Inner Orbital Area Study

Stage B Report

Version 2.0

May 2021

Contents

TRANSPORT FOR THE **South East**

Introduction

Structure of this Report

This report sets out the findings, insights and conclusions from Stage B of Transport for the South East's (TfSE) Inner Orbital Area Study. The work undertaken in Stage B is aligned with the first four steps of Department for Transport's Transport Appraisal Guidance (TAG). It presents an understanding of the current and future situation in the area, identifies the key issues and opportunities and set out the vision and objectives for the study. This report has four parts:

Part 1 summarises the current evidence base underpinning this area study. It is aligned with the requirements of TAG Step 1: Understanding the Current Situation.

It presents research and analysis sourced from policy documents, data, scheme promoters, and insights from stakeholders. It is presented in six parts:

- **Part 1a** summarises the national, regional, and local policies relevant to this study (more detail is provided in the Appendix).
- **Part 1b** describes demographic and economic trends.
- **Part 1c** describes social trends, including deprivation, collisions, and air quality.
- **Part 1d** describes environmental characteristics, including protected areas, heritage, flood risk, and landscape.
- **Part 1e** describes the road, railway, and international gateway networks that serve the South East and highlights opportunities.
- **Part 1f** presents analysis of the accessibility and connectivity of the public transport networks serving the area.

Part 2 summarises evidence that shows how the future of the area may evolve. It is aligned with the requirements of TAG Step 1: Understanding the Current Situation.

It is presented in four parts:

- **Part 2a** summarises the demographic projections based on Local Plan development data provided by Local Planning Authorities.
- **Part 2b** describes the results of the South East Economic and Land Use Model (SEELUM) which estimates the impact of a "Preferred Scenario" of the future (developed by TfSE and its stakeholders in 2018/19) on socioeconomic and transport outcomes in the Inner Orbital area.
- **Part 2c** lists the key railway, highway, international gateway, and local transport schemes under development in the area.
- **Part 2d** explores the impact of the COVID-19 pandemic on the South East's economy and transport demand.

Part 3 presents our articulation of the need for intervention in the Inner Orbital area. It is aligned with the requirements of TAG Step 3: Establishing the Need for Intervention.

It is presented in two parts:

- **Part 3a** presents the results of our SWOC (Strengths, Weaknesses, Opportunities and Challenges).
- **Part 3b** sets out a number of problem statements identified from a review of the evidence base and collation of stakeholder priorities.

Part 4 sets a vision and objectives for the Inner Orbital area study. . It is aligned with the requirements of TAG Step 4a: Identifying Objectives

It is presented in three parts:

- **Part 4a** describes the Vision Statement for the Inner Orbital area study.
- **Part 4b** lists the objectives of the Inner Orbital area study.
- **Part 4c** summarises the next steps of the Inner Orbital area study.

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Definition of the Inner Orbital Area
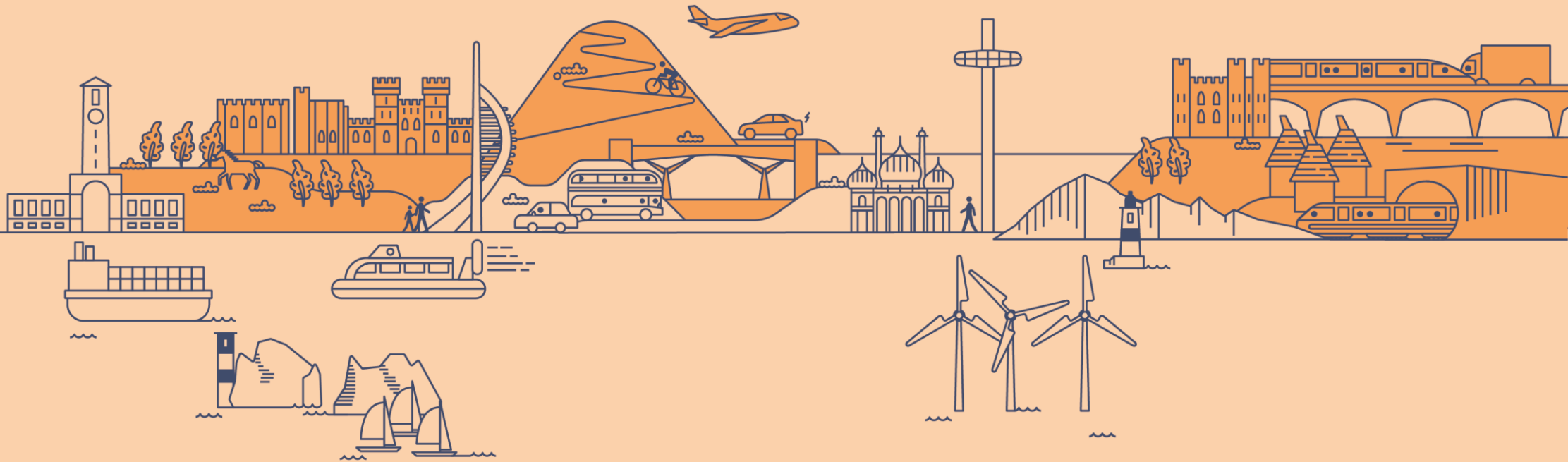
The Inner Orbital Area encompasses the strategic corridors that serve the Lower Thames Valley, communities around the M25 and North Kent. The Local Authorities in this area are shown below.

Legend

Corridor

Berkshire (all authorities)
Dartford
Medway
Sevenoaks
Gravesham
Swale
Hart
Tonbridge & Malling
Rushmoor
Maidstone
Basingstoke & Deane
Surrey (all authorities)
Crawley
Royal Tunbridge Wells
Ashford

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Inner Orbital Area Study Evidence Base

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Major Economic Hubs and International Gateways

The corridor serves a number of major economic hubs including Newbury and Basingstoke to the West, and Medway and Maidstone to the East. Other notable centres include Reading, Guildford, Crawley and Royal Tunbridge Wells. The corridor is home to the two largest airports in the UK, Heathrow and Gatwick, as well as Medway and Sheerness ports on the eastern end of the corridor.

Legend

Hub

Airport

Port

Rail

Corridor

0 5 10 15 20 25 km

0 5 10 15 Miles

Base map data © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), Natural England

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East
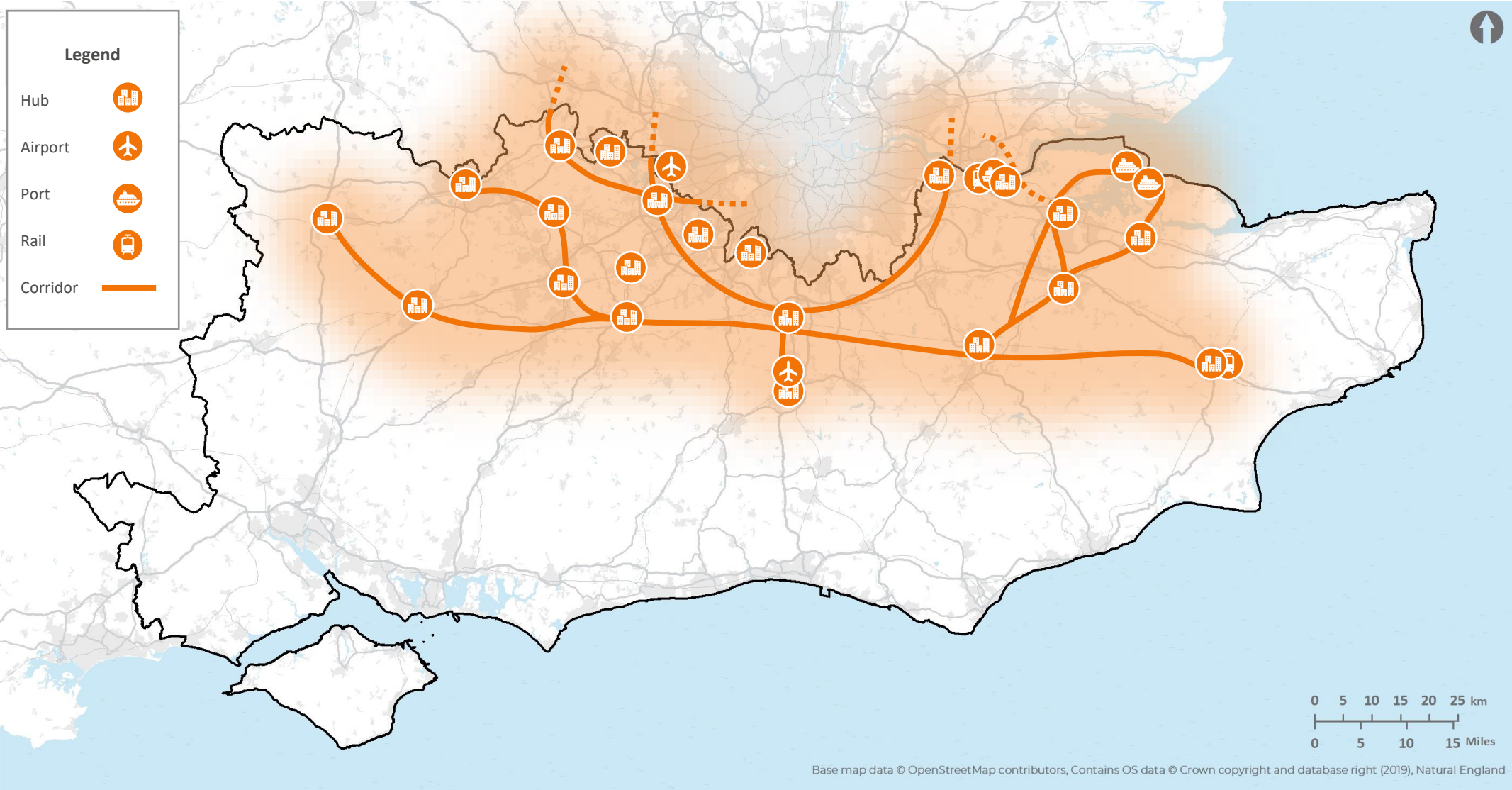
Part 1
Current Context

Part 1a
Policy Context

National and International Policy Context

National and international policies set a framework for the future of planning, climate change and digital technology. They aspire to deliver transport networks that work better for the people, the economy, and the environment. A complete list of the policies reviewed for this Inner Orbital area study is provided in tables the Appendix. Key themes are discussed below:

Climate Change/Decarbonisation Policies

The declaration of a UK climate emergency and associated legally binding Net Zero targets in 2019 has led to an increased focus on the importance of decarbonization across all sectors, but particularly in transport.

Decarbonising Transport, Setting the Challenge, sets out the broad framework within which this context sits, and will provide the foundation for future DfT policies in this area. It comes in the wake of several other critical national (e.g. the **Clean Growth Strategy**) and international (e.g. the **Paris Accords**) documents which are helping to set the overall direction for decarbonization.

Clearer understanding of how these changes will be delivered is provided in documents such as **Gear Change**, which explains the government's new policies towards walking and cycling, and we expect policy to continue evolving rapidly in this area. The government Net Zero strategy is expected later this year, plus an action plan in support of a ban on petrol and diesel vehicles.

Planning Reform

The UK government is currently undertaking a major overhaul of its planning policies and frameworks. Some of the detail of these new plans have been set out in the UK **National Planning Policy Framework.** This document promotes the importance of sustainable development, and has several clear environmental themes.

However, it is expected that future governmental changes to planning policies will emphasize the importance of building more new homes, to make them more affordable and readily available to those living across the country. This would closely follow the policy outlined in the **Housing White Paper 2017 (Fixing our broken housing market).** This has been supplemented by the **Planning for the future (2020)** white paper, released for public consultation earlier this year, which follows similar themes, but also emphasizes the importance of using data and digitalization to help make the planning system more efficient.

Emerging Technology Policies

The realisation that new technology will be critical for helping the transport network to continue developing over forthcoming years has been accelerated by the advent of COVID-19.

The majority of national and international policy documents have not had the time and/or opportunity to respond to this crisis with new policies. However, even prior to the crisis, many were emphasizing the importance of using technology to drive clean growth.

For example, in both **Road to Growth** and the latest **Road Investment Strategy** Highways England have emphasized the importance of using new technology across our highway network. The **Road to Zero** document also aims to encourage greater uptake of low-emissions vehicles, which it notes will require new technological development.

Inner Orbital Area Study Evidence Base

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Regional and Local Policy Context

Regional and local policies recognise the strength of the South East's natural assets and understand the importance of balancing future growth with social and environmental needs. The recently adopted Transport Strategy for the South East provides a framework for the implementation of national and regional priorities at a local level.

Economic Strengths

The region's economic strengths are a key theme which run through several documents, for example, the **Economic Connectivity Review** showed that the TfSE area, nationally, had the highest economic productivity outside London.

The importance of international gateways is noted in several policy documents, for example, the Highways England **Route Strategies,** and several **Local Transport Plans** in the area**.**

The region's proximity to London is also a key driver of economic growth. However, the area's reliance on London is seen as a transport operations risk in documents such as the **London South East Market** network rail study and the **West Sussex Connectivity Modular Strategic Study.**

Many stakeholders in the South East wish to see its existing major economic hubs, establish themselves as self-contained, high-performing, urban centres. This could be supported by improving connectivity within and between these conurbations to enable them to function (i.e. agglomerate) cohesively and efficiently.

Planning for People and Places

At a local level, the importance of places and placemaking is emphasised in several policy documents. While this is cited in all Local Transport Plans and many Local Plans in the area, it is a particular focus for the urban authorities in the Inner Orbital area.

This is a key theme of the recently developed **TfSE Transport Strategy** for the South East, which aims to shift transport planning away from "planning for vehicles" towards "planning for people" and "planning for places", and net-zero carbon emissions by 2050 at the latest.

Planning for vehicles acknowledges that some local highways schemes may be needed to support immediate housing needs and congestion hotspots in the Inner Orbital area.

However, the focus also needs to consider **planning for people** (as a means of considering all modes of transport, especially healthy and public transport) and **planning for places** (which required much better integrated transport, services, and other infrastructure planning at a regional and local level).

Local Response to COVID-19

The COVID-19 pandemic has caused a significant rise in uncertainty around local planning. Behaviour change may mean that some traditional planning approaches may become obsolete.

In several areas, Local Industrial Strategies have been delayed as a result of the pandemic, which has increased levels of uncertainty.

Several Local Enterprise Partnerships have released COVID-19 statements and the South East LEP has released a formal **COVID-19 Statement** document. It explains SELEP's overall approach to the crisis and outlines how the LEP plans to help the region bounce back quickly. The government has supported infrastructure projects through the Getting Building Fund and Active Travel Fund to help local areas manage the impacts of and recover from COVID-19.

Though the road map for easing restrictions has been set out, overall, it must be recognised that many local planning documents may quickly become outdated as priorities shift in response to behaviour change and economic downturn .

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East
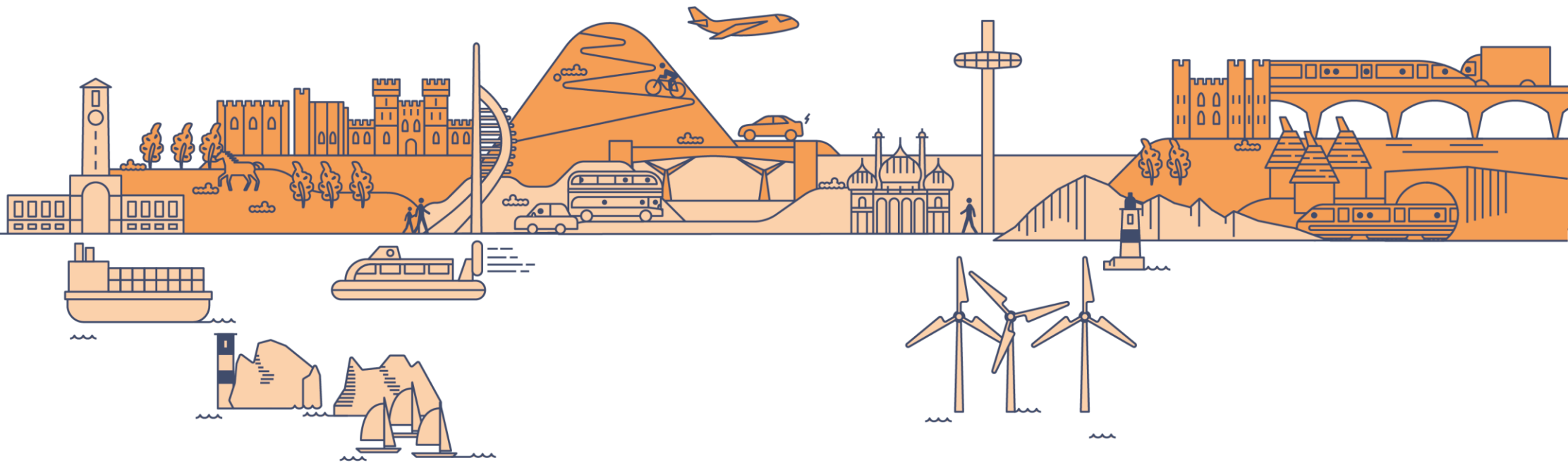
Part 1b

Demographic and Economic Context

Population

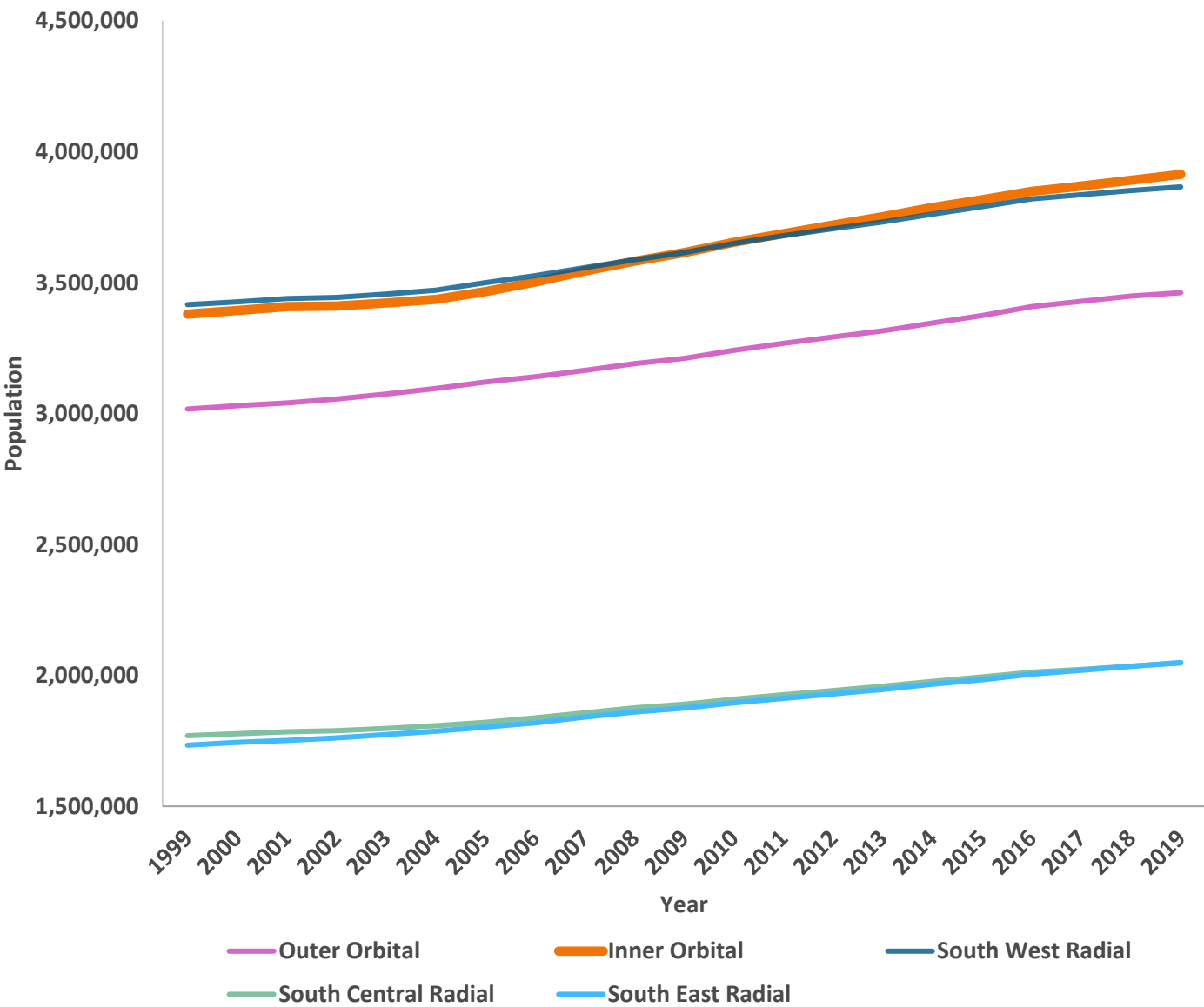**The population of the Inner Orbital area was just over 3.9 million in 2019.**

The Inner Orbital Area experienced population growth in line with other parts of the South East, experiencing an 8.3% growth in the past decade, compared to the regional average of 8.0%. This growth is forecast to continue in the future.

The fastest growing areas along this corridor in the past decade include Dartford (18.2%), Maidstone (13.3%) and Swale (12.8%).

In contrast, the slowest growing areas include Rushmoor (2.2%), Mole Valley (3.0%) and West Berkshire (3.5%).

The Inner Orbital Area has experienced the lowest increase in elderly population in relation to other Area Study geographies, with the number of over 65s increasing by 18.3% since 2011, compared to 19.8% across the South East.

Figure 1 Population growth over time in the South East Region

Source: NOMIS Official Labour Market Statistics, Population Estimates (2019)

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

Employment

In 2019, 81% of the eligible workforce in the Inner Orbital area was employed.

This is the higher than the South East (79%) and national (76%) average.

In 2017, 1,846,655 jobs were available in the Inner Orbital area, which resembles 55% of all jobs available in the TfSE region.

The Inner Orbital area has historically performed well with respect to the number of jobs and the number employed. The percentage employed has continued to rise in recent years, recovering from the economic downtown as a result of the financial crisis in 2008.

However, it is expected that unemployment will rise in 2020 and 2021 due to the economic downturn driven by the COVID-19 pandemic.

Within the Inner Orbital area, the areas with the highest employment in 2019 were the Hart (89%), Dartford (89%) and Mole Valley (87%); with the latter two areas experiencing a high increase in employment in the past decade. In contrast, Swale (72%) and Elmbridge (74%) had the lowest levels of employment.

Figure 2: Percentage of the eligible working population employed in the South East
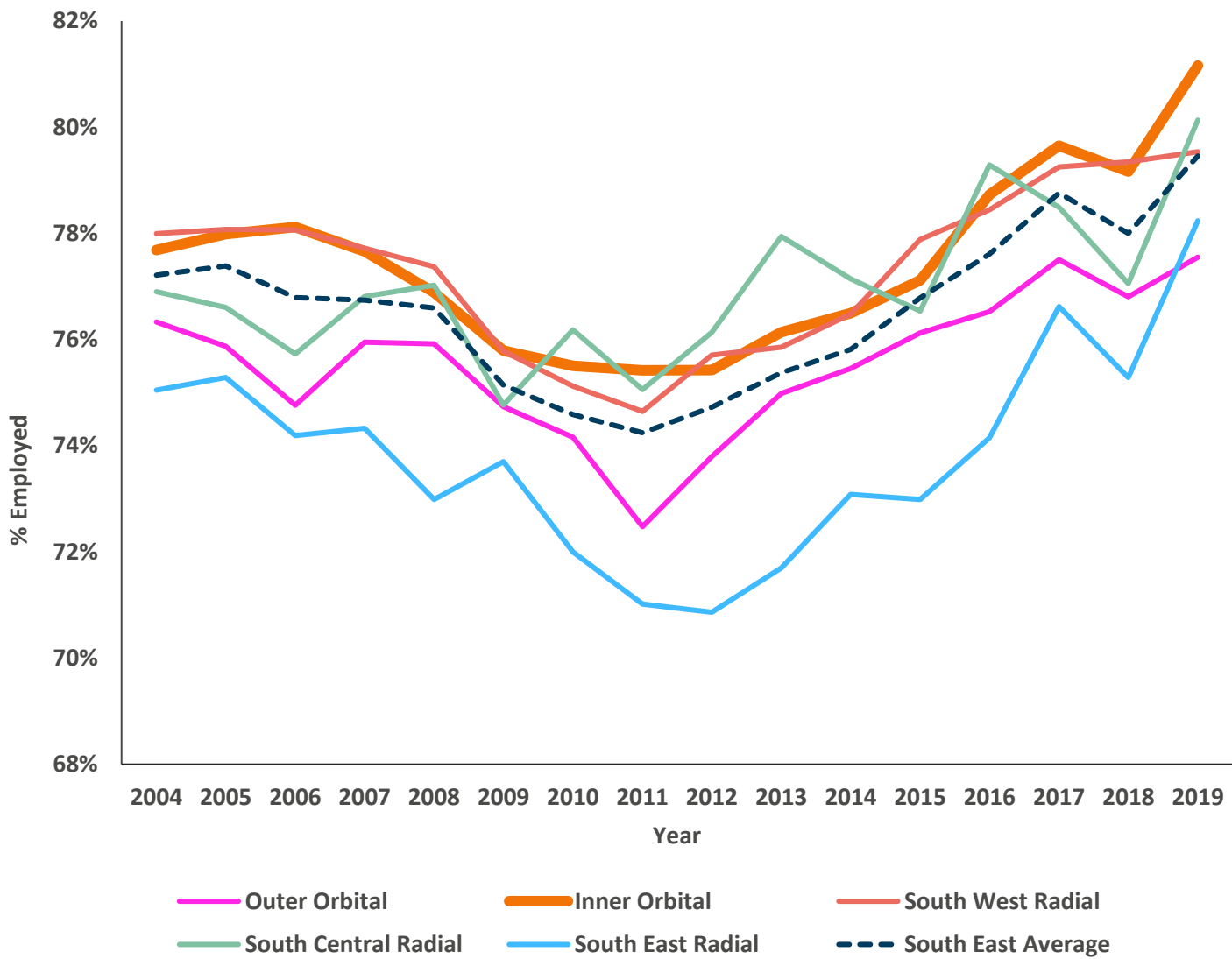
Source: NOMIS Official Labour Market Statistics, Employed Workforce (2019)

TRANSPORT FOR THE
South East

Priority Industrial Sectors

In 2017, 12.3% of all jobs available in the Inner Orbital area were priority industrial sector jobs.

In 2018, TfSE identified industrial sectors that were deemed to be high value, high growth industries. Employment by each key sector in the Inner Orbital area is listed in **Table 1.**

The Inner Orbital area is particularly strong in the following priority industrial sectors:

- **IT services,** which includes a large proportion of technical computer programming roles which are in very high demand

- **Transportation**, this includes land transport roles, warehousing and support roles and aviation roles required to operate Heathrow and Gatwick Airports, the two largest airports in the UK.

- **Management and Administrative,** including a high proportion of top-level management and consultancy roles.

- **Manufacturing**, primarily computer, other electrical and chemical products.

Table 1: Priority sector jobs in the Inner Orbital Area

Priority industrial sector	Number of jobs	% of South East*
IT Services	98,200	82%
Transportation	48,660	55%
Management and Administrative	25,100	90%
Manufacturing	14,485	29%
Public Administration and Defense	12,250	29%

* Number of jobs in the Inner Orbital Area as a proportion of all jobs in the given priority industrial sector in the South East area. E.g. the Inner Orbital area is home to 82% of all IT roles in the South East area. Source: BRES data (2018).

Transport sub-sector	Number of jobs	% of South East*
Land transport and transport via pipelines	10,150	41%
Water transport	230	6%
Air transport	9,670	97%
Postal and courier activities	5,450	71%
Warehousing/transportation support	23,070	55%

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
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Earnings

In 2019, the average resident in the Inner Orbital area earned £35,291. This is the highest of all areas in the South East, where the average resident earns £33,110 and far higher than the UK average of just over £30,350.

Figure 3 shows the average earnings for residents from 2004 to 2019. Historically, the Inner Orbital Area has the highest median resident earnings of all the SE study areas.

However, there are significant variations in earnings and earnings growth between the local authorities in the Inner Orbital area. Elmbridge has the highest resident earnings in the area, with the average resident earning over £42,000. In contrast, residents in Crawley have the lowest resident earning in the region, earning under £30,000.

Areas that have experienced the highest increase in resident earnings include Basingstoke and Woking, with both experiencing a 28% growth in average earnings over the past 10 years.

However, nearby Guildford and the Hart district have experienced some of the lowest growth in earnings, with earnings rising just 8% in the past decade - though with growth from very high baseline.

Figure 3: Average resident earnings over time in the South East Region
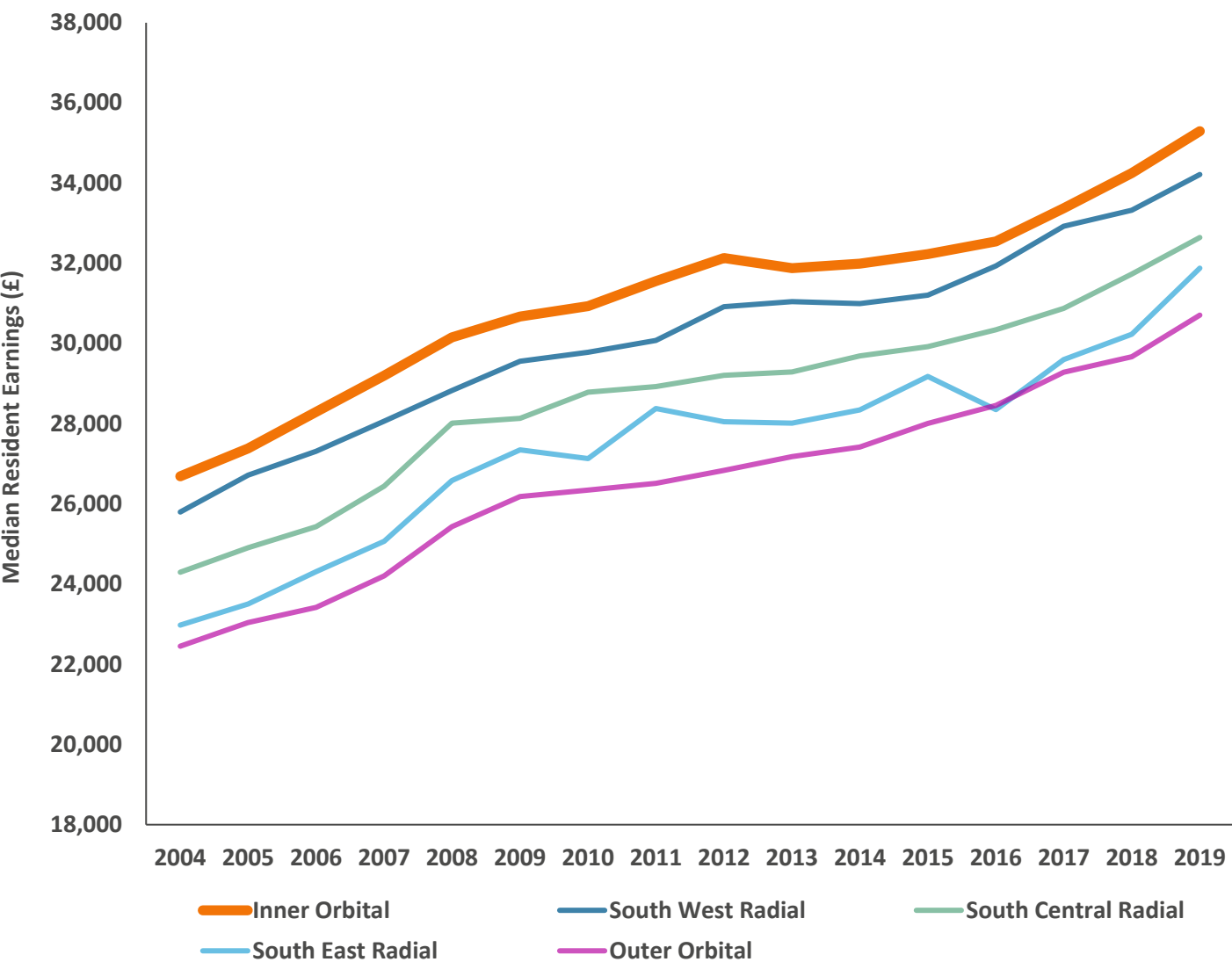
Source: NOMIS Official Labour Market Statistics, Resident Earnings (2019)

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Housing Affordability

In 2019, the average home in the Inner Orbital area cost more than ten times the average income in this area.

Figure 4 shows the affordability ratio for each area in the South East from 2002 to 2019. This ratio has been growing for all corridors in the past decade, indicating that housing is becoming more unaffordable across all regions.
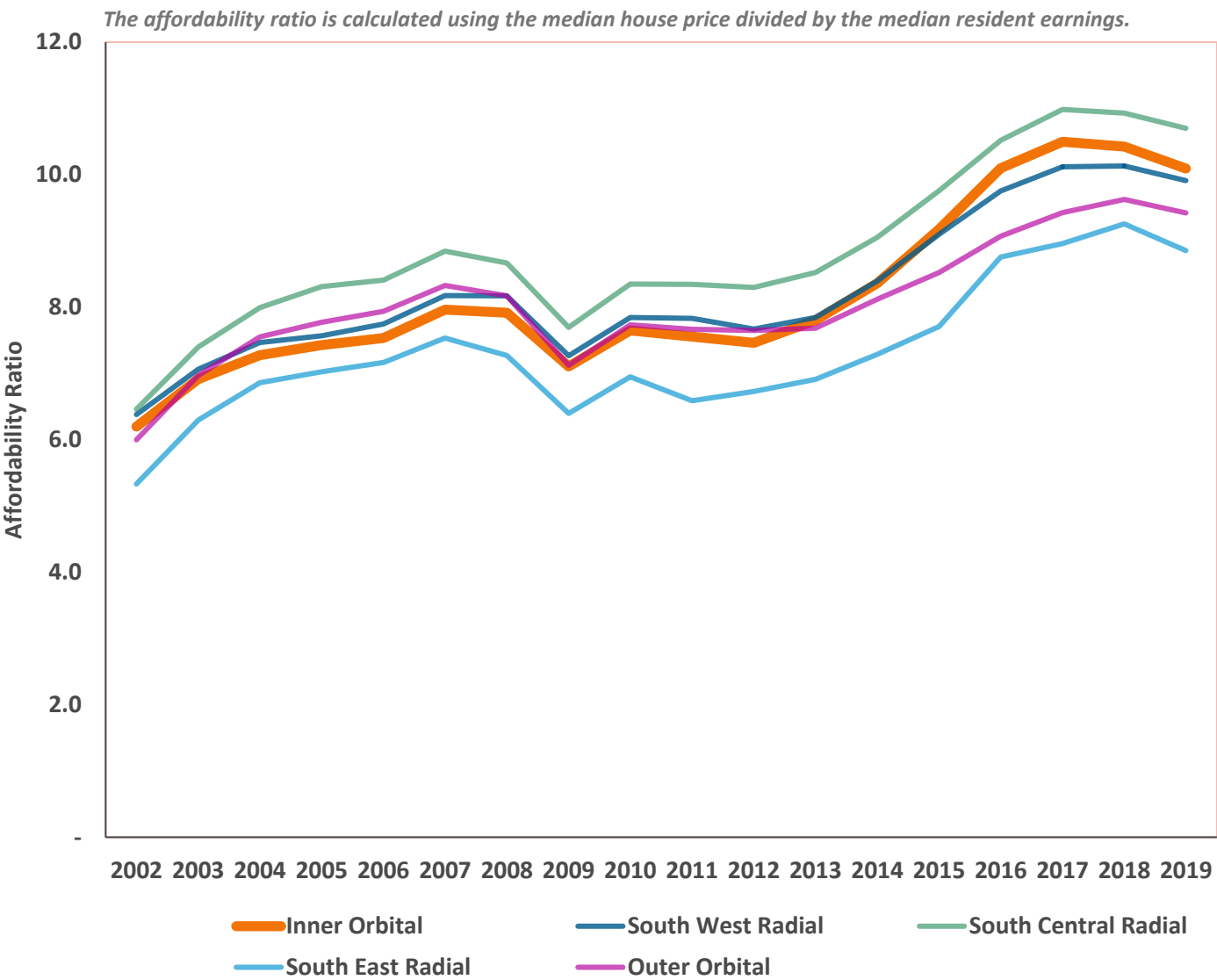
This increase is predominantly driven supply of housing not meeting demand. This has led house prices increasing at almost twice the rate of resident earnings.

The affordability ratio has worsened by 42% since 2010, in contrast to 37% across the South East Region.

In 2019, the least affordable housing in relation to earnings were in the areas closest to London, with the ratio in Mole Valley being over 15:1, and Elmbridge, Tandridge and Epsom and Ewell being in excess of 12:1.

In contrast, the most affordable housing is in Basingstoke, Swale and Medway, with a ratio of 8:1. However, even this level is significantly above the average in England of 7.5 and less affordable that at any time previously. Moreover, affordability in these areas has significantly worsened in recent years.

Figure 4: Housing Affordability ratio over time in the South East Region

The affordability ratio is calculated using the median house price divided by the median resident earnings.

Source: ONS House Price Existing Dwellings to Residence Based Earnings Ratio (2019)

TRANSPORT FOR THE
South East
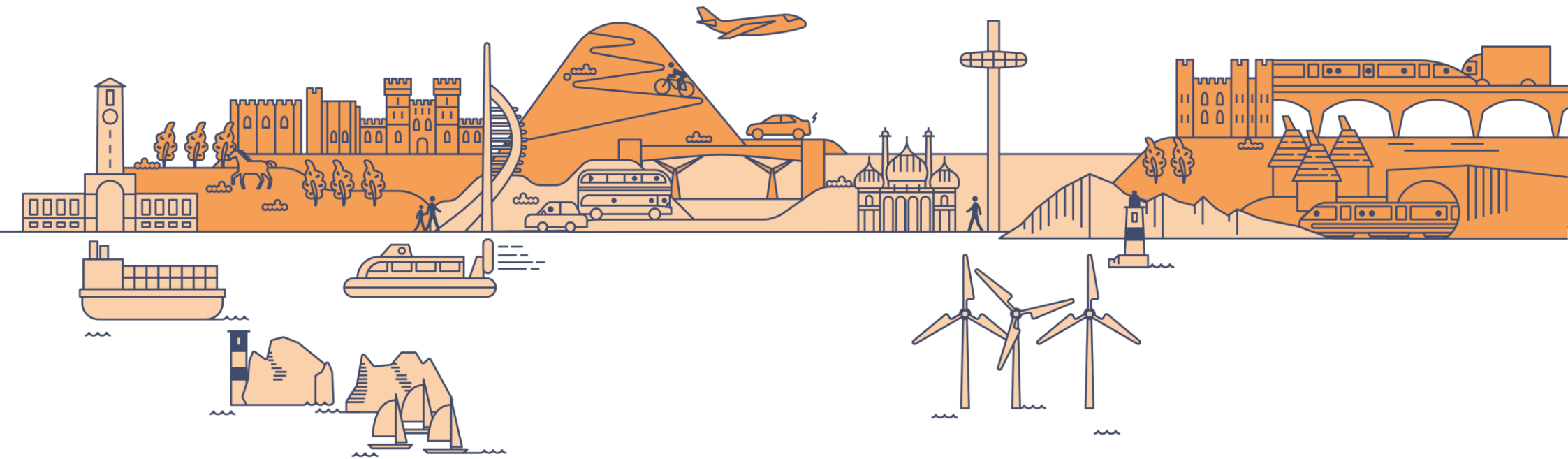
Part 1c
Social Context

Social Context

Deprivation

Deprivation is generally low along the Inner Orbital corridor, limited to small pockets, mostly at the eastern end of the corridor.

As illustrated by **Figure 5**, the highest level of deprivation is present in limited areas along the corridor. In general terms, socioeconomic outcomes tend to be poorer at the eastern end of the corridor.

Poor transport connectivity can be a factor that can significantly limit the potential prosperity of an area by restricting access to employment opportunities and services and acting as a constraint on new development which may have generated new opportunities. It is therefore important that areas with poor connectivity are prioritised for transport investment in the future. That said, it is also acknowledged that transport investment on its own is rarely enough to address long standing socioeconomic problems and other complementary interventions will also be required.

Further discussion of socioeconomic outcomes in the context of the wider South East is presented in Part 3.

Air Quality

The most significant air quality challenges are found in urban areas.

As illustrated by **Figure 6,** there are multiple air quality management areas within the corridor. These are particularly focused around the urban areas such as Guildford, Crawley/Gatwick, Maidstone and Medway. These are the most heavily urbanised areas of the corridor, and therefore have the highest densities of housing, transport and industry.

High levels of motorized travel, particularly diesel engine vehicles, are one of the highest contributors to poor air quality, and many of the poorest air quality is found where large interurban corridors and strategic roads pass through urban areas, where particulate matters cannot readily dissipate.

This is particularly notable in Dartford, Medway and Slough/Windsor which have a high density of major roads that serve high levels of traffic.

Road Traffic Collisions

Road traffic Collisions are a key problem, particularly around the largest cities.

As illustrated in **Figure 7,** the highest incidences of collisions - collisions "hotspots" – are located around the urban areas of Dartford, Medway, and Guildford. This increased concentration around urban areas is likely reflective of the fact that there are more junctions and intersections, and therefore greater risk of conflicts. There is also a higher concentration of traffic, which means that the probability of collisions is higher. The presence of a number of roads which serve both strategic and local functions means that speed can also be a contributing factor to the number of collisions.

Improved junction design, and lower car usage, is likely to improve the rates of collisions around these cities.

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Slough/Windsor
Maidenhead
Reading
Spelthorne
Bracknell/Wokingham
Elmbridge
Newbury/Thatcham
Blackwater Valley
Woking
Ewell/Epsom
Gravesend
Dartford
Medway Towns
Sittingbourne
Maidstone
Basingstoke
Guildford
Redhill/Reigate
Crawley/Gatwick
Royal Tunbridge Wells/Tonbridge
Ashford

TfSE area
Inner Orbital area

Index of multiple deprivation (2019)
Relative to England & Wales
10% most deprived areas
11 - 20% most deprived areas
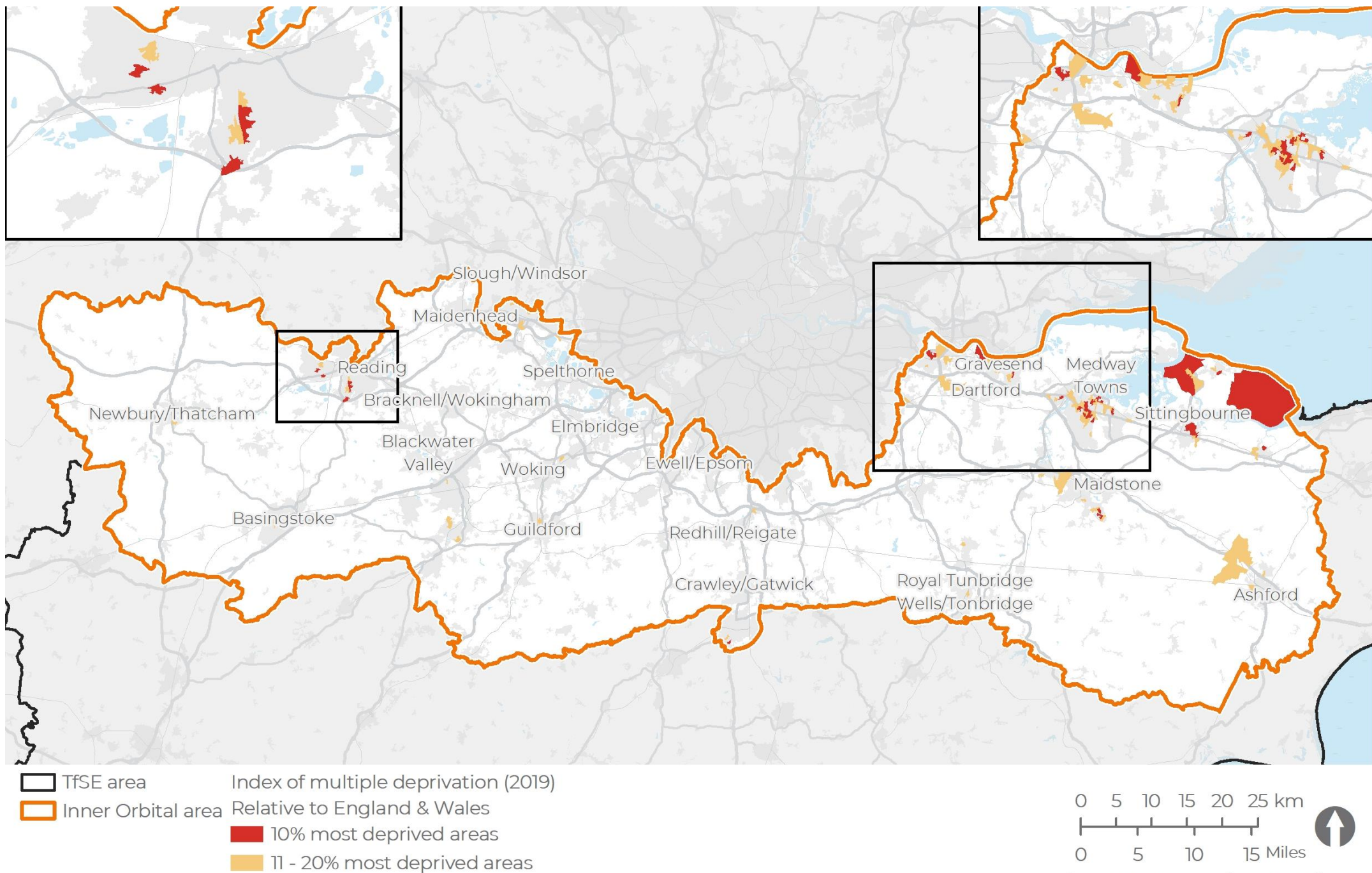
0   5   10   15   20   25 km

0   5   10   15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), DCLG.

Slough/Windsor
Maidenhead
Newbury/
Thatcham
Reading
Bracknell/
Wokingham
Spelthorne
Gravesend
Elmbridge
Dartford
Medway
Towns
Sittingbourne
Blackwater
Valley
Woking
Ewell/Epsom
Basingstoke
Maidstone
Guildford
Redhill/Reigate
Crawley/Gatwick
Royal Tunbridge
Wells/Tonbridge
Ashford
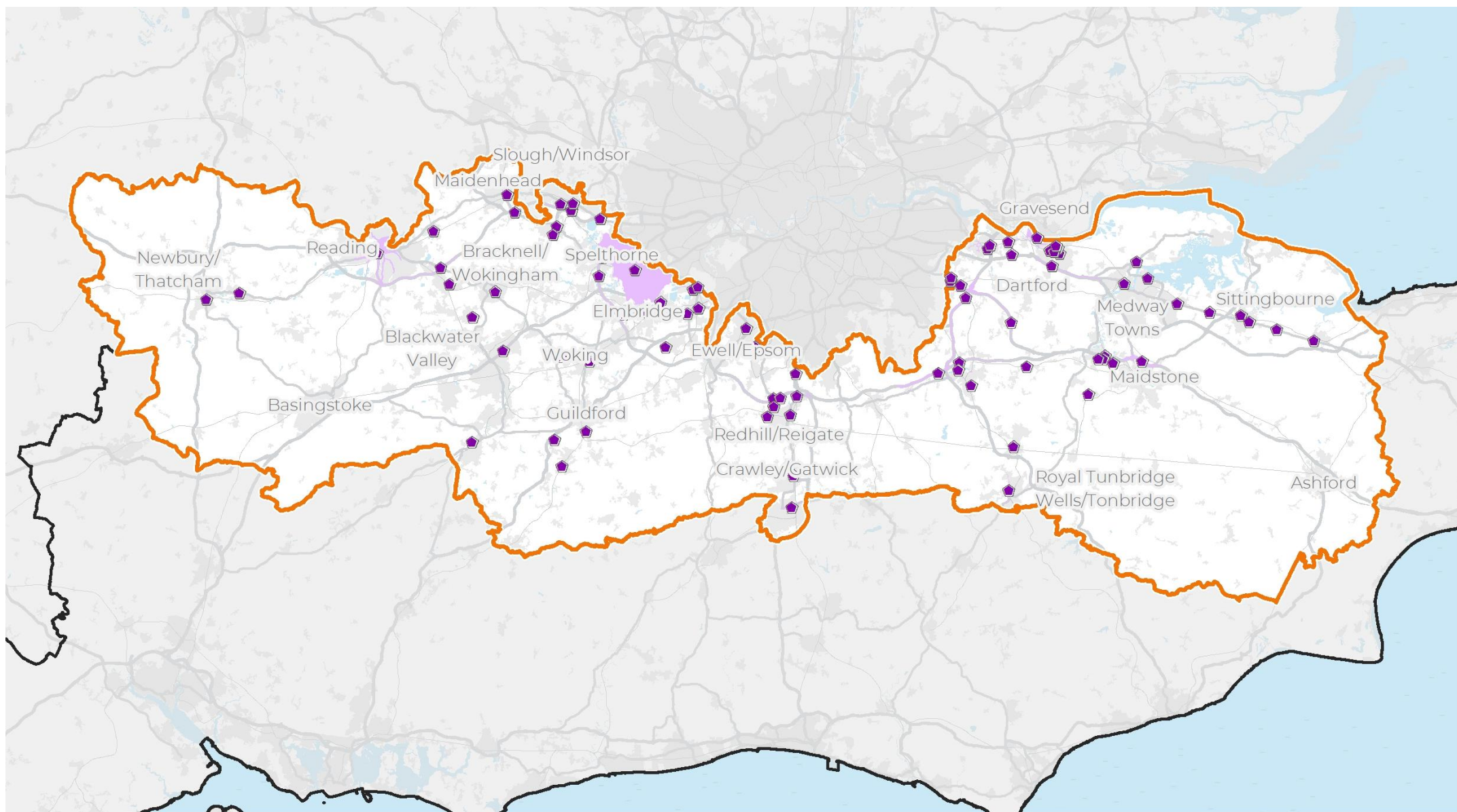
TfSE area
Inner Orbital area
Air Quality Management Area

0   5   10   15   20 25 km

0   5   10   15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS
data © Crown copyright and database right (2019),
DEFRA.
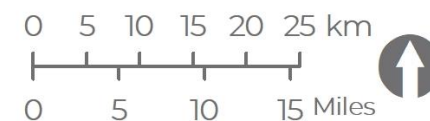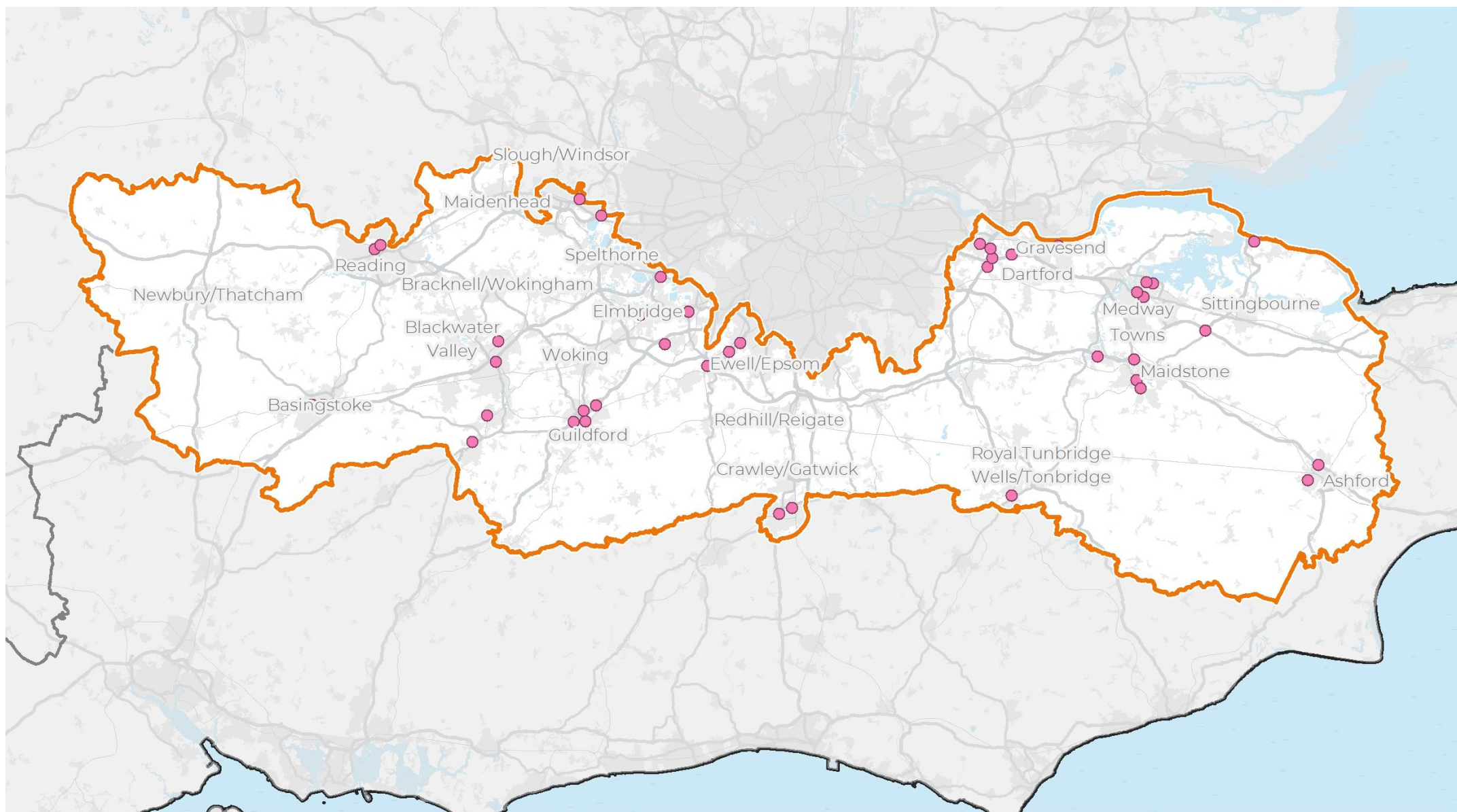
Locations with more than 10 KSI

● collisions within a 500m radius

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), DfT.
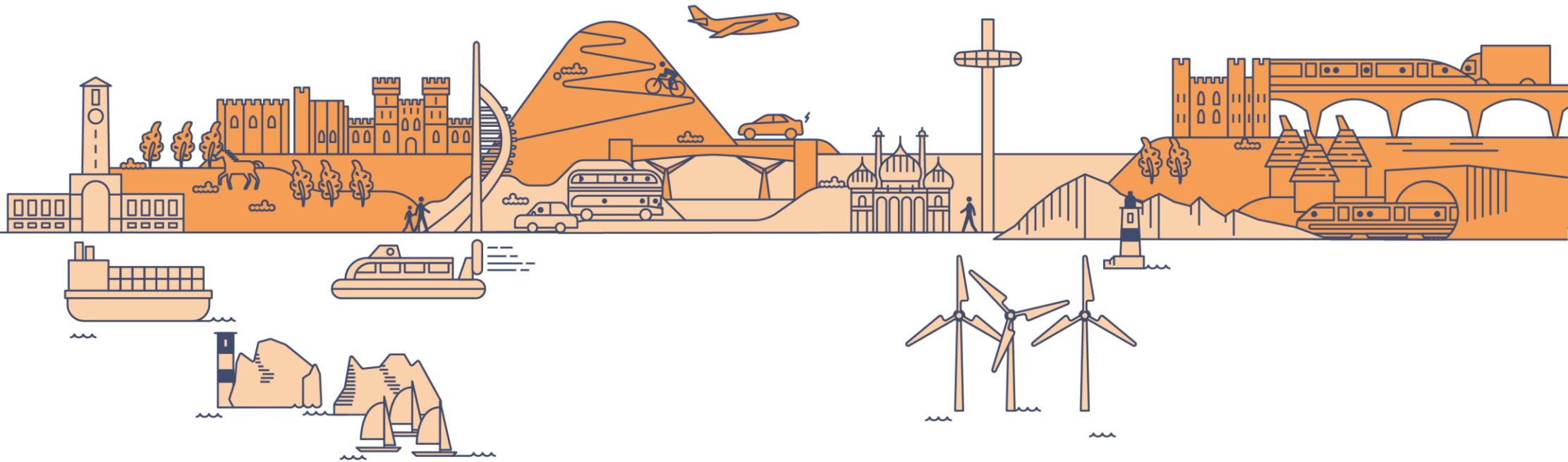
Part 1d
Environmental Context

Environmental Context

Protected Areas

The Inner Orbital area has a rich natural environment that is cherished by local residents and visitors.

Figure 8 shows Protected Areas and **Figure 9** shows Landscape Character Areas of the Inner Orbital Area. Key features of this area include

- 4 Areas of Outstanding Natural Beauty;
- 51 Ramsar sites;
- 125 Special Protection Areas;
- 92 Special Areas of Conservation;
- 25 National Nature Reserves;
- 617 Sites of Special Scientific Interest; and
- 11,026 Ancient woodland sites.

Landscapes

The area has a high degree of landscape diversity, each with its own special characteristics.

From the quaintness of the Surrey Hills, to the historic Medway estuary, the area has a wide diversity of natural and urban landscapes, each with their own unique value. This diversity provides a wide range of amenities for local residents within easy, quick access. The importance of these cherished landscapes has been underlined by their popularity with local visits in 2020, when international travel and longer journeys were restricted due to COVID-19 measures.

Heritage

The area has a very rich natural and historical heritage, with a range of cultural amenities bringing significant value to local residents and visitors.

As **Figure 10** shows, the area has a rich cultural heritage. The area is home to:

- 153 registered parks and gardens;
- 538 Grade 1 listed buildings; and
- 629 scheduled monuments.

The area is also home to:

- Several historic towns and cities, including Guildford, Maidstone, Rochester, Royal Tunbridge Wells, Sevenoaks and Windsor;
- Historic ports, including Rochester and Sheerness; and
- Internationally renowned major events such as Royal Ascot and RHS Wisley garden exhibitions.

Overall, the area has a diverse and rich heritage, that planners must carefully consider when they develop planning policy and transport schemes.

Flood Plains

**There are major flood risks on large sections of the corridor.**

Hydrologically the area can be split into three broad areas, as illustrated by **Figure 11**.

To the west of Crawley/Gatwick there are a number of key tributaries to the Thames which run northwards. To the east of Crawley runs the River Medway, with a floodplain that is most extensive around Royal Tunbridge Wells and to the northeast of Medway.

Although there have been instances of severe flooding of infrastructure assets across the corridor – for example, severe flooding has led to the closure of Gatwick airport and the M25 – much of the infrastructure and development in the area is beyond the reach of floodwaters. This is particularly the case with historic urban areas, which were designed to be beyond the reach of floodwaters.

However, there is a consensus in the scientific community that incidents of extreme weather will only increase as the impact of climate change starts to intensify. As such, it will become ever more important to be aware of flood risk across the corridor as severe weather events become more frequent.

TRANSPORT FOR THE South East

Figure 8: Protected Areas
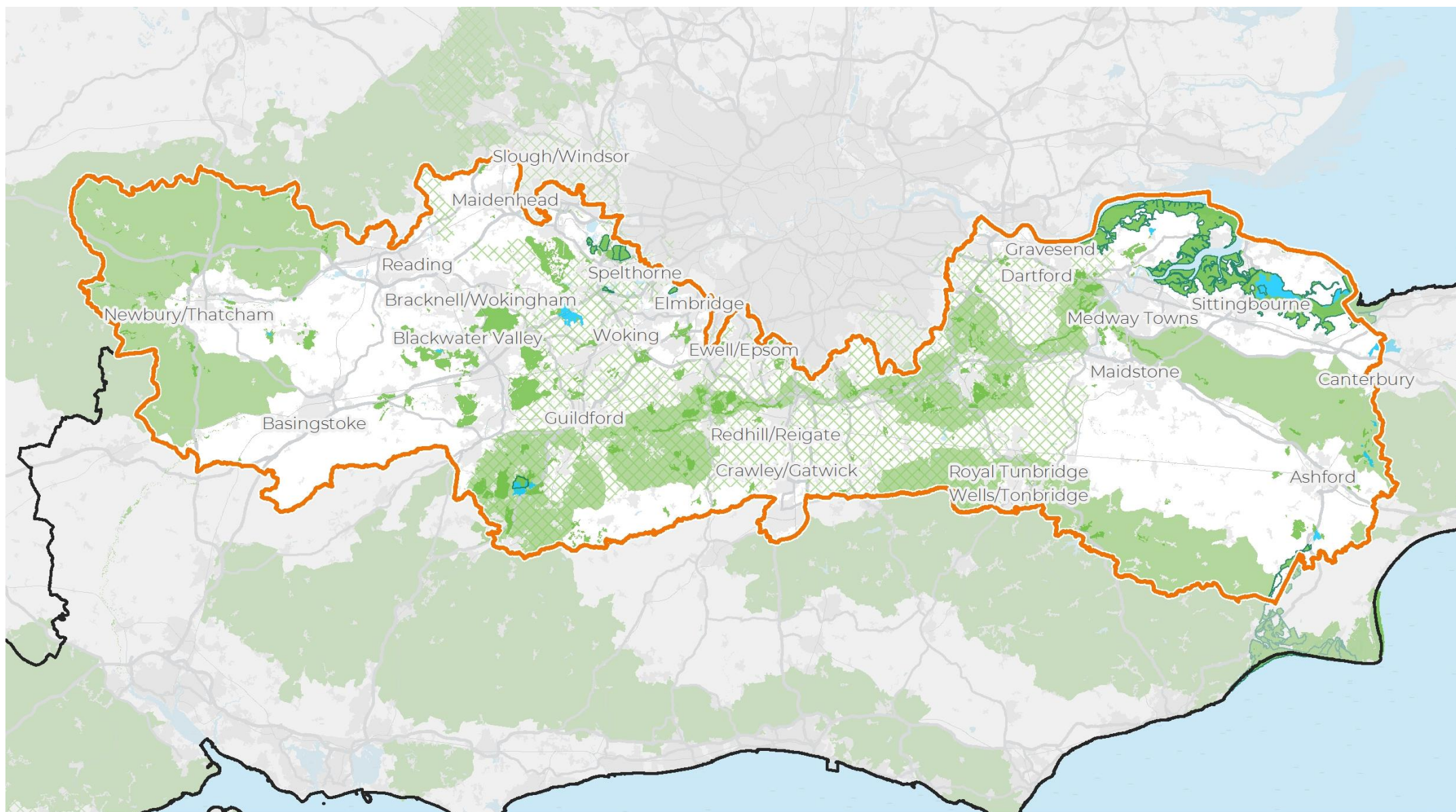
Legend:
- TfSE area
- Inner Orbital area
- National Nature Reserve
- RAMSAR
- SSSI
- Greenbelt
- National Park/AONB
- Biosphere Reserve
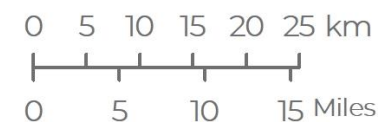
Map labels: Slough/Windsor, Maidenhead, Reading, Spelthorne, Bracknell/Wokingham, Elmbridge, Newbury/Thatcham, Blackwater Valley, Woking, Ewell/Epsom, Basingstoke, Guildford, Redhill/Reigate, Crawley/Gatwick, Royal Tunbridge Wells/Tonbridge, Gravesend, Dartford, Sittingbourne, Medway Towns, Maidstone, Canterbury, Ashford

Scale: 0 5 10 15 20 25 km / 0 5 10 15 Miles

Inner Orbital Area Study Evidence Base

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Figure 9: Landscape Character Areas

Slough/Windsor
110
Maidenhead
Reading
115
Spelthorne
Bracknell/Wokingham
Elmbridge
116
Newbury/Thatcham
129 Blackwater Valley
Woking
114
Basingstoke
Guildford
130
Ewell/Epsom
Gravesend 113
Dartford
119
Medway Towns
81
Sittingbourne
Maidstone
120
Redhill/Reigate
121
Crawley/Gatwick
Royal Tunbridge Wells/Tonbridge
Ashford
122
123

Legend:
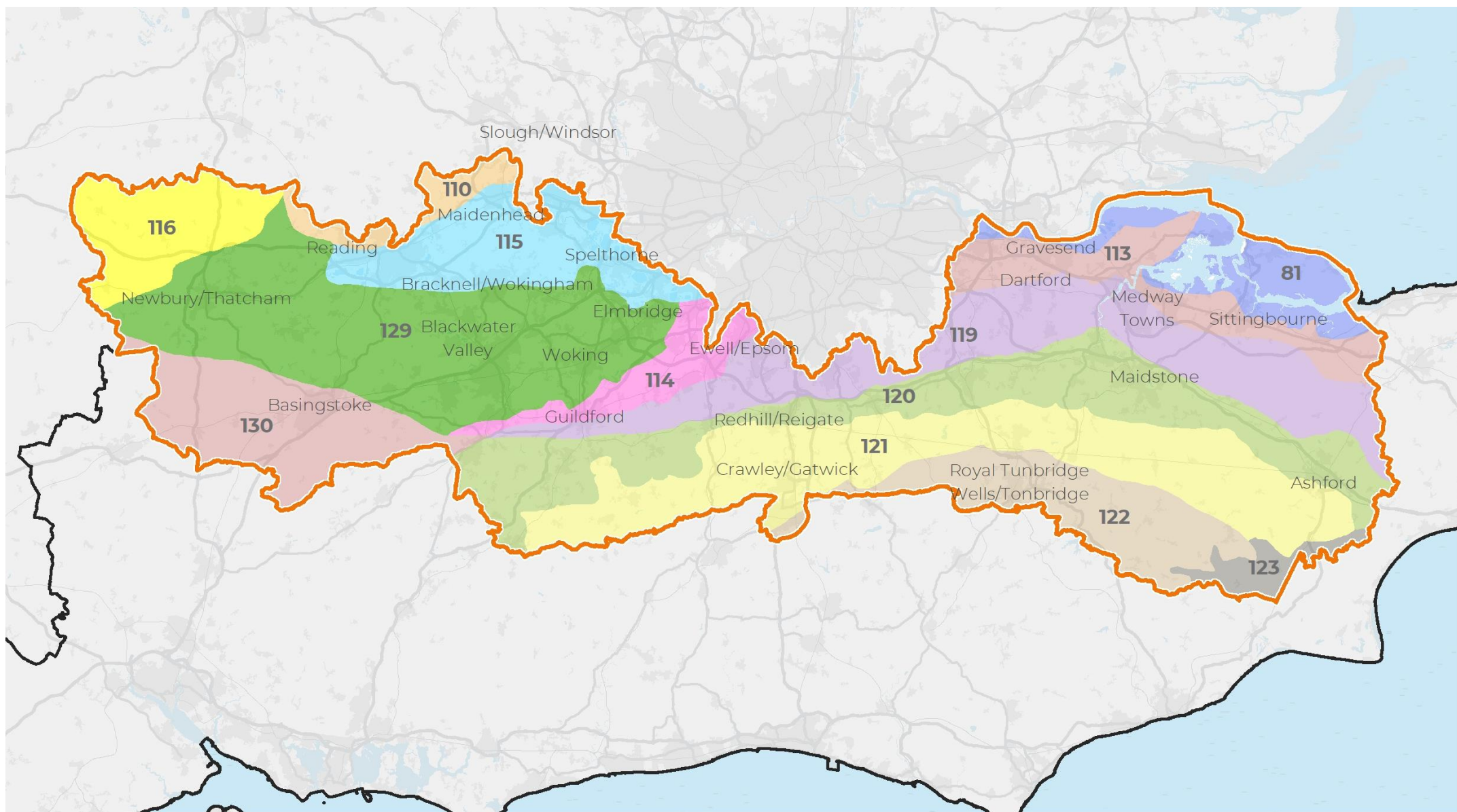
TfSE area
Inner Orbital area

National Character Area
- 81 Greater Thames Estuary
- 25 110 Chilterns
- 113 North Kent Plain
- 114 Thames Basin Lowlands
- 115 Thames Valley
- 116 Berkshire and Marlborough Downs
- 119 North Downs
- 120 Wealden Greensand
- 121 Low Weald
- 122 High Weald
- 123 Romney Marshes
- 129 Thames Basin Heaths
- 130 Hampshire Downs

0 5 10 15 20 25 km
0 5 10 15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), Natural England

TfSE area
Inner Orbital area
Ancient Scheduled Monument
Grade 1 Listed Buildings
Historic Parks/Garden
National Park/AONB

Slough/Windsor
Maidenhead
Reading
Bracknell/Wokingham
Newbury/Thatcham
Spelthorne
Elmbridge
Woking
Ewell/Epsom
Blackwater Valley
Basingstoke
Guildford
Redhill/Reigate
Crawley/Gatwick
Royal Tunbridge
Wells/Tonbridge
Gravesend
Dartford
Medway
Towns
Sittingbourne
Maidstone
Ashford

0 5 10 15 20 25 km
0 5 10 15 Miles

Inner Orbital Area Study Evidence Base
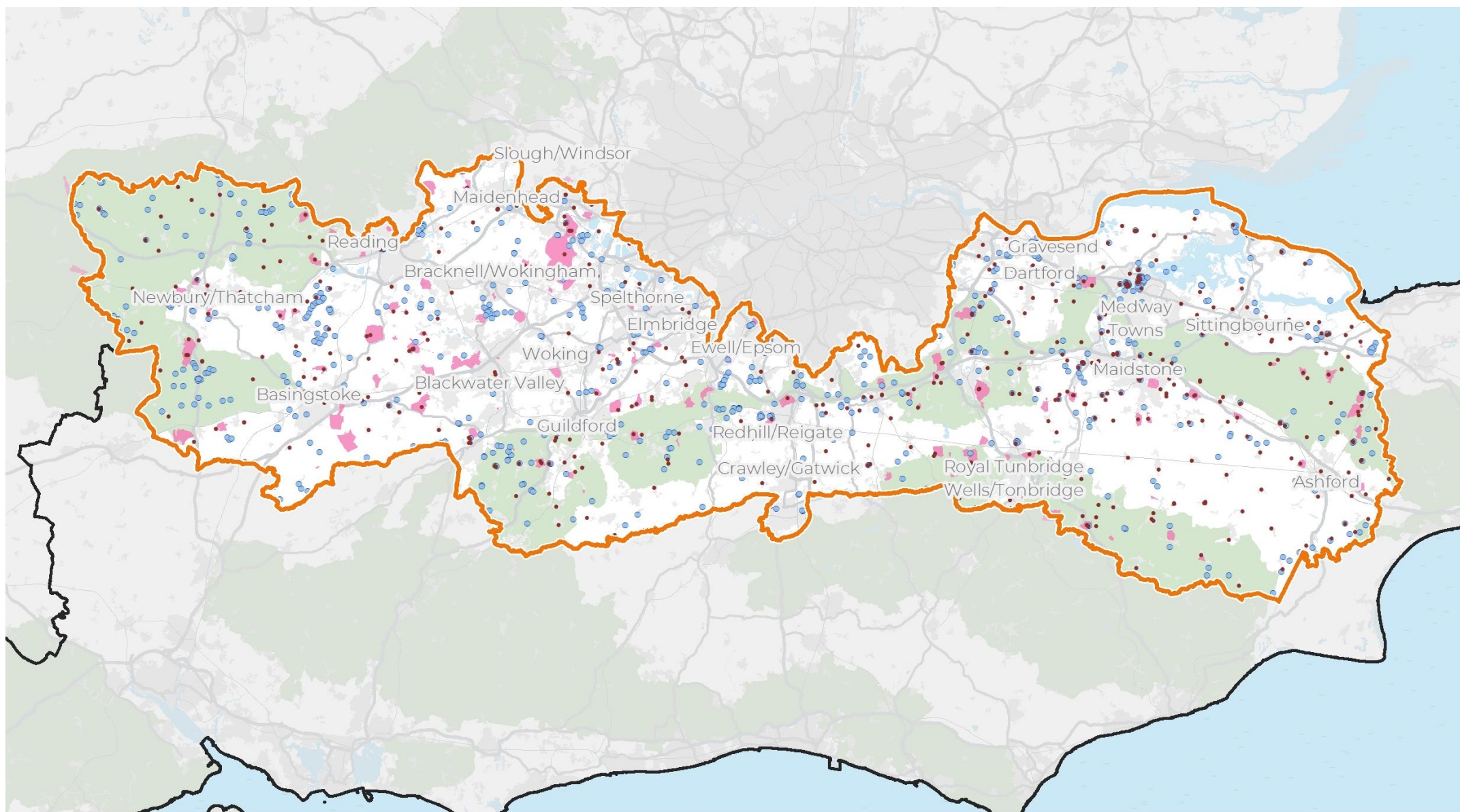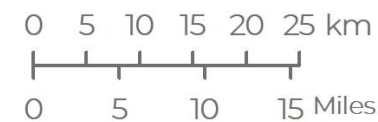
Sources: © OpenStreetMap contributors, Contains OS
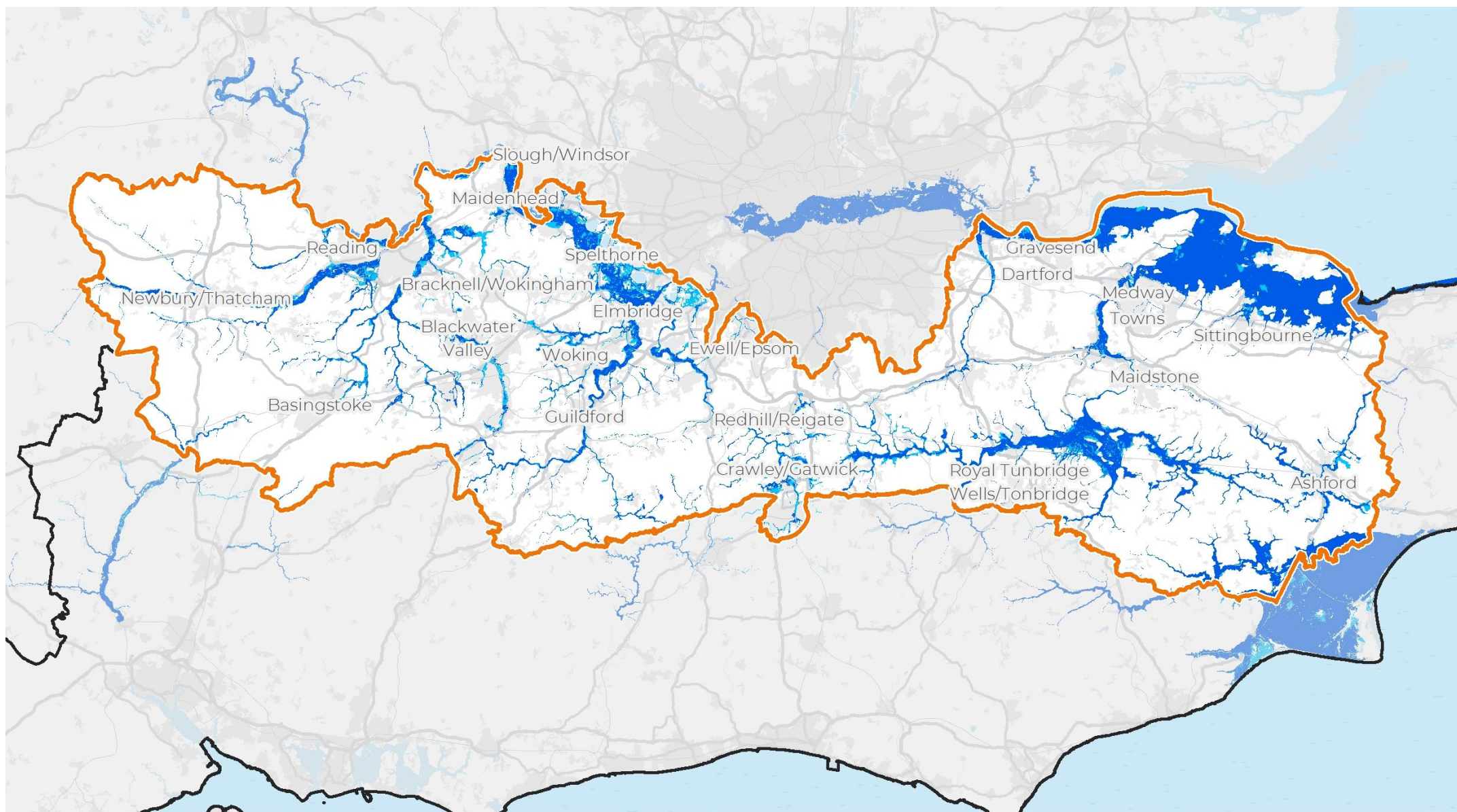data © Crown copyright and database right (2019),
Natural England, Historic England.

Figure 11: Flood Risk Areas

Slough/Windsor
Maidenhead
Reading
Spelthorne
Bracknell/Wokingham
Newbury/Thatcham
Elmbridge
Blackwater
Valley
Woking
Ewell/Epsom
Basingstoke
Guildford
Redhill/Reigate
Crawley/Gatwick
Royal Tunbridge
Wells/Tonbridge
Gravesend
Dartford
Medway
Towns
Sittingbourne
Maidstone
Ashford

TfSE area
Inner Orbital area
Flood zone 2
Flood zone 3

Zone 2 - 0.1 - 1% chance of flooding each year
Zone 3 - > 1% chance of flooding each year from rivers, or >0.5% chance of flooding each year from sea

0 5 10 15 20 25 km
0 5 10 15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), Natural England, DEFRA.

The Carbon Challenge
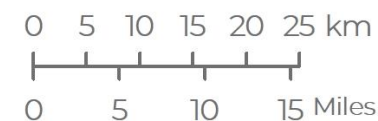
Current Carbon Trajectory

As Figure 12a shows, reaching a net zero carbon transport network by 2050 (yet alone 2030) will be very challenging.

Carbon emissions from transport in the South East are declining, but not at a rate fast enough to reach net zero by 2050 or 2030.

Economic growth and carbon emissions have become decoupled at both a national and regional scale (since 1990 the UK Economy has grown 72% while the country's carbon emissions have dropped by 42%) meaning that decarbonisation should be seen as an economic opportunity, rather than a burden.

Figure 12b shows that the Inner Orbital area emitted the highest transport carbon emissions per capita of all study areas. Almost 10m tonnes of transport CO_2 were emitted (23% of the SE total.)

Options for Decarbonisation

Reducing the need to travel is the most effective method for meeting decarbonisation goals. These can be achieved through improvements to digital connectivity, integrated spatial planning and demand management measures. But this will not be sufficient. Other policy levers must also be used.

Shift to sustainable modes and appropriate and effective reallocation of road space will be critical and bring a benefits in terms of improved public realm and local air quality. **Figure 12c** shows the carbon impact of modal shift to sustainable modes.

Switching fossil-fuel powered cars to zero emission alternatives will be necessary, as currently cars are not only the most polluting land transport mode, but also the most popular. However this transition is not carbon neutral due to the embedded emissions produced during vehicle manufacture and emissions produced during energy production for the national grid.

Figure 12a: Transport Carbon Emissions in South East
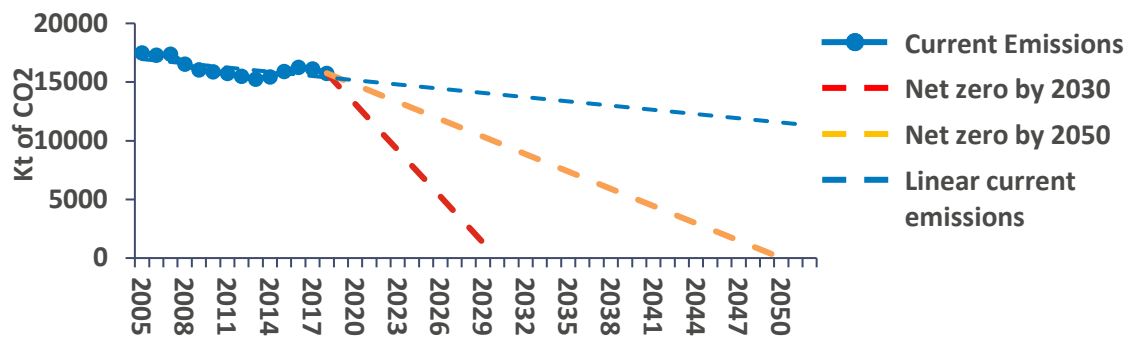
Figure 12b: Transport Carbon Emissions in the five study areas

Transport Carbon Emissions per Capita (Tonnes CO_2)
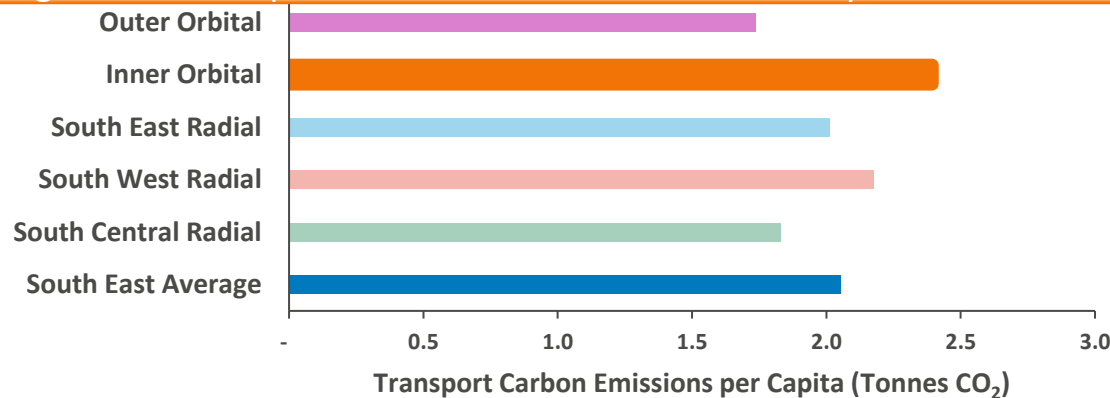
Figure 12c: Carbon emissions per passenger km

- CO2 emissions
- Secondary effects from high altitude, non-CO2 emissions

Domestic flight ✈	133g +121g
Long haul flight ✈	102g +93g
Car (1 passenger) 🚗	171g
Bus 🚌	104g
Car (4 passengers) 🚗	43g
Domestic rail 🚆	41g
Coach 🚌	27g
Eurostar 🚆	6g

TRANSPORT FOR THE
South East
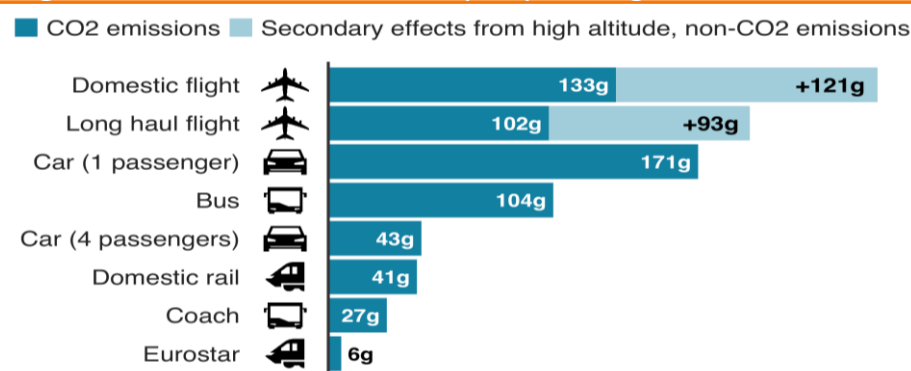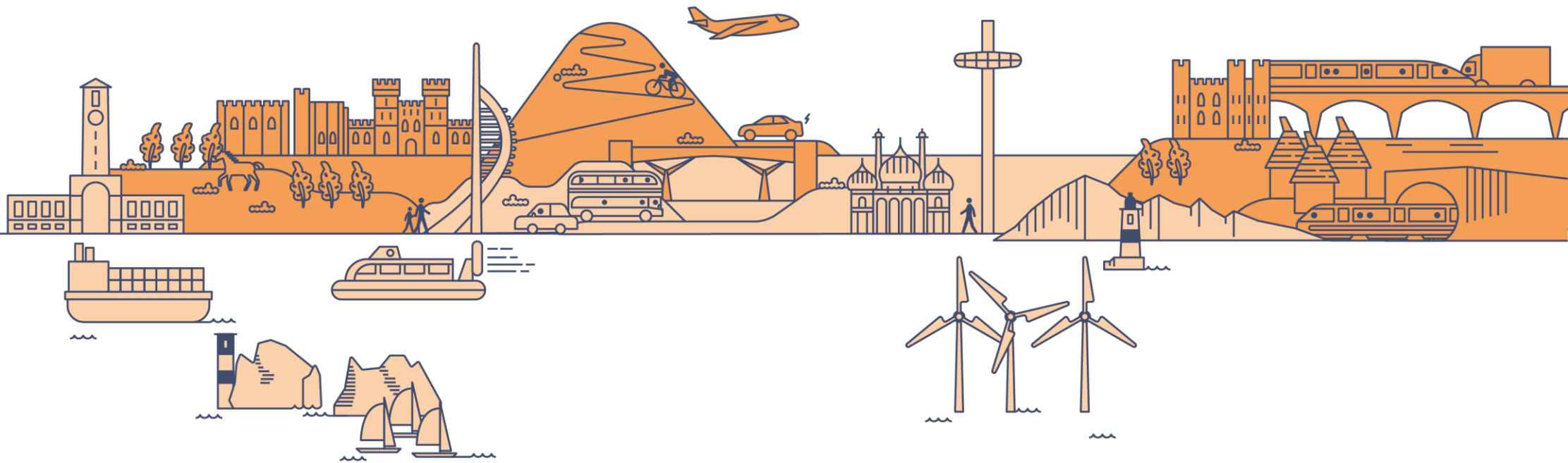
Part 1e
Transport Networks

Transport Networks

Railways

The Inner Orbital corridor has a relatively dense railway network. However, the level of service provided on east-west routes is generally poorer than on radial routes.

The North Downs Line between Reading, Wokingham, Guildford and Redhill and the Redhill-Tonbridge line provide some orbital connectivity. However, services on this line are geared towards serving the local and London market with little focus on fast, strategic orbital connectivity.

Figure 13 presents the average speed of rail journeys along rail corridors in the Inner Orbital area and highlights the weaknesses in east-west services compared to radial services.

There are trade-offs in managing capacity between local, longer distance, orbital, and radial journeys, which will need to be managed at the options appraisal stage later in this study.

Figure 14 presents a map of the rail network and station usage in 2019/20. In this year, the busiest stations (by passengers) locations:

- Gatwick Airport   21.2 million
- Reading   17.0 million
- Woking   7.8 million
- Guildford   7.5 million
- Basingstoke   6.0 million

Highways

Highway connectivity along the Inner Orbital is good, with the M25 providing good radial connectivity.

Figure 15 shows the key highways in the Inner Orbital area and highlights several congestion "hot spots" on strategic and major roads.

The M25 is the key motorway that serves longer distance, east-west movements in the Inner Orbital area. It also serves and links traffic to/from other settlements in the South East and London and the rest of England.

To the western end of the corridor, key congested components of the Major Road network include the A339, A33, A329(M) and A322, which together connect the M3 and M4, and provide connectivity between settlements in Berkshire, Surrey and North Hampshire. To the eastern end, the A229, A228 and A249 provide regional connectivity between the M2 and M20, whilst also fulfilling a local role of connecting communities in North Kent including Maidstone and Medway.

TfSE's vision of planning for people and places (as opposed to planning for vehicles), means any future highway investment will need consider sustainable travel patterns and wider objectives, and delivered with great sensitivity.

International Gateways

The Inner Orbital corridor is well-served by Heathrow and Gatwick airport, the two largest airports in the UK.

In 2019, Heathrow airport served 80.8 million passengers and Gatwick airport served a further 46.6 million passengers. Heathrow served 1.7m tonnes and Gatwick 35,000 tonnes of freight .
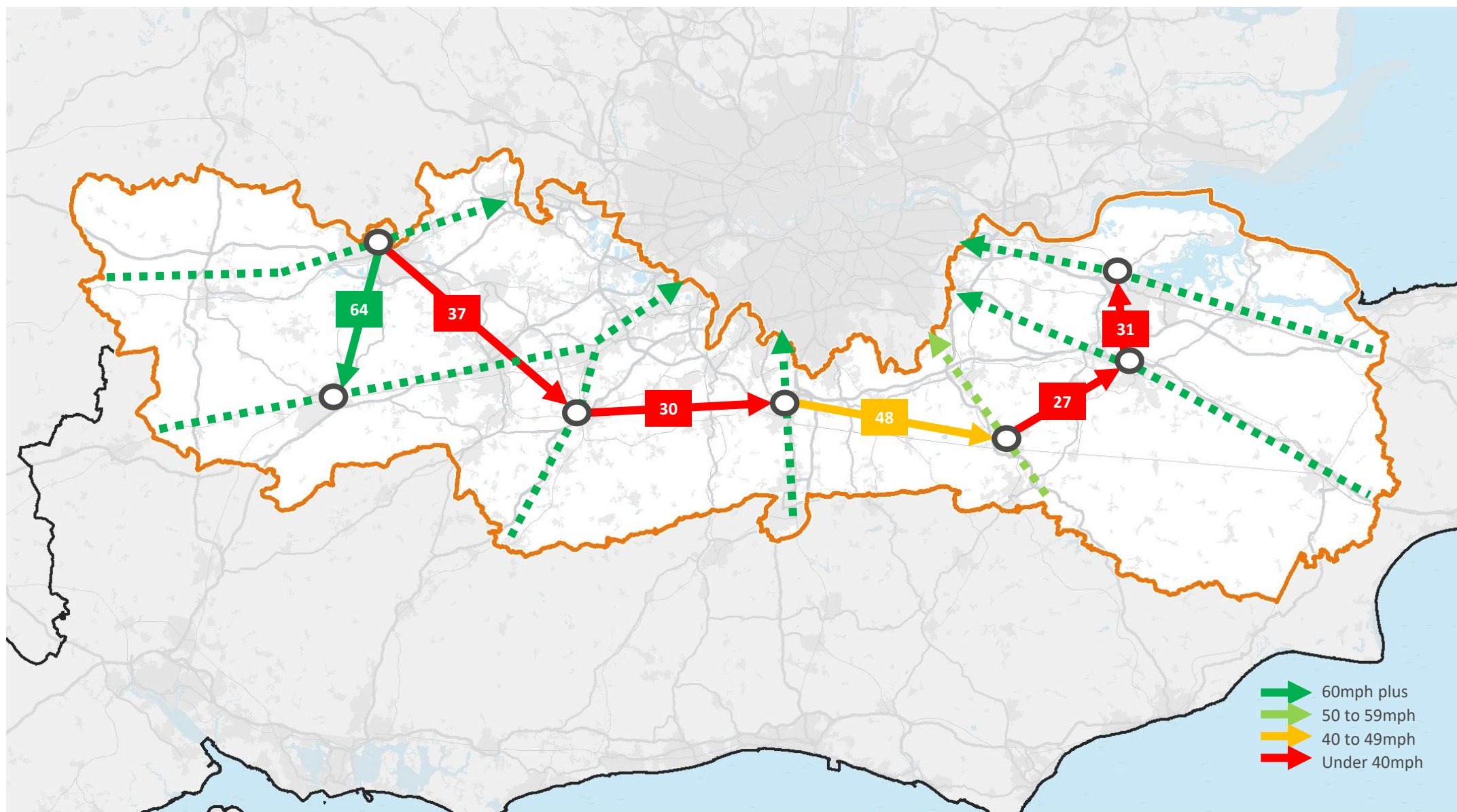
Figure 16 shows the international gateways in the area, including airports, ports and Eurotunnel stations at Ebbsfleet and Ashford International. The Inner Orbital area also plays a vital role in transporting freight from ports on the south coast and the rest of the country.

Road connectivity to the international gateways is good, with Heathrow situated near the M4 and M25 and Gatwick situated alongside the M23. However, roads connecting to both airports suffer with congestion.

There is direct, orbital connectivity to Gatwick from Reading and Guildford to the west. From the east, connectivity is indirect and infrequent.

Rail connectivity from the west, north and south into Heathrow is relatively poor. Crossrail is set to open in 2022 and will provide improved connectivity from the west. The Western and Southern Access to Heathrow schemes are in early development and seek to improve orbital rail access to Heathrow.

TRANSPORT FOR THE
South East

Figure 13: Railway average line speeds

Legend:
- 60mph plus
- 50 to 59mph
- 40 to 49mph
- Under 40mph

TfSE area
Inner Orbital area

0 5 10 15 20 25 km
0 5 10 15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), Natural England

Figure 14: Railway network and station entries and exits

Legend:
- TfSE area
- Inner Orbital area
- Rail line

Station entries & exits (Total 2018/19)
- < 250,000
- 250,001 - 500,000
- 500,001 - 750,000
- 750,001 - 1,000,000
- 1,000,001 - 2,500,000
- 2,500,001 - 5,000,000
- > 5,000,000

Labelled stations: Slough, Maidenhead, Reading, Farnborough, Woking, Basingstoke, Guildford, Gatwick Airport, Three Bridges, Redhill, Dartford, Gravesend, Sevenoaks, Tonbridge, Tunbridge Wells, Ashford International

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), ORR.

Scale: 0 5 10 15 20 25 km / 0 5 10 15 Miles

TfSE area

Inner Orbital area

Congestion

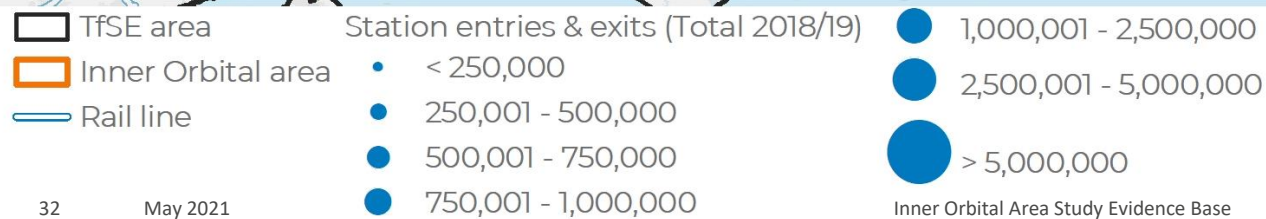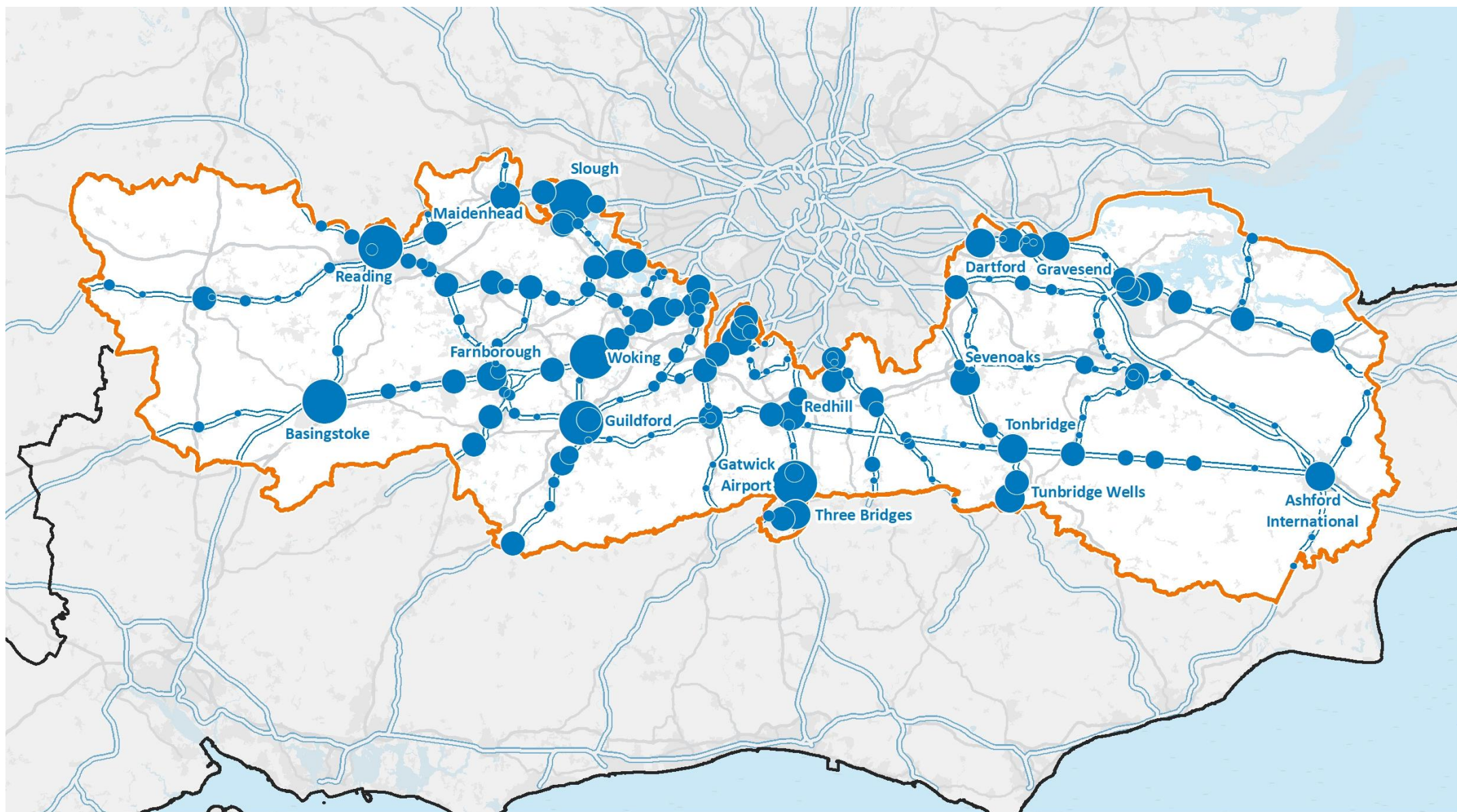AM peak as % of night time speed

■ < 40%

■ 41% - 60%

■ 61% - 80%

■ 81% - 100%

0 5 10 15 20 25 km

0 5 10 15 Miles

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), Pitney Bowes Speed Profiles.

Figure 16: Airports, ports and Eurotunnel stations

TfSE area
Inner Orbital area
Eurotunnel station

Airports
- Hub
- Major
- Regional
- Local

Ports
- Major freight
- Major passenger
- Minor freight
- Minor passenger

0 5 10 15 20 25 km

0 5 10 15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019).
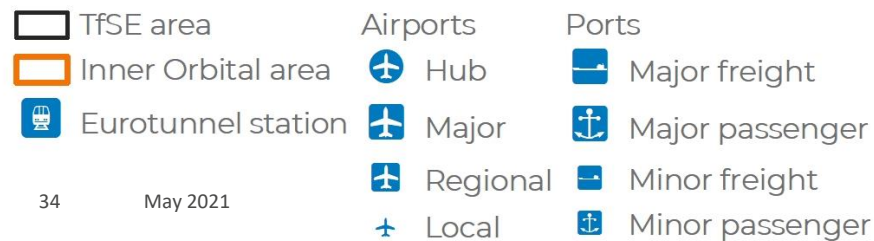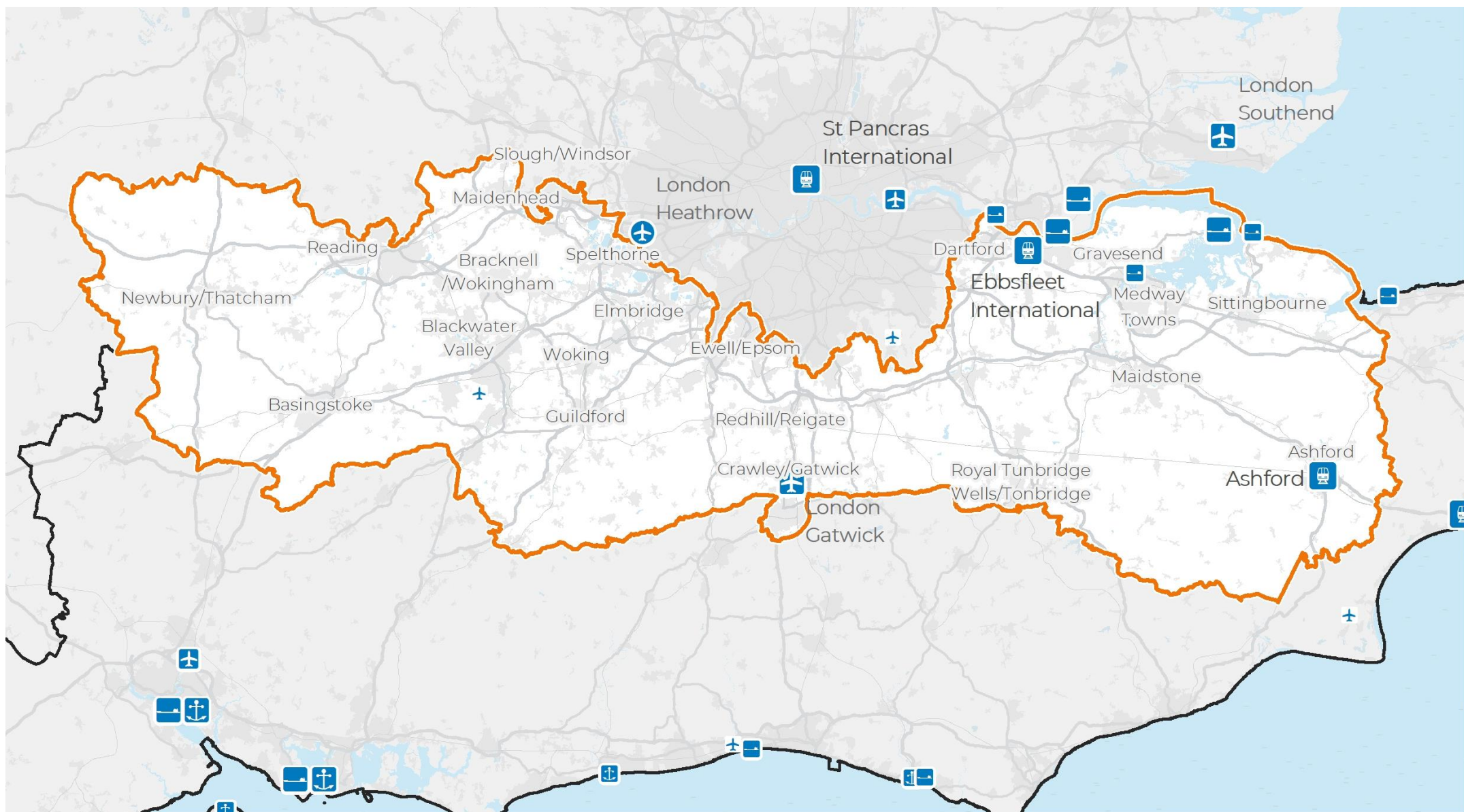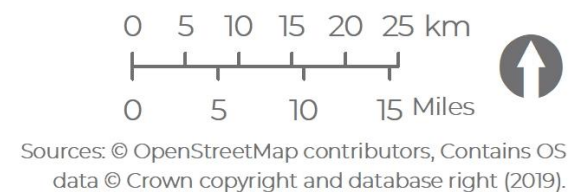
Part 1f
Public Transport Access and Connectivity

Public Transport Access and Connectivity

Public Transport Access

Urban areas generally enjoy much better access to public transport services than rural areas along the Inner Orbital corridor.

Figure 17 shows the average minimum journey time to key services – providers of retail, education, and health services – by public transport (plus walking). Access to these services is faster in urban areas compared to rural areas, as people living in rural areas need to travel further for these services and public transport is often limited in rural areas. Access to services by public transport is particularly good in and around Reading, Maidstone and in the Blackwater Valley area, however, is challenging in more rural parts of Surrey, Hampshire and Kent.

Figure 18 shows the difference in journey times between car and public transport to access services. This shows a similar pattern; public transport is slightly slower than driving in urban areas but significantly slower than driving in rural areas, particularly in southeast Surrey and central Kent. This underlines the current importance of the car to residents in rural areas who, in many cases, have limited other viable alternatives for accessing services.

Catchment Analysis

To help better understand how public transport connectivity varies across the South East, we conducted analysis of public transport connectivity to key urban hubs.

Figures 19 – 23 show the areas of South East England that can be reached by public transport for the following large urban areas:

- Medway (Figure 19)
- Maidstone (Figure 20)
- Crawley/Gatwick (Figure 21)
- Guildford (Figure 22)
- Reading (Figure 23)

This analysis examines how easy or difficult it is to travel from a given point using public transport (and walking). Using isolines, it shows how far it is possible to travel by 0-30 minutes, 31-60 minutes, and 61-90 minutes.

In general, the larger the catchment area, the more likely one can access a wider range of opportunities and amenities.

The maps also highlight the poor provision of orbital public transport access along in Inner Orbital corridor, compared to radial connections.

The results of this analysis clearly show that that public transport is not provided equally between urban areas across the South East.

Medway is reasonably well connected in radial directions with a slower and less regular service provided on an orbital axis towards Maidstone.

Maidstone, like Medway, is well connected in radial directions. Some orbital connectivity is available to Medway and Tonbridge.

Gatwick is extremely well connected in a north-south direction. Poorer levels of connectivity are provided to the west and particularly the east.

Guildford benefit from good radial connectivity. The North Downs Line provides some orbital connectivity to Reading to the North and Redhill/Gatwick to the east.

Reading has excellent radial connectivity with some orbital connectivity provided by the Reading to Basingstoke line and North Downs to neighbouring hubs in Berkshire, Hampshire and Surrey.

TRANSPORT FOR THE
South East

Slough/Windsor
Maidenhead
Reading
Spelthorne
Newbury/Thatcham
Bracknell/Wokingham
Elmbridge
Blackwater
Valley
Woking
Ewell/Epsom
Basingstoke
Guildford
Redhill/Reigate
Crawley/Gatwick
Royal Tunbridge
Wells/Tonbridge
Gravesend
Dartford
Medway
Towns
Sittingbourne
Maidstone
Ashford
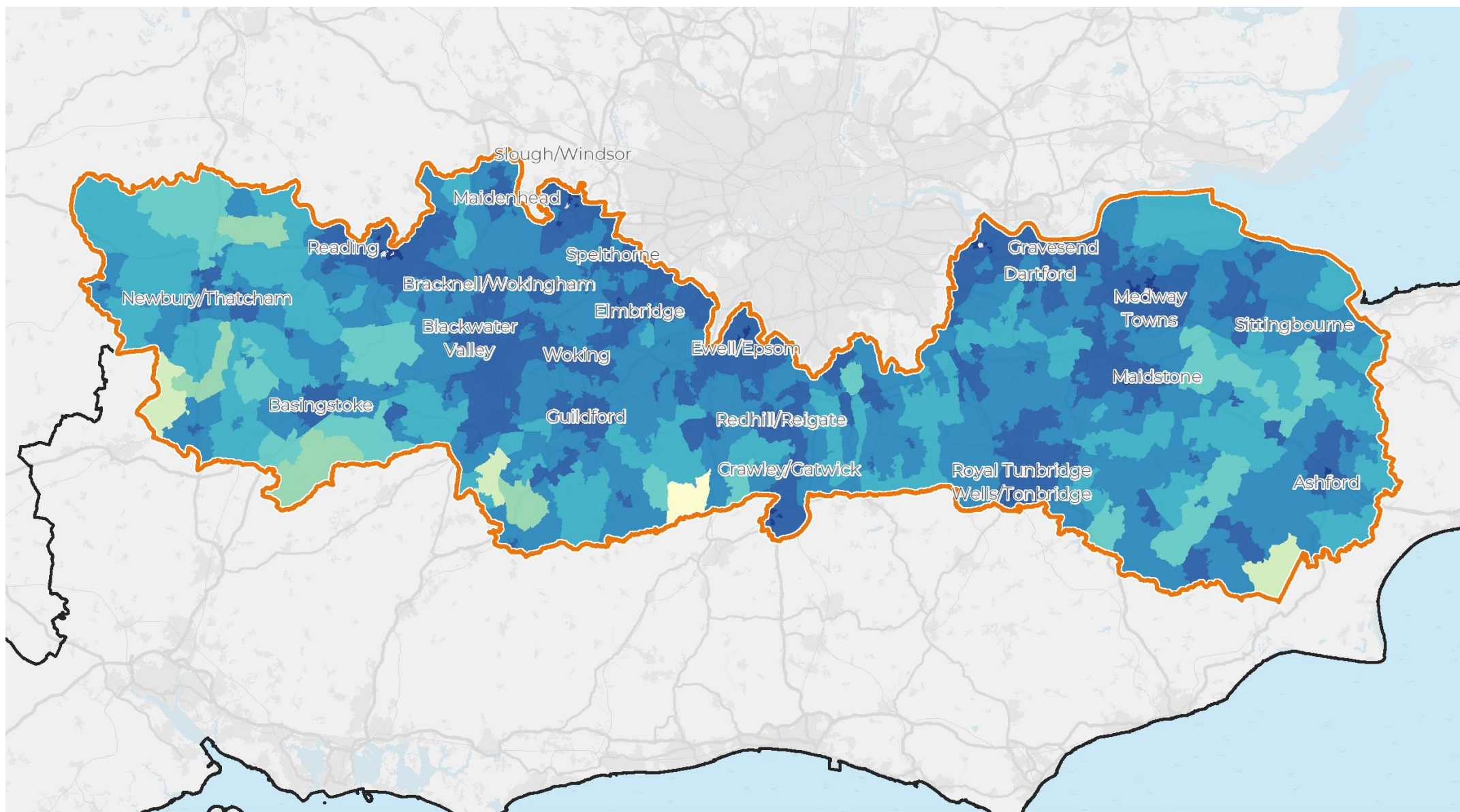
TfSE area
Inner Orbital area

Average minimum journey time to key services
By public transport plus walking (mins)

6 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80

0 5 10 15 20 25 km
0 5 10 15 Miles

Sources: © OpenStreetMap contributors,
Contains OS data © Crown copyright
and database right (2019), DfT.

Figure 18: Comparison of car and public transport options

Slough/Windsor
Maidenhead
Reading
Spelthorne
Newbury/Thatcham
Bracknell/Wokingham
Elmbridge
Blackwater Valley
Woking
Ewell/Epsom
Basingstoke
Guildford
Redhill/Reigate
Crawley/Gatwick
Royal Tunbridge Wells/Tonbridge
Gravesend
Dartford
Medway Towns
Sittingbourne
Maidstone
Ashford
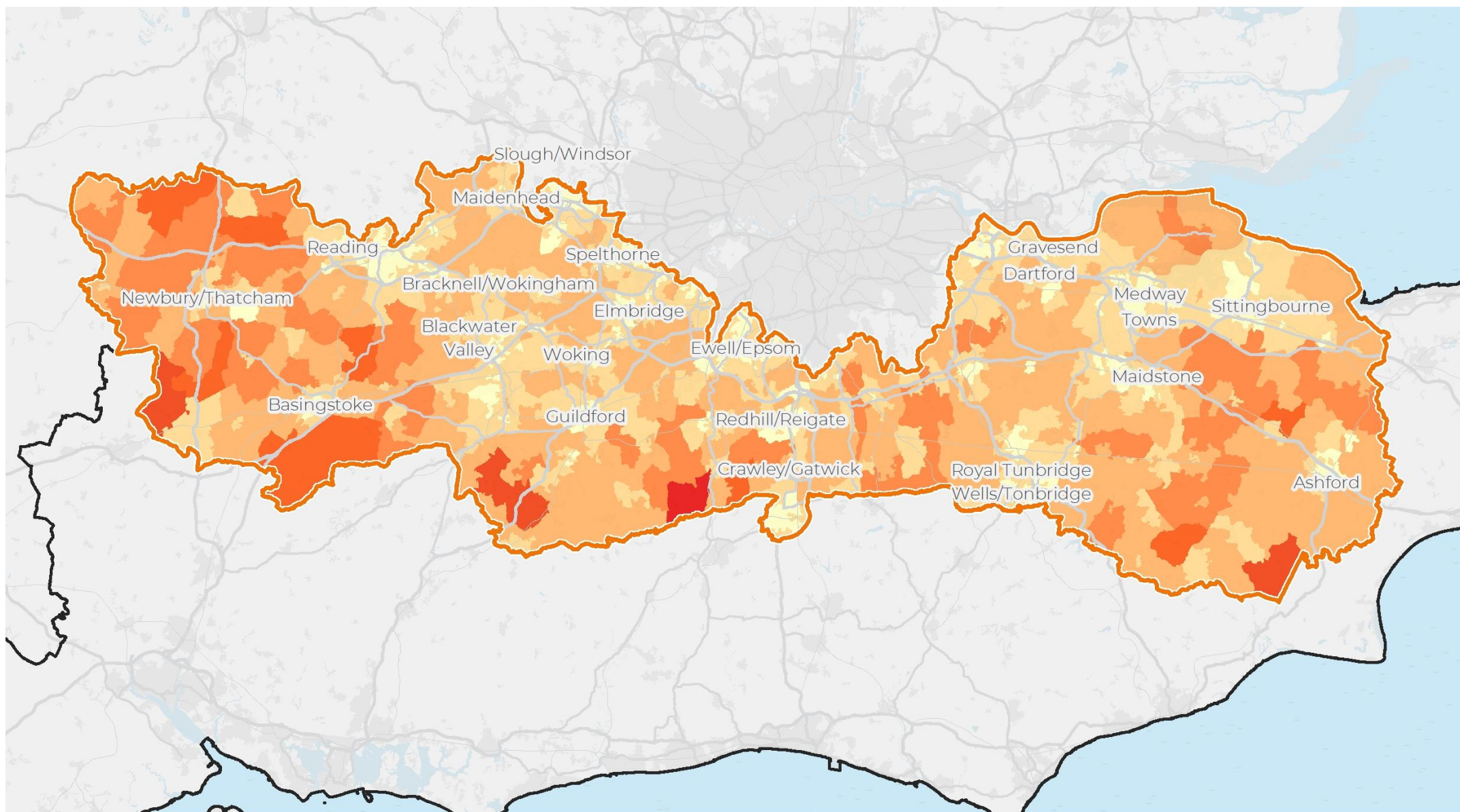
TfSE area

Inner Orbital area

Average minimum journey time to key services
Difference between driving and public transport plus walking

Driving 0 - 5 mins faster

Driving 6 - 10 mins faster

Driving 11 - 20 mins faster

Driving 21 - 30 mins faster

Driving 31 - 40 mins faster

Driving 41 - 50 mins faster

Driving 51 - 65 mins faster

0   5   10   15   20   25 km

0   5   10   15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), DfT.

TfSE area

Journey time by public transport
to Medway Towns

0 - 30 mins

31 - 60 mins

61 - 90 mins

0 5 10 15 20 25 km

0 5 10 15 Miles

May 2021

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS
data © Crown copyright and database right (2021),
Natural England

Figure 20: Maidstone Public Transport Catchments

TfSE area

Journey time by public transport to Maidstone

0 - 30 mins
31 - 60 mins
61 - 90 mins

0 5 10 15 20 25 km
0 5 10 15 Miles

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May 2021

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2021), Natural England

TfSE area

Journey time by public transport
to Gatwick

- 0 - 30 mins
- 31 - 60 mins
- 61 - 90 mins

0 5 10 15 20 25 km

0 5 10 15 Miles

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data © Crown copyright and database right (2021),
Natural England

41   May 2021

TfSE area

Journey time by public transport
to Guildford

0 - 30 mins

31 - 60 mins
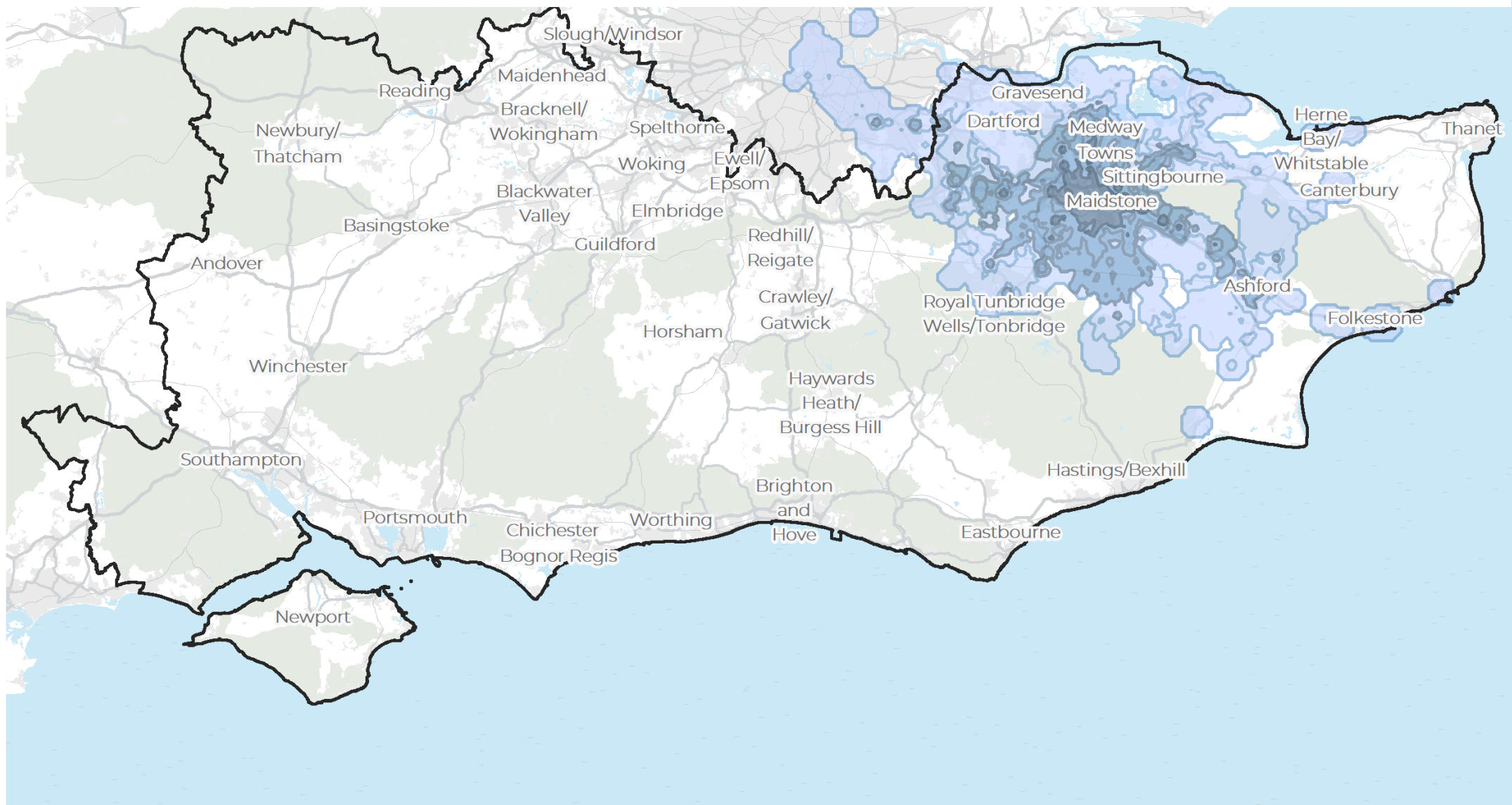
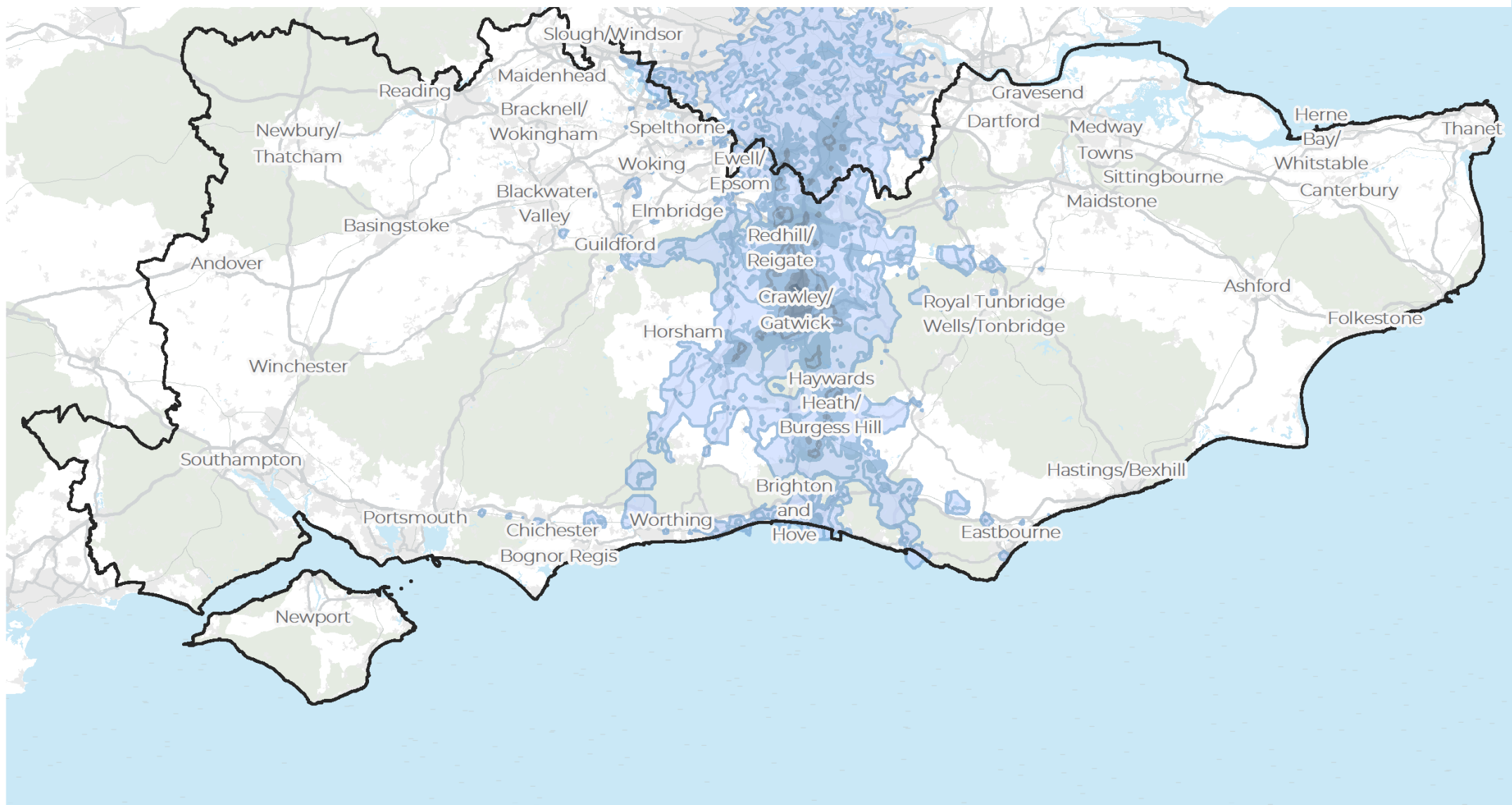61 - 90 mins

0 5 10 15 20 25 km

0   5   10   15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS
data © Crown copyright and database right (2021),
Natural England

Slough/Windsor

Maidenhead

Reading

Newbury/
Thatcham

Bracknell/
Wokingham

Spelthorne

Woking

Ewell/
Epsom

Blackwater
Valley

Elmbridge

Basingstoke

Guildford

Redhill/
Reigate

Andover

Crawley/
Gatwick

Horsham

Winchester

Royal Tunbridge
Wells/Tonbridge

Gravesend

Dartford

Medway
Towns

Sittingbourne

Maidstone

Herne
Bay/
Whitstable

Canterbury

Thanet

Ashford

Folkestone

Haywards
Heath/
Burgess Hill

Southampton

Brighton
and
Hove

Hastings/Bexhill

Portsmouth

Chichester
Bognor Regis

Worthing

Eastbourne

Newport

TfSE area

Journey time by public transport
to Reading

0 - 30 mins

31 - 60 mins

61 - 90 mins

0 5 10 15 20 25 km

0   5   10   15 Miles

May 2021

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS
data © Crown copyright and database right (2021),
Natural England

Part 2

Future Context

Part 2a
Demographic Projections

Demographic Projections

Housing and population

The Inner Orbital area is expected to accommodate significant housing growth in the next local plan period (up to 2035).

Figure 24a and 24b show the location of the largest housing growth sites in the Inner Orbital area. This is based on Local Plan estimates in 2019, which in many instances are dependent on transport and other infrastructure being delivered.
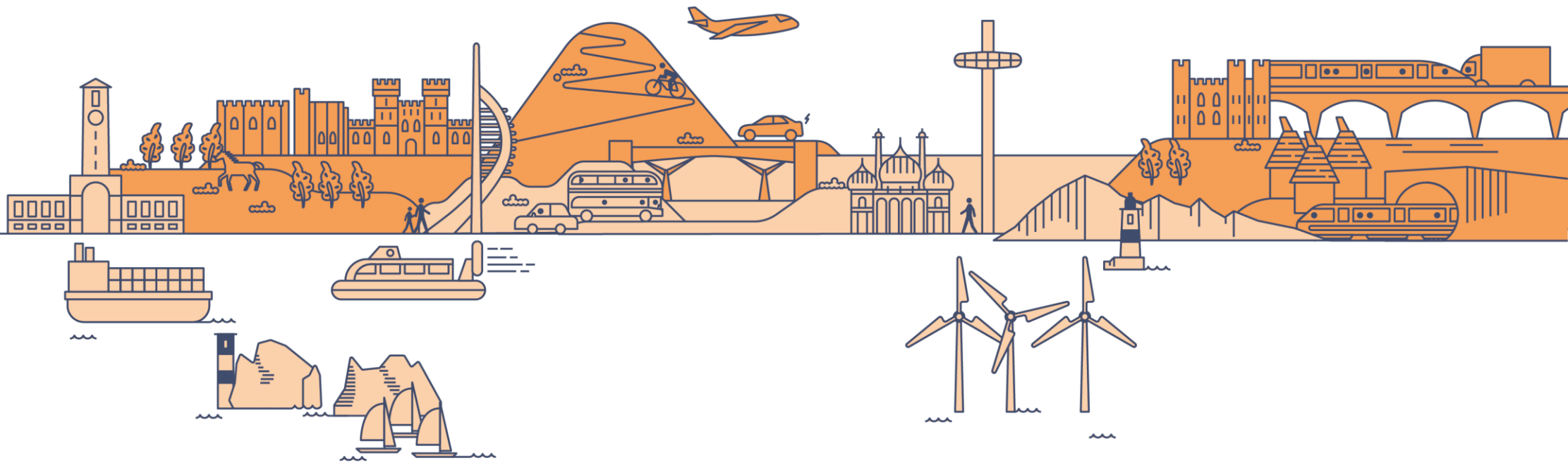
This map shows that areas of particular future housing growth include Medway, Maidstone, Ashford, Crawley/Gatwick, Reading, Elmbridge, Guildford and Basingstoke.

Much of this growth is in peri-urban settings and it will therefore be critical that developments are supported with walking, cycling and public transport enabling sustainable communities to develop.

ONS future population projections somewhat align with projected housing growth. Areas of population growth between now and 2040 include Dartford (22%), Ashford (16%), Maidstone (15%), and Swale (15%).

In contrast, places such as Medway (4%), Basingstoke (2%) and Reading (1%) population growth is minimal.

Employment

Employment growth is expected to be more concentrated in the larger urban areas.

Figure 25 shows the location of the largest employment growth sites in the Inner Orbital area. This map shows that employment growth is expected to be focused in Guildford, Elmbridge, Woking and Medway.

Some of the planned employment in Medway and Maidstone will be concentrated immediately adjacent to the urban areas. This growth could provide a boost to these towns local economic outlook.

By contrast, employment in the Guildford/Elmbridge area is more dispersed in nature. This may be driven by the higher cost of land in this area, and the relatively low availability of land close to urban centres.

Overall, it will be important to provide good public transport and active travel connections from peri-urban locations to city centres and transport hubs. This will ensure that Major Eocnomic Hubs will grow more sustainably, enjoying economic prosperity and an increased quality of life for all residents.

Spatial distribution

There is a risk that any significant imbalance in housing and employment growth may cause unsustainable outcomes.

These maps show that housing development is generally expected to take place in a dispersed fashion across the Inner Orbital corridor, while employment development will be more concentrated in urban areas. There is a risk that this may create a spatial imbalance in housing and employment may generate more demand, particularly by the car.

It is recognised that there is a need for housing in the Inner Orbital area to meet population demand and ensure that housing is accessible and affordable. Given the existing high density of development in some parts of the corridor, some areas will be better placed to absorb housing than others.

To promote more sustainable outcomes, it is recommended that:

- Development is located near to urban centres and transport hubs;
- Developments are mixed-use to provide local shops and services and are a suitable density/volume; and
- Developments are served by sustainable transport options (from the outset).

TRANSPORT FOR THE
South East

Figure 24a: Housing targets in the Inner Orbital area by Local Authority
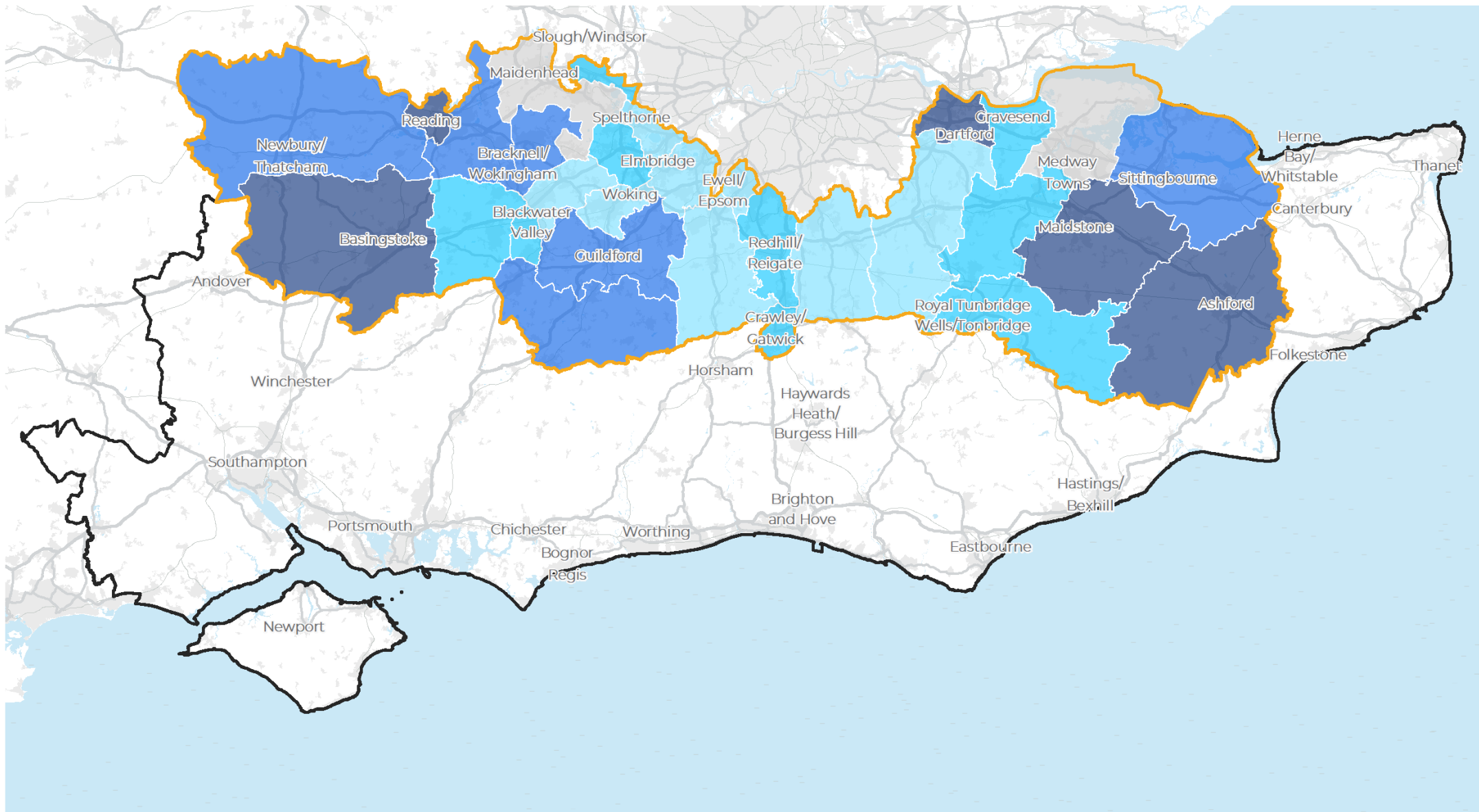
TfSE area
Inner Orbital

Adopted Housing Target - Total Over Plan Period

No data

Less than 5,000

5,001 - 10,000

10,001 - 15,000

15,001 - 20,000

This data is sourced from MHCLG's local plans prototype tool : https://local-plans-prototype.herokuapp.com/. Local plan housing requirement data reflects MHCLG understanding of adopted plans as at end January 2021. The data is experimental, updated monthly, and subject to limited validation. It therefore shouldn't be relied upon as a reliable 'real-time' representation of local plan progress or content.

Inner Orbital Area Study Evidence Base

0 5 10 15 20 25 km

0 5 10 15 Miles

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2021), Natural England

Figure 24b: Planned New homes in Inner Orbital area

Slough/Windsor
Maidenhead
Reading
Spelthorne
Bracknell/Wokingham
Newbury/Thatcham
Elmbridge
Blackwater
Valley
Woking
Ewell/Epsom
Basingstoke
Guildford
Redhill/Reigate
Crawley/Gatwick
Royal Tunbridge
Wells/Tonbridge
Gravesend
Dartford
Medway Towns
Sittingbourne
Maidstone
Ashford

TfSE area
Inner Orbital area

Number of new homes
<100
100 - 250
250 - 500
500 - 1,000
1,000 - 2,500
>2,500

0   5   10   15   20   25 km
0   5   10   15 Miles

Inner Orbital Area Study Evidence Base

Sources: © OpenStreetMap contributors, Contains OS
data © Crown copyright and database right (2019),
Natural England. Data provided by local authorities.

TfSE area

Inner Orbital area

Number of new jobs

< 25

26 - 50

51 - 100

101 - 250

251 - 500

> 500

0 5 10 15 20 25 km

0 5 10 15 Miles

Inner Orbital Area Study Evidence Base

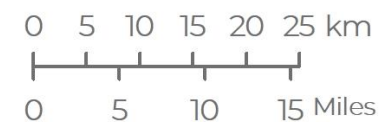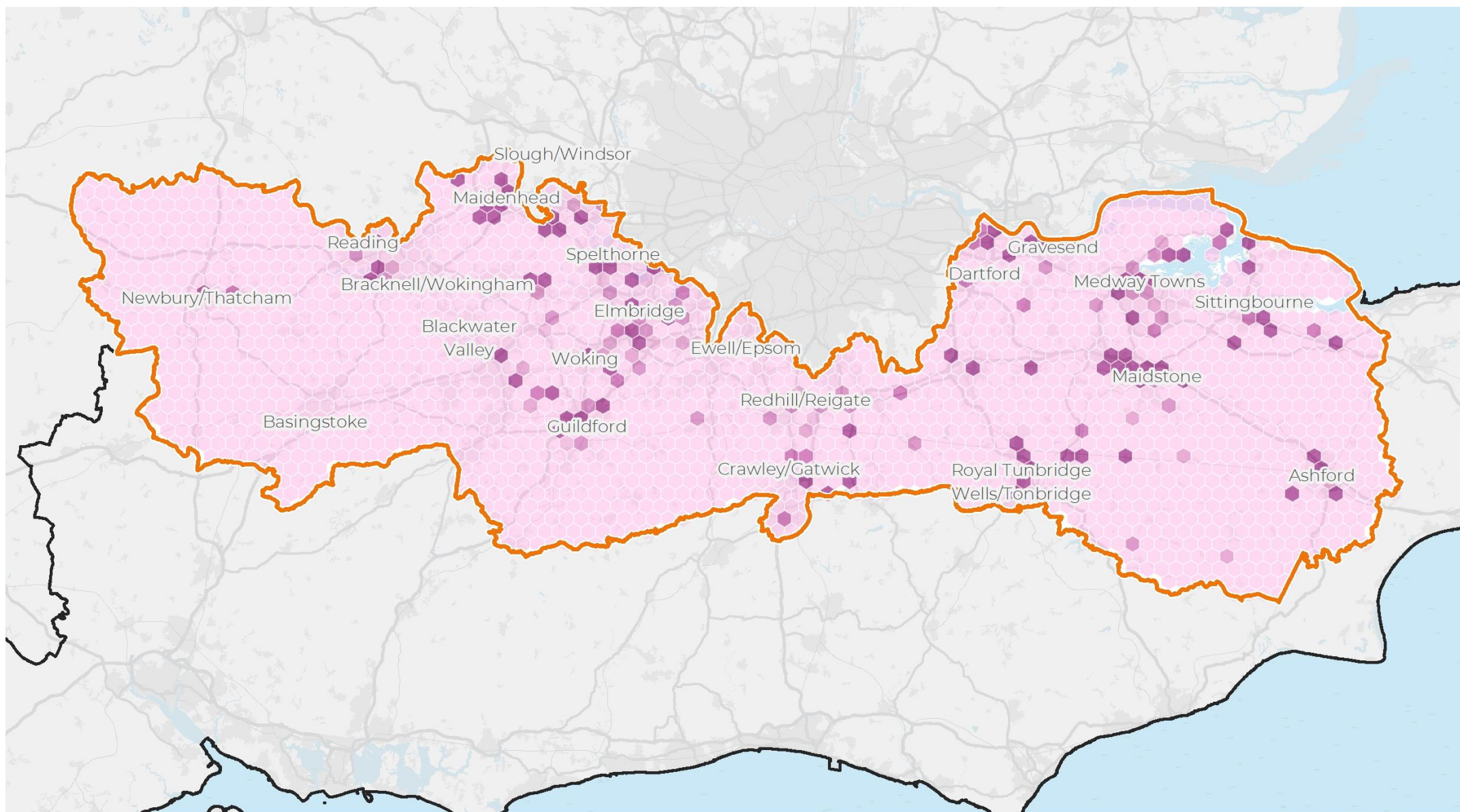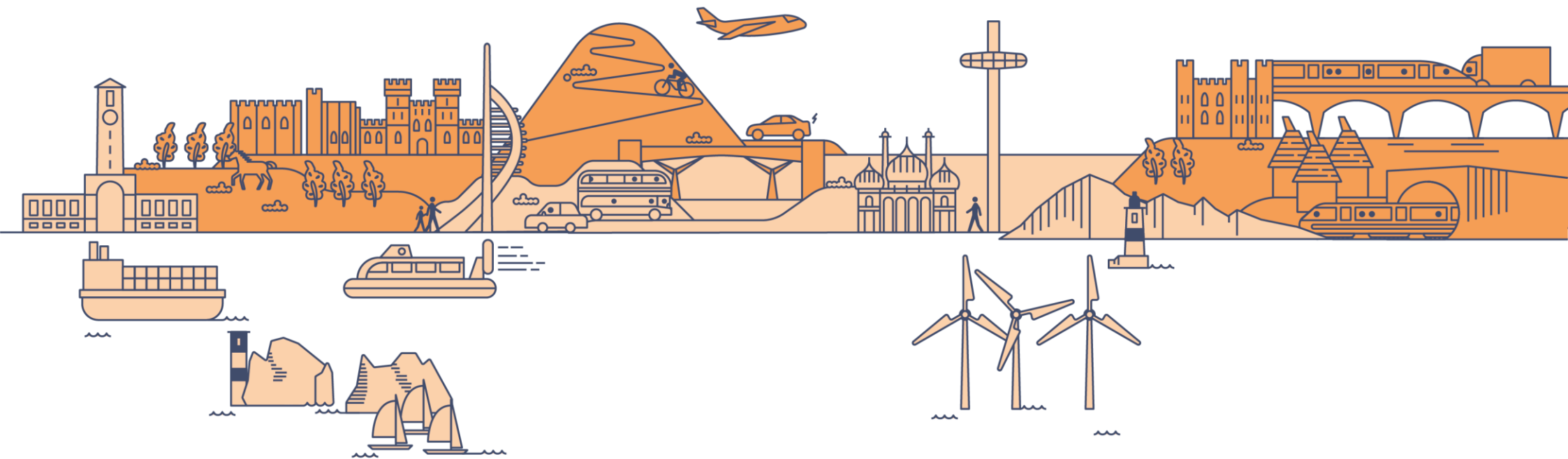Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), Natural England. Data provided by local authorities.

Part 2b
Scenario Forecasts

Scenario Forecasts

TfSE Transport Strategy

To support the development of the Strategy for South East England, in 2018/19 TfSE developed future scenarios for the area.

The scenarios were designed to help TfSE understand how different routes for the development of the South East's economy and population might impact transport outcomes from 2020 to 2050. They were developed by combining "axes of uncertainty", which describe the plausible outcomes of uncertain trends. These trends included the rate of adoption of emerging technology, changes in attitudes towards the environment, and the development of target industrial sectors in the economy.

Each scenario was modelled using a land use and transport model called the South East Economy and Land Use Model (SEELUM). The outcomes of modelling each scenario were compared to a Business as Usual (BAU) scenario, which was developed by modelling the impacts of the Department for Transport's National Trip End Model on the South East's economy and transport networks. Further adjustments have been made to reflect the impact of COVID-19 on the South East.

A Sustainable Route to Growth

The modelling results were used to develop a Preferred Scenario for the future of the South East: "A Sustainable Route to Growth".

The Preferred Scenario envisages a focus on more sustainable and active transport modes and improved integrated transport and land use planned to promote more sustainable travel outcomes (e.g. fewer trips overall, and fewer trips by car).

The results have been disaggregated for each area in TfSE's programme of area studies. **Figure 26a** provides a summary of the results of the BAU and **Figure 26b** shows the Preferred Scenario compared to the BAU for the Inner Orbital area.

These results show that for the Inner Orbital area, compared to the BAU a preferred scenario delivers:

- Minimal change in population growth;
- Higher employment and GVA;
- Fewer trips out of the region;
- Slightly fewer trips to other parts of the region; and
- A modal shift away from private car use towards rail and bus.

Transport Demand

The Preferred Scenario anticipates lower growth in highway demand than the "Business As Usual" scenario.

It also calls for a step change in public transport provision, including the railway network, as well as widespread adoption of demand management measures, such as road user charging.

Figure 27a and 27b show the expected impact of the Business as Usual Scenario and Preferred Scenario on highway demand. It generally points to significantly less demand, which suggests only targeted highways improvements will be required where there are particular local issues and/or growth hotspots, such as in Surrey along the A3 and M3, near Woking, Guildford, Farnborough and Aldershot; and the A33 to support planned development.

Figure 28a and 28b show the expected impact of significant increase in rail demand on the rail network under the Preferred Scenario. It suggests that additional capacity will be required on all corridors, including the North Downs Line, serving the corridor between Reading and Guildford.

The model only provides map outputs for the railway lines where the highest levels of crowding occurs. Analysis has indicated that on some parts of the orbital rail network (e.g. Medway Valley Line), it is level of service rather than crowding which limits the rail passenger numbers.
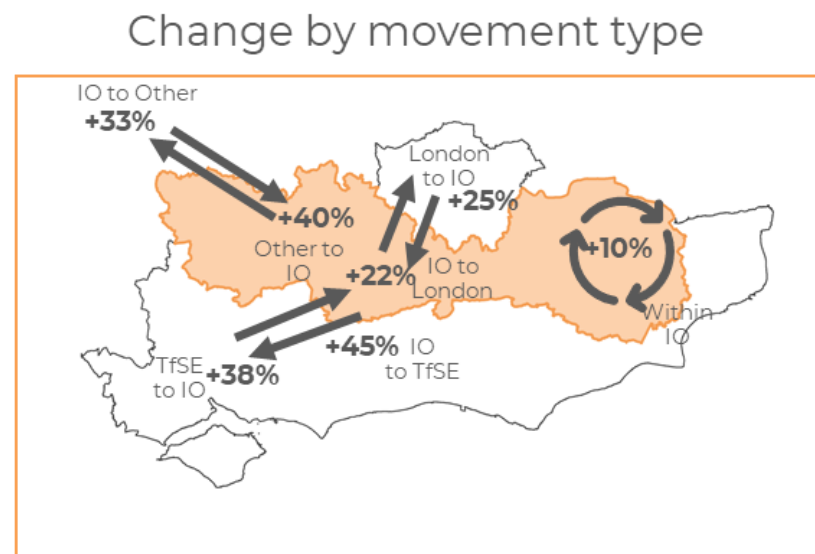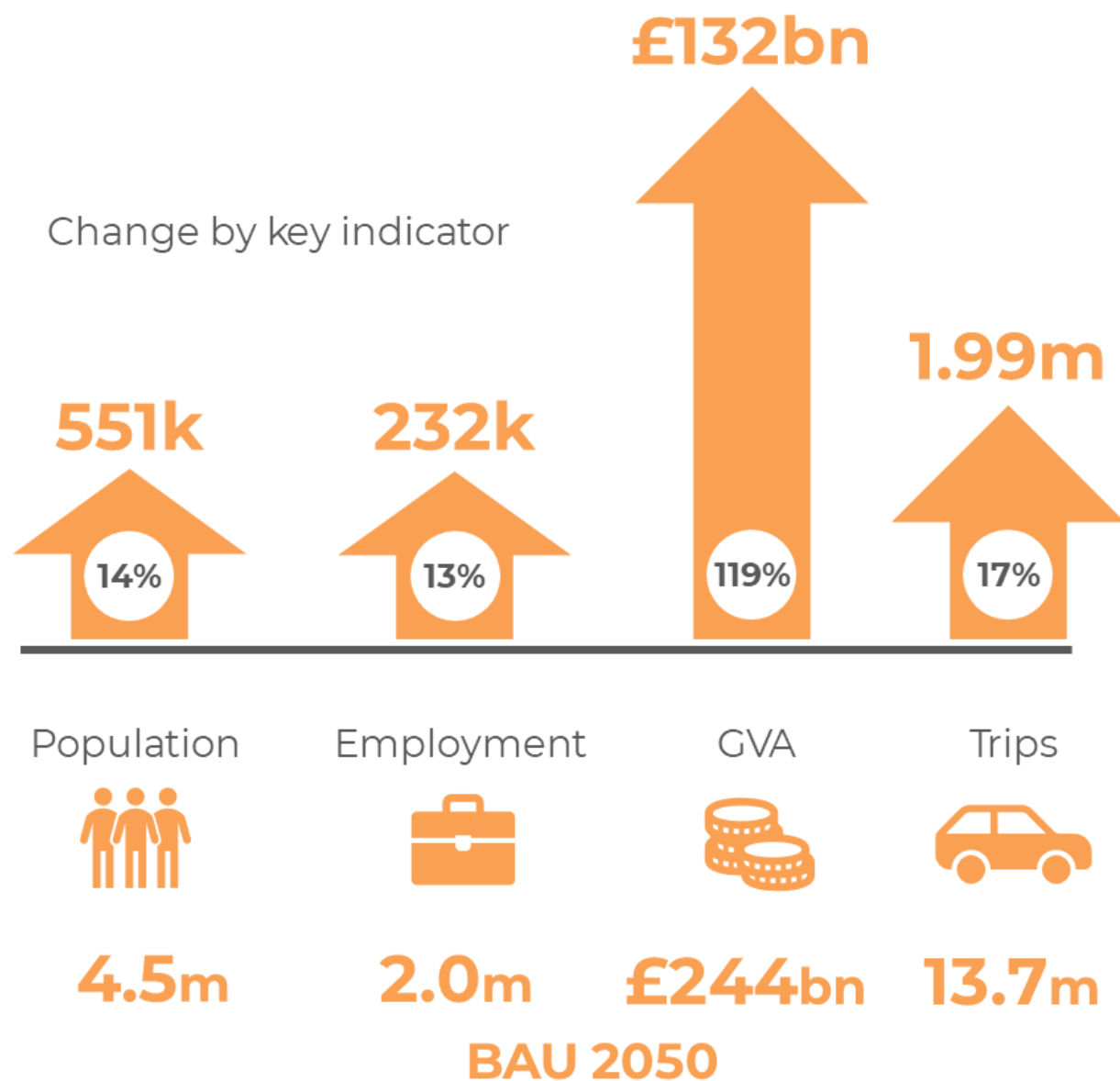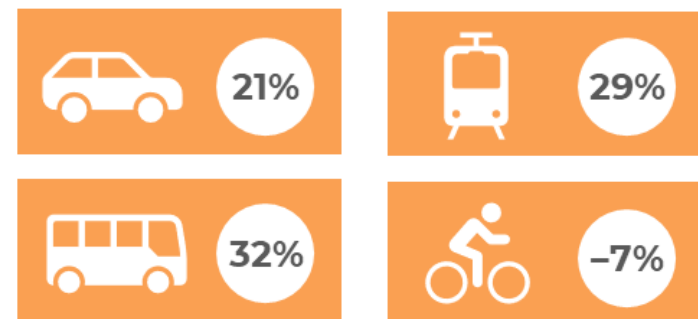
Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Change by key indicator

£132bn

1.99m

551k
14%

232k
13%

119%

17%

Population

Employment

GVA

Trips

4.5m

2.0m

£244bn

13.7m

BAU 2050

Change by movement type

IO to Other
+33%

London to IO
+25%

Other to IO
+40%

IO to London
+22%

Within IO
+10%

TfSE to IO
+38%

IO to TfSE
+45%

Change in trips by mode

21%

29%

32%

−7%

Change compared to **Business as Usual (2050)**

-124k **-3%**

+230k 12%

+£34bn 14%

+85k 1%

Population

Employment

GVA

Trips

4.5m

2.0m

£244bn

13.7m

BAU 2050

Change by movement type

IO to Other **-16%**

London to IO **+40%**

+0% Other to IO

-5% IO to London

0% Within IO

TfSE to IO **-3%**

+3% IO to TfSE

Change in trips by mode

−13%

94%

117%

2%
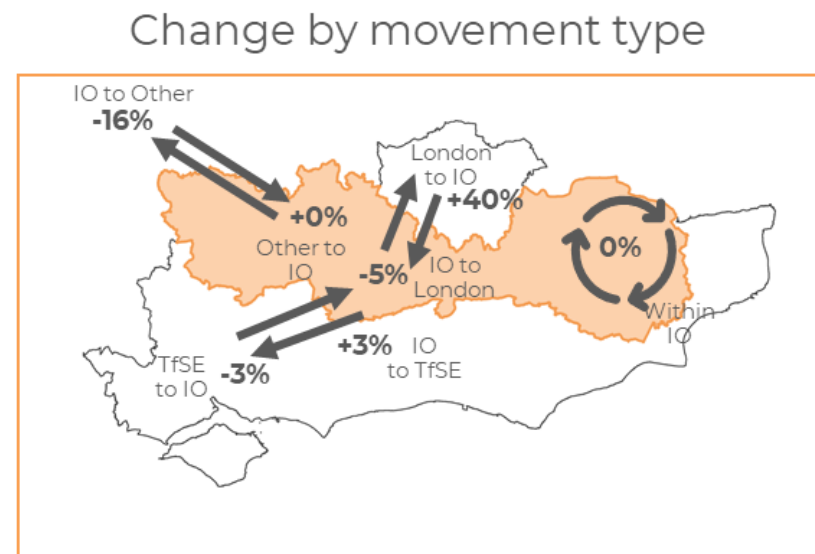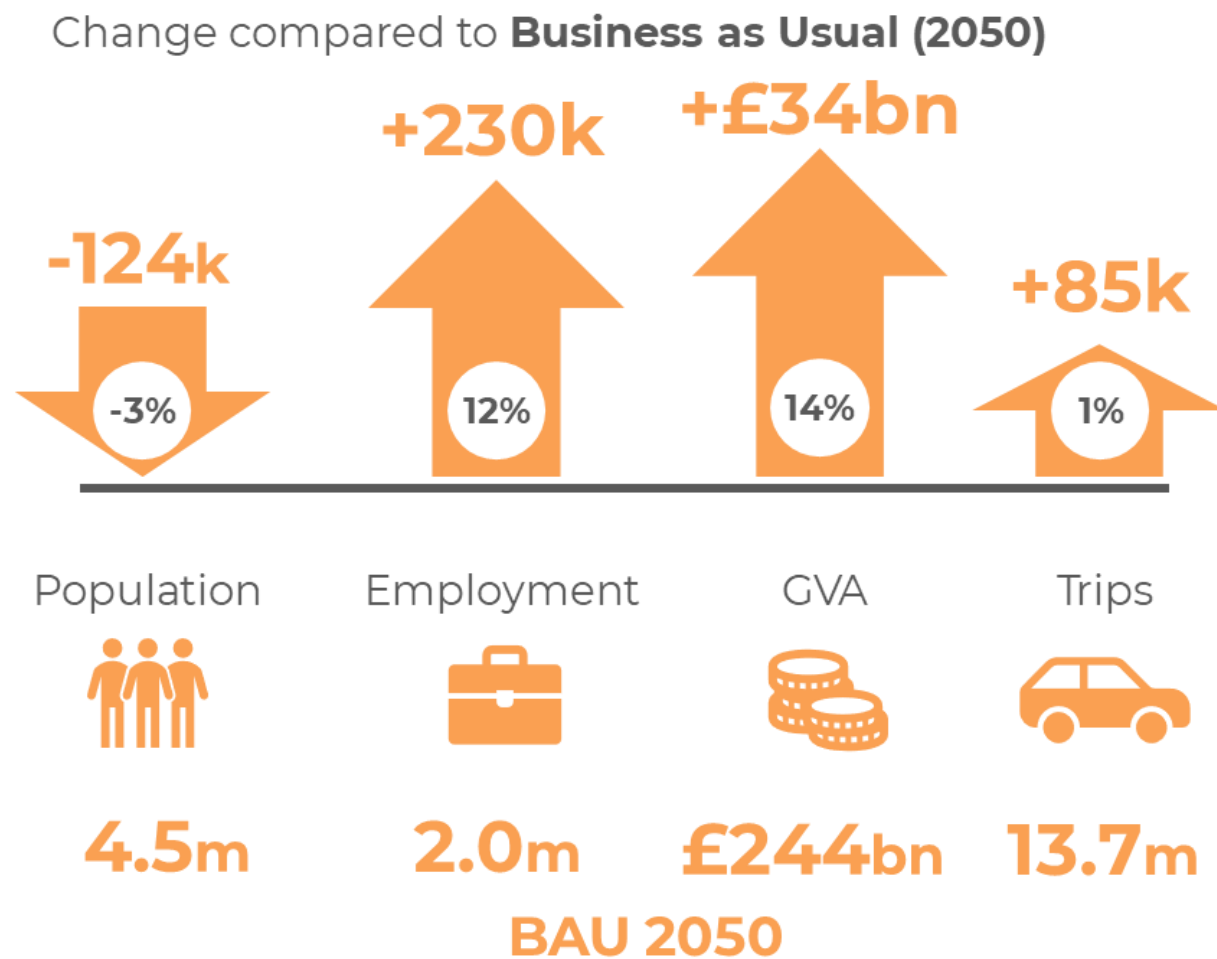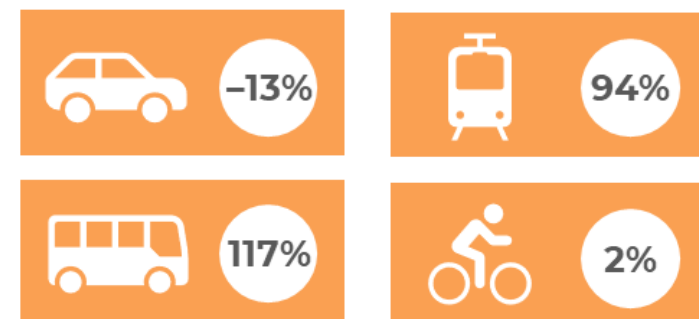
Figure 27a: Volume over capacity forecasts for highways under the "Business as Usual" Scenario

Legend

Inner Orbital Area

TFSE Area

Volume over Capacity

Less than 25%

25% - 50%

50% - 75%

75% - 100%

Greater than 100%

0 5 10 15 20

Kilometres

TfSE Area Study SEELUM Outputs
Inner Orbital - Road
Volume over Capacity (using 2050
Business as Usual AADT)

Layer Credits: Contains OS data © Crown Copyright and database right 2020

Created by:	Last Updated:	Scale:
TG	14/10/2020	700,000

steer

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Figure 27b: Volume over capacity forecasts for highways under the Preferred Scenario, "A Sustainable Route to Growth"

Legend

Inner Orbital Area

TFSE Area

Volume over Capacity

Less than 25%

25% - 50%

50% - 75%

75% - 100%

Greater than 100%

0   5   10   15   20
Kilometres

TfSE Area Study SEELUM Outputs
Inner Orbital - Road
Volume over Capacity (using 2050
Sustainable Route to Growth AADT)

steer

| Created by: TG | Last Updated: 14/10/2020 | Scale: 700,000 |

Layer Credits: Contains OS data © Crown Copyright and database right 2020

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Legend

- Link Junctions
- Railway Lines
- Inner Orbital Area
- TFSE Area

Volume over Capacity

- Less than 50%
- 50% - 75%
- 75% - 100%
- 100% - 125%
- 125% - 150%
- Greater than 150%

0 5 10 15 20
Kilometres

TfSE Area Study SEELUM Outputs
Inner Orbital - Rail
Volume over Capacity (using 2050
Business as Usual AADT)

steer

| Created by: | Last Updated: | Scale: |
| TG | 14/10/2020 | 700,000 |

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Legend

- - - Railway Lines
● Link Junctions
▭ Inner Orbital Area
▭ TFSE Area

Volume over Capacity

— Less than 50%
— 50% - 75%
— 75% - 100%
— 100% - 125%
— 125% - 150%
— Greater than 150%

0 5 10 15 20
Kilometres

TfSE Area Study SEELUM Outputs
Inner Orbital - Rail
Volume over Capacity (using 2050
Sustainable Route to Growth AADT)

steer

Created by:	Last Updated:	Scale:
TG	14/10/2020	700,000

Layer Credits: Contains OS data © Crown Copyright and database right 2020

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Part 2c
Schemes and Initiatives

Railway Schemes

Network Rail, Local Transport Authorities and other scheme promotors are preparing several rail upgrade schemes that will enhance orbital and radial connectivity in the Inner Orbital area.

Table 2 summarises the key railway schemes that are currently under development in the Inner Orbital area.

There is an opportunity to upgrade the North Downs Line and Redhill-Tonbridge Line, a stretch of railway connecting the major economic hubs of Reading, Wokingham, Farnborough, Guildford, Redhill, Tonbridge and Ashford; whilst also enhancing services from these centres to Gatwick.

These large-scale schemes are supported by a programme to upgrade branch lines that interface with this route, such as reopening the Tunbridge Wells West line and upgrading railway infrastructure in Medway and Maidstone to provide higher frequency services. The Inner Orbital area stands to benefit from several enhancements in the London area, including the Metroisation of services in south London and the Crossrail extension to Ebbsfleet.

The list in Table 2 is not exhaustive.

Table 2: List of railway schemes in the pipeline to enhance the Inner Orbital corridor

Project name	Status	Estimated Delivery date	Estimated Cost
Major Orbital Railway Schemes facilitating East-West Connectivity			
North Downs Line Infrastructure upgrades - to enable up to 3tph to Gatwick Airport	Development	Phased delivery	-
Ashford International to Tonbridge line upgrade - to enable direct services between Reading, Guildford, Redhill and Kent	Inception	2030+	-
Ebbsfleet Southern Link - to enable new services between North Kent and South London	Inception	2030+	-
Tonbridge to Redhill Line Infrastructure upgrades - to enable direct services between Tonbridge to Gatwick Airport	Inception	2030+	-
North Kent to South Kent Links - to enable more rail connectivity between Faversham and Ashford	Inception	2030+	-
Supporting Railway Schemes in the Inner Orbital Area			
New Reading Green Park railway station	Delivery	2021	£20.1m
Reinstatement of passenger services on Grain branch	Delivery	2024	£63m
Several station redevelopments in Berkshire, including improving accessibility and park and ride facilities (Winnersh Triangle, Reading West, Newbury, Theale, Maidenhead)	Development	2021-2025	£40-50m total
Woking Area Capacity Enhancement and Grade Separation between SWML and Portsmouth Direct Line	Feasibility	2030+	-
Basingstoke Area Capacity Enhancement	Feasibility	2025+	-
Guildford station capacity increase	Feasibility	2025+	-
Crossrail/Elizabeth Line extension to Ebbsfleet	Feasibility	2030+	£2bn
South London Suburban Capacity Improvement	Feasibility	2025+	-
New Chineham Station	Feasibility	2025+	-
Maidstone to Medway metro service, line upgrades and new stations	Inception	2030+	-
Tunbridge Wells West line/Wealden Line reopening	Inception	-	-
Several rail freight interventions to improve capacity and freight movements in South London	Inception	2030+	-

TRANSPORT FOR THE
South East

Highways Schemes

Highways England and the Local Transport Authorities are promoting several strategic highways schemes in the Inner Orbital area, many of which aim to improve east–west connectivity.

Table 3 summarises the key highways schemes that are currently in development in the Inner Orbital area.

The most prominent schemes in an advanced stage of design involve upgrading the M25, particularly upgrading the stretch between Junction 10 and 16 to a smart motorway that will create an additional lane for traffic.

Lower Thames Crossing has a funding commitment and will have a significant impact on strategic trips from the rest of the UK into the TfSE area.

Supporting this are junction redesigns and improvements to key access roads such as the A289 and A30 to enable a smoother flow of traffic on/off the M25.

Many of the road schemes highlighted have progressed through the initial feasibility stages and have shortlisted options being considered. However, they still need to go through lengthy statutory processes and secure funding if they are to be realised.

The list in Table 3 is not exhaustive.

Table 3: List of highway schemes in the pipeline to enhance the Inner Orbital corridor

Project name	Status	Estimated Delivery date	Estimated Cost
Major Orbital Highway Schemes facilitating East-West Connectivity			
M25 Junctions 10-16 upgrade to Smart Motorway	Development	2023	£200m-£400m
M25 Junction 10/A3 Wisley interchange	Development	2025	£100m-£250m
A320 North Corridor connecting the M25 with Woking and Guildford	Development	2025+	£20m-£50m
Lower Thames Crossing	Feasibility	2025+	£6,400m-£8,200m
A229 Blue Bell Hill Junction upgrade (M2 junction 3 with M20 Junction 6)	Feasibility	2025+	£142m
Reading Third Thames Crossing	Feasibility	2025+	£150m
Supporting Highway Schemes in the Inner Orbital Area			
A2 Bean and Ebbsfleet junction improvements	Delivery	2023	-
A30 Crooked Billet Roundabout upgrade	Delivery	2021	£6.4m
A3095 road upgrade (Bracknell)	Delivery	2021-22	£8m
Kent Strategic Congestion Management Programme (A2/A251/A229/A274)	Delivery	2021-22	£5m
Slough-Langley High Street improvement works	Delivery	2022+	£8m
M20 Junction 7	Development	2023+	-
A3 Ripley to Guildford and A3/A247 junction improvements	Development	2025+	-
A289 Four Elms Roundabout to Medway Tunnel improvements	Development	2024	£11m
A325/Farnborough Growth Package	Development	2025+	£8.7m
A249 Swale programme (M2 Junction 5 and A249 Grovehurst Interchange)	Development	2024	£40m
Medway City Estate Connectivity Improvement Measures	Development	2021-22	£2.3m
Barkham Bridge Replacement (Wokingham)	Development	2022+	£7.7m
Slough-Stoke Road Area Regeneration	Development	2022+	£8.65m
A322 SMART Corridor	Development	2022+	£2.2m
Farnham Infrastructure Programme, (A31 Hickley's Corner and A325 Relief Road)	Feasibility	2025+	-

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

International Gateway and Freight Schemes

The Inner Orbital is home to some of the largest international gateways to the UK.

Table 4 summarises the key international gateway schemes currently under development in the Inner Orbital area.

Heathrow and Gatwick are the largest international airports in the UK. There have been plans to increase capacities of both airports by constructing an additional runway at each. However, the downturn in air travel due to Covid-19 has impacted on the viability of these schemes.

Nonetheless, the airports are committed to improve accessibility by providing new rail links and easing road congestion. A revamp of Gatwick airport railway station is underway with desires to increase direct rail connections to the airport via the aforementioned rail upgrades. Heathrow has drawn up two new rail access schemes to provide direct connections to the nearby Great Western and South Western main lines.

Additionally, there are plans to increase public transport provision to Ebbsfleet and Ashford International, enabling better connectivity with international rail services.

Lastly, there are a number of freight schemes in the pipeline to accommodate freight from ports to the rest of the South East and Beyond.

The list in Table 4 is not exhaustive.

Project name	Status	Estimated Delivery date	Estimated Cost
Table 4: List of international gateway and freight schemes in the pipeline along the corridor			
Airport Capital Investment Schemes			
Heathrow Airport long term capital investment programme, including a third runway	Feasibility	2025+	£14bn+
Gatwick capital investment programme, including potential second runway expansion	Feasibility	2030+	£10bn+
Supporting Airport Rail Schemes			
Gatwick Airport Station Upgrade	Delivery	2022	£150m
Western Rail Link to Heathrow	Feasibility	2025+	£900m
Southern Rail Link to Heathrow	Feasibility	2025+	£1,400m
North Downs Frequency Increase - up to 3tph to Gatwick Airport	Feasibility	2025	£2m
Guildford station capacity increase	Feasibility	2025+	-
Tonbridge to Gatwick Airport direct services	Inception	2025+	-
Supporting Eurostar/Channel Tunnel Schemes			
A2 Bean and Ebbsfleet junction improvements	Delivery	2023	-
Ebbsfleet Southern Link	Feasibility	2030+	-
Crossrail/Elizabeth Line extension towards Ebbsfleet	Feasibility	2030+	£1.5bn
Ashford International to Tonbridge line upgrade - to enable direct services between Reading, Guildford, Redhill and Kent	Feasibility	2030+	-
Rail Freight Connectivity Schemes			
Freight Gauge Clearance programme - to enable container freight trains to run to/from London and the Channel Tunnel	Inception	2030+	-
Rail Freight Link to Sheerness Docks	Inception	2030+	-
Several freight interventions to improve capacity and ease of freight into South London	Inception	2030+	-

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

Local Transport Schemes

Many of the largest centres in the Inner Orbital area are developing ambitious public and active transport programmes to improve local connectivity.

Stakeholders are committed to local road schemes to ease congestion and introduce walking and cycling infrastructure; providing an attractive alternative to car use in urban centres such as Guildford, Maidenhead and Medway. Supporting these are a host of sustainable transport packages that further look to create extensive and coherent walking and cycling networks to serve local areas by connecting the key attractions of towns, such as railway stations, high streets, schools and hospitals.
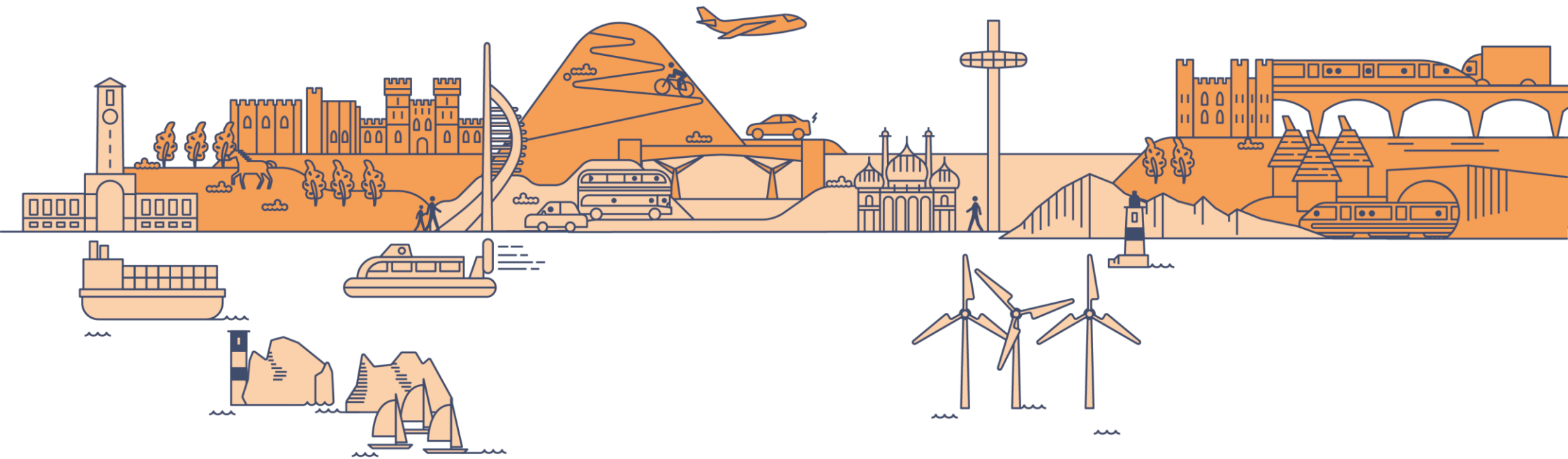
Local councils are working with local bus operators in developing ideas to maximise the effectiveness of existing bus networks and to invest in infrastructure where there are gaps in provision. One such example is the expansion of segregated bus routes in the Blackwater Valley area. Congested areas in the Thames Valley are planning park and ride schemes to improve access to centres.

These schemes have access to funds such as the Transforming Cities Fund, which should facilitate the development of numerous sustainable transport schemes.

The list in Table 5 is not exhaustive.

Table 5 List of sustainable local transport schemes in the pipeline along the corridor

Project name	Status	Estimated Delivery date	Estimated Cost
Sustainable Local Transport Schemes			
Maidenhead Town Centre "Missing Links" scheme	Delivery	2021	£2.8m
Wokingham - National Cycle Network Route 422	Development	2023+	£7.8m
Blackwater Valley Gold Grid - bus, cycling and public realm works	Development	2022+	£10.5m
Crawley Eastern Gateway Scheme	Development	2021-22	£8.3m
Copper Beech Park and Ride - to serve Wokingham and Bracknell town centres	Development	2021-22	£3m
Maidstone Integrated Transport Package	Development	2022	£10.55m
Woking Sustainable Transport Package	Development	2022	£4.4m
Slough Mass Rapid Transit Phase 2 (SMaRT P2)	Development	2022+	-
Thames Valley Berkshire Smart City Cluster (digital innovation)	Development	2022+	£10m
South Reading Mass Rapid Transit Phase 5 and 6	Development	2022+	£10m
Basingstoke MRT	Development	2022+	-
Epsom - Banstead Sustainable Transport Package	Feasibility	2025+	£4.84m
Greater Leatherhead Sustainable Transport Package	Feasibility	2025+	£4.8m

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

Part 2d
COVID-19

COVID-19

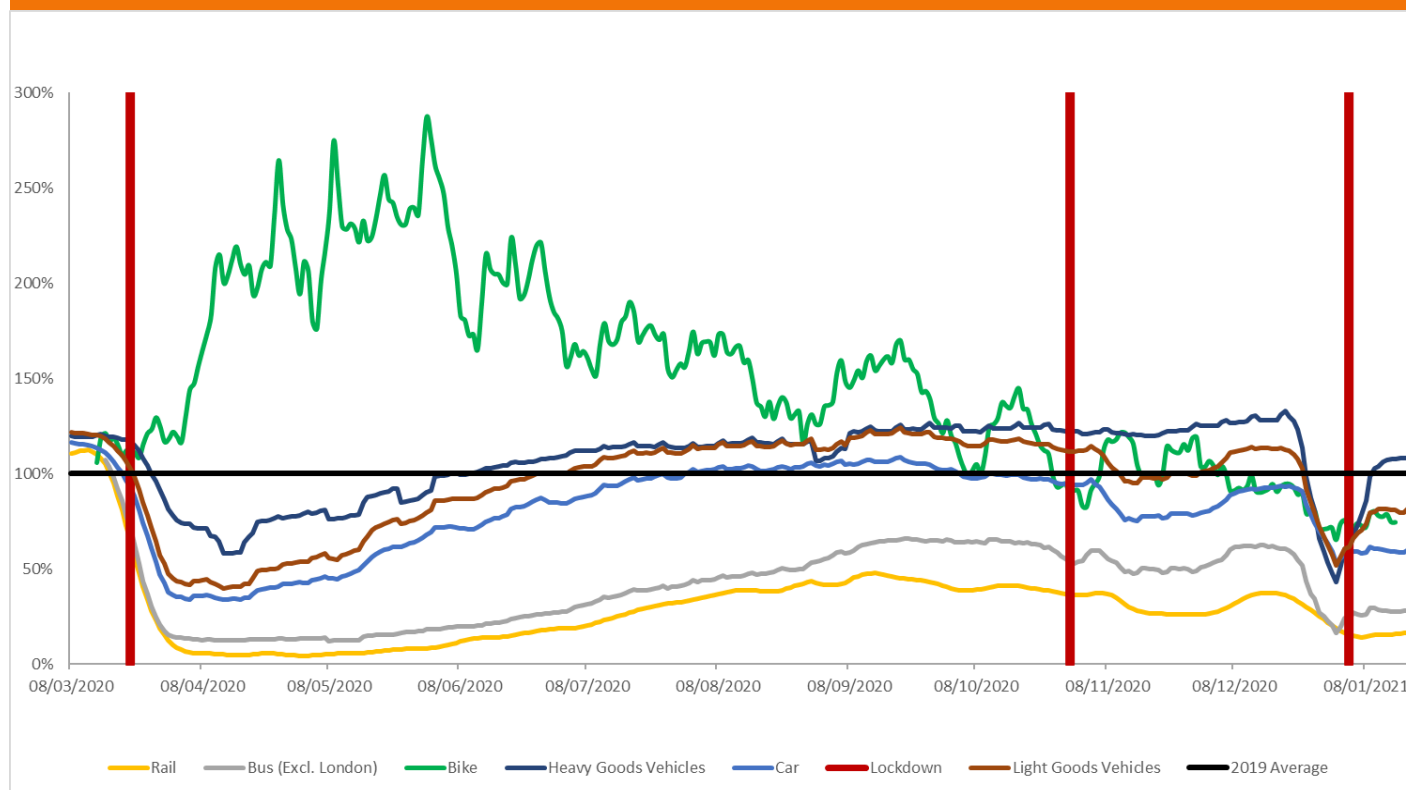**The economy and travel behaviours in the South East have been severely impacted by the COVID-19 pandemic.**

At the time of writing, the South East has entered three periods of "lockdown" – a first in spring 2020, a second in November 2020 and a third in January 2021. With the assistance of a vaccine programme it currently appears likely that national 'unlocking' will occur in 2021, but there remains significant uncertainty about how the transport network is going to develop post COVID-19.

Impact on transport networks and demand

As **Figure 29** shows, the spring lockdown and subsequent appeal to the public to maintain social distancing had a profound impact on travel behaviour.

The spring lockdown generated a significant increase in the use of active modes (walking and cycling), especially in urban areas. Use of the car quickly rebounded to pre-COVID-19 pandemic levels. The use of public transport modes has been severely limited across all areas. Rail patronage, in particular, has remained below pre-lockdown levels. International travel has also been impacted with a number of countries imposing travel bans and many airlines responding by running significantly reduced operations..

Figure 29: Indexed transport demand by mode

Legend: Rail, Bus (Excl. London), Bike, Heavy Goods Vehicles, Car, Lockdown, Light Goods Vehicles, 2019 Average

Impact on the economy and employment

There has been a significant impact on the economy and employment. In May 2020, the Treasury introduced the job retention or "furlough" scheme to cover a portion of the cost of employees who were unable to work during the spring lockdown.

As **Figure 30** shows, the proportion of workers participating in this scheme has been substantial with particularly high levels seen in Crawley, where economic dependence on the aviation sector (from Gatwick Airport) has led to significant economic impacts.

TRANSPORT FOR THE
South East
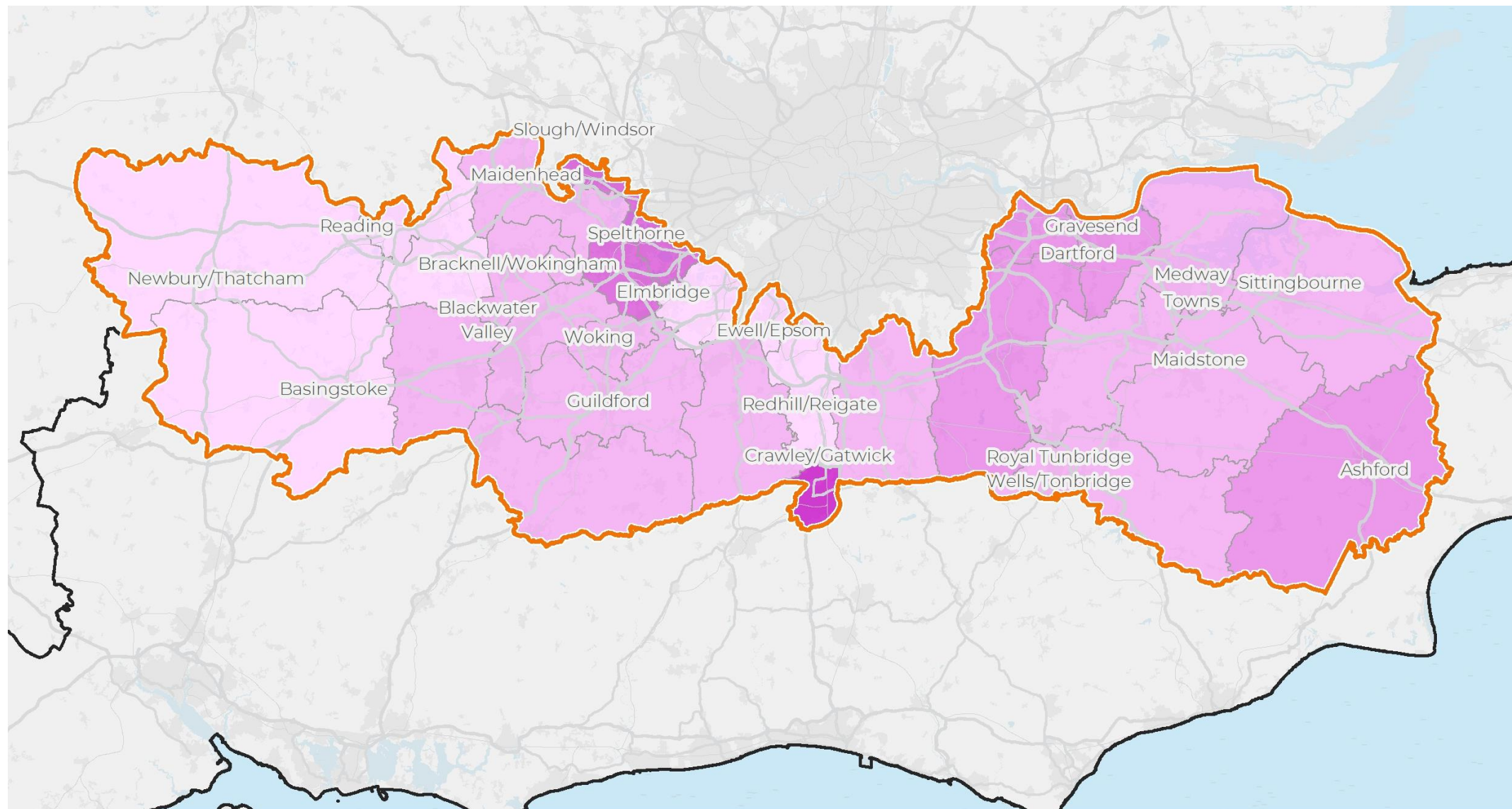
TfSE area
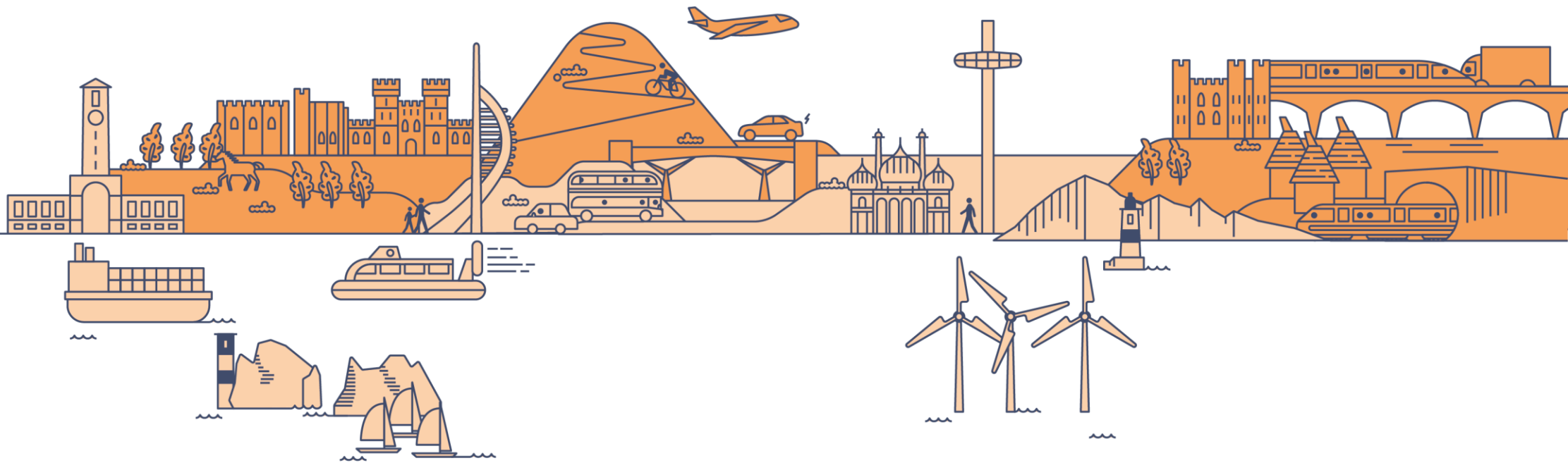Inner Orbital area

% Furloughed in August 20
<28%
28 - 30%
30 - 32%
32 - 34%
>34%

0 5 10 15 20 25 km

0 5 10 15 Miles

Sources: © OpenStreetMap contributors,
Contains OS data © Crown copyright
and database right (2019), DfT.

Inner Orbital Area Study Evidence Base

Part 2e
PESTLE Analysis

PESTLE Analysis - Introduction

What is PESTLE analysis?

PESTLE considers the key exogenous drivers that might impact the Inner Orbital area.

The framework considers:

P **Political**

E **Economic**

S **Sociological**

T **Technological**

L **Legal**

E **Environmental**

This framework is designed to capture the key external factors which may impact upon any organisation or area. This can help the organisation to spot future risks and opportunities which may impinge/influence its future strategy.

This type of analysis is particularly useful in this area because of the array of factors which feed into its future development – there is no single overriding factor which will define its future development.

A summary of the key issues we have identified through this analysis is presented in **Figure 31** to the right and explored in more detail in the following two pages.

Figure 31: Summary of PESTLE Analysis

Political

- Increasing interests and concerns about Climate Change and the environment
- The "Levelling Up" agenda and devolution
- COVID-19 and "Building Back Better"

Economic

- COVID-19 and the recession
- Reducing reliance on London as an economic centre

Social

- Inequality
- Ageing population
- Changes in working patterns

Technological

- New mobility
- Broadband and mobile connectivity
- Technological developments in established transport networks

Legal

- UK Exit from the European Union
- Planning framework reforms
- Local government reform

Environmental

- Climate Change
- Areas of outstanding natural beauty
- Changing attitudes and behaviors to sustainability

TRANSPORT FOR THE **South East**

Political

- **Environmental awareness –** There is increasing awareness in the political mainstream that environmental destruction fundamentally threatens the stability of our societies. This shift in policy/political direction will likely change the nature of the conversations being conducted about future scheme development in the Inner Orbital area.

- **"Build Back Better" –** Following calls for a "Green New Deal" the current government is promising to "Build Back Better" following the COVID-19 pandemic. This may help the Inner Orbital area to alleviate significant constraints, in terms of housing supply and affordability.

- **"Levelling up" –** The government has expressed a need to 'level up' the economy, helping to reduce inequality. The Inner Orbital includes some of the least deprived areas of the South East, but also some of the least deprived and "levelling up" would present an opportunity to reduce deprivation through improved transport connectivity to skills, education and employment.

Economic

- **COVID-19 recession –** The UK economy is currently in a recession resulting from the COVID-19 pandemic. It has caused unprecedented structural changes to, and imposed severe limits upon, economic activity. This will have a major impact on the economic development of the Inner Orbital area, and the South East more widely. This is particularly relevant for parts of the Inner Orbital area that are economically very reliant upon "business as usual" operations at London Gatwick and London Heathrow airports.

- **Reducing reliance on London as an economic centre –** The government have outlined an ambition to "level up" the economy through investing more in the regions. Couple this with COVID-19 and a shift in attitudes to working in large centres, there may be more scope for developing local economies which will benefit small and medium sized enterprises. There is opportunity for new industries in the region, which will drive jobs and earning potential. The Inner Orbital area already has a well-developed industrial base so is in a good position to capitalise on the opportunities presented by a reduced reliance on London

Social

- **Inequality –** There is significant wealth disparity in this area. Within the western part of the corridor are some of the wealthiest areas in the country, while the eastern part has some of the highest levels of deprivation.

- **Ageing population –** Almost all sections of the corridor are projected to have an ageing population over the next twenty years. This has the potential to place a brake on regional growth, whilst also adding significant expense to the region's healthcare bill. However, compared to the other areas of the South East, the Inner Orbital has experienced the slowest increase in the elderly population this decade

- **Changes in working patterns –** In response to the COVID-19 pandemic, significant volumes of people are working totally/more extensively from home. This has encouraged individuals who might otherwise have lived and worked full-time in London to spend more time in the South East. Some stakeholders believe this trend will continue and this could lead to more people living further away from London and commuting less frequently than before.

Technological

- **New Mobility –** This encompasses new, emerging technologies (e.g. electric vehicles, scooters, and bikes) as well as new business models, often based on sharing rather than owning assets. Advances in technology must be allied with encouragement by local political actors to ensure the uptake of these technologies is straightforward and widespread.

- **Broadband and mobile connectivity –** Social changes, such as increased home working, and the greater need for internet to share data about what is happening around the transport network (e.g. congestion) mean that connectivity to the internet is becoming increasingly important for economic prosperity and development.

- **Technological developments in established transport networks –** including Smart Motorways providing efficiencies on the highways. Technology to allow for dynamic and automated signalling on the rail network can increase capacity by enabling trains to run closer together at higher speeds.

Legal

- **UK exit from the European Union ("Brexit")** – There will be significant changes in the legal frameworks which govern trade flows between the UK and EU. This will likely have a major impact upon the flows of people and goods that move through the international gateways located in the Inner Orbital area.

- **Planning Framework Reforms –** The current approach towards planning and developing schemes can make it challenging to bring projects to reality. A number of different studies have been undertaken to identify measures to reduce congestion on the M25 South West Quadrant, but development of a scheme has not yet taken place

- **Local Government Reform** – There is a general trend in UK local government towards Unitary Authorities and Combined Authorities. Unitary Authorities, which combine the powers and roles of counties and districts into a single authority, already exist in urban areas in the Inner Orbital Area. In other parts of England, Unitary Authority are being established to replace two tier counties. Some areas are going further by combining transport functions through Combined Authorities.

Environmental

- **Climate Change –** The Inner Orbital corridor will be particularly impacted by the climate crisis because it is already one of the warmest and fastest warming areas in the country. It is also forecast to have one of the fastest rising temperatures of all UK regions. Many activists are increasingly using the UK's Climate Change Act (2019) to challenge infrastructure planning decisions.

- **Areas of Outstanding Natural Beauty**– The Inner Orbital area is home to four nationally significant Areas of Outstanding Natural Beauty which are one of the region's core strengths. However, they also limit opportunities for development of new housing and/or transport links.

- **Changing attitudes and behaviors to sustainability** – People are becoming more aware of the wider climate issues. Environmental groups are becoming more vocal in the region, showing strong opposition to infrastructure schemes which may harm the natural environment or increase carbon emissions. This may encourage more people to switch from less sustainable transport modes (e.g. cars) to more sustainable modes (e.g. healthy and public transport).
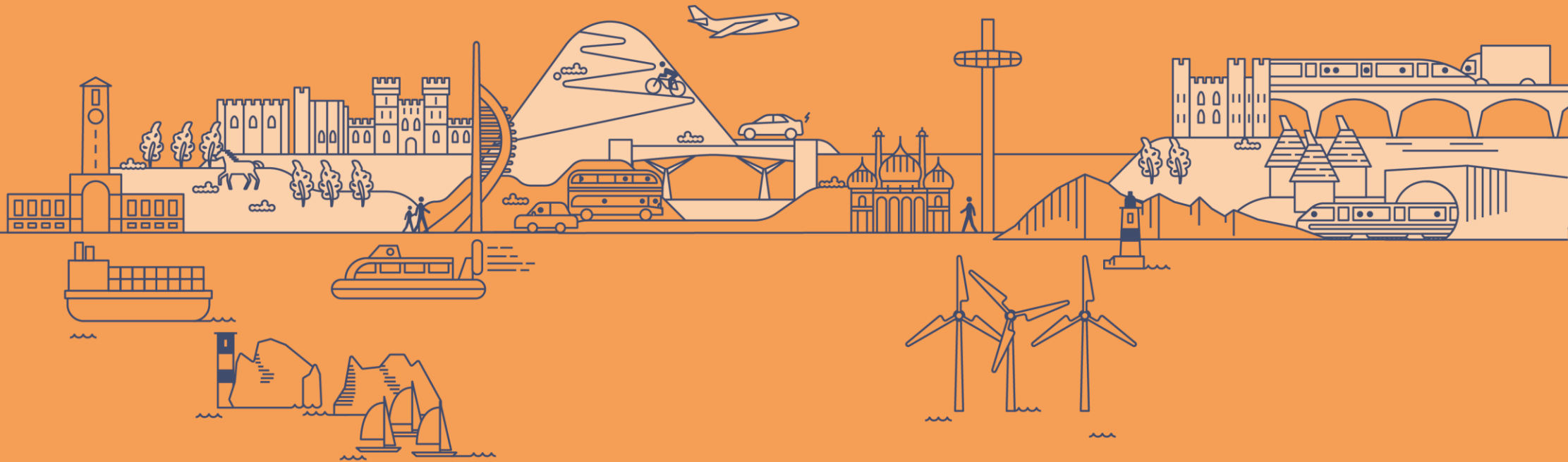
Part 3
Need for Intervention
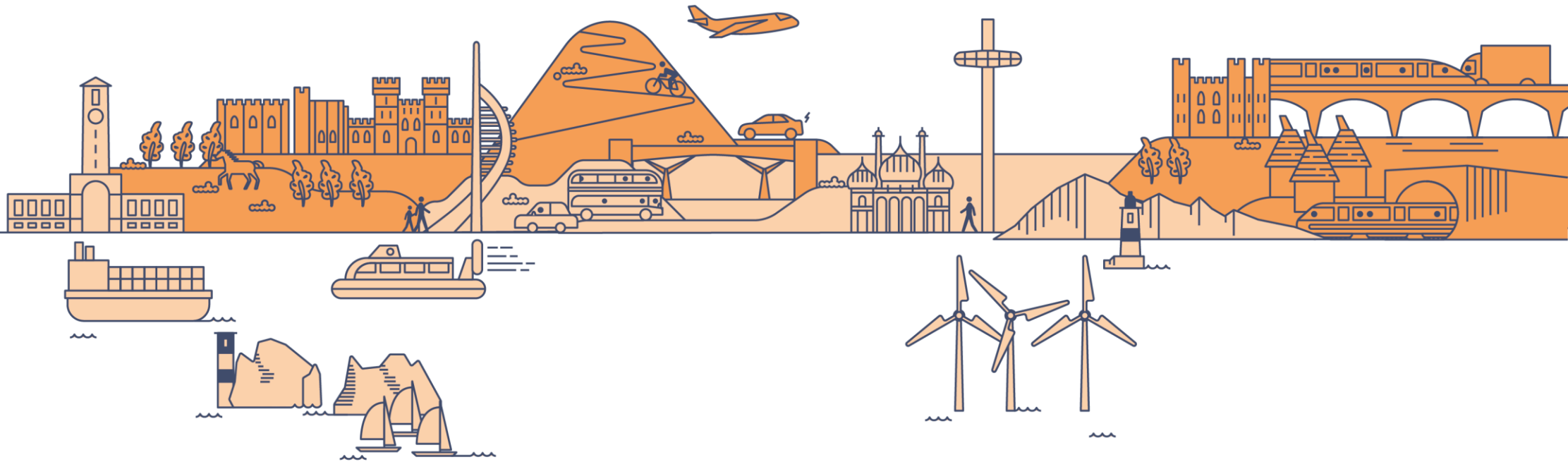
Part 3a
SWOC Analysis

SWOC Analysis

Introduction

SWOC is a framework that considers:

S Strengths

W Weaknesses

O Opportunities

C Challenges

In this context, it will be used to help understand and synthesise the Inner Orbital area's current resilience and provide a platform from which to examine the future potential for the area.

We have analysed the evidence presented in earlier parts of this document and worked with stakeholders to understand the key strengths, weaknesses, opportunities and challenges for the Inner Orbital area. These are summarised to the right and on the following page.

We have also undertaken additional SWOCs for highways (including local and healthy transport options), railways, and international gateways. These are presented in Figures 39, 40, and 41 respectively.

Strengths

- **Prosperity –** with nearly the highest GVA/capita outside the capital.

- **Connectivity to London –** through good highway and railway radial routes.

- **High-value high-growth industries –** including high-end manufacturing, maritime, financial services, creative industries, and IT and data centres. These will help drive growth in the future.

- **International connections –** the area is home to Gatwick airport and borders on Heathrow airport – the UK's two largest airports. London Thamesport, a Deep-water port facility is also located in the area. The corridor a crucial thoroughfare for freight arriving at the channel ports, providing onward transport connectivity to the rest of the UK.

- **Natural and historic environment –** the corridor has a high density of protected landscapes, and numerous historic landmarks, towns, and cities.

- **Diversity in places and economy –** the proximity of vibrant cities, diverse landscapes, and economic opportunities provides a high level of opportunities and quality of life for residents.

Weaknesses

- **Poor affordability –** high house prices and a high overall cost of living make it difficult for those without high-end jobs to sustain a reasonable quality of life.

- **Dependence upon London –** although the area benefits from its proximity to the capital, this also leads to negative socioeconomic impacts. One such example is poor community cohesion in 'dormitory towns' along the corridor.

- **Less developed local transit systems –** medium density development coupled with poor public transport availability across much of the area leads to high car usage and limited use of sustainable modes.

- **Poor orbital connectivity -** which makes journey times by public transport uncompetitive compared to private car journeys.

- **Complex governance landscape –** with multiple levels of regional, local, and national government, this means that decision-making can be complex and slow.

TRANSPORT FOR THE **South East**

SWOC Analysis

Opportunities

- **Housing and employment growth –** planned investment will enable more of the South East's residents to access affordable housing and local employment.

- **COVID-19 behavioral shifts –** increased homeworking may prove highly beneficial for the local economy of this corridor, as individuals spend more of their time in their local areas leading to higher levels of localized consumer spending.

- **New technologies –** the area is home to a number of high-end manufacturing and technology businesses, leading low-carbon innovation and development. This, combined with the relatively high levels of prosperity across the corridor means that uptake of these new technologies is likely to be rapid and widespread.

- **Decarbonisation –** provides a great opportunity for the promotion of sustainable transport.

- **High land value –** can lead to success in obtaining funding through alternative funding mechanisms such as land value capture.

Challenges

- **Climate change (sea level rise, coastal erosion, extreme storms, droughts) –** the area is one of the warmest and most rapidly warming areas of the country. Several transport corridors are vulnerable to disruption (e.g. landslips) caused by extreme weather.

- **Size and diversity of study area –** means solutions tend to be localized rather than cross-regional.

- **Population growth –** ensure adequate housing and sustainable infrastructure, and services are provided for a dense, and growing population.

- **COVID-19 and economic fallout –** certain parts of the Inner Orbital area are particularly exposed to the socio-economic impacts of COVID-19.

- **Building consensus among stakeholders –** this has proved challenging in recent years due to competing priorities.

- **Funding –** limited availability of funding to invest in sustainable transport and stimulate behaviour change.

Conclusions

The Inner Orbital has many strengths, reflected by the fact that it is a desirable place to live, is home to high growth, high value industries and the two busiest UK airports are located within the area.

These significant social and economic assets have, however, contributed to increasing land values which results in housing affordability ratio's being very high, which impacts upon the achievement of social equity objectives.

The area is vulnerable to a number of major challenges:

- **Currently:** COVID-19; and

- **In the short/medium term:** Climate Change.

For the Inner Orbital area to address these challenges and remain a productive, and attractive place, it will be necessary to bring a range of political actors, capitalise on the area's unique economic assets and design progressive, creative solutions. These must make best use of new technologies and alternative funding mechanisms. Doing so will allow the area to build on its successes and seize opportunities ahead, to continue developing sustainably in the years to come.

TRANSPORT FOR THE
South East

Figure 32: Inner Orbital Area Railways SWOC

Strengths

- The existing rail network serves most major economic hubs in the area.
- Airports and Thamesport are connected to the rail network.
- Most major population centres have access to the rail network.

Opportunities

- The Inner Orbital benefits from at least having an East-West corridor and rail alignment with opportunity for incremental enhancements
- Investment opportunities for the North Downs Line and the Redhill to Tonbridge Line to achieve faster, more frequent services to more destinations.
- Infrastructure interventions could enable paths for orbital services'
- HM Treasury *The Green Book* review may result in the case for orbital rail being stronger on strategic and environmental grounds.
- Rail reform may offer service level improvements.

Weaknesses

- Many Major Economic Hubs are only connected to radial lines, which presents a a number of significant orbital connectivity gaps.
- Level crossings and junction design reduce the capability of parts of the rail network.
- High fares (often in low-income areas).
- The North Downs line is not fully electrified, limiting potential carbon reduction and air quality improvements.
- It is not possible to rely on direct trains to everywhere, so there will inevitably be some reliance on interchange – it's therefore important to figure out where these will be/how they can happen.

Challenges

- COVID-19 recovery, reattracting users, lower commuting demand.
- Trade-offs between orbital and radial connectivity.
- Climate change (impacts on the network and the need to decarbonize both transport and construction).
- Air quality if poor in some areas of the corridor.
- Funding and affordability, especially with lower commuting reducing rail revenue.
- Is there sufficient demand to justify orbital rail infrastructure schemes?

TRANSPORT FOR THE
South East

Strengths

- Well developed orbital road network, with the M25 providing good east-west connectivity, and onward connectivity to other regions in the UK.
- Strong recent increase in bus patronage in some areas (e.g. Reading and Wokingham).
- Some areas where cycling mode share is well in excess of the national average.

Opportunities

- Planned highway interventions provide active transport infrastructure opportunity.
- Park and Ride infrastructure can be better used to increase bus patronage and provide facilities for delivery consolidation centres to enable sustainable last mile freight trips into town centres.
- New technology to encourage transport integration.
- Demand management measures to reduce highway congestion and generate revenue.

Weaknesses

- Significant congestion on the Strategic Road Network.
- Conflict between through and local traffic movement.
- Congestion in urban areas causing poor air quality.
- Rural public transport provision is insufficient.
- Road safety is a problem with a number of accident hotspots still existing on the highway network.
- Significant carbon emissions from motorized vehicles.

Challenges

- Climate change (resilience and the need to decarbonise motoring).
- Funding constraints.
- Limited bus connectivity, frequency and operating ours, outside of largest conurbations being a disincentive to use sustainable transport.
- Reducing negative perceptions of bus travel.
- Disruption during construction.
- Safety for cyclists.
- Political challenges for cycle investment.

TRANSPORT FOR THE
South East

Strengths

- The Inner Orbital area is well served by international gateways (Gatwick Airport, Eurostar services from Ebbsfleet and Ashford, ports in North Kent.
- There is good highway and rail access between international gateways and many parts of the rest of UK. The airports are adjacent to the SRN and are well connected to the rail network.

Opportunities

- Significant investment in additional capacity planned for Gatwick and Heathrow airports, supported by schemes to further improve access to airports by rail.
- Lower Thames Crossing will improve access to South East ports from the rest of the UK.
- Government policy on free ports may offer opportunities for investment in Thamesport.
- Opportunity to increase rail freight and for international freight to use the channel tunnel link.
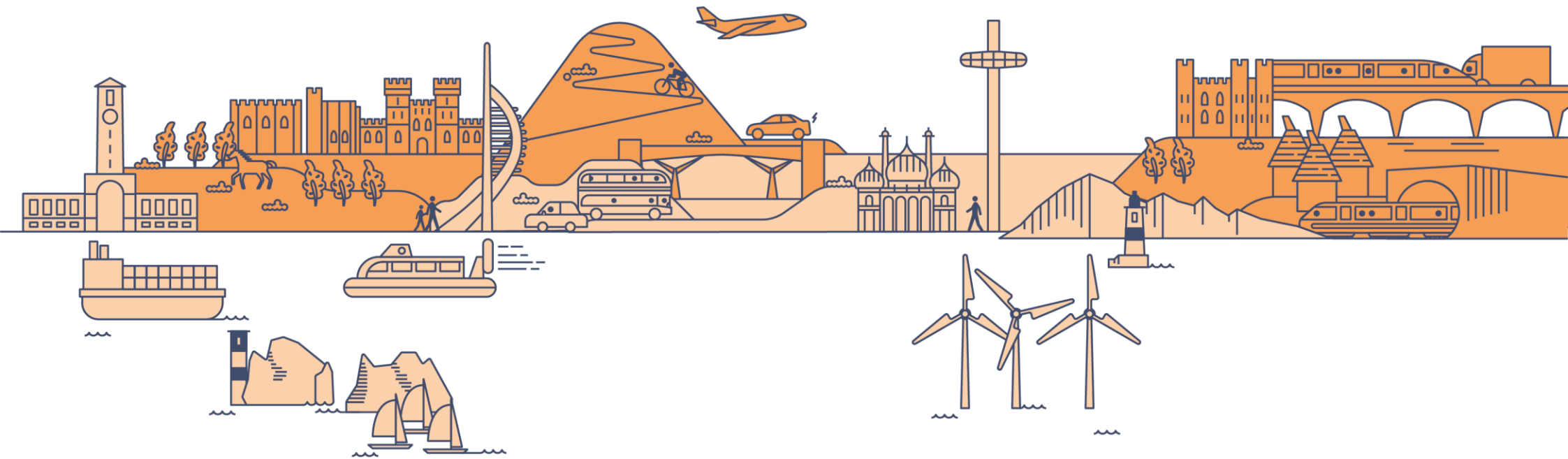
Weaknesses

- Poor sustainable connectivity from the east and west to Gatwick.
- Poor orbital sustainable connectivity to Heathrow from the north, west and south.
- Poor local sustainable connectivity to the airports except on radial rail network.
- Channel tunnel is underutilised by passenger and freight services.

Challenges

- The need to decarbonise transport is especially challenging for road freight and aviation sectors.
- Much of the Crawley/Gatwick area and Slough, Spelthorne and Elmbridge areas near Heathrow are particularly dependent upon the aviation sector, which has been severely impacted by COVID-19.
- Loading and gauge restrictions prevent freight from using much of the Inner Orbital Rail network.
- The growth in online shopping and resulting delivery vehicle traffic particularly from micro freight vehicles.

TRANSPORT FOR THE **South East**

Part 3c
Problem Statements

Problems Statements

A number of problem statements have been developed, drawing on the outputs of the evidence base, SWOC analysis and inputs of stakeholders to articulate the need for intervention in the Inner Orbital Area. Problem statements present an issue or opportunity which could be addressed by a number of different solutions and are therefore directional to option development and assessment without predetermining the preferred solution. They are presented in five parts:

Global issues

1. Transport is not decarbonising fast enough
2. Climate change threatens the resilience of transport networks
3. There is substantial economic disparity in the area
4. Housing affordability presents a barrier to achieving social equity objectives
5. There is a need for better coordination between land-use and transport planning
6. Demand for public transport has been negatively affected by COVID-19

Rail

7. Orbital rail journey times are slow
8. Level crossings on orbital railway lines reduce the capability of the service provided
9. Orbital rail connectivity to Gatwick airport is poor
10. Orbital rail connectivity to Heathrow is poor
11. Infrastructure constraints in the area are a barrier to more freight being carried by rail
12. Rail capacity allocation prioritises radial journeys over orbital trips

Active Travel

13. Cycling accounts for a small proportion of commuting and business trips

Urban and intra-urban transport

14. Urban highway congestion is a problem in several major economic hubs
15. The current transport network does not adequately provide for strategic local trips
16. In many areas, bus services do not provide a competitive sustainable alternative to cars
17. The benefits of Park and Ride infrastructure in the area could be better optimised

Highways

18. The M25 South West Quadrant is at capacity
19. The Lower Thames Crossing will increase congestion on the local highway network
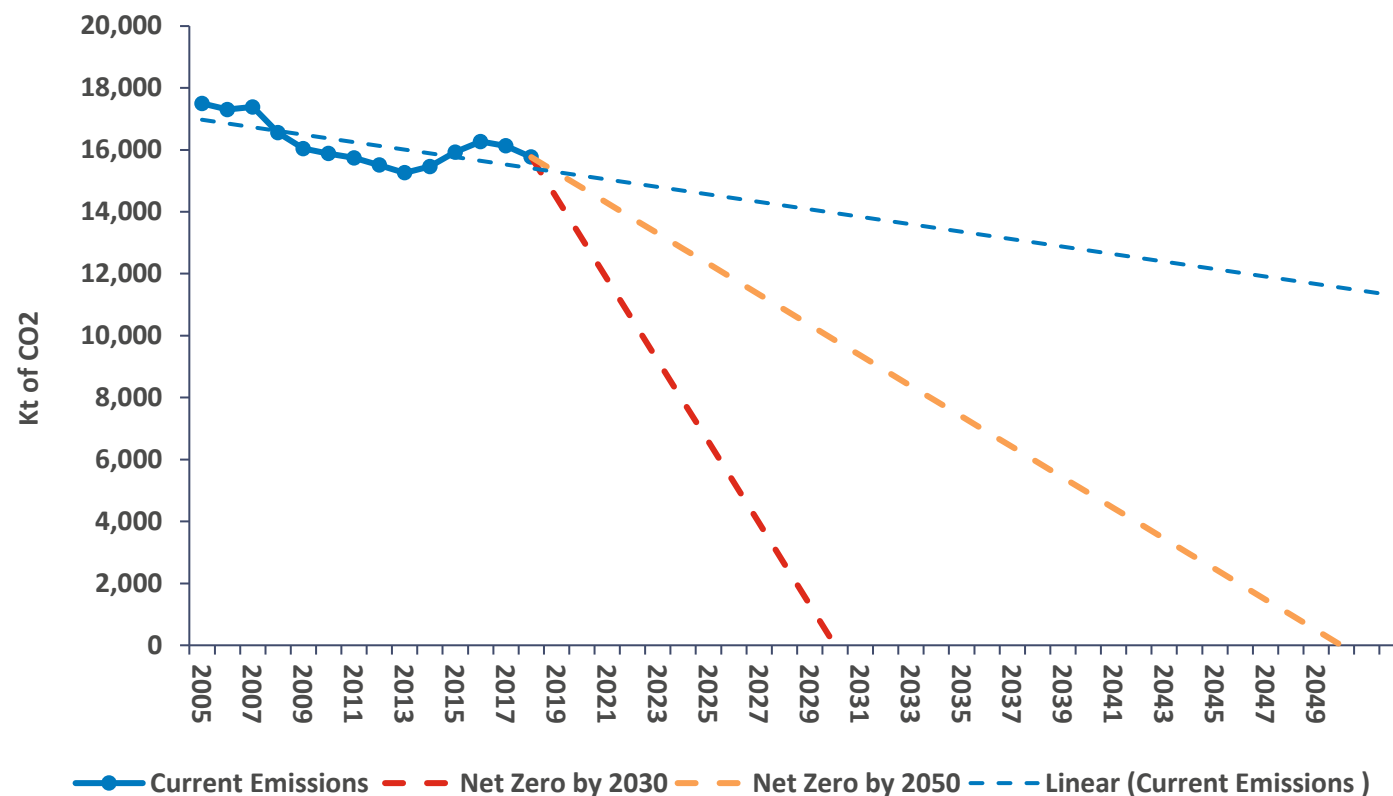
TRANSPORT FOR THE
South East

While key stakeholders in the Inner Orbital area recognise the need to decarbonise their transport systems, this is not happening fast enough.

The trajectory shown in the figure to the right indicates, the South East will not reach a position of net-zero carbon emissions by transport by 2050.

Electric vehicle uptake is low and there are some areas with very poor access to charging points. A step change in the electrification of highway transport, reduction in levels of trip-making activity, and modal shift away from fossil fuel transport to electric/healthy transport is needed if the area is to reach its climate commitments.

Carbon Emissions Trajectory for the South East Area

Legend: Current Emissions — Net Zero by 2030 — Net Zero by 2050 — Linear (Current Emissions)

Y-axis: Kt of CO_2

Source: Steer analysis

How can we influence future policy to ensure this region meets the net-zero target by 2050 (if not earlier)?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

The transport networks serving the Inner Orbital area are vulnerable to the effects of climate change and in many areas are showing signs of poor resilience.

The South East's railway network is relatively old and features numerous tunnels and cuttings. There have been several incidents of flooding and landslides closing key road and rail links in the region in recent years. Climate change is likely to increase the frequency and strength of weather events, and this risks undermining the resilience of the transport network.

The South East is already seeing the damaging impacts of climate change, with the region expected to warm more rapidly than the rest of the UK over the next 50 years, we need to implement maintenance measures as well as specifying infrastructure requirements to ensure future resilience of the transport network.

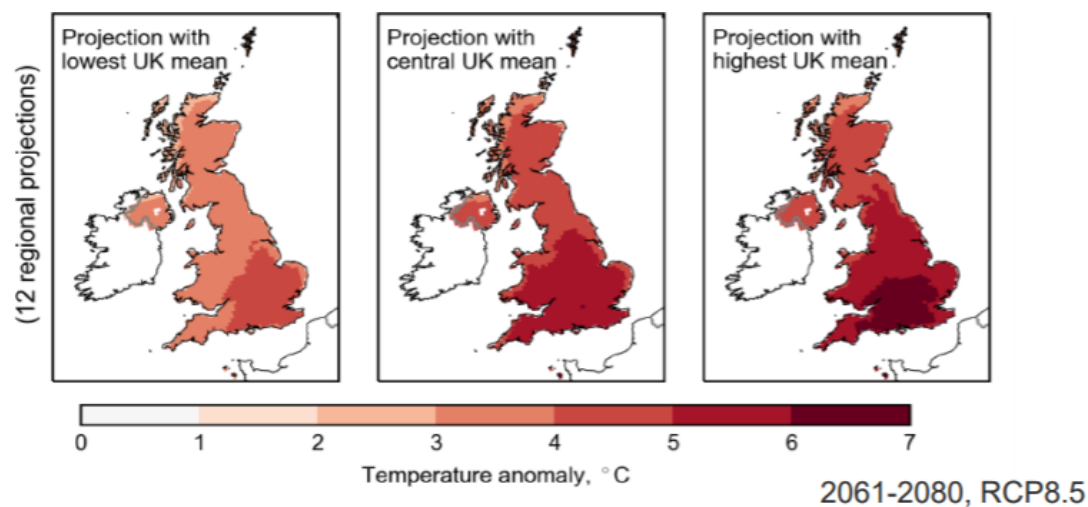**Extreme Weather Events in the South East**

Electric power lines overheating between London and Gatwick

Flooding of the M23 preventing access to Gatwick Airport

Projected Mean Temperature Increase in the UK

Projection with lowest UK mean

Projection with central UK mean

Projection with highest UK mean

(12 regional projections)

Temperature anomaly, °C

2061-2080, RCP8.5

With extreme weather events likely to become more frequent and severe in the future, how can we make the transport network more resilient to climate change?

The Inner Orbital area is the most socio-economically diverse of the five Area Study geographies in the South East.

The western end of the corridor has some of the highest average incomes in the country, whilst the eastern end contains significant pockets of deprivation.

It has been observed that according most indicators socioeconomic outcomes are better in the west then in the east of the area. While this trend is observed both north of and south of London, it is particularly acute to the south.

The areas of the Transport for the South East area which lie close to London have enjoyed particularly strong economic outcomes, possibly in part due to 'spillover' from the capital. The western end of the corridor has a particularly large number of 'commuter towns' where individuals who work in highly paid London-based industries live.

In contrast, areas at the Eastern end of the corridor are home to several pockets of deprivation which rank in the most deprived 10% of all areas in the country.

The reasons for this issue may lie beyond transport – both the eastern and western ends of the Inner orbital corridor have relatively good connectivity to London.

GVA per capita in the South East area
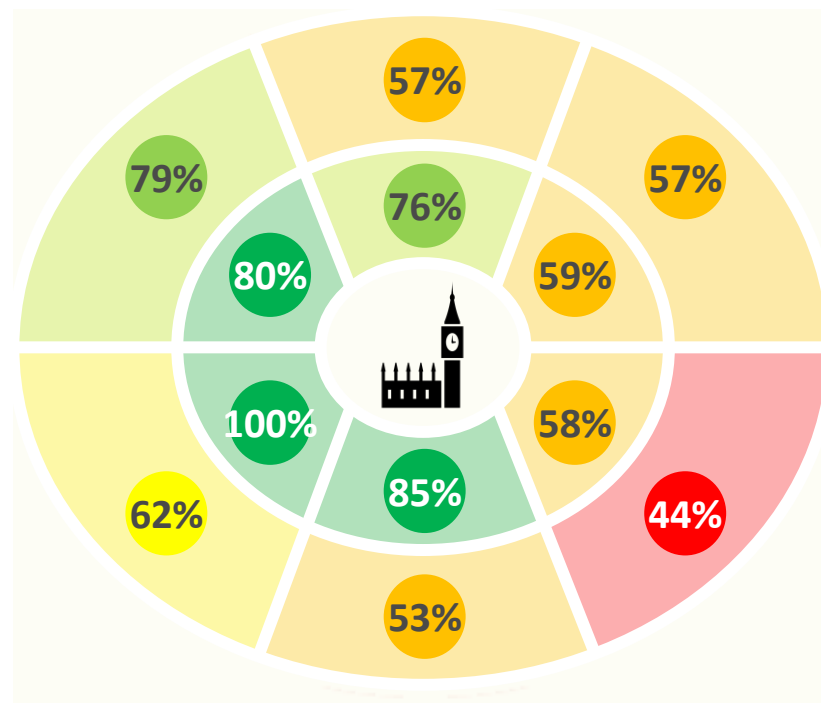
Source: ONS GVA per capita data
South West / Inner Orbital zone = 100%
Icon Credit: Pham Duy Phuong Hung

The figure above shows the average GVA per capita observed for 12 zones around London.
Six zones are in the TfSE area, and a further six (to the north of London) lie outside the TfSE area.
These zones can be combined to create the areas included in the TFSE area study programme
In this instance, the three segments immediately to the south of London correspond to the Inner Orbital area.

How can we "level up" this corridor, ensuring fair and equitable outcomes?

Housing affordability presents a barrier to achieving social equity objectives

There is an imbalance in housing supply between the western part of the corridor (where there is high demand) and the eastern part (where there is great housing surplus and lower demand).

The affordability ratio, shown in the bottom chart to the right, is calculated by dividing the median house price by the median resident earnings. Housing affordability is particularly poor in the west and central parts of the inner orbital area though the affordability ratio of 9:1 in the eastern parts still presents a barrier to social equity.

There is a risk that the planned spatial distribution of housing growth on this corridor will result in greater disparity in housing affordability with a greater percentage growth in housing planned in the eastern part of the corridor, where there is greater surplus, than in the western part.

This will result in people on lower incomes having to relocate to find affordable homes and may result in unsustainable travel patterns as they travel further to access employment.

Planned Housing Developments and the current Housing Affordability Ratio

Number of new homes
- 0 - 100
- 101 - 250
- 251 - 500
- 501 - 1,000
- > 1,000
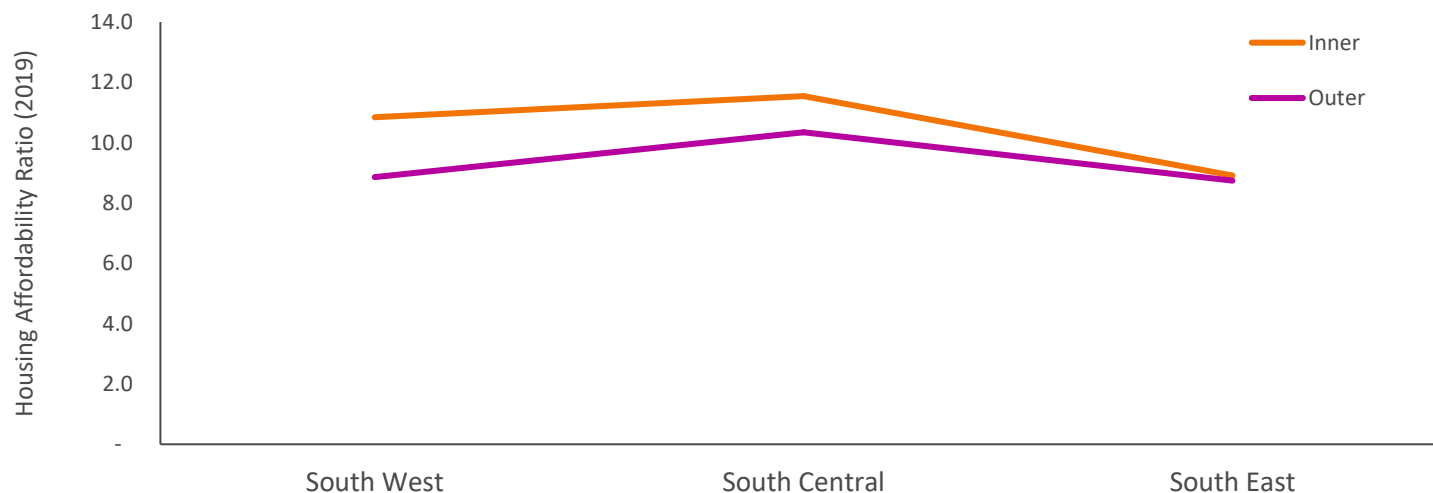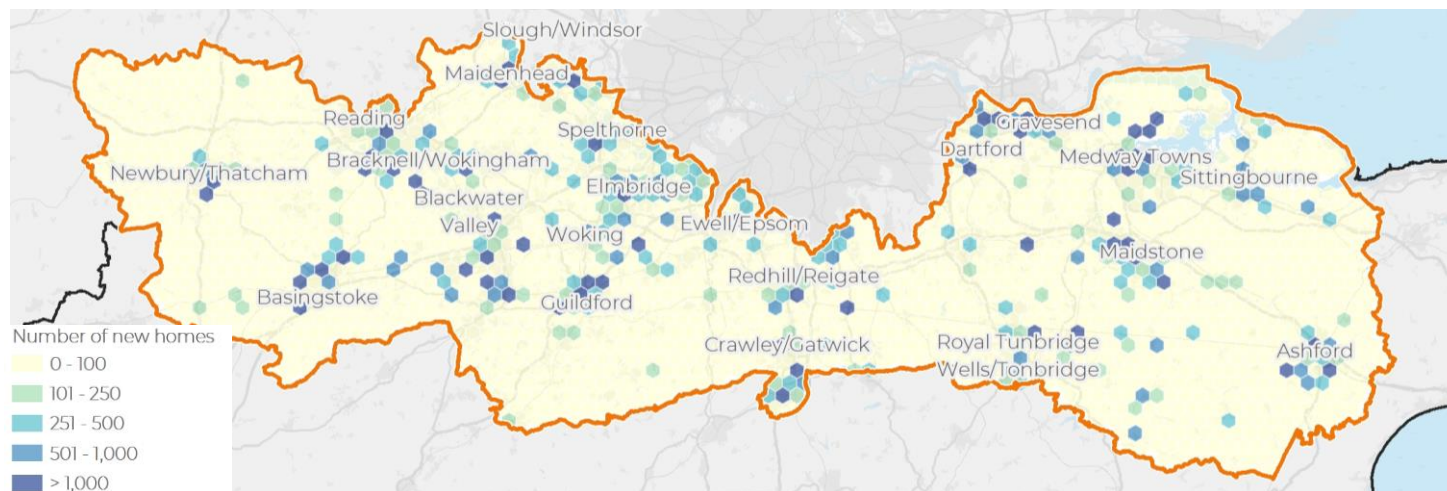
Source: ONS Housing Affordability data

How can transport investment be focused to enable development in the right places?
How can we improve housing affordability across the corridor?

TRANSPORT FOR THE
South East

There is a need for better coordination between land-use and transport planning

Analysis of travel to work trips between major economic hubs, particularly in Berkshire and Surrey has shown that there is a need to encourage the use of sustainable modes for strategic local trips. This will reduce congestion on strategic roads connecting urban centres and within urban centres.

There is a disparity in the future planned growth in residential versus employment areas in this corridor.

For example, there is significant housing development growth planned along the Basingstoke to Reading corridor, whereas there are few new employment sites planned. There is a risk that this imbalance means residents in this area will need to travel further to access employment. It is expected that this would further constrain the local transport network between these two locations.

Stakeholders have identified the need for spatial planning and transport planning to be more aligned in approach and more directed towards decarbonisation and social equity goals.

Planned housing and employment growth based on local plans up to 2050
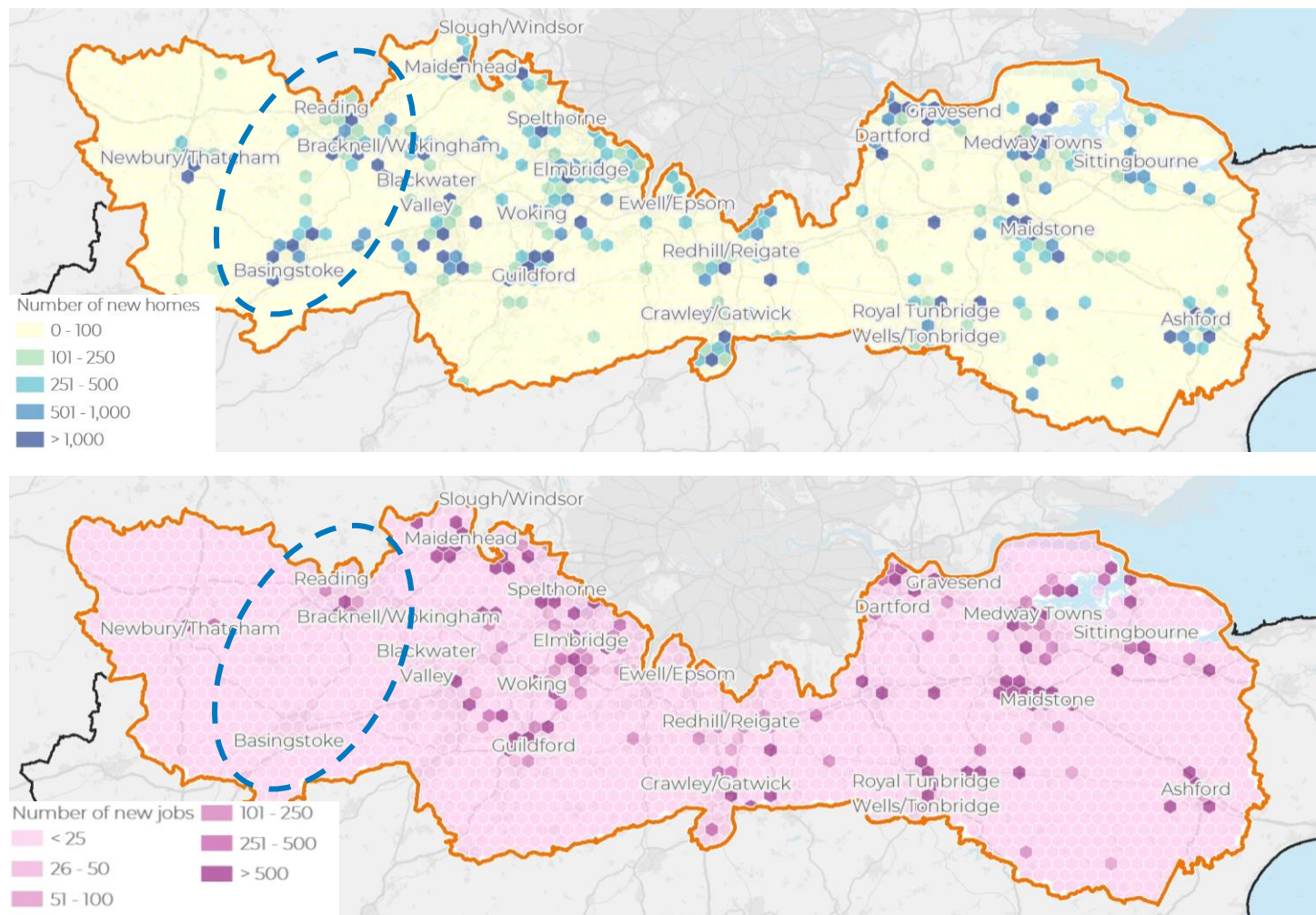
How do we ensure stronger integration between housing, employment and transport planning?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Demand for public transport has been negatively affected by COVID-19

Public transport patronage has dropped significantly due to COVID-19, causing some operators to cut services and increase fares.

The transport behavioural changes as a result of COVID-19 has increased private car usage, to the detriment of public transport. There is a risk that if proactive interventions are not made to preserve service quality, these changes may have a long-term legacy impact upon public transport planning and patronage.

However, COVID-19 also presents an opportunity to rethink spatial planning in the area. For example, more space can be created for active transport. This crisis represents a moment when there are positive behavioural shifts which should be capitalized upon.

National demand for transport in the past year by mode

How can we support public transport to bounce back following the recovery of COVID-19?
How can we influence behavioural change?
How can we retain the uptake of cycling?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

Journey speeds along orbital rail lines are slow when compared to the intersecting radial lines.

Additionally, some sections are under-served, such as Tonbridge to Medway which only typically experiences one stopping service per hour; or completely unserved, such as Kent to Gatwick and Surrey.

Journey times between strategic orbital pairs are slow due to services typically providing both a local and regional service by stopping at several intermediate stops. However, the demand along these corridors cannot justify separate faster services akin to those typically on radial corridors to London.

The need to interchange also makes rail a poor option for many trips. Most notably, this is the case for trips between Kent and Gatwick and Surrey and Reading, where an interchange at Redhill (or Central London) is required. This is amplified by poor service frequencies on the Tonbridge to Redhill line, currently only served by one train per hour in each direction.

Line speeds of the typical fastest service between major economic hubs on radial corridors
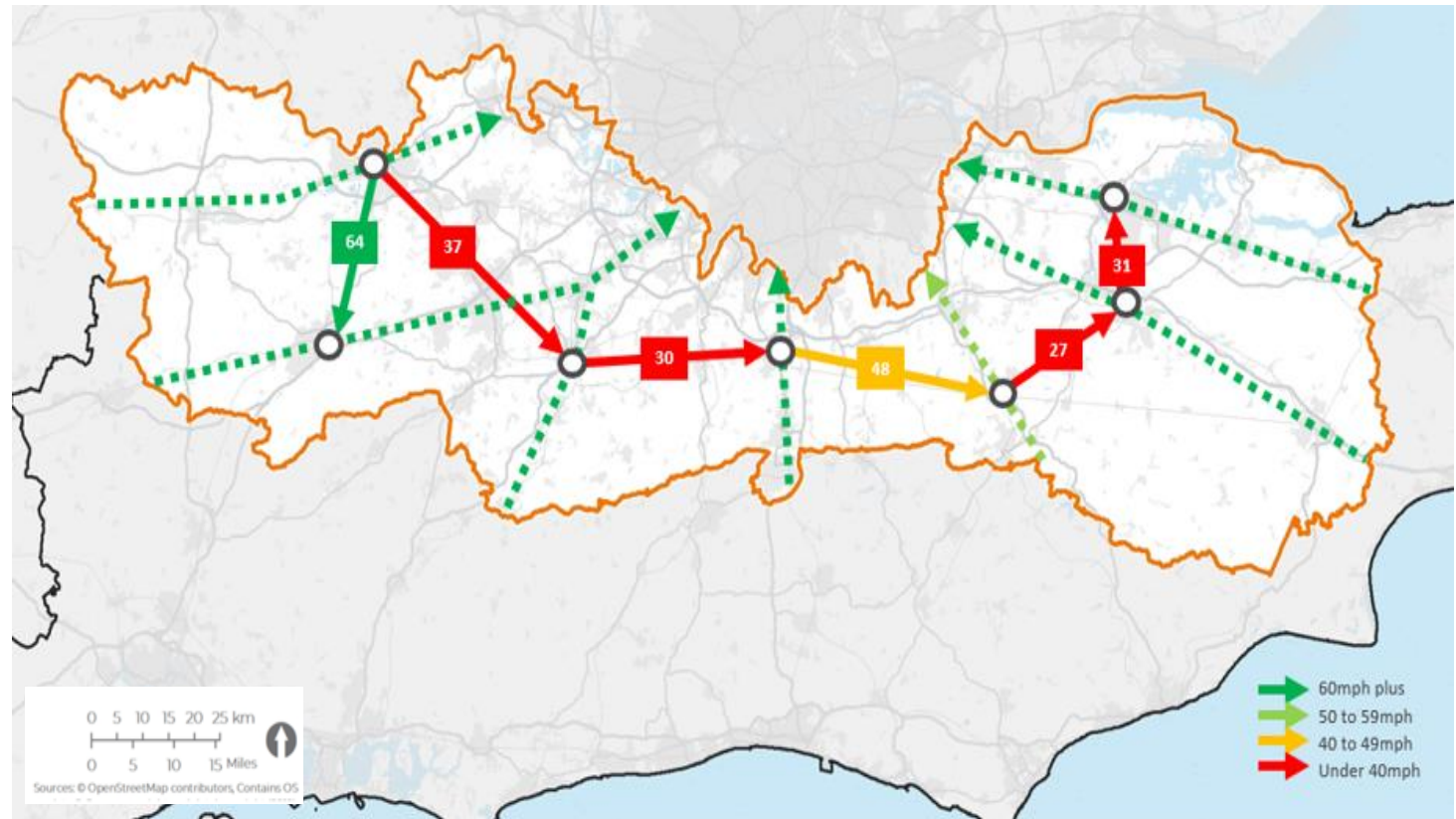
How do we improve journey times on key orbital rail routes? Is there an opportunity to run segregated regional and local services? Is there an opportunity to run direct services to more destinations?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Level crossings on orbital railway lines reduce the capability to provide more services

It would seem the orbital railway lines have spare capacity, with only a few local trains per hour utilising the infrastructure, however several constraints exist which limit the ability to run more services, most notably level crossings and constraints at key interchange stations such as Guildford and Redhill.

There are also alignment issues in some sections, which influence the theoretical speed of services along this corridor.

Level crossings present significant safety risks for all users along this corridor. There are examples of urban and rural level crossings, most notably in the town of Reigate, which have significant highway impacts on the local area, with the A217 regularly experience queuing causing congestion at Junction 8 of the M25.

There is an opportunity to realign the highway at Reigate to enable removal of the level crossing, however, affordability currently presents a barrier to further scheme development. Closure of level crossings can also cause severance where no alternative routes are provided.

Location of level Crossings along the primary inner orbital railway lines
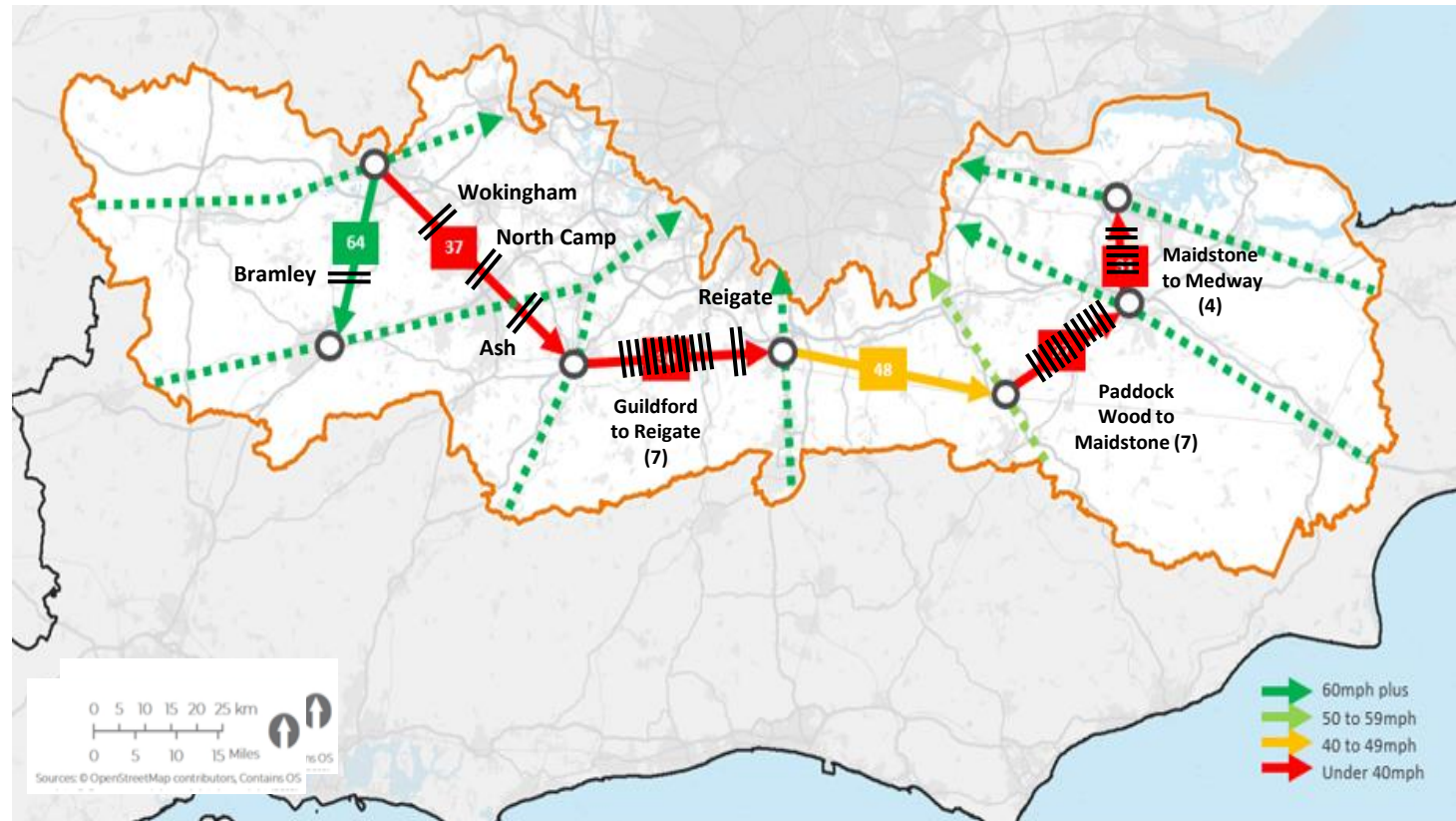
How do we build a case for overcoming these infrastructure constraints? Will this unlock the capacity to run faster, more frequent services which in turn will generate more rail demand?

Inner Orbital Area Study Evidence Base
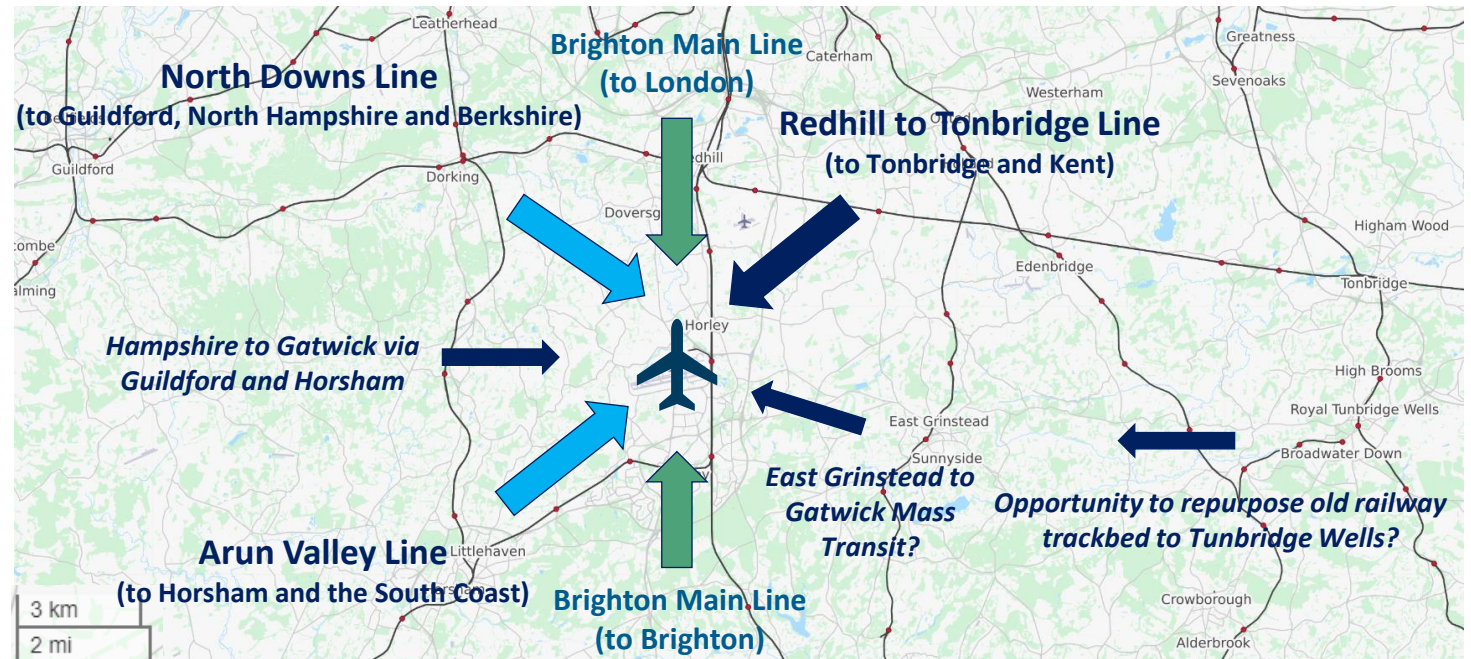
TRANSPORT FOR THE
South East

The rail service between Berkshire and Surrey to Gatwick is under-served. There are no direct services between Kent and Gatwick.

Gatwick Airport plans to construct a second runway which will increase capacity to over 65 million passengers a year.

As described in previous problem statements, the orbital corridors need various infrastructure upgrades to enable more services. Network Rail is working with Great Western Railway to improve the Reading to Gatwick service by introducing an additional fast train each hour. New rail infrastructure could provide the opportunity enable direct services between Kent and Gatwick bypassing Redhill. This would also provide connectivity to new housing development planned in the area as well as the East Surrey Hospital.

There are also mass transit opportunities to improve connectivity within the Gatwick diamond, which can enable local employees to access the airport more easily. A bus rapid transit network "Fastway", already exists in the area and the scope of this could increase bring wider local connectivity benefits.

Gaps in rail connectivity to Gatwick

Brighton Main Line (to London)

North Downs Line (to Guildford, North Hampshire and Berkshire)

Redhill to Tonbridge Line (to Tonbridge and Kent)

Hampshire to Gatwick via Guildford and Horsham

East Grinstead to Gatwick Mass Transit?

Opportunity to repurpose old railway trackbed to Tunbridge Wells?

Arun Valley Line (to Horsham and the South Coast)

Brighton Main Line (to Brighton)

→ Regular, frequent, direct rail connectivity

→ Regular, direct rail connectivity

→ Regular indirect rail connectivity

→ Opportunity for new infrastructure

What are the options of providing better, sustainable orbital access to Gatwick?

Rail connectivity to Heathrow from the north, west and south is poor

There is no direct connection between the Great Western Rail line or South Western Main Line and Heathrow.

Two schemes have been proposed to overcome this connectivity gap, the Western Rail Access to Heathrow and Southern Rail Access to Heathrow.

The schemes can play a dual role: enabling access to the airport for employees and travellers who are relatively closely located to the airport, living in places such as Reading and Woking as well as those from the wider South East, parts of England's Economic Heartland and towards Bristol and the South West.

They can also unlock the potential for Heathrow to become a railway hub. However, both proposed schemes were first envisaged over a decade ago and are still facing barriers which include getting access to funding from HM Treasury / Department for Transport and local stakeholder opposition.

These rail infrastructure interventions would be complemented by policy which promotes highway demand management to reduce congestion around the airport and a provision of bus rapid transit schemes to provide sustainable, local connectivity where rail infrastructure is not available.

Gaps in rail connectivity to Heathrow
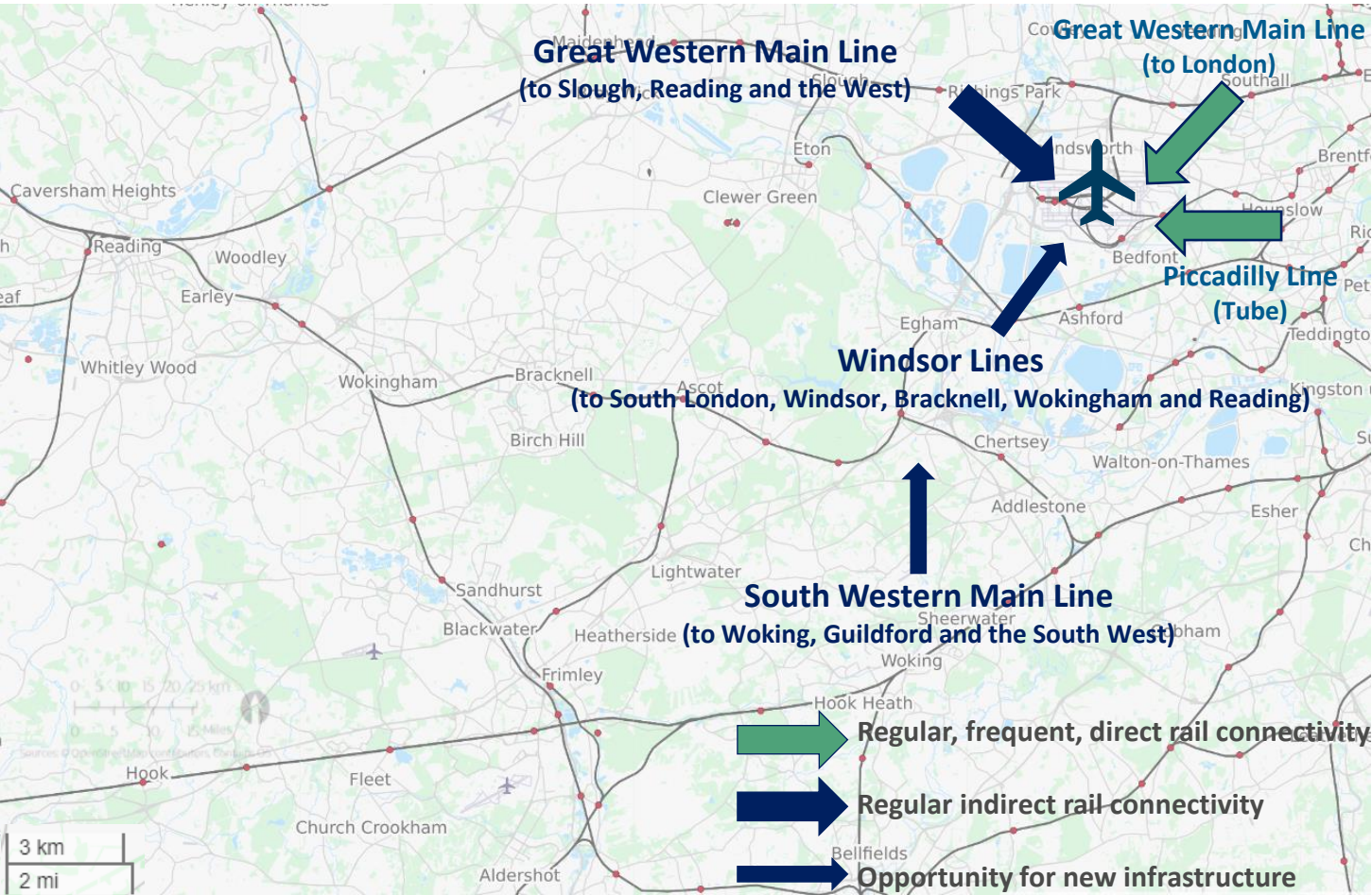
Source: Open Street Map (2021)

🔆 **What are the options of providing more sustainable orbital access to Heathrow?**

TRANSPORT FOR THE South East

Freight is very reliant on highways and the infrastructure is not currently in place to enable rail freight to be competitive.
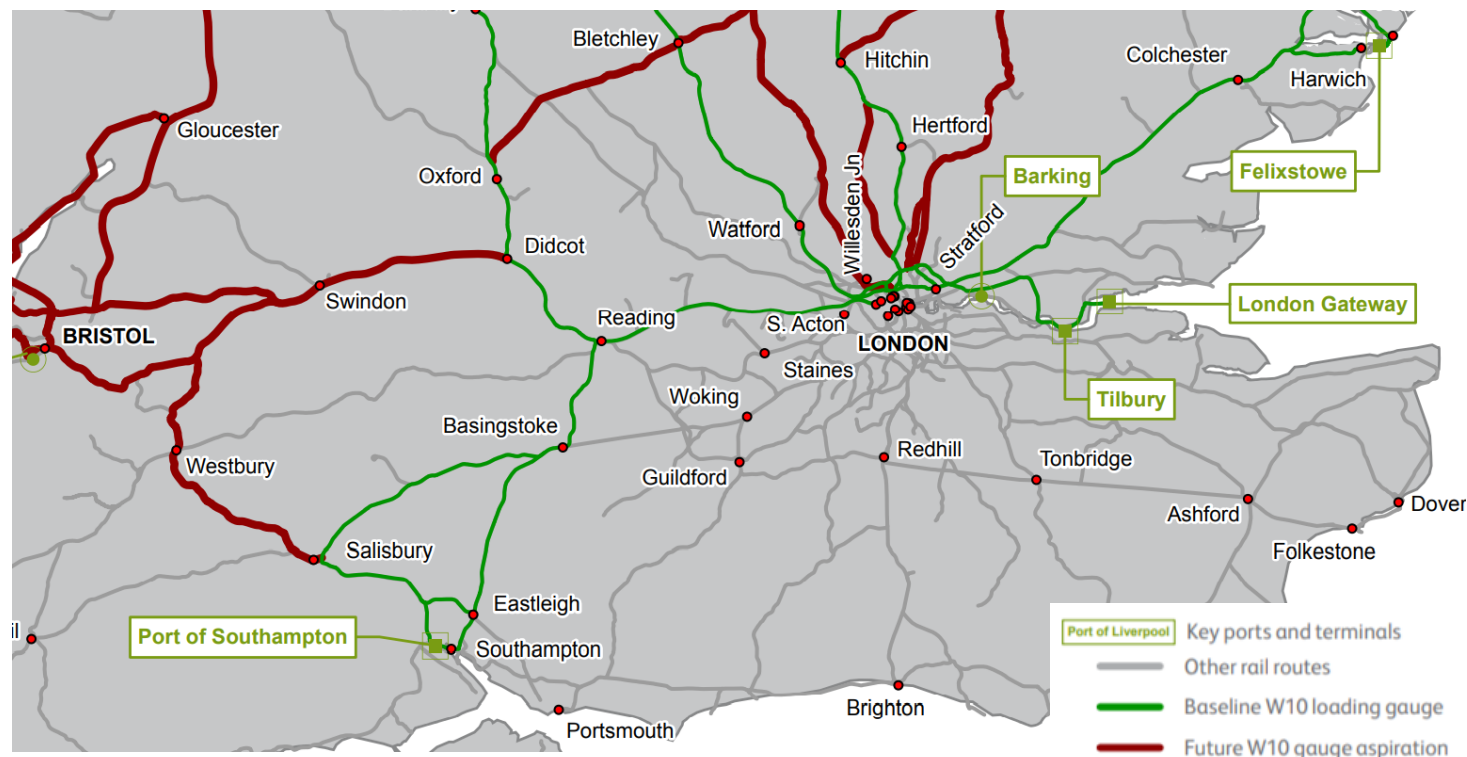
Orbital routes are not currently suitable for significant rail freight volumes, with gauging and load restrictions preventing freight trains from using the existing rail infrastructure present between the Channel Ports and the rest of the country. Inadequate gauge clearance also affects rail routes serving Dover.

Rail freight mode share is low nationally (around 5%, based on tonnage). Freight train movements on the national network has fallen by 50% since 2004, although this is predominantly due to lower coal traffic. Intermodal and construction freight traffic on rail has increased in recent years.

There are no easy options for decarbonising the road haulage fleet. Moreover, reducing its impact on air quality, particularly as it relies so heavily on diesel combustion, is of paramount importance.

Furthermore, there are significant other barriers to rail freight in the South East including a lack of freight terminals, no available routes across London, and high access charges on High Speed 1 and the Channel Tunnel.

Rail network gauges (2017)

Map source: Network Rail, freight Network Study, https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf
Freight statistics source: https://dataportal.orr.gov.uk/media/1738/freight-rail-usage-performance-2019-20-q4.pdf

Network Rail is evaluating options to upgrade lines between the Channel Ports and the Midlands via the Inner Orbital Area) to accommodate freight.
How else can we increase a modal shift to rail freight?
Does HS1 provide an opportunity for rail freight with a higher gauge clearance?

TRANSPORT FOR THE **South East**

Rail capacity allocation prioritises radial journeys over orbital journeys

Orbital rail services are often an afterthought, with radial connectivity to London prioritised at key interchanges such as Redhill and Guildford.

The figure to the right illustrates the number of radial services operating on the Brighton Main Line between London and Gatwick Airport which call at Redhill. Discounting fast services which do not stop at Redhill, there are typically six trains per hour between Redhill and London and five trains an hour southbound to Gatwick. In comparison, there are only two trains per hour towards Guildford and only a one train per hour shuttle service operating on the Redhill to Tonbridge line. For services that are available, journey times are typically not competitive with private car.

In recent years, several train paths that used to support orbital and cross-country services (most notably from Portsmouth/Brighton to Reading/Midlands/North via the Inner Orbital area) have been reassigned to radial services. This means the Inner Orbital area and the rest of the South East is less well connected to the rest of the country than it used to be, which undermines the competitiveness of the railway and encourages longer distance travelers to drive instead.

Orbital vs Radial Railway services calling at Redhill
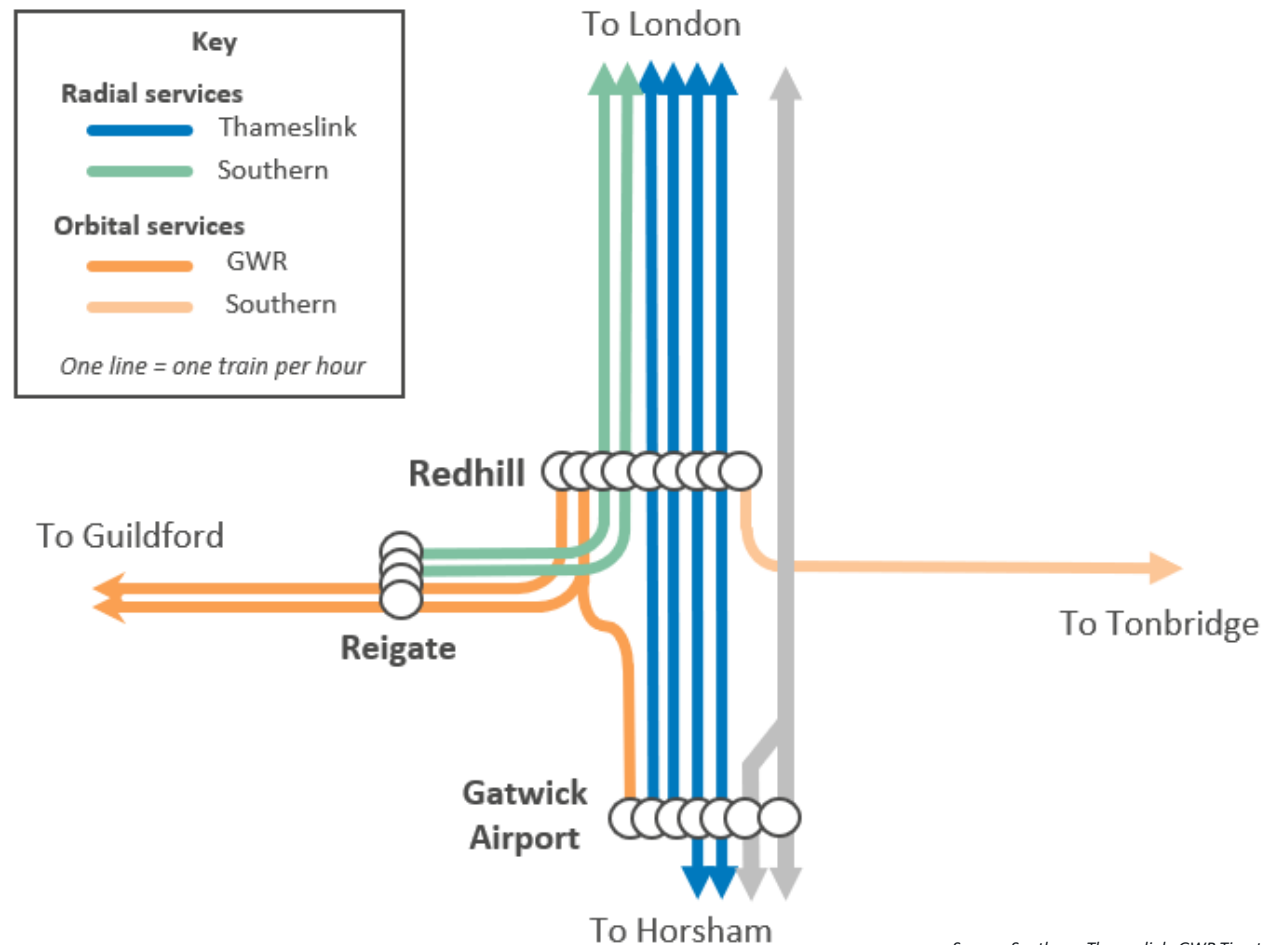
Source: Southern, Thameslink, GWR Timetables (2020)

How do we increase the provision of orbital services at constrained railway hubs?
How do we increase the provision of direct rail services to other parts of the country?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

Cycling accounts for a small proportion of local utility trips

Despite cycling being a very efficient and sustainable transport method, in this area people tend to cycle for leisure, rather than for local utility trips.

Many Local Transport Authorities on this corridor wants to see a step change in cycling participation in their areas, but the infrastructure is not available to support this ambition.

Furthermore, cycling infrastructure is seen as an enabler for new technologies such as electric bikes/scooters. A lack of adequate cycling infrastructure could be holding the region back from the opportunities these technologies offer.

The propensity to commute by bike is correlative with a number of factors including topography, trip length and household income and this explains in part the variance between different parts of the inner orbital area. A key driver of cycling uptake however is the level of cycling infrastructure in place. Woking, for example, benefits from both NCN route 221 and 223 as well as having been a Cycle Demonstration Town.

Improved infrastructure or policy measures could encourage leisure users from other parts of the area to use their bike for local utility trips as well as leisure.

Proportion of adults that cycle at least once a week for travel and leisure

■ Once a week (travel or leisure)　■ Once a week (travel)
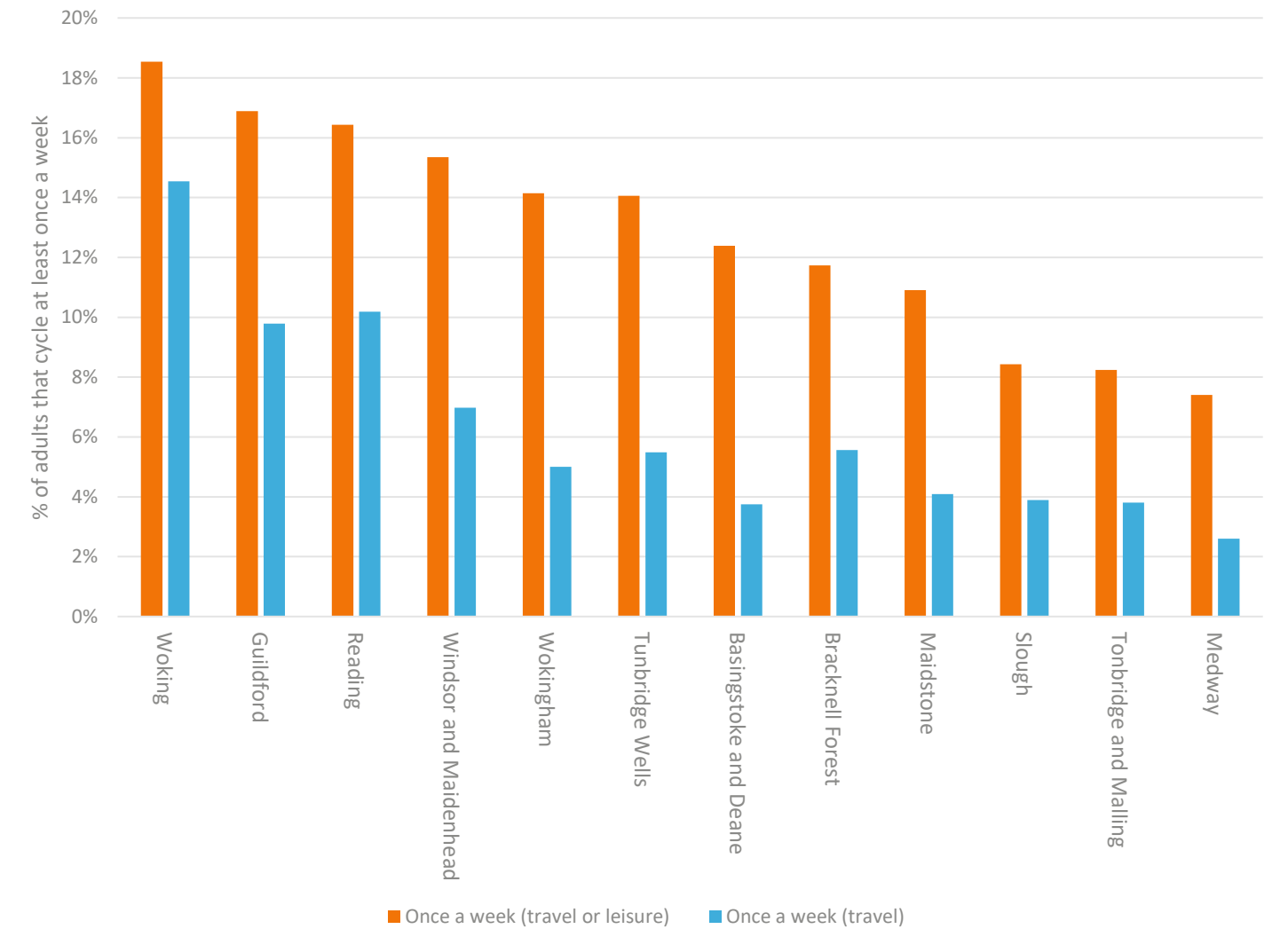
What infrastructure or policy developments can increase cycling mode share in this area?
What lessons can we learn from Woking and Guildford?
How can we retain the uptake of walking and cycling?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Many stakeholders across the corridor have raised the fact that commercial and residential growth in regional centres has not been accompanied by the necessary improvements in public transport.

The graph shows that in 2019, road users in Reading and Slough experienced the highest average delay. In these towns we see many instances of local roads serving both strategic and local function which results in these severe congestion levels.

Not only does regular congestion cause delay to users, it has negative consequences for local air quality, carbon emissions, road safety, causes severance and acts as a disincentive for people to use more sustainable modes. This problem is set to worsen as many major economic hubs continue to expand through new developments on the urban fringe.

Some improvements have been made to this in recent years. Reading has reduced delays by 10% since 2015. In addition to strategic, targeted improvements in addressing highway bottlenecks in the area; the change is partly attributed to the increase in modal shift to bus during this time period, with bus patronage in Reading being among the highest in the South East.

Average delay experienced on locally managed A Roads by Unitary Authority in 2019
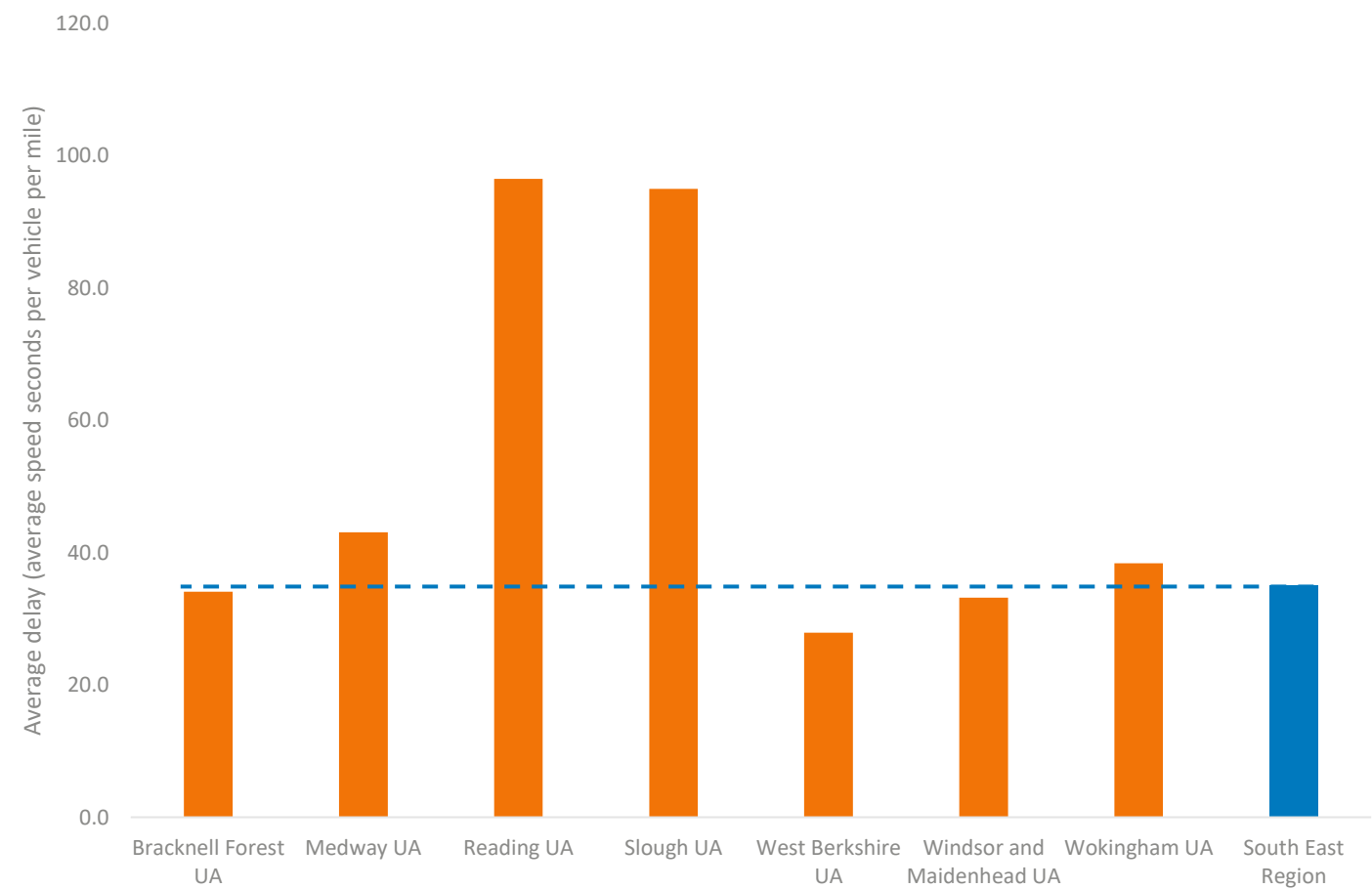
Source: DfT Road Congestion Statistics – Table CGN0502b (Jan-Dec 2019)

What options are there for alleviating the pressure on the road network in urban areas? How can we encourage a modal shift to public transport and active modes of travel?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

The current transport network does not adequately provide for strategic local trips

Within the corridor, there are a number of significant major economic hubs closely located to one another. However, in many instances, sustainable modes of transport are not competitive with private car use. Where rail does exist, it is slow and infrequent.

A Regional Gravity Model was developed which identified the key highway and rail connectivity gaps. Gaps exist where two areas of relatively large populations are located close together, but journey times between them are relatively poor. To the right the most significant highway "gaps" are shown. In many cases these poor journey time exist because highway links between the major economic hubs are on slow, local roads. The rail connectivity improvements which could address these gaps are show below.

The North Downs Line carries local services between Reading and Guildford for residents travelling between the economic centres of Wokingham and the Blackwater Valley. It also carries more strategic, orbital services for users between Reading, Guildford and Gatwick Airport. Improvements on this line would improve sustainable connectivity between many major economic hubs in the area.

Most significant highway connectivity "gaps"
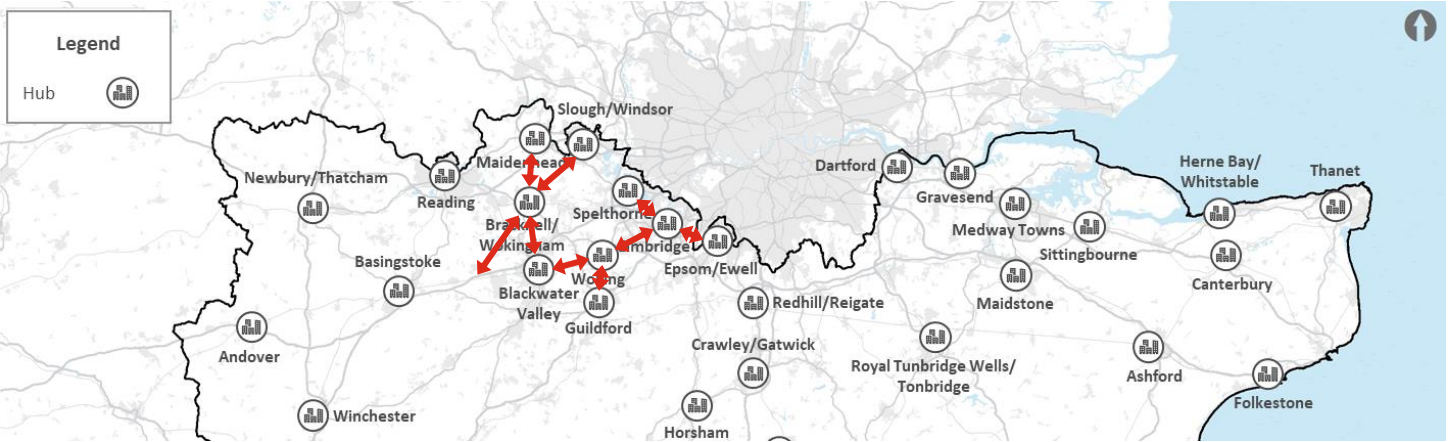
Rail connectivity "opportunities"

How do we improve strategic local connectivity between Major Economic Hubs?
How can we encourage a modal shift to public transport and active modes of travel?

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE **South East**

In many areas, bus services do not provide a competitive sustainable alternative to cars
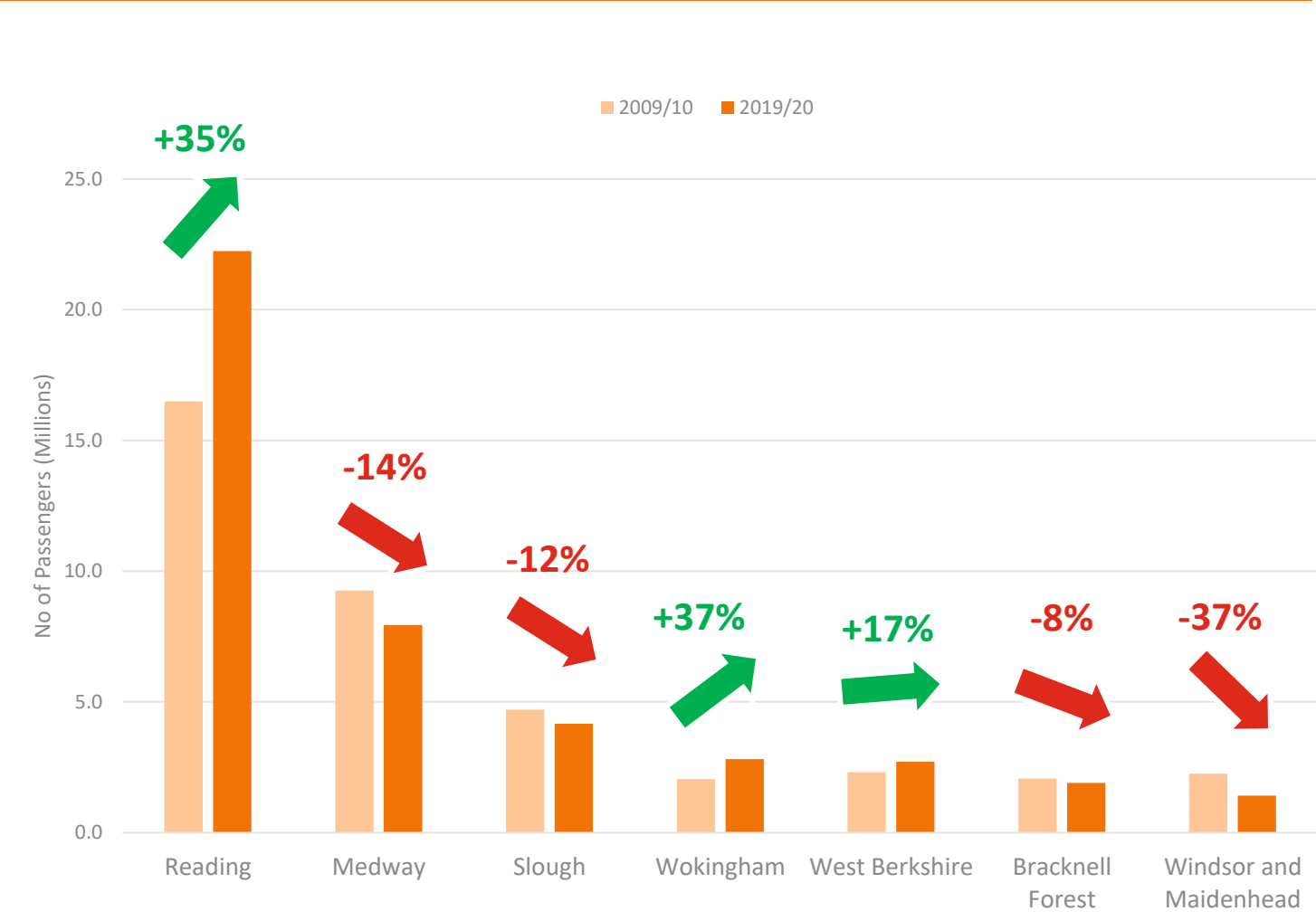
Even prior to COVID-19, bus patronage was falling in some areas. Buses form a key component of an effective, sustainable transport network.

Bracknell, for example, has suffered from poor bus uptake in recent years, with local stakeholders citing the design of the town as a barrier to implementing commercially viable and effective bus services. Stakeholders highlight the need to challenge the negative perception of bus use and encourage behavioural shift of residents in Bracknell away from private car use.

There are a number of approaches which may encourage greater bus patronage. Demand Responsive Transport (DRT) is being trialled in towns across Kent in which scheduled bus services are not commercially viable, such as the Go2 DRT programme in Sevenoaks.

Following recent successes in implementing bus priority in Reading, there are opportunities for Bus Rapid Transit in other urban areas to provide journey times that are competitive with the car.

Annual local bus passengers in major economic hubs across the inner orbital area

Legend: 2009/10, 2019/20

Reading: +35%
Medway: -14%
Slough: -12%
Wokingham: +37%
West Berkshire: +17%
Bracknell Forest: -8%
Windsor and Maidenhead: -37%

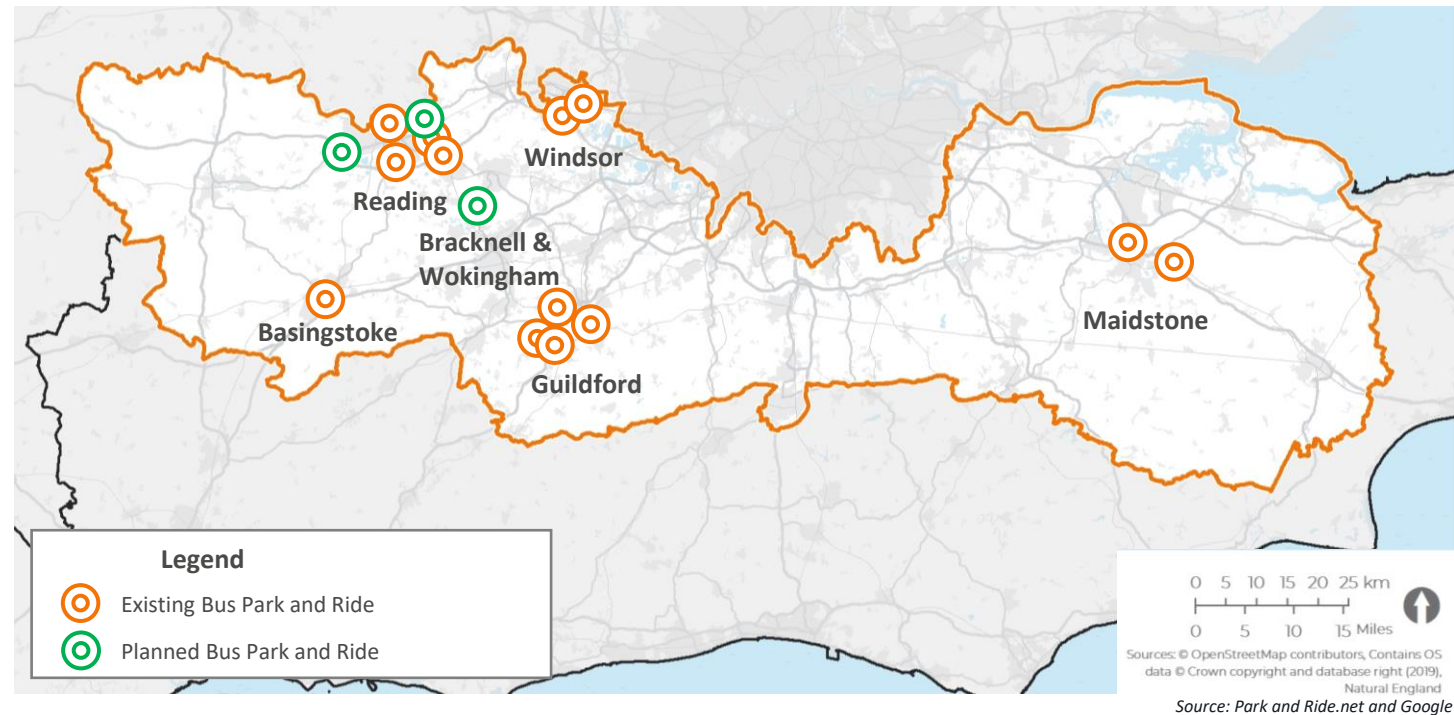Y-axis: No of Passengers (Millions) — 0.0, 5.0, 10.0, 15.0, 20.0, 25.0

How do we reverse declines where they exist and learn lessons from where bus patronage is on the rise? Is there an opportunity for Demand Responsive Transport?

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Many of the major economic hubs have bus Park and Ride infrastructure in place. This presents an opportunity for the development of Strategic Mobility Hubs to provide a facility that enables interchange between transport modes as well as other services.

Strategic mobility hubs can offer easy access to strategic highways, railways, and local public transport services. Many existing hubs take the form of Park and Ride facilities, but the vision for these hubs is that they evolve to include freight interchange as well as offering a single site for the location of services such as "click and collect", Bikeshare Hubs, car club vehicles, electric vehicle infrastructure and local convenience shops.

Even with advances in rail freight, there would still a need for freight on highways to provide last-mile connectivity. Strategic mobility hubs can be a location for delivery consolidation centres from which freight can be carried the "last mile" to the town centre using sustainable and active modes.

Existing and Planned Bus Park and Ride sites

Legend
- Existing Bus Park and Ride
- Planned Bus Park and Ride

Sources: © OpenStreetMap contributors, Contains OS data © Crown copyright and database right (2019), Natural England
Source: Park and Ride.net and Google

How can the current Park and Ride infrastructure be used to better serve a wide range of passenger and freight transport demand?
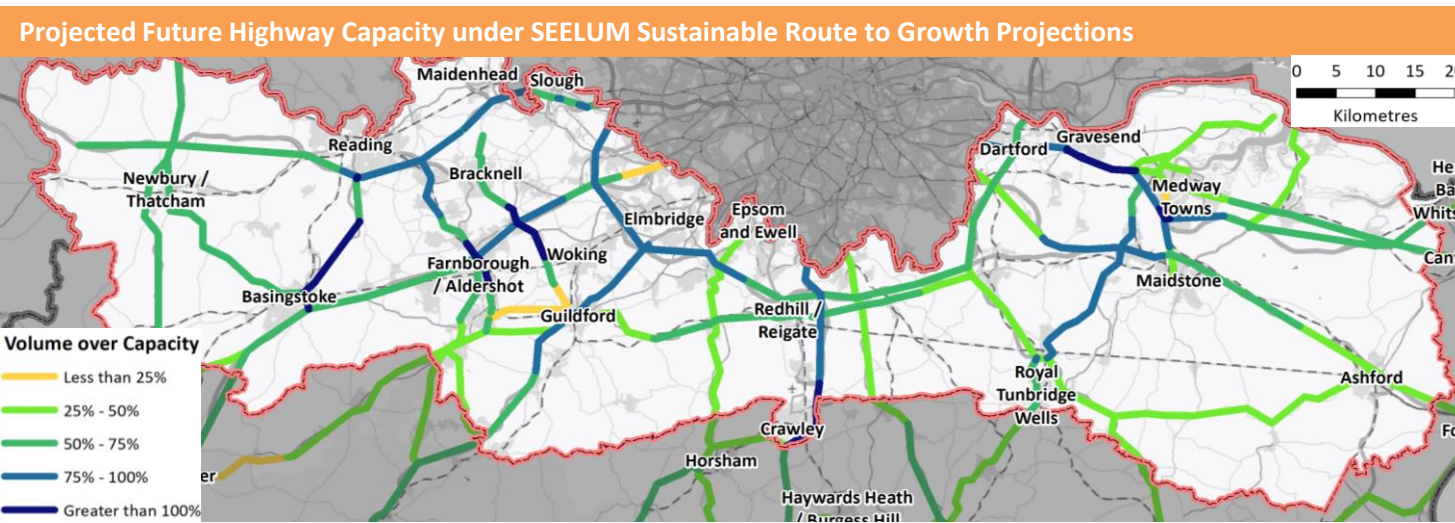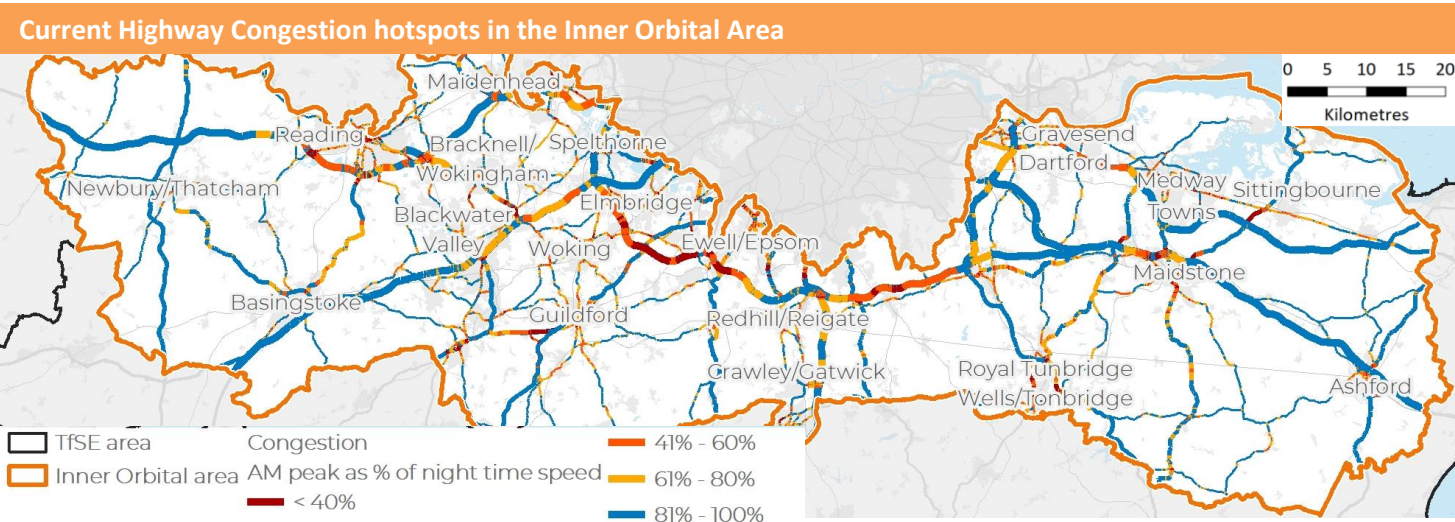
The M25 South West Quadrant is at capacity

Even under our Sustainable Route to Growth projections, critical parts of the highway network will continue to be at capacity.

Currently, the South West Quadrant of the M25 is at capacity, with traffic flowing at less than 40% of the national speed limit during the morning peak. Orbital routes designed to provide relief to the M25 in this area such as the A329(M)/A322 corridor are also subject to considerable congestion.

The projected future highway traffic shows the M25 South West quadrant will likely remain at capacity. With limited option for expansion, our modelling forecasts that other orbital roads becoming busier in response.

A number of studies have been carried out to identify options for relieving congestion on this part of the strategic highway network and it has been concluded that rather than focusing on providing additional capacity on the M25, the solution may lie in considering local network interventions to mitigate the negative impacts of congestion on the wider corridor.

Current and future highway capacity constraints

Current Highway Congestion hotspots in the Inner Orbital Area

Legend:
- TfSE area
- Inner Orbital area
- Congestion AM peak as % of night time speed
  - < 40%
  - 41% - 60%
  - 61% - 80%
  - 81% - 100%

Projected Future Highway Capacity under SEELUM Sustainable Route to Growth Projections

Volume over Capacity:
- Less than 25%
- 25% - 50%
- 50% - 75%
- 75% - 100%
- Greater than 100%

💡 **How do we address congestion of this corridors? Could demand management, accompanied by suitable public transport alternatives provide a solution?**

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There are concerns that the Lower Thames Crossing will increase congestion on the local highway network

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A number of stakeholders have identified the potential negative impacts the Lower Thames Crossing will have on the local highway network.

The Lower Thames Crossing will have a significant impact of the distribution of strategic transport demand in the area. It is forecast that this will particularly affect the way in which freight vehicles access the Channel Tunnel or Port of Dover from the rest of the UK. It is forecast that this will provide some relief to the M25 South West Quadrant.

However, consideration must also be given to how flows on the local traffic network may change and whether key orbital routes in North Kent such as the A229 have sufficient capacity to accommodate an expected increase in demand.

This area is already subject to significant levels of development growth. There are also planned sites of employment and leisure, such as the proposed London Resort near Northfleet, which will generate transport demand not yet considered as part of the local planning process.
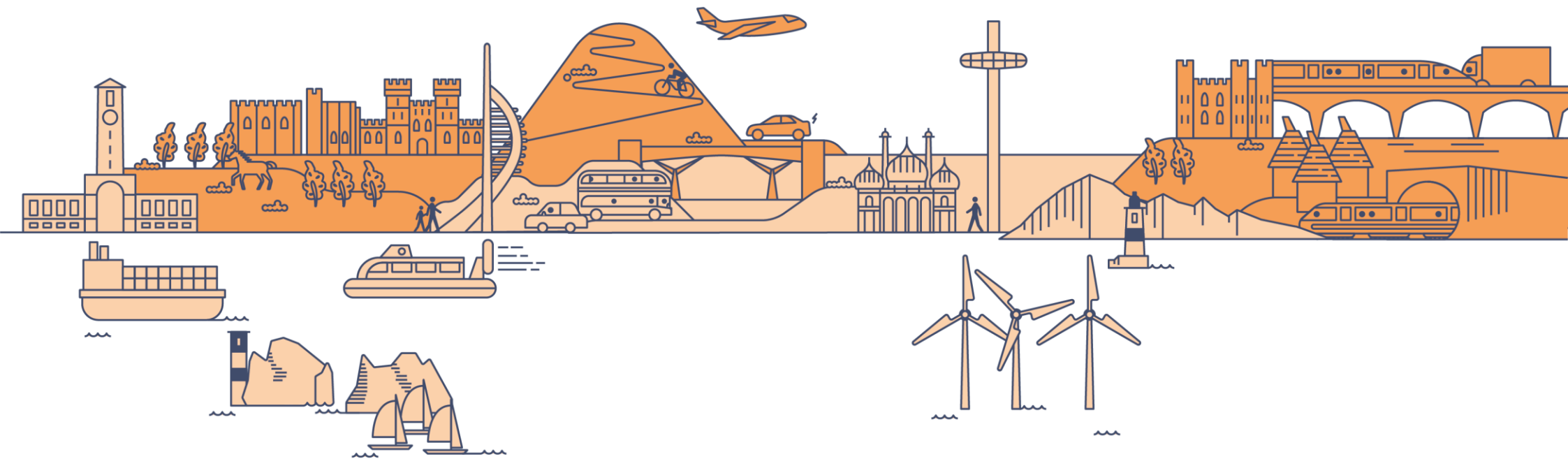
Planned Lower Thames Crossing

How do we make the rest of the transport network in this area sustainable and resilient to the changes caused by the Lower Thames Crossing and other planned large-scale developments?

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TRANSPORT FOR THE **South East**
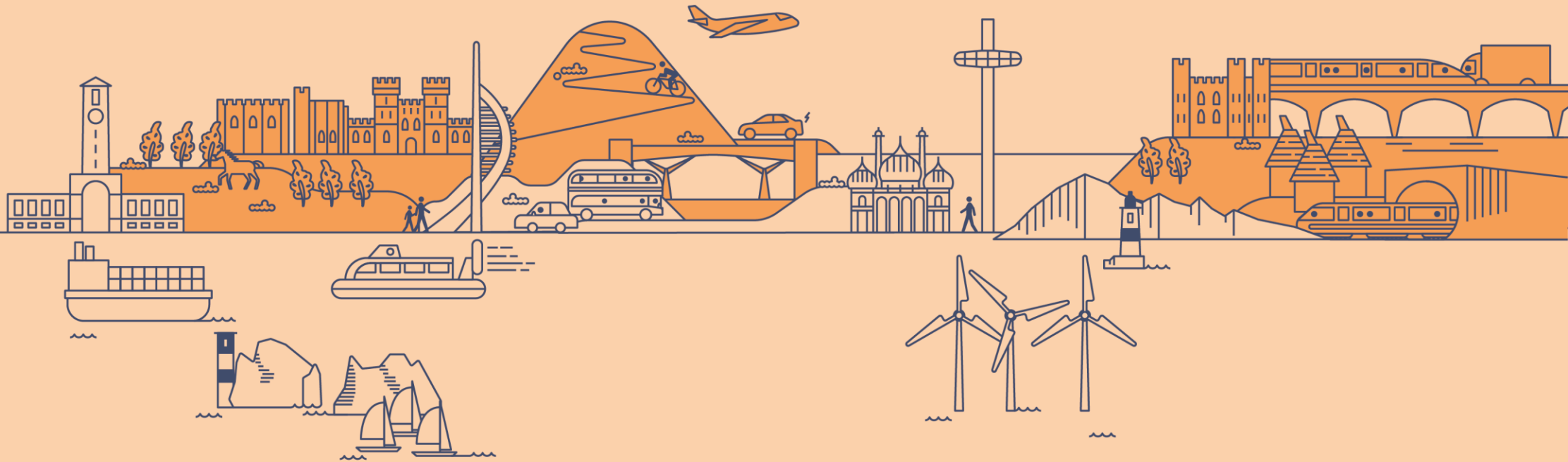
Part 4
Vision and Objectives

Part 4a
Vision

Vision

TfSE's Transport Strategy for the South East sets out an ambitious vision for a sustainable, high performing, net-zero transport system. We have applied this vision to the Inner Orbital area to develop a vision statement for this area.

TfSE Vision Statement

By 2050, the South East of England will be a leading global region for net-zero carbon, sustainable economic growth where integrated transport, digital and energy networks have delivered a step change in connectivity and environmental quality.

A high-quality, reliable, safe and accessible transport network will offer seamless door-to door journeys enabling our businesses to compete and trade more effectively in the global marketplace and giving our residents and visitors the highest quality of life.

Inner Orbital Vision Statement

The Inner Orbital area will leverage technology and behavioural change paired with the economic assets of high growth, high value industries, international gateways and proximity to London to deliver carbon neutrality, sustainable economic growth and improved opportunities for residents.
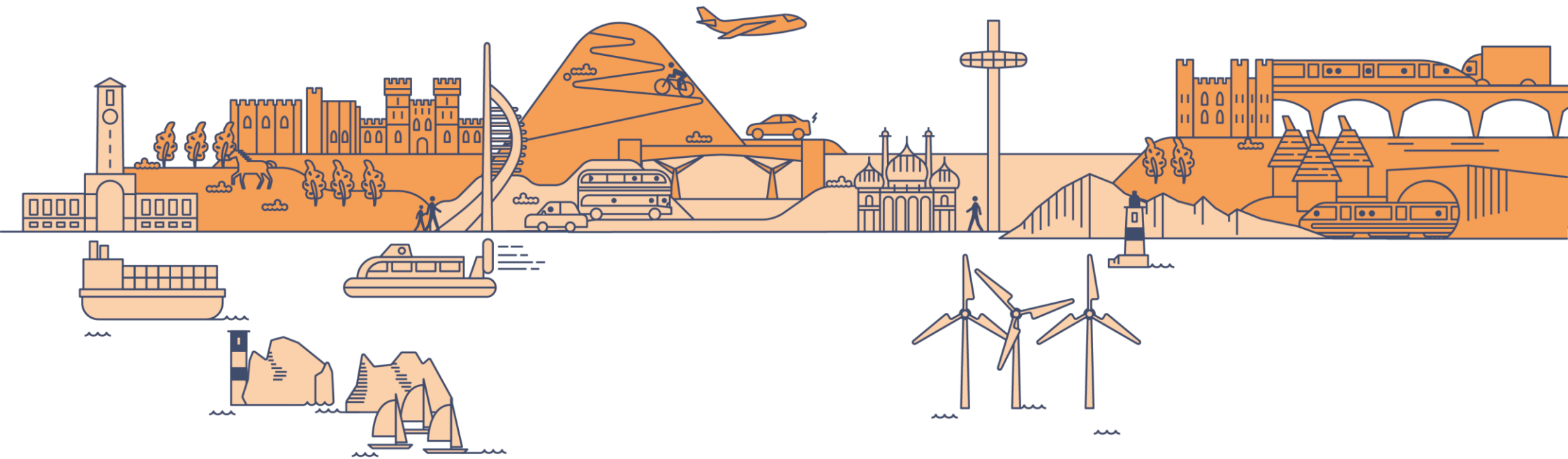
We will use integrated transport, digital, and energy networks and technologies to progress interventions that:

- deliver strategic and local access and connectivity within the South East and to the rest of the UK to ensure the needs of the Inner Orbital area's residents, businesses, visitors and international gateways are met;

- facilitate increased interaction between major economic hubs to optimise knowledge sharing and collaboration opportunities;

- support the creation of healthy, accessible and high-quality places where people are put first; and

- provide cross-cutting solutions that support the development of sustainable communities, improve socioeconomic and health outcomes and capitalize on the successes of the corridor.

We will use innovative and exemplar delivery models, schemes, investment packages and funding mechanisms that – through tailored governance and funding models – support integrated high-quality, reliable, safe and accessible transport networks.

This will ensure that the businesses will thrive, trade effectively and maximise the opportunities of the corridor for residents, visitors and investors.

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Part 4b
Objectives

Objectives

A high performing, multi-modal transport system will ensure this study helps deliver the following six objectives:

Climate Change

Minimise disruption from climate change and move to net zero carbon by:

- Shifting travel from fossil fuel traction to non-carbon emitting traction;
- Encouraging active and sustainable transport modes;
- Reducing the need to travel; and
- Reducing fossil fuel dependent trips.

Safety

Reduce serious (KSI) collisions, allowing residents to live longer, healthier lives by:

- Embedding a safe systems approach into all planning and transport operations to achieve Vision Zero – zero fatalities or serious injuries; and
- Prioritising vulnerable users over less vulnerable users where there are conflicts.
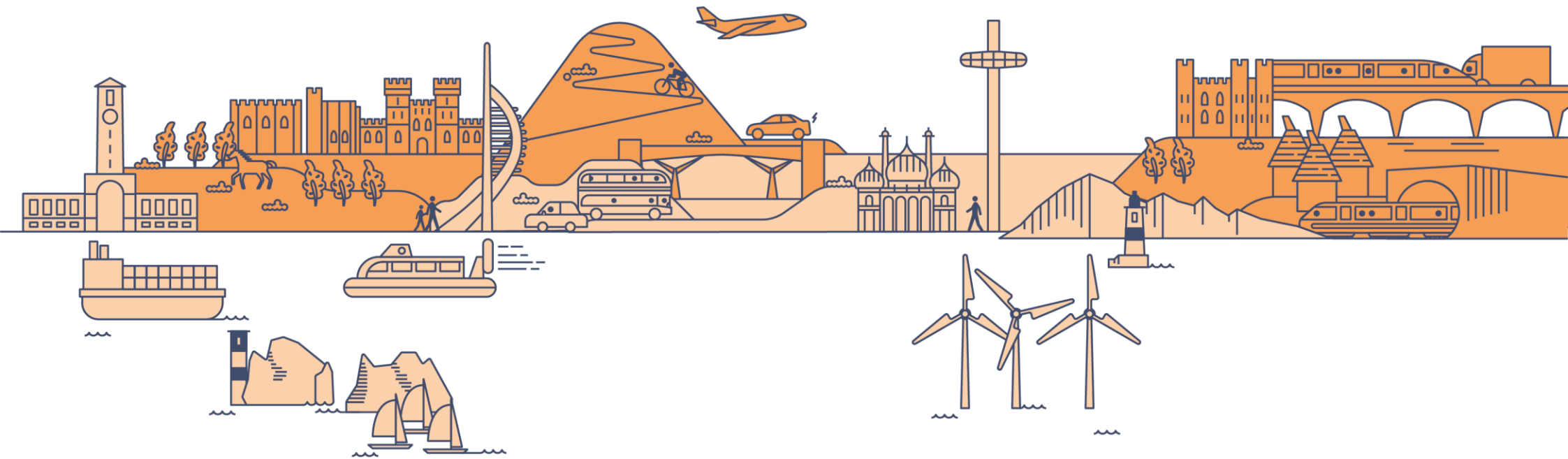
Health and Wellbeing

Minimise adverse impacts on human health and promote healthy living by:

- Shifting to lower polluting transport options (all modes) and minimise the impacts of transport-related air and noise pollution on local communities;
- Embrace active travel and the associated health benefits;
- Creating better places in which to live work and visit.

Economy

Reduce poverty and boost prosperity for all residents by:

- Attracting investment in high growth, high value opportunities;
- Boosting productivity through better skills matching, knowledge sharing and agglomeration;
- Reducing costs for businesses; and
- Improving transport network resilience.

Society

Enable the "levelling up" of socioeconomic outcomes by:

- Increasing access to employment opportunities;
- Enabling residents to access affordable housing and services;
- Improving access for all members of society, especially individuals of reduced mobility; and
- Enabling deprived communities to attract investment and achieve more equitable socioeconomic outcomes.

Natural and Historic Environment

Protect and enhance the natural and historic environment by:

- Adopting the principles of biodiversity net gain / no-net loss;
- Avoiding interventions that adversely impact protected environments;
- Reducing the impact of transport operations on protected and historic environments; and
- Improving public and active mode transport to protected environments.

Inner Orbital Area Study Evidence Base

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Part 4c
Next Steps

Next Steps

This report provides a summary of the work undertaken in the second of the five stages underpinning the Inner Orbital area study.

Figure 35 shows the stages and steps that are being delivered for this study.

This report concludes **Stage B,** which provides a common understanding of the current and future context, demonstrates a need for intervention in the area, and defines objectives for the inner Orbital Area Study.

The next stage for this study is **Stage C**. The purpose of this stage is to generate a long list of options in response to the SWOCs and need for intervention identified in Stage A, describe them in a consistent way, and assess them informed by the evidence base, against the criteria included in the Multi Criteria Assessment Framework (MCAF) tool that was developed for the Transport Strategy. This stage will mobilise in May 2020 and report in June 2021.

The purpose of **Stage D** will be is to produce outputs to make the case (to government and others) for investment in the South East's transport networks. This will mobilise in Summer 2021 and report by early Autumn 2021.

Finally, to ensure that each area study meets the vision, goals and priorities of the Draft Transport Strategy, an Integrated Sustainability Appraisal (ISA) will be developed for each of the five Area Studies – shown below as **Stage E** – which will also report by early Autumn 2021.
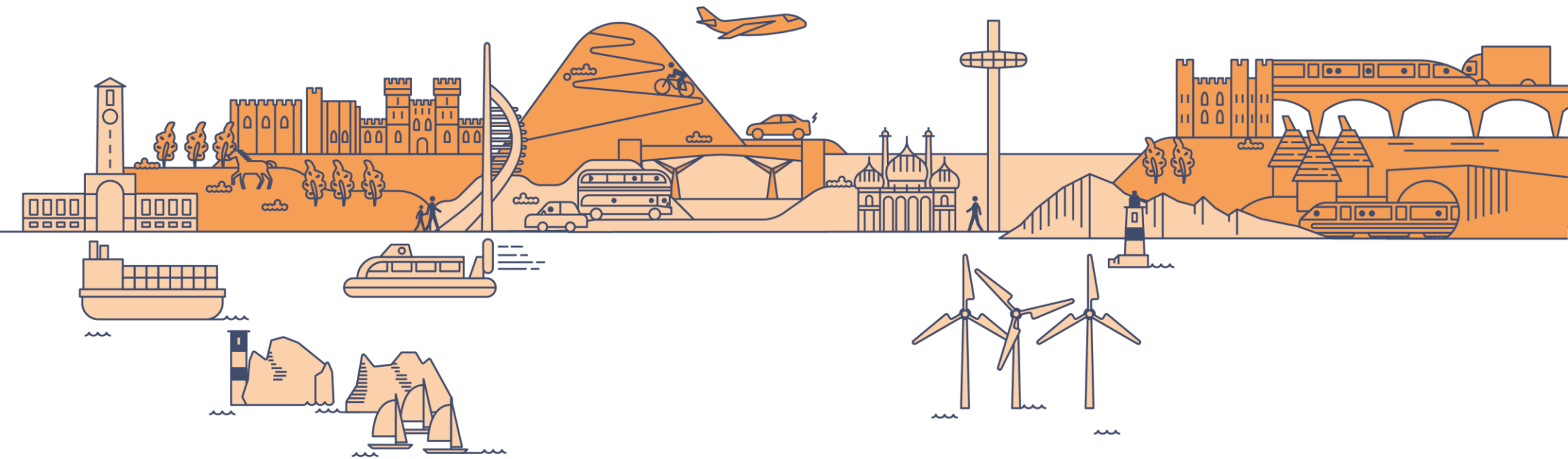
Figure 35: Overview of the Inner Orbital area study stages and steps

Progress of this study in May 2021

Inner Orbital Area Study Evidence Base

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South East
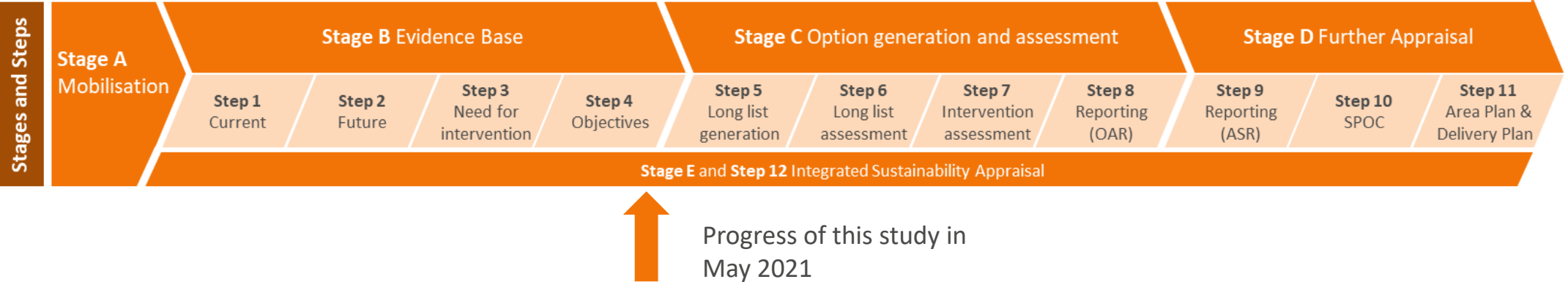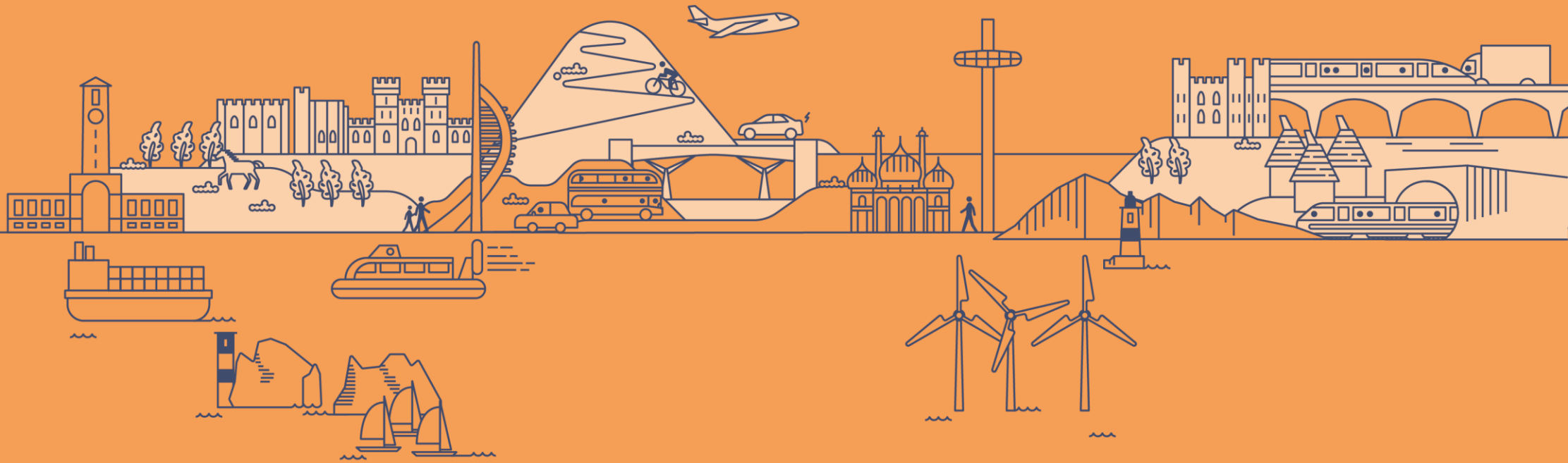
Part 5
Appendices

Appendix A
Policy Review

Policy Context Tables – International Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	The convention has three main aims which are stated in Article 1: • to conserve wild flora and fauna and their natural habitats; • to promote cooperation between states; and • to give particular attention to endangered and vulnerable species including endangered and vulnerable migratory species.
Conservation of Natural Habitats and Wild Fauna & Flora (the 'Habitats Directive') (1992)	The identification of a European network of Sites of Community Importance (SCIs) to be designated as Special Areas of Conservation (SACs). A SEA would need to report on any potential effects on SACs and all development plans should aim to avoid adverse effects on them.
Ambient Air Quality Directive	The Ambient Air Quality Directive provides the current framework for the control of ambient concentrations of air pollution in the EU. The control of emissions from mobile sources, improving fuel quality and promoting and integrating environmental protection requirements into the transport and energy sector are part of these aims.
The Paris Agreement (2015)	Aims to limit the global warming change to well below 2°C above pre-industrial levels. However, countries aim to limit the increase to 1.5°C to reduce the impacts of global warming. The EU has committed to a binding target of a reduction of at least 40% in greenhouse gas emissions by 2030 compared to 1990.
The Climate Change Act, 2008	• Improve carbon management and help the transition towards a low carbon economy in the UK. • Demonstrate strong UK leadership internationally, showing the commitment to taking shared responsibility for reducing global emissions in the context of developing negotiations on a post-2012 global agreement at Copenhagen in 2009. • Greenhouse gas emission reductions through action in the UK and abroad of at least 80% by 2050, and reductions in CO_2 emissions of at least 26% by 2020, against a 1990 baseline. However, more ambitious targets are being set under the Paris Agreement.
Transforming our World: the 2030 Agenda for Sustainable Development (2015)	Sets a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. It sets 17 Sustainable Development Goals (SDGs) and 169 targets. Applicable goals include: • Goal 6 - Ensure availability and sustainable management of water and sanitation for all • Goal 7 - Ensure access to affordable, reliable, sustainable and modern energy for all • Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation • Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable • Goal 12 - Ensure sustainable consumption and production patterns • Goal 13 - Take urgent action to combat climate change and its impacts • Goal 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development • Goal 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Inner Orbital Area Study Evidence Base

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Policy Context Tables – International Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Directive 2000/60/EC of the European Parliament - "The Water Framework Directive" (2000)	The main aims of the Water Framework Directive (WFD) are to: • prevent deterioration and enhance status of aquatic ecosystems, including groundwater • promote sustainable water use • reduce pollution • contribute to the mitigation of floods and droughts The WFD requires the creation of River Basin Management Plans (RBMPs).
EU Biodiversity Strategy to 2020 – towards implementation (2011)	Aimed at halting the loss of biodiversity and ecosystem services in the EU by 2020, the strategy provides a framework for action over the next decade and covers the following key areas: • Conserving and restoring nature; • Maintaining and enhancing ecosystems and their services; • Ensuring the sustainability of agriculture, forestry and fisheries; • Combating invasive alien species; and • Addressing the global biodiversity crisis.
EU Adaptation Strategy (2013)	• Promoting action by member states and supporting adaptation in cities; • Promoting adaptation in vulnerable sectors and ensuring Europe's infrastructure is more resilient; and • Better informed decision making by addressing gaps in knowledge about adaptation.
A 2030 Framework for Climate and Energy Policies Green Paper (2013)	The framework sets three key targets for the year 2030: • At least 40% cuts in greenhouse gas emissions (from 1990 levels); • At least 27% share for renewable energy; and • At least 27% improvement in energy efficiency
Directive 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste	Waste management in the EU should be improved and transformed into sustainable material management, with a view to protecting, preserving and improving the quality of the environment, protecting human health, ensuring prudent, efficient and rational utilisation of natural resources, promoting the principles of the circular economy, enhancing the use of renewable energy, increasing energy efficiency, reducing the dependence of the Union on imported resources, providing new economic opportunities and contributing to long-term competitiveness.

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Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
25 Year Environment Plan (2018)	Biodiversity The 25 Year Environment Plan outlines the Government's ambition to leave our environment in a better state than we found it and the steps proposed to take to achieve that ambition. The Plan includes ten key targets of which two focus on biodiversity. Thriving plants and wildlife: • Restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term; • Creating or restoring 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits; • Taking action to recover threatened, iconic or economically important species of animals, plants and fungi and where possible to prevent human-induced extinction or loss of known threatened species in England and the Overseas Territories; • Increasing woodland in England in line with our aspiration of 12% cover by 2060: this would involve planting 180,000 hectares by end of 2042. Enhancing biosecurity: • Managing and reducing the impact of existing plant and animal diseases; lowering the risk of new ones and tackling invasive non-native species; • Reaching the detailed goals to be set out in the Tree Health Resilience Plan of 2018; • Ensuring strong biosecurity protection at our borders, drawing on the opportunities leaving the EU provides; and • Working with industry to reduce the impact of endemic disease.
	Landscape Goal 6: Enhancing beauty, heritage and engagement with the natural environment, is to "safeguard and enhance the beauty of our natural scenery and improving its environmental value while being sensitive to considerations of its heritage."
	Climate Goal 7 of the 25 Year Environment Plan, 'Mitigating and adapting to climate change', is to "take all possible action to mitigate climate change, while adapting to reduce its impact" by "continuing to cut greenhouse gas emissions including from land use, land use change…" and "making sure that all policies, programmes and investment decisions consider the possible extent of climate change this century". With regards to the transport sector, the 25 Year Environment Plan identifies four 'early' priorities through the 'Future of Mobility Grand Challenge'. These include encouraging new modes of transport; addressing the challenges of moving from hydrocarbon to zero emission vehicles; and Preparing for a future of new mobility services, increased autonomy, journey-sharing and a blurring of the distinctions between private and public transport.
	Water Environment Goal 2 - Clean and plentiful water: "Improve at least three quarters of our waters to be close to their natural state as soon as is practicable by: […] Reaching or exceeding objectives for rivers, lakes, coastal and ground waters that are specially protected, whether for biodiversity or drinking water".
The Environment Bill (2020)	The Environment Bill 2020 sets out how the Government plan to protect and improve the natural environment in the UK and is a key vehicle in the delivery of the 25 Year Environment Plan. It sets a new and ambitious domestic framework for environmental governance on a number of measures including the clean air strategy; biodiversity net gain; trees; conservation covenants; extended producer responsibility for packaging; recycling; a deposit return scheme for drinks containers and water.

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Department for Transport, National Policy Statement for National Networks (2014)	Paragraph 4.38 of the NN NPS states that "New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the provision of green infrastructure." The NN NPS also requires carbon impacts to be considered as part of the appraisal of scheme options, and an assessment of any likely significant climate factors in accordance with the requirements in the EIA Directive. It goes on to state that "it is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets."
The Clean Growth Strategy (2017)	This Strategy sets out a comprehensive set of policies and proposals that aim to accelerate the pace of "clean growth", i.e. deliver increased economic growth and decreased emissions. Key Policies and Proposals in the Strategy: • Develop world leading Green Finance capabilities; • Develop a package of measures to support businesses to improve their energy productivity, by at least 20 per cent by 2030; • Improving the energy efficiency of our homes; • Rolling out low carbon heating; • Accelerating the shift to low carbon transport; • Delivering clean, smart, flexible power emissions; and • Enhancing the benefits and value of our natural resources

Inner Orbital Area Study Evidence Base

TRANSPORT FOR THE
South East

Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
National Planning Policy Framework (2019)	**Biodiversity** Paragraphs 170 and 174 to 177 of the NPPF require development to protect and safeguard biodiversity, and advise that development should aim to conserve, restore and enhance biodiversity adequately through mitigation or, as a last resort, using compensation. Recognise the wider benefits of ecosystem services; minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures. Paragraph 170 of the NPPF requires that planning decisions should be taken to enhance the natural environment by recognising the wider benefits from natural capital and ecosystem services. Further, Paragraph 171 requires plans to take a strategic approach to maintaining and enhancing green infrastructure networks and improving natural capital at a catchment or landscape scale.
	Landscape & Historic Environment Paragraph 170 of the NPPF requires developments to protect and enhance valued landscapes and recognise the intrinsic character and beauty of the countryside. Paragraph 172 of the NPPF states that great weight should be given to conserving and enhancing landscape and scenic beauty in National parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection. The scale and extent of development within these designated areas should be limited, planning permission for major developments should be refused other than in exceptional circumstances where it can be demonstrated that the development is in the public interest.
	Water Environment "… inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere". "… if there is no reasonably available site in Flood Zones 1 or 2, then national networks infrastructure projects can be located in Flood Zone 3, subject to the Exception Test. Both elements of the test will have to be passed for development to be consented…" "Any project that is classified as 'essential infrastructure' and proposed to be located in Flood Zone 3a or 3b should be designed and constructed to remain operational and safe for users in times of flood; and any project in Zone 3b should result in no net loss of floodplain storage and not impede water flows". "… impacts on the water environment should be given more weight where a project would have adverse effects on the achievement of the environmental objectives established under the Water Framework Directive".
	Air Quality and Climate Change Paragraph 150 of the NPPF states that "New development should be planned for in ways that: a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards."
	Noise Paragraph 180 state planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.

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Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
1979 Ancient Monuments and Archaeological Areas Act	Where Ancient Monuments occur on agricultural land the following Act influences the extent of public control to ensure the protection of scheduled ancient monuments.
Future Water The Government's water strategy for England (2008)	The vision for water policy and management is one where, by 2030 at the latest, England has: • improved the quality of our water environment and the ecology which it supports, and continued to provide high levels of drinking water quality from our taps; • sustainably managed risks from flooding and coastal erosion, with greater understanding and more effective management of surface water; • ensured a sustainable use of water resources, and implemented fair, affordable and cost reflective water charges; • cut greenhouse gas emissions; and • embedded continuous adaptation to climate change and other pressures across the water industry and water users.
Noise Policy Statement for England (2010)	The long-term vision for the Noise Policy Statement for England is to "promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."
Accessible Natural Green Space Standards in Towns and Cities: A review and Toolkit for their Implementation (2003) and Nature Nearby: Accessible Green Space Guidance (2010)	English Nature (now Natural England) recommends that provision should be made of at least 2ha of accessible natural greenspace per 1000 population according to a system of tiers into which sites of different sizes fit: • no person should live more than 300m from their nearest area of natural greenspace; • there should be at least one accessible 20ha site within 2km from home; • there should be one accessible 100ha site within 5km; and • there should be one accessible 500ha site within 10km.
Green Infrastructure: An integrated approach to landscape use. Landscape Institute Position Statement (2013)	The Landscape Institute's most recent position statement, 'Green Infrastructure LI Position Statement 2013' sets out why GI is crucial to our sustainable future. The publication showcases a range of successful GI projects and shows how collaboration is key to delivering multifunctional landscapes. It also illustrates why landscape professionals should take the lead on the integration of GI.

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Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Our Waste, Our Resources: A Strategy for England (2018)	This Strategy is the first significant government statement in this area since the 2011 Waste Review and the subsequent Waste Prevention Programme 2013 for England. It builds on this earlier work but also sets out fresh approaches to long-standing issues like waste crime, and to challenging problems such as packaging waste and plastic pollution. The strategy is framed by natural capital thinking and guided by two overarching objectives: 1. To maximise the value of resource use; and 2. To minimise waste and its impact on the environment. The Strategy has five key principles: 1. To provide the incentives, through regulatory or economic instruments if necessary and appropriate, and ensure the infrastructure, information and skills are in place, for people to do the right thing; 2. To prevent waste from occurring in the first place, and manage it better when it does; 3. To ensure that those who place on the market products which become waste to take greater responsibility for the costs of disposal – the 'polluter pays' principle; 4. To lead by example, both domestically and internationally; and 5. To not allow our ambition to be undermined by criminality.
Clean Air Strategy (2019)	Addresses action to reduce emissions from transport "as a significant source of emissions of air pollution", in-particular oxides of nitrogen (NOx) – which is responsible for high levels of NO2 in ambient air, especially in urban areas - and particulate (PM10 and PM2.5) emissions.
The State of Natural Capital, Natural Capital Committee (2020)	In the report, the Natural Capital Committee sets out: • Despite some improvements, only limited progress has been made towards the 25 Year Environment Plan's goals. • Its advice to Government that biodiversity net gain should be expanded to environmental net gain. • Its advice that an England wide baseline of natural capital assets should be established to measure progress towards environmental goals. Natural capital should be seen as infrastructure in its own right, in recognition of its contribution to economic wellbeing.
Planning for the Future (White Paper) August 2020	As part of the government's drive to reform national planning regulations, they have recently released a white paper for consultation. It focusses on digitalisation (moving to a 'data-driven' form of planning) removing 'red tape' around planning policies, and improving the sustainability of housing stock. Key pillars include: 'First, we will streamline the planning process with more democracy taking place more effectively at the plan-making stage, and will replace the entire corpus of plan-making law in England Second, we will take a radical, digital-first approach to modernise the planning process. This means moving from a process based on documents to a process driven by data. Third, to bring a new focus on design and sustainability. Fourth, we will improve infrastructure delivery in all parts of the country and ensure developers play their part, through reform of developer contributions. Fifth, to ensure more land is available for the homes and development people and communities need, and to support renewal of our town and city centres.'

TRANSPORT FOR THE
South East

Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Planning (Listed buildings and Conservation Areas) Act 1990	This is an Act relating to special controls in respect of buildings and areas of special architectural or historic interest.
National Networks National Policy Statement (NN NPS) (2014)	**Noise** Paragraph 5.193 states that developments must be undertaken in accordance with statutory requirements for noise. Due regard must have been given to the relevant sections of the Noise Policy Statement for England, National Planning Policy Framework and the Government's associated planning guidance on noise. Paragraph 5.192 states that the Secretary of State should not grant development consent unless satisfied that the proposals will meet, the following aims, within the context of Government policy on sustainable development: • avoid significant adverse impacts on health and quality of life from noise as a result of the new development; • mitigate and minimise other adverse impacts on health and quality of life from noise from the new development; and • contribute to improvements to health and quality of life through the effective management and control of noise, where possible. **Air Quality** Paragraph 4.38 of the NN NPS states that "New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the provision of green infrastructure." The NN NPS also requires carbon impacts to be considered as part of the appraisal of scheme options, and an assessment of any likely significant climate factors in accordance with the requirements in the EIA Directive. It goes on to state that "it is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets." **Soils, waste and materials** "Evidence of appropriate mitigation measures (incorporating engineering plans on configuration and layout, and use of materials) in both design and construction should be presented". **Landscape and Historic Environment** Paragraph 5.149 states that when judging the impact of a project on landscape, the decision is dependent on the nature of the existing landscape likely to be affected and the nature of the effect likely to occur. The project should aim to avoid or minimise harm to the landscape, providing reasonable mitigation where possible and appropriate. **Water** "… if there is no reasonably available site in Flood Zones 1 or 2, then national networks infrastructure projects can be located in Flood Zone 3, subject to the Exception Test. Both elements of the test will have to be passed for development to be consented…" "Any project that is classified as 'essential infrastructure' and proposed to be located in Flood Zone 3a or 3b should be designed and constructed to remain operational and safe for users in times of flood; and any project in Zone 3b should result in no net loss of floodplain storage and not impede water flows". "… impacts on the water environment should be given more weight where a project would have adverse effects on the achievement of the environmental objectives established under the Water Framework Directive". **Biodiversity and Geodiversity** NN NPS states that development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity offsetting in devising compensation to counteract impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought. Paragraphs 3.2 to 3.5 of the NN NPS state that not only should national road and rail networks be designed to minimise social and environmental impacts, but that they should also seek to improve quality of life. In part this may be achieved by "reconnecting habitats and ecosystems […] improving water quality and reducing flood risk, […] and addressing areas of poor air quality." Paragraph 5.162 recognises the potential for developments to provide positive environmental and economic benefits through the provision of green infrastructure. Paragraph 5.175 of the NN NPS highlights that green infrastructure use identified in development plans should be protected and, where possible, enhanced

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TRANSPORT FOR THE
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Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Road Investment Strategy 2 (RIS2): 2020 to 2025 (2020)	The Road Investment Strategy 2 (RIS2), published by the Department for Transport in May 2020, sets out the Government's strategic vision for the Strategic Road Network (SRN) – the UK's motorways and principal A-roads – covering the years 2020 to 2025. RIS2 has been developed on the back of an extensive round of public engagement and consultation, research and evidence gathering begun in 2016. It has been the biggest exercise ever undertaken to inform national road investment and provides a well-informed picture of the current performance of the network, future pressures on it, and the opportunities available for improvement. RIS2 emphasises the need to ensure the SRN is safe, serviceable, and free-flowing. It also highlights the need for the SRN to be 'smart' and build on new technologies, increase the level of accessibility and integration with the wider transport network (including the newly identified Major Road Network), and demonstrate how the SRN supports economic development and how investment can improve the environment. It details the investment plan and committed enhancements for RIS2, along with those in the pipeline for RIS3 (and are in the TfSE long list of interventions).
Highways England: Strategic Business Plan and Delivery Plan 2020 to 2025 (2020)	The Strategic business plan, responds to and aligns with government's RIS2. It provides the high-level direction for every part of Highways England for the second road period (2020 to 2025), setting the outcomes we will work to deliver and the strategic priorities for our business. This Strategic business plan is supported by the Delivery plan, which provides the detail of specific funding, activities and projects we will deliver over the five years. It also discusses how you approach efficiency and risk management. The Delivery plan includes the performance framework, which brings together all the delivery aims for the second road period.
Transport Investment Strategy (2017) Department for Transport	The Transport Investment Strategy, published in July 2017 by the Department for Transport, describes the UK government's priorities for investment in transport. These are: • To create a more reliable, less congested, and better-connected transport network that works for the users who rely on it. The TIS notes UK transport systems are ageing and are facing increasing demands. In many places, the current transport network does not provide the right levels of connectivity for people and business. • To build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities. The TIS notes the UK's national productivity is lower than other G7 countries (e.g. 36% behind Germany), and describes transport as one way of boosting productivity. It is also acknowledged that prosperity hasn't been shared evenly between different places, leaving some communities feeling left behind. • To enhance the UK's global competitiveness by making Britain a more attractive place to trade and invest. Britain is globally renowned as a leader in Research and Innovation, and Scientific fields. Foreign investment in these areas is significant and relies upon good national and international transport links. Retaining the UK's pre-eminence in these areas will require continued investment in the transport network, enhancing "city clusters" and "international connectivity". The TIS therefore views transport as a means of attracting job-creating investment, leveraging the UK's industrial strengths and enabling it to trade with partners with as few frictions as possible. • To support the creation of new housing. The TIS acknowledges parts of the UK face a significant challenge to provide the houses that people need in the places they wish to live. Furthermore, the Government's Housing White Paper recognises that investing in transport infrastructure is one of the best ways of unlocking development in places that are currently poorly served by our transport system.
Industrial Strategy White Paper (2017) Department for Business Energy and Industrial Strategy	The Industrial Strategy White Paper, published by the UK government in November 2017, sets out the government's over-arching industrial policy. This White Paper describes how the government will work to boost the productivity of the UK by helping "businesses create better, higher-paying jobs in every part of the United Kingdom with investment in the skills, industries and infrastructure of the future". The White Paper describes five "foundations of productivity": • ideas; • people; • infrastructure; • business environment; and • places.

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Policy Context Tables – National Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Clean Growth Strategy (2017) UK Department for Business Energy and Industrial Strategy	Outlines the government's method for ensuring that the UK continues to grow economically, whilst reducing its emissions. The strategy sets out how £2.5bn of funding will be invested by the government to support low carbon innovation from 2015 to 2021. The strategy notes that changes to the transport network will be fundamental for reducing emissions and describes in depth how it expects to encourage a shift to low carbon transport.
Air Quality Plan (2017) Department for Environment and Rural Affairs	Describes how the government plans to improve air quality by ending the sale of new, conventional petrol and diesel cars and vans by 2040. This policy has had a significant impact on the automotive industry and has already resulted in significant changes in consumer behaviour.
Housing White Paper (2017) (Fixing our broken housing market) Ministry for Communities Housing and Local Government	Sets out how the government intends to boost housing supply and create a more efficient housing market. The government wishes to ensure the housing market delivers outcomes that are more closely matched to the needs and aspirations of all households, and support wider economic prosperity. This policy is particularly pertinent to the South East as the region is characterised by relatively low levels of housing affordability.
Road to Zero (2018) Office for Low Emissions Vehicles	Department for Transport's Road to Zero Strategy, published in July 2018, which sets a target of ensuring that 50% of all new cars in 2030 are ultra-low emission vehicles. The strategy aims to deliver a significant expansion of green infrastructure across the country, reduce emissions from the vehicles already on the UK's roads, and encourage greater uptake of zero emission road vehicles.
Inclusive Transport Strategy (2018) Department for Transport	Government wants people with disabilities to have the same access to transport as all other users by 2030. The document outlines a wide ranging series of interventions which it will employ to achieve this aim, from raising awareness to providing better physical infrastructure. It also describes how the government will hold itself accountable for the delivery of this strategy, including processes for monitoring and evaluation specifying key output indicators.
Government Clean Air Strategy (2019) Department for Environment and Rural Affairs	Explains how the government will tackle all sources of air pollution. It sets out potential future legislation around transport, and broad measures to help drive a switch to zero-emissions transport modes.
Gear Change: A Bold Vision for Walking and Cycling (2020) Department for Transport	This policy sets out how the government plans to make a step change in walking and cycling over the coming years. It was released after the onset of the COVID-19 pandemic, and aims capitalise on the dramatic changes to travel behaviours it has caused. The paper provides several key reasons for making this change, ranging from improvements to public health, to addressing inequalities, to tackling congestion, to improving air quality, to slowing climate change, and boosting the economy.
Decarbonising Transport, Setting the Challenge (2020) Department for Transport	Provides an overview of transport modes and their current contributions to carbon emissions. It then summarises the current policies which are in place to help them decarbonise, and provides forward projections of how effective these policies will be for bringing the transport network to net zero. The plan also considers the importance of incorporating 'place-based' solutions, providing geographically specific answers to the challenge. Ultimately, the policy comes up with six strategic priorities which reflect 'the core areas we believe plans are needed for delivery of the TDP [Transport Decarbonisation Plan]', which are: • Accelerating modal shift to public and active transport – making public transport and active travel the first choice for daily activities, reducing car use, and exploring how to make use of how to use vehicles differently. • Decarbonisation of road vehicles – requiring major changes to the vehicles we drive and the way we use our roads, driven by investing in innovative technology solutions and developing sustainable supply chains. • Decarbonising how we get our goods – transforming 'last mile' deliveries, ensuring an integrated, clean and sustainable delivery system, making use of digitally-enabled solutions, data-sharing and collaborative platforms. • Place-based solutions for emissions reduction – understanding where, how and why emissions occur in specific locations, will enable development of a tailored response, addressing how management at a local level can best address emissions at a local level. • UK as a hub for green transport technology and innovation – utilising the UK's world-leading scientists, business leaders and innovators, positioning the UK as an internationally recognised leader in environmentally sustainable technologies.

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Policy Context Tables – Sub-Regional Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Energy South 2 East, Local Energy Strategy (2019)	This local energy strategy has been developed to enable the Coast to Capital, Enterprise M3 and South East Local Enterprise Partnerships (LEPs) of England to achieve clean growth from now until 2050 in energy across the power, heat and transport sectors. The strategy has five priority themes: • Low Carbon heating - district heat networks, off-gas grid homes, hydrogen injection into the natural gas grid, new-build homes on hydrogen grid • Energy Saving and efficiency - off gas grid homes, energy efficiency in homes, SME support programme • Reducing carbon in a global economy – international aspects of transportation – shipping and aviation – are vital to the UKs economy; the UK must become a centre of expertise to drive low carbon transport, boosting the UK economy and helping to lead the change internationally. • Renewable generation - offshore wind, solar and microgrid on landfill sites, biomass fuel supply chain, solar energy for network rail, car park solar potential, biofuel evolution • Smart energy system - housing and community microgrids, EV charging and hydrogen fuelling infrastructure, setup of ESCO/MUSCO infrastructure, support developments in CO2 capture • Transport Revolution - port modernisation, EV charging, CNG fleet fuelling
Coast to Capital Rural Statement (2016)	The purpose of the Rural Statement is highlight the contribution of the unique rural area to the future economic, social and environmental success of Coast to Capital and to identify the priorities for action which will be included in the action plan which is to follow. The key to improving rural competitiveness is not only to recognise the interdependencies between rural and urban areas but also to develop strong rural areas in their own right which reflect the varied and rapidly changing nature of the rural economy and communities. The evidence suggests that: high-performing rural areas have five essential attributes: 1. A highly skilled workforce 2. An innovative economic base serving both national and global markets 3. A physical environment that provided the basis of a high quality of life 4. A strong sense of place and identity 5. Good access to urban employment centres.
Thames Valley Berkshire LIS	Vision that "Berkshire should grow with ambition and intent." Priorities: • Enhancing productivity within Berkshire's enterprises • Ecosystems which are maturing and evolving and extend beyond Berkshire • International trade, connections, collaborations and investments • Vibrant places and a supportive infrastructure • Making Berkshire an inclusive area where aspirations can be realized

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Policy Context Tables – Sub-Regional Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Strategic Economic Plans (SEPs) (2014)	SEPs 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. The regions which currently have SEPs in the South East are: • Coast to Capital • Enterprise M3 • South East • Thames Valley Berkshire The SEPs also outline the industrial and sectoral priorities for their region, which are based on each region's perceived economic strengths and stated growth ambitions. Please note that not all of the SEPs cover all of the areas highlighted to the right - they are selected based on what is representative of the 'general' SEPs in the South East
Coast to Capital LIS Logic Chains (2019) Coast to Capital	The Coast to Capital LEP have submitted a set of 'logic chains' to the Government's LIS Analytical Panel for review, presenting the rationale behind a set of draft interventions for the LIS which were identified through extensive engagement with partners and in response to the findings from the evidence base. These logic chains cover the following areas; • People: local talent pipeline • Business environment: business growth • Business environment: business space • Places: sustainable growth • Place: natural capital • Infrastructure: 5G digital region • Infrastructure: smart, clean mobility • Ideas: innovation acceleration
SELEP COVID-19 Economic Statement (2020) South East Local Enterprise Partnership	SELEP's LIS is currently on hold while the economic challenges from COVID-19 are being assessed. In the interim, a COVID-19 economic statement has been released, which explains SELEP's response to the crisis and the economic support it is providing. It notes that they are providing more than £90m of investment to accelerate the recovery effort, focussing on delivering key infrastructure which will provide jobs now, and long-term positive economic benefits in the future. It also notes a number of areas where SELEP will focus its attention in the coming months in order to aid the recovery, including: • Supporting businesses to adapt, recover and grow. • Re-skilling the workforce, supporting people back into the labour market • Driving forward innovation, research and development to help stimulate the economy and increase productivity • Promoting and enabling clean recovery in the future planning of our towns and communities • Addressing gaps in digital connectivity • Accelerating planned growth through investment in £85m Getting Building Funds • Tackling the implications of the UK's exit from the European Union • Continuing a strong dialogue with government as a LEP

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Policy Context Tables – Sub-Regional Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
London South East Market Study (2013) Network Rail	This study quantifies the importance of rail travel in South East England (nearly half of all trips to Central London are by rail) and forecasts that demand for off-peak travel and commuting into regional centres is expected to grow. The strategic goals identified for this market are: • to enable economic growth; • to reduce carbon emissions and the transport sectors' impact on the environment; • to improve the quality of life for communities and individuals; and • to improve affordability. Long term conditional outputs developed from the study include accommodating peak demand on short distance services and improving services between regional centres.
Freight Market Study (2017) Network Rail	The study brings together the strategic freight recommendations from individual routes and also provides an outline of the wider non-route specific priorities for rail freight capacity and capability. The study notes that there has been a recent growth in rail freight, a geographical shift in freight flows towards busier rail corridors, and a growth in passenger numbers. All of these trends are placing additional capacity constraints on the freight sector. This market study identifies future requirements on individual corridors and highlights capacity gaps. It also considers the need for increased capability (e.g. speed improvements and capacity).
Network Rail Local Studies	Local Studies, which bring together the suggested outputs for all the market sectors of a part of the network. These studies evaluate the trade-offs between the suggested outputs for the different sectors, form a view of the likely long-term allocation of different sectors, and use these findings to inform decisions on the appropriate capability of the network. In total, there are five Local Studies in the South East: • London and South East • South East (Sussex) • South East (Kent) • Wessex • Western

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Policy Context Tables – Sub-Regional Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
The High Weald AONB, Management Plan (2019 -2024)	Key objectives of the plan include: • To restore the natural function of rivers, water courses and water bodies. • To protect and enhance soils, sandstone outcrops, and other important landform and geological features. • To help secure climatic conditions and rates of change which support continued conservation and enhancement of the High Weald's valued landscape and habitats. • To reconnect settlements, residents and their supporting economic activity with the surrounding countryside. • To enhance the architectural quality of the High Weald and ensure development reflects the character of the High Weald in its scale, layout and design. • To enhance the ecological function of routeways. • To enhance the ecological quality and functioning of woodland at a landscape scale. • To secure agriculturally productive use for the fields of the High Weald, especially for local markets, as part of sustainable land management. • To enhance the ecological function of field and heath as part of the complex mosaic of High Weald habitats. • To improve amenities, infrastructure (including the provision of appropriate affordable housing), and skills development for rural communities and related sectors that contribute positively to conserving and enhancing natural beauty
Kent Downs AONB Management Plan (2014 -2019)	Key aims of the plan include: • The character and distinctiveness of villages, farmsteads and individual buildings are conserved and enhanced by combining the best traditions of the past with the best technologies of the present to create environmentally sustainable and locally enhancing development. • A positive, proactive and urgent approach is taken to the implications of climate change and intelligent and effective mitigation and adaptation responses are chosen which support landscape character and ecosystem services. • The setting and views in and out of the AONB are conserved and enhanced. • The highest standards of landscape conservation, restoration and enhancement are encouraged and integrated into all land uses in the Kent Downs and its setting. • The natural heritage and wildlife is recognised for its inherent value for contributing to quality of life and the economic value of the Kent Downs. • A network of well-managed, connected sites of biodiversity importance covers the Kent Downs, providing habitats for locally typical and rare species and communities and the essential building block to achieve functional ecological networks to assist with climate change adaptation. • Woodland ecology and archaeology is well understood, conserved, enhanced and recognised for its value. • The landscape context and setting of all historic buildings, features and settlements is protected, conserved and enhanced. • The extreme importance and sensitivity of the Heritage Coasts are recognised publicly, through appropriate international status and in policy and development management decisions.

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Policy Context Tables – Sub-Regional Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Future Mobility Review (2018) WSP on behalf of Transport for the South East	This paper examined how future mobilities have the potential to change the transportation and provide opportunities in the South East area. The study provides a number of key recommendations for TfSE, which include; • Energy – develop a sufficient and reliable supply of energy across all sectors • Communications – provide consistently fast and reliable digital coverage in all communities/corridors • Spatial Planning – integrate spatial planning, economic development, and transport policy. Plan new developments that prioritise major trip generators in the most accessible locations. • Health – improve health and social care outcomes through comprehensive and consistent access to services. • Education – consider the implications of future mobility trends upon the skills and education sector, in particular those associated with automotive, AI and robotics. • Environment – reduce emissions related to poor air quality, and wider environmental impacts from transport.
TfSE Economic Connectivity Review (2018) Transport for the South East	Highlights the unique position of the South East as a powerful driver of the UK economy and as the nation's major international gateway for people and business. It provides the evidence that underlines the South East's competitiveness in the maritime, defence, advanced engineering, biosciences, and connected digital sectors. These strengths are all supported by digital enabling technologies and other high growth sector specialisms in finance, professional services, transport and logistics. The study estimates the South East's high-growth priority sectors and their economic assets could deliver as much as £500 billion per year to the UK economy by 2050. However, it concludes that the region needs a period of sustained investment in infrastructure if it is to maintain its competitiveness in the face of intensifying global competition. and realise its full economic potential.
Logistics and Gateway Review (2019) Transport for the South East	The aim of this study was to provide a consistent view of current and future patterns of freight activity and key cross-cutting issues relating to freight logistics and gateways across the TfSE area. Recommends developing a comprehensive freight strategy, which sets out the interventions and management actions required across the TfSE area, as well as the cost of undertaking these. Second, thought should be provided about how the promotion of best practice can be undertaken. Third, the strategy must incorporate local freight planning, including consolidation centres, land use, and retiming.
Highways England Route Strategies	The Government's priorities for investment in the SRN in South East England is described in Highways England's Route Strategies. In total, Highways England has published 18 Route Strategies covering the whole SRN in England, seven of which are relevant for the South East. These are • Kent Corridor to M25 (M2 and M20); • London Orbital and M23 to Gatwick; • London to Wales; • M25 to Solent (A3 and M3); • Solent to Midlands; • South Coast Central; and • South West Peninsula. Each strategy provides a description of the key centres of population and industry, international gateways served by the route, the type of road, and its current performance and constraints. Each strategy outlines options for maintaining, operating and/or enhancing roads. Where appropriate, this could include influencing driver behaviour or considering other modes of travel.

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Policy Context Tables – Local Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Bracknell Forest LTP (2011)	• Reduce delays associated with traffic congestion and improve reliability of journey times. • Encourage and promote accessibility by sustainable modes. • Protect and enhance the quantity and quality of natural resources including water, air quality and the natural environment. • Reduce greenhouse gas emissions from transport. • Reduce casualties and improve safety on local transport. • Enhance the street environment.
Hampshire LTP (2013)	Priorities: • Support economic growth by ensuring the safety, soundness and efficiency of the transport network. • Provide a safe, well-maintained, and more resilient road network and continued casualty reduction. • Manage traffic to maximise the efficiency of existing network capacity, improving journey time reliability and reducing emissions. • Improving international gateways (Southampton, Portsmouth and Southampton International Airport). • Public transport (BRT) to assist delivery in planned developments such as New Community North Fareham, Basingstoke and Whitehill-Bordon • Improved access to Heathrow Airport. • Securing investment to improve capacity and journey time reliability on strategic national corridors (M3, A34 and A303). • Increased capacity on key rail routes.
Kent LTP (2016)	• Economic growth and minimised congestion by delivering resilient transport infrastructure and schemes that reduce congestion and improve journey time reliability to enable economic growth and appropriate development, meeting demand from a growing population. • Affordable and accessible door-to-door journeys by promoting affordable, accessible and connected transport to enable access for all to jobs, education, health and other services. • Provide safer travel by providing a safer road, footway and cycleway network to reduce the likelihood of casualties, and encourage other transport providers to improve safety on their networks. • Enhanced environment by delivering schemes to reduce the environmental footprint of transport, and enhance the historic and natural environment. • Provide better health and wellbeing by providing and promoting active travel choices for all members of the community to encourage good health and wellbeing, and implement measures to improve local air quality. • Enabling growth in the Thames Estuary
Medway LTP (2011)	• ensuring highway infrastructure is maintained to the highest possible standard within the available resources • efficiently managing and improving Medway's local highway network to ensure reliability of journey times • ensuring public transport becomes a realistic alternative choice to the private car • contributing to better health by encouraging walking and cycling and by improving accessibility to key services • ensuring that people can move around safely ib Medway
Reading LTP (2011)	• Facilitate more physically active travel for journeys in a healthy environment. • Improve personal safety on the transport network. • Ensure that the transport network operates safely and efficiently to meet the needs of all users. • Align transport and land use planning to enable sustainable travel choices, improve mobility, reduce the need to travel and preserve the natural environment. • Offer sustainable transport choices for the Travel to Work Area and beyond, integrating within and between different types of transport. • Improve journey times, journey time reliability and the availability of information. • Reduce carbon emissions from transport, improve air quality and create a transport network which supports a mobile, affordable low-carbon future.

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Policy Context Tables – Local Policy
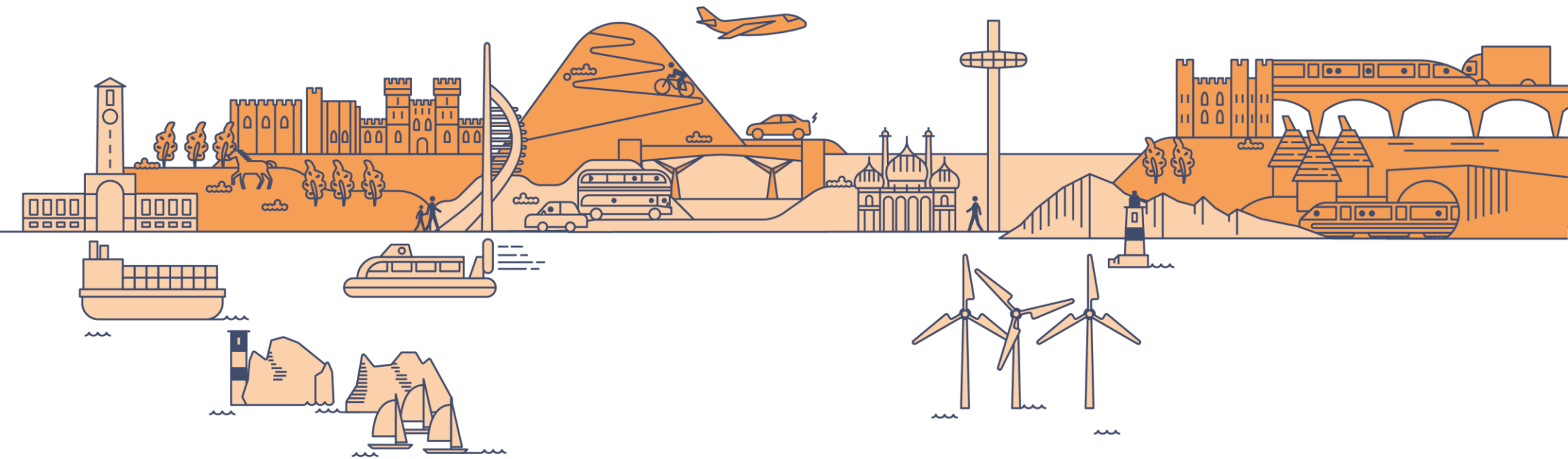
Plan or Policy	Relevant Aims/Objectives/Key Messages
Slough LTP (2011)	• Make sustainable transport options accessible to all. • Enhance social inclusion and regeneration of deprived areas. • Minimise the noise generated by the transport network. • Achieve better links between neighbourhoods and access to the natural environment. • Reduce the number of traffic collisions involving death or injury. • Minimise the opportunity for crime, anti-social behaviour and terrorism and maximise personal safety of the PT network. • Reduce transport's C02 emissions and make the PT network resilient to the effects of climate change. • Minimise effects of transport on natural environment, heritage and landscape. • Ensure that the transport system helps Slough sustain its economic competitiveness and retain its position as an economic hub of the South East. • Facilitate the development of new housing in accordance with the LDF.
Surrey LTP (2018)	• Facilitate end-to-end journeys for residents, business and visitors by maintaining the road network, delivering public transport services and providing enhancements. • Improve road safety and the security of the travelling public. • Provide an integrated transport system that protects the environment, keeps people healthy and provides for lower carbon transport choices. • None have been identified in the Local Transport Plan. The Districts/Boroughs are producing Local Transport Strategies which identify priorities at a spatial level.
West Berkshire LTP (2011)	• To improve travel choice and encourage sustainable travel; • To support the economy and quality of life by minimising congestion and improving reliability on West Berkshire's transport networks; • To maintain, make best use of and improve West Berkshire's transport networks for all modes of travel; • To improve access to services and facilities; • To improve and promote opportunities for healthy and safe travel; • To minimise energy consumption and the impact of all forms of travel on the environment
West Sussex LTP (2011)	• Provide a high-quality transport network that promotes a competitive and prosperous economy in all parts of the County. • Provide a resilient transport network that complements the built and natural environment whilst reducing carbon emissions over time. • Provide access to services, employment and housing. • Provide a transport network that feels and is safer and healthier to use. • Improvements to the A27 trunk road and complementary public transport improvements to local bottlenecks. • Improve connectivity to Gatwick – extend Fastway, improve Brighton Main Line and Arun Valley Line
Windsor and Maidenhead LTP (2012)	• Improve access to everyday services and facilities for everyone. • Improve road safety and personal security for all transport users. • Support sustainable economic growth. • Improve quality of life and minimise the social, health and environmental impacts of transport. • Mitigate and adapt to the effects of climate change.
Wokingham LTP (2012)	• Have a resilient, safe highway network that balances capacity for all users, enhances the economic prospects of the Borough, and promotes sustainable travel. • Work with partners to promote walking and cycling for all residents. • Promote an integrated and inclusive public transport network that provides a convenient, acceptable, reliable and affordable alternative to car travel. • Manage the demand for travel to ensure that people have a high level of access to different destinations, with sufficient choice, whilst minimising the adverse effects of congestion.

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TRANSPORT FOR THE
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Policy Context Tables – Local Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Kent Biodiversity 2020 and beyond – a Strategy for the Natural Environment (2015-2025)	The vision for biodiversity in Kent and Medway is: "By 2050 our land and seas will be rich in wildlife, our biodiversity will be conserved, restored, managed sustainably and be more resilient and able to adapt to change and will be enjoyed and valued by all, underpinning our long-term economic, social and personal wellbeing" Key aims of the strategy include: • Restoring at least 15% of degraded ecosystems as a contribution to climate change mitigation and adaptation. • More, bigger and less fragmented areas for wildlife, with no net loss of priority habitat and an increase in the overall extent of priority habitats of 10,260 ha. • By the end of 2016 in excess of 25% of waters around Kent and Medway will be contained in a well-managed Marine Protected Area network that helps deliver ecological coherence by conserving representative marine habitats that are nationally and internationally important. This target should not include the area already covered by the Outer Thames SPA. • Better wildlife habitats in the county, with 70% of Local Wildlife Sites in favourable condition and at least 90% of Local Wildlife Sites in favourable or recovering condition, at least 50% of SSSIs in favourable condition, while maintaining at least 95% in favourable or recovering condition. • By 2020, landscape scale initiatives that address the conservation of key species, through effective, integrated and joined up approaches including through management of our existing systems of protected areas and the establishment of nature improvement areas, in place on 17% of land and water.
Future water resource requirements for South East England (2020)	The plan will take a long-term view, looking ahead to 2100 and consider the water needed in homes and at work, and that required by industry, agriculture, electricity generation and the water needs of the environment. The plan will seek to: • Ensure there is enough water to serve the growing population and support growth in the economy • Address the impacts of climate change on water availability • Improve the environment by leaving more water in the region's rivers, streams and underground sources • Increase the region's resilience to drought and other events.
Kent Local Flood Risk Management Strategy 2017 - 2023	The aims of the local strategy are: • To support and improve the safety and wellbeing of Kent's residents and the economy of Kent through appropriate flood risk management; • To ensure that we all work together effectively to understand and deliver appropriate flood risk management in Kent • To contribute to sustainable development, regeneration and land management in Kent through the promotion of sustainable flood risk management practices that utilise natural processes where appropriate.

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Policy Context Tables – Local Policy

Plan or Policy	Relevant Aims/Objectives/Key Messages
Kent Minerals and Waste Local Plan (2013 -2030)	Throughout the plan period 2013-2030, minerals and waste development will: 1. Make a positive and sustainable contribution to the Kent area and assist with progression towards a low carbon economy. 2. Support the needs arising from growth within Kent. 3. Deliver cost effective and sustainable solutions to Kent's minerals and waste needs through collaborative working with communities, landowners, the minerals and waste industries, the environmental and voluntary sector and local planning authorities. 4. Embrace the naturally and historically rich and sensitive environment of the plan area, and ensure that it is conserved and enhanced for future generations to enjoy. 5. Seek to deliver a sustainable, steady and adequate supply of land-won minerals including aggregates, silica sand, crushed rock, brickearth, chalk and clay, building stone and minerals for cement manufacture. 6. Facilitate the processing and use of secondary and recycled aggregates and become less reliant on land-won construction aggregates. 7. Safeguard economic mineral resources for future generations and all existing, planned and potential mineral transportation and processing infrastructure (including wharves and rail depots and production facilities). 8. Restore minerals sites to a high standard that will deliver sustainable benefits to Kent communities. 9. Move waste up the Waste Hierarchy, reducing the amount of non-hazardous waste sent to landfill. 10. Encourage waste to be used to produce renewable energy incorporating both heat and power if it cannot be re-used or recycled. 11. Ensure waste is managed close to its source of production. 12. Make provision for a variety of waste management facilities to ensure that Kent remains at the forefront of waste management with solutions for all major waste streams, while retaining flexibility to adapt to changes in technology. 13. Ensure sufficient capacity exists to meet the future needs for waste management. 14. Restore waste management sites to a high standard that will deliver sustainable benefits to Kent communities.
West Sussex Joint Minerals Local Plan (2018)	The overall vision of the plan is to create a "place where minerals are produced in ways which conserve and enhance the beautiful outdoors of West Sussex, including the special qualities of the South Downs National Park and Areas of Outstanding Natural Beauty, for the benefit of current and future generations". "Will have contributed to the supply of minerals, in particular, aggregates (soft sand, sharp sand and gravel, and marine won aggregate), clay, chalk, building stone, silica sand and oil and gas, to support growth in West Sussex. In particular social and economic progress of both the Coastal West Sussex and Gatwick Diamond strategic growth areas will be supported through the provision of aggregate to enable the delivery of new development".

TRANSPORT FOR THE
South East

Appendix B
Socioeconomic Indicators

Area	GVA (2018, £m)	GVA (2008, £m)	GVA Growth (%)	GVA per capita (£)	Jobs Available	Eligible workforce (16-64)	Jobs minus workers	Jobs / Workforce (%)	Priority Sectors Jobs	Priority Sectors Jobs (%)	Priority Sector Quotient	Population (2019)	Population (2009)	Population Growth
Inner Orbital	140,517	107,337	31%	35,906	1,846,655	2,400,100	(553,445)	77%	227,435	12.3%	0.43	3,913,426	3,614,802	8.3%
South West (Inner Orbital)	94,225	70,973	33%	42,018	1,134,900	1,383,100	(248,200)	82%	141,950	12.5%	0.43	2,242,472	2,092,937	7.1%
South Central (Inner Orbital)	22,773	19,300	18%	35,813	317,550	380,600	(63,050)	83%	48,135	15.2%	0.53	635,882	591,488	7.5%
South East (Inner Orbital)	32,424	24,518	32%	24,533	520,825	803,100	(282,275)	65%	48,075	9.2%	0.32	1,321,668	1,200,989	10.0%
Outer Orbital	81,031	62,686	29%	23,405	1,373,870	2,088,000	(714,130)	66%	160,965	11.7%	0.41	3,462,171	3,210,710	7.8%
South West (Outer Orbital)	42,060	32,359	30%	25,907	694,725	986,000	(291,275)	70%	102,545	14.8%	0.51	1,623,484	1,521,374	6.7%
South Central (Outer Orbital)	31,437	24,359	29%	22,281	546,285	846,600	(300,315)	65%	50,985	9.3%	0.32	1,410,944	1,298,734	8.6%
South East (Outer Orbital)	15,734	12,699	24%	18,355	293,780	504,200	(210,420)	58%	23,795	8.1%	0.28	857,216	789,620	8.6%
South Central Radial	54,210	43,659	24%	26,485	863,835	1,227,200	(363,365)	70%	99,120	11.5%	0.40	2,046,826	1,890,222	8.3%
South West Radial	136,285	103,332	32%	35,253	1,829,625	2,369,100	(539,475)	77%	244,495	13.4%	0.46	3,865,956	3,614,311	7.0%
South East Radial	45,169	34,892	29%	22,046	758,315	1,227,100	(468,785)	62%	66,695	8.8%	0.31	2,048,852	1,874,915	9.3%
South East	226,759	174,429	30%	29,545	3,325,155	4,656,700	(1,331,545)	71%	399,585	12.0%	0.42	7,675,038	7,108,836	8.0%

Area	Current Dwellings (2019)	Planned Dwellings (up to 2050)	% Dwelling Growth	Current Jobs (2017)	Planned Jobs (up to 2050)	% Job Growth	Number of LSOAs in Planning Authority	Number of LSOAs in Most Deprived Areas	% of Total LSOAs	In Scope Population	Population NVQ4+	NVQ Level 4+ (%)
Inner Orbital	1,646,633	278,783	17%	1,846,655	294,760	16%	2,293	243	11%	2,396,900	1,077,400	45%
South West (Inner Orbital)	951,399	135,195	14%	1,134,900	104,511	9%	1,334	82	6%	1,381,200	673,900	49%
South Central (Inner Orbital)	283,964	31,714	11%	317,550	38,166	12%	368	16	4%	379,600	193,000	51%
South East (Inner Orbital)	551,581	125,003	23%	520,825	169,010	32%	757	150	20%	802,800	302,900	38%
Outer Orbital	1,541,926	200,309	13%	1,373,870	129,332	9%	2,038	415	20%	2,081,200	834,300	40%
South West (Outer Orbital)	714,661	74,984	10%	694,725	33,725	5%	970	195	20%	983,300	392,300	40%
South Central (Outer Orbital)	632,893	76,507	12%	546,285	26,256	5%	822	121	15%	843,400	376,400	45%
South East (Outer Orbital)	386,842	77,261	20%	293,780	92,066	31%	497	144	29%	503,300	166,300	33%
South Central Radial	916,857	108,221	12%	863,835	64,422	7%	1,190	137	12%	1,223,000	569,400	47%
South West Radial	1,666,060	210,179	13%	1,829,625	138,237	8%	2,304	277	12%	2,364,500	1,066,200	45%
South East Radial	884,030	186,359	21%	758,315	232,760	31%	1,176	282	24%	1,225,900	437,500	36%
South East	3,326,636	491,630	15%	3,325,155	418,491	12.6%	4,504	691	15.3%	4,646,700	1,980,700	42.6%

Area	Average Workplace Earning	% South East Average	Average Resident Earning	% South East Average	Average House Price (2019)	Affordability Ratio (2019 - %)	Total Carbon Emissions (2018) kTCO2	Transport Carbon Emissions (2018) kTCO2	Minor Road Carbon Emissions (2018) kTCO2	Carbon Emissions per capita TCO2	Transport Carbon Emissions per capita TCO2	Minor Road Carbon Emissions per capita TCO2	Transport as % of total Carbon emissions
Inner Orbital	30,907	104%	35,231	106%	360,162	10.2	19,669	9,368	2,118	5.0	2.4	0.54	48%
South West (Inner Orbital)	31,038	100%	36,506	110%	395,787	10.8	11,086	5,231	1,298	4.9	2.3	0.58	47%
South Central (Inner Orbital)	31,879	100%	35,202	106%	406,076	11.5	3,125	1,523	381	4.9	2.4	0.60	49%
South East (Inner Orbital)	30,236	100%	33,181	100%	295,557	8.9	6,640	3,134	613	5.0	2.4	0.46	47%
Outer Orbital	28,642	96%	30,701	93%	290,389	9.5	13,737	6,017	2,178	4.0	1.7	0.63	44%
South West (Outer Orbital)	29,144	98%	30,847	93%	273,147	8.9	6,959	3,183	1,046	4.3	2.0	0.64	46%
South Central (Outer Orbital)	28,247	95%	31,525	95%	326,031	10.3	5,181	2,223	924	3.7	1.6	0.65	43%
South East (Outer Orbital)	27,363	92%	29,831	90%	260,757	8.7	3,285	1,305	449	3.8	1.5	0.52	40%
South Central Radial	29,582	99%	32,665	99%	350,822	10.7	8,306	3,746	1,305	4.1	1.8	0.64	45%
South West Radial	30,318	102%	34,151	103%	343,180	10.0	18,045	8,414	2,344	4.7	2.2	0.61	47%
South East Radial	29,155	98%	31,912	96%	281,902	8.8	9,327	4,123	987	4.6	2.0	0.48	44%
South East	£29,807	100.0%	£33,108	100.0%	£324,890	9.8	34,496	15,764	4,462	4.5	2.1	0.58	46%

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