on which this is focussed, locations with the top 20 passenger flows into London were identified. These are shown in Table 2.2 and Figure 2.10 below.

Figure 2.10: Rail passenger demand to London



**Table 2.2: Rail passenger demand to London**

Source: ORR's GB Rail Origin Destination Matrix

Origin	Total annual passenger demand to London	Total annual passenger demand	London demand as a percentage of total passenger demand	Economic Corridor
<b>Crawley/Gatwick</b>	9,587,000	12,720,000	75%	A23-M23/Brighton Mainline
<b>Brighton &amp; Hove</b>	4,953,000	13,353,000	37%	A23-M23/Brighton Mainline
<b>Elmbridge</b>	4,758,000	5,705,000	83%	A3/Portsmouth Direct Line
<b>Reading</b>	3,881,000	10,681,000	36%	M4/Great Western Mainline and A322-A329/North Downs Line
<b>Dartford</b>	3,476,000	3,964,000	88%	A2/Chatham-Ramsgate Mainline
<b>Woking</b>	3,106,000	4,587,000	68%	M3/South Western Mainline and A322-A329/North Downs Line
<b>Epsom and Ewell</b>	2,895,000	3,543,000	82%	A23-M23/Brighton Mainline
<b>Slough</b>	2,293,000	3,940,000	58%	M4/Great Western Mainline
<b>Guildford</b>	2,063,000	4,025,000	51%	A3/Portsmouth Direct Line and A322-A329/North Downs Line
<b>Redhill and Reigate</b>	1,875,000	2,685,000	70%	A23-M23/Brighton Mainline and A322-A329/North Downs Line
<b>Medway Towns</b>	1,632,000	2,699,000	60%	A2/Chatham-Ramsgate Mainline
<b>Royal Tunbridge Wells</b>	1,627,000	2,479,000	66%	A21/Hastings Line
<b>Burgess Hill/Haywards Heath</b>	1,542,000	3,120,000	49%	A23-M23/Brighton Mainline
<b>Maidenhead</b>	1,327,000	2,330,000	57%	M4/Great Western Mainline
<b>Basingstoke</b>	1,271,000	2,682,000	47%	M3/South Western Mainline and A33/Cross Country
<b>Blackwater Valley</b>	1,184,000	2,868,000	41%	M3/South Western Mainline and A322-

Origin	Total annual passenger demand to London	Total annual passenger demand	London demand as a percentage of total passenger demand	Economic Corridor
				A329/North Downs Line
<b>Gravesend</b>	1,133,000	1,468,000	77%	A2/Chatham-Ramsgate Mainline
<b>Ashford</b>	1,061,000	1,831,000	58%	A20-M20/HS1
<b>Winchester</b>	892,000	2,402,000	37%	M3/South Western Mainline and A34/Cross Country
<b>Portsmouth</b>	844,000	4,190,000	20%	A3/Portsmouth Direct Line

- 2.24 The analysis shows the dominant flows are from the south via the Brighton Mainline. Demand from Crawley/Gatwick is more than double that of Brighton & Hove, which has the second highest level of demand. This reflects the fact that figures for Crawley/Gatwick include those for Gatwick Airport, as it is within the Major Economic Hub and the high levels of demand from air passengers to and from the airport. Currently 40% of air passengers using Gatwick Airport travel to and from the airport by rail<sup>6</sup>.
- 2.25 Brighton & Hove, Redhill and Burgess Hill/Haywards Heath are all on the same corridor, and all feature in the list above (as top 20 origins for rail demand to London). This highlights the significant level of demand on this key southern corridor.
- 2.26 The Great Western Mainline also serves Major Economic Hubs which have high levels of rail demand going into London including Maidenhead, Slough and particularly Reading.
- 2.27 Apart from Brighton & Hove and Reading, which benefit from very fast journey times to London, the trend across Major Economic Hubs with highest levels of demand to London, are that they are very close to London. Six (Elmbridge, Slough, Epsom/Ewell, Redhill/Reigate, Dartford and Woking) out of the top ten Major Economic Hubs by passenger demand into London are near to or on the M25.
- 2.28 For Major Economic Hubs which border Greater London, the percentage of total passenger demand which is headed for London rail termini is far higher than for those which are further away. More than 80% of all passenger trips departing from Dartford, Elmbridge and Epsom and Ewell terminate at a London station. Similar numbers of people travel between Reading and London, but as a proportion of total demand, trips to London are far less at just over one third.

#### **Business passenger demand**

- 2.29 ORR's GB Rail Origin Destination Matrix has also been used to identify the rail corridors most frequently used by those travelling for business purposes. This is shown in Table 2.3 below.

<sup>6</sup> Source: Gatwick Masterplan, Gatwick Airport, 2018

The number of business passengers has been calculated using the rail industries standard journey purpose splits as set out in the Passenger Demand Forecasting Handbook<sup>7</sup>.

**Table 2.3: Business rail passenger demand**

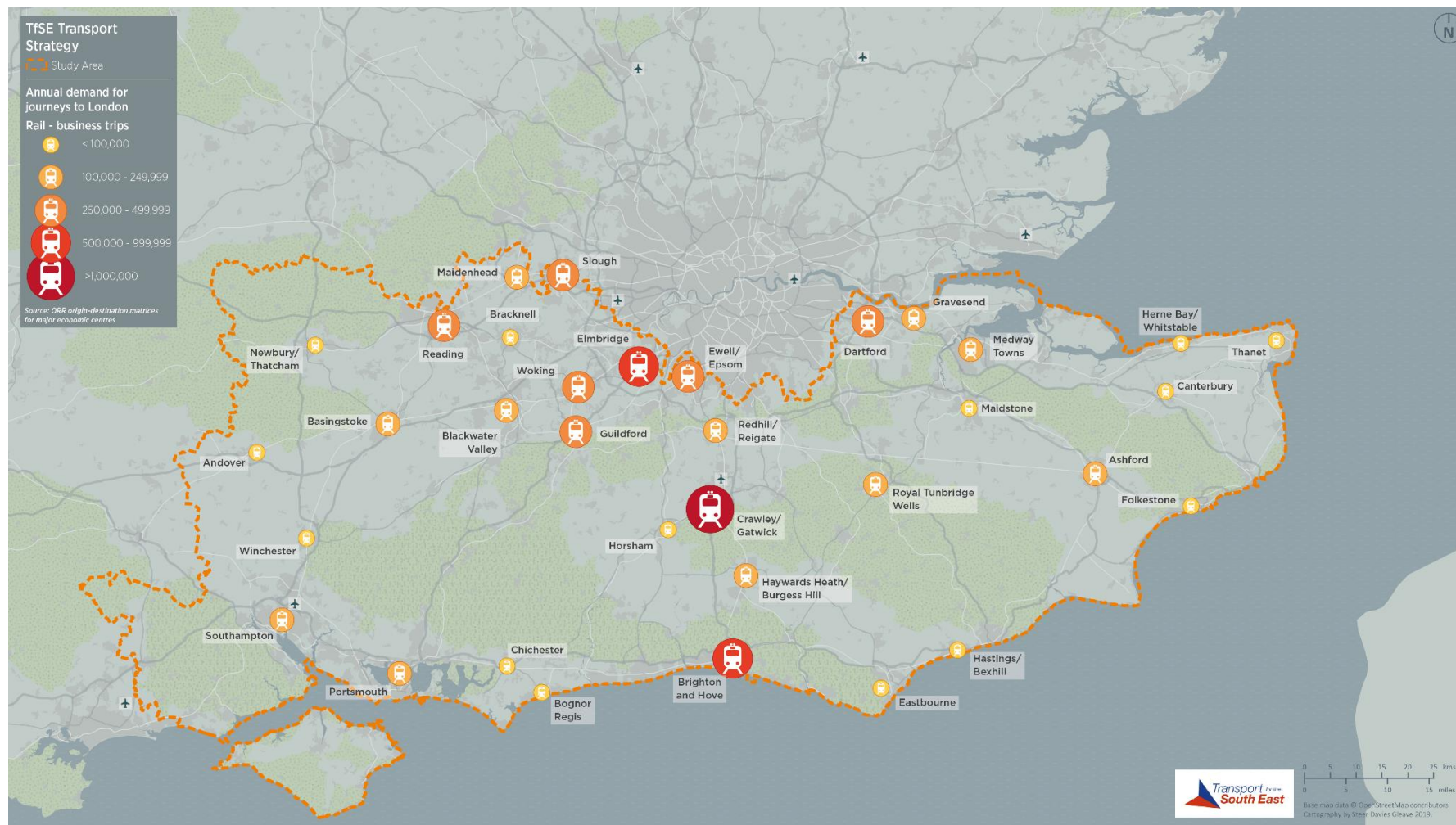
Source: ORR's GB Rail Origin Destination Matrix

Origin BUA	Total annual business passenger demand to London	Economic Corridor
Crawley/Gatwick	1,687,000	A23-M23/Brighton Mainline
Brighton & Hove	640,000	A23-M23/Brighton Mainline
Elmbridge	579,000	A3/Portsmouth Direct Line
Reading	480,000	M4/Great Western Mainline and A322-A329/North Downs Line
Dartford	399,000	A2/Chatham-Ramsgate Mainline
Woking	353,000	M3/South Western Mainline and A322-A329/North Downs Line
Epsom and Ewell	353,000	A23-M23/Brighton Mainline
Slough	290,000	M4/Great Western Mainline
Guildford	276,000	A3/Portsmouth Direct Line and A322-A329/North Downs Line
Redhill and Reigate	198,000	A23-M23/Brighton Mainline
Medway Towns	165,000	A2/Chatham-Ramsgate Mainline
Royal Tunbridge Wells	162,000	A21/Hastings Line
Maidenhead	154,000	M4/Great Western Mainline
Basingstoke	144,000	M3/South Western Mainline
Burgess Hill/Haywards Heath	143,000	A23-M23/Brighton Mainline
Blackwater Valley	140,000	M3/South Western Mainline
Portsmouth	120,000	A3/Portsmouth Direct Line
Gravesend	112,000	A2/Chatham-Ramsgate Mainline
Southampton	108,000	M3/South Western Mainline
Ashford	108,000	A20-M20/HS1

<sup>7</sup> Source: Passenger Demand Forecasting Handbook 5.1, Passenger Demand Forecasting Council, 2016



Figure 2.11: Business rail passenger demand



- 2.30 Crawley/Gatwick records nearly three times more annual business passenger trips than the next highest Major Economic Hub. This is partly the impact of business journeys from Gatwick Airport into London, but it also reflects the fact that Crawley/Gatwick is the centre of Gatwick Diamond, home to 45,000 businesses including many UK and European Headquarters.<sup>8</sup>
- 2.31 Other areas with high business passenger demand into London are located on the M4/Great Western Mainline corridor and the A322-A329/North Downs Line. Along these corridors there is a high concentration of economic activity in the IT and Professional Services sectors which have high levels of interaction with businesses in London.

#### **Railway network crowding**

- 2.32 Figure 2.12 and Figure 2.13 are two schematic maps that show crowding on the rail network in London and the TfSE area. These are Network Rail's 2013 high peak hour capacity data schematics. The 2013 data has been used because it is the most recent year for which Network Rail has data which is not distorted by significant or extraordinary infrastructure works on the network. The 'high peak' is the busiest one-hour period in the day. Figure 2.12 shows forecast crowding on inner suburban services and Figure 2.13 shows forecast crowding on long distance and outer suburban rail services into Central London. The crowding illustrated by these maps is assessed by corridor below.
- 2.33 It is important to note that the level of crowding presented in the maps is an average level of crowding across the high peak hour. This means that there will be trains that are both significantly more and significantly less crowded along the line of route than the level of crowding indicated by the maps. In instances where crowding is worse this will result in passengers having to stand on services from stations further from their destination than the point at which the map indicates standing will begin. Moreover, this data does not differentiate between the level of crowding on slow, stopping services and fast, non-stop services. Additionally, all of this information is based upon 2013 data. In the intervening six years since this data was collected, passenger numbers have increased markedly. This means therefore that some services on the corridors will experience crowding and standing further away from London than is indicated here.

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<sup>8</sup> Source: Business Plan Prospectus 2018-2023 (Manor Royal Business Improvement District, 2018)

Figure 2.12: High peak crowding from TfSE area (inner suburban) to Central London

### London and the South East 2013 capacity

Inner suburban and orbital rail services operating during the high peak hour 0800 to 0859

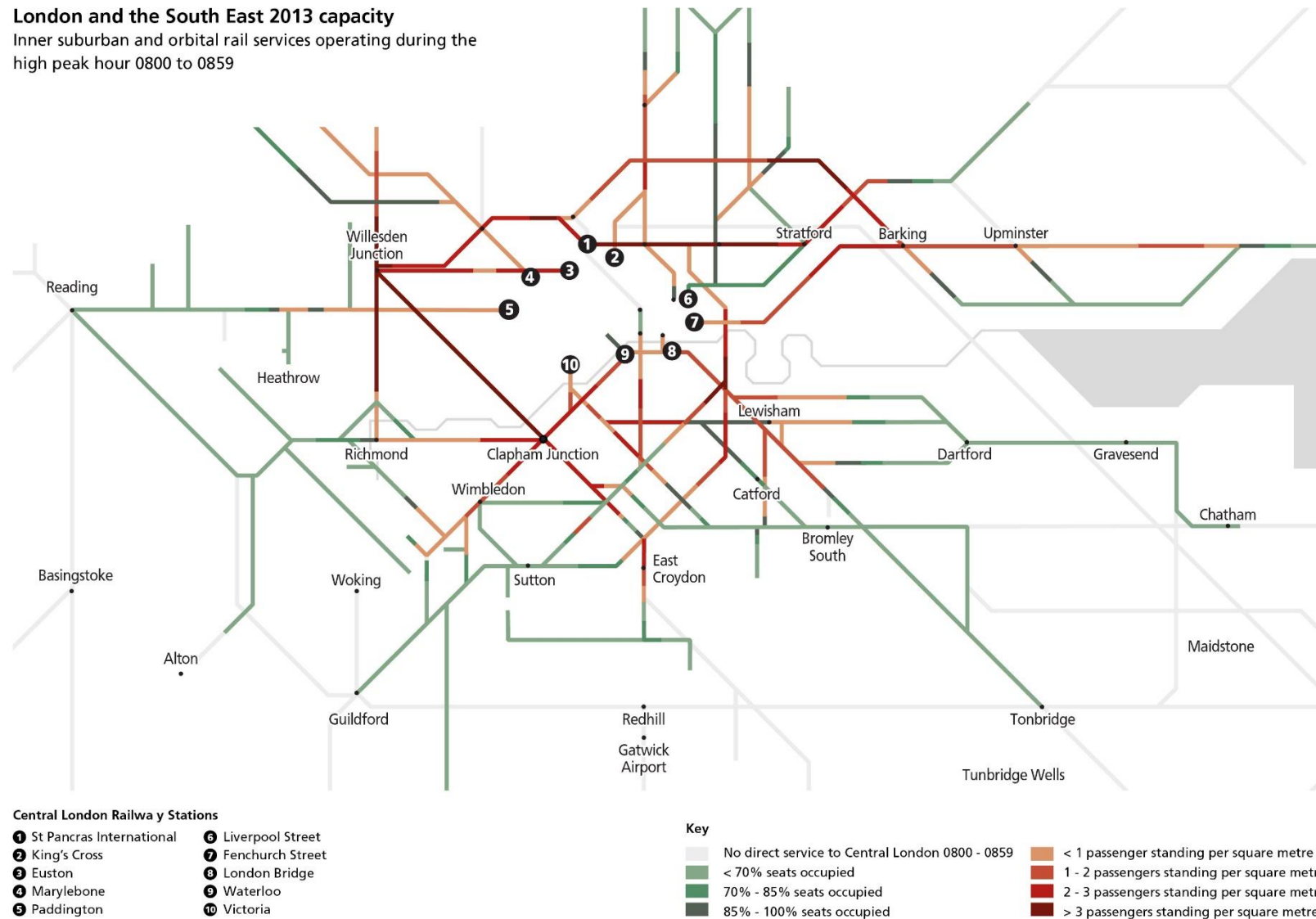
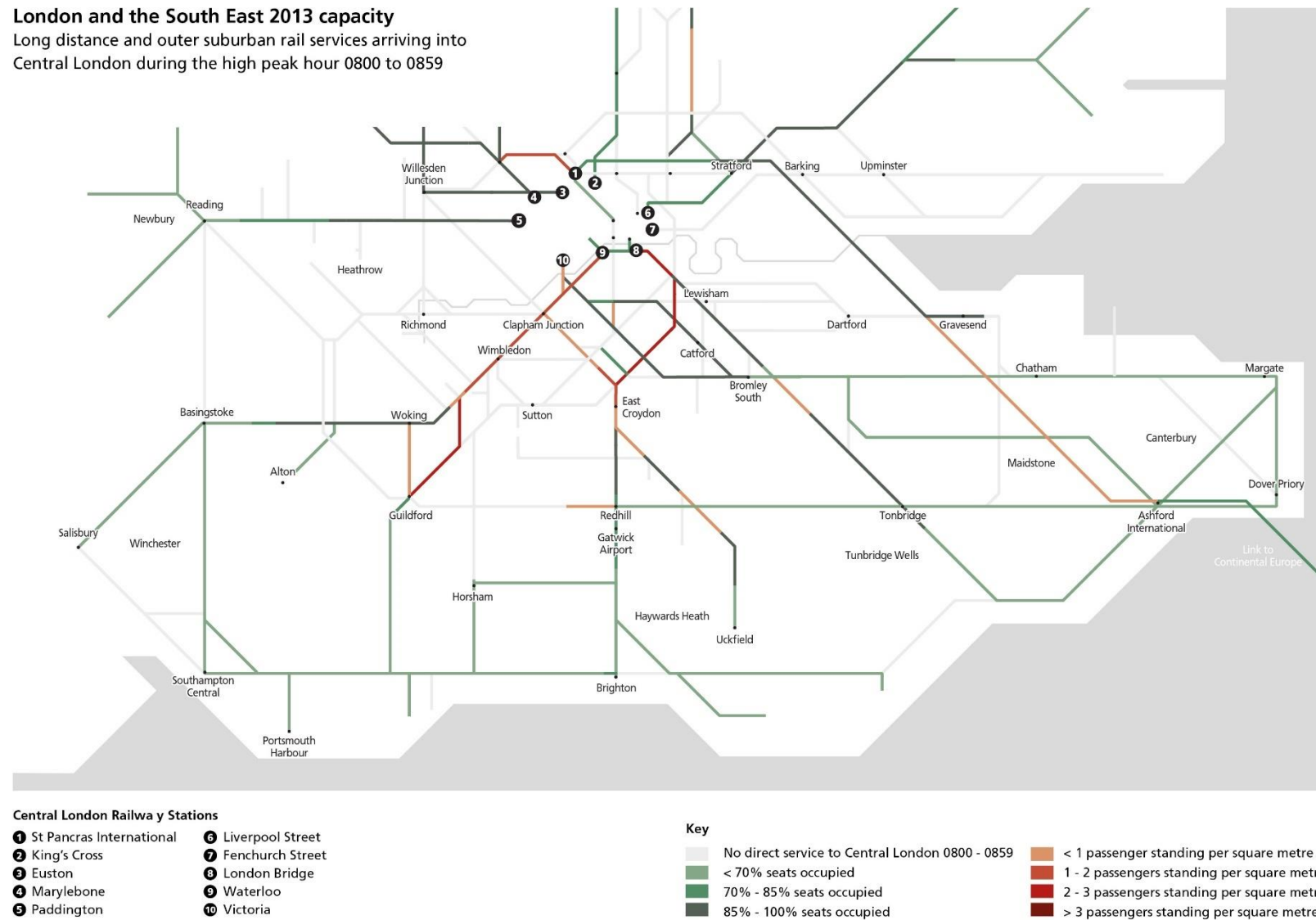




Figure 2.13: High peak crowding from TfSE area (outer suburban & mainline) to Central London

### London and the South East 2013 capacity

Long distance and outer suburban rail services arriving into Central London during the high peak hour 0800 to 0859



## Analysis of rail demand by corridor

### A2-M2/Chatham Mainline Corridor

- 2.34 Three of the key Major Economic Hubs along the corridor – Dartford, Medway Towns and Gravesend – appear in the top twenty origin stations in terms of annual rail demand to London.
- 2.35 The rail network which serves this economic corridor has three Central London termini. Charing Cross, London Cannon Street, and London Bridge stations fall within Greater London, but most of the sub-routes on this main strategic route originate in Gillingham or Chatham in Medway. As shown in Figure 2.12 seat occupancy increases as regional branches progress through the Outer London boroughs, however Figure 2.13 indicates that standing is not a regular occurrence on the outer services which serve the towns of Kent and Medway.

### A20-M20/HS1 Corridor

- 2.36 One of the key Major Economic Hubs along the corridor – Ashford – appears in the top twenty origin stations in terms of annual rail demand to London. This corridor is served by both HS1 and also Thameslink services.
- 2.37 Figure 2.13 shows that on the Thameslink route terminating at London Blackfriars and serving TfSE origin stations in Maidstone East and Sevenoaks, seats fill up on both the Catford Loop and the Kent House services within Greater London, but passengers from the TfSE area are able to get a seat.
- 2.38 The HS1 route terminates at London St Pancras, accommodating both the Cross-Channel Eurostar services and regional services to locations including Ashford, Canterbury, Folkestone, Ramsgate and Dover. Figure 2.13 shows that in the high peak hour the seated capacity is sufficient to accommodate demand.

### A21/Hastings Line

- 2.39 This route connects London with Hastings/Bexhill via Tunbridge Wells. Figure 2.13 indicates that demand on high peak hour trains starts to exceed seated capacity at Sevenoaks at which point boarding passengers will have to stand for their journey to Central London.
- 2.40 One of the key Major Economic Hubs along the corridor – Tunbridge Wells – appears in the top twenty origin stations in terms of annual rail demand to London.

### A23-M23/Brighton Mainline Corridor

- 2.41 As set out in Table 2.2 and Table 2.3 above, certain stations along this corridor are amongst the busiest in the TfSE area. All of the key Major Economic Hubs along the corridor – Crawley, Brighton & Hove, Epsom and Ewell, Redhill and Reigate and Burgess Hill/Haywards Heath – appear in the top twenty origin stations in terms of annual rail demand to London.
- 2.42 The Brighton Main Line is an arterial route of critical importance, connecting major conurbations from Brighton and the East and West Coastway lines to Central London. Gatwick Airport sees a particularly high rate of alighting and boarding passengers, due to the high level of demand by passengers arriving and departing for the airport.
- 2.43 The Network Rail South East Route: Sussex Area Route Study from September 2015 singles out the Brighton Main Line for its complexity and criticality. Network Rail is currently undertaking an extensive series of upgrade works on the line, but the conurbations along the route are

projected to grow significantly, leading to forecast demand exceeding capacity in the absence of further interventions to increase capacity. The outer services crowding map, Figure 2.13, indicates that demand on high peak hour trains starts to exceed seated capacity at South Croydon from which point boarding passengers have to stand for their journey to Central London. Additionally, there is anecdotal evidence which suggests standing is a regular occurrence on the West and East Coastway lines at peak times.

#### **A3/Portsmouth Line Corridor**

- 2.44 Three of the key economic hubs along the corridor – Portsmouth, Guildford and Elmbridge– appear in the top twenty origin stations in terms of annual rail demand to London.
- 2.45 This route terminates at London Waterloo. The outer services crowding map, Figure 2.13 shows that trains from Portsmouth exceed seated capacity between Guildford and Woking, which results in boarding passengers at Guildford having to stand to London Waterloo. As this line passes through Greater London crowding quickly increases with crowding of 1-2 passengers per square metre from Surbiton into Waterloo. Additionally, there is anecdotal evidence that standing is often common from Haslemere onwards.

#### **M3/South Western Mainline Corridor**

- 2.46 Four of the key Major Economic Hubs along the corridor – Southampton, Basingstoke, Blackwater Valley and Woking – appear in the top twenty origin stations in terms of annual rail demand to London.
- 2.47 This route terminates at London Waterloo. Figure 2.13, the outer services crowding map indicates that passengers joining the service beyond Surbiton will be required to stand. Demand is between 85% and 100% of seated capacity between Farnborough and Surbiton so there may be some trains within the high peak where passengers boarding before Surbiton may be required to stand.

#### **M4/Great Western Mainline Corridor**

- 2.48 Three of the key Major Economic Hubs along the corridor – Reading, Maidenhead and Slough – appear in the top twenty origin stations in terms of annual rail demand to London.
- 2.49 The Great Western Main Line serves the west of England, but within the TfSE area it serves Reading, Maidenhead and Slough, and terminates at Paddington Station. Figure 2.13, the outer services crowding map shows spare seating capacity for passengers boarding from Reading until Southall, where boarding passengers must stand, with standing at an average crowding of 1 standing person per square metre up to the terminus at London Paddington.

#### **Summary**

- 2.50 The top 20 locations from which the highest levels of rail demand originate are distributed across the arterial routes between the TfSE area and London. There is concentration of demand on the A23-M23/Brighton Mainline. All of the Major Economic Hubs on this route appear in the top twenty origins stations in terms of annual rail demand to London.
- 2.51 Crowding is a significant issue on the arterial rail corridors connecting London with the TfSE area. Currently there are few stations in the TfSE area from which, the data shows that boarding passengers will not be able to get a seat in the high peak hour. It is mainly within Outer London and Inner London that trains exceed their seated capacity.

- 2.52 This summary is caveated by the fact that this information is based upon 2013 data. In the intervening six years since this data was collected, passenger numbers have increased markedly. This means therefore that some services on the corridors will experience crowding and standing further away from London than is indicated here.

## Highway demand and congestion

- 2.53 Highways England's South East Regional Traffic Model has been used to assess the volume of traffic on the principal arterial highways between the TfSE area and London and the extent to which the capacity provided by this network can cope with current and future demand.
- 2.54 To provide an indication of the current situation the baseline scenario has been used. This shows demand on the highway network as of March 2015. The future scenario used is the 2041 do minimum. This scenario includes all highway schemes committed as of March 2015.

### Demand

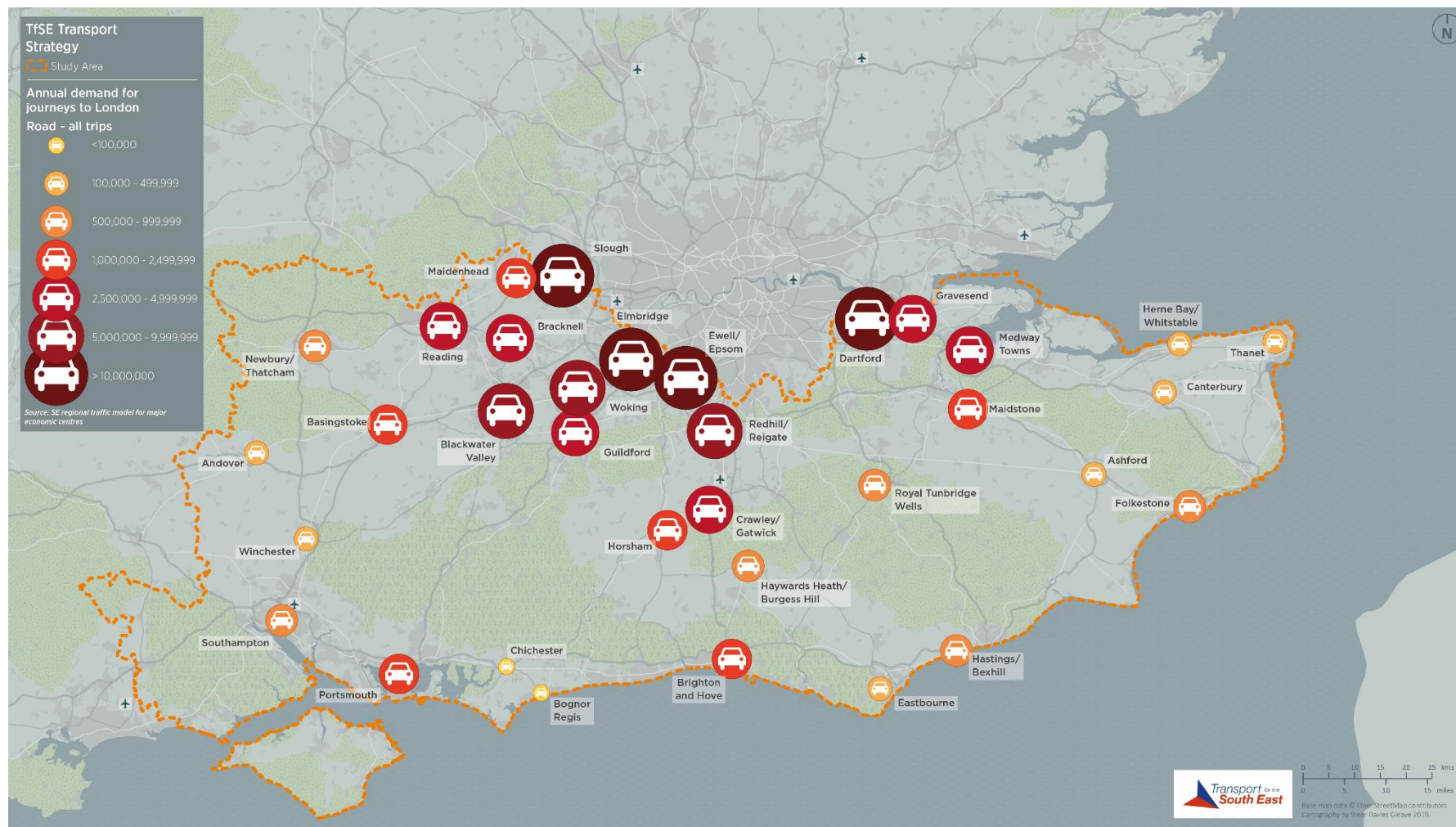
- 2.55 Table 2.4 below shows the top twenty Major Economic Hubs in the TfSE area from which the highest level of highway demand originates. For each of the top twenty locations shown in Table 1.4, the split of this demand into different journey purposes (freight, business, commuting and other) is also presented. The five maps below show the geographical location of these top twenty locations and also the top twenty locations for each journey purpose. The final column is "other" demand which is made up of car trips that are neither commuter trips nor business trips.

Table 2.4: Highway demand to London

Origin	Economic corridor to London	Total Annual highway demand to London (000s)	Annual Highway LGV and HGV demand to London (000s)	Annual highway demand for business purposes to London (000s)	Annual highway demand for commuting to London (000s)	Annual highway demand for other trips to London (000s)
Elmbridge	A3/Portsmouth Direct Line	18,025	2,420	1,215	3,861	10,529
Epsom and Ewell	A23-M23/Brighton Mainline	13,682	1,277	817	3,333	8,255
Dartford	A2/Chatham-Ramsgate Mainline	13,518	2,201	976	3,229	7,112
Slough	M4/Great Western Mainline	12,149	3,237	803	3,484	4,625
Redhill/Reigate	A23-M23/Brighton Mainline	6,604	1,433	457	2,143	2,570
Blackwater Valley	M3/South Western Mainline	6,217	1,481	461	1,592	2,683
Woking	M3/South Western Mainline	6,079	1,223	375	1,530	2,951
Crawley	A23-M23/Brighton Mainline	4,689	1,446	479	971	1,793
Bracknell	M3/South Western Mainline	4,362	702	214	990	2,456
Medway Towns	A2/Chatham-Ramsgate Mainline	3,735	1,252	227	831	1,425
Guildford	A3/Portsmouth Direct Line	3,598	771	210	981	1,636
Reading	M4/Great Western Mainline	3,572	814	307	758	1,693
Gravesend	A2/Chatham-Ramsgate Mainline	3,188	378	182	503	2,125
Brighton & Hove	A23-M23/Brighton Mainline	1,660	591	176	135	757
Basingstoke	M3/South Western Mainline	1,596	497	120	197	783
Maidenhead	M4/Great Western Mainline	1,425	330	121	381	593
Portsmouth	A3/Portsmouth Direct Line	1,381	605	103	81	591
Horsham	A23-M23/Brighton Mainline	1,134	344	95	244	451
Maidstone	A20-M20/HS1	1,105	382	64	230	429
Royal Tunbridge Wells	A21/Hastings Line	919	351	107	150	310



Figure 2.14: Annual highway demand, all journey purposes



**Figure 2.15: Annual highway demand - LGV and HGV**

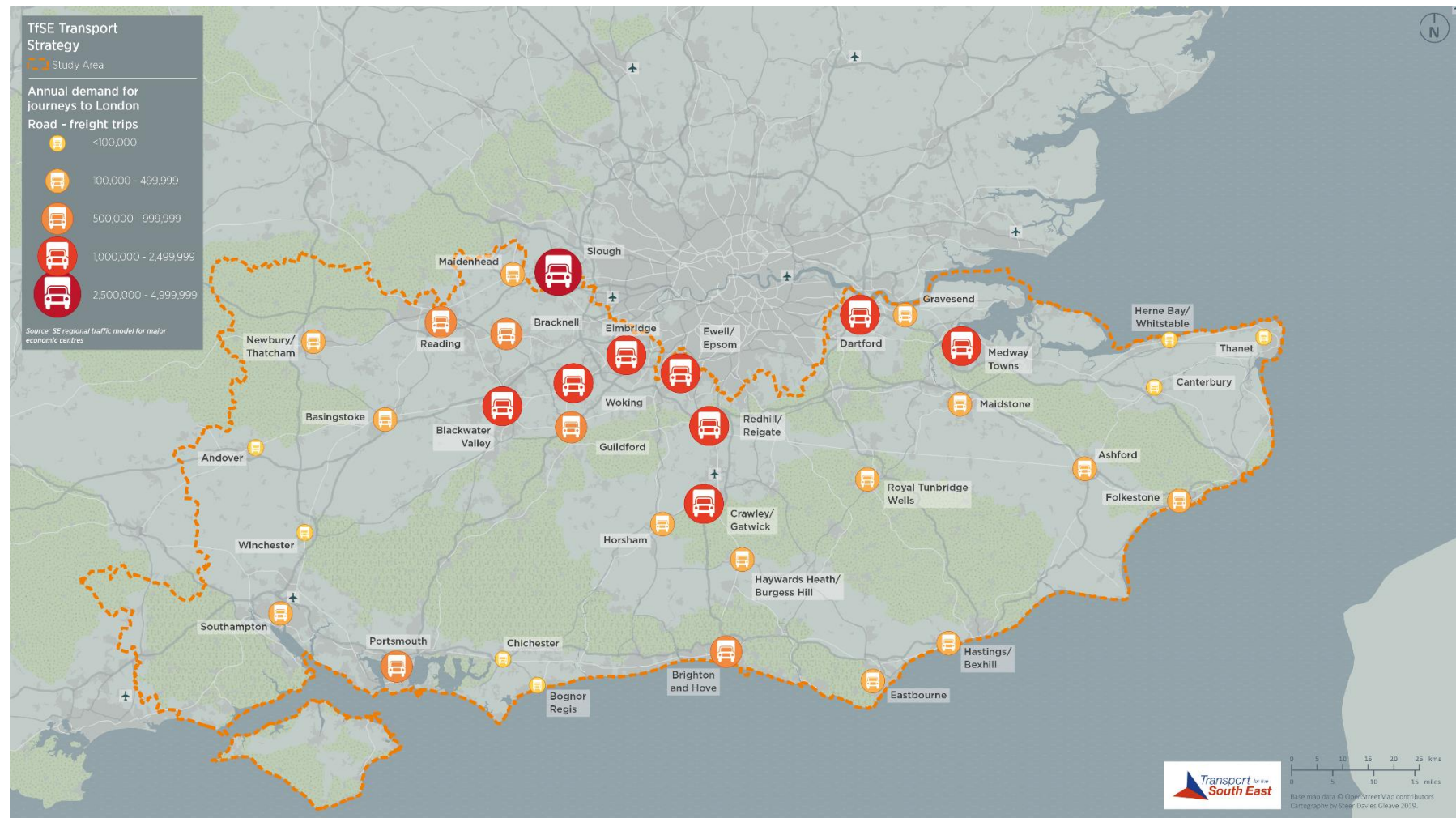




Figure 2.16: Annual highway demand - business purposes

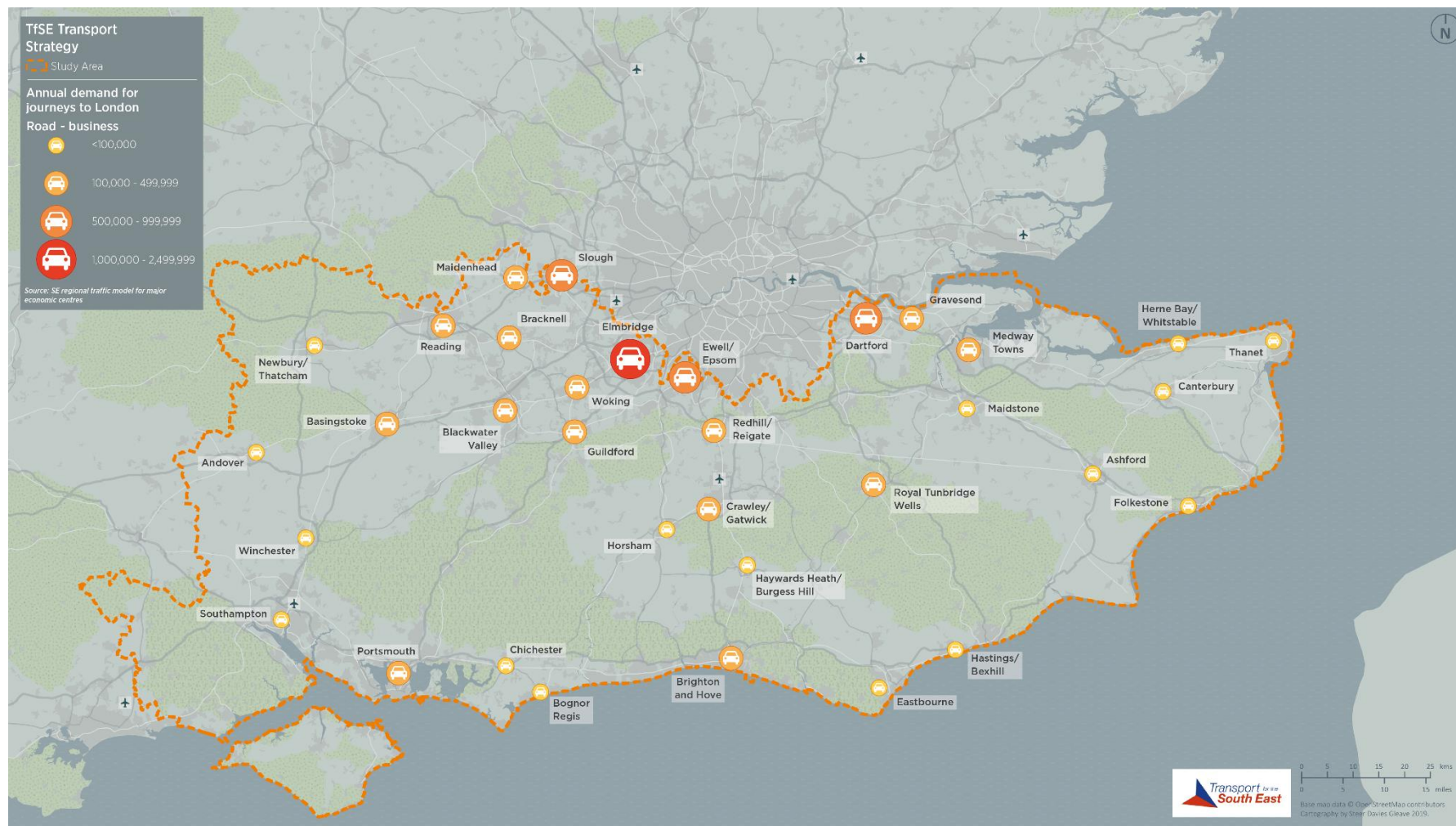


Figure 2.17: Annual highway demand - commuting by car

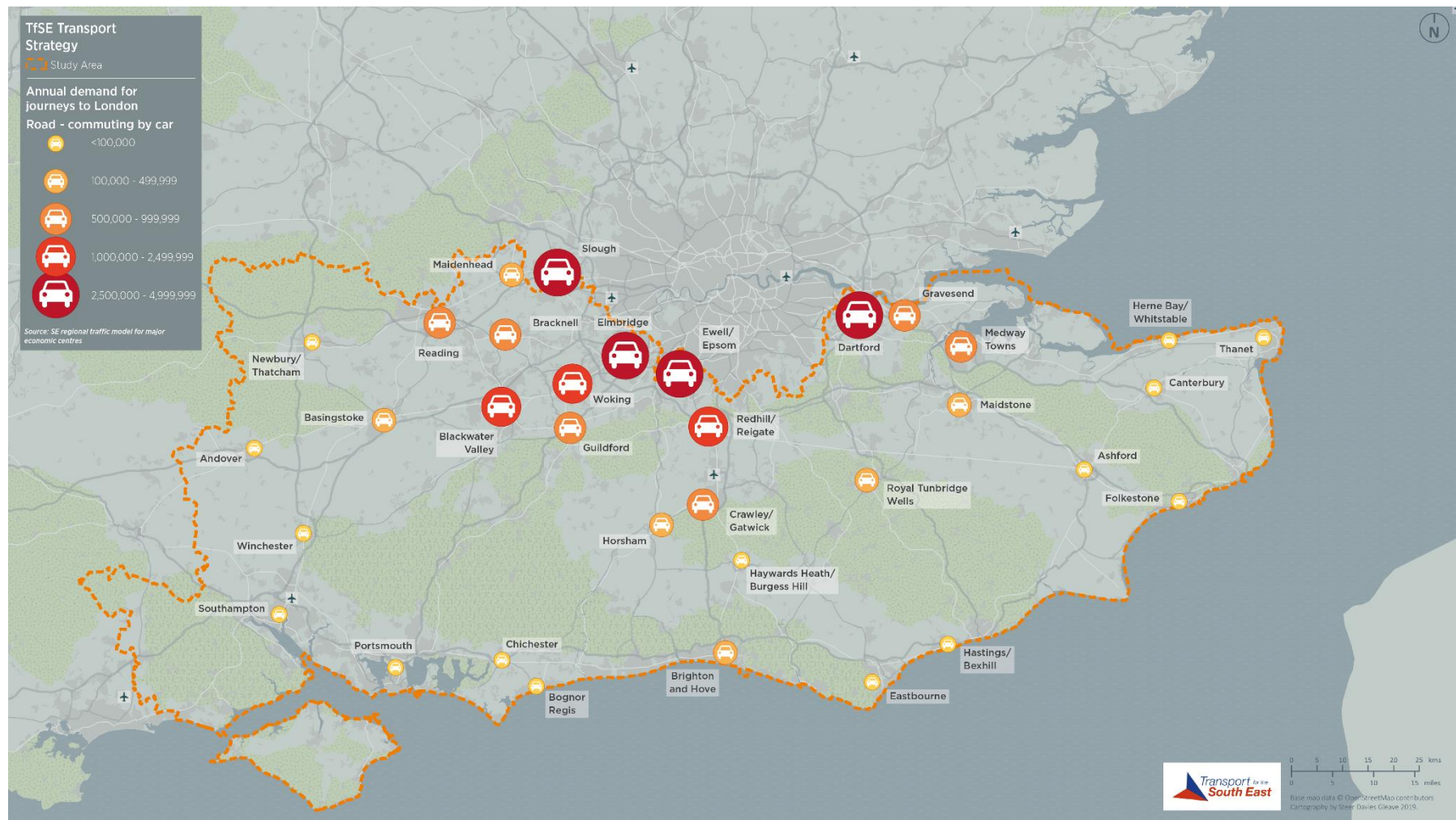
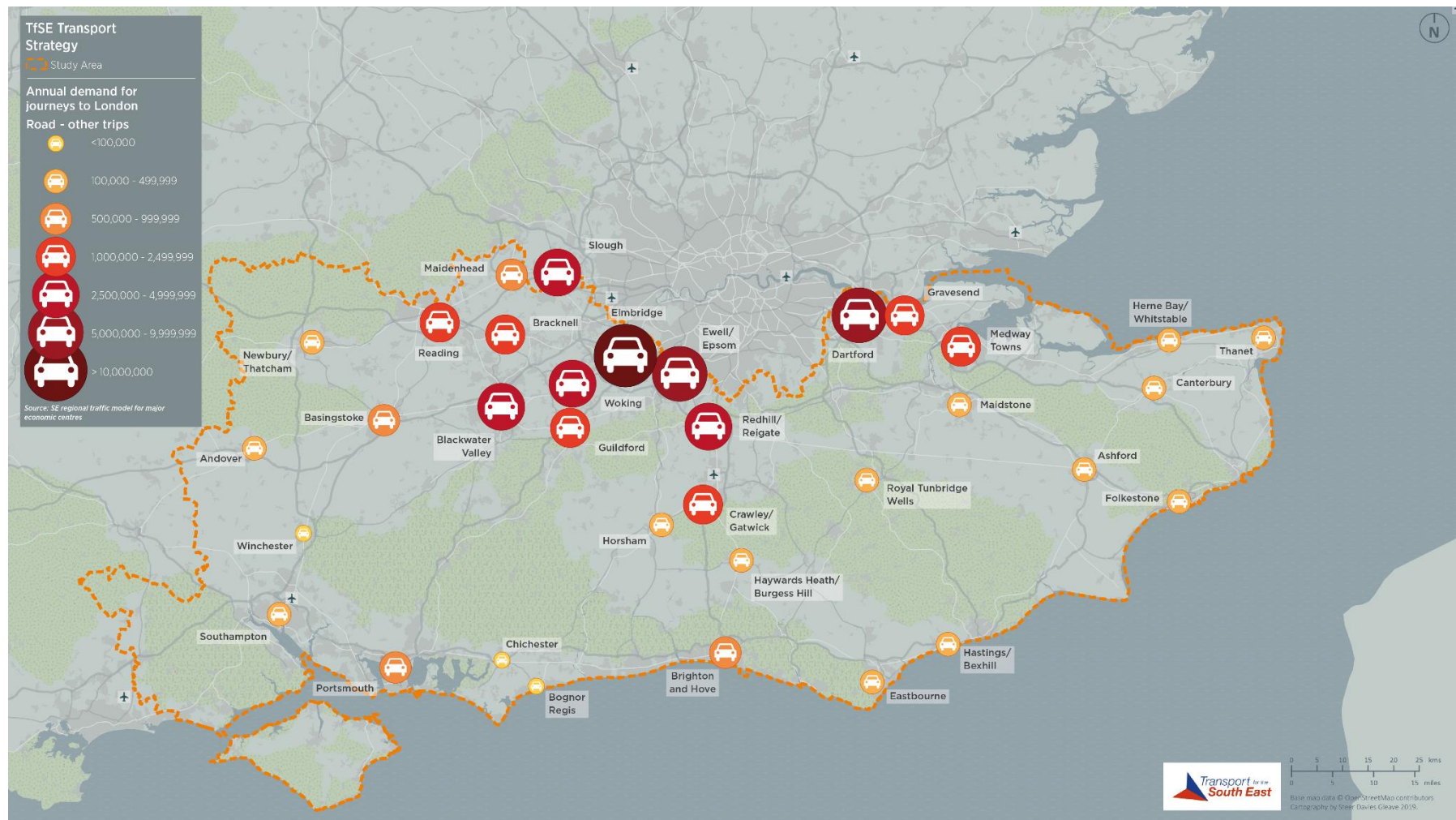




Figure 2.18: Annual highway demand - other trip purposes



- 2.56 In summary, the various tables and figures above show that proximity to London is a significant factor in determining the level of highway demand from an area. The top five highway demand locations border Greater London, so some of the demand from these areas will be local trips that involve travelling, over the border, into Greater London.
- 2.57 The origin of goods transporting trips is distributed similarly, but there are much more significant levels of demand from locations where transport and logistics sectors are particularly concentrated. These areas include Dartford and Slough.
- 2.58 Again, business purpose trips are particularly focussed in economic hubs bordering Greater London. Blackwater Valley and Crawley/Gatwick are areas where there is a significant concentration of industrial activity in the Aerospace and Defence sector and the Professional Services sector. A substantial interaction with businesses in London is required for both of these sectors. However, highway demand from these two locations is significantly lower than that of Elmbridge and Epsom and Ewell, which border Greater London.
- 2.59 To add further detail to this highway data, the next section will consider the relationship between demand and capacity.

### **Congestion**

- 2.60 The two maps below Figure 2.19 and Figure 2.20 show the current AM and PM peak period delay on the Strategic Road Network<sup>9</sup>. The maps have been developed from the South East Regional Traffic Model which provides the demand and capacity by highway link. Links that make up each corridor have been mapped together to identify how congestion changes along the strategic corridors in the TfSE area. This will contribute to identification and prioritisation of corridors which require further consideration as part of the Transport Strategy. At this stage the junction congestion has not been isolated, but this will be further analysed as part of more in-depth corridor studies that will be commissioned as part of the development of the Transport Strategy.
- 2.61 It is important to note that the level of congestion presented in the maps is an average level of congestion across the three-hour peak period. This means that there will be periods within this three-hour peak that are both significantly more and significantly less congested than the level of congestion indicated by the maps.
- 2.62 The Major Road Network (MRN) also sees significant congestion at certain points. The MRN supports the Strategic Road Network by providing critical first-mile and last-mile connectivity, as well as providing relief, improving the resilience and reliability of journey times. However, the majority of the highway trips between the South East and London will be primarily taken on the Strategic Road Network, rather than the MRN.
- 2.63 Further analysis of the MRN will be undertaken as part of Task 5 – the Baseline Review of Corridors and the development of the Regional Evidence Base, supporting bids from the TfSE area for National Roads Funding.

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<sup>9</sup> Source: South East Regional Traffic Model, Highways England

Figure 2.19 Current delay on the highway network in the AM Peak

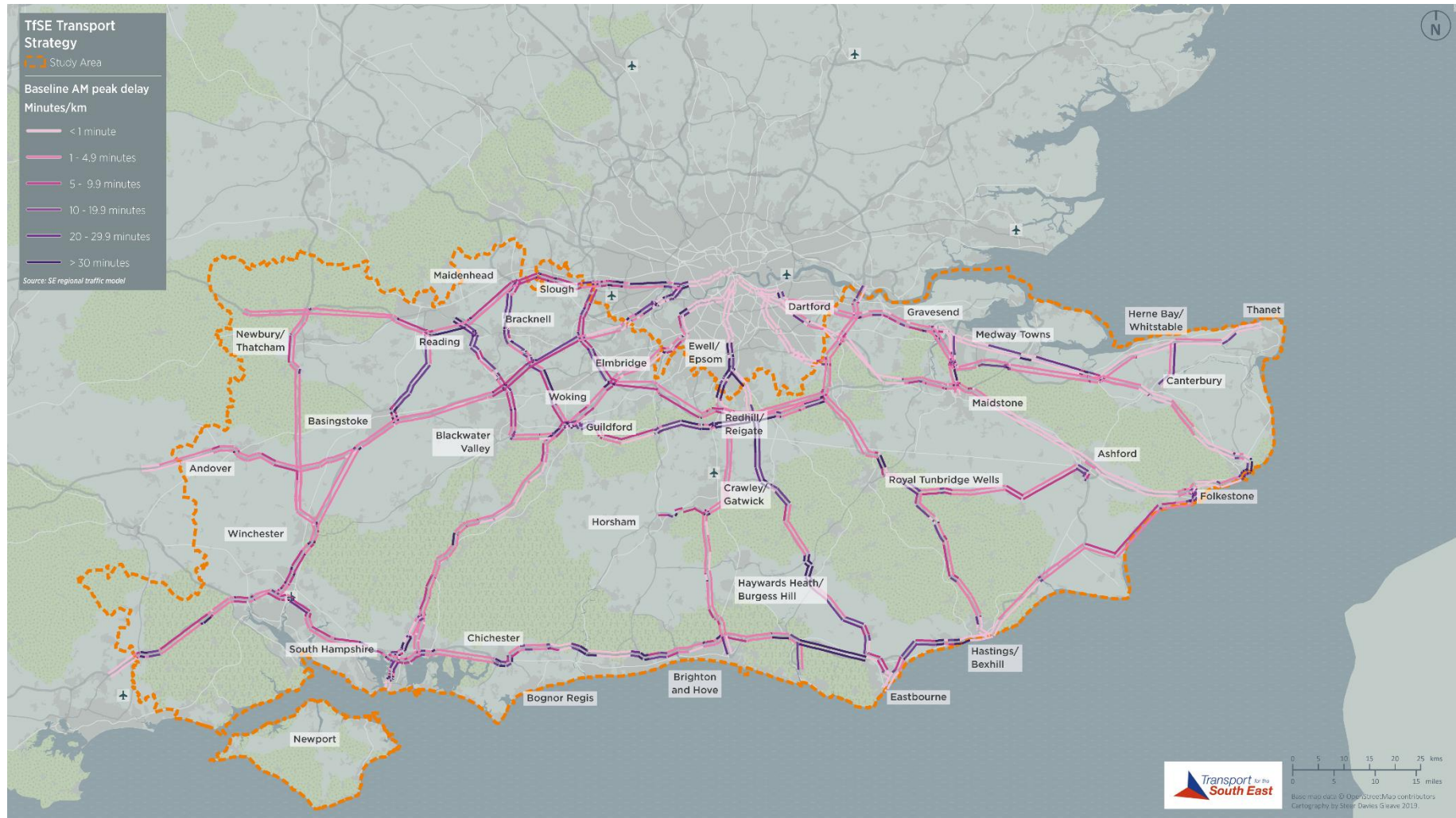
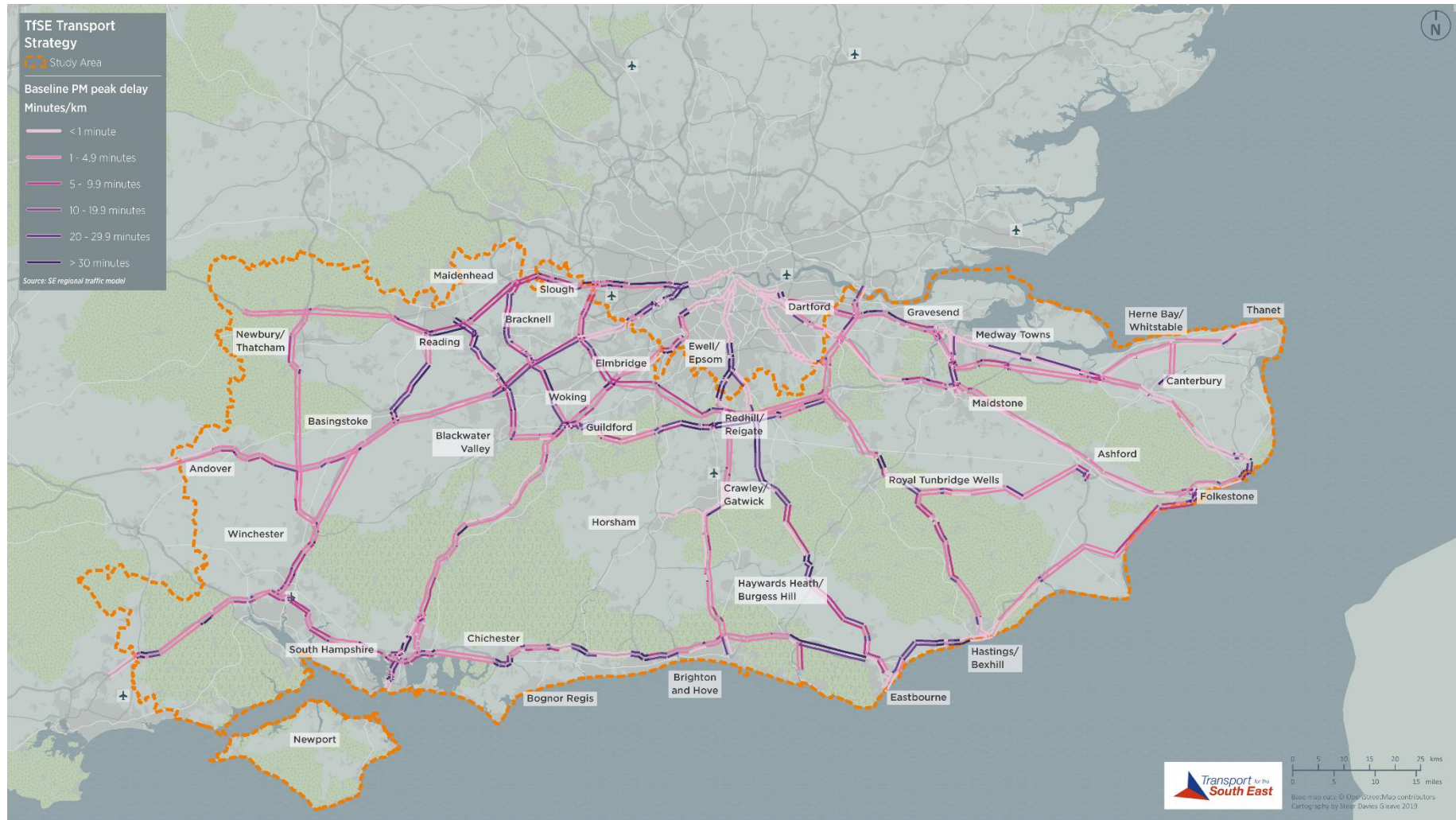




Figure 2.20: Current delay on the highway network in the PM Peak





## Highways analysis by corridor

- 2.64 Demand and capacity analysis has been considered on a corridor by corridor basis on the Strategic Road Network corridors linking the TfSE area with London as well as the M25.

### **M25**

- 2.65 In the AM peak the M25 has delays of more than 5 minutes per kilometre on the whole of its southern half. The south west quadrant, between the junctions with the M23 and with the M4, is particularly congested and clockwise sections of this quadrant experience delays of over ten minutes per kilometre in the AM peak. PM peak delays are not as severe, though the majority of the corridor remains subject to delays in this period. In the south east quadrant there is some capacity to accommodate growth though even here each junction is a congestion pinchpoint.

### **A2/M2 Chatham Mainline**

- 2.66 Three of the top twenty locations in terms of highway demand into London are on this corridor namely - Dartford, Medway Towns and Gravesend. Dartford and the Medway Towns are economic hubs from which high levels of freight movements into London originate.
- 2.67 Figure 2.19 and Figure 2.20 indicate that significant delays are not widespread across the corridor although there are pinch-points at key junctions where delays increase to over ten minutes per kilometre during peak periods. These pinch-points include junctions off the M2 to the Medway Towns. Delays of one to five minutes per kilometre occur beyond the junction of the M2 and the M25 between Dartford and Inner London. Between Dover and Swale and around the Medway Towns there is some capacity to accommodate growth in demand.

### **A20-M20/HS1**

- 2.68 Maidstone is the economic hub on this corridor, which is in the top twenty locations in terms of highway demand into London. Considering the distance from London, freight demand from Maidstone to London is relatively high.
- 2.69 In both the AM and PM peak period there is relatively little delay along this road corridor. There are pinch-points in the section between Maidstone and Tonbridge where there is significant delay. As the corridor enters London delay remains limited until the A20 reaches Inner London, at which point the corridor is subject to severe congestion. Between Folkestone and Maidstone and to the north of Tonbridge there is capacity to accommodate demand growth.

### **A22/Oxted Line**

- 2.70 Royal Tunbridge Wells is the Major Economic Hub on this corridor which is in the top twenty locations in terms of highway demand into London.
- 2.71 Between Eastbourne and the M25 this corridor is subject to significant delay in both directions in the AM and PM periods. As the road enters Greater London congestion reduces significantly indicating that a lot of traffic is transferring onto the M25. There is some capacity to the South of Sevenoaks to accommodate growth on this corridor.

### **A23-M23/Brighton Mainline**

- 2.72 Five of the Major Economic Hubs in the top twenty in terms of highway demand into London are on this corridor namely – Epsom and Ewell, Redhill/Reigate, Crawley, Brighton & Hove and

Horsham. Epsom and Ewell and Redhill/Reigate are both Major Economic Hubs from which high levels of freight demand into London originates. Considering the distance from London, business demand from Crawley/Gatwick to London is relatively high.

- 2.73 The corridor sees relatively high levels of congestion along its length, particularly in the AM peak in both directions. Gatwick Airport is a pinch-point where delay increases to over 10 minutes per kilometre. As the corridor enters Greater London, it is served by the A23 rather than the M23 and congestion increases significantly due to a reduction in capacity. There is capacity in Mid Sussex and between Crawley/Gatwick and the M25 to accommodate demand growth.

#### **A3/Portsmouth Direct Line**

- 2.74 Three of the locations in the top twenty in terms of highway demand into London are on this corridor. These are – Elmbridge, Guildford and Portsmouth. Elmbridge borders Greater London and is the origin of high levels of freight, business and commuter demand into London.
- 2.75 This corridor is subject to some congestion, although significant levels of congestion are not widespread along the corridor. There are pinch-points around Guildford and at the junction of the A3 and the M25. As the corridor enters Greater London congestion continues to cause some delays, though it is clear that a substantial proportion of northbound traffic on the A3 transfers onto the M25. There is capacity between East Hampshire and Guildford to accommodate growth.

#### **M3/South Western Mainline**

- 2.76 Three of the locations in the top twenty in terms of highway demand into London are on this corridor. These are Basingstoke, Blackwater Valley and Woking. Freight and commuter demand from Blackwater Valley and Woking are high, though business demand is much higher from Blackwater Valley than from Woking.
- 2.77 Congestion is not considerable in the south western section of this corridor except at localised pinch-points, such as Winchester, at the junction of the M3 with the A34. Once the M3 corridor crosses the A322/A329(M) corridor at Junction 3 (Lightwater) the congestion increases significantly, particularly in the London bound direction in the AM peak. As the corridor crosses the M25 towards Greater London, congestion becomes more severe. To the north of Winchester and around Basingstoke there is some capacity for growth in travel demand.

#### **M4/Great Western Mainline**

- 2.78 Three of the locations in the top twenty in terms of highway demand into London are on this corridor. These are – Reading, Slough and Maidenhead. High levels of freight demand into London originate from Slough while Reading has relatively high business demand to London, especially when its distance from the capital is considered.
- 2.79 London bound AM Peak delays on this corridor are quite considerable from Reading as far as Inner London. There are pinch-points on the corridor around Reading and Slough where congestion causes more severe delays and as the corridor enters Greater London congestion causes delays of in excess of 10 minutes per kilometre. In West Berkshire there is some capacity for growth in travel demand.

## Summary of key findings from analysis of the current situation

### Overview

- More than four fifths of all commuting from the TfSE area stays within the TfSE area, one eighth is to London and just 3.5% is to the rest of the UK.
- The level of commuting to London across all modes is far higher in areas that border or are very close to London.
- There is very little commuting from Central and Inner London to the TfSE area, however commuter numbers from Outer London to the TfSE area are quite significant, particularly to areas of Kent and Surrey which border Greater London.

### Rail

- The majority of the locations which generate the highest levels of passenger rail demand into London are in areas which border Greater London, such as Dartford and Elmbridge. The exceptions to this are areas with particularly fast mainline links into London such as Brighton and Reading.
- While areas that border London tend to have a high percentage of passenger rail demand headed into London, areas of the TfSE area that are further from London, but are still considered commuter towns, have a far smaller proportion of total demand headed to London. For example, 64% of demand from Reading and 49% of demand from Guildford is headed to locations other than Greater London.
- One sixth of all passenger rail demand into London from Crawley, (which includes Gatwick Airport), is for business purposes. Business travel by rail from Crawley/Gatwick is almost three times that of the next highest area.
- Passenger rail demand on the A23-M23/Brighton Mainline is particularly high with all of the Major Economic Hubs appearing in the top twenty in terms of annual passenger rail demand to London, and the top ten includes four Major Economic Hubs from this corridor.
- Crowding is a significant constraint on the main radial rail corridors connecting London and the TfSE area but currently there are relatively few stations in the TfSE area from which a passenger will not be able to get a seat on 'fast' trains in the high peak hour (e.g. Slough, Woking, Redhill, Sevenoaks). Generally speaking, it is from stations within Outer London and Inner London that overcrowding becomes an issue.
- On certain lines such as the A21/Hastings Line and on parts of the A3/Portsmouth Direct Line Corridor from Guildford northwards passengers boarding a train travelling into London in the peak hour may not be able to get a seat.

### Highways

- As with Rail, the majority of the locations from which the highest levels of highway demand into London start are in areas which border Greater London, such as Elmbridge and Epsom and Ewell.
- The areas from which high levels of freight, commuter and business demand emanate are broadly similar, which is indicative of the fact that a large proportion of demand from areas bordering Greater London are local trips which cross over the border into Greater London.
- The A23-M23/Brighton Mainline corridor and the M4/Great Western Mainline corridor are subject to the highest levels of delay and both have considerable congestion for the majority of the highway route serving the corridor.

- There are sections of all the arterial roads connecting London to the TfSE area, as well as the M25, where there is capacity for significant demand growth.
- The Kent and Medway corridors of the A2-M2/Chatham Mainline and A20-M20/HS1 have more capacity for growth than other arterial corridors in the TfSE area.
- Delays do not necessarily increase as highway corridors enter London. Delay on the highways that serve the A20-M20/HS1 corridor, the A22/Oxted Line and the A3/Portsmouth Direct Line reduces past the M25 in the London direction.

#### **Economic outcomes of transport**

- **Business connectivity.** Amongst the areas with the highest levels of business travel by rail to London from the TfSE area are Crawley/Gatwick and Reading. Crawley/Gatwick is at the centre of the 'Gatwick Diamond' and Reading is at the centre of the M4 corridor - two internationally recognised hubs for IT and Professional Services respectively.
- **Labour market efficiency.** Reliable journey times by road and rail increases the size of the catchment in which residents can seek employment. Congestion and relatively slower journey times on some corridors such as A2/M2 Chatham-Ramsgate Mainline reduces the effective functioning of labour markets.
- **Enabling development.** Both rail and highway analysis indicate that there is capacity for growth in areas of the TfSE area earmarked for significant levels of housing development and an increase in jobs. These areas include the Medway Towns, Ashford, Burgess Hill/Haywards Heath, Basingstoke and West Berkshire.
- **Accessing international gateways.** Crawley/Gatwick is located in the area with highest rail demand to London for all passengers and for those travelling for business purposes.
- **Supporting deprived communities.** Only three out of the ten most deprived Local Authorities in the TfSE area are within the top 20 locations in terms of highway trips to London. Only four out of the ten most deprived Local Authorities are within the top 20 locations in terms of rail trips. This is indicative of the fact that poor connectivity to London is a contributor to deprivation in communities in the TfSE area. London is the most economically productive area in the country, and communities within the TfSE area which are not well connected to it are unable to benefit from its prosperity.

## 3 Future Situation

3.1 As part of the review of the evidence base a number of data sources have been utilised to review future travel demands and patterns of movement between the TfSE area and London.

3.2 This review has considered the following topics:

- forecast housing and employment growth;
- future rail demand and overcrowding; and
- future highway demand and congestion.

### Forecast housing and employment

3.3 The TEMPRO system (Trip End Model Presentation Programme) incorporates Local Planning Authority data for future years up to 2051. TEMPRO data provides an overview of the forecast growth in housing, jobs and trips across the TfSE area. The data has been interrogated to identify the potential growth in housing and jobs in the TfSE area through to 2041.

3.4 The two figures below Figure 3.1 and Figure 3.2 show the forecast growth in housing and jobs across the TfSE area by 2041. The headline observations from these maps are provided below for each of the economic corridors identified in the Economic Connectivity Review.

### Analysis by corridor

#### **A2/M2 Chatham Mainline and A20-M20/HS1**

3.5 The areas with the most significant growth in housing – in excess of 25,000 households over the 30-year period between 2011 and 2041 are identified primarily within Kent and Medway along the A2/M2 Chatham Mainline and A20-M20/HS1 corridors. High levels of housing growth in Ashford, Maidstone, Medway Towns and Canterbury are forecast, but there is not an expectation of high growth in the number of jobs located in Kent, with the exception of the Medway Towns. Without local employment growth, the growth in housing may stimulate an associated increase in commuting from new residential areas to locations with higher employment growth.

#### **A23-M23/Brighton Mainline**

3.6 There are high levels of housing growth forecast for the southern half of this corridor with Mid Sussex (particularly the Burgess Hill area) and Brighton & Hove being the focus. Jobs growth is forecast to be tightly focussed in the Brighton & Hove area and around Crawley and Gatwick Airport where good national and international connectivity make this a very attractive location for businesses. This growth will likely lead to more demand on the southern end of the Brighton Mainline, as commuter journeys increase between Burgess Hill and Crawley/Gatwick and between Burgess Hill and Brighton.



### **A3/Portsmouth Direct Line**

- 3.7 Housing growth will be high in Portsmouth and Guildford, while Guildford will also be the focus of the greatest increases in jobs along the corridor. This will mean an increase in demand along the southern end of this corridor, as there will likely be increased flows of commuters between Portsmouth and Guildford.

### **M3/South Western Mainline**

- 3.8 Southampton, Winchester and particularly Basingstoke and Deane will see high levels of housing growth with Basingstoke and Deane planning for growth in excess of 25,000 households over the 30-year period. It is these same three Local Planning Authorities which are planning for the highest levels of jobs growth along the corridor too. Overall this should mean only minor changes in commuting patterns occur, as there is good balance between the location of new homes and jobs.

### **M4/Great Western Mainline**

- 3.9 In this corridor, Wokingham and Reading are forecast to see high levels of housing growth while jobs growth in this corridor will be the highest of all the corridors in the TfSE area. West Berkshire, Reading, Windsor and Maidenhead and Slough are all planning an increase in jobs in excess of 16,000. This may mean that there is an increase in inbound commuting to these areas from surrounding areas.

Figure 3.1: Forecast housing growth

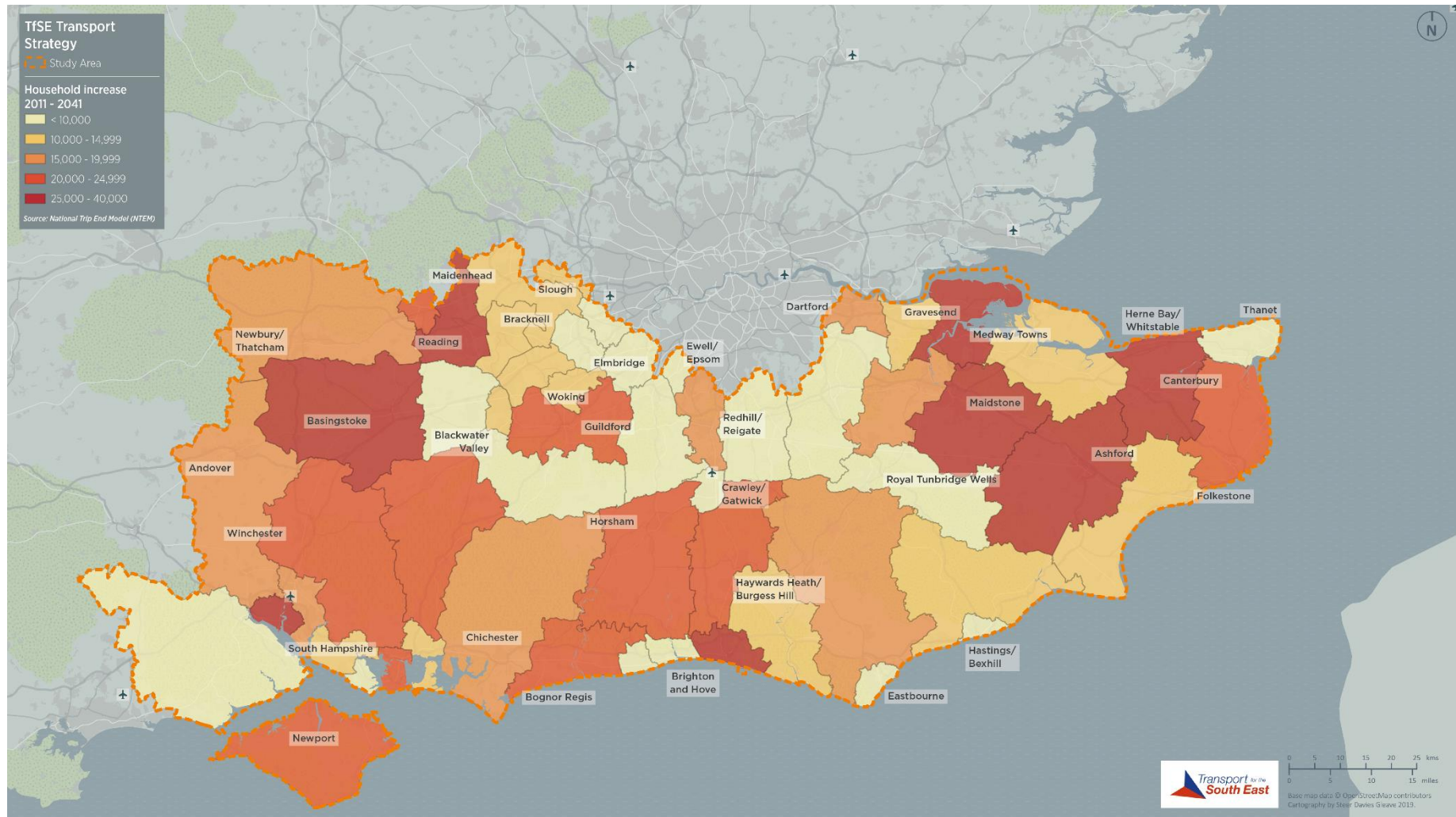
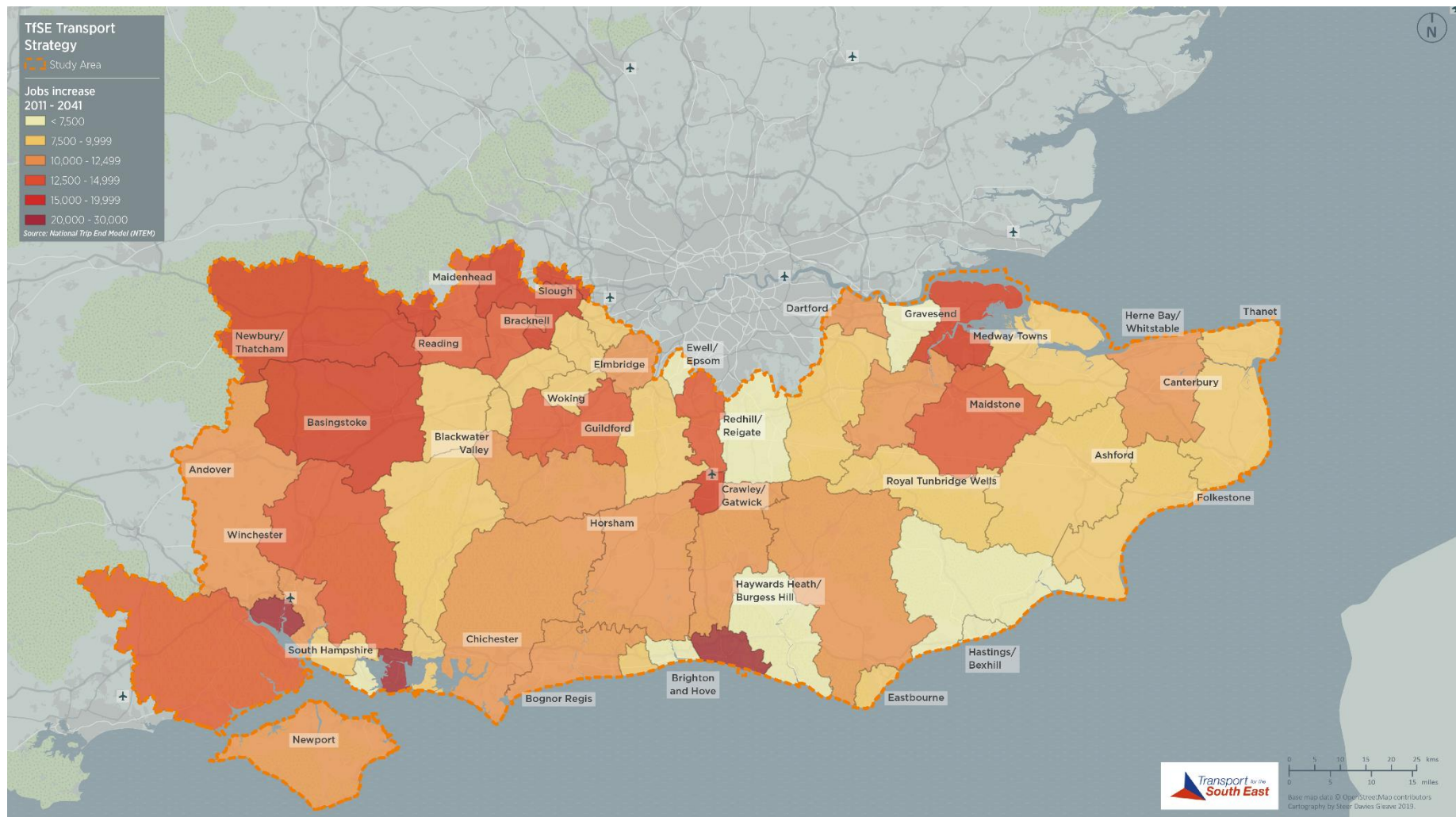


Figure 3.2: Forecast jobs growth

### Task 3 The Relationship between the South East and London



### Future crowding on key rail routes

- 3.10 The following section considers crowding on key rail routes in the TfSE area in more detail. The analysis uses Network Rail's 2026 high peak hour capacity data schematic maps. Figure 3.3 presents the high peak crowding for inner suburban and orbital services into Central London, and Figure 3.4 is the regional schematic map for long distance and outer suburban rail services into Central London. The crowding illustrated by these maps is assessed by corridor in the section below.
- 3.11 It is important to note that the level of crowding presented in the maps is an average level of crowding across the high peak hour. This means that there will be trains that are both significantly more and significantly less crowded along the line of route than the level of crowding indicated by the maps. In instances where crowding is worse this will result in passengers having to stand on services from stations further from their destination than the point at which the map indicates standing will begin. Moreover, this data does not differentiate between the level of crowding on slow, stopping services and fast, non-stop services



Figure 3.3: 2026 High peak crowding TfSE area to Inner London

### London and the South East 2026 capacity 'baseline'

Inner suburban and orbital rail services operating during the high peak hour 0800 to 0859

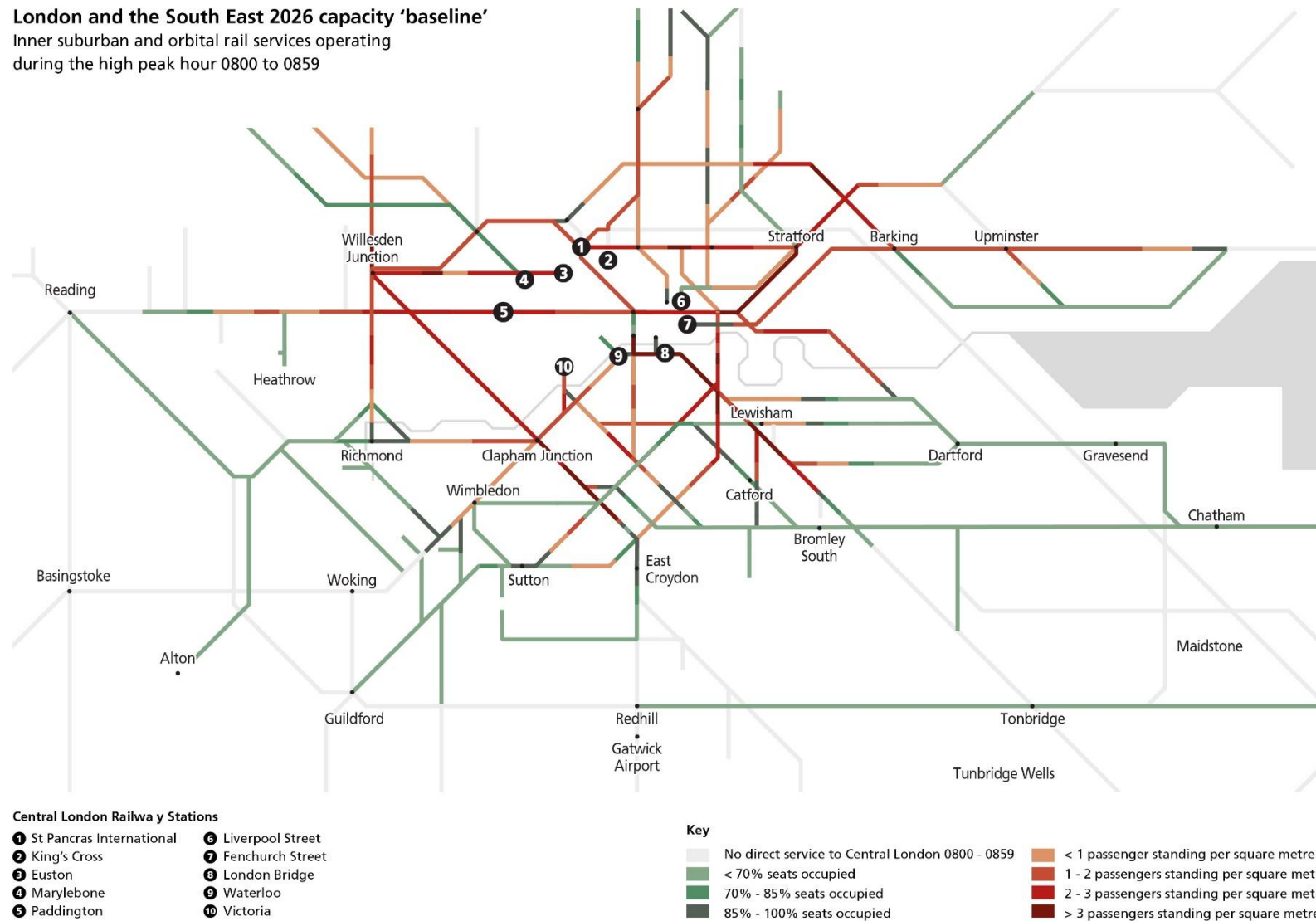
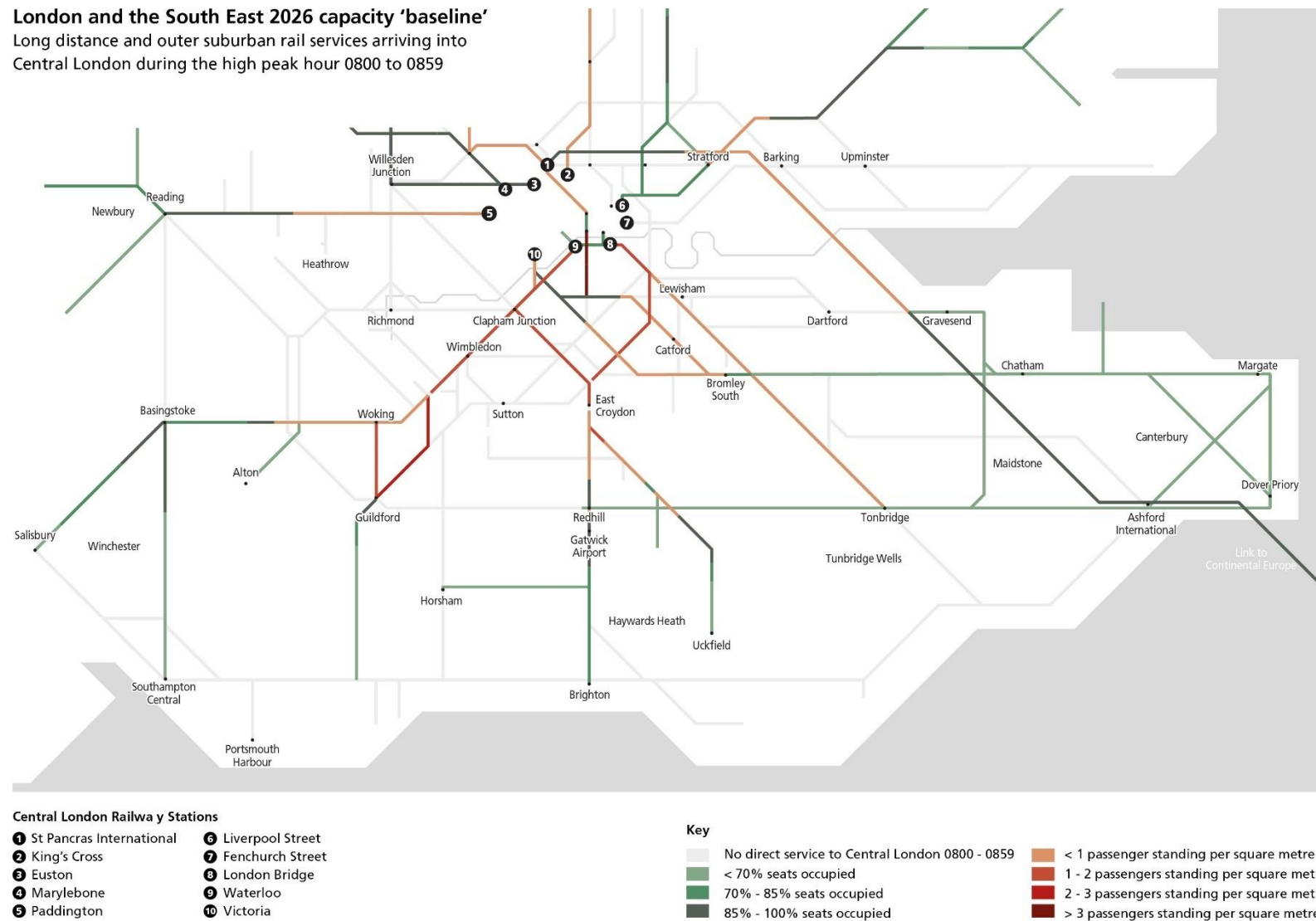




Figure 3.4: 2026 High peak crowding TfSE area to Outer London

### London and the South East 2026 capacity 'baseline'

Long distance and outer suburban rail services arriving into Central London during the high peak hour 0800 to 0859



## Rail analysis by corridor

### A2/M2 Chatham Mainline Corridor

- 3.12 Demand on this route will continue to grow but the crowding map, Figure 3.4, shows that passengers will still begin standing at a similar point of the route as they do currently. The most notable change is that the magnitude of crowding after key junctions on the approach to London will grow significantly, with crush loading beginning in Inner London.
- 3.13 As set out in Network Rail South East Route: Kent Area Route Study 2018<sup>10</sup>, rolling stock upgrade options will be exhausted at that point, so the route will require more substantial infrastructure interventions to accommodate additional capacity.

### A20-M20 HS1 Corridor (High Speed Route)

- 3.14 Figure 3.4 shows that most passengers in 2026 along the high-speed route are still able to get a seat except for passengers boarding at Ebbsfleet International or Gravesend, who may need to stand as far away from London as Stratford International. Capacity mapping is not available beyond 2026, but the Network Rail South East Route: Kent Area Route Study 2018 suggests that this route will require a combination of rolling stock lengthening, platform lengthening, and additional train services to provide enough capacity up to 2044.

### A21/Hasting Line

- 3.15 Figure 3.4 shows that passengers boarding the mainline route into Victoria or London Bridge before Sevenoaks will be able to get a seat in 2026 but after this point there will be standing room only.
- 3.16 The Kent Area Route Study 2018 states that this route will require a combination of rolling stock lengthening, electrification upgrades, platform lengthening and additional train services in order to handle capacity up to 2044.

### A23/M23 Brighton Main Line Corridor

- 3.17 Forecasts for 2026 along the Brighton Mainline considers the addition of Thameslink services and the significant route upgrades planned for Control Period 6. However, even with these improvements, the peak hour crowding worsens, and it is forecast that no seating will be available for passengers boarding between Redhill and Central London. The map, Figure 3.4, above reiterates this, indicating that capacity will not be reached until arrival at Redhill, but crowding through Greater London will be very significant. Crowding on the Arun Valley Line, feeding into the Brighton Mainline is not forecast to experience high levels of crowding in high peak periods. However, anecdotal evidence indicates that if current forecast growth in rail demand is realised, there will be increased incidences of standing on services on the East and West Coastway lines.
- 3.18 Looking ahead to 2043, (the current extent of Network Rail route study modelling), Network Rail has shown that for a scenario which assumes no further capacity increase interventions after 2019, that all seats will be full upon departure from Brighton, and a significant proportion of passengers will be standing for the entire journey from the south coast to London, with possible crush loading from East Croydon onwards.

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<sup>10</sup> Source: South East Route: Kent Area Route Study, Network Rail, 2018

- 3.19 An increase in crowding on this corridor will result in a reduction in business connectivity between the concentration of Professional Services companies located in the Crawley/Gatwick area and suppliers or clients located in London. Similarly, Brighton & Hove has a specialism in Financial Services for which reliable rail connectivity to London is vital.

#### **A3/Portsmouth Direct Line Corridor**

- 3.20 Figure 3.4, the outer services crowding map, shows that there is significant growth in crowding from the 2013 baseline with crowding between Guildford and Woking at a density of one to two passengers per square metre. Capacity mapping is not available beyond 2026, but the Network Rail Wessex Route Study 2015 predicts that future capacity will require a combination of train lengthening, signalling upgrades, platform lengthening, and re-planning services between different routes, along with adding additional train services. Line capacity is so stretched along these routes that additional services may have significant, detrimental impacts to reliability and punctuality. However, the proposed new flyover at Woking would enable frequency improvements.

#### **M3/South Western Main Line Corridor**

- 3.21 Figure 3.4 shows that trains from both Portsmouth and Southampton begin crowding earlier, with standing beginning at Farnborough and Guildford, respectively, with crowding from Guildford to Woking noticeably worse than in the 2013 baseline. Standing intensifies to between one to two passengers per square meter one stop earlier, before Surbiton, and continues until Waterloo.
- 3.22 The Network Rail Wessex Route Study 2015 predicts that future capacity will require a combination of train lengthening, rolling stock redesign, signalling upgrades, and additional train services. However, line capacity is so stretched that additional services may have significant, detrimental impacts to reliability and punctuality. Network Rail is also considering several major infrastructure interventions, including a line reconfiguration between Waterloo and Clapham Junction, new flyovers at Basingstoke and Woking, and wider area track and platform redesigns.
- 3.23 An increase in crowding on this corridor as well as the A3/Portsmouth Direct Line would result in a reduction in business connectivity between the concentration of Professional Services companies located in Guildford, Woking and Bracknell and suppliers or clients located in London.

#### **M4/Great Western Main Line, Inner and Outer Suburban**

- 3.24 This portion of the line will see significant effects from the new Elizabeth Line services from 2020 or 2021 onwards, with the new, high capacity rolling stock and direct connections through Central London, alleviating crowding at Paddington Station. However, with the large increase in capacity and the new design of the Elizabeth Line trains, a significant proportion of passengers will now be standing. The crowding map show that passengers in 2026 begin to stand at Burnham, with crowding increasing to one to two passengers per square metre by Iver. Crowding continues to worsen by Ealing Broadway to two to three passengers per square metre, and heavy crowding continues through to Central London.
- 3.25 Network Rail Western Route Study 2015 predicts that future capacity will require a combination of rolling stock upgrades, signalling upgrades and additional train services in order to provide capacity through 2043.

- 3.26 Increased crowding on this line will result in a reduction in business connectivity between the concentration of IT Services companies located in the M4/Great Western Mainline corridor and suppliers or clients located in London.

## Future highway congestion

- 3.27 Highways England's South East Regional Traffic Model provides details of future forecast network conditions on the Strategic Road Network. A number of maps below display the forecast future demand flows across the network, with maps showing goods related trips provided separately. Future delay in minutes per kilometre is also shown. The change in demand between the base year and 2041 forecast has also been mapped to show where the particular areas of growth in highway demand are forecast to be greatest.

### M25

- 3.28 In the AM peak the M25 has delays of more than five minutes per kilometre for the whole of its southern half and delays of over ten minutes per kilometre over a considerable proportion of this. The south west quadrant, between the junctions with the M23 and with the M4 is forecast to be particularly congested with the majority of the quadrant experiencing delays of over ten minutes per kilometre in both directions in the AM and PM peak periods.

- 3.29 This level of congestion will have a negative impact on the operations of the transport and logistics sector which is concentrated in Major Economic Hubs close to the M25 such as Dartford and Slough. This sector relies on the M25 to facilitate travel from the eastern part of the TfSE area to other destinations in the UK.

### A2/M2 Chatham Mainline

- 3.30 The maps below indicate that while there are still parts of the route which do not have significant delays, sections of significant congestion are much more widespread than in the base year. The pinch-point at key junctions now cause delay of over ten minutes per kilometre for large sections of the corridor. Junctions off the M2 to Medway Towns continue to cause the greatest congestion and delay. Delays into Greater London are now ten minutes per kilometre due to the growth in demand.

- 3.31 This level of congestion will have a negative impact on the operations of the Transport and Logistics sector which is concentrated in Major Economic Hubs on this corridor such as Dartford and Medway Towns. Equally, this sector relies on the A2/M2 Chatham Mainline to transport freight from Port of Dover to other parts of the TfSE area and the UK.

### A20-M20/HS1

- 3.32 Growth in demand means that in both the AM and PM peak period there is significant delay along the majority of the highway corridor. The pinch-points in the section between Maidstone and Tonbridge continue to exacerbate congestion, but the highest level of congestion growth is in the section between Ashford and Maidstone. As the corridor enters London delay remains severe.

- 3.33 This level of congestion will have a negative impact on the operations of the Transport and Logistics sector which is concentrated in Major Economic Hubs on this corridor such as Ashford and Maidstone. As well as the A2/M2 Chatham Mainline this corridor is heavily relied upon by the Transport and Logistics Sector to transport freight from the Port of Dover to other parts of the TfSE area and the UK.

### A22/Oxted Line

- 3.34 Between Eastbourne and the M25 this corridor is subject to increased congestion and delay in both directions in the AM and PM periods. As the road enters Greater London congestion



reduces significantly indicating that a lot of traffic is transferring onto the M25. Due to there being very little spare capacity on this road in the base year, it does not see the same level of congestion growth by 2041 as is seen with the other highway corridors.

#### **A23-M23/Brighton Mainline**

- 3.35 The corridor is forecast to see severe levels of congestion along its route particularly in both the AM and PM peak in both directions. Gatwick Airport continues to be a significant pinch-point. As the corridor enters Greater London, it is served by the A23 rather than the M23 and congestion increases significantly due to a reduction in capacity.

#### **A3/Portsmouth Direct Line**

- 3.36 This corridor is forecast to be subject to high levels of congestion for large portions of its route, though compared to other corridors severe delays are not as widespread. Pinch-points at Guildford and at the junction of the A3 and the M25. As the corridor enters Greater London there is significant growth in congestion compared to the base year with delays of over ten minutes per kilometre between the junction of A3 and M25 and Inner London.

#### **M3/South Western Mainline**

- 3.37 Growth in highway demand is forecast to result in congestion becoming substantial in the south western section of this corridor, particularly exacerbated by localised pinch-points, such as Winchester, at the junction with the A34. Congestion on the M3 between Basingstoke and the junction between the M3 and the A322/A329(M) see delays of over ten minutes per kilometre. As the corridor crosses the M25 towards Greater London, congestion becomes more severe.
- 3.38 Congestion on this corridor and also M3/South Western Mainline will negatively impact the Marine, Maritime and Defence sector which is concentrated in this corridor, particularly in Portsmouth, Southampton, Basingstoke and Blackwater Valley. A free-flowing highway network is important to ensure that the supply chain serving this sector, and the transport and logistics sector linked to the international gateway port of Southampton, which generates significant HGV flows, can operate efficiently.

#### **M4/Great Western Mainline**

- 3.39 The entire corridor in both directions in both the AM and PM peak is forecast to be subject to severe levels of highway congestion. The principal change from the base year is that congestion between West Berkshire and Reading is expected to grow substantially. As the corridor enters Greater London congestion continues to cause delays in excess of ten minutes per kilometre.

Figure 3.5: Future delay on the highway network in the AM Peak



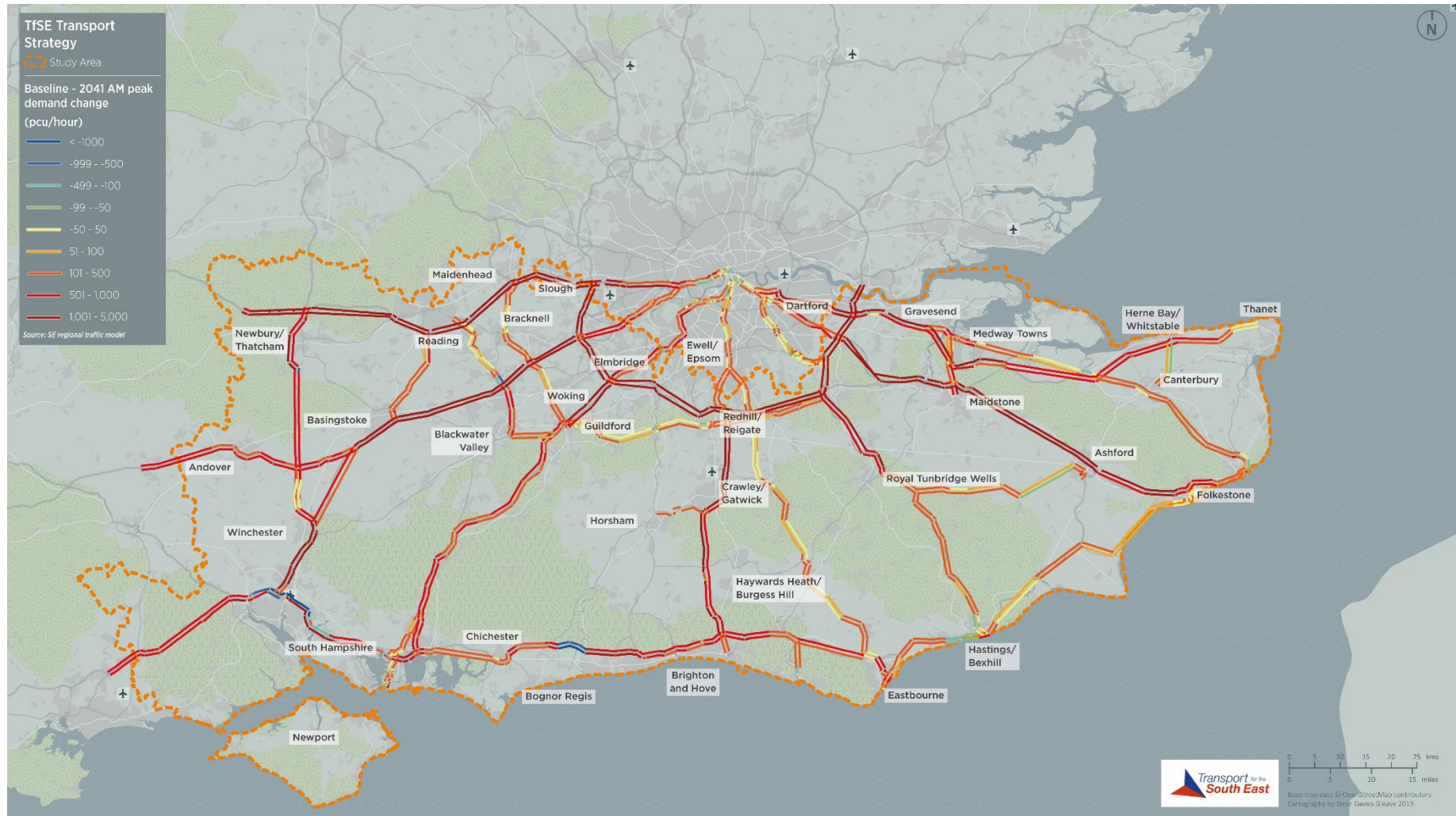


Figure 3.6: Future delay on the highway network in the PM Peak



### Task 3 The Relationship between the South East and London

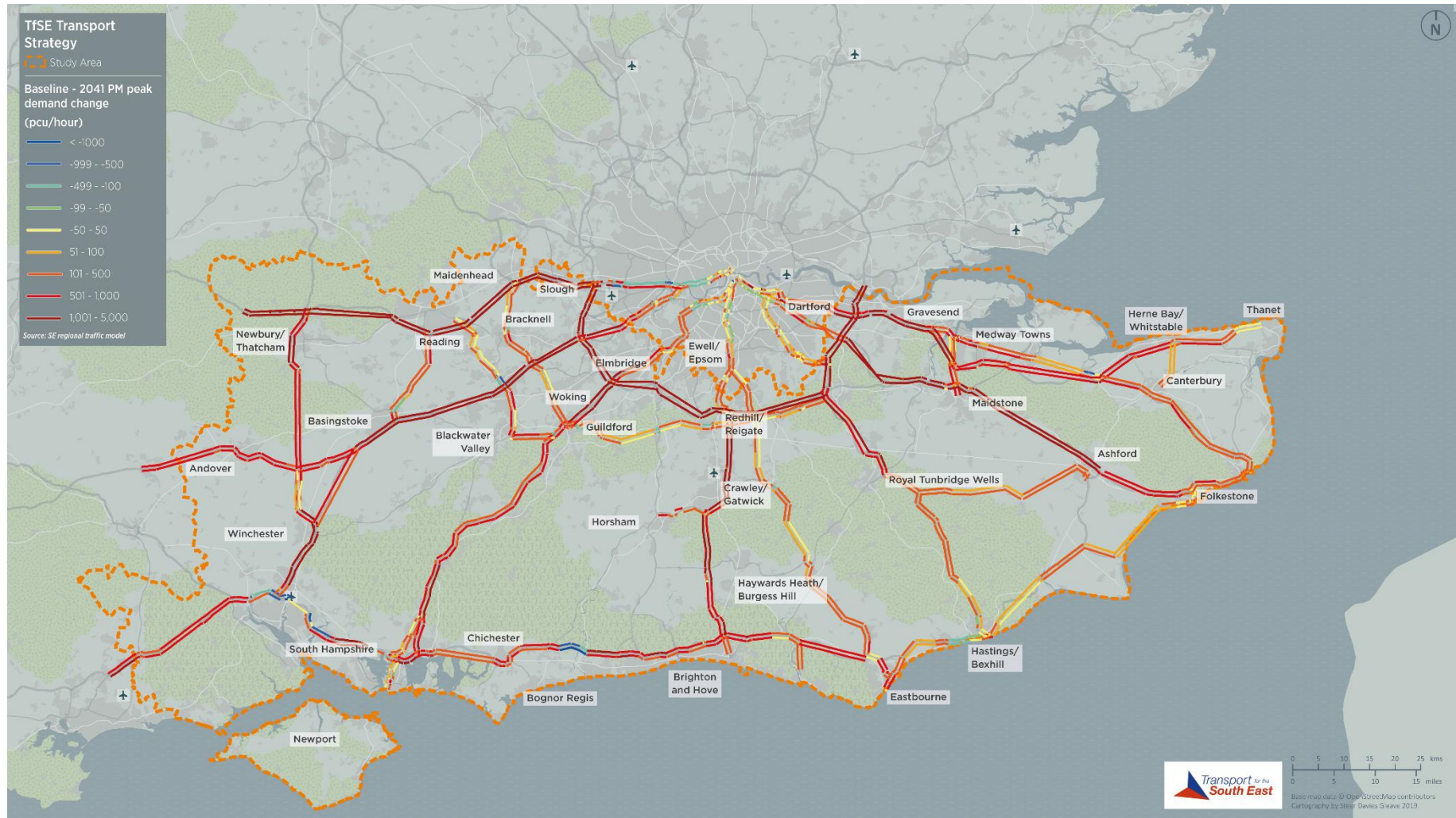
Figure 3.7: Change in highway demand AM Peak





### Task 3 The Relationship between the South East and London

Figure 3.8: SERTM PM Peak Change in Demand Flow Baseline to 2041



## 4 Policies and schemes

4.1 A key determinant of how transport between the TfSE area and London will change in the future are the policies and schemes which are in place or are being planned at a local and regional level in the area. This section will consider the following topics:

- London's transport and spatial planning policy context;
- major planned schemes which will have an impact on the transport network of London and the TfSE area; and
- schemes and initiatives set out by Local Enterprise Partnerships in their Strategic Economic Plans and by Local Transport Authorities in their Local Transport Plans.

### The London Plan

#### Overview

4.2 The London Plan provides the strategic planning policy framework for London. The adopted London Plan is being replaced by the draft new London Plan which will run to 2041.

4.3 The key target in the new London Plan is to increase the housing delivery target to 66,000 homes a year. This is a significant increase from the adopted London Plan which has a target of 49,000 homes a year.

#### Future growth in transport demand

4.4 It is projected that by 2041 approximately 7 million people will be working in London: 2.7 million in the Central Activities Zone (CAZ) and the North Isle of Dogs; 1.8 million people in Inner London and 2.5m people in Outer London (the Central Activities Zone is defined as the highlighted area in Figure 4.1). These projections represent a 24% growth across London as a whole; 28% growth in the CAZ; a 29% growth in Inner London; and a 16% growth in Outer London.

4.5 Latest projections by the Office for National Statistics (ONS)<sup>11</sup> forecast that the UK population will rise by 5.5% between 2016 and 2026, to 69 million. London is the fastest growing region and by 2026 its population is expected to reach 9,543,000, a 9% increase on its 2016 level. The South-East (the TfSE area plus Oxfordshire, Buckinghamshire and Milton Keynes) is anticipated to be the fourth-fastest growing region in England with a forecast population increase of 6.4%, and an additional 574,000 people by 2026, giving a population of 9,605,000.

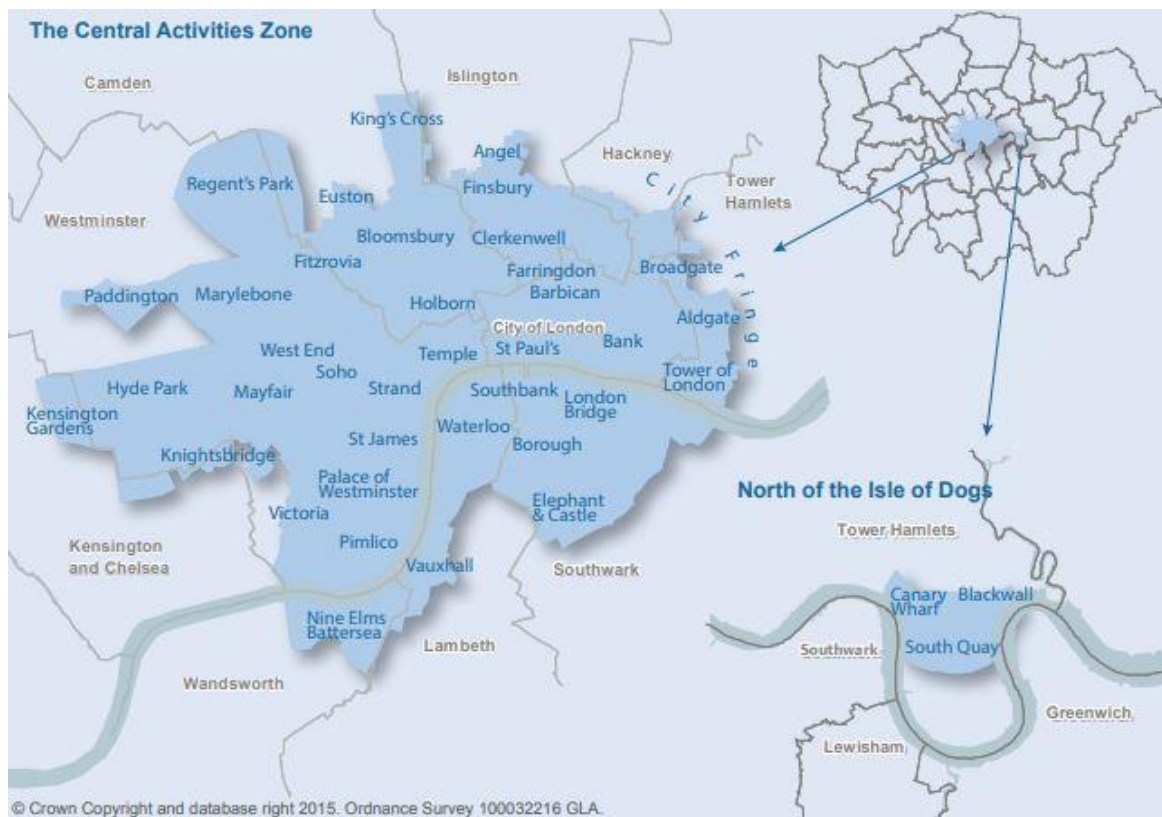
4.6 During the morning peak it is estimated, in the ONS data, that traffic levels will reduce by 15% across London as a whole by 2041, with a commensurate reduction of 23% in Central London, 27% in Inner London and 12% in Outer London. By contrast, in the London Plan Core Reference Case scenario, it is estimated that there would be an 8% rise in traffic across

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<sup>11</sup>Source: ONS, [Population Projections](#), 2016

London, with: a 9% rise in Outer London; a 3% rise in Inner London; and a 4% reduction in Central London.<sup>12</sup>

**Figure 4.1: The London Central Activities Zone (CAZ)**



<sup>12</sup> [Strategic Transport Modelling](#), Transport for London, 2017

### Strategic Transport corridors

- 4.7 A significant volume of the Strategic Housing Land Availability Assessment sites within London are located within London's Opportunity Areas. The London Plan recognises the importance of wider infrastructure to support development in the Opportunity Areas and identifies thirteen strategic Infrastructure priorities. The strategic Infrastructure priorities that will have an impact on movement between the TfSE area and London are detailed below.

**Table 4.1: Key connections between the TfSE priority corridors and the London Plan/MTS corridors**

Strategic priority infrastructure	Homes	Jobs	Potential impact on TfSE economic corridors
<b>Bakerloo Line Extension</b>	33,500	14,000	<p>The Bakerloo Line extension will connect central and Inner London to the South East in the medium term. In the long term, extension via Lewisham to Hayes has the potential to free up capacity for six more heavy rail paths into London Bridge on the South Eastern Main Line.</p> <p>While the additional capacity may relieve congestion on the <b>A2-M2/Chatham Mainline</b> and the <b>A20-M20/HS1</b> economic corridors, the additional development planned in these corridors will put additional pressure on the transport network which serves these corridors inside the boundaries of London.</p>
<b>Crossrail 2 South West</b>	16,500	13,500	<p>Crossrail 2 will connect Cheshunt in the north east of London with Wimbledon in the South West. There are some additional spurs planned which are in Surrey or on the Surrey border.</p> <p>One of the key objectives of Crossrail 2 is to free up capacity on the South Western Mainline therefore this will provide relief on the <b>M3/Southwestern Mainline</b> and <b>A3/Portsmouth Direct Line</b> economic corridors.</p>
<b>Thames Estuary Corridor (Kent Thameside)</b>	127,000	115,000	<p>The Thames Estuary Growth corridor includes a number of major transport projects connecting with the TfSE area, including the Lower Thames Crossing, the south-eastern branch of Elizabeth Line to Abbey Wood, and a proposed Elizabeth Line extension to connect Ebbsfleet and Dartford via Abbey Wood, through the Thames Estuary area.</p> <p>This transport infrastructure will provide relief to the <b>A2/Chatham-Ramsgate Mainline</b> economic corridor as well as the <b>M25</b> economic corridor. The significant number of jobs forecast in this area has the potential to change travel patterns from the areas served by the <b>A2/Chatham-Ramsgate Mainline</b> economic corridor stimulating an increase in commuting north of the River Thames where the majority of this new commercial development will be located.</p>



Strategic priority infrastructure	Homes	Jobs	Potential impact on TfSE economic corridors
<b>Elizabeth Line West (to Reading &amp; Heathrow)</b>	50,000	38,000	<p>The Elizabeth Line West will connect Reading and Heathrow via Old Oak Common. This will provide significant levels of relief on the <b>M4/Great Western Mainline</b> economic corridor. It will also connect some Opportunity Areas which are served by the <b>A322-A329/North Downs Line</b> economic corridor.</p> <p>The strength of the IT and Professional Services sectors in the areas served by these two corridors combined with improved connectivity from areas of west London to <b>Reading, Maidenhead, Slough, Bracknell</b> and <b>Blackwater Valley</b> has the potential to stimulate an increase in out commuting from the new residential developments stimulated by the Elizabeth Line West. This would increase demand on these corridors.</p>
<b>Trams Triangle / Gatwick</b>	19,500	14,000	<p>The Tram Triangle currently connects Wimbledon and Croydon via the A23, with rail connections to Surrey and Brighton. Gatwick is connected to London By Thameslink, Southern and Gatwick Express. The transport schemes planned will provide little relief for the <b>A23-M23/Brighton Mainline</b> as the movements facilitated are quite local and are aimed at providing improved first mile last mile connectivity.</p> <p>However, the commercial and residential development planned in this area will add congestion to this corridor which is already severely congested in the peak.</p>

### The Mayor of London's Transport Strategy

- 4.8 The Mayor of London's Transport Strategy (MTS) was adopted by the Mayor and London Assembly in March 2019, in advance of the new London Plan, replacing the previous MTS from 2010.
- 4.9 Its principal focus is on setting out the policies, initiatives and schemes which will improve the transport network in London. However, millions of commuters from the TfSE area travel to London every weekday to their place of work, on business, and for leisure purposes. Equally, there is significant overlap between the transport network of London and of the TfSE area. Therefore, some of the policies outlined in the Mayor's Transport Strategy will have an impact on movement between London and the TfSE area.
- 4.10 Some of the key policies which may influence the transport network of the TfSE area are summarised below.

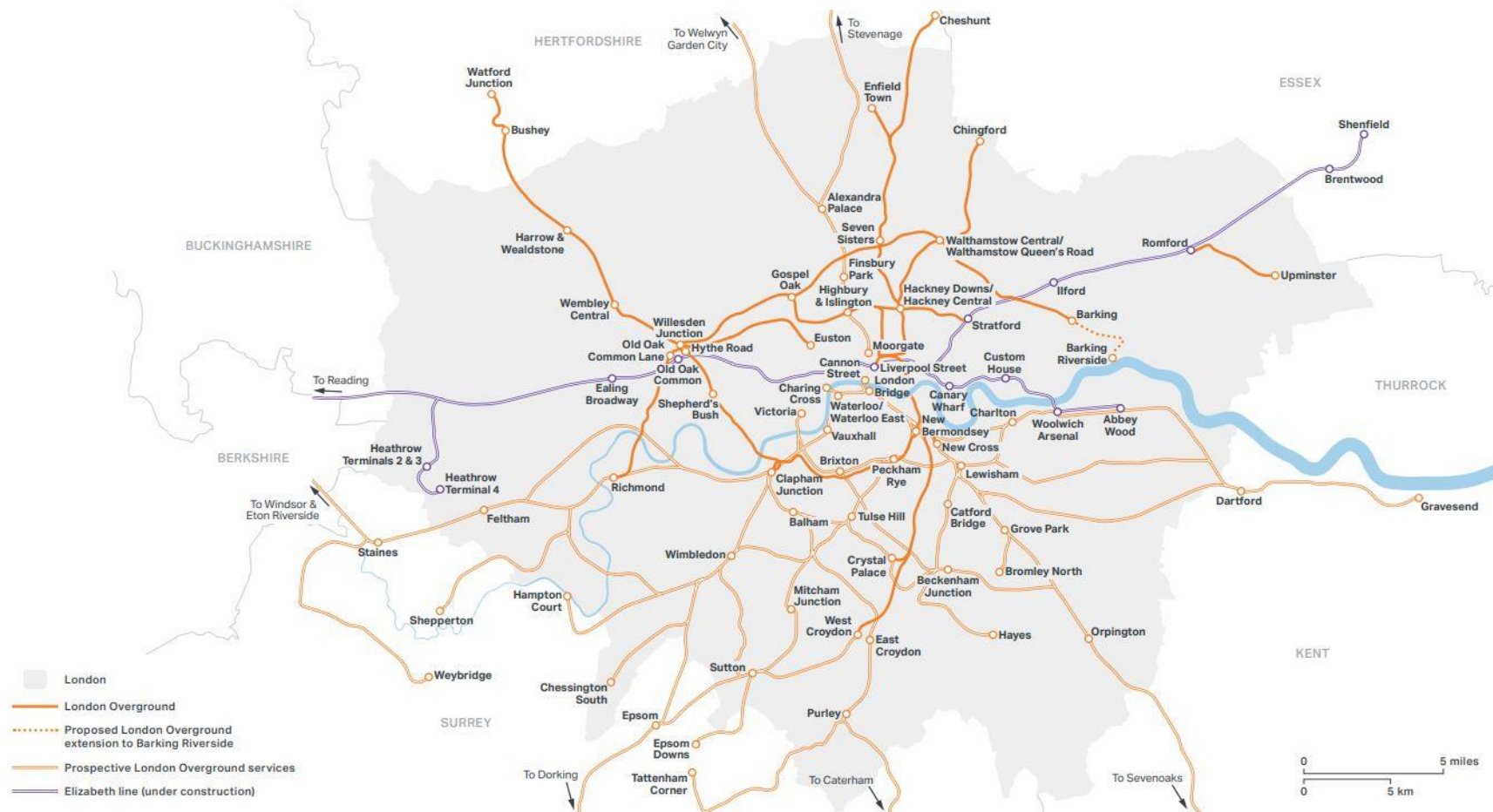
#### Devolution of suburban rail services to Transport for London

- 4.11 TfL are seeking to assume control from Department for Transport of the specifications of local suburban passenger rail services in London that currently form part of the South Eastern,

South Western, Southern and Great Northern franchises. A strong business case has been made that devolution of these services would make the creation of a London suburban metro much simpler and faster and would provide greater benefits for Londoners and visitors alike. However, concerns have been raised about this scheme and it does not have support at a Central Government level.

- 4.12 If realised, the benefits of such an approach as outlined in the Mayor's Transport Strategy would include:
- improved reliability;
  - increased service frequencies at off-peak times, especially at weekends;
  - improved station quality and service with staffing from first to last trains, and a cleaner, brighter environment;
  - more integrated travel advice and improved information, as well as a move towards more affordable, simple and integrated fares over time; and
  - an increased availability of step-free access and 'turnup- and-go' travel for wheelchair users.
- 4.13 **Potential impacts:** With devolution, if this were to be accepted by the Government, TfL's role would be restricted to selected local passenger services within the London area or slightly beyond where the geography and operation of the railway network requires it. Passengers using longer-distance services, which would remain the responsibility of the DfT through the current franchising system, would be unaffected in terms of fares, train stopping patterns or relative priority of services. TfL would have no ability to alter their timetables, although TfL estimates there would be beneficial knock-on reliability improvements as a result of devolving local stopping services to TfL.
- 4.14 Figure 4.2 below shows the assumed geographic scope of the local stopping services that would transfer to TfL if devolution proposals put forward to the Government are progressed.

Figure 4.2: Geographic scope of the local stopping services that would transfer to TfL under devolution



### **Making the most of London's rail network for freight and passengers**

- 4.15 With increasing demand and constrained capacity on the London rail network, TfL is seeking to maximise the capacity that is available for both passengers and freight. Currently, parts of the London Overground network are shared with freight trains from Felixstowe and London Gateway or HS1. The different acceleration and speeds of passenger and freight trains reduces capacity for both services. More efficient use of the network for both passengers and freight could be made by scheduling freight services (as well as engineering and other non-passenger trains) to avoid peak periods of passenger demand on the Overground network, running them at quieter times.
- 4.16 However, there is also a recognition that large volumes of freight traffic travelling from one side of London to the other, (for example, freight from the Eurotunnel at Folkestone and bound for the West Midlands and North Wales) is currently routed through Inner London.
- 4.17 TfL plans to work to encourage the DfT and Network Rail to upgrade orbital rail routes outside London so that non-London rail freight can be taken around London, thereby freeing up rail paths through the capital for additional passenger services and freight trains that serve London.
- 4.18 **Potential impacts:** An increase in freight use of the orbital routes of the TfSE area (such as the North Downs Line) to free up capacity in Inner London would result in a reduction in track capacity on the rail network of the TfSE area. However, upgrading of railway lines to enable more freight to be transported by rail would reduce the level of freight highway demand on the road network, reduce congestion and have a positive environmental impact.

### **Road user charging**

- 4.19 TfL is investigating proposals for the next generation of road user charging systems. These could replace schemes such as the Congestion Charge, Low Emission Zone and Ultra Low Emission Zone. More sophisticated road user charging or workplace parking levy schemes could be used to contribute to achieving mode shift, casualty reduction and environmental objectives, and to help reduce congestion on the road network and support efficient traffic movement. In doing so, TfL will consider the appropriate technology for any future schemes, and the potential for a future scheme that reflects distance, time, emissions, road safety and other factors in an integrated way.
- 4.20 **Potential impact:** Road user charging is currently reserved for Central London and from 2021, the most polluting vehicles will be subject to a charge for entering the area within the North and South Circular. If the geographical scope, level of charging or type of vehicles which are being discouraged, were to change and increase the charge on motorists, this would potentially reduce the numbers of people travelling by car to London. This would result in reduced volumes on the arterial highway corridors linking London and the TfSE area.

## Major schemes

### Crossrail 2

- 4.21 Crossrail 2 is a proposed north east-south west rail link across London, which would connect the South Western Main Line to the West Anglia Main Line. It is intended that the line will be open in the early 2030s. However, the current delays in opening the Elizabeth Line and cost over-runs have the potential to delay this date.<sup>13</sup> Crossrail 2 has been designed to benefit London's agglomeration driven economy, which relies on commuter flows from the South-East. The project, which has yet to secure the necessary funding, should allow significantly quicker journey times for commuters travelling from the TfSE area to key employment sites in the centre of London. It should also help to alleviate the strain on South Western inner suburban rail routes into London Waterloo from parts of Surrey, which are currently operating close to maximum capacity.<sup>14</sup>
- 4.22 The line will also provide better connectivity north of London, to areas such as the upper Lea Valley. In the long run this will open up these areas for housing development, which may redistribute some demand for commuter rail services away from the TfSE area.
- 4.23 **Transport impacts:** Crossrail 2 would provide significant additional rail capacity to Central London, over 10% more than current levels. This would allow the transportation of over 90,000 passengers per hour on average, and over 270,000 more passengers per hour during the peak period. This should ensure that hundreds of thousands more people live within a one-hour radius of employment sites across London.<sup>15</sup>

### Crossrail (Elizabeth Line) extension to Ebbsfleet

- 4.24 The original plans for the Crossrail/Elizabeth Line suggested that the line would continue to Ebbsfleet, which could provide opportunity for interchange with HS1. However, as part of a review of the Crossrail business case in 2004 it was decided that the line should terminate at Abbey Wood.
- 4.25 The curtailment has been opposed by the Thames Gateway Kent Partnership and the 'Crossrail to Ebbsfleet' campaign.<sup>16</sup> These groups have recently submitted a Strategic Outline Business Case to HM Treasury and DfT which outlines the potential benefits that could be brought by extending Crossrail to Ebbsfleet.<sup>17</sup>
- 4.26 **Transport impacts:** The proposed extension would provide direct connectivity from northern Kent to Central London, Canary Wharf, London City airport and Heathrow. Currently Bexley is one of only two London boroughs not served by tube or tram. Consequently, journey times from Dartford to Central London by train are approximately 52 minutes, one of the worst

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<sup>13</sup> Source: [TfL Board Meeting papers, 30<sup>th</sup> January 2019](#)

<sup>14</sup> Source: Crossrail 2 [website](#) (Accessed 22<sup>nd</sup> February 2019)

<sup>15</sup> Source: [Crossrail 2 Delivering Growth in London and the South East](#) (Crossrail 2 Growth Commission, 2016)

<sup>16</sup> Source: Thames Gateway Partnership, Crossrail to Ebbsfleet [website](#) (Accessed 22<sup>nd</sup> February 2019).

<sup>17</sup> Source: Thames Gateway Partnership, Crossrail to Ebbsfleet news [website](#) (Accessed 22<sup>nd</sup> February 2019)



journey times within the boundary of the M25. The extension would markedly improve this journey time.<sup>18</sup>

- 4.27 The line would have the potential to encourage modal shift from car to rail. For example, currently two million private car trips are made between Kent and Heathrow each year. The direct connection provided by the link will significantly reduce this figure. The Dartford Crossing is a current bottleneck on the highway network. Mode shift away from the private car stimulated by this project will help to relieve pressure on this part of the network.<sup>19</sup>

#### **Heathrow Airport Third Runway**

- 4.28 Heathrow Airport is the UK's main hub airport and its success is critically important for the UK economy. The airport is operating at close to 99% capacity. Since the 1970s, there have been calls to expand this capacity through developing a third runway.<sup>20</sup>
- 4.29 Following an independent review led by Howard Davies, in October 2016, the Government announced that it now supported developing a third runway at Heathrow Airport. The Airports National Policy Statement (NPS) will be used as the primary basis of making decisions on any development consent application for the Heathrow scheme.<sup>21</sup>
- 4.30 **Transport impacts:** The construction of the third runway will have a significant impact upon surrounding road and rail infrastructure, which will need modification to deal with these impacts. As part of the construction of the runway the M25 will need to be moved 150 metres to the west and lowered seven metres into a tunnel under the runway. Although Heathrow Airport and Highways England are working together to ensure that disruption to travel is minimised, the requirement for road closures and diversions will cause disruption to traffic flows.<sup>22</sup> The volume of passenger flows through the airport will markedly increase due to the construction of the runway. Heathrow Airport estimates that construction of the third runway will provide for growth of between 22 and 51 million passengers and between 67 and 192 billion passenger-kilometres by 2050. This will have an impact not only for Heathrow, but on airports around the country which will need to accommodate this increase in passenger flows.<sup>23</sup> The impact of Heathrow expansion may be reduced if there is construction of a second runway at Gatwick, a scheme which is currently being considered by the Airport. This would have the potential to attract trips which currently depart from Heathrow, to Gatwick.
- 4.31 Some of the surface transport which serves Heathrow is already overcrowded. For example, The M25 experiences significant congestion and the Piccadilly Line, one of the key access routes to the airport, already sees overcrowding at peak times. The extension of the Elizabeth Line/Crossrail 1 to Heathrow will help to alleviate some of this overcrowding, but additional

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<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Source: History and Policy [website](#) about the Treasury and London's third airport (accessed 22<sup>nd</sup> February 2019).

<sup>21</sup> Source: [Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England](#), (Department for Transport, 2018)

<sup>22</sup> Source: [Heathrow Airport Public Consultation](#), (Heathrow Airport, 2018)

<sup>23</sup> Source: [Airports Commission: Heathrow Airport North West Runway: Business Case and Sustainability Assessment](#), (Airports Commission, 2014)

capacity, including delivering rail access from different corridors will be required if this issue is to be fully addressed.

### Heathrow Rail Connections

- 4.32 The planned Heathrow airport expansion will require concurrent improvements in surface capacity. This will be provided by the opening of the Elizabeth Line in 2020 or 2021, the Western Rail Link to Heathrow, and the proposed Heathrow Southern Rail link.
- 4.33 The Western Rail Link to Heathrow will form a connection between the airport and the Great Western Main Line. This link will allow trains to run westward towards Reading, Slough, and the wider Southwest. Finalised plans are being published in early 2019, and it is expected that the scheme will be completed by 2024. The Heathrow Southern Railway is a proposal for a new railway which will link Heathrow airport to the Southwestern Mainline. Plans for the railway were announced in 2017, and it is hoped that the line will be completed between 2025 and 2027. The project is expected to cost between £1.3bn and £1.6bn and will be privately financed.<sup>24</sup>
- 4.34 **Transport impacts:** In combination, it is expected that these schemes provide significantly better connectivity between Heathrow and the TfSE area. This should help to alleviate strain on road links such as the M25 and the M3 and ensure that as the Airport expands it does not become limited by the surrounding transport links.

### New Lower Thames Crossing

- 4.35 The lower Thames is currently a key strategic bottleneck on the highway network. Freight traffic, travelling from Dover and heading North of London must use this route, or travel a substantially longer distance around the west of the city along the M25. Currently the crossing has capacity for four lanes of traffic in each direction and is used by approximately 130,000 vehicles daily.
- 4.36 The new Lower Thames crossing was confirmed in 2017. It will consist of a tunnel crossing the River Thames from East of Gravesend and Tilbury. It will be connected north of the river to the M25, and south of the river will connect directly to the A2. It is expected that the crossing will be opened in 2027.
- 4.37 **Transport impacts:** The crossing will expand the capacity of the current Thames crossing at Dartford by over 90%<sup>25</sup>. Traffic which is moving from Dover up the A2 will be able to cross the river Thames before reaching the M25, which will take significant pressure off junction 2 of the M25. Freight traffic coming from Dover will consequently be encouraged to take the A2, as opposed to the M20. This will lead to a significant increase in the flow of traffic moving along the A2, which is currently not built to dual carriageway standard at its eastern end, and so in period of peak demand may be subject to severe congestion.

### Brighton Mainline

- 4.38 The Brighton Mainline, which connects London, Gatwick Airport, Crawley, Burgess Hill, Haywards Heath and Brighton, is currently undergoing a major series of improvements. They are part of a £300 million investment programme which aims to improve the reliability of the rail network in the TfSE area. The improvements will focus predominantly on the tunnels at

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<sup>24</sup> Source: Heathrow Southern Railway Funding [website](#) (Accessed February 22<sup>nd</sup> 2019)

<sup>25</sup> Source: Highways England [website](#) about Lower Thames Crossing (accessed 22 February 2019)

the southern end of the line and the provision of better electrification and signalling infrastructure. Additionally, remodelling of the ‘Selhurst triangle’, which is one of the most congested bottlenecks on the rail network, and improvements to East Croydon station should help to “unblock the Croydon bottleneck”, improving the overall efficacy of the line.<sup>26</sup>

- 4.39 **Transport impacts:** The line carries over 300,000 people per day and these improvements will make their journeys easier and more reliable.<sup>27</sup> The corridors include Brighton & Hove and Crawley/Gatwick from which there are significant levels of business travel demand. Industrial sectors concentrated within these Major Economic Hubs include Financial Services and the Creative sector in Brighton & Hove and Professional Services in the Gatwick Diamond around Crawley.

### Local Transport Plans

- 4.40 Each Local Transport Authority in England has an obligation to produce a Local Transport Plan (LTP) for their area. An LTP should:
- outline the baseline situation for transport, accessibility and air quality;
  - set objectives and a programme of policies, programmes, projects and initiatives to realise them; and
  - outline bids for funding from the Department for Transport.
- 4.41 The relationship that each area has with London and how this affects transport opportunities, challenges and priorities (as identified in each LTP) are outlined in the Table 4.2 below.

**Table 4.2: Transport Opportunities, Challenges and Priorities relating to London, Local Transport Plans**

Local Transport Authority	Transport Opportunities, Challenges and Priorities
Bracknell Forest	<ul style="list-style-type: none"> <li>• Supporting rail infrastructure and service improvements on the Reading to London Waterloo line is a priority.</li> </ul>
Brighton & Hove	<ul style="list-style-type: none"> <li>• International hubs such as Gatwick Airport and Newhaven and Shoreham ports are key to providing access for visitors from London.</li> <li>• Capacity and reliability on the Brighton Mainline is key to supporting jobs and growth between Brighton &amp; Hove, Crawley/Gatwick and London.</li> </ul>
East Sussex	<ul style="list-style-type: none"> <li>• Connectivity between Uckfield and Hastings to London is restricted by shortcoming in rail infrastructure, such as sections of single track, routes which cannot accommodate electric trains and inadequate signalling. Lobbying for targeted improvements to address this is a priority, such as the electrification and dual tracking of the Uckfield line and Hastings to Ashford line.</li> <li>• Capacity problems in the London termini and on the Brighton Main Line likely to arise in the next 15 years will affect train services. Lobbying for targeted rail improvements to address this is a priority, such as increased capacity on the network serving London termini and new stations at Glyne Gap, Wilting, Stone Cross/North Langney and Polegate.</li> <li>• Lobbying for improvements to the strategic road and rail networks to help business connectivity to London is a priority.</li> </ul>

<sup>26</sup> Source: National Rail, Unblocking the Croydon bottleneck [website](#) (Accessed 30<sup>th</sup> April, 2019)

<sup>27</sup> Source: National Rail, Brighton main Line Improvement Project [website](#) (Accessed February 22<sup>nd</sup> 2019)

Local Transport Authority	Transport Opportunities, Challenges and Priorities
Hampshire	<ul style="list-style-type: none"> <li>• Out-commuting and long-distance commuting is a principal challenge for North Hampshire, due to its strategic location and the attraction of London.</li> <li>• Increasing capacity on the main line rail corridor from Southampton and Basingstoke towards London and better rail access to international airport hubs is a priority.</li> <li>• Smart Motorway schemes on M27 and M3 to improve journey time reliability. Port of Southampton forecast to see large increase in cruise passengers and deep sea container traffic.</li> </ul>
Isle of Wight	<ul style="list-style-type: none"> <li>• The rail connection at Ryde Pier head offers a good connection via the catamaran to the mainland rail network, which provides links to London.</li> </ul>
Kent	<ul style="list-style-type: none"> <li>• East Kent has opportunity for growth but is beyond the 'magic hour' time from London, discouraging employers from locating in the area. Regeneration in East Kent is dependent on improving this through schemes such as Thanet Parkway railway station.</li> <li>• The announcement of the Government's preference for a third runway at Heathrow makes connectivity to the London airport system increasingly important. Schemes such as an extension of Crossrail to Dartford and Ebbsfleet and the reinstatement of a direct service from Tonbridge to Gatwick Airport via Edenbridge are prioritised for achieving this.</li> <li>• Rail commuting services into London need to be maintained and improved to satisfy growing demand, such as services from Sevenoaks and the Cannon Street services from Tonbridge. Significant out-commuting from Gravesham to Dartford and Central London also causes congestion and poor air quality.</li> <li>• High Speed rail services have reduced journey times to London but there is a need for more capacity to accommodate growing demand. Dover District Council will also press for a journey time of less than 1-hour between Dover and St Pancras, additional capacity on the route and investigation into a new Whitefield Station. Improving access to Ebbsfleet International (via public transport and cycling/walking) is also identified as a challenge.</li> </ul>
Medway	<ul style="list-style-type: none"> <li>• Recent investment in infrastructure includes the Medway Tunnel, widening of the M2 and the High-Speed Rail Link from the Channel Tunnel to London, which have improved external connectivity including to and from London.</li> <li>• In response to high levels of out-commuting from Medway to London, future priorities will focus on working with coach bus operators to improve coach park and ride (to support services whilst maintaining local residential amenity).</li> </ul>
Portsmouth	<ul style="list-style-type: none"> <li>• Efficient connectivity to London is essential for development and regeneration to occur.</li> </ul>
Reading	<ul style="list-style-type: none"> <li>• The Great Western Main Line railway runs east to west through Reading, with services from Reading Station providing fast links to London.</li> <li>• There is good connectivity between London and Reading, which creates a mutually supportive economic relationship that enables regional economic development.</li> </ul>

Local Transport Authority	Transport Opportunities, Challenges and Priorities
Slough	<ul style="list-style-type: none"> <li>Many passengers use Slough's three stations (5.5 million in 2007/08), of which some two million were between Slough and London Paddington, making Slough the busiest suburban commuter station into Paddington.</li> <li>The continued success of London Heathrow Airport is identified as critical to the economic prosperity of Slough.</li> </ul>
Southampton	<ul style="list-style-type: none"> <li>Port of Southampton is forecast to see a large increase in cruise passengers and deep-sea container traffic.</li> <li>Potential improvements under consideration include increasing capacity on rail services into London, longer freight trains and direct rail access to Heathrow.</li> <li>Highways England's Smart Motorway schemes on the M27 and M3 will help to improve journey time reliability and benefit users of the port.</li> <li>There is potential to encourage modal shift of passengers and freight from road to rail and public transport. There is opportunity to deliver local rail services at 'metro' frequencies and improve interchanges at stations.</li> </ul>
Surrey	<ul style="list-style-type: none"> <li>Surrey's strategic road network has evolved principally to serve London, with several nationally important routes passing through the county, including the M3, M23, M25 and the A3.</li> <li>Rail movements to and from Central London are well catered for via the main London to Brighton line, London to Portsmouth/Southampton services and various secondary and branch line services.</li> <li>A quarter of Surrey working residents out-commute to London, putting growing pressure on the transport network.</li> </ul>
West Berkshire	<ul style="list-style-type: none"> <li>Increasing capacity on peak hour Great Western Main Line services to Reading and London is a priority.</li> <li>Plans for improvements to the rail service through electrification of the Great Western Main Line from London through to Newbury (and the line to Oxford through Pangbourne) will enable the introduction of emission free trains.</li> <li>There is daily congestion on the main strategic road network, particularly on the M4 eastwards towards Reading and London. Improving linkages and dealing with congestion will be vital to maintain the economic competitiveness of both the District and the wider Thames Valley economy.</li> </ul>
West Sussex	<ul style="list-style-type: none"> <li>Capacity constraints on the railway are a major issue, particularly on peak time services to and from London. Running additional and longer trains is identified as a potential solution.</li> <li>There is poor rail connectivity between Gatwick to the Thames Valley and areas north of London, and to the east and west. Rail services between Arun and London are perceived as slow. Additionally, due to the location and spacing of stations on the Arun Valley Line, many commuters make substantial journeys to get to the nearest rail station.</li> <li>The A24 is an alternative to the A23 as a key north-south route to London, but there are high casualty rates between Ashington and Southwater.</li> <li>Identifying further possible schemes to improve the M23/A23 strategic road corridor between Brighton and London (and access to these) is a priority.</li> </ul>



Local Transport Authority	Transport Opportunities, Challenges and Priorities
Windsor and Maidenhead	<ul style="list-style-type: none"> <li>• The area has good connectivity to London via the strategic road and rail networks, with the M4 running through the middle of the Borough and the M3, M25 and M40 within easy reach. Maidenhead is on the Great Western Main Line, connecting to London Paddington, and Windsor and Eton Riverside is the western terminus for services from London Waterloo.</li> <li>• There is a forecasted 30% increase in rail commuters travelling to London by 2031. Even with additional capacity provided at Reading station and by Crossrail, it is predicted that there will be a shortfall of around 5,200 seats in the peak hour resulting in significant overcrowding between Reading and Maidenhead.</li> <li>• While there are comprehensive public transport connections to Heathrow from London and the east, there is no direct rail link from the west and public transport access from Thames Valley is confined largely to bus and coach.</li> <li>• Maidenhead will be the western terminus for Crossrail, which will provide direct train services to Central London and the financial district.</li> </ul>
Wokingham	<ul style="list-style-type: none"> <li>• The existing highway provision is well developed within and surrounding the borough. The M4 passes through the centre and the M3 lies to the south, with the A3290/A329 (M)/A322 corridors connecting to provide direct access to London, Heathrow and the West. Further to the east, the M25 provides a strategic network linking corridors radiating from London.</li> <li>• Improving the Reading to Waterloo rail line is a priority, as the current service suffers from overcrowding, poor service frequency and excessive journey times. As a result, there is suppressed rail demand in the Borough with many residents choosing to drive to alternative stations.</li> <li>• Given the lack of a direct link to Heathrow Airport, Thames Valley Business Park spends in excess of £100,000 on taxi bills per year. It is essential that convenient and direct access is provided for the area to remain economically competitive.</li> <li>• To maintain the Borough' economic competitiveness maintaining and improving access to key hubs such as London is important. The main priority in improving access is by improving the opportunity to use public transport.</li> </ul>

## Strategic Economic Plans

- 4.42 Regional economic policy is set out in Strategic Economic Plans (SEPs), which are developed by each of the five LEPs in the region. These plans outline each LEP's vision and strategic priorities for their region up to 2020/21. The first round of SEPs were published by each LEP in 2014. These are currently being updated to reflect the emerging Industrial Strategy (described under "National Policy Context"). The next round of SEPs will outline a vision to 2030.
- 4.43 A summary of the opportunities, challenges and priorities relating to each region's relationship with London (for the most recently published SEPs<sup>28</sup>) and how this might impact travel patterns is presented in Table 4.3.

**Table 4.3: Transport Opportunities, Challenges and Priorities relating to London, Strategic Economic Plans**

Local Enterprise Partnership	Transport Opportunities, Challenges and Priorities
<b>Coast to Capital</b>	<ul style="list-style-type: none"> <li>Approximately 59% of people who commute out of the area for work travel to London and 10% of the area's working age population commute to London every day. There is a long tradition of commuting into London from towns such as Reigate and Dorking, but this has now extended to coastal towns such as Worthing, Newhaven and Shoreham. 27,000 people commute into London every working day between 8am - 9am, with this expected to grow to 38,000 by 2043.</li> <li>The area has become over-reliant on the London labour market to provide employment opportunities, with ever-rising numbers of commuters pushing rail infrastructure to its limits. Enhancing connectivity will help to reverse the trend of the towns becoming dormitory towns for London, by encouraging growing businesses to locate in the area and bringing high quality jobs to local people.</li> <li>The growing dependency on London also serves to feed growing inequality within the area. People who cannot access the London labour market are more likely to have lower skills, lower income and less opportunity.</li> <li>Investment in rail schemes that provide connectivity to London (such as the Brighton Main Line and Crossrail 2) is a priority for achieving a state-of-the-art digital railway and relieving the pressure of growing commuting into London.</li> <li>Wider transport infrastructure in the area needs further investment to improve links to London. The quality of the area's rail services is a well-documented and ongoing issue, but the upgrade of major transport corridors, including the M23/A23 is also pressing.</li> </ul>

<sup>28</sup> At the time of writing an updated SEP was not available for South East and Solent.

Local Enterprise Partnership	Transport Opportunities, Challenges and Priorities
<b>Enterprise M3</b>	<ul style="list-style-type: none"> <li>• London is ‘overheating’ and the area is taking advantage of the opportunities provided by its close proximity to London’s economic area. Enterprise M3 has a very mobile population, with nearly 60,000 people per day commuting to London.</li> <li>• A high-quality transport infrastructure connecting markets, people and goods within the area to London (and internationally) is critical for attracting and retaining businesses and highly skilled residents, and improving productivity.</li> <li>• Whilst links to London are good in some areas, in others journey times are long when compared to other parts of the TfSE area. Specifically, none of the LEP’s ‘Growth’ or ‘Step-up’ towns has a peak rail journey time of half an hour or better to London except for Woking.</li> </ul>
<b>Solent</b>	<ul style="list-style-type: none"> <li>• The Solent benefits from close proximity and good road links to London, which comes with advantages such as supporting commuting and benefiting local businesses.</li> <li>• Although further from London by road than other parts of the TfSE area, it still takes less than two hours to reach the capital by train or car from most parts of Solent. National rail links are also strong with direct routes from both Portsmouth and Southampton to London (taking 106 minutes and 80 minutes respectively).</li> <li>• Congestion is an issue for those travelling into and out of the Solent. On the A3 (Portsmouth to London), traffic flow increased by 3% between 2005 and 2011 but delays per ten miles increased by 43%. On the M3 (Southampton to London), delays per ten miles have increased by 30% despite a decreasing flow of traffic.</li> </ul>
<b>South East (SELEP)</b>	<ul style="list-style-type: none"> <li>• The relationship with London is a central factor in the area’s economy, with over 270,000 people working in London (10.7% of working age residents). Many London companies rely on SELEP businesses to supply a wide range of goods and services. In the 21<sup>st</sup> Century, the Thames Gateway and the area will be London’s premier expansion location and the prospects for sectors linked to the London economy are strong.</li> <li>• There is a recognised need to invest in the Thames Gateway and the areas Coastal Communities to further contribute to the growth of the London economy.</li> <li>• The QEII Crossing and the Dartford tunnel is the only crossing of the Thames east of London, carrying around 50 million vehicles per year. Heavily congested, delays impede the movement of local traffic across the Thames Gateway, and increase pressure on the surrounding road network, particularly the M25, A13, A127 and A2.</li> <li>• The SEP identifies 12 transport growth corridors/areas, six of which are corridors into London: <ul style="list-style-type: none"> <li>– M11 London – Harlow – Stansted – Cambridge</li> <li>– A12 &amp; Great Eastern Brentwood – Chelmsford – Colchester</li> <li>– A13 Corridor – Thurrock – Canvey Island</li> <li>– A2/M2 Thames Gateway Kent</li> <li>– M20 London – Maidstone – Ashford Corridor</li> <li>– A21 London – Tonbridge – Tunbridge Wells</li> </ul> </li> <li>• Additional investment in rail and road infrastructure is essential for unlocking the full economic potential of these corridors. Many of the corridors have strong links with the London labour market, supporting substantial commuter flows which will increase further, especially once Crossrail is completed.</li> </ul>

Local Enterprise Partnership	Transport Opportunities, Challenges and Priorities
<b>Thames Valley Berkshire</b>	<ul style="list-style-type: none"> <li>Three features of the area's economy are highlighted as important: technology-based activity; the significance of internationalisation; and the role of the corporates. All three are seen as being inherently related to the area's strong relationship with London; but none of them reducible to it.</li> <li>The importance of the area's link with London cannot be overstated – particularly through the M4, the Great Western Mainline and the Reading to Waterloo Mainline.</li> </ul>

### Summary

- 4.44 The importance of the relationship between London and the TfSE area is reiterated throughout the LTPs and SEPs and improving connectivity between the two regions is a common priority. We have explored this further by outlining the opportunities, challenges and priorities that are common to these strategic documents below.
- 4.45 A large number of workers in the TfSE area commute into London daily, making the current Labour Market connectivity between the two regions essential for productivity. Nearly all of the LTPs recognise that rail commuter corridors in the area are under strain, resulting in overcrowding, poor service frequency and excessive journey times. This issue is likely to worsen as the population of the TfSE area continues to grow; the Enterprise M3 SEP notes that London is 'overheating' and as a result, surrounding areas are an attractive place for young people to live and work. Strategic investments in the rail network can unlock long-term capacity, supporting growth and creating the environment for increased housing development to take place without overcrowding the network further.
- 4.46 The LTPs and SEPs also highlight constraints on the strategic road network into London, such as on the A23-M23/Brighton Mainline, the M25 and A3/South Western Mainline corridors as well as the Dartford Crossing. This congestion impedes the flow of traffic and freight movements, which has a negative impact on business connectivity. As identified in the Coast to Capital SEP, improving access into London may also encourage businesses to locate in the TfSE area, as they will be able to retain access to the benefits of remaining relatively close to London (such as agglomeration benefits). Improved access to London could reverse the trend of towns in the TfSE area acting as 'dormitory towns' for London, by bringing high quality jobs and opportunities to local people. To prevent these communities becoming 'dormitory towns', transport improvement must come alongside wider investment packages, covering housing, employment space provision, education and the development of skills.
- 4.47 By encouraging businesses to locate in the TfSE area, individuals in rural areas and coastal communities who have less accessibility to London would also have increased opportunities, working towards reducing deprivation and rebalancing the economy. For example, the Kent LTP recognises that regeneration in East Kent is dependent on improving connectivity to London, as being beyond the 'magic hour' discourages employers from locating in the area. This will require improved connectivity on the M4/Great Western Mainline and the M3/South West Mainline to address connectivity to Heathrow from the Berkshire Local Transport Body area.
- 4.48 Connectivity to London Heathrow is also a recurrent theme of the LTPs, with the announcement of the Government's preference for a third runway emphasising this. Areas in the west such as Wokingham and Windsor and Maidenhead note that there is a lack of a direct link to the Airport, with access confined largely to bus and coach.



## Summary of key findings from analysis of the future evidence base and policy review

### Spatial development

- The location of the most substantial levels of housing development is typically in areas of the TfSE area that are the furthest away from London. Areas which border Greater London have comparatively lower levels of forecast housing development.
- The areas where the most significant levels of commercial development and consequent increase in jobs are in the M4/Great Western Mainline corridor.
- There are a number of areas which have a mismatch between housing and employment space growth. For example, North Kent is forecast to have high levels of residential development, but this is not matched by similar levels of planned commercial development. By contrast, in the M4 corridor high levels of commercial development are forecast, but this is not matched by similar levels of planned residential development. This will affect future commuting patterns including those between London and TfSE area.

### Rail

- An analysis of 2013 crowding levels demonstrates that the lines showing highest levels of overcrowding are the Brighton Main Line, South West Main Line and Great Western Main Line, though crowding on the Great Western Mainline will be mitigated to some extent by additional capacity provided by the Elizabeth Line.
- By 2026, there is forecast to be significant growth in demand on the arterial routes into London, but there are only a few instances where this will result in passengers from the TfSE area needing to stand from the time they board to the time they alight. These locations are Guildford, Woking, Redhill and Slough. The level of congestion is an average level of congestion across the three-hour peak period which means that there will be individual services within this three-hour peak that are both significantly more and significantly less congested than this average level.
- Beyond 2026 Network Rail's route studies have identified that all the arterial rail corridors will require a combination of rolling stock lengthening, signalling upgrade, electrification upgrades, platform lengthening and additional train services to handle capacity up to the mid 2040s.

### Highway

- By 2041, without intervention, there will be almost no sections of all the arterial roads connecting London to the TfSE area, as well as the M25, where there is capacity for growth in demand. The majority of links on the Strategic Road Network will be subject to delays of more than ten minutes per kilometre.
- The small sections of network where delays are not so severe are typically located in the areas of environmental protection including the South Downs National Park and the North Kent Downs Area of Outstanding Natural Beauty.
- As is observed in the current baseline data, when highway corridors enter Greater London the average delay per kilometre does not increase compared to the parts of the corridor which are outside of Greater London.

### Policies and schemes

- The housing growth aspirations of London are well supported by planned strategic infrastructure. While a considerable amount of the capacity delivered by this

infrastructure will be filled by additional demand from development in London, this will provide some relief on commuter routes between the TfSE area and London.

- Transport policies set out in the Mayor's Transport Strategy aim to reduce the use of cars in London. There is significant commuting by car from TfSE areas bordering Greater London and the Outer London boroughs. These policies have the potential to reduce the affordability or ease of commuting in this way.
- The majority of major schemes promoted by TfL and DfT in the TfSE area will add additional capacity onto the transport network and reduce highway congestion or rail network crowding on links between the TfSE area and London.
- The Local Transport Authorities and Local Enterprise Partnerships of the TfSE area all consider connectivity to London, by rail and road to be a priority for investment.

### **Economic outcomes of transport**

- **Business connectivity:** Forecast growth in jobs is focussed particularly in:
  - the M4/Greater Mainline Corridor where there is a concentration of economic activity in the IT Service sector;
  - the M3/South Western Mainline corridor where there is a concentration of economic activity in the Marine, Maritime and Defence sectors; and
  - the A2/Chatham Mainline Corridor where there is a concentration of economic activity in the Transport and Logistics sector.
- **Labour market efficiency:** The following factors have the potential to increase rail's commuter mode share for travel between the TfSE area and London:
  - highways becoming more congested in the AM and PM peak,
  - the Mayor's Transport Strategy seeking to reduce car use in London; and
  - planned major schemes driving an increase in rail capacity.
- **Enabling development:** Areas in the TfSE area where housing and commercial development is planned are forecast to have significantly increased levels of congestion and crowding on the transport network that serves them.
- **Accessing international gateways:**
  - Planned major schemes such as Heathrow Southern and Western Rail Access and Brighton Mainline improvements will improve connectivity to Gatwick and Heathrow Airport.
  - Upgraded railways allowing freight trains to operate on more orbital routes in the TfSE area will allow increased transportation of freight by rail from major international gateways such as Southampton and Eurotunnel.
- **Supporting deprived communities:** Major schemes planned will not provide improved connectivity to many of the most deprived communities in the TfSE area.

## 5 Implications for the Transport Strategy for the South East

- 5.1 This task has reviewed current and future transport and spatial planning data and the policies, schemes and initiative which will shape future patterns of movement between London and the TfSE area. The findings from this review have the following implications for the development of the Transport Strategy for the TfSE Area.

### Corridor prioritisation

#### Overcrowding on rail corridors

- 5.2 The current and future rail crowding analysis has shown that across all routes, crowding reaches high levels on the approaches to the London termini. However, the point at which high levels of overcrowding starts to occur varies, as some corridors have sufficient capacity into Inner London while some corridors in the high peak have passengers standing from as far out as Guildford. Experiences can also vary considerably depending upon whether the train is a fast or slow service.
- 5.3 By 2041, those corridors where all seats will be occupied within the TfSE area, are the Brighton Main Line, South Western Mainline and Great Western Mainline. This suggests there will be very little further capacity for growth in the near future without significant interventions on these corridors.

#### Constraints of London termini

- 5.4 One of the key constraints on capacity increases on the arterial railway lines between the TfSE area and London is the capacity of the existing London termini. Track or train capacity increases which would facilitate more passengers to travel to London from the TfSE area by train, may not be feasible due to constraints in station capacity at these London termini. The transport strategy must therefore consider alternative strategies for movement which can accommodate future growth or support Network Rail plans to redevelop key termini stations such as London Victoria.
- 5.5 As London expands and becomes better connected to Outer London rail nodes, opportunities arise to create new business centres further south, such as the rapid and dense transport-oriented development currently occurring in East Croydon. Schemes like the Elizabeth Line and its possible extension to Ebbsfleet; Crossrail 2; Western and Southern Rail Access to Heathrow; and connections to HS2 and the Overground at Old Oak Common are expected to create new economic centres on the fringes of London which would be attractive future employment locations. New and emerging centres of commerce in London and its suburbs will require more consideration as to what the key corridors to support business to business connectivity and labour market connectivity are. The transport strategy must carefully consider all planned future developments and remain flexible enough to adapt to new growth corridors as and when they emerge.

## Schemes for consideration

### Elizabeth Line extension to Gravesend

- 5.6 The Elizabeth Line has the potential to provide relief on the A2/Chatham Mainline corridor when it begins service at Abbey Wood in 2020 or 2021. Were the Ebbsfleet and Gravesend extensions to be realised in the longer-term further relief could be provided. However, Network Rail 2026 crowding schematics indicate that the Elizabeth Line will have 1-2 standing passengers per square metre shortly after departing its origin station at Abbey Wood. Were this to be extended to Ebbsfleet or Gravesend, the additional demand would worsen this crowding. The Transport Strategy will need to consider this when assessing options to accommodate the significant housing growth planned in the A2/Chatham Mainline corridor.

### SWML capacity improvements and Crossrail 2

- 5.7 The delivery of improvements at Clapham Junction and new flyovers at Woking and Basingstoke would enable additional train services to operate from areas of growth on outer suburban and mainline parts of the South West Main Line. This would alleviate forecast levels of crowding on these routes from Winchester and Guildford into central London. Further capacity improvements would require investment in Crossrail 2 to free up inbound track capacity from Clapham Junction and terminal capacity at London Waterloo.

### Optimising capacity on HS1

- 5.8 The analysis has shown that connectivity by both highway and rail from Key locations in East Sussex such as Hastings and Eastbourne are poor. It is likely that this is a factor in the level of deprivation experienced in these locations. High Speed 1 is operating at 50% capacity currently and while demand is forecast to grow, by 2026 there will be unused capacity on the line. At present, Network Rail is consulting with the government and local stakeholders to extend services on the High Speed Route to Rye, Hastings and Eastbourne via Ashford International, known as the Marshlink High Speed project. This project aligns with the objectives of Transport for South East and the Transport Strategy should consider making it a priority when assessing options to address lack of transport connectivity to deprived communities.

### Optimising capacity on the Elizabeth Line (Thames Valley)

- 5.9 Rail crowding analysis has shown that there is significant crowding on the Great Western Mainline travelling into London in the AM peak. By 2026 passengers boarding at Burnham will need to stand until they alight at London Paddington. At the same time there are significant levels of planned commercial development along this corridor which will increase demand on the local rail network including its branch lines. The arrival of the Elizabeth Line will bring additional capacity onto the M4/Great Western Mainline corridor. Investment into branch lines connecting to the Elizabeth Line will facilitate increased travel by rail both into London and to other Major Economic Hubs along this corridor including, Slough, Maidenhead, Reading and Newbury. The Transport Strategy should take account of this when assessing options for accommodating growth in jobs on the M4/Great Western Mainline corridor in a sustainable way.

### Brighton Main Line, East Croydon and Selhurst Triangle

- 5.10 To help improve reliability on the Brighton Main Line, Network Rail is undertaking planning for significant improvements to East Croydon station and the 'Selhurst Triangle' junction. This will involve the provision of two additional platforms, a larger concourse with improved facilities for passengers and better connections with the town centre and other transport links. In order

to improve the 'Selhurst Triangle' existing junctions will be removed and new flyovers and dive-unders will be constructed.

## Policies and initiatives

### Promoting social inclusion

- 5.11 If transport investment is prioritised based on where the highest flows occur, it is clear that areas of deprivation would not rank highly. While transport is only one factor influencing the prosperity or deprivation of a community, transport investment has an important role to play in increasing access to employment and skills. The prioritisation of transport investment must therefore balance the need to invest in areas which are already enjoying strong economic performance, with those that will require higher levels of external investment to stimulate their local economies. This external investment should aid regeneration, ultimately leading to increased demand to and from these areas.

### Transport meeting the needs of future housing and employment space growth

- 5.12 The forecasts of where jobs growth and housing development is planned within the TfSE area show that the areas of significant housing development are not necessarily the same areas, or close to the areas where jobs growth is expected to take place.
- 5.13 For example, the Ebbsfleet Development Corporation is planning for significant development in Ebbsfleet Garden City, and rail crowding growth projections to 2026 do not take this into account. If Ebbsfleet Garden City includes significant office developments and becomes a major labour market, there would be capacity on this route to accommodate the increase in demand that would result from this. However, if the development is mainly residential and residents rely on peak hour commuting to Central London, it risks not having sufficient sustainable capacity on the High Speed Route to accommodate this. The transport strategy must look to work with developers, encouraging transport-led development, rather than simply using transport to mitigate the impacts of poorly planned development.
- 5.14 A similar situation exists in north Kent and Medway on the A2 Chatham Mainline corridor where there are high levels of housing growth planned, which are not accompanied by high level of jobs growth. Conversely in the M4/Great Western Mainline corridor there are high levels of jobs growth forecast, but housing is not planned to grow to the same extent. This has the potential to drive an increase in long-distance commuting across the area. The transport strategy must carefully consider how it can best accommodate this, on a network which already sees significant daily commuting flows.



# Appendix A Commuting journeys by Mode

Figure .1: Commuting journeys to/from London by all modes combined

Source: ONS, Location of usual residence and place of work by method of travel to work, 2011

Transport Authority	To				From			
	Outer London	Inner London	Central London	Total	Outer London	Inner London	Central London	Total
Berkshire - Bracknell Forest	3,335	714	1,135	5,184	1,981	536	24	2,541
Berkshire - Reading	1,359	1,136	2,105	4,600	1,743	659	42	2,444
Berkshire - Slough	9,944	1,490	1,756	13,190	9,555	1,448	101	11,104
Berkshire - West Berkshire	887	732	1,423	3,042	718	363	38	1,119
Berkshire - Windsor and Maidenhead	5,794	1,854	3,445	11,093	3,643	1,094	100	4,837
Berkshire - Wokingham	2,508	1,133	2,089	5,730	1,582	627	35	2,244
Brighton & Hove	1,933	2,342	4,975	9,250	687	546	57	1,290
East Sussex	2,769	2,696	6,098	11,563	648	355	37	1,040
Hampshire	7,084	4,724	11,353	23,161	4,022	1,717	143	5,882
Isle of Wight	145	156	283	584	47	19	9	75
Kent	27,724	24,613	37,790	90,127	19,013	6,701	232	25,946
Medway	4,630	5,662	7,008	17,300	1,368	839	36	2,243
Portsmouth	472	268	550	1,290	260	138	17	415
Southampton	427	270	613	1,310	272	175	19	466
Surrey	67,024	22,524	44,651	134,199	54,729	10,664	638	66,031
West Sussex	7,360	4,866	10,985	23,211	6,207	2,137	182	8,526
<b>TOTAL</b>	<b>143,395</b>	<b>75,180</b>	<b>136,259</b>	<b>354,834</b>	<b>106,475</b>	<b>28,018</b>	<b>1,710</b>	<b>136,203</b>

**Figure .2: Commuting journeys to/from London by car/taxi**

Source: ONS, Location of usual residence and place of work by method of travel to work, 2011

Transport Authority	To				From			
	Outer London	Inner London	Central London	Total	Outer London	Inner London	Central London	Total
<b>Berkshire - Bracknell Forest</b>	3,042	290	199	3,531	1,577	245	3	1,825
<b>Berkshire - Reading</b>	871	161	152	1,184	1,003	157	9	1,169
<b>Berkshire - Slough</b>	8,021	602	319	8,942	7,311	739	40	8,090
<b>Berkshire - West Berkshire</b>	759	162	196	1,117	537	180	11	728
<b>Berkshire - Windsor and Maidenhead</b>	5,104	612	476	6,192	2,764	503	36	3,303
<b>Berkshire - Wokingham</b>	2,186	330	283	2,799	1,186	270	9	1,465
<b>Brighton &amp; Hove</b>	951	294	199	1,444	251	89	4	344
<b>East Sussex</b>	1,870	741	503	3,114	411	152	14	577
<b>Hampshire</b>	6,059	1,282	1,138	8,479	2,788	616	32	3,436
<b>Isle of Wight</b>	98	36	44	178	17	8	4	29
<b>Kent</b>	22,654	12,073	3,553	38,280	15,034	4,061	106	19,201
<b>Medway</b>	3,717	3,096	954	7,767	1,078	559	28	1,665
<b>Portsmouth</b>	300	83	86	469	148	60	3	211
<b>Southampton</b>	303	79	71	453	136	44	2	182
<b>Surrey</b>	53,299	7,282	3,502	64,083	39,234	4,512	138	43,884
<b>West Sussex</b>	5,244	1,154	781	7,179	4,001	811	36	4,848
<b>TOTAL</b>	<b>114,478</b>	<b>28,277</b>	<b>12,456</b>	<b>155,211</b>	<b>77,476</b>	<b>13,006</b>	<b>475</b>	<b>90,957</b>

**Figure .3: Commuting journeys to/from London by train**

Source: ONS, Location of usual residence and place of work by method of travel to work, 2011

Transport Authority	To				From			
	Outer London	Inner London	Central London	Total	Outer London	Inner London	Central London	Total
<b>Berkshire - Bracknell Forest</b>	181	368	837	1,386	245	172	15	432
<b>Berkshire - Reading</b>	295	856	1,764	2,915	491	350	31	872
<b>Berkshire - Slough</b>	522	598	1,019	2,139	805	480	37	1,322
<b>Berkshire - West Berkshire</b>	95	515	1,110	1,720	92	115	12	219
<b>Berkshire - Windsor and Maidenhead</b>	411	1,076	2,675	4,162	505	462	50	1,017
<b>Berkshire - Wokingham</b>	255	726	1,686	2,667	209	189	22	420
<b>Brighton &amp; Hove</b>	761	1,811	4,444	7,016	263	348	40	651
<b>East Sussex</b>	707	1,706	5,170	7,583	109	105	11	225
<b>Hampshire</b>	714	3,004	9,409	13,127	622	691	73	1,386
<b>Isle of Wight</b>	23	59	136	218	4	2	1	7
<b>Kent</b>	2,995	10,054	31,220	44,269	1,494	1,127	100	2,721
<b>Medway</b>	694	1,728	4,901	7,323	150	155	9	314
<b>Portsmouth</b>	78	115	350	543	50	47	7	104
<b>Southampton</b>	41	129	443	613	62	84	10	156
<b>Surrey</b>	5,990	13,005	38,582	57,577	7,070	4,520	403	11,993
<b>West Sussex</b>	1,693	3,380	9,658	14,731	1,268	968	129	2,365
<b>TOTAL</b>	<b>15,455</b>	<b>39,130</b>	<b>113,404</b>	<b>167,989</b>	<b>13,439</b>	<b>9,815</b>	<b>950</b>	<b>24,204</b>

**Figure .4: Commuting journeys to/from London by bus/coach**

Source: ONS, Location of usual residence and place of work by method of travel to work, 2011

Transport Authority	To				From			
	Outer London	Inner London	Central London	Total	Outer London	Inner London	Central London	Total
<b>Berkshire - Bracknell Forest</b>	14	7	11	32	33	31	0	64
<b>Berkshire - Reading</b>	106	28	45	179	53	32	1	86
<b>Berkshire - Slough</b>	980	83	104	1,167	888	39	3	930
<b>Berkshire - West Berkshire</b>	8	5	23	36	30	14	3	47
<b>Berkshire - Windsor and Maidenhead</b>	69	31	37	137	111	21	1	133
<b>Berkshire - Wokingham</b>	18	14	15	47	74	44	1	119
<b>Brighton &amp; Hove</b>	116	53	76	245	43	36	2	81
<b>East Sussex</b>	46	45	73	164	40	24	6	70
<b>Hampshire</b>	62	56	115	233	222	166	6	394
<b>Isle of Wight</b>	6	7	16	29	5	1	0	6
<b>Kent</b>	857	1,033	1,415	3,305	1,518	816	12	2,346
<b>Medway</b>	66	490	872	1,428	43	49	0	92
<b>Portsmouth</b>	40	21	19	80	8	4	0	12
<b>Southampton</b>	38	12	35	85	30	11	3	44
<b>Surrey</b>	3,660	229	197	4,086	4,720	500	15	5,235
<b>West Sussex</b>	146	53	86	285	433	92	2	527
<b>TOTAL</b>	<b>6,232</b>	<b>2,167</b>	<b>3,139</b>	<b>11,538</b>	<b>8,251</b>	<b>1,880</b>	<b>55</b>	<b>10,186</b>

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