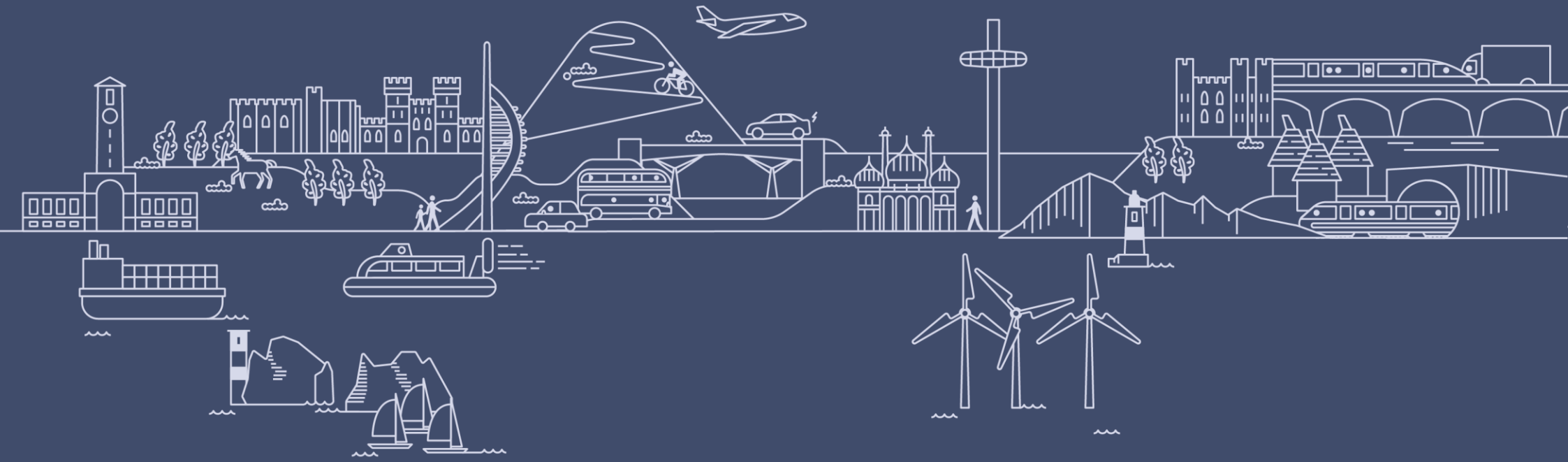
TRANSPORT FOR THE South East

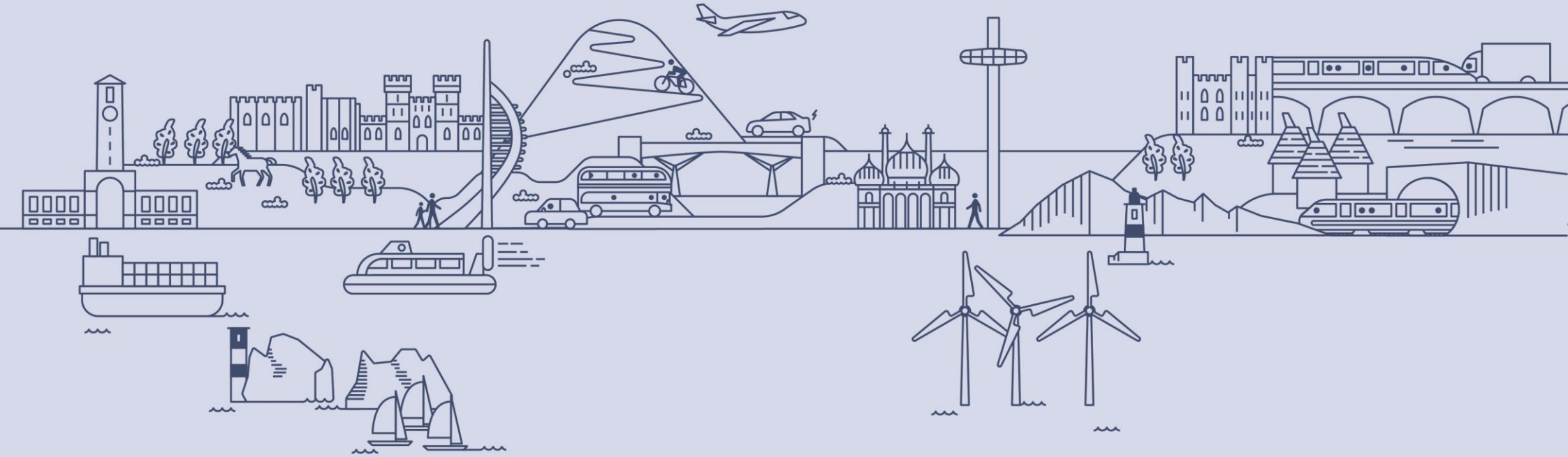


Strategic Narrative

Version 7.0

March 2023

TRANSPORT FOR THE South East



Part 1: Introduction

Introduction

Purpose

This document provides a TfSE area wide and place-based narrative to inform TfSE's Strategic Investment Plan and builds on TfSE's published Transport Strategy (see Figure 1). It presents the packages of interventions identified as part for the Area Studies programme that have been taken forward into the Strategic Investment Plan.

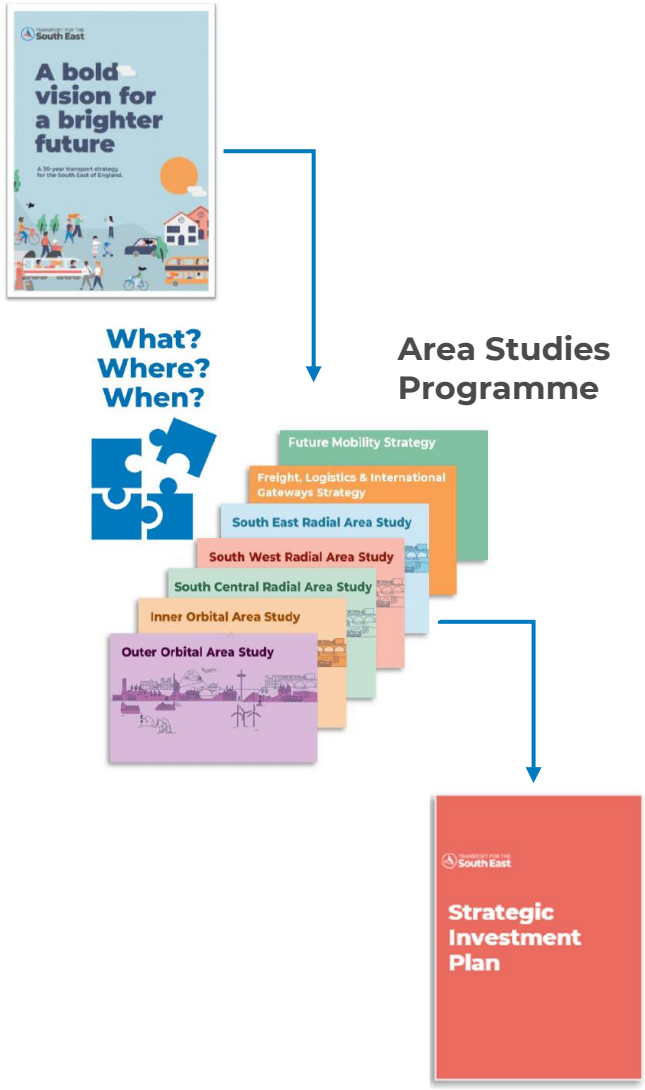
This narrative represents the culmination of TfSE's Area Study Programme, and this document should be read alongside other parallel and more detailed technical documents (see **Figure 2**) which include:

- **Delivery Plan** for the packages of interventions;
- **Strategic Outline Programme Cases** (SPOC) for four areas within the TfSE area; and
- six Thematic Plans for **Decarbonisation**; **Levelling-up**; **Railways**; **Bus, Mass Transit and Shared Mobility**; **Strategic Active Travel and Micro Mobility**; and **Highways**.

This narrative also includes a detailed description of the "global" package of interventions to be applied TfSE area wide. In this context, "Global" is taken to mean applied or applicable across the whole TfSE area.

The method followed for the Area Studies programme is displayed in **Figure 3** and aligns with the Department for Transport's Transport Analysis Guidance, including extensive stakeholder engagement to identify priorities.

Figure 1: Route map from Transport Strategy to Strategic Investment Plan via the Area Studies programme



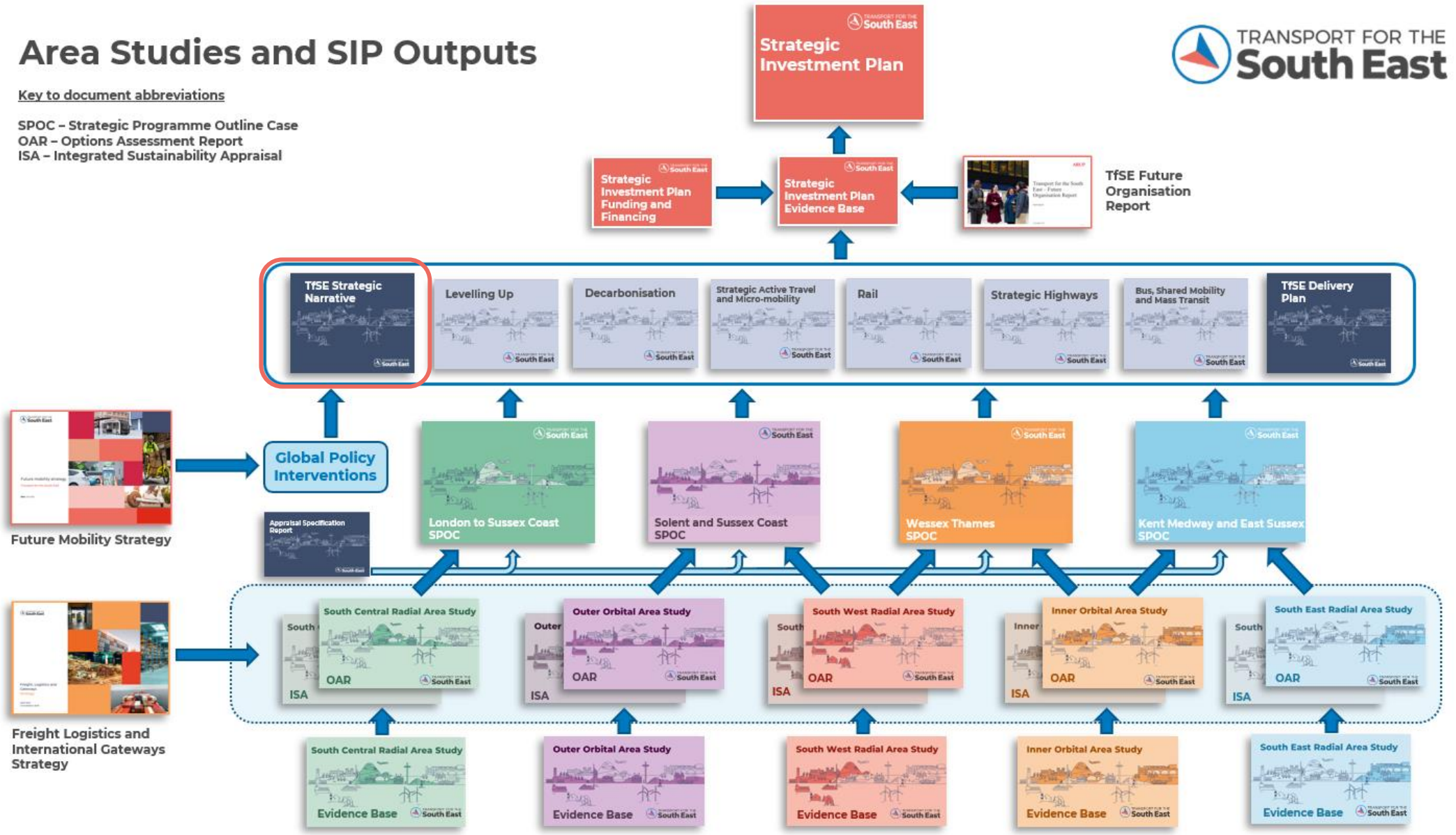
Contents

The rest of this Plan is presented in six Parts, which are listed below.

- **Part 2** summarises the South East's strengths and opportunities.
- **Part 3** summarises the South East's key challenges and threats.
- **Part 4** outlines TfSE's Strategic Vision, Goals, and Priorities for the South East. It also summarises the Problem Statements collected by the Area Study Programme.
- **Part 5** describes how the packages of interventions were developed, and presents the "global" package of interventions that have been developed to realise the Vision presented in Part 4.
- **Part 6** presents the results of our modelling of the benefits of packages of interventions and their corresponding capital costs up to and including construction (and more detailed information in the parallel Delivery Plan).
- **Part 7** shows how all of the packages of interventions developed through TfSE's portfolio of technical work support the eight priorities described in Part 4.

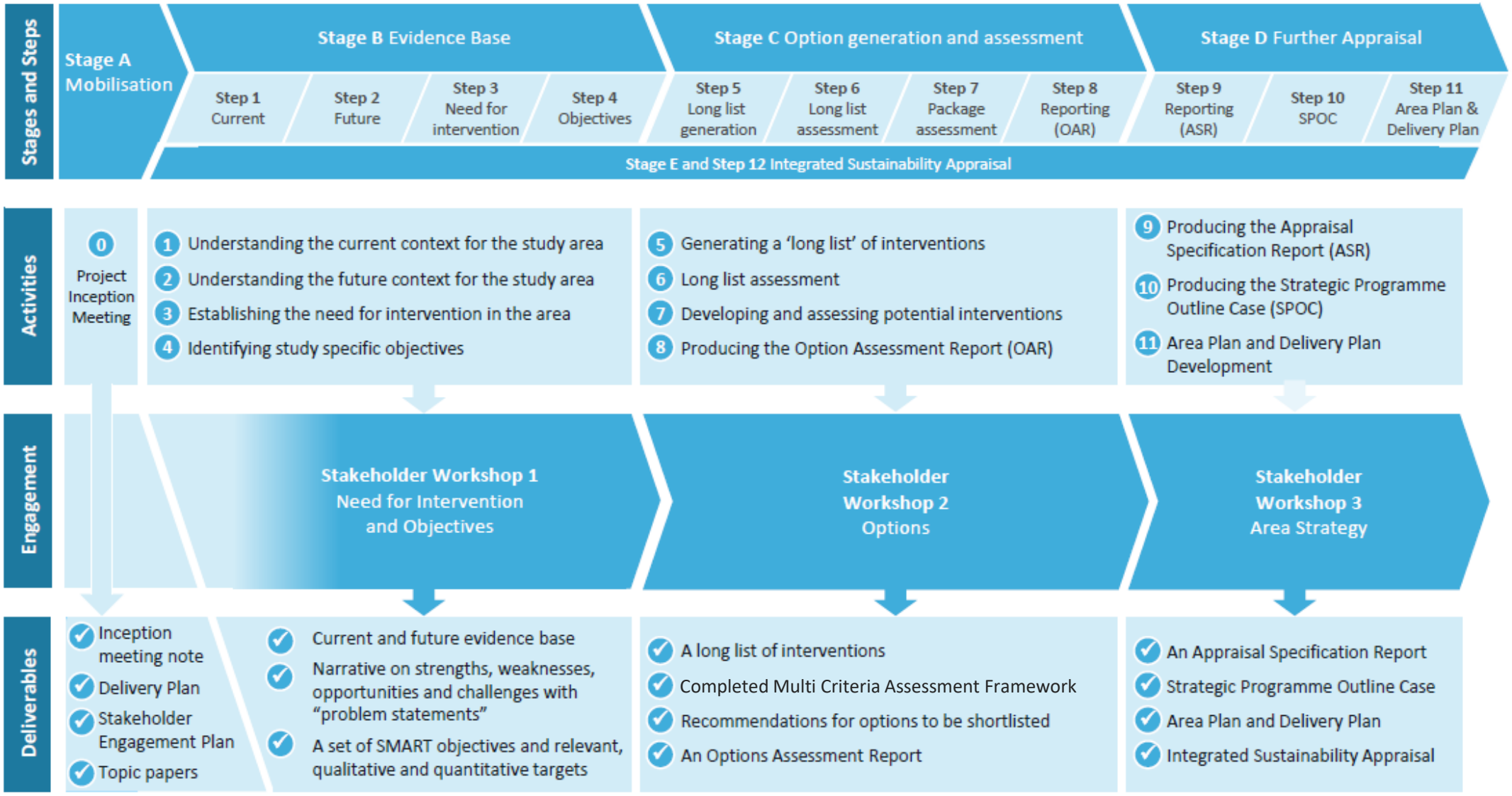
Area Studies Outputs

Figure 2: Area Studies programme and Strategic Investment Plan document hierarchy



Introduction

Figure 3: Area Studies Method



Introduction

Next Steps

TfSE's Transport Strategy and Strategic Investment Plan are the flagship documents outlining the priorities and case for investment over the next 30 years.

They represent a bold and ambitious direction of travel for transport – a once-in-a-generation opportunity for change.

The Transport Strategy identified the vision, goals, principles and priorities for transport across the South East. The Strategic Investment Plan (SIP) provides the packages of interventions to meet the vision and goals; the case for investment in change in the packages; and identifies their phasing and delivery considerations, including funding and financing options

The SIP builds on all technical work undertaken to date by TfSE, including this Strategic Narrative, and presents the compelling case for investment across all modes of surface transport in South East England.

The SIP will include a more detailed examination of potential funding opportunities beyond central government, and it will outline how TfSE, its partners, and its constituent authorities will work together to deliver positive change.

Although the Transport Strategy approved and published in 2020 is not a Statutory Document, the UK government has stated it will give "due regard" to it. The Strategic Investment Plan is an integral part of the Transport Strategy development process, articulating the case for investment and a delivery plan to 2050.

Introduction

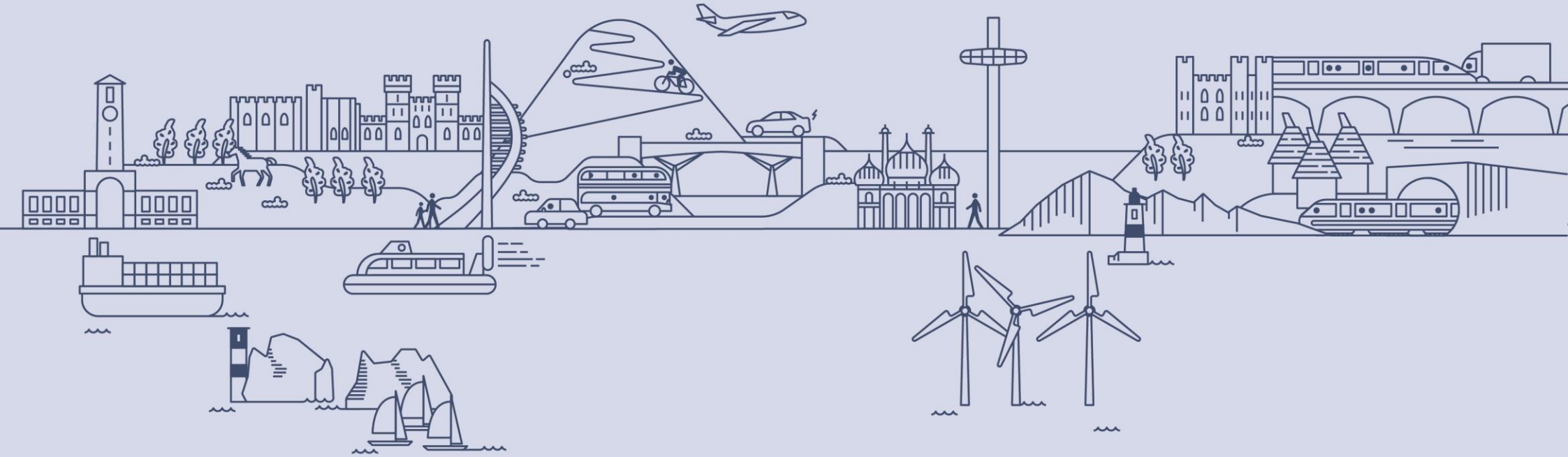
Glossary

There are terms used in the document that provide a framework for expressing the overarching and specific strengths, weaknesses, opportunities and challenges experienced across and within the region.

From an analysis of these, priorities for intervention have been identified. It is these interventions that, ultimately, will meet TfSE's vision and goals. Terms include:

- **Strengths and Opportunities:** The attributes of the South East's economy and economic assets (such as its universities and research facilities, skilled labour markets, and global gateways); geography, including its proximity to Greater London and Mainland Europe; as well as rich landscapes and quality of life that make the South East a top choice as a place to live, work, visit, and invest.
- **Challenges and Threats:** The transport and wider, overarching factors that must be addressed if the TfSE area is to truly optimise its contribution to the UK economy and to lead sustainable economic growth.
- **Priorities**: From the assessment of Opportunities and Challenges, four overarching and four transport themed-priorities have been identified that TfSE wishes to address or unlock. It is these priorities that solutions or "packages of interventions" must address and align to.
- **Strategic Vision**: A top down, long-term description of the future TfSE wishes to see.
- **Goals:** A breakdown of the vision using a sustainable development framework.
- **Need for Intervention**: The outcomes if investment and changes in policy are not aligned to vision, goals, and priorities and interventions identified.
- **Problem Statements**: Weaknesses and challenges that TfSE wishes to see its Strategic Investment Plan address.
- **Packages of Interventions:** Options considered and prioritised as solutions. Individual prioritised options are "interventions". In coherent, integrated groupings, they are "packages". These packages collectively are multi-modal solutions that address the problem statements, align with its priorities, and help achieve TfSE's visions and goals.

TRANSPORT FOR THE South East



Part 2: Strengths and Opportunities

Overview

Our area

The South East is a great place to live, work, study, visit and do business. Our focus is on ensuring that this success story continues.

The TfSE area covers the Local Transport Authority areas of Bracknell Forest, Brighton & Hove, East Sussex, Hampshire, Isle of Wight, Kent, Medway, Portsmouth, Reading, Slough, Southampton, Surrey, West Berkshire, West Sussex, Windsor & Maidenhead, and Wokingham (see **Figure 4**).

It is the most productive region in the country outside London – home to 8.3 million people[1], more than 300,000 businesses, and an economy producing £228bn Gross Value Added (GVA) per annum[2].

Within or on the border of the TfSE area are the country's most important global gateways – ports, airports and international stations – that given the region's proximity to mainland Europe and international shipping lanes into Northern Europe give the region one of its key competitive advantages.

Our area boasts world-leading universities and research institutes, diverse towns and cities, and stunning coasts and countryside. All of this contributes to the high quality of life on offer.

This part of the Strategic Narrative starts by outlining our area's key **strengths**, **weaknesses**, **opportunities** and **threats**.

The South East is a powerful driver of the nation's economy and is a major global gateway for people and businesses.

The South East has a highly productive economy. The GVA for the South East Region is the 2nd highest of all the English regions, and the GVA per capita for the TfSE area is the highest of the Sub-national Transport Bodies outside London[3].

The South East has many concentrations of excellence with a rich mix of innovative and integrated sectors. It is home to clusters of innovation and entrepreneurship. For example, in 2020 Portsmouth was identified as the most entrepreneurial town or city in the UK[4], with Southampton and Brighton also in the top 20[5].

Analysis undertaken for TfSE's Economic Connectivity Review suggests that, with the right policies focussed on highest growth sectors, the economy of the South East will grow from c.£200bn in 2020 to c.£500bn in 2050 in terms of Gross Value Added (GVA). Whilst transport is only one component of policy, it is integral to how we live, conduct business, and trade.

Priority Industrial Sectors

TfSE's Economic Connectivity Review identified eight Priority Industrial Sectors, that offer the highest growth opportunities.

These industries either currently deliver high-volume, high-value outputs to the South East economy, and/or have the potential to grow fast in the future.

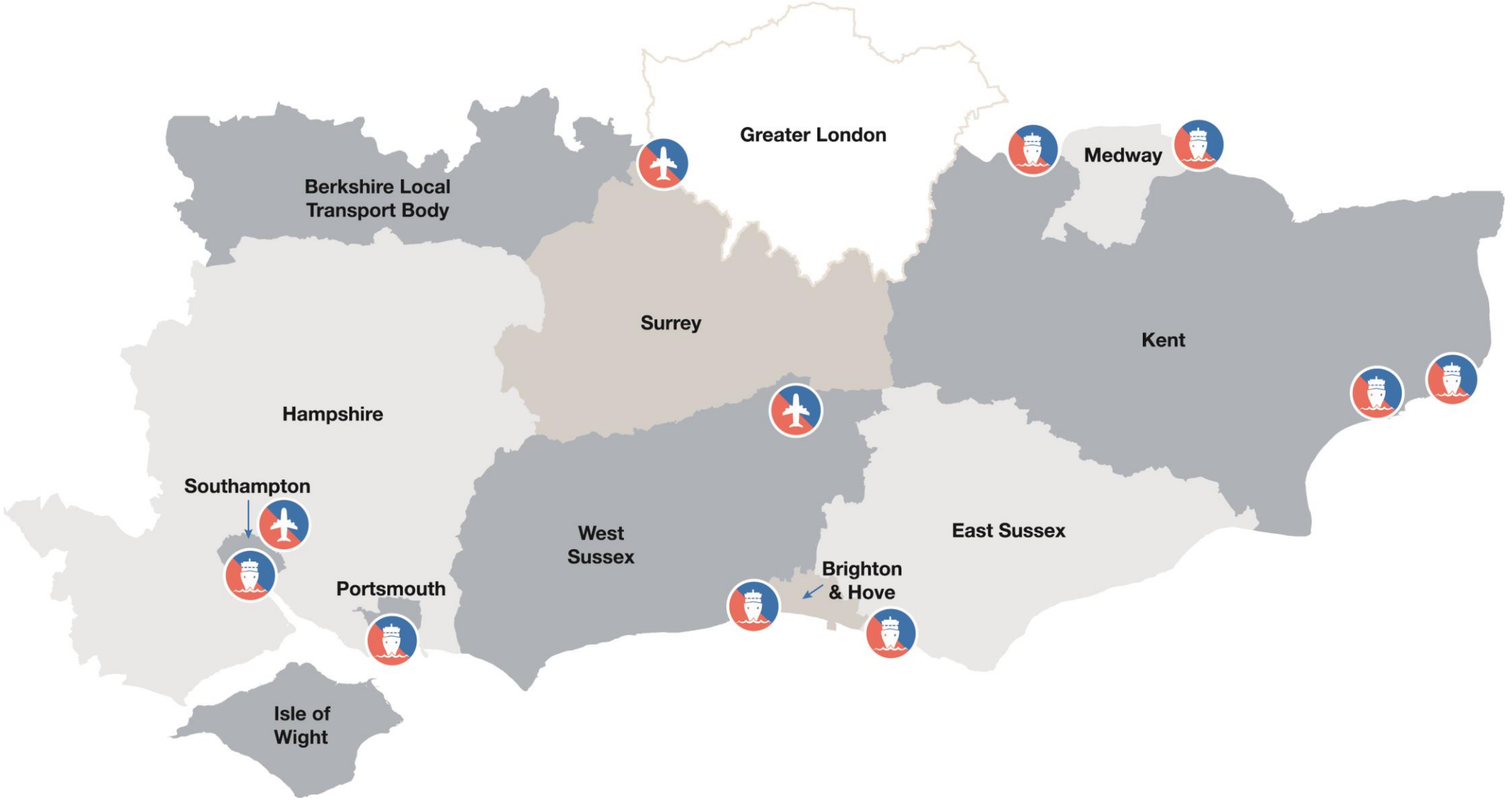
The Priority Industrial Sectors are:

- Financial and Professional Services;
- Advanced Engineering and Manufacturing;
- Information Technology;
- Marine, Maritime and Defence;
- Transport and Logistics;
- Tourism;
- Low Carbon Environmental; and
- Creative Industries.

A map showing place-specific clusters of economic activity and key related assets by priority industrial sector is provided in **Figure 5**.

The South East's Strengths and Opportunities

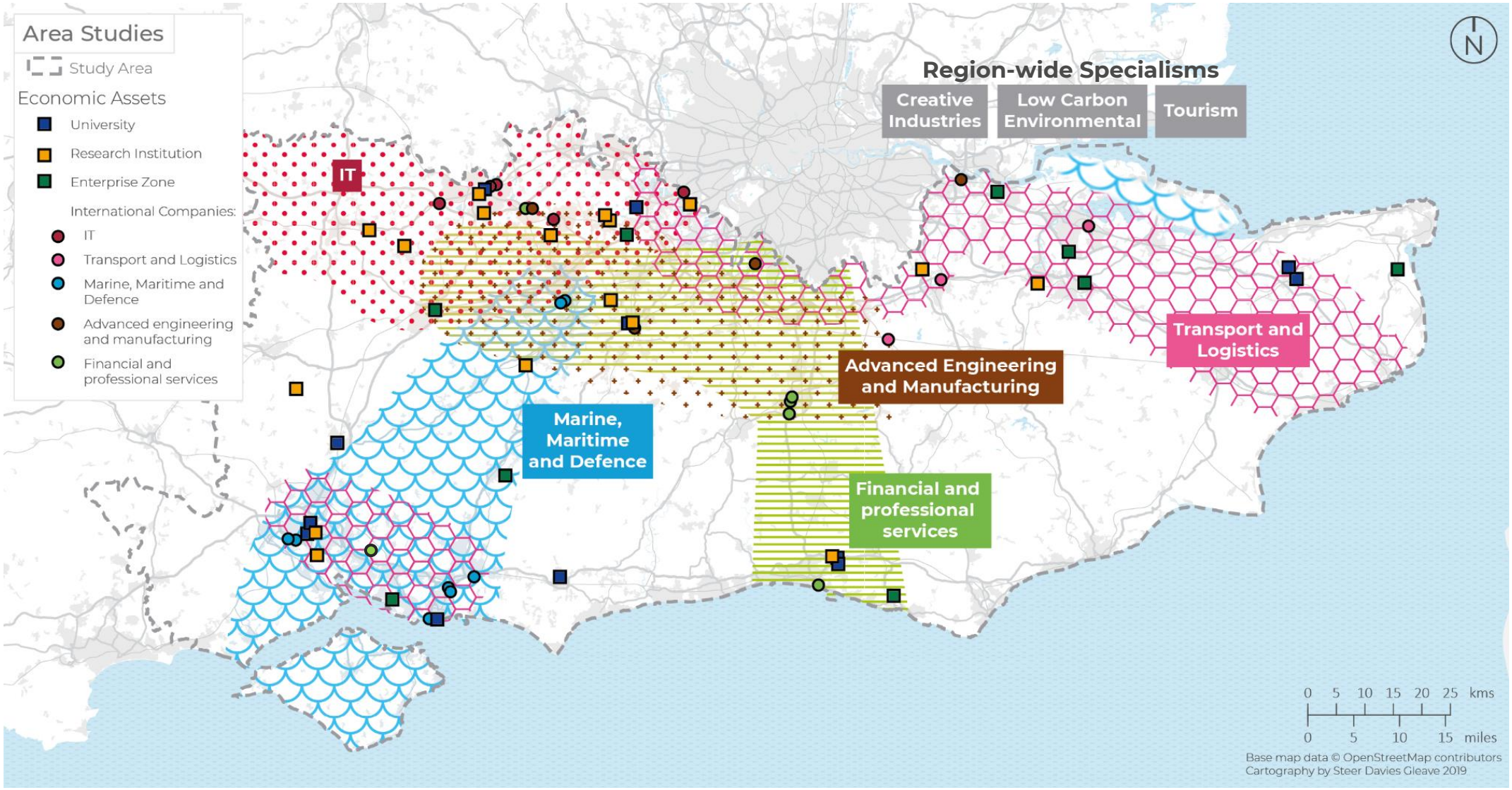
Figure 4: The TfSE Area, its Local Transport Authority areas, and Global Gateways



TRANSPORT FOR THE South East

The South East's Strengths and Opportunities

Figure 5: Key Priority Industries in the South East and key aassets



The South East's Strengths and Opportunities

Relationship with London

The South East's economy benefits from a strong economic relationship with London.

London's contribution to the UK economy is well in excess of the contribution of other regions in the UK. However, it does not function in isolation. Its economic success relies on strong transport links with towns, cities, and global gateways outside of London, including many locations within the South East. The relationship between London and the South East is reflected strongly in commuting patterns between both regions (one in seven commuting trips in the South East pre-pandemic was to/from Greater London)[6].

London is a strong attractor of talent, meaning most areas in the country experience a net-migration flow towards London. In the South East, however, this trend is more complex. While many people are drawn from the South East to move to the capital, a significant number of people are moving in the opposite direction[7] in search of more affordable housing and a different lifestyle.

Labour Market

The South East is home to 4 million workers (13% of the UK workforce) and 330,000 companies.

The average employment rate across the South East (statistical region) is high at 77.6%, above the UK average of 75.5%[8].

The South East's labour market is highly educated. In 2018, 33% of the South East's residents had a degree level qualification[9] – the highest of all UK statistical regions and outside London. This figure has grown significantly in recent years, from 24% of the population in 2014 to a third of the population today.

Universities, Research & Development

The South East is home to several nationally and world-leading universities and research centres operating across a broad and dynamic range of disciplines and sectors.

Several university campuses have strengths in the creative arts. These include the University for the Creative Arts (with multiple campuses in Kent and Surrey), the University of Sussex, the University of Winchester, and award-winning gaming courses at the University of Portsmouth.

Many universities are centres of research excellence in engineering and IT. These include Canterbury Christ Church, Southampton Solent, and the Universities of Brighton, Chichester, Kent, Portsmouth, Reading, Southampton, Surrey and Winchester. The Universities of Sussex and Reading are recognised as leading centres for research in robotics and artificial intelligence. Additionally, the Universities of Portsmouth, Surrey and Winchester are considered centres of excellence for the tourism and hospitality industry and several institutions are leaders in transport & logistics research (e.g. University of Southampton).

The South East's Strengths and Opportunities

Environmental Assets

The South East has a varied and highly-valued natural environment.

As shown in **Figure 6**, significant parts of the South East area are designated as National Parks or Areas of Outstanding Natural Beauty. These environmental assets of the South East including SSSIs and RAMSAR Sites, local Nature Reserves, listed buildings and protected heritage sites, help make the area an attractive place to live, work and visit, and they also make a key contribution to its economy. Significant areas of the South East are highly productive agricultural land, and many producers are diversifying and changing their focus in response to climate change.

The South East also boasts a rich cultural and historic environment, including internationally renowned cities and cultural centres. It hosts world famous festivals such as Glorious Goodwood and Glyndebourne. Many of the region's historic towns, cities, monuments – from Historic Rochester to Windsor Castle – draw visitors from across the UK and beyond. The area is also home to some of the UK's most popular attractions including some with a transport focus (e.g. historic ports and railways).

Availability of Land

The South East is a relatively densely-populated area of England, but it still has sizeable areas of land in many areas that, under the right conditions, would be suitable for regeneration and development.

In some places, notably North Kent and Medway, there are long-standing institutional frameworks and relationships in place to enable successful, large-scale, sustainable regeneration.

The South East has the lowest level of housing affordability of all UK nations and regions outside London. There is clearly demand for new housing. However, the availability of suitable land for development is not necessarily equitably distributed across the South East, and this presents challenges in aligning demand with supply.

Through the Local Plans of the TfSE area's Local Planning Authorities, all areas are delivering against evidenced needs for housing and employment. TfSE and its partners work closely with planning authorities to identify ways that transport can sustainably open-up sites for development and connect and integrate them into existing communities and transport networks.

Investment Environment

In line with the rest of the UK, the South East benefits from a favourable investment environment.

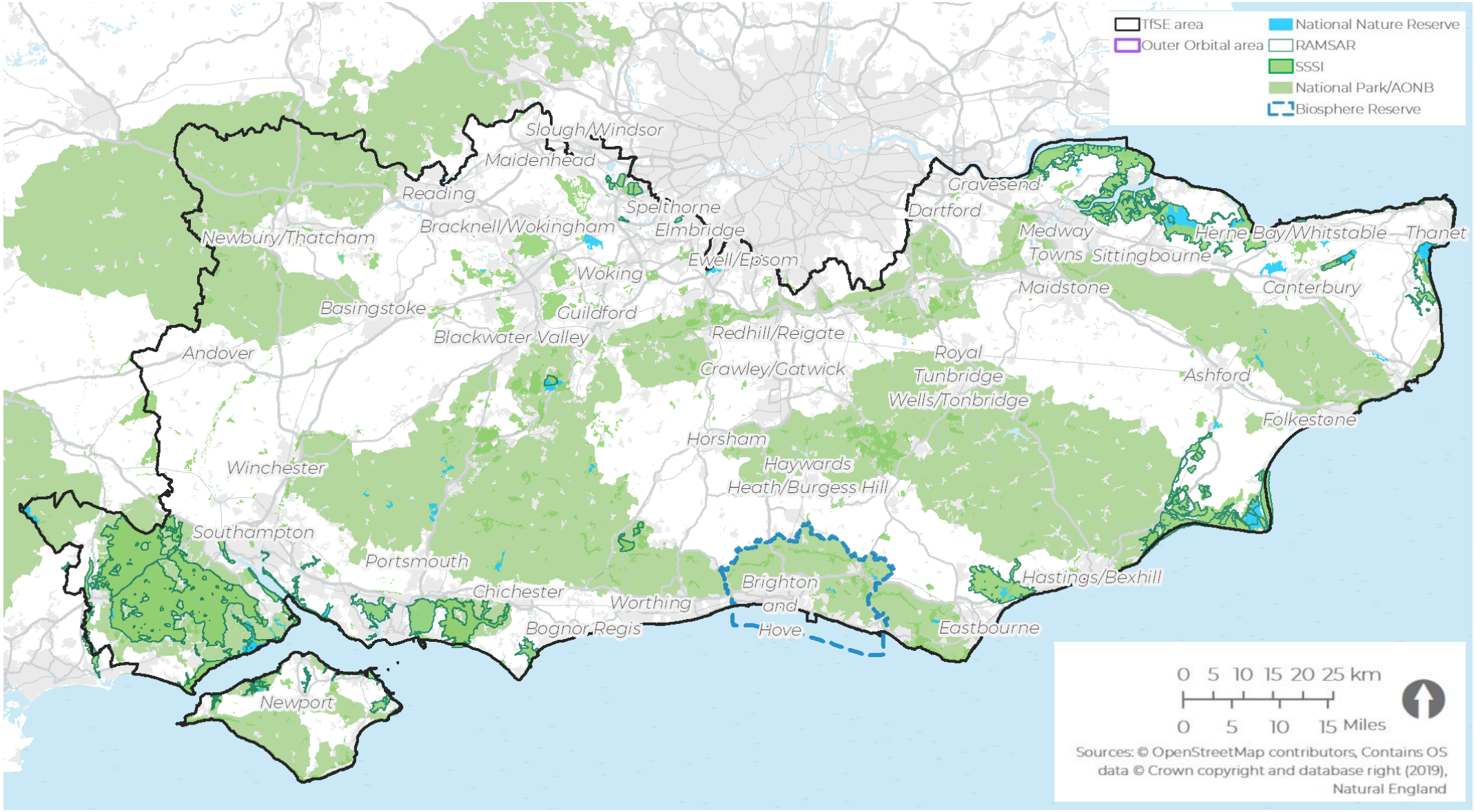
Governance is effective and transparent, public services function well, and the UK's tax environment is favourable to investors.

The South East has a strong tradition of effective civic, political, and business leadership across the area, as well as a successful record of partnership working across institutional boundaries.

The emergence of TfSE as a partnership-led Sub-national Transport Body builds on the strengths of the South East's governance and provides a framework for more effective cross-boundary, long-term decision making.

The future development of the transport network must minimise any potential adverse impact and, where possible, enhance the South East's natural, historic, and cultural assets.

Figure 6: Protected landscapes in the South East



Transport Strengths and Opportunities

Global Gateways

The South East's geographical position between Greater London and Mainland Europe means it is home to many of the busiest Global Gateways in the UK.

As well as serving international trade, the South East's Global Gateways support tens of thousands of jobs in coastal areas – 22,000 in Dover[10] and 45,600 in Southampton[11].

The key global gateways in the South East are:

- **The Port of Southampton,** which in 2019 handled £70bn of goods, 90% of which served markets outside the UK/EU and was the largest export port; was the second busiest container port in the UK; the largest turnaround cruise port in Europe; and provide marine access to Fawley Refinery – the largest in the UK.
- **The Port of Dover,** in 2018 handled over £120bn of trade (and about a third of all trade with the EU), 25 million tonnes of cargo handled and was the busiest Roll-On-Roll-Off port in the world, and served 12 million passengers in the same year.
- **Portsmouth International Port**, which handled 3.1 million tonnes in 2019.
- **The Port of Newhaven**, which served just under 1 million tonnes in 2019.
- **Other freight ports** including Medway, Shoreham, Ramsgate, Whitstable, Sheerness, and London Thamesport.
- The **Channel Tunnel**, which supports the UK's only direct rail link with Mainland Europe (21 million passengers in 2018).
- **Heathrow Airport**, which sits on the boundary between Greater London and Surrey was the 2nd busiest international airport in the world by passengers in 2018 (80 million).
- **Gatwick Airport**, which was the busiest single runway airport in the world in 2018 (46 million passengers).
- **Southampton Airport**, which served just under two million passengers in 2018, and which has plans (supported by the Local Authority) to lengthen its runway to support longer-haul destinations;.
- **Farnborough International Airport**, one of the UK's busiest General Aviation airports.

Mass Transit Success

There are many places in the South East where investment, planning, and partnership working between operators and Local Transport Authorities has delivered impressive growth.

These success stories include:

- **Crawley/Gatwick Fastway**: this Bus Rapid Transit scheme generated a 160% growth in bus trips between September 2003 and September 2013[12].
- **Reading**: bus patronage in the borough increased by 35% between 2009/10 and 2019/20, with the main operator council owned.
- **South East Hampshire Bus Rapid Transit**: the opening of a dedicated busway between Fareham and Gosport delivered an 18% growth[13] in bus journeys in its first year of operation.
- **Brighton & Hove Buses**: which has helped deliver a 19% increase in passengers over the same period.
- **Dartford/Ebbsfleet Fastrack**: which is set to expand significantly to support growth in the area.

Transport Strengths and Opportunities

London Connections

The South East has generally good radial transport links to London and the rest of Great Britain.

Most Major Economic Hubs in the South East have easy access to motorways that radiate from London and the M25 towards the South Coast. The railways that mirror these same radial corridors offer (generally) fast, high capacity, electric, passenger rail services to and from the capital.

The South East has the UK's only purpose-built High Speed Railway, which serves both domestic and international markets.

Many of these radial networks provide a generally good service for local and interurban journeys in the South East, as well as serving the capital.

The South East's public transport networks make good use of the high quality radial infrastructure. Pre-COVID-19 pandemic, there was significant use of long distance coach services between the South East's key global gateways, London, and the wider UK.

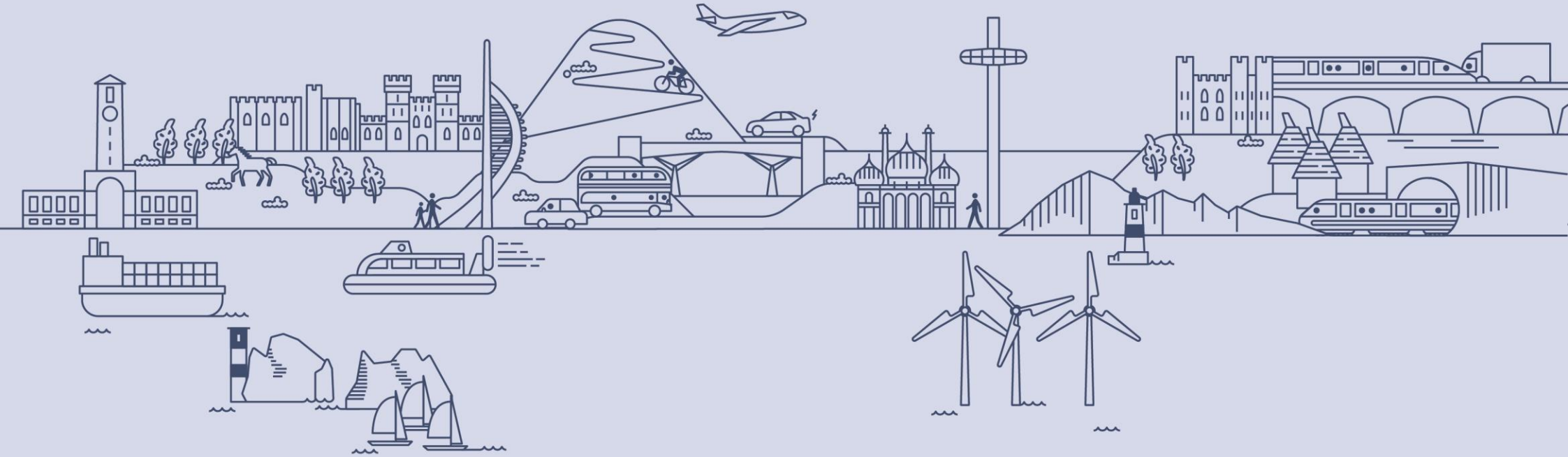
Recent Investment

The South East has benefitted from recent investment in a wide range of transport interventions in recent years, which include (but are not limited to):

- the UK's first High Speed Railway between London and the Channel Tunnel – High Speed 1;
- the electrification of the Great Western Main Line (and rolling stock);
- the extension of Crossrail to Reading;
- the Brighton Main Line resilience programme;
- new and upgraded rolling stock on the South Eastern, Thameslink, Southern, and South Western rail franchises;
- enhancements to the Thameslink programme;
- improvements in bus and Bus Rapid Transit systems in Crawley/Gatwick, Dartford/Ebbsfleet/Gravesham, Brighton & Hove, and Reading;
- Smart Motorways on the M20, M23, M25, M3 and M4;
- A3 Hindhead;
- improvements to highways in Kent (e.g. A228, A256, A299) and on the Strategic Road Network (e.g. M20 Junction 10a, A21 Pembury); and
- expansion of active travel networks and infrastructure – including the Avenue Verte (launched in 2012).

In summary, the South East's radial transport networks are generally fit for purpose and have benefitted from investment in recent years. However, journey times are not matched for east-west corridors and mass transit systems in the South East's largest conurbations. This Strategic Investment Plan will consider the quality of the South East's radial networks while addressing gaps in orbital/coastal and urban networks.

TRANSPORT FOR THE South East



Part 3: Challenges and Threats

The South East's Challenges

Overview

The South East faces several challenges and threats, which are grouped in eight priorities.

The first four of these priorities focus on broader issues where action is required across multiple sectors – including transport.

- Decarbonisation and Environment.
- Adapting to a New Normal.
- Levelling Up Left Behind Communities.
- Regeneration and Growth.

The second group of four priorities has a more direct relevance to transport.

- World Class Urban Transit Systems.
- East – West Connectivity.
- Resilient Radial Corridors.
- Freight and Global Gateways.

Decarbonisation and Environment

Climate change is one of the most important challenges we are facing today.

As such, this topic is widely cited and analysed in the evidence base underpinning this Strategic Investment Plan. Government policy on this issue is clear and ambitious – the UK government has committed to deliver a net-zero economy by the year 2050, while many Local Authorities in the South East have declared Climate Emergencies. The national target of 2050 is enshrined in UK law and embedded into international agreements – notably the UN Paris Agreement. Some Local Authorities in the South East are pushing to decarbonise their areas sooner than 2050.

The South East's transport network is responsible for almost half of its total carbon emissions – 46% in 2018[14]. Therefore, reducing transport emissions to as near to zero as possible and offsetting the residual emissions will be critical to facilitate a region-wide shift to net zero.

While many stakeholders recognise the transport system needs to decarbonise, this is not happening fast enough.

Achieving decarbonisation requires not only infrastructure, services, and policy and regulation, but significant behaviour change. Trip rates need to decrease; modal shift away from fossil fuel transport to zero emission and active modes necessary; and a step-change in the use of electric and hydrogen vehicle technology is required. However, electric and hydrogen vehicle take-up to date is low. The share of trips by sustainable transport modes (walking and cycling in particular) is low. Cycling participation increased during 2020/21 in response to "lockdown" policies and resulting changes in working and wider travel patterns. It is important that increase in cycling levels are maintained and built upon. In addition, the rail network still has sections of diesel operation. Interventions are needed to address these issues.

As **Figure 7** shows, carbon emissions from transport are declining, but not at a rate fast enough to reach net zero by 2050, let alone 2030.

Decarbonisation and Environment (cont.)

The South East's transport systems will also need to adapt to the effects of global warming.

The area's transport networks cut across several areas that are already vulnerable to flooding and temperature extremes. Some corridors, such as the railway at Folkestone Warren, are particularly vulnerable to storms and sea level rise.

Climate change is likely to increase the frequency and strength of weather events and extreme heat in summer. There is also a risk of sea level rise in the longer term, threatening low-lying infrastructure and communities. This could lead to increased operations, maintenance, and renewal costs, which will need to be borne by transport users and wider society.

There is, therefore, a need to enable the South East to adapt to Climate Change and minimise disruption that might arise from changes in weather and sea levels.

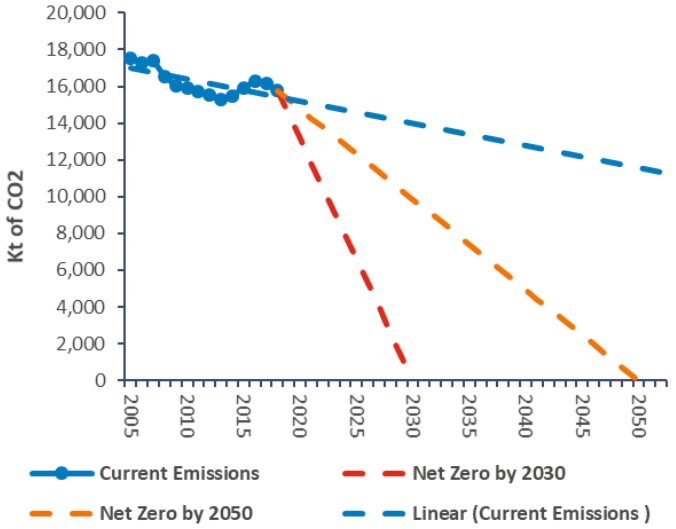
Beyond global warming, there is a need to protect and enhance the natural, built, and historic environment.

This includes:

- reducing the need to travel, particularly by private car, to reduce transport's impact on people and the environment;
- ensuring transport networks protect and enhance the South East's natural, built, and historic environments;
- adopting the principle of 'biodiversity net gain' (i.e. development that leaves biodiversity in a better state than before) in all transport initiatives; and
- minimising transport's consumption of resources and energy.

This may mean some interventions that are higher cost, but more beneficial to the environment, may be prioritised over lower-cost, less-beneficial interventions.

Figure 7: Decarbonisation trajectories of surface transport emissions



The South East's Challenges

Adapting to a New Normal

The COVID-19 global pandemic has had a significant impact on the South East's health, economy, and transport systems.

It is likely to have a permanent impact on how we live, work, and do business. These changes may not be immediately apparent, and it may be some time before 'living with Covid' establishes itself. At the time of writing (in Spring 2022), rail, bus and aviation demand remained materially below pre-COVID-19 pandemic levels, which has undermined the financial viability of some public transport operations. The problem of driver/staff shortages in many industries, including transport, has also arisen during Covid. For transport operators, this has further impacted the provision and viability of public transport services. The economic impact on the transport network translates into wider socio-economic impacts.

Figure 8 shows the proportion of furloughed workers in the South East. Furlough rates were particularly high in the Gatwick area. This is likely due to the high dependence of this area on aviation.

The longer term economic impacts on the South East remain to be seen.

However, there are likely to be fundamental changes in the way people live and work, particularly with respect to the South East's relationship with London. Many of the 'key workers' who provided invaluable support to the country's response to the pandemic are highly reliant on public transport to access their work. At a time when public transport services are under great financial strain, these workers may find it harder to access work in a post-pandemic Britain. In short, not everyone can or wants to work from home, and there is a need to support public transport services.

While in some instances reduced travel demand over the past two year (e.g. on morning peak rail services towards London, and on some parts of the highway network) has reduced onboard crowing and congestion, this may only be a temporary change for in the short term. In this period of reduced stress on the network, there is time to help plan and deliver interventions to better serve demand and to capture or incentivise behaviour change.

The South East will also need to adapt to new trading relationships with the European Union.

Recent changes are already showing an impact on freight patterns due to increased trade frictions.

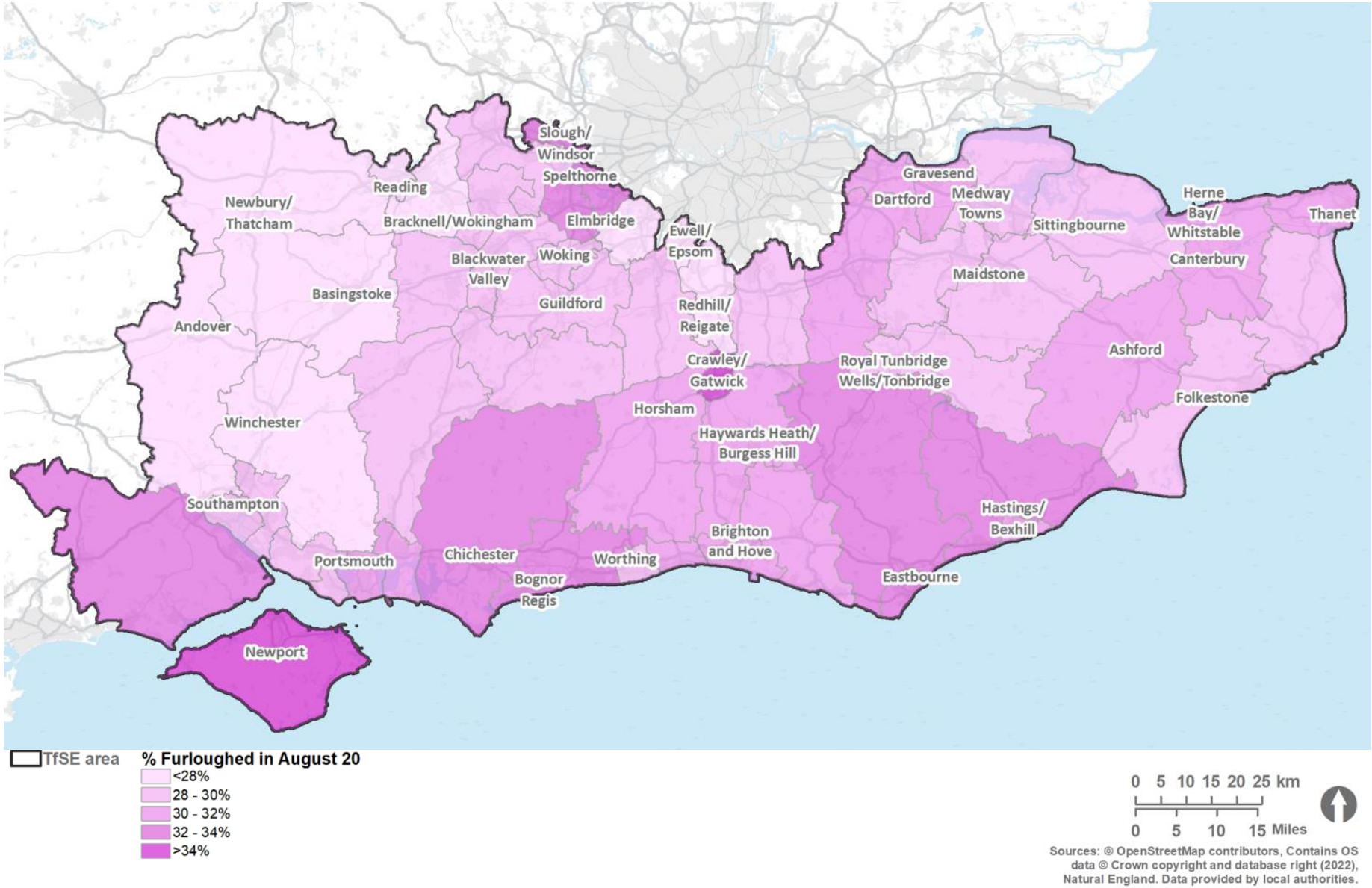
Although it is perhaps too early to objectively assess these impacts, there are already early signs that increased frictions are undermining the (already relatively weak) resilience of the Channel Ports and the key radial routes that serve these ports.

This further underlines the need for intervention on these nationally- and internationally-important corridors.

TfSE acknowledges that the business case for some schemes will have changed due to the pandemic. New investment will be needed to help the nation adapt to a post-pandemic, new EU relationship environment.

The South East's Challenges

Figure 8: Proportion of furloughed workers by Local Planning Authority in August 2020



The South East's Challenges

Levelling Up Left Behind Communities

While the South East is a relatively prosperous area as a whole, socioeconomic outcomes vary significantly across the area, particularly in coastal areas.

In general, most socioeconomic indicators (including GVA) are stronger in the west and weaker in the east. While this trend is observed both north of and south of London, it seems to be particularly acute 'south of the river' and to the east.

The link between socioeconomic outcomes and transport investment is complex. However, many stakeholders believe poor connectivity, particularly to Central London and between urban centres along the coast, means coastal and more remote places need to 'work harder' to secure the investment in opportunities that these places deserve.

While poor transport connectivity is not the only issue at play, it is almost certainly contributing to poor socioeconomic outcomes in coastal communities, as well as pockets of deprivation in more relatively affluent area. **Figure 9** appears to show a relationship between connectivity to Central London and the most deprived areas of the South East.

Inequality also extends beyond urban and coastal communities into rural areas.

Many rural communities in the South East have poorer accessibility and connectivity – spatial proximity to key services and employment opportunities; physical connectivity by public transport; and virtual connectivity by digital means, both fixed and mobile.

This means it is harder for rural communities to work remotely, access future mobility technologies and services, and attract businesses that rely on technology and/or public transport. All this promotes a high reliance on private motoring.

There are other barriers to access that extend beyond poor connectivity.

For many people, transport services are out of reach due to physical and/or economic constraints. There is a widely-held view that transport fares are too high and too complicated. Furthermore, the relative cost of public transport has risen in real terms.

As **Figure 10** shows, the relative cost of rail and bus travel has grown faster than inflation and faster than motoring costs over the last several decades. This means it is harder to persuade people to change from the car to bus and/or rail.

TfSE wishes to lift the economic performance across communities with socio-economic challenges and widen access to public transport options.

The South East's Challenges

Figure 9: Connectivity and Deprivation

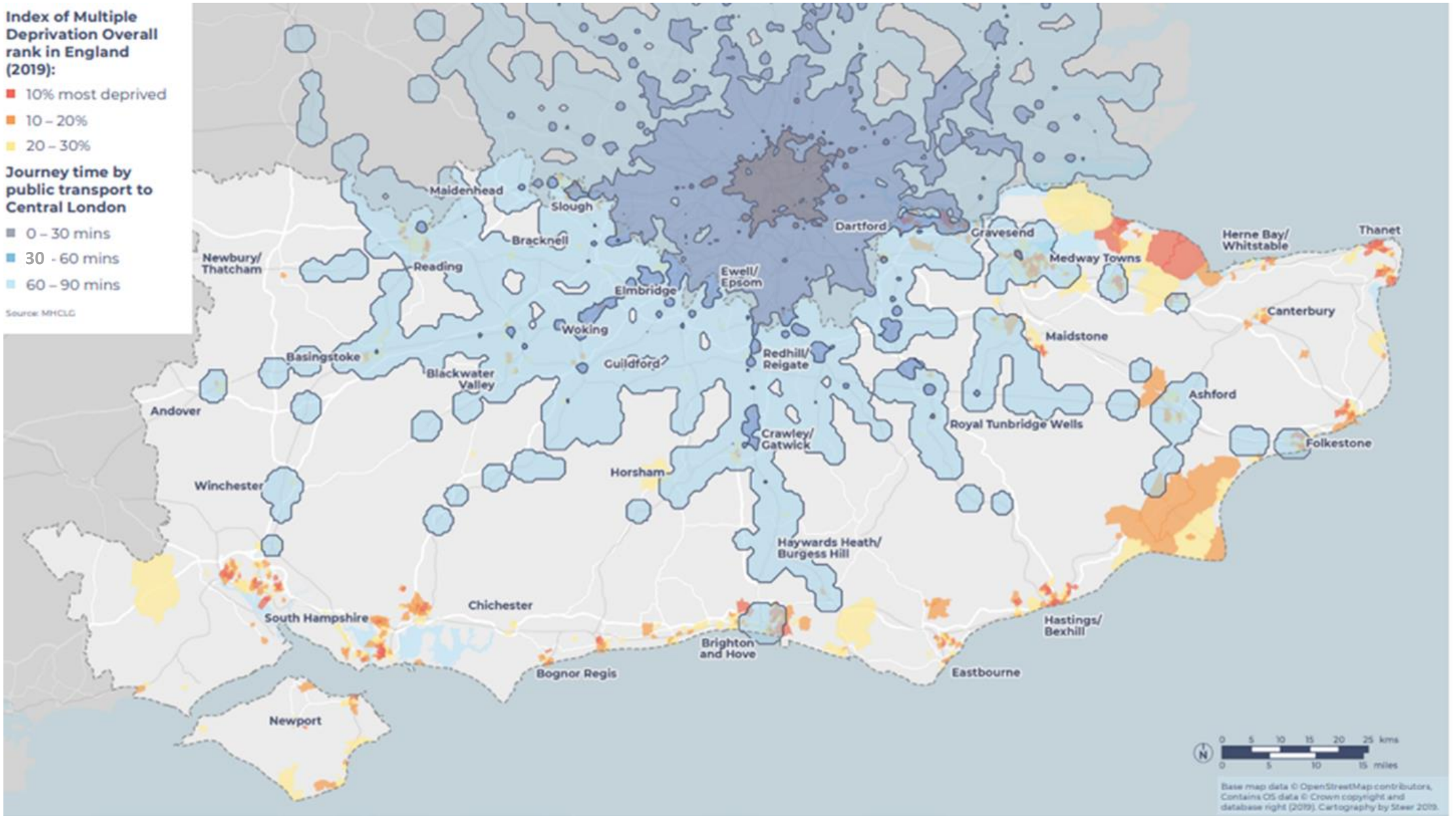
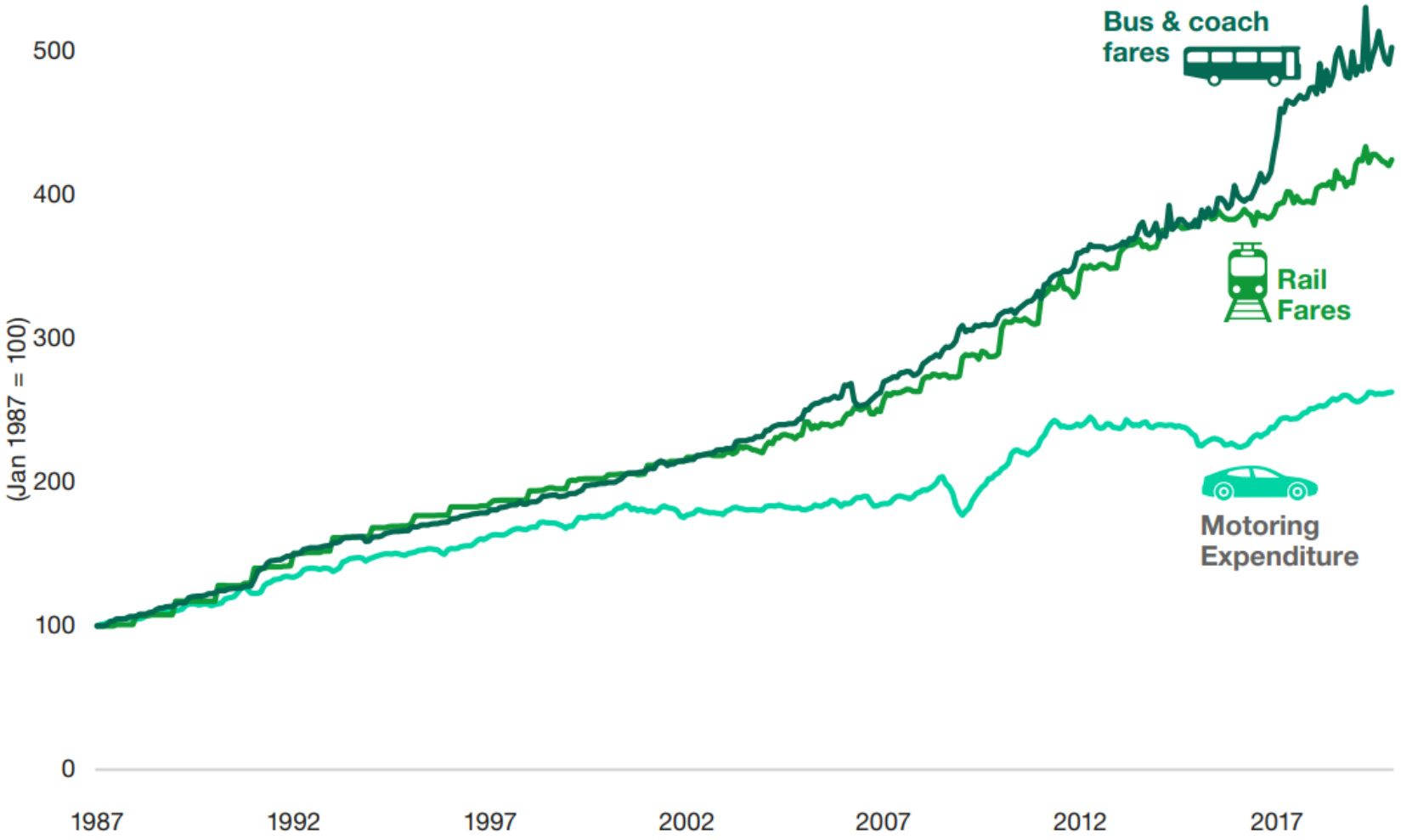


Figure 10: Trends in affordability of transport



Retail Prices Index (RPI)
Bus and coach fares, rail fares, and motoring expenditure (1987-2019)

The South East's Challenges

Regeneration and Growth

There is a recognised need for housing and communities in the South East.

As **Figure 11** shows, the South East has some of the lowest levels of housing affordability (the ratio of average house prices to average earnings[15]) in England and Wales. And, as **Figure 12** and **Figure 13** show, this trend has worsened in recent years and seems to be driven more by house prices and less by lower earnings.

To tackle the need for more housing, and greater affordability of housing, the South East is forecast to deliver 400,000[16] new households between 2022 and 2043. However, current planning policy and the high cost of land in the South East is blocking many of these opportunities from coming forward.

There is a risk that these new homes could add to pressure on existing transport networks. It is therefore critically important that they are supported by the right infrastructure and services to deliver sustainable travel outcomes. to ensure they are sustainable and reduce the need for people to travel.

Furthermore, while housing growth is expected to be spread across the whole region, employment growth is expected to be more concentrated within the city centres of the larger urban areas – this can be seen in the imbalance shown in **Figure 14** and **Figure 15**.

There is a risk the imbalance between housing and employment growth may generate unsustainable travel outcomes, unless planned in an integrated way that benefits from existing strong sustainable transport connectivity or allows for the right transport solutions to be identified, funded and secured.

To ensure new housing is both affordable and accessible, given physical and environmental constraints, some areas will be better placed to absorb housing than others, while some areas will find land supply considerably constrained or find transport infrastructure and services constraining factors. As such, it is often sites identified for regeneration that will be best-placed to accommodate growth.

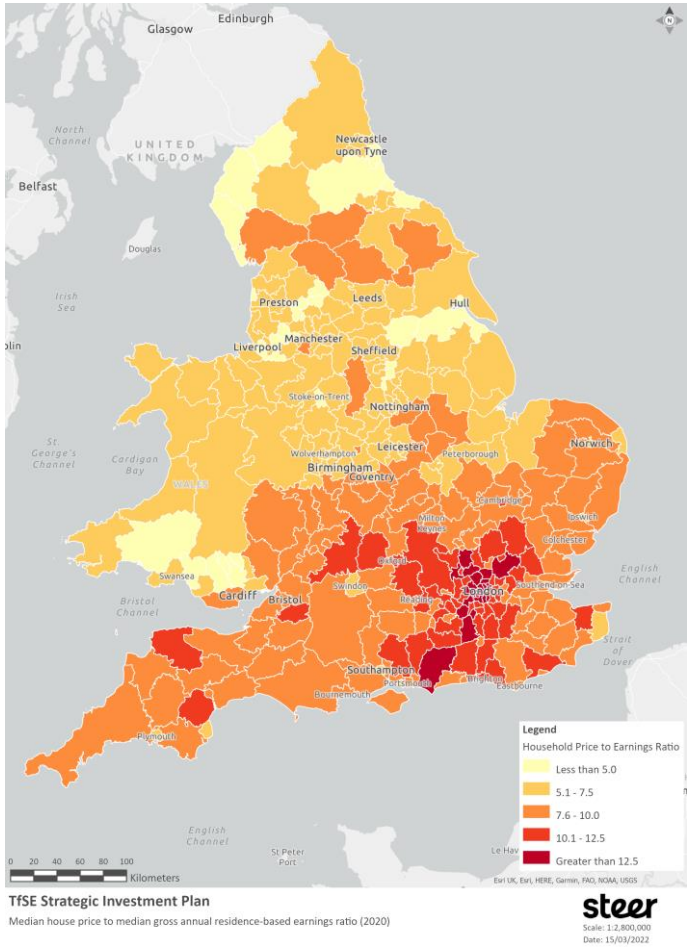
TfSE's plans include many multi-modal interventions that unlock development that is enabled by high frequency, high capacity public transport – "transit-oriented development" - and support the South East's ambitions for regeneration and growth.

Several areas within the South East have been designated in long-term plans for material increases in development:

- **North Kent**, delivering significant growth in Dartford, Gravesham, and Swale.
- **Southampton**, which is developing a masterplan to regenerate a large area of the City Centre and nearby waterfront.
- **Portsmouth**, which has ambitions to develop a new community at Tipner.
- **Wider South Hampshire area**, such as Eastleigh and Fareham, and challenges in accommodating growth and travel sustainably.
- **Gatwick Diamond**, a fast-growing area around Gatwick Airport, which is accommodating growth in Redhill, Crawley, Horsham, East Grinstead, Burgess Hill, and Haywards Heath.
- **Basingstoke and Ashford**, which are among the fastest growing communities in Hampshire and Kent, respectively.
- Several developments in the **Thames Valley**, including Reading Green Park, which will be served by a new rail station.

The South East's Challenges

Figure 11: Housing affordability



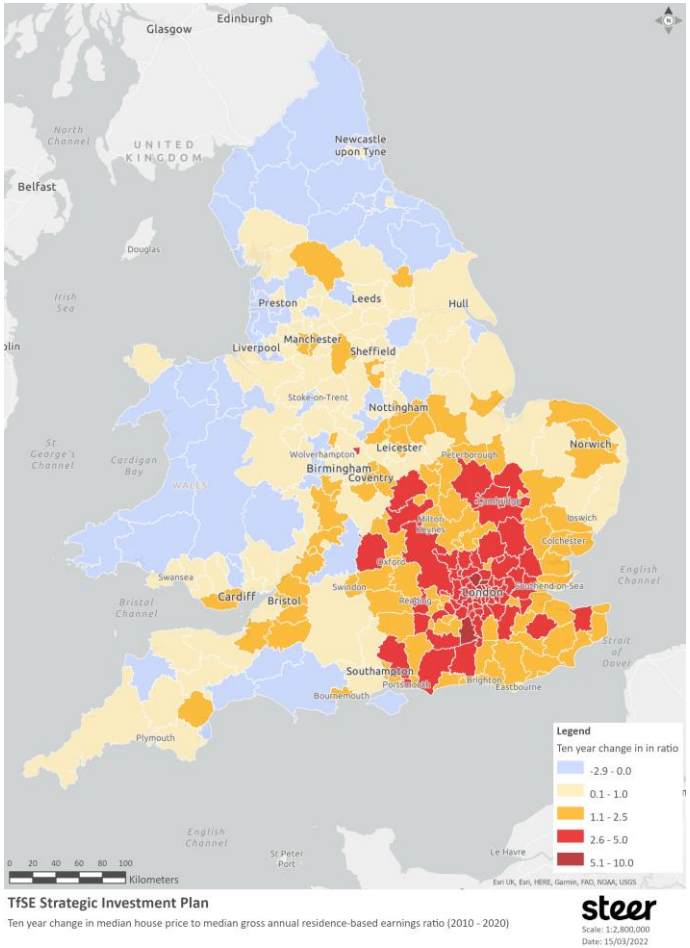
TfSE Strategic Investment Plan

Median house price to median gross annual residence-based earnings ratio (2020)

steer

Scale: 1:2,800,000
Date: 15/03/2022

Figure 12: Change in housing affordability



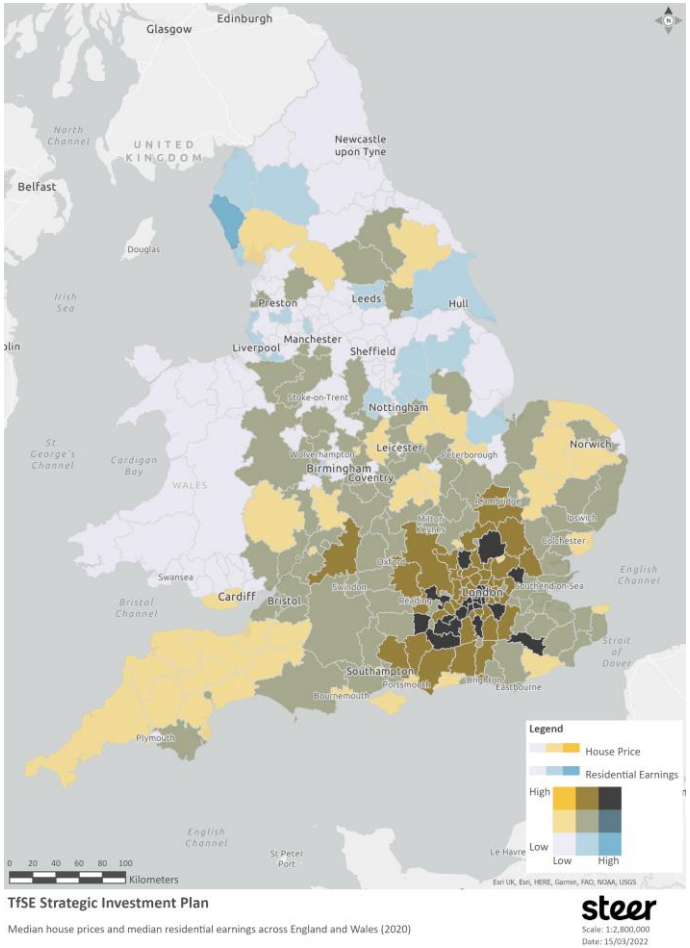
TfSE Strategic Investment Plan

Ten year change in median house price to median gross annual residence-based earnings ratio (2010 - 2020)

steer

Scale: 1:2,800,000
Date: 15/03/2022

Figure 13: Median price/earnings ratio



TfSE Strategic Investment Plan

Median house prices and median residential earnings across England and Wales (2020)

steer

Scale: 1:2,800,000
Date: 15/03/2022

The South East's Challenges

Figure 14: Planned housing growth in the TfSE area

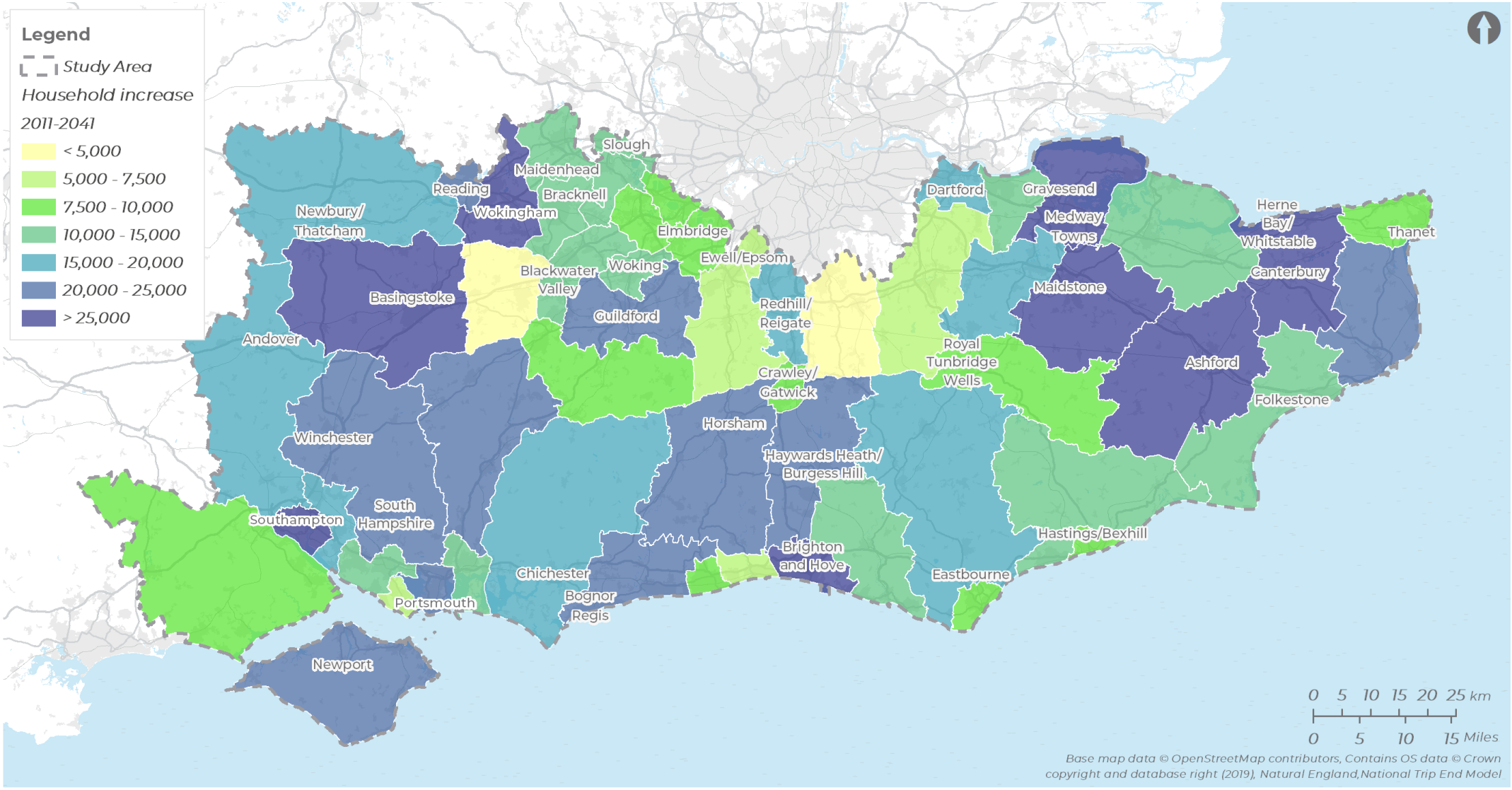
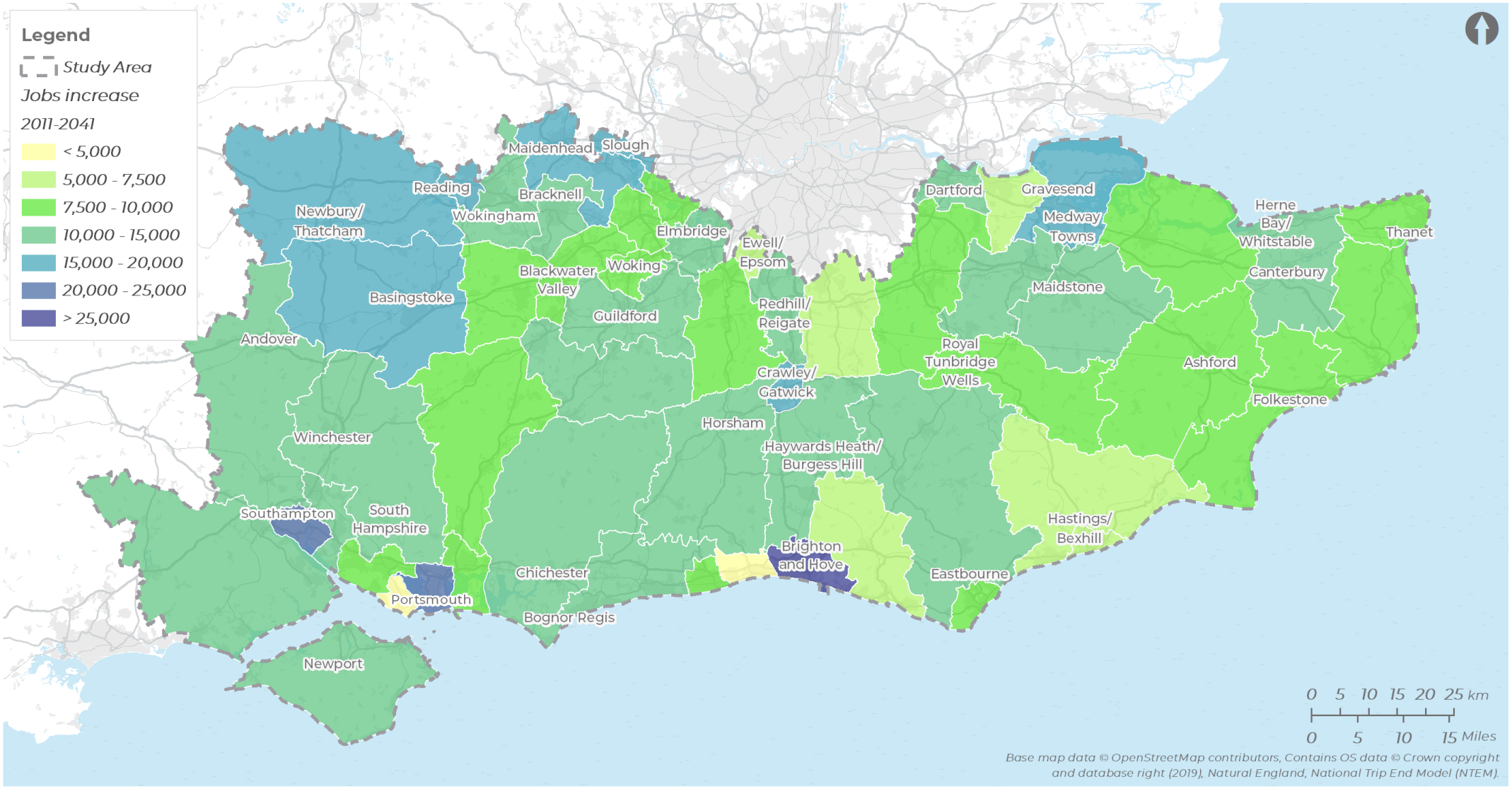


Figure 15: Planned employment growth in the TfSE area



World Class Urban Transit Systems

The South East is home to several large conurbations.

According to the Office of National Statistics analysis for built-up areas, the 2011 population of the South Hampshire built-up area (the urban conurbation stretching from Southampton to Portmouth including Eastleigh, Fareham and Gosport) was just under 856,000 (6th largest in England and Wales) and the population of the Brighton and Hove built-up area was over 474,000 (12th largest in England and Wales). Farnborough/Aldershot, Medway, and Reading/Wokingham also feature in the top 30 largest built-up Areas.

Many of these conurbations have high population densities – Brighton and Hove is the 2nd most densely populated built-up area in the UK.

However, despite the size and density of these conurbations, public transport mode share is relatively low. This is especially the case in South Hampshire, where public transport mode share is just 4.7% according to data published by Solent Transport[17].

Figure 9 presents the UK's largest built-up areas by population, density, and mass transit system provision. This shows that the South Hampshire and Sussex Coast conurbations are relatively large and relatively densely populated areas – more so than many other conurbations that are served by underground systems, tramways, and high-quality rail services.

Many of the public transport systems shown in this chart – such as Nottingham Express Trams – generate an operational profit[18]. This evidence suggests there should be a strong business case for better mass transit in these areas. The evidence presented in **Figure 16** shows the South East's largest conurbations are big enough and dense enough to support world class mass transit systems. These systems could take the form of Light Rail, Bus Rapid Transit, waterborne transport, and active travel interventions.

TfSE wishes to see world class, mass transit systems in the TfSE area's largest urban areas. These should encompass all modes of urban transport, including bus, tram, waterborne transport, rail, and active travel.

The rail network could also play a role in delivering a much-improved mass transit offer for some conurbations.

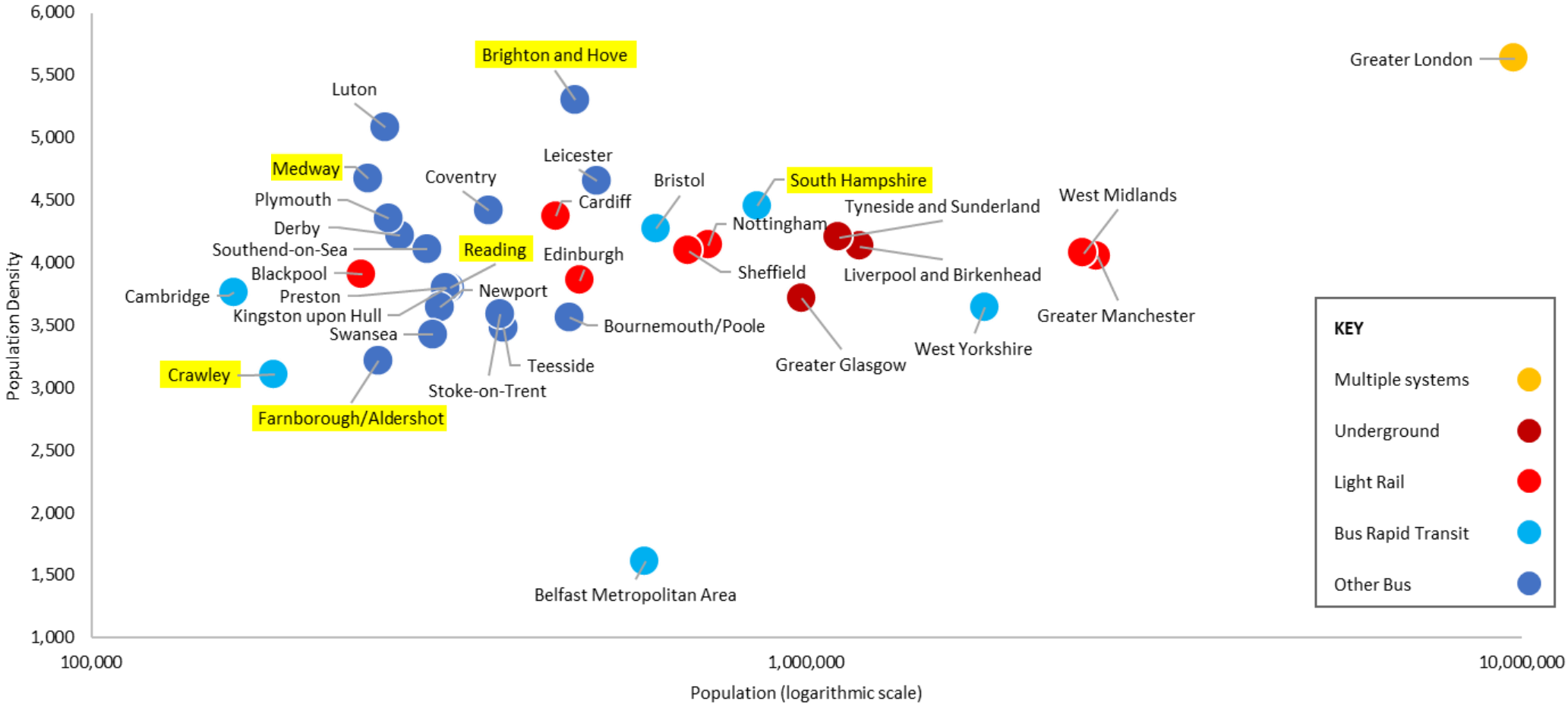
Many of this area's urban rail stations are provided with rural levels of passenger rail service (e.g. one train per hour) despite serving sizeable populations.

Rail journeys within urban areas are also slow. For example, journey times between Southampton Central and Portsmouth and Southsea are typically longer than 45 minutes (and frequencies low), while journeys between Southampton and Bournemouth (which are further apart) are possible in 25 minutes.

Active travel infrastructure could play an important role in enabling more people to walk and cycle for shorter journeys, as well as improve the urban realm of the South East's towns and cities. In addition, support for e-bikes could expand the opportunities for active modes, making longer or harder journeys more feasible. However, cycling participation is low in many urban areas. For example, as **Figure 17** shows, Medway has the lowest cycling participation in the South East.

Transport Challenges

Figure 16: Mass transit provision in the UK



Transport Challenges

Figure 17: Cycle participation in the South East

Transport Challenges

East – West Connectivity

There are challenges with east – west connectivity in several parts of the South East. This is visible across all modes of transport. We summarise the challenges for each key transport modes below.

Railways

While the South East is well served by radial railways, interurban passenger rail services are slow and uncompetitive with car. **Figure 18** shows the average speeds of key sections of the South East's railway network. This shows that east-west rail services deliver a significantly slower offer than most of the radial railways that serve the South East.

This is due in part to the condition and capability of the infrastructure, and due in part also to timetables and calling patterns (which is tied to capacity and capability of the infrastructure).

While there are relatively few 'end to end' journeys on the North Downs Line and Coastway Lines, many stakeholders believe there is a market for interurban journeys on east – west routes.

Highways

There are similar challenges for strategic east – west movements on the Strategic Road Network on the South Coast. The strategic highways, which include the Strategic and Major Road Networks, serving this corridor (particularly the A27) are unable to adequately perform their strategic role.

To better understand the strategic challenges of the South Coast corridor, TfSE commissioned advisors to develop a high-level gravity model for Great Britain. This Gravity Model was used to identify the largest theoretical latent demand between the 30 largest built-up areas in England and Wales. The focus was on the relative 'attraction' of large population centres to each other, and the quality of the highway and railway networks connecting them.

The Gravity Model showed that the second most significant strategic gap in Great Britain's strategic highway network (after Manchester – Sheffield) is between the South Hampshire and Sussex Coast conurbations. It also highlighted a gap between the M3 and M4 corridors.

Mass Transit and Active Travel

The South East's east – west connectivity challenges also extend to short distance trips.

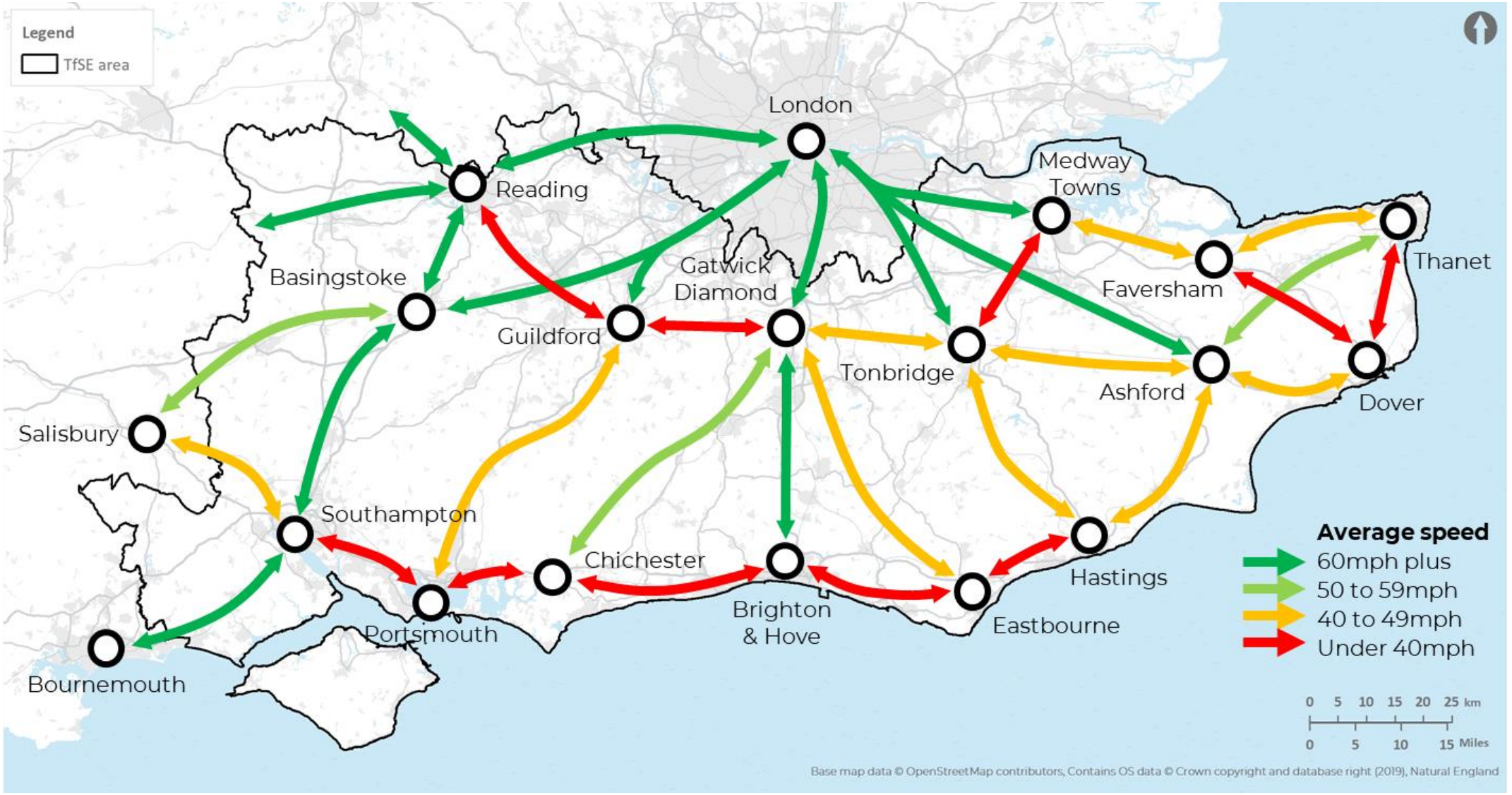
For example, the configuration of the largest conurbations cited in **Figure 16** – notably South Hampshire and the Sussex Coast Conurbation – are orientated on an east – west axis. Other conurbations such as Reading, Blackwater Valley, and Medway would also benefit from better orbital public transport services to complement their (generally good) radial services.

There are also notable east – west gaps in the active travel network. For example, there are gaps in the NCN2, which links Brighton and Southampton via Worthing, and NCN4 between London and Wales.

Many stakeholders in the South East wish to see long term multi-modal solutions that deliver much-improved strategic connectivity along east – west 'orbital' corridors, notably on the South Coast and North Downs Line corridors.

Transport Challenges

Figure 18: Average speed of rail services



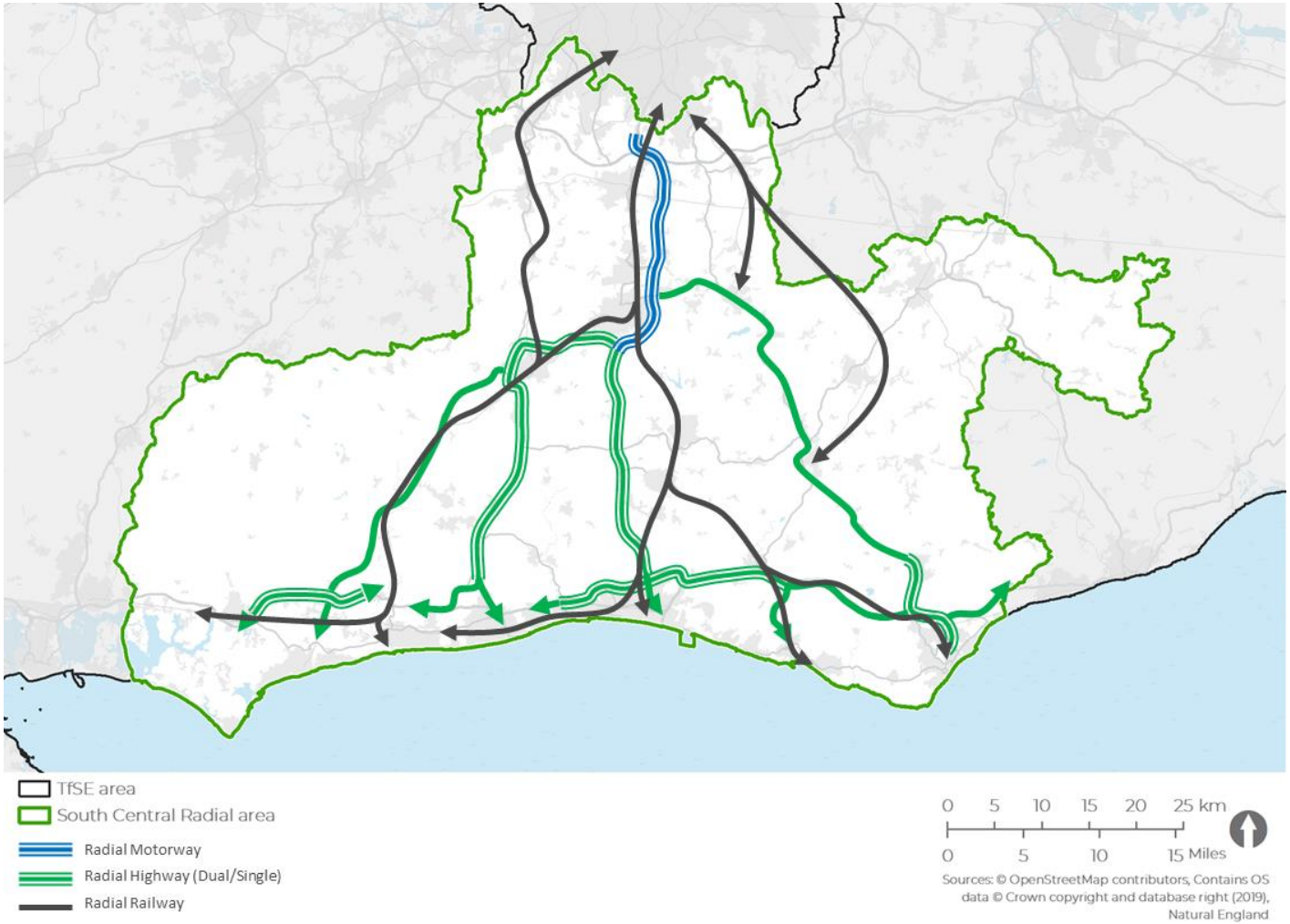
Resilient Radial Corridors

While the capacity and quality of radial corridors are better than orbital and coastal corridors, many of them operate at the limits of their capacity.

This means they are vulnerable to disruption and struggle to perform their role during planned maintenance.

The Brighton Main Line and M23/A23 corridor provides an example of this issue. As **Figure 19** shows, almost all radial rail routes and strategic highway routes merge at Crawley/Gatwick and continue north to London and the M25. This means places such as Brighton, Hove, Worthing and Eastbourne are vulnerable to disruption if there are any delays on the north of this corridor. There are similar challenges with the South West Main Line, which had high levels of peak hour crowding on rail services pre-pandemic. In Kent and East Sussex, resilience is strongly tied to international trade, any disruption to cross-channel services can spill over on to local highways. The rail network in Kent and many parts of the Brighton Main Line also lack four tracked sections, which limits the ability of the network to respond to disruption.

Figure 19: London to Sussex Coast radial routes



There is also a need to enable the South East to develop a more resilient infrastructure to enable it to better respond to external shocks and climate change.

Even with post-pandemic commuter demand, there is a need to invest in radial corridor resilience.

Transport Challenges

Global Gateways and Freight

The South East is home to some of the busiest global gateways in the UK.

Many of these are expected to grow – in some cases by a significant margin. The challenges facing these global gateways vary according to their context.

The Channel Ports regularly face resilience challenges on the corridors between Dover, Folkestone and the M25. Kent is the gateway to the British Isles for many international travellers and freight transporters. The two busiest cross channel ports – the Port of Dover and Folkestone Cheriton Channel Tunnel Terminal – are linked to the rest of the motorway network by the M20 and A20. An alternative route is available via the M2 and A2 corridor, which runs through North Kent. However, this corridor features several sections that fall below the motorway standard offered by the M20.

Heathrow Airport has good public transport access to London, but limited options for other journeys to/from the south and west of the airport site.

There are ambitions to provide direct services to Gatwick Airport and Kent. There are opportunities to grow the successful Bus Rapid Transit System in Crawley to support Gatwick's planned growth.

Demand for throughput and services through the Port of Southampton is expected to be significant across all sectors in the medium and long term. Expansion of the Port can only be undertaken on the Port's strategic land reserve across the Test estuary in the local authority area of New Forest District Council. Increased throughput will require upgrades to key highway and rail corridors that serve the Port. Along with the Southampton Airport and Portsmouth International Port – a key ferry port – they form one of central government's Freeport designations.

There are aspirations to improve access to the Port of Newhaven, and to explore means of shifting more freight to rail in Portsmouth and the Channel Ports.

Conclusion

Many of the issues identified in this Part of the Strategic Investment Plan are complex and driven by trends that are not directly controlled by the transport profession on its own.

These include:

- poor integration with spatial and transport planning;
- centralisation of services away from public transport services;
- high car ownership and use; and
- high growth in LGV (i.e. van) use.

On the other hand, there are other issues that can be directly addressed through investing in transport.

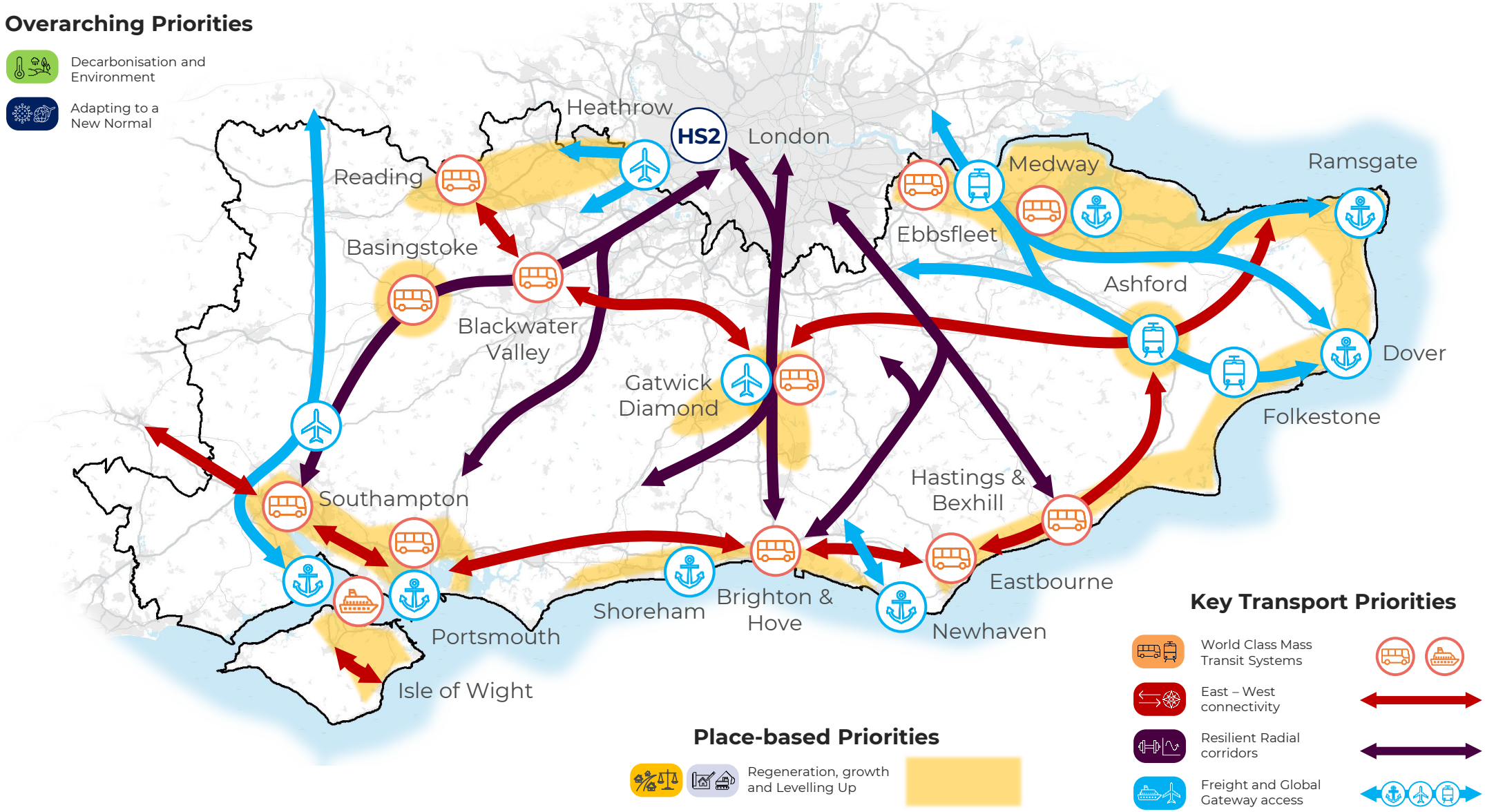
These include:

- inadequate mass/urban transit systems;
- poor east – west rail and road networks;
- lack of capacity to absorb shocks; and
- misalignment of capacity and demand.

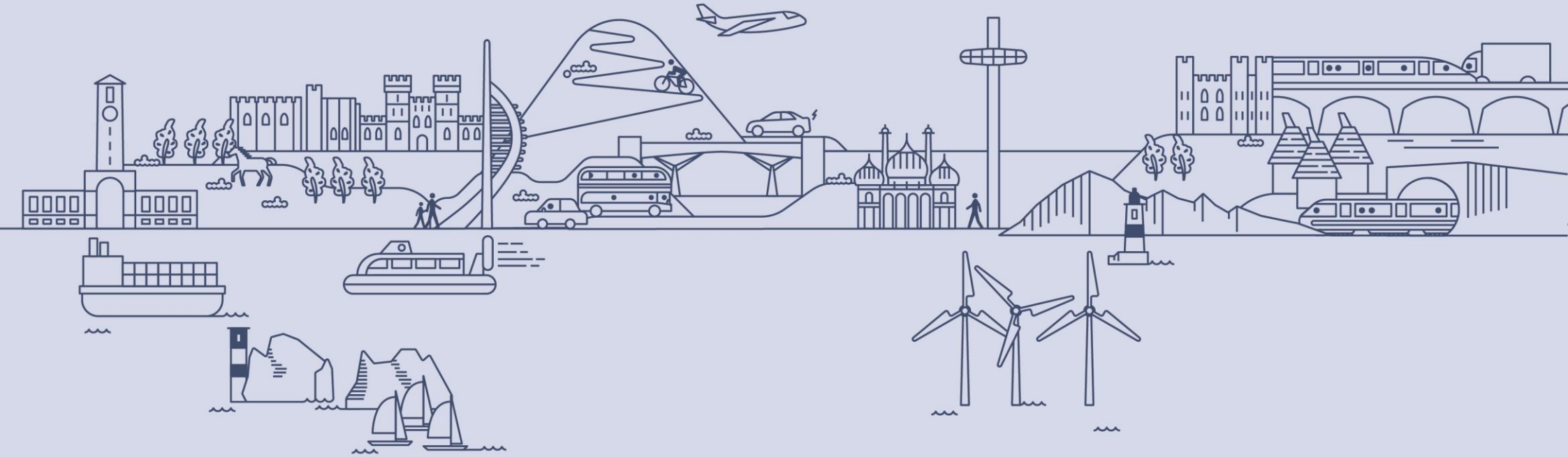
Figure 20 on the following page summarises the transport challenges this Strategic Narrative has discussed and that TfSE wishes to see addressed as priorities.

Transport Challenges

Figure 20: Key Priorities



TRANSPORT FOR THE South East



Part 4: Strategic Vision

Strategic Vision and Need for Intervention

Strategic Vision

TfSE's Transport Strategy vision is as follows:

"By 2050, the South East of England will be a leading global region for net zero carbon and 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."

This is underpinned by three strategic goals:

- **Economic**: Improve productivity and attract investment to grow our economy and better compete in the global marketplace;
- **Social**: Improve health, safety, wellbeing, quality of life, and access to opportunities for everyone; and
- **Environmental**: Protect and enhance the area's unique natural and historic environment.

Need for Intervention

We have used Department for Transport data to help model transport and socioeconomic outcomes for the South East.

This has shown that if the South East stays on a "Business As Usual" trajectory, by 2050:

- car trips will grow 23%;
- rail trips will grow 31%;
- bus trips will grow 26%;
- active travel trips will decline 10%;
- carbon emissions will (only) decline by 35%; and
- the economy will grow, but structural inequalities will persist.

Furthermore, if we do not act, then many of the challenges and opportunities presented in Part 2 and 3 will not be addressed.

More specifically:

- the South East will not decarbonise its transport system fast enough;
- the South East's transport systems will not adapt to a living with Covid, new EU relationship environment;
- housing will remain unaffordable to too many of the South East's residents or potential residents; and
- the South East's left behind communities will be unable to "catch up".

As these outcomes do not align with our strategic vision, we believe a range of interventions is needed to realise our vision.

Priorities (1 of 2)

Priorities

TfSE has identified eight priorities that align with the eight thematic challenges and opportunities presented earlier.

The first four of these priorities are more overarching in nature, applying to the whole of the TfSE area, and the following four are more focussed transport outcomes.

Overarching Priorities

Decarbonisation and Environment

- Accelerate the decarbonisation of the South East's transport sector to achieve net zero by 2050.
- Deliver a transport network that protects and enhances our natural, built, and historic environments.

Living with Covid

- Enable the South East's economy and transport systems to adapt to changing travel patterns and new ways of working and living in a post-pandemic world.
- Place the South East's transport system on a sustainable financial footing.
- Protect and enhance public transport services that have been placed under significant financial pressure due to the COVID-19 pandemic.
- Help the UK adapt to new trading arrangements between the UK and EU.

Levelling Up Left Behind Communities

- Deliver an affordable, accessible transport network for all that promotes social inclusion and reduces barriers to employment, learning, social, leisure, physical and cultural activity.
- Boost connectivity and service quality for left behind communities to place them on an equal footing.
- Promote sustainable transport modes that improve our health and wellbeing and improve air quality.

Regeneration and Growth

- Attract investment to grow our economy and better compete in the global marketplace.
- Unlock regeneration and growth opportunities, especially where this is held back by inadequate transport.
- Promote a more integrated approach to land use and transport planning that helps our partners across the South East meet future housing, employment and regeneration needs sustainably.

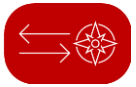
Priorities (2 of 2)

Transport Priorities

World Class Urban Transit Systems

- Deliver world class, sustainable urban transit and active travel systems for the South East's largest conurbations, to enable residents, businesses, and visitors to travel seamlessly and sustainably within and between built-up areas, including the 'first mile' and 'last mile' of every journey.
- Provide a seamless, integrated transport network with people at its heart, making it simpler and easier to plan and pay for journeys and to use and change between different forms of transport.

East – West Connectivity



- Boost connectivity between our major economic hubs, international gateways (ports, airports, and rail terminals) and their markets on east – west corridors.

Resilient Radial Corridors

- Deliver a transport network that is more resilient to incidents, extreme weather, and the impacts of a changing climate.
- Provide reliable journeys for people and goods travelling between the South East's major economic hubs and to and from international gateways.
- A 'smart' transport network that uses digital technology to manage transport demand, encourage shared transport, and make more efficient use of our assets.

Global Gateways

- Boost connectivity to the South East's Global Gateways and adapt to changing patterns of freight demand and trade.
- Improve the capacity and productivity of the freight and logistics sector.
- Enhance the contribution of the freight and logistics sector to the South East's economy.

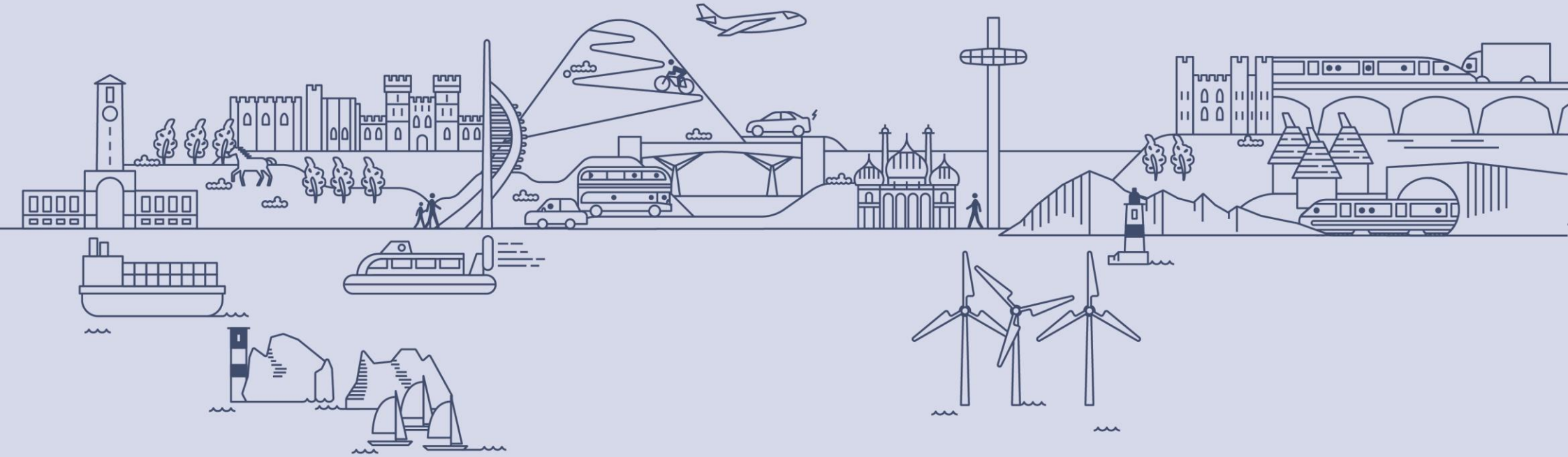
Problem Statements

The Area Study Programme identified specific problems (weaknesses and/or challenges) that many stakeholders wish to see the Strategic Investment Plan address.

Some of these problem statements refer directly to specific places or areas and corridors, while others are broad and are pertinent regionally, if not nationally or internationally. A list of the key problem statements that fit into the latter category is presented below:

- Transport is not decarbonising fast enough.
- Climate change threatens the resilience of transport networks.
- Freight is heavily reliant on highways, especially for first-mile-last-mile deliveries.
- Numerous parts of the South East have unacceptably poor socioeconomic outcomes.
- Demand for public transport has been negatively affected by COVID-19.
- Some parts of the South East appear to be too reliant on a small number of industrial sectors.
- The economic influence of London dominates many areas in the South East.
- Housing affordability presents a barrier to achieving social equity goals.
- There is a recognised need for housing – but in the right places, supported by the right infrastructure, planned to deliver sustainable transport outcomes.
- The benefits of new technologies are not accessible to everybody.
- We need better coordination between land-use and transport planning.
- Rural communities are being left behind in digital, active travel, and public transport connectivity.
- Too many transport services and networks are inaccessible to some potential users.
- For many people, public transport fares are too high and too complicated.

TRANSPORT FOR THE South East



Part 5: Packages of Interventions

Packages of Interventions

Approach

TfSE has worked with key stakeholders and technical advisors to develop 30 coherent multi-modal packages of interventions that aim to deliver TfSE's vision and goals for the South East, and align to the eight priorities.

These packages have been developed through :

- workshops and discussions to gather the ideas of stakeholders;
- careful analysis of need or "gap analysis"; and
- assessment of a long list of options or "interventions" using a multi criteria assessment framework, modelling, and an Integrated Sustainability Assessment all using criteria relating to the vision and goals of the TfSE Transport Strategy, key priorities, and impact and deliverability criteria.

In essence, this reflects both a 'top down' vision-led approach and a 'bottom up' assessment of interventions approach. **Figure 21** illustrates the essence of this combined approach.

TfSE has used a land-use and transport interaction model to simulate the impacts of these packages of interventions. The results from this modelling exercise are presented in **Part 6**.

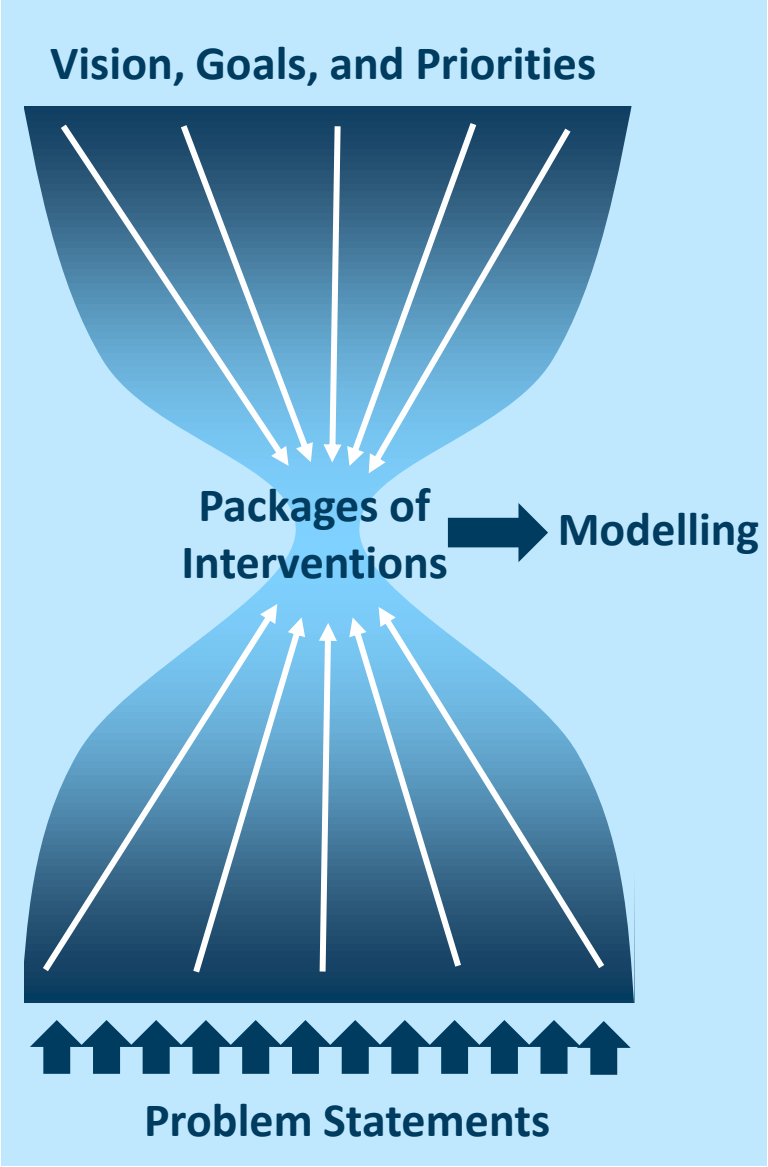
Place-based Packages of Interventions

24 of the 30 packages are "place-based" packages of interventions. These focus on place-, location- or corridor-specific interventions across multiple modes that tend to yield benefits at a more local level.

The list of place-based packages appears overleaf, grouped by the sub-regional geographies of the Strategic Programme Outline Cases.

Over the following pages, these packages are presented in an integrated, multi-modal format across a series of maps aligning to the four Strategic Programme Outline Case geographies. Further details of each package can be found in the **Appendix**.

Figure 21: Approach to package development



Packages of Interventions

Place-based Packages of Interventions (cont.)

The four Strategic Programme Outline Case geographies and their corresponding maps are:

- **Solent and Sussex Coast: Figures 22 to 24**
- **London – Sussex Coast : Figures 25**
- **Wessex Thames: Figures 26**
- **Kent, Medway and East Sussex: Figures 27**

While high-level planning has taken place considering multi-modal options and how packages group and integrate, they are presented in the **Appendix** by mode or groups of modes. This is partly as a product of how they needed to be modelled, but also to talk directly to key stakeholders and modal-based planners of national networks (e.g. Network Rail and National Highways), and possible funding sources – which are often siloed.

Solent and Sussex Coast

1. South Hampshire Rail (Core)
2. South Hampshire Rail (Enhanced)
3. South Hampshire Mass Transit
4. South Hampshire Active Travel
5. Isle of Wight
6. Sussex Coast Rail
7. Sussex Coast Mass Transit
8. Sussex Coast Active Travel
9. South Coast Highways

London – Sussex Coast

1. London – Sussex Coast Rail (Core and Reinstatements)
2. London – Sussex Coast Mass Transit
3. London – Sussex Coast Active Travel
4. London – Sussex Coast Highways

Wessex Thames

1. Wessex Thames Rail
2. Wessex Thames Mass Transit
3. Wessex Thames Active Travel
4. Wessex Thames Highways

Kent, Medway, and East Sussex (KMES)

1. KMES Classic Rail
2. KMES High Speed Rail (East)
3. KMES High Speed Rail (North)
4. KMES Mass Transit
5. KMES Active Travel
6. KMES Highways
7. Lower Thames Crossing

Global Package of Interventions

There are six "global" packages of interventions. These are largely regulatory and policy interventions that affect the whole of the South East (and in most cases the wider UK).

1. **Decarbonisation**: This delivers a faster trajectory towards net-zero than current trends are expected to yield through faster adoption of zero emission vehicles.
2. **Public Transport Fares**: This reverses the real terms increase in the cost of public transport compared to motoring.
3. **Road User Charging**: This assumes the UK government develops a national road user charging system to replace funding currently raised from fuel duty and vehicle excise duty.
4. **New Mobility**: This reflects the potential for new mobility (e.g. electric bikes and bike hire) to boost active travel in the South East.
5. **Virtual Living**: The pandemic has shown how virtual working can help reduce demand for transport services.
6. **Integration and Access**: This delivers improvements in integration and accessibility across and between all modes of transport. It also supports better integration between transport and spatial planning.

Solent and Sussex Coast – South Hampshire Interventions List

Core Rail Package

- **A1** Solent Connectivity Strategic Study
- **A2** Botley Line Double Tracking
- **A3** Netley Line Signalling and Rail Service Enhancements
- **A4** Fareham Loop / Platform
- **A5** Portsmouth Station Platforms
- **A6** South West Main Line - Totton Level Crossing Removal
- **A7** Southampton Central Station Upgrade and Timetabling
- **A8** Eastleigh Station Platform Flexibility
- **A9** Waterside Branch Line Reopening
- **A10** West of England Service Enhancements
- **A11** Additional Rail Freight Paths to Southampton

Enhanced Rail Package

- **B1** Southampton Central Station - Woolston Crossing
- **B2** New Southampton Central Station
- **B3** New City Centre Station
- **B4** South West Main Line - Mount Pleasant Level Crossing Removal
- **B5** West Coastway Line - Fareham to Cosham Capacity Enhancements
- **B6** Cosham Station Mobility Hub
- **B7** Eastleigh to Romsey Line - Electrification
- **B8** Havant Rail Freight Hub
- **B9** Fratton Rail Freight Hub
- **B10** Southampton Container Port Rail Freight Access and Loading Upgrades
- **B11** Southampton Automotive Port Rail Freight Access and Loading Upgrades

Mass Transit

- **C1** Southampton Mass Transit
- **C2** south east Hampshire Rapid Transit Future Phases
- **C3** New Southampton to Fawley Waterside Ferry Service
- **C4** Southampton Cruise Terminal Access for Mass Transit
- **C5** M271 Junction 1 Strategic Mobility Hub
- **C6** M27 Junction 5 / Southampton Airport Strategic Mobility Hub
- **C7** M27 Junction 7 / 8 Strategic Mobility Hub
- **C8** M27 Junction 9 Strategic Mobility Hub
- **C9** Tipner Transport Hub (M275 Junction 1)
- **C10** Southsea Transport Hub
- **C11** Improved Gosport - Portsmouth and Portsmouth - Hayling Island Ferries

Highways

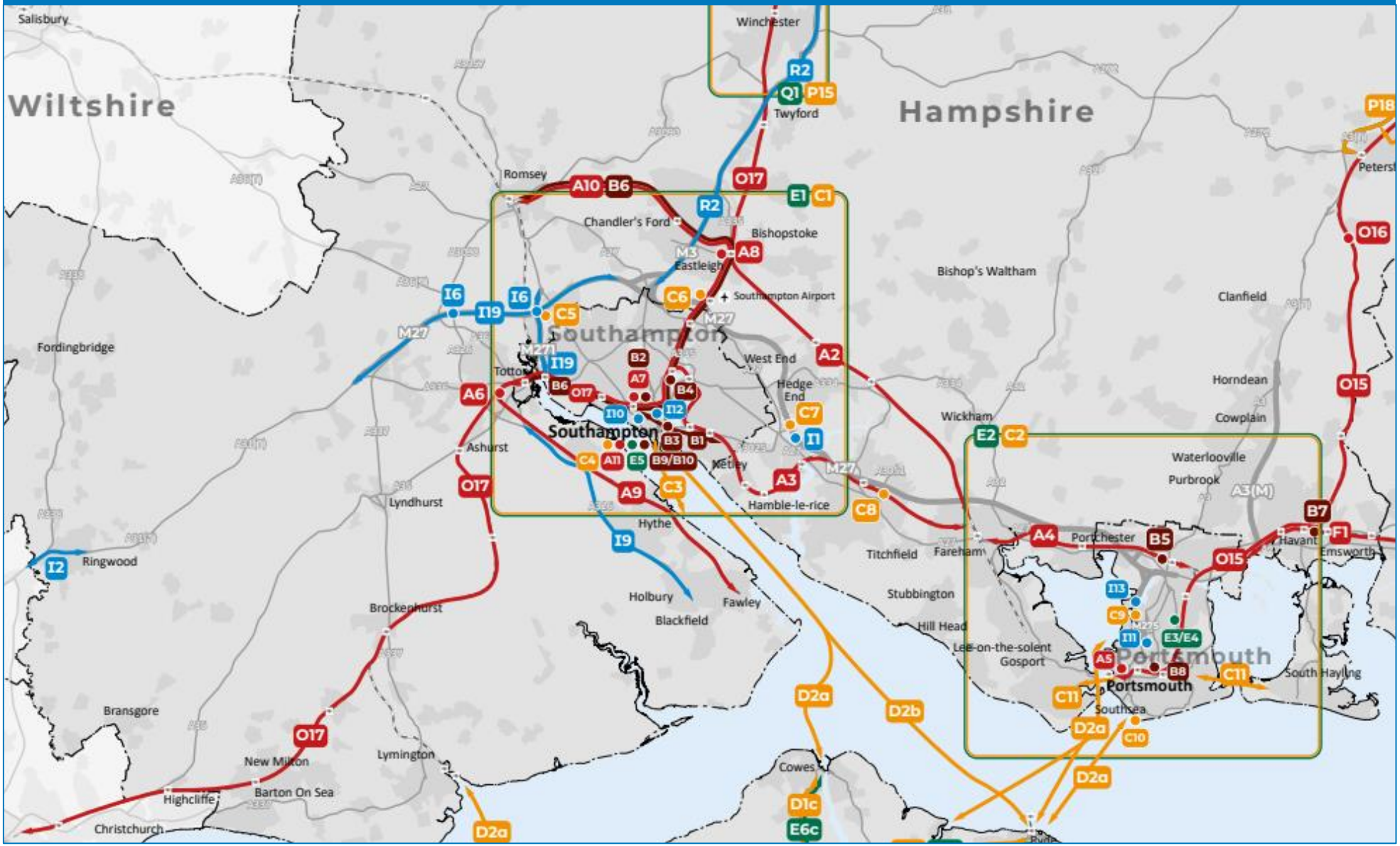
- **I1** M27 Junction 8 (RIS2)
- **I2** A31 Ringwood Strategic Traffic (RIS2)
- **I6** Southampton Access (M27 Junction 2 and Junction 3) (RIS3 Pipeline)
- **I9** A326 Capacity Enhancements (LLM)
- **I10** West Quay Realignment (LLM)
- **I11** Portsmouth City Centre Road (LLM)
- **I12** Northam Rail Bridge Replacement and Enhancement (MRN)
- **I13** New Bridge from Horsea to Tipner
- **I19** M27 / M271 Smart Motorway(s)

Active Travel

- **E1** Southampton Area Active Travel (including LCWIPs)
- **E2** south east Hampshire Area Active Travel (including LCWIPs)
- **E3** Portsmouth Eastern Road Active Travel Bridge Extension
- **E4** Portsmouth Eastern Road East-West Bridge
- **E5** Southampton City Centre Placemaking

Solent and Sussex Coast – South Hampshire Interventions Map

Figure 22: South Hampshire Multi-Modal Packages and Interventions

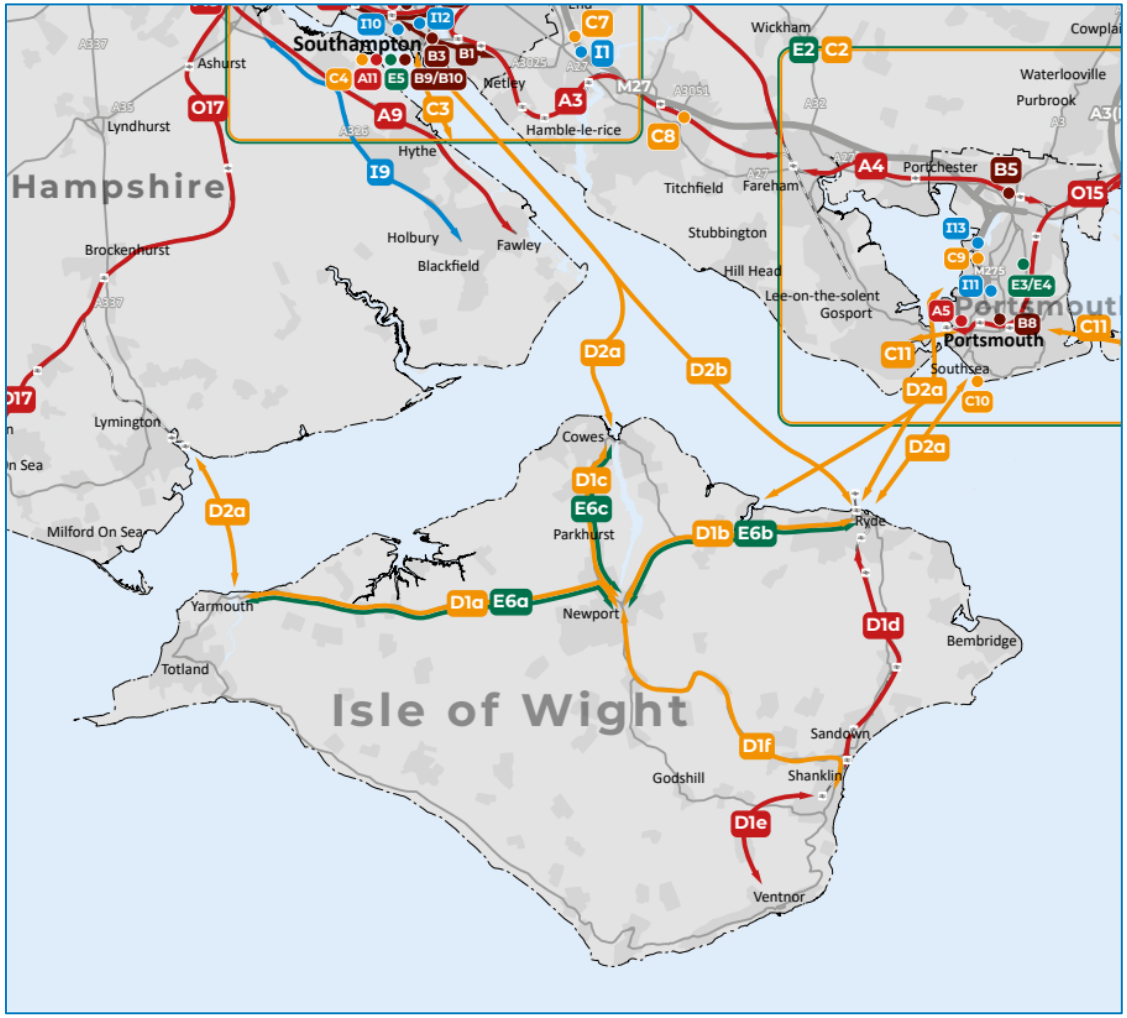


Note: List of interventions refers to Packages A — C, E & I only.

TRANSPORT FOR THE South East

Solent and Sussex Coast – Isle of Wight Interventions Map

Figure 23: Isle of Wight Multi-modal Package and Interventions



Connectivity Package

D1	New Isle of Wight Mass Transit System
D1a	Bus Mass Transit - Newport to Yarmouth
D1b	Bus Mass Transit - Newport to Ryde
D1c	Bus Mass Transit - Newport to Cowes
D1d	Isle of Wight Railway Service Enhancements
D1e	Isle of Wight Railway Extensions or Mass Transit alternative - Shanklin to Ventnor
D1f	Isle of Wight Railway Extensions or Mass Transit alternative - Shanklin to Newport
D2	Isle of Wight Ferry Service Enhancements
D2a	Operating Hours and Frequency Enhancements
D2b	New Summer Route - Ryde to Southampton

Active Travel

E1	Southampton Area Active Travel (including LCWIPs)
E2	south east Hampshire Area Active Travel (including LCWIPs)
E3	Portsmouth Eastern Road Active Travel Bridge Extension
E4	Portsmouth Eastern Road East-West Bridge
E5	Southampton City Centre Placemaking
E6	Isle of Wight Active Travel Enhancements
E6a	Active Travel Enhancements - Newport to Yarmouth
E6b	Active Travel Enhancements Newport to Ryde
E6c	Active Travel Enhancements Newport to Cowes

Note: List of interventions refers to Packages D & E only.

Solent and Sussex Coast – Sussex Coast Interventions Map

Figure 24: Sussex Coast Multi-modal Packages and Interventions

Note: List of interventions refers to Packages E — I only.

Rail Package

- **F1** West Coastway Strategic Study
- **F2** West Worthing Level Crossing Removal

Active Travel

- **H1** Sussex Coast Active Travel Enhancements (including LCWIPs)

Mass Transit

- **G1** Shoreham Strategic Mobility Hub
- **G2** A27 / A23 Patcham Interchange Strategic Mobility Hub
- **G3** Falmer Strategic Mobility Hub
- **G4** Eastbourne / Polegate Strategic Mobility Hub
- **G5** Sussex Coast Mass Rapid Transit
- **G6** Eastbourne / Wealden Mass Rapid Transit
- **G7** Hastings / Bexhill Mass Rapid Transit
- **G8** A27 Falmer – Polegate Bus Stop and Layby Improvements

Highways

- **I1** M27 Junction 8 (RIS2)
- **I2** A31 Ringwood Strategic Traffic (RIS2)
- **I3** A27 Arundel Bypass (RIS2)
- **I4** A27 Worthing and Lancing Improvement (RIS2)
- **I5** A27 East of Lewes Package (RIS2)
- **I6** Southampton Access (M27 Junction 2 and Junction 3) (RIS3 Pipeline)
- **I7** A27 Lewes - Polegate (RIS3 Pipeline)
- **I8** A27 Chichester Improvements (RIS3 Pipeline)
- **I9** A326 Capacity Enhancements (LLM)
- **I10** West Quay Realignment (LLM)
- **I11** Portsmouth City Centre Road (LLM)
- **I12** Northam Rail Bridge Replacement and Enhancement (MRN)
- **I13** New Bridge from Horsea to Tipner
- **I14** A259 Bognor Regis to Littlehampton Enhancement (MRN)
- **I15** A259 South Coast Road Corridor - Eastbourne to Brighton (MRN & BSIP)
- **I16** A259 Chichester to Bognor Regis Enhancement (MRN Pipeline)
- **I17** A259 (King's Road) Seafront Highway Structures Renewal Programme (MRN)
- **I18** A29 Realignment including combined Cycleway and Footway
- **I19** M27 / M271 Smart Motorway(s)
- **I20** A27 Tangmere Junction Enhancements
- **I21** A27 Fontwell Junction Enhancements
- **I22** A27 Worthing (Long Term Solution)
- **I23** A27 Hangleton Junction Enhancements
- **I24** A27 Devils Dyke Junction Enhancements
- **I25** A27 Falmer Junction Enhancements
- **I26** A27 Hollingbury Junction Enhancements

London to Sussex Coast Interventions List

Rail Packages

- **J1** Croydon Area Remodelling Scheme
- **J2** Brighton Main Line - 100mph Operation
- **J3** Brighton Station Additional Platform
- **J4** Reigate Station Upgrade
- **J5** Arun Valley Line - Faster Services
- **J6** East Coastway Line - Faster Services
- **J7** Brighton Main Line - Reinstate Cross Country Services
- **J8** New Station to the North East of Horsham
- **J9** Newhaven Port Capacity and Rail Freight Interchange Upgrades
- **J10** Uckfield Branch Line - Hurst Green to Uckfield Electrification
- **J11** Redhill Aerodrome Chord
- **K1** Uckfield - Lewes Wealden Line Reopening - Traction and Capacity Enhancements
- **K2** Uckfield - Lewes Wealden Line Reopening - Reconfiguration at Lewes
- **K3** Spa Valley Line Modern Operations Reopening - Eridge to Tunbridge Wells West to Tunbridge Wells

Mass Transit

- **L1** Fastway Extension: Crawley - Horsham
- **L2** Fastway Extension: Crawley - East Grinstead
- **L3** Fastway Extension: Haywards Heath - Burgess Hill
- **L4** Fastway Extension: Crawley - Redhill
- **L5** A22 Corridor Rural Bus Service Enhancements
- **L6** A23 Corridor Rural Bus Service Enhancements
- **L7** A24 Corridor Rural Bus Service Enhancements
- **L8** A26 Corridor Lewes - Royal Tunbridge Wells Rural Bus Service Enhancements
- **L9** A26 Corridor Newhaven Area Rural Bus Service Enhancements
- **L10** A272 Corridor Rural Bus Service Enhancements
- **L11** A264 Corridor Rural Bus Service Enhancements
- **L12** A29 Corridor Rural Bus Service Enhancements
- **L13** A283 Corridor Rural Bus Service Enhancements
- **L14** A281 Corridor Rural Bus Service Enhancements
- **L15** Three Bridges Strategic Mobility Hub

Highways

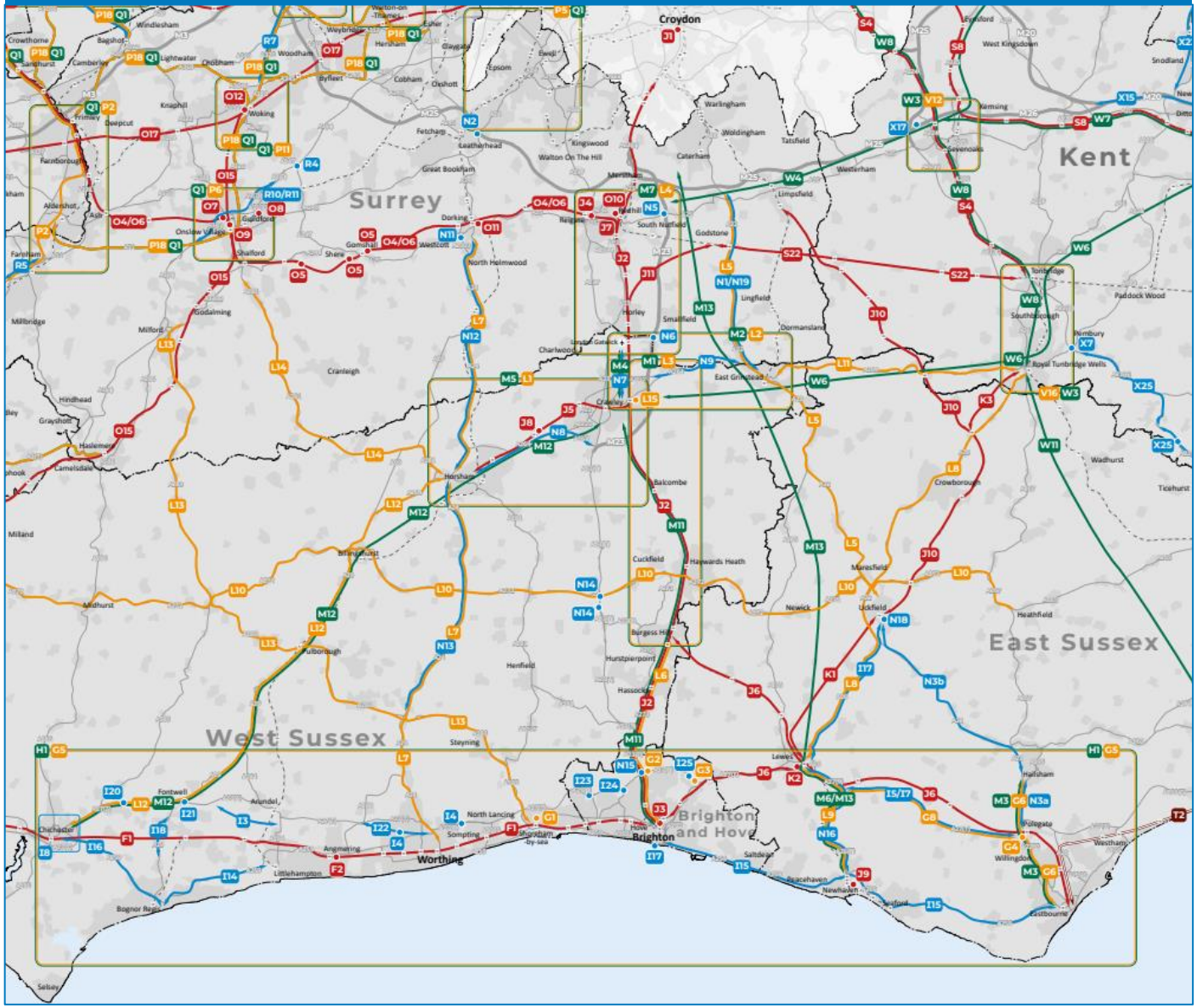
- **N1** A22 N Corridor (Tandridge) - South Godstone to East Grinstead Enhancements (LLM Pipeline)
- **N2** A24 / A243 Knoll Roundabout and M25 J9A (MRN Pipeline)
- **N3a** A22 Corridor Package
- **N3b** A22 Corridor - Hailsham to Uckfield
- **N4** A2270 / A2101 Corridor Movement and Access Package (MRN Pipeline)
- **N5** M23 Junction 8a New Junction and Link Road - Redhill
- **N6** M23 Junction 9 Enhancements - Gatwick
- **N7** A23 Carriageway Improvements - Gatwick to Crawley
- **N8** A264 Horsham - Pease Pottage Carriageway Enhancements
- **N9** A264 Crawley - East Grinstead Dualling and Cycleway
- **N10** Crawley Western Link Road and Active Travel Infrastructure
- **N11** A24 Dorking Bypass
- **N12** A24 Horsham to Washington Junction Improvements
- **N13** A24 Corridor Improvements Horsham to Dorking (LLM Pipeline)
- **N14** A23 Hickstead and Bolney Junction Enhancements
- **N15** A23 / A27 Patcham Interchange Junction Enhancements
- **N16** A26 Lewes - Newhaven Realignment and Junction Enhancements
- **N17** A26 Lewes - Uckfield Enhancements
- **N18** A22 Uckfield Bypass Dualling
- **N19** A22 Smart Road Trial Proposition Study

Active Travel

- **M1** Burgess Hill / Haywards Heath Local Active travel infrastructure
- **M2** East Grinstead Local Active travel infrastructure
- **M3** Eastbourne / Hailsham Local Active travel infrastructure
- **M4** Gatwick / Crawley Local Active travel infrastructure
- **M5** Horsham Local Active travel infrastructure
- **M6** Lewes / Newhaven Local Active travel infrastructure
- **M7** Reigate / Redhill Local Active travel infrastructure
- **M8** East Sussex Inter-urban Active travel infrastructure
- **M9** Surrey Inter-urban Active travel infrastructure
- **M10** West Sussex Inter-urban Active travel infrastructure
- **M11** New London - Brighton National Cycle Network Corridor
- **M12** New Crawley - Chichester National Cycle Network Corridor
- **M13** London - Paris New "Avenue Verte"

London to Sussex Coast Interventions Map

Figure 25: London to Sussex Coast Multi-Modal Packages and Interventions



Not shown on map

Surrey: M9

East Sussex: M8 W9 W10

West Sussex: M10

Kent: S17 X8 X9 X10

Note: List of interventions refers to Packages J — N only.

Wessex Thames Interventions List

Rail Package

- **O1** Western Rail Link to Heathrow
- **O2** Southern Rail Link to Heathrow
- **O3** Reading to Basingstoke Enhancement
- **O4** North Downs Line - Electrification
- **O5** North Downs Line - Level Crossing Removals
- **O6** North Downs Line - Service Level and Capacity Enhancements
- **O7** Guildford Station Upgrade
- **O8** New Station Guildford West (Park Barn)
- **O9** New Station Guildford East (Merrow)
- **O10** Redhill Station Upgrade
- **O11** Dorking Deepdene Station Upgrade
- **O12** South West Main Line / Portsmouth Direct Line - Woking Area Capacity Enhancement
- **O13** South West Main Line / Basingstoke Branch Line - Basingstoke Enhancement Scheme
- **O14** Cross Country Service Enhancements
- **O15** Portsmouth Direct Line - Line Speed Enhancements
- **O16** Portsmouth Direct Line - Buriton Tunnel Upgrade
- **O17** South West Main Line - Digital Signalling
- **O18** Theale Strategic Rail Freight Terminal
- **O19** West of England Main Line - Electrification from Basingstoke to Salisbury
- **O20** Reading to Waterloo Service Enhancements

Mass Transit

- **P1** Basingstoke Mass Rapid Transit
- **P2** Blackwater Valley Mass Rapid Transit
- **P3** Bracknell / Wokingham Bus Enhancements
- **P4** Elmbridge Bus Enhancements
- **P5** Epsom / Ewell Bus Enhancements
- **P6** Guildford Sustainable Movement Corridor
- **P7** Slough / Windsor / Maidenhead Area Bus Enhancements
- **P8** Newbury / Thatcham Bus Enhancements
- **P9** Reading Mass Rapid Transit
- **P10** Spelthorne Bus Enhancements
- **P11** Woking Bus Enhancements
- **P12** A4 Reading - Maidenhead - Slough - London Heathrow Airport Mass Rapid Transit
- **P13** A329 / B3408 Reading - Bracknell / Wokingham Mass Rapid Transit
- **P14** Winchester Bus Enhancements
- **P15** Andover Bus Enhancements
- **P16** Runnymede Bus Enhancements
- **P17** London Heathrow Airport Bus Access Enhancements
- **P18** Berkshire, Hampshire and Surrey Inter-urban Bus Enhancments

Active Travel

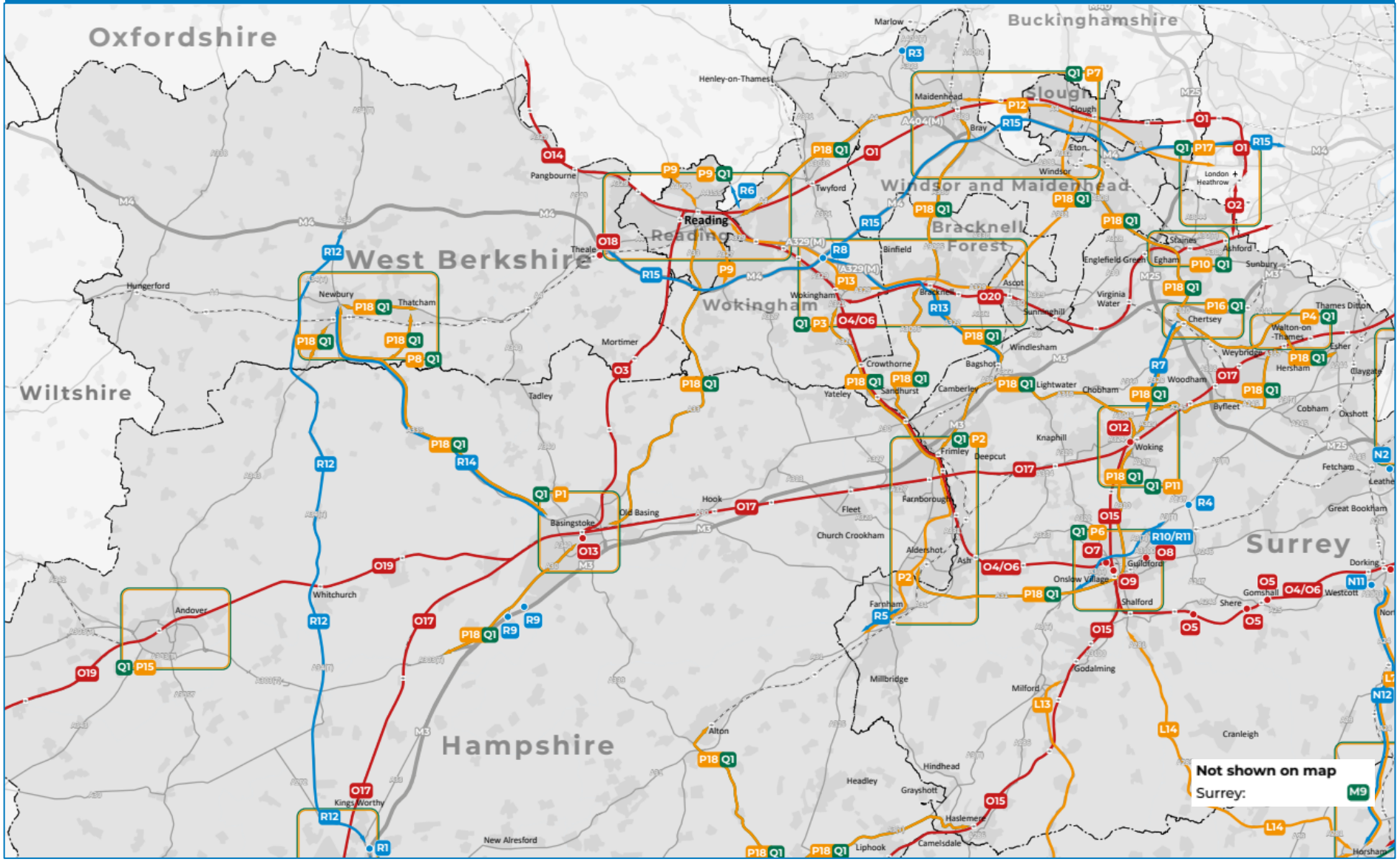
- **Q1** Berkshire, Hampshire and Surrey Urban and Inter-urban Active Travel Infrastructure

Highways

- **R1** M3 Junction 9 (RIS2)
- **R2** M3 Junction 9 - Junction 14 Smart Motorway (SMP)
- **R3** A404 Bisham Junction (RIS3 Pipeline)
- **R4** A3 / A247 Ripley South (RIS3 Pipeline)
- **R5** A31 Farnham Corridor (LLM)
- **R6** New Thames Crossing East of Reading (LLM)
- **R7** A320 North Corridor (HIF)
- **R8** M4 Junction 10 Safety Enhancments
- **R9** M3 Junction 7 and Junction 8 Safety and Capacity Enhancements
- **R10** A3 Guildford Local Traffic Segregation
- **R11** A3 Guildford Long Term Solution
- **R12** A34 Junction and Safety Enhancements
- **R13** A322 and A329(M) Smart Corridor
- **R14** A339 Newbury to Basingstoke Safety Enhancements
- **R15** M4 Junction 3 to Junction 12 Smart Motorway (SMP)

Wessex Thames Interventions Map

Figure 26: Wessex Thames Multi-Modal Packages and Interventions



Note: List of interventions refers to Packages O — R only.

TRANSPORT FOR THE South East

Kent, Medway and East Sussex Interventions List

Classic Rail Package

- **S1** St Pancras International Domestic High Speed Platform Capacity
- **S2** London Victoria Capacity Enhancements - Signalling and Digital Rail
- **S3** Bakerloo Line Extension
- **S4** south eastern Main Line - Chislehurst to Tonbridge Capacity Enhancements
- **S5** London Victoria to Shortlands Capacity Enhancements
- **S6** Hoo Peninsula Passenger Rail Services
- **S7** North Kent Line / Hundred of Hoo Railway - Rail Chord
- **S8** Thameslink - Extension to Maidstone and Ashford
- **S9** North Kent Line - Service Enhancements
- **S10** North Kent Line / Chatham Main Line - Line Speed Enhancements
- **S11** OOtterpool Park / Westenhanger Station Platform Extensions and Station Upgrade
- **S12** Integrated Maidstone Stations
- **S13** Dartford Station Remodelling / Relocation
- **S14** Canterbury Rail Chord
- **S15** New Station - Canterbury Interchange
- **S16** New Strood Rail Interchange
- **S17** Rail Freight Gauge Clearance Enhancements
- **S18** Crossrail - Extension from Abbey Wood to Dartford / Ebbsfleet
- **S19** High Speed 1 / Waterloo Connection Chord - Ebbsfleet Southern Rail Access
- **S20** Ebbsfleet International (Northfleet Connection)
- **S21** Ebbsfleet International (Swanscombe Connection)
- **S22** Gatwick - Kent Service Enhancements

High Speed Rail Package

- **T1** High Speed East - Dollands Moor Connection
- **T2** High Speed 1 / Marsh Link - Hastings, Bexhill and Eastbourne Upgrade
- **U1** High Speed 1 - Link to Medway (Chatham)
- **U2** High Speed 1 - Additional Services to West Coast Main Line

Mass Transit

- **V1** Fastrack Expansion - Swanscombe Peninsula
- **V2** Fastrack Expansion - Northfleet to Gravesend
- **V3** Fastrack Expansion - Medway
- **V4** Medway Mass Transit
- **V5** Medway Mass Transit - Extension to Hoo Peninsula
- **V6** Medway to Maidstone Bus Priority
- **V7** Medway Mass Transit - Chatham to Medway City Estate New Bridge
- **V8** Medway Mass Transit - Chatham to Medway City Estate Water Taxi
- **V9** Maidstone Bus Enhancements
- **V10** Dover Bus Rapid Transit
- **V11** Sittingbourne Bus Enhancements
- **V12** Sevenoaks Bus Enhancements
- **V13** Thanet Bus Enhancements
- **V14** Folkestone Bus Enhancements
- **V15** Ashford Bus Enhancements
- **V16** Royal Tunbridge Wells / Tonbridge Bus Enhancements
- **V17** Thames Gateway / Gravesham Bus Enhancements
- **V18** Canterbury / Whitstable / Herne Bay Bus Enhancements
- **V19** Ferry Crossings - New Sheerness to Hoo Peninsula Service
- **V20** Ferry Crossings - Sheerness to Chatham / Medway City Estate / Strood Enhancements
- **V21** Ferry Crossings - Ebbsfleet - Tilbury Enhancements
- **V22** Inland Waterway Freight Enhancements

Active Travel

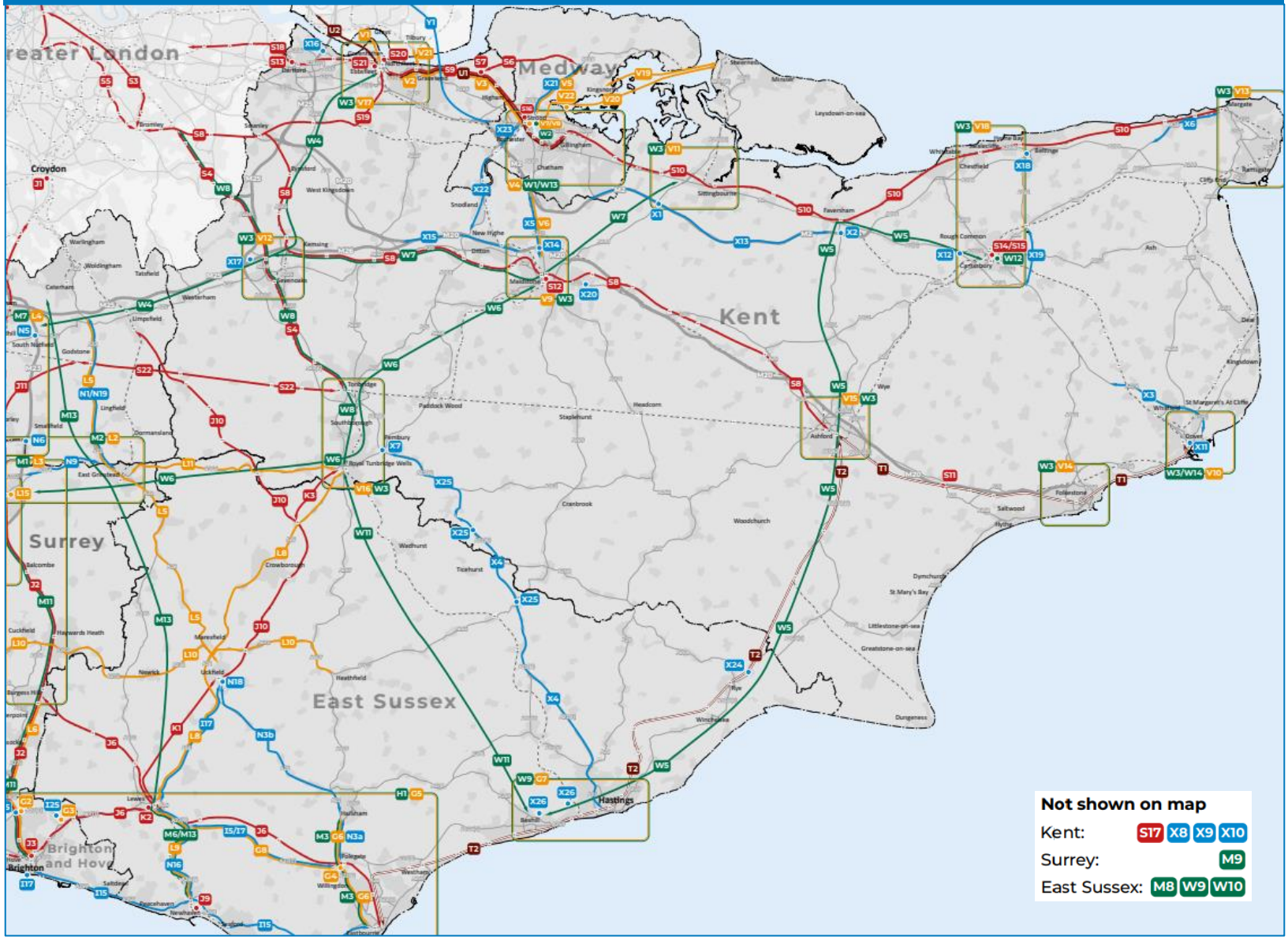
- **W1** Medway Active Travel Enhancements
- **W2** Medway Active Travel - Chatham to Medway City Estate River Crossing
- **W3** Kent Urban Active Travel Infrastructure
- **W4** Kent Inter-urban Active Travel Infrastructure
- **W5** Faversham - Canterbury - Ashford - Hastings National Cycle Network Enhancements
- **W6** Tonbridge - Maidstone National Cycle Network Enhancements
- **W7** Sevenoaks - Maidstone - Sittingbourne National Cycle Network Enhancements
- **W8** Bromley - Sevenoaks - Royal Tunbridge Wells National Cycle Network Enhancements
- **W9** East Sussex Local Active Travel Infrastructure
- **W10** East Sussex Inter-urban Active Travel Infrastructure
- **W11** Royal Tunbridge Wells - Hastings National Cycle Network Enhancements
- **W12** Canterbury Placemaking and Demand Management Measures
- **W13** Medway Placemaking and Demand Management Measures
- **W14** Dover Placemaking and Demand Management Measures

Highways

- **X1** M2 Junction 5 (RIS2)
- **X2** A2 Brenley Corner Enhancements (RIS3 Pipeline)
- **X3** A2 Dover Access (RIS3 Pipeline)
- **X4** A21 Safety Enhancements (RIS3 Pipeline, brought forward to RP2)
- **X5** A229 Bluebell Hill Junction Upgrades (LLM)
- **X6** A28 Birchington, Acol and Westgate-on-Sea Relief Road (MRN)
- **X7** A228 Colts Hill Strategic Link (MRN Pipeline)
- **X8** Digital Operations Stack and Brock
- **X9** A20 Enhancements for Operations Stack & Brock
- **X10** Kent Lorry Parks (Long Term Solution)
- **X11** Dover Freight Diversification
- **X12** A2 Canterbury Junctions Enhancements
- **X13** M2 Junction 4 - Junction 7 Smart Motorway (SMP)
- **X14** M20 Junction 6 Sandling Interchange Enhancements
- **X15** M20 Junction 3 - Junction 5 Smart Motorway
- **X16** M25 Junction 1a Enhancements
- **X17** M25 Junction 5 Enhancements
- **X18** Herne Relief Road
- **X19** Canterbury East Relief Road
- **X20** New Maidstone south east Relief Road
- **X21** A228 Hoo Peninsula Enhancements
- **X22** A228 Medway Valley Enhancements
- **X23** Strood Riverside Highways Enhancement and Bus Lane
- **X24** A259 Level Crossing Removals – East of Rye
- **X25** A21 Kippings Cross to Lamberhurst Dualling and Flimwell and Hurst Green Bypasses
- **X26** Hastings and Bexhill Distributor Roads
- **Y1** Lower Thames Crossing (costings for Kent-side only)

Kent, Medway and East Sussex Interventions Map

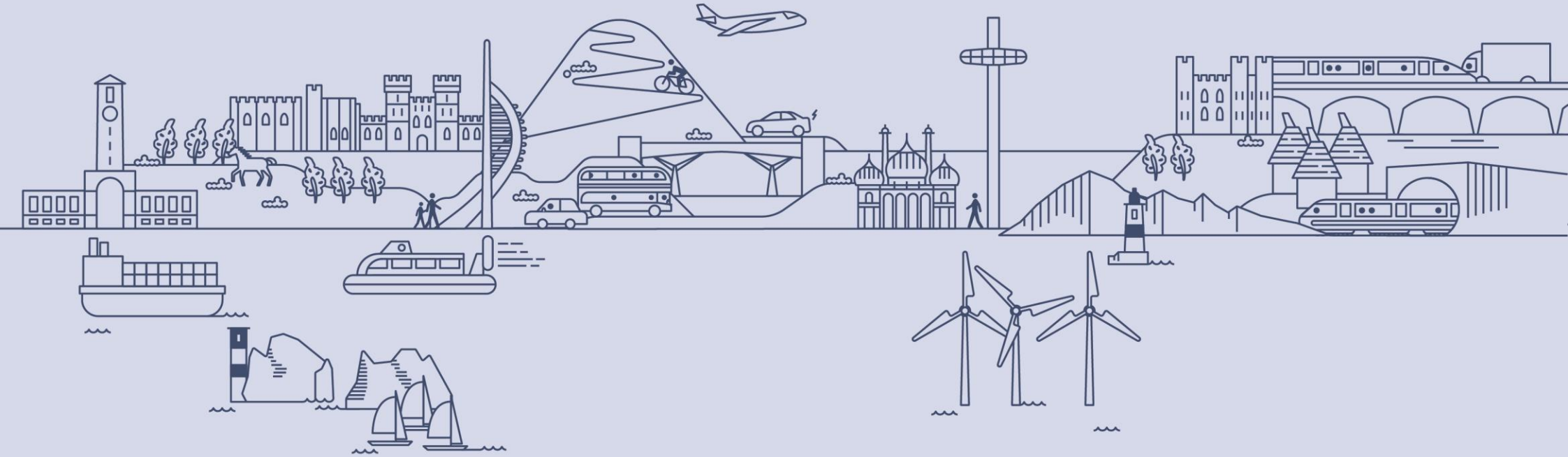
Figure 27: Kent, Medway and East Sussex Multi-Modal Packages and Interventions



Note: List of interventions refers to Packages S — Y only.

TRANSPORT FOR THE South East

TRANSPORT FOR THE South East



Part 6: Benefits and Cost

Approach to Modelling Impacts

Introducing SEELUM

In 2018, TfSE and Steer developed a model to test the impact of the scenarios developed in support of the development of a Transport Strategy for the South East.

This model, known as the South East Economy and Land Use Model (SEELUM), is a transport and land use model that simulates the interaction of transport, people, employers and land-use over periods of time.

SEELUM produces detailed reports on:

- changes in land-use in each zone (i.e. housing units and business premises);
- changes in households, population and the workforce in each zone;
- changes in employment (jobs filled) in each zone and the unemployment rates;
- changes on CO_2 emissions from transport activity;
- travel patterns, volumes and mode shares; and
- time savings benefits for appraisal and impacts on productivity.

SEELUM and Transport Analysis Guidance (TAG)

SEELUM is not a "TAG Compliant" model, however discussions with DfT analysts have confirmed its appropriateness for these studies and that package do not require TAG compliant appraisals at this time.

Modelling Place Based Packages

To model each Package in SEELUM, adjustments were made to:

- Generalised Journey Times (GJTs) within and between each zone (by mode); and
- Characteristics of links on the road and railways network (notably capacity).

The packages were modelled in SEELUM from a base year of 2018 and run for 32 years to 2050. The results are presented as a comparison to a Business as Usual Scenario (BaU), which is based on the Department for Transport's National Trip End Model (NTEM) that also projects employment and population growth to 2050.

The results of the modelling place-based packages of interventions are provided in **Tables 2** and **3**.

These are grouped by the **Strategic Programme Outline Case (SPOC)** areas, which were used to structure the delivery of the Area Study Programme.

Modelling the Global Package

Not all "global" package interventions can be modelled effectively using SEELUM.

That said, we have been able to use SEELUM to model the impact of the following interventions on transport, socioeconomic, and environmental outcomes:

- **New Mobility and Active Travel** (enhanced active travel options resulting in a 10% reduction active travel Generalised Journey Times);
- **Public Transport Fares** (a net reduction in real terms of 5% for fares);
- **Road User Charging** (and other changes to road vehicle costs resulting in a 10% increase in car and road freight Generalised Journey Times); and
- **Virtual Living** (e.g. more home working to 30%).

The results of the modelling of these packages are shown in **Table 2.**

- **Decarbonisation** (faster adoption of zero emission vehicles) and **Integration and Access** (between modes and with spatial planning) have not been modelled.

Further analysis and cost estimates for these packages is provided in the SPOCs.

Global Package Impacts

Table 2: Global Policy Packages Modelling Results

Package	Population (2050)	New Jobs (2050)	GVA (£m, 2050)	Total CO_2 (Tonnes in 2050)	Car Trips (weekday return in 2050)	Rail Trips (weekday return in 2050)	MT Trips (weekday return in 2050)	Total Trips (weekday return in 2050)
Micro Mobility and Active Travel	550	200	50	-35,000	-135,000	-	-15,000	-
Public Transport Fares	-32,000	-300	500	-190,000	-315,000	90,000	300,000	-70,000
Road User Charging	5,400	-3,950	-750	-375,000	-195,000	10,000	25,000	-60,000
Virtual Living	33,250	7,300	950	-750,000	-875,000	-90,000	-70,000	-1,150,000
Combined Impacts	**-52,550**	**-1,650**	**750**	**-1,400,000**	**-1,630,000**	**60,000**	**250,000**	**1,400,000**

Key to colours

- **Rail Packages – Classic/Core**
- **Rail Packages – Enhanced/High Speed/Reinstatements**
- **Mass Transit (bus, tram, shared mobility, and ferry) Packages**
- **Active Travel (walking, cycling and demand management) Packages**
- **Highways Packages**

Abbreviations

- KMES: Kent, Medway and East Sussex
- R'ment: Reinstatement
- Pop^n: Population
- GVA: Gross Value Added
- CO_2: Carbon Dioxide
- MT: Mass Transit (including bus, BRT, tram, shared mobility, and ferries)
- AT: Active Travel (including micromobility and placemaking)

Reporting units

- GVA (Gross Value Added) is £millions GVA per annum in 2050 in 2020 prices
- Carbon emissions are CO_2 tonnes equivalent
- Changes in trips are weekday return trips
- Capital Costs are "Mid Cost" estimates in 2020 prices, up to and including construction

Commentary (Table 2)

"Global" package interventions have a very powerful impact on population, employment, economic growth, carbon emissions, and transport outcomes (see Table 2 above).

SEELUM has been used to model four of the six global package interventions (faster take up of zero emission vehicles and greater integration between modes and with spatial planning have not been tested).

The interventions deliver very significant reductions in carbon emissions. This is achieved through reducing overall demand (virtual working), managing demand (road pricing), and making lower carbon transport options more attractive (new mobility and public transport fares).

The interventions also boost GVA across the South East. Technically, increasing road vehicle costs in isolation results in a reduction in GVA, but this is offset by other interventions.

These interventions also drive significant change in mode share by reducing weekday return car trips by 1.6 million, while boosting public transport by over 300,000 return trips per day.

Note, that implemented together, the combined impact of the four interventions tested varies from the sum of the individual interventions within the global package.

Place Based Packages Impacts (Solent and Sussex Coast | London – Sussex Coast)

Table 3: Place Based Packages Modelling Results (Solent and Sussex Coast, London – Sussex Coast)

Package	Pop[n] (2050)	New Jobs (2050)	GVA (£m in 2050)	Total CO_2 (Tonnes in 2050)	Car Trips (weekday return in 2050)	Rail Trips (weekday return in 2050)	MT Trips (weekday return in 2050)	Total Trips (weekday return in 2050)	Capital Construction Costs (£m, 2020 prices)	Annual Capital Maintenance & Renewal Costs (£m, 2020 prices)
Solent and Sussex Coast										
South Hampshire Rail (Core)	1,050	1,550	285	-	-5,000	15,000	-	5,000	600	15
South Hampshire Rail (Enhanced)	1,150	2,000	305	-	-5,000	15,000	-	10,000	3,700	95
South Hampshire Mass Transit	1,300	1,000	165	-30,000	-70,000	-	110,000	5,000	1,800	135
South Hampshire Active Travel	150	50	10	-10,000	-40,000	-	-5,000	-	350	30
Isle of Wight Multi-Modal	1,950	1,500	165	-	-15,000	5,000	15,000	5,000	250	20
Sussex Coast Rail	700	350	80	-	-	5,000	-	5,000	350	25
Sussex Coast Mass Transit	850	550	120	-10,000	-35,000	5,000	55,000	5,000	450	35
Sussex Coast Active Travel	<50	<50	5	-5,000	-20,000	-	-5,000	-	250	20
South Coast Highways	250	700	170	45,000	5,000	-	5,000	5,000	3,400	260
Combined Multi-Modal Impacts	**6,350**	**7,900**	**1,250**	**-10,000**	**-180,000**	**45,000**	**170,000**	**35,000**	**11,200**	**635**
London – Sussex Coast										
London – Sussex Coast Rail (Core)	6,250	2,350	375	-10,000	-10,000	45,000	-	30,000	500	15
London – Sussex Coast Rail (R'ment)										
London – Sussex Coast Mass Transit	1,350	800	100	-15,000	-35,000	-	60,000	5,000	400	30
London – Sussex Coast Active Travel	50	<50	10	-10,000	-35,000	-	-5,000	-	1,100	80
London – Sussex Coast Highways	700	1,350	140	20,000	5,000	-	-	5,000	1,600	120
Combined Multi-Modal Impacts	**8,100**	**4,450**	**615**	**-10,000**	**-70,000**	**40,000**	**55,000**	**40,000**	**3,600**	**245**

Please see page 53 for notes on colours, abbreviations, and units.

Place Based Packages Impacts (Wessex Thames | KMES)

Table 4: Place Based Packages Modelling Results (Wessex Thames, Kent, Medway, and East Sussex)

Package	Pop[n] (2050)	New Jobs (2050)	GVA (£m in 2050)	Total CO_2 (Tonnes in 2050)	Car Trips (weekday return in 2050)	Rail Trips (weekday return in 2050)	MT Trips (weekday return in 2050)	Total Trips (weekday return in 2050)	Capital Construction Costs (£m, 2020 prices)	Annual Capital Maintenance & Renewal Costs (£m, 2020 prices)
Wessex Thames										
Wessex Thames Rail	3,100	3,750	850	-5,000	-5,000	50,000	-	35,000	7,200	185
Wessex Thames Mass Transit	3,300	1,300	245	-55,000	-130,000	-5,000	225,000	10,000	1,000	80
Wessex Thames Active Travel	500	<50	35	-30,000	-120,000	-	-10,000	-	400	30
Wessex Thames Highways	200	450	90	25,000	5,000	-	-	5,000	1,800	135
Combined Multi-Modal Impacts	**7,100**	**5,600**	**1,205**	**-60,000**	**-240,000**	**40,000**	**200,000**	**45,000**	**10,400**	**430**
Kent, Medway, and East Sussex (KMES)										
KMES Classic Rail	6,150	1,500	140	-15,000	-	15,000	-	20,000	3,700	95
KMES High Speed Rail (East)	5,800	1,400	125	-15,000	-	15,000	-	15,000	1,000	25
KMES High Speed Rail (North)	11,700	2,450	225	-15,000	-	35,000	-	35,000	7,300*	190
KMES Mass Transit	1,550	400	45	-25,000	-50,000	-	85,000	-	700	55
KMES Active Travel	450	250	15	-10,000	-50,000	-	-5,000	-	100	5
Lower Thames Crossing	1,200	950	90	65,000	10,000	-	-	5,000	2,800[+]	290
KMES Highways	1,600	1,400	105	45,000	85,000	-	-5,000	75,000	3,800	210
Combined Multi-Modal Impacts	**28,400**	**8,400**	**750**	**30,000**	**-**	**65,000**	**75,000**	**160,000**	**19,400**	**865**

** Assumes High Speed Rail option goes via Chatham rather than Rochester*

[+] Assumes assignment of 40% of Lower Thames Crossing capital costs to Kent geographically

Please see page 53 for notes on colours, abbreviations, and units

Combined Impacts

Table 5: Combined Packages Modelling Results

Package	Pop[n]	New jobs	GVA (£m in 2050)	Total CO_2 (Tonnes in 2050)	Car Trips (weekday return)	Rail Trips (weekday return)	MT Trips (weekday return)	Total Trips (weekday return)	Capital Construction Costs (£m, 2020 prices)	Annual Capital Maint-enance & Renewal Costs (£m, 2020 prices)
Solent and Sussex Coast	6,350	7,900	1,250	-10,000	-180,000	45,000	170,000	35,000	11,200	635
London – Sussex Coast	8,100	4,450	615	-10,000	-70,000	40,000	55,000	40,000	3,600	245
Wessex Thames	7,100	5,600	1,205	-60,000	-240,000	40,000	200,000	45,000	10,400	430
Kent, Medway, and East Sussex	28,400	8,400	750	30,000	-	65,000	75,000	160,000	19,400	865
Global Package	-52,550	-1,650	750	-1,400,000	-1,630,000	60,000	250,000	1,400,000		
Combined Multi-Modal Packages	**2,200**	**31,550**	**5,165**	**-1,355,000**	**-2,135,000**	**285,000**	**795,000**	**-1,130,000**	**44,700**	**2,170**
Combined Multi-Modal Packages (phased)	**3,500**	**21,400**	**4,130**	**-1,350,000**	**-2,135,000**	**275,000**	**795,000**	**-1,135,000**		

Combined Packages

Table 5 shows the results of the modelling of multi-modal combinations of all the packages. The place based packages are presented by SPOC area, as well as combined with "global" package interventions. The combined model runs often generate slightly different results to the sum of the individual package model runs – this reflects the effects of overlapping benefits and, in some cases, benefits that are "more than the sum of their parts" or the converse where, for example, mass transit interventions may abstract demand from active travel, and vice versa.

Phasing

Up to this point, model runs have assumed a base year (i.e. a theoretical start date from which impacts are assessed) of 2018 and an end date of 2050. In reality, interventions will be delivered at different times. To understand the impact of the timing, scenarios where the packages are delivered in different years have been modelled. Several scenarios have been run, reflecting different policy options (e.g. holding back highways and bringing mass transit forward to allow the road fleet time to decarbonise). The results of the different phasing scenarios, for the year 2050 at least, are quite similar.

The results for the scenario we consider to be the most "realistic" (based on our assessment of the likely timelines for delivering the packages) are shown above. That said, some scenarios yield quite significant differences in total carbon emissions across the whole modelling period given likely take-up of zero emission vehicles. This is explored further in the **Decarbonisation Thematic Plan**.

Capital Costs

The mid cost estimate of all packages is £45bn in 2020 prices. Further detail can be found in the parallel **Delivery Plan**.

Combined Impacts

Commentary (Tables 3 to 5)

Transport Impacts

Overall, there is a small increase in the number of overall trips by 2050 compared to the base case or "Business as Usual".

As expected, modal based packages support increases in the use of each mode. As such, highway-based packages do increase car and private vehicle trips, but with minimal increases or decreases in other, more sustainable mode trips. Where there are reductions in sustainable mode trips, these are more than offset by corresponding sustainable mode packages.

Overall, place-based packages deliver about 500,000 fewer return car or private vehicle trips from the highway network a day, with a further 1.6 million return car trips removed resulting from "global" package interventions. Demand for private vehicle modes is transferred or "abstracted" to material increases in the use of sustainable modes. This helps justify investment and can support the commercial and financial viability of rail, bus, mass transit and shared mobility networks (e.g. bike hire, e-scooter hire).

There is some abstraction of demand between sustainable modes, but place-based packages result in the increased use of all sustainable modes overall.

Global package interventions, as modelled, do see a reduction in walk and cycle trips, but this is as a result of higher levels of home working and virtual / remote access to key services and a reduction in public transport fares. Modelling, only considers the main leg of a journey, and in reality, walking and cycling levels are unlikely to diminish as a result of investment in public transport.

Wider Impacts – population, jobs and GVA

The increases in trips is in line with forecast increases in population and jobs successfully realised as part of the economic development response to the packages.

It is typically rail and mass transit (including assumptions for bus and shared mobility) that result in the highest increases in population and jobs.

Increases in GVA – a measure of economic productivity – typically follow increases in population and jobs. As such, it is sustainable transport mode interventions driving economic prosperity across the programme of packages.

Wider Impacts – carbon

All global package interventions and almost all sustainable mode packages reduce carbon emissions through mode shift away from higher emitting private modes.

For South Hampshire rail packages, the economic response is so significant in increasing population and jobs, that the increased demand for travel generated by the growth cannot all be accommodated by the rail infrastructure and services that prompted it. As such, carbon impacts in isolation are minimal; and integrated, multi-modal packages complement this to result in a net reduction in carbon.

The extent of this is relatively minor from modelling results of place-based packages, but modelling is unable to respond to the major benefits of sustainable transport interventions being able to provide a more expansive and integrated network capable of accommodating additional demand, by sustainable modes, as a result of demand management interventions, spatial planning policies, and a growing population and additional jobs.

With all packages combined, a further 15% reduction in emissions is generated. The extent of global package interventions is explored in the **Decarbonisation Thematic Plan** to identify a credible, budgeted pathway to net zero by 2050.

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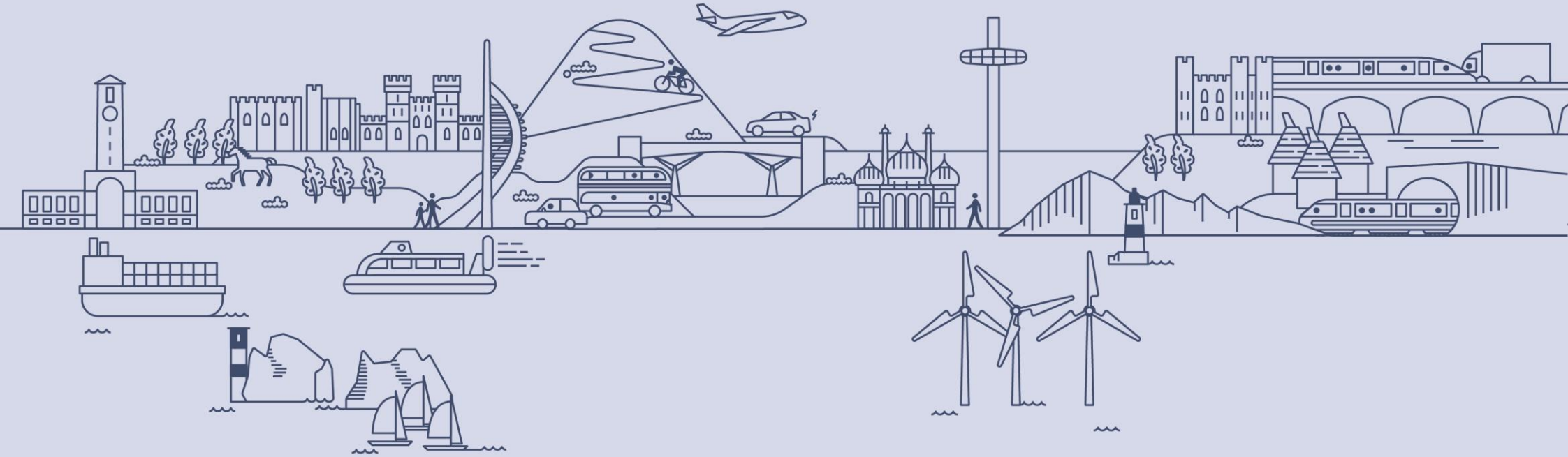


Part 7: Conclusions

Conclusion

Alignment with Priorities

A framework showing how the place-based and global packages of interventions map to the key priorities, carried forward into the Strategic Investment Plan, is presented in **Figure 28**.

All packages align to at least three priorities and all priorities have at least twelve supporting packages. From the assessment of the packages, we conclude that the packages identified – both place-based and "global" – have the potential to meet all eight priorities, delivering material socio-economic and environmental benefits across a deliverable programme with the right investment.

Whilst transport is only a component of sustainable economic growth, and additional interventions will be required at both national and local levels, and from the private sector, the packages presented meet the ambition of TfSE's Transport Strategy's vision, goals and priorities.

Furthermore, the packages presented here represent the most bold and ambitious programme of transport intervention in a generation.

Alignment of rail packages

Rail packages bring together interventions across electrification, infrastructure and enhanced services, extensions and reinstatements, enhanced hubs and new strategic mobility hubs, and schemes outside the geography (e.g. in London).

Electrifications schemes support the priority for decarbonisation, as do all rail packages by promoting mode shift to rail from private vehicles with higher emissions for passengers and freight.

New infrastructure, including extensions and reinstatements, and enhanced services increase the capacity of the network to accommodate increased numbers of passengers and reduce onboard crowding, as well as increasing journey speeds. Many of these interventions increase the range of destinations served and the frequency with which they are served.

This is even more important in our economic recovery from the COVID pandemic – as we make more journeys, as many as possible are made by sustainable modes rather than the private car.

Collectively, these packages support new development and economic growth near existing and new stations, making land more attractive for development and new occupants, as well as regeneration and levelling up of local communities. This is most pertinent on east-west routes where journey times are slowest, and capacity often constrained.

Interventions, particularly on radial routes and those that address bottlenecks including level crossings and platform constraints, increase the resilience and safety of the network.

Capacity enhancements from new or enhanced infrastructure or new services also provide additional capacity and paths for rail freight, and several interventions have been identified to improve access and connectivity to the region's global gateways, both for passengers and freight.

Conclusion

Alignment of mass transit packages

Mass transit including bus, bus rapid transport, and tram (and other mass transit modes); shared mobility options (e.g. bike hire, e-scooter hire, car clubs), and ferries can complement and integrate well with the rail network. It also provides sustainable access and connectivity with more flexibility in terms of speed of delivery, lower cost, and reaching communities and gateways that rail may find difficult or not be suited to.

Packages and interventions include:

- new and extended mass transit systems – modal option include bus, new tram / light rail transit systems, or possibly other mass transit modes;
- new strategic mobility hubs between private, mass transit, and active modes, and with rail in some instances;
- identification of key inter-urban corridors for service frequency enhancement and priority infrastructure;
- support for all Local Transport Authorities' Bus Service Improvement Plans;
- expansion of (digital) demand responsive transport, particularly covering rural areas; and
- reduced fares.

Like rail, mass transit and wider public transport interventions support all priorities. Mode shift from heavier emitting private modes to public transport supports decarbonisation.

High quality public transport, particularly mass transit, supports new development and regeneration by opening up sites for development and incentivising investment in well connected places. It also supports our response to the COVID pandemic, in providing access to work for "key workers as well as preventing the recovery in travel being car based.

Public transport also provides options for urban, inter-urban, and rural movement that effectively brings places close together, expands the labour markets of employers, and support collaboration and the sharing of resources to generate agglomeration benefits.

Public transport provides access to important key services, and new routes, new services, and new operating models (e.g. shared mobility and digital demand responsive transport, Mobility as a Service) not only providing accessibility and capacity, but also resilience in the network and improving the safety of our transport networks.

Alignment of active travel packages

Active travel incorporates multiple modes – not only walking and cycling – wheeling, micro-transit (e.g. e-bikes, e-scooters), as well as horse riding and carriage-driving.

Individual interventions tend to have more localised impacts, but however long a journey, all journeys start and finish on foot or by wheeling. Investment in the right local, first-mile / last-mile connectivity is critical for allowing journeys to be integrated and seamless, whether in an urban, sub-urban, peri-urban or rural setting.

Active modes have immediate benefits for supporting our pathway to net zero carbon as active modes are zero or "ultra low" emission, and good infrastructure investment, as proposed in the packages identified, will help ensure the recovery from the COVID pandemic, or future shocks, need not be car based.

Well-designed, high-quality infrastructure supports access to key services – it can help realise many urban areas' visions for 15- or 20-minute neighbourhoods - where all key services can be access on foot or by wheeling in that amount of time, and deliveries can also be made by active modes.

Conclusion

It can help shape places for the better – provide high quality public realm, bring communities together, raise civic pride, increase footfall, supporting local economies and attracting visitors. Good design, can also help reduce crime and improve personal security.

It can help shape people for the better – provide safe and suitable routes for physical activity and pleasant routes for accessing green and “blue” (e.g. rivers and coastlines) spaces; make travel safer; and along with other sustainable modes, help people to access healthcare, participate more fully and productively in society, and reduce air pollutants that cause poor health from respiratory illnesses.

The packages identified contain a small number of named interventions and TfSE continues to work with Sustrans and Local Transport Authorities to prioritise these. For Local Transport Authorities, recognition is given for all Local Cycling and Walking Infrastructure Plans. Development of these plans and their delivery is anticipated to continue at pace, whether interventions are delivered by the authority itself, National Highways, Sustrans, or the private sector.

Alignment of highway packages

95% of all trips in the TfSE area are made using its highways, this includes movement of both people and goods. Highways provide the infrastructure necessary for the movement of multiple modes of travel – not just cars, vans and HGVs, but also public transport, shared mobility options (e.g. (bike hire, e-scooter hire, car clubs), and active modes. As such, highway packages support the majority of priorities, but it is only with mass transit / public transport and active travel packages, can our highways and investment in them, support decarbonisation.

Investment in highways and complementary sustainable mode packages support growth in trade and resilience of the network, including changing trading patterns, particularly internationally, via the region’s gateways for passengers as well as freight, and supports our region’s Freeport for the Solent.

Highways packages provide capacity to open up sites for new development, as well as the capacity required to reallocate travel demand away from our town and city centres, to allow reallocation of road space within them to transfer to more sustainable modes, further development, and regeneration activities.

Whilst highway schemes are being proposed they will be supported by measures detailed in the thematic 'decarbonisation' plan, including the transition to alternative fuels.

It should be noted, that at the time of plan development, further delivery of all lane running, a key component of many Smart Motorway interventions, had been paused. This was part of the government's response in 2019 to the Transport Select Committee’s review. In addition, National Highways were asked to conduct an “evidence stocktake” was asked for by the Secretary of State to gather the facts on safety and make recommendations.

Conclusion

Alignment of Global Package Interventions

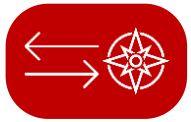
Global packages largely require the intervention of central govenrment and its agencies, local authorities across multiple functions, the private sector, and local communities and the behavioral responses of households and workplaces.

Through the relatively modest assumptions tested, approximately 15% of carbon emissions can be reduced a year by 2050. More significant policy ambition can see this increase towards about a third based on the six key areas modelled. Ultimately, it will be integrated spatial planning, digital technology, vehicle technology, and local and private sector intervention in providing attractive alternatives to private cars and goods vehicles running on fossil fuels, supported by central govenrment regulation, policy and investment that will get us to net zero carbon.

It is also the integration of interventions that will support the Levelling-up of our left behind communities in the region and nationally - all the more prescient as we strive to recover from the global COVID pandemic.

Conclusions

Figure 28: Mapping of Packages of Interventions to Priorities

Packages of Interventions *Some are grouped together KMES: Kent, Medway, East Sussex MT: Mass Transit*	 *Decarbonisation & Environment*	 *Adapting to a New Normal*	 *Regeneration & Growth*	 *Levelling Up Left Behind Communities*	 *East – West Connectivity*	 *Freight & Global Gateways*	 *World Class Urban Mass Transit*	 *Resilient Radial Corridors*
South Hampshire Rail	✓	✓	✓	✓	✓	✓	✓	✓
Sussex Coast Rail	✓	✓	✓	✓	✓		✓	
London - Sussex Coast Rail	✓		✓			✓		✓
Wessex Thames Rail	✓	✓	✓			✓		✓
KMES Classic Rail	✓	✓	✓	✓	✓	✓	✓	✓
KMES High Speed Rail	✓	✓	✓	✓		✓	✓	✓
South Hampshire Mass Transit	✓	✓	✓	✓	✓	✓	✓	
Isle of Wight	✓	✓	✓	✓		✓	✓	✓
Sussex Coast Mass Transit	✓	✓	✓	✓	✓		✓	
London - Sussex Coast MT	✓	✓	✓		✓	✓	✓	✓
KMES Mass Transit	✓	✓	✓	✓	✓	✓	✓	
All Active Travel	✓	✓	✓	✓	✓		✓	
South Coast Highways		✓	✓	✓	✓	✓	✓	
London - Sussex Highways			✓			✓		✓
Wessex Thames Highways			✓		✓	✓		✓
KMES Highways / LTC		✓	✓	✓		✓		✓
Decarbonisation	✓	✓	✓			✓	✓	
Public Transport Fares	✓	✓		✓			✓	
Road User Charging	✓	✓						✓
New Mobility	✓		✓	✓	✓		✓	
Virtual Living	✓	✓	✓	✓				✓
Integration and Access			✓	✓	✓	✓	✓	✓

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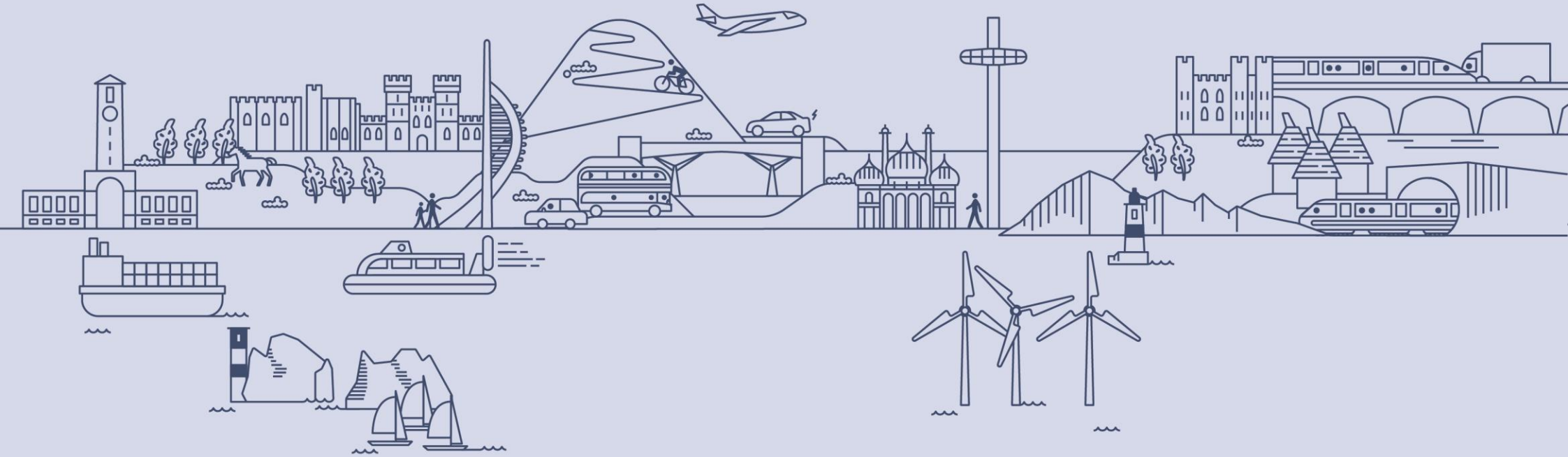


Appendix: Place Based Packages

Packages of Interventions – Solent and Sussex Coast

The Options Assessment Report (OAR) recommended eight Packages of Interventions to be included in the SPOC. These are listed here and described in detail in the following pages. This details the **scope of the intervention** and summarises its **strategic benefits**.

Core Rail Package

- **A1** Solent Connectivity Strategic Study
- **A2** Botley Line Double Tracking
- **A3** Netley Line Signalling and Rail Service Enhancements
- **A4** Fareham Loop / Platform
- **A5** Portsmouth Station Platforms
- **A6** South West Main Line - Totton Level Crossing Removal
- **A7** Southampton Central Station Upgrade and Timetabling
- **A8** Eastleigh Station Platform Flexibility
- **A9** Waterside Branch Line Reopening
- **A10** West of England Service Enhancements
- **A11** Additional Rail Freight Paths to Southampton

Enhanced Rail Package

- **B1** Southampton Central Station - Woolston Crossing
- **B2** New Southampton Central Station
- **B3** New City Centre Station
- **B4** South West Main Line - Mount Pleasant Level Crossing Removal
- **B5** West Coastway Line - Fareham to Cosham Capacity Enhancements
- **B6** Cosham Station Mobility Hub
- **B7** Eastleigh to Romsey Line - Electrification
- **B8** Havant Rail Freight Hub
- **B9** Fratton Rail Freight Hub
- **B10** Southampton Container Port Rail Freight Access and Loading Upgrades
- **B11** Southampton Automotive Port Rail Freight Access and Loading Upgrades

Mass Transit

- **C1** Southampton Mass Transit
- **C2** south east Hampshire Rapid Transit Future Phases
- **C3** New Southampton to Fawley Waterside Ferry Service
- **C4** Southampton Cruise Terminal Access for Mass Transit
- **C5** M271 Junction 1 Strategic Mobility Hub
- **C6** M27 Junction 5 / Southampton Airport Strategic Mobility Hub
- **C7** M27 Junction 7 / 8 Strategic Mobility Hub
- **C8** M27 Junction 9 Strategic Mobility Hub
- **C9** Tipner Transport Hub (M275 Junction 1)
- **C10** Southsea Transport Hub
- **C11** Improved Gosport - Portsmouth and Portsmouth - Hayling Island Ferries

Highways

- **I1** M27 Junction 8 (RIS2)
- **I2** A31 Ringwood Strategic Traffic (RIS2)
- **I6** Southampton Access (M27 Junction 2 and Junction 3) (RIS3 Pipeline)
- **I9** A326 Capacity Enhancements (LLM)
- **I10** West Quay Realignment (LLM)
- **I11** Portsmouth City Centre Road (LLM)
- **I12** Northam Rail Bridge Replacement and Enhancement (MRN)
- **I13** New Bridge from Horsea to Tipner
- **I19** M27 / M271 Smart Motorway(s)

Active Travel

- **E1** Southampton Area Active Travel (including LCWIPs)
- **E2** south east Hampshire Area Active Travel (including LCWIPs)
- **E3** Portsmouth Eastern Road Active Travel Bridge Extension
- **E4** Portsmouth Eastern Road East-West Bridge
- **E5** Southampton City Centre Placemaking

Isle of Wight Connections

Connectivity Package

- **D1** New Isle of Wight Mass Transit System
- **D1a** Bus Mass Transit - Newport to Yarmouth
- **D1b** Bus Mass Transit - Newport to Ryde
- **D1c** Bus Mass Transit - Newport to Cowes
- **D1d** Isle of Wight Railway Service Enhancements
- **D1e** Isle of Wight Railway Extensions or Mass Transit alternative - Shanklin to Ventnor
- **D1f** Isle of Wight Railway Extensions or Mass Transit alternative - Shanklin to Newport
- **D2** Isle of Wight Ferry Service Enhancements
- **D2a** Operating Hours and Frequency Enhancements
- **D2b** New Summer Route - Ryde to Southampton

Active Travel

- **E1** Southampton Area Active Travel (including LCWIPs)
- **E2** south east Hampshire Area Active Travel (including LCWIPs)
- **E3** Portsmouth Eastern Road Active Travel Bridge Extension
- **E4** Portsmouth Eastern Road East-West Bridge
- **E5** Southampton City Centre Placemaking
- **E6** Isle of Wight Active Travel Enhancements
- **E6a** Active Travel Enhancements - Newport to Yarmouth
- **E6b** Active Travel Enhancements Newport to Ryde
- **E6c** Active Travel Enhancements Newport to Cowes

Packages of Interventions – Solent and Sussex Coast

Rail Package

- **F1** West Coastway Strategic Study
- **F2** West Worthing Level Crossing Removal

Active Travel

- **H1** Sussex Coast Active Travel Enhancements (including LCWIPs)

Mass Transit

- **G1** Shoreham Strategic Mobility Hub
- **G2** A27 / A23 Patcham Interchange Strategic Mobility Hub
- **G3** Falmer Strategic Mobility Hub
- **G4** Eastbourne / Polegate Strategic Mobility Hub
- **G5** Sussex Coast Mass Rapid Transit
- **G6** Eastbourne / Wealden Mass Rapid Transit
- **G7** Hastings / Bexhill Mass Rapid Transit
- **G8** A27 Falmer – Polegate Bus Stop and Layby Improvements

Highways

- **I1** M27 Junction 8 (RIS2)
- **I2** A31 Ringwood Strategic Traffic (RIS2)
- **I3** A27 Arundel Bypass (RIS2)
- **I4** A27 Worthing and Lancing Improvement (RIS2)
- **I5** A27 East of Lewes Package (RIS2)
- **I6** Southampton Access (M27 Junction 2 and Junction 3) (RIS3 Pipeline)
- **I7** A27 Lewes - Polegate (RIS3 Pipeline)
- **I8** A27 Chichester Improvements (RIS3 Pipeline)
- **I9** A326 Capacity Enhancements (LLM)
- **I10** West Quay Realignment (LLM)
- **I11** Portsmouth City Centre Road (LLM)
- **I12** Northam Rail Bridge Replacement and Enhancement (MRN)
- **I13** New Bridge from Horsea to Tipner
- **I14** A259 Bognor Regis to Littlehampton Enhancement (MRN)
- **I15** A259 South Coast Road Corridor - Eastbourne to Brighton (MRN & BSIP)
- **I16** A259 Chichester to Bognor Regis Enhancement (MRN Pipeline)
- **I17** A259 (King's Road) Seafront Highway Structures Renewal Programme (MRN)
- **I18** A29 Realignment including combined Cycleway and Footway
- **I19** M27 / M271 Smart Motorway(s)
- **I20** A27 Tangmere Junction Enhancements
- **I21** A27 Fontwell Junction Enhancements
- **I22** A27 Worthing (Long Term Solution)
- **I23** A27 Hangleton Junction Enhancements
- **I24** A27 Devils Dyke Junction Enhancements
- **I25** A27 Falmer Junction Enhancements
- **I26** A27 Hollingbury Junction Enhancements

Package A: South Hampshire Rail (Core)

Overview

Network Rail, Solent Transport, and the Solent Authorities have developed a comprehensive package of interventions that will deliver improvements to urban and inter-urban rail journeys.

These form part of the Solent Connectivity Strategic Study (formerly the Solent Continuous Modular Strategic Plan), the main objective of which is to deliver additional local rail services so that most of the stations in the area currently served by infrequent one train per hour (1tph) services get a much more frequent "semi metro" 2 to 3tph (or perhaps “metro” 4tph) service frequency.

The plan includes interventions such as the provision of an additional through line / overtaking line at Fareham, increasing capacity on the Botley line to twin tracks, adding platform capacity at Portsmouth Harbour, signalling improvements on the Netley Line, and timetable changes to maximise capacity at Southampton Central.

A key enabler to the plan is the provision of sidings at Totton and a solution to a level crossing constraint in this area. This would then allow many local trains from Southampton to be run on to Totton for two reasons: 1) to reduce platform demand/improve capacity at Southampton Central by having fewer trains terminate there, and 2) to improve service to Totton which is currently under-served.

The Solent Connectivity Strategic Study will also complement passenger rail services to be introduced to the Fawley Branch Line and serve a large planned development in this area. While alternative uses for this railway have been explored, there appears to be consensus that this corridor should develop as (an ideally electrified) heavy rail service. Ferries could also complement this service.

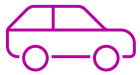
Benefits

- **Capacity** enhancements across the whole Solent conurbation
- Improvements in **service frequencies**, especially for urban metro services
- Better **interchange** and **service quality** at Southampton Central station
- More new and growing communities will have **access** to the national rail network

Modelling Results

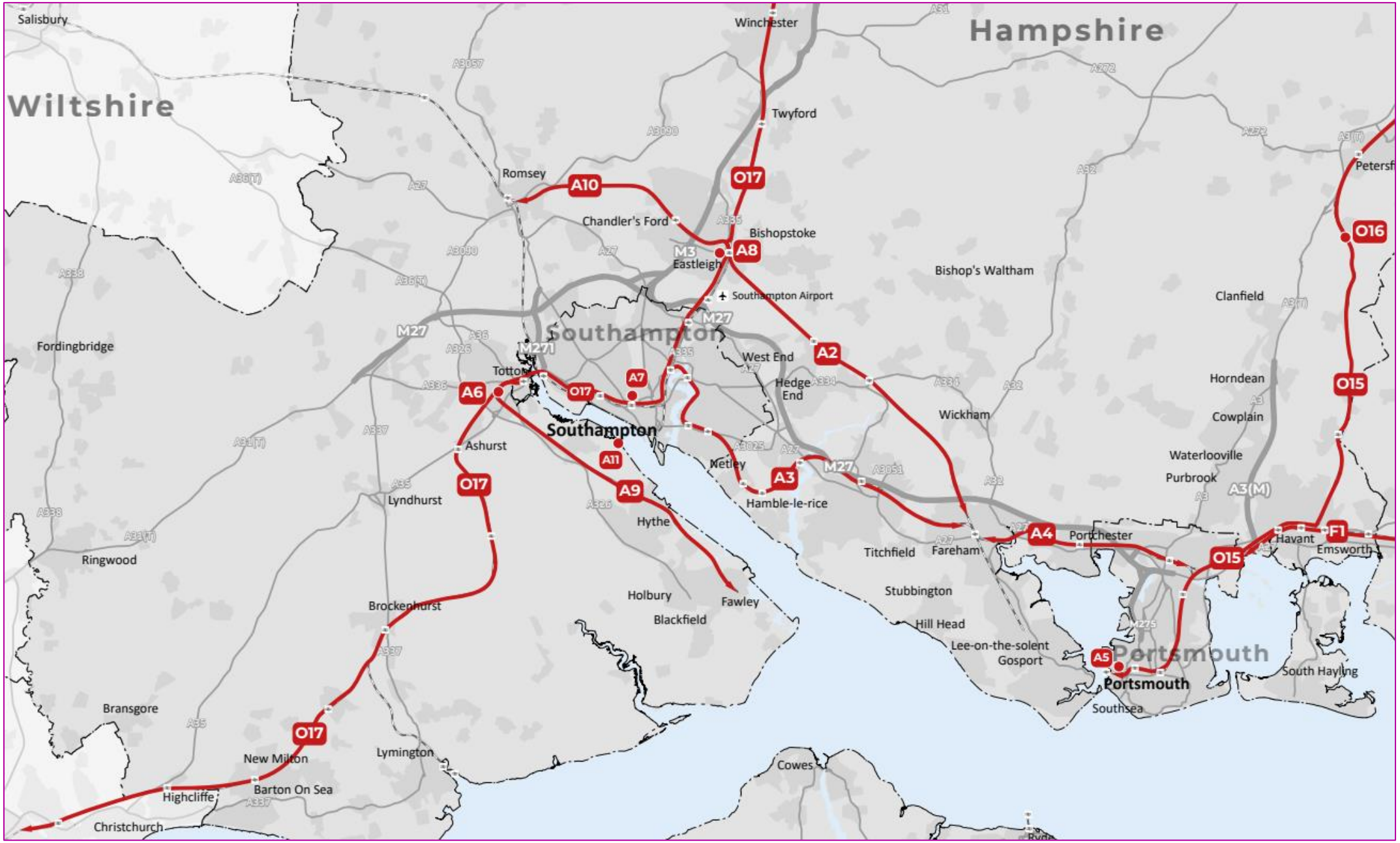
£285m GVA uplift per annum (by 2050, 2020 prices)

15,000 More return rail trips per weekday



5,000 Fewer return car trips per weekday

Package A: South Hampshire Rail (Core)



TRANSPORT FOR THE South East

Package B: South Hampshire Rail (Enhanced)

Overview

Building on the core package, TfSE's strategic studies have a horizon as far as 2050 and an ambition to deliver transformational change in sustainable travel options across South Hampshire. Solent Transport and Local Transport Authorities have previously stated an ambition to deliver a level of service on urban metro routes comparable to suburban London, akin to four trains per hour – a "metro" level of service.

There are also aspirations to grow freight and provide better connectivity between South Hampshire, the West of England, the Midlands, and beyond. This requires more capacity than the current network can provide. The key bottleneck preventing this from being realised is the tunnel between Southampton Central and St Denys.

TfSE has worked with key stakeholders to develop a longer-term package of scheme that unlock significant capacity and shorter journey times between Southampton and Portsmouth City Centres. This could include a potential new underground link between Southampton Central and the Netley Line providing a more direct route and deconflicting north-south and east-west rail movements.

Benefits

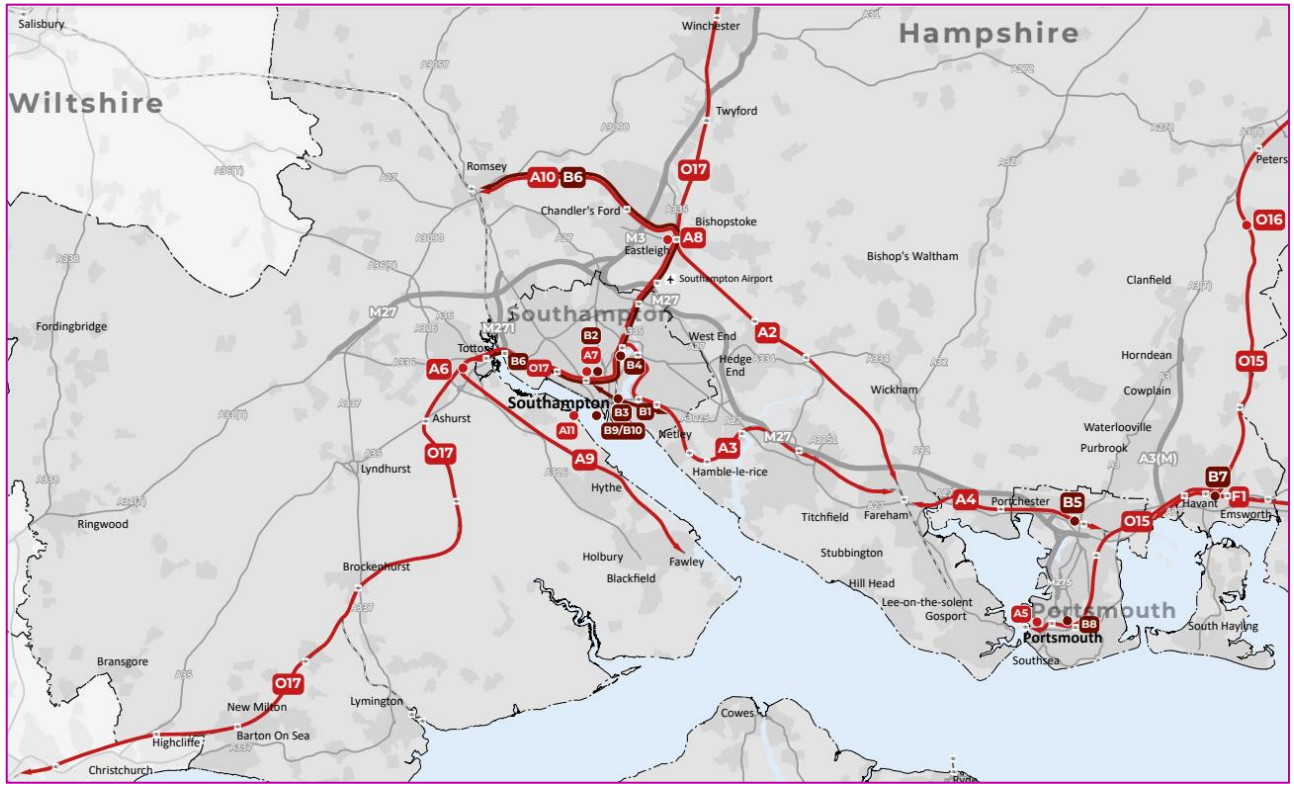
- **Transformational capacity and connectivity benefits** – especially on east-west rail journeys (30 – 35 minute Southampton – Portsmouth journeys)
- Supports **regeneration** of Southampton City Centre and other **growth** areas
- Significant boost to **GVA** in a relatively deprived part of the South East
- Large **reduction in carbon emissions**.

Modelling Results (additional to core)

£305m GVA uplift per annum (by 2050, 2020 prices)

15,000 More return rail trips per weekday

5,000 Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package C: South Hampshire Mass Transit

Overview

TfSE and the Area Study Working Group believe the South Hampshire conurbation is large enough and dense enough to support world class mass transit systems.

Portsmouth City Council are developing and delivering a comprehensive high quality Bus Rapid Transit that will serve the Portsmouth City Region. Southampton City Council also aspire to develop a Mass Transit System for their city region – which could take the form of Light Rail Transit, tram-train, Bus Rapid Transit, and/or ferries (and terminal facilities).

Both mass transit systems will be supported by a high-quality urban rail service (see packages for core and enhanced rail in South Hampshire) and, where good interchange opportunities are available, strategic mobility hubs. These hubs should provide interchange across a range of modes including active travel and new mobility choices, as well as having the potential for the co-location of services and potentially new development and enhanced public realm to improve place-making. This package includes interventions to improve access for peninsulas/islands, in particular, through improving and expanding ferry services.

Benefits

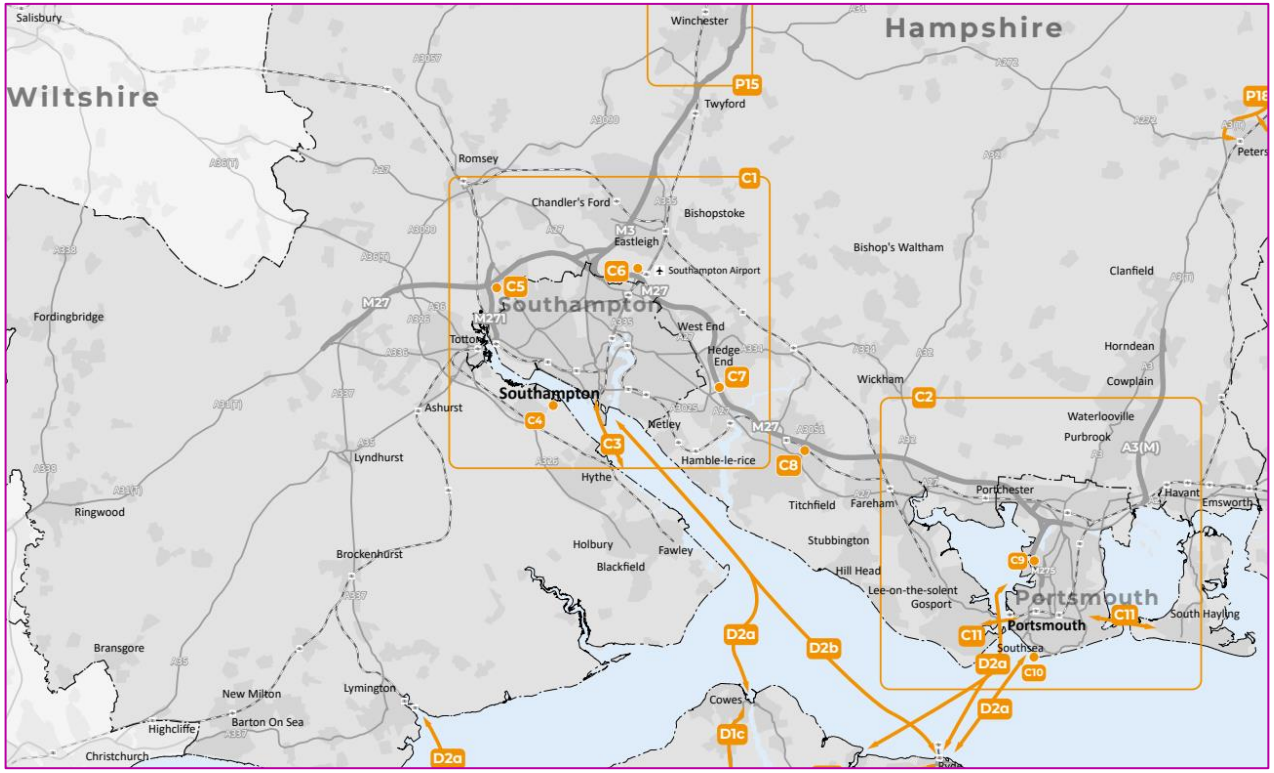
- **Transformation improvement** in the quality, speed, and frequency of mass transit services in the Solent
- Better **interchange** and **service quality** at Strategic Mobility Hubs
- Improvements in **connectivity** between **islands and peninsulas** in the Solent
- **Significant mode shift** from car to bus, ferry, and tram, and enhance place-making

Modelling Results

£165m GVA uplift per annum (by 2050, 2020 prices)

110,000 More return mass transit trips per weekday

70,000 Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package E: South Hampshire Active Travel

Overview

All three Local Transport Authorities in the Solent have ambitious plans to improve cycling and walking in their areas. This ambition is supported by this study.

Active travel interventions across South Hampshire support a number of key priorities, including reducing congestion, helping to tack climate change, improving air quality, and supporting placemaking - creating high-quality attractive, liveable towns and cities.

Enhanced infrastructure also benefits bike hire schemes, e-bikes and e-scooters.

Several highway interventions – including the Southampton West Quay Road scheme – will unlock opportunities for pedestrians and cyclists by freeing up more public space in town and city centres.

The Portsmouth Clean Air Zone (CAZ) is also identified. Whilst being delivered, it is held up as good practice, a model to be built upon by other authorities as well as expanded within Portsmouth.

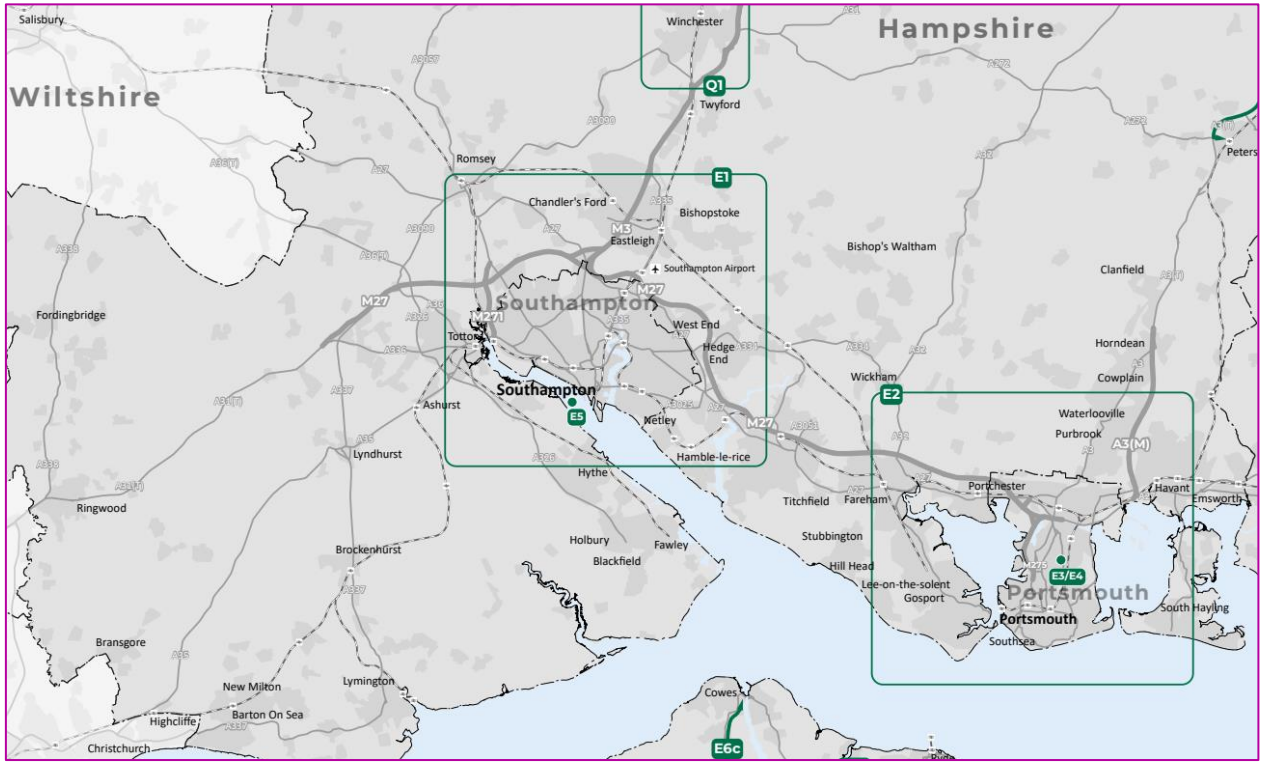
As with all sustainable mode packages, behaviour change interventions, locally, are required to optimise benefits.

Benefits

- **Material improvements to the urban realm** of the Solent Built Up Area, unlocking active travel, placemaking and regeneration/development opportunities
- Improvements in **air quality** in urban areas
- Significant **mode shift** from car to active travel, with associated health benefits

Modelling Results

£10m	GVA uplift per annum (by 2050, 2020 prices)
45,000	More return active travel trips per weekday
40,000	Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package D: Isle of Wight Connectivity

Overview

TfSE believe the Isle of Wight has the characteristics to support a high-quality, integrated mass transit system.

TfSE and key stakeholders have identified a package of interventions aimed at improving connectivity between the Isle of Wight and the Mainland and improving connectivity within the Isle of Wight itself.

Stakeholders from the Isle of Wight and wider Solent region all raised opportunities to transform ferry services, through increasing frequency of services, extending hours of operation, more affordable ferry fares, and the possibility of new seasonal routes.

The Isle of Wight has the potential to be an exemplar for public transport given its size and unique characteristics.

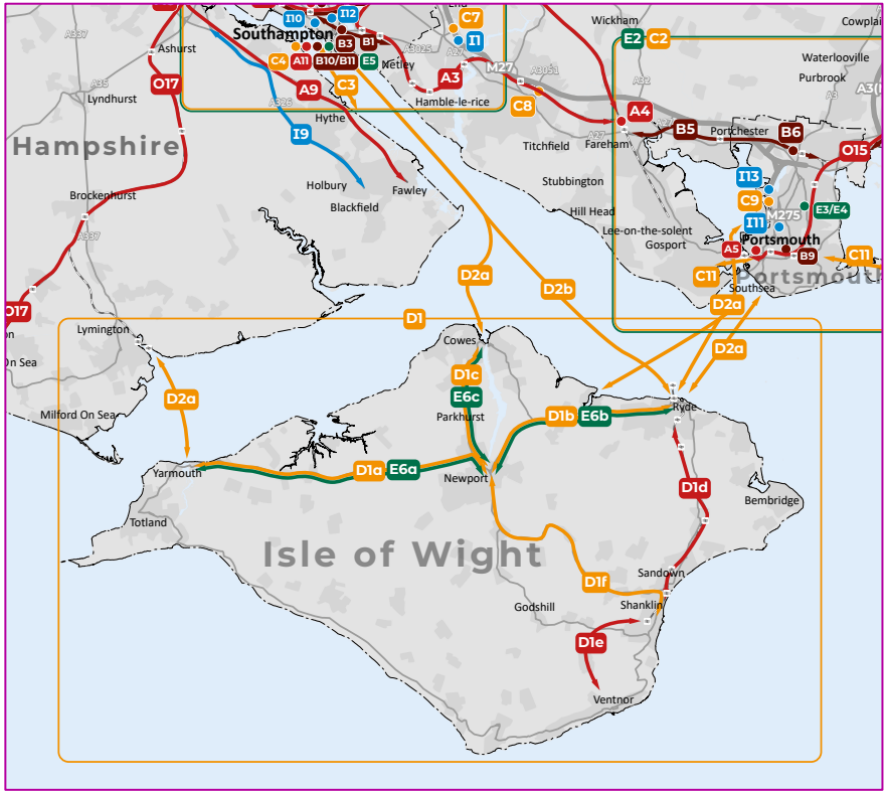
With investment in ferries and public transport on the Island, there is opportunity to make the most of existing infrastructure by reinstating disused railways and complementing rail with a bus-based Mass Transit system connecting key destinations across the Island including ferry terminals and tourism hotspots and delivery of the LCWIP and island-wide segregated active travel routes.

Benefits

- **Transformational improvement** in the quality, speed, and frequency of ferry services between the Isle of Wight and Mainland.
- **Seamless integration** between ferry and public transport on the mainland and the Isle of Wight supporting sustainable onward connectivity.

Modelling Results

£165m	GVA uplift per annum (by 2050, 2020 prices)
15,000	More return mass transit (incl. ferry) and rail trips per weekday
15,000	Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package F: Sussex Coast Rail

Overview

Network Rail has worked with Local Transport Authorities to develop a package of improvements for the West Coastway and East Coastway lines.

The West Coastway Strategic Study (formerly Continuous Modular Strategic Planning), if delivered, would result in faster journeys and more capacity between Brighton and Hove and Southampton. However, there is not enough capacity to accommodate all stakeholder aspirations on this corridor.

The package identified here supports those interventions that best support inter-urban and long-distance journeys – those for which car alternatives have greatest emissions and other sustainable modes are less likely to provide attractive alternatives.

In the east of Sussex Coast area, a package (see Kent, Medway and East Sussex – High Speed Rail – East), includes extending high speed rail services off High Speed 1 at Ashford along an upgraded Marsh Link Line to Hastings, Bexhill and Eastbourne. This has the potential to almost half journey times between Hastings as London, as well as considerable improvements to more local, and inter-urban travel.

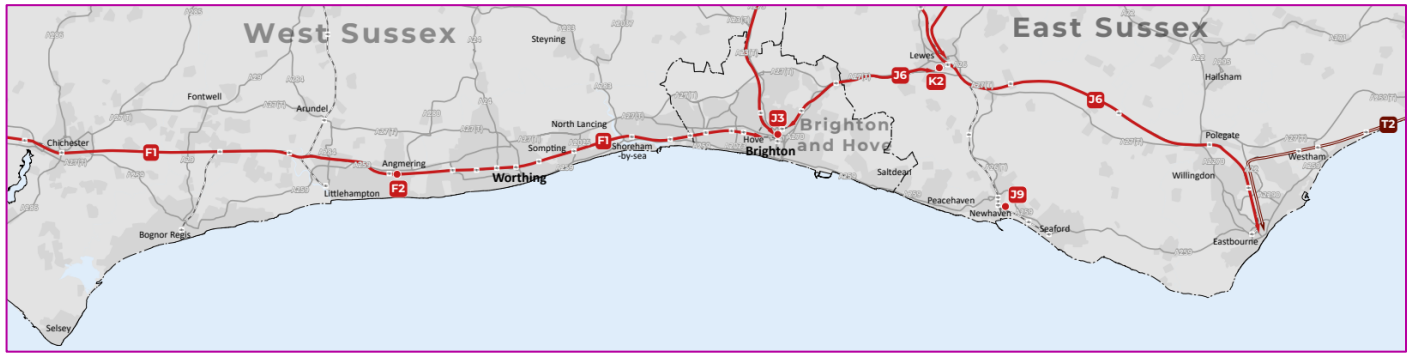
Benefits

- **Faster journeys** between Brighton, Chichester, Portsmouth, and Southampton
- Potentially **more frequent longer distance services** between Brighton, Chichester, Portsmouth, and Southampton
- **Additional capacity** between Worthing and Brighton for shorter journeys

Modelling Results (excl. High Speed services to Hastings, Bexhill and Eastbourne)

£80m GVA uplift per annum (by 2050, 2020 prices)

5,000 More return rail trips per weekday



TRANSPORT FOR THE South East

Package G: Sussex Coast Mass Transit

Overview

TfSE believes there is a strong case for high-quality mass transit on the Sussex Coast.

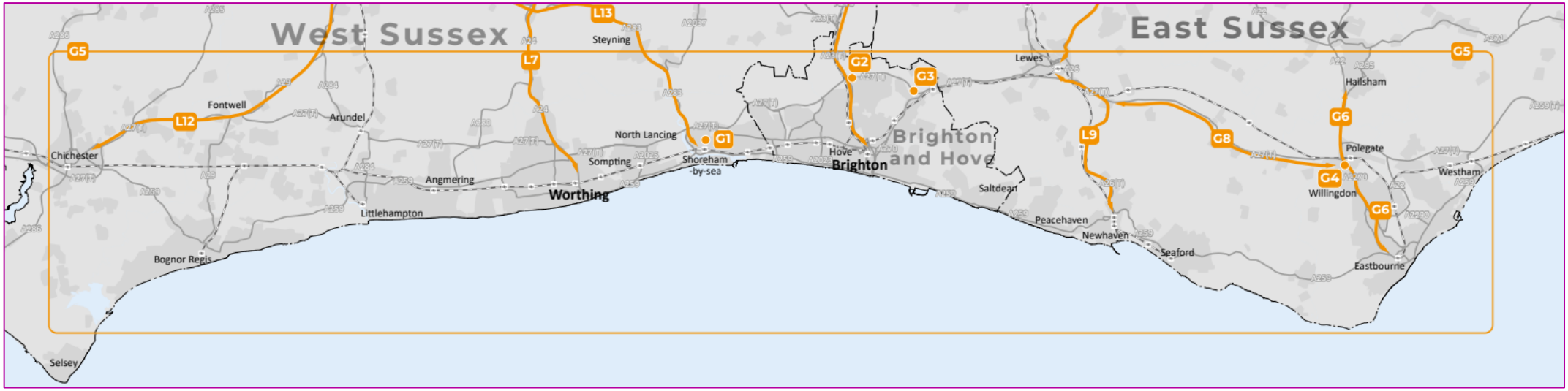
Brighton and Hove City Council is developing plans for a high-quality public transport system along the Brighton seafront, and how to best integrate all public transport across the city, including using strategic mobility hubs to intercept car trips heading into the city. Details are to be finalised, but the typology of the city lends itself strongly to Bus Rapid Transit. There are longer term options to extend or compliment this system in East and West Sussex. At this stage, extending in East Sussex appears to be more technically feasible than West Sussex where the focus is in on supporting the existing bus network. Additionally, there are proposals for improved mass transit infrastructure and services Eastbourne and Hastings.

Benefits

- **Significant improvement** in the quality, speed, and frequency of mass transit services in Sussex Coast conurbation
- Better **interchange** and **service quality** at intermodal Strategic Mobility Hubs on the periphery of Brighton & Hove and, potentially, Eastbourne
- **Significant mode shift** from car to mass transit services

Modelling Results

£120m	GVA uplift per annum (by 2050, 2020 prices)
55,000	More return mass transit trips per weekday
35,000	Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package H: Sussex Coast Active Travel

Overview

All three Local Transport Authorities on the Sussex Coast have ambitious plans to improve cycling and walking in their areas. This is fully supported by this study.

Within Brighton & Hove, there is a sizeable intervention to renew seafront structures to support active travel.

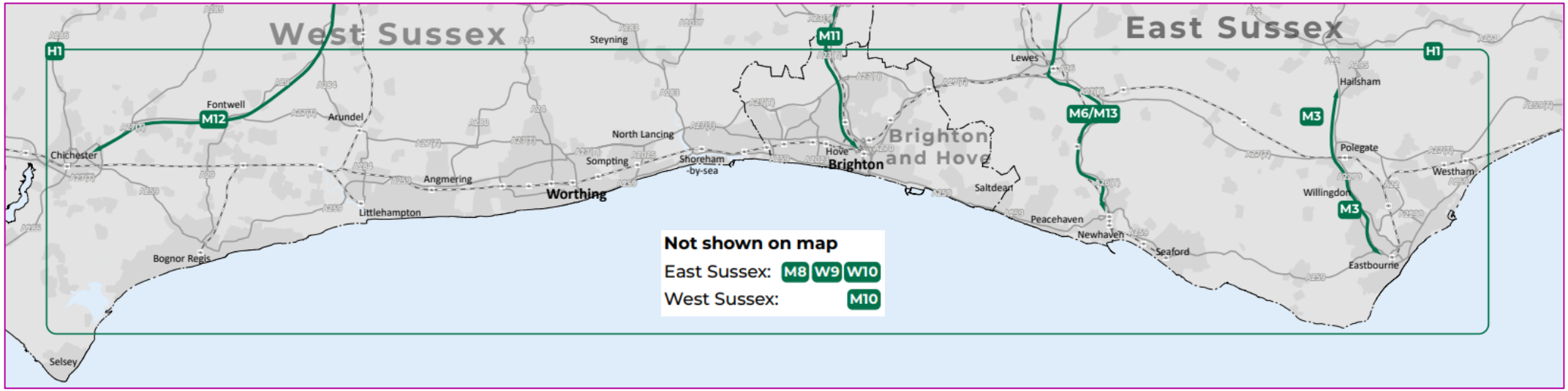
Several smaller scale highways interventions are also proposed to support housing growth along the Sussex Coast. Most of these interventions include public transport and active travel elements, such as those being proposed for the A29 between Bognor Regis and Littlehampton, and the A259 between Chichester and Bognor Regis.

Benefits

- **Material improvements to the urban realm** of the Sussex Coast Built Up Area, unlocking active travel and regeneration opportunities
- Improvements in **air quality** in urban areas
- Significant **mode shift** from car to active travel, with associated health benefits

Modelling Results

£5m	GVA uplift per annum (by 2050, 2020 prices)
25,000	More return active travel trips per weekday
20,000	Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package I: Solent and Sussex Coast Highways

Overview

This package for the Solent to Sussex Coast area contains interventions that help deliver TfSE's vision for a high-quality highway between the areas' two largest conurbations.

This does not necessarily mean delivering a grade separated dual carriageway – more modest interventions may be appropriate, but a priority is a long-term solution for Worthing. Addressing pinch-points along the A27, but not at Worthing, is likely to increase congestion in the town. Any highway intervention proposed in this package should be designed to de-conflict local and longer-distance traffic, and address safety and air quality issues. They should support (and be supported by) public transport and active travel improvements. Several interventions unlock opportunities to reallocate road-space to active travel and public transport.

This is reflected in modelling analysis that indicates these highways interventions could stimulate almost as many more bus trips on the A27 corridor as private car trips if supported by service enhancements.

The parallel A259 corridor provides a complimentary function alongside the A27 in providing access to coastal communities (Bognor and Littlehampton) from the SRN but also linking coastal communities (Brighton - Peacehaven - Newhaven - Seaford – Eastbourne – Bexhill – Hastings).

Southampton Access M27 Junctions and A326 Capacity Enhancements open up residential and commercial development (e.g. Fawley Waterside) and improve access to the Port of Southampton and the wider Solent Freeport and its growth.

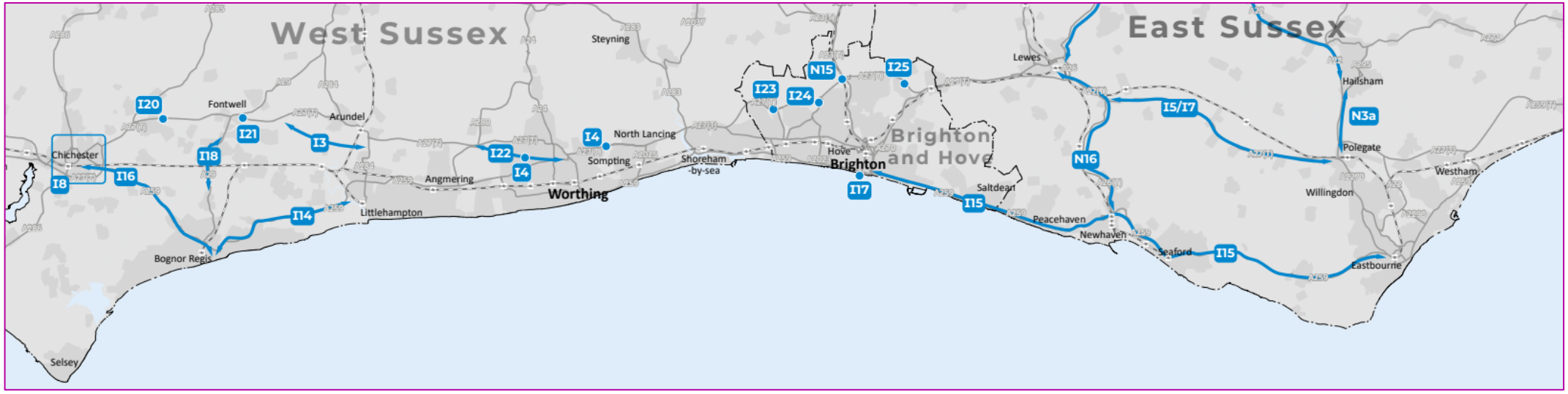
Modelling Results

£170m GVA uplift per annum (by 2050, 2018 prices)

5,000 More bus and car return journeys per weekday

Benefits

- **Safer highways**, notably in urban areas
- **Faster**, more **reliable highway journeys** between Brighton and South Hampshire
- **Improved air quality** in urban areas
- Scope to r**eallocate road-space to active travel and public transport**
- **Reduced impact of road traffic** on the South Downs National Park



TRANSPORT FOR THE South East

Packages of Interventions – London to Sussex Coast

The OAR recommended eight Packages of Interventions to be included in the SPOC. These are listed here and described in detail in the following pages. This details the **scope of the intervention** and summarises its **strategic benefits**.

Global Policy Package
To be defined but likely to include new mobility, rural connectivity, freight, demand management, and accelerated decarbonisation interventions

Packages J & K: London – Sussex Coast Rail (Core) | London – Sussex Coast Rail (Reinstatements)

Overview

In collaboration with Network Rail and the Local Transport Authorities a package of rail interventions has been developed which will enhance connectivity, and reliability between London and the Sussex Coast.

The **Core Rail Package** addresses key bottlenecks on the Brighton Main Line, enabling faster, more reliable services. It also provides line speed enhancements allowing for faster journeys on the Arun Valley Line and the East Coastway Line. Electrification of the Uckfield Branch of the Oxted Line stimulates positive operational and environmental impacts.

The **Railway Reinstatements Package** brings back into use the Uckfield – Lewes railway and the Tunbridge Wells West – Tunbridge Wells (Central) railway. This will increase resilience of rail connectivity between the South Coast and London whilst creating a new east west rail link between the Brighton Main Line and Hastings Line.

Several other historical railways have been considered for reinstatement, but the study found the conversion to active travel corridors would have a more positive impact.

Benefits

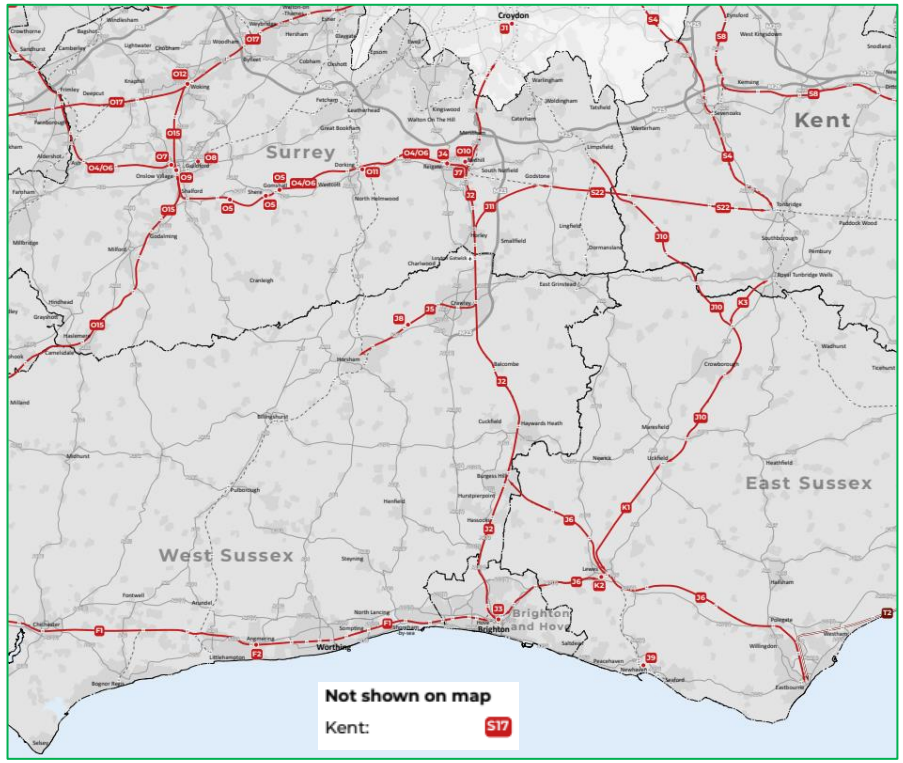
- Improvements to **resilience** of north south trips
- Increased **reliability** on Brighton Main Line serving key strategic locations
- **Faster journeys** on Brighton Main Line, Arun Valley Line and East Coastway Line.
- Improved access to **boost** (currently) **less prosperous coastal areas**.
- Enhanced **connectivity** from Brighton via Lewes and Uckfield to Tunbridge Wells.
- Large reduction in **carbon emissions**.

Modelling Results

£375m GVA uplift per annum (by 2050, 2020 prices)

45,000 More return rail trips per weekday

10,000 Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package L: London – Sussex Coast Mass Transit

Overview

TfSE and its key stakeholders supporting development of the Area Studies have assessed that there are parts of the London to Sussex Coast Area which are populous and dense enough to support a bus based-transit network.

The **Mass Transit Package** will build on the success of the Fastway Bus Rapid Transit system in Crawley/Gatwick. Its expansion will be on high growth corridors towards (and within) nearby Major Economic Hubs. This expansion will include investing in segregated bus infrastructure where feasible on corridors to the north (Redhill), south (Haywards Heath), east (East Grinstead and Tunbridge Wells) and the west (Horsham). In addition, mass transit systems are proposed for Brighton and Hove and the wider Sussex Coast, if feasible, including the Eastbourne/South Wealden area.

This system will be supported by general improvements to non-BRT buses and Strategic Mobility Hubs at Falmer, Three Bridges, and on the periphery of Eastbourne. The overall mass transit network and service provision will be designed to provide an integrated network which facilitates seamless journeys across the London to Sussex Coast area and beyond.

Benefits

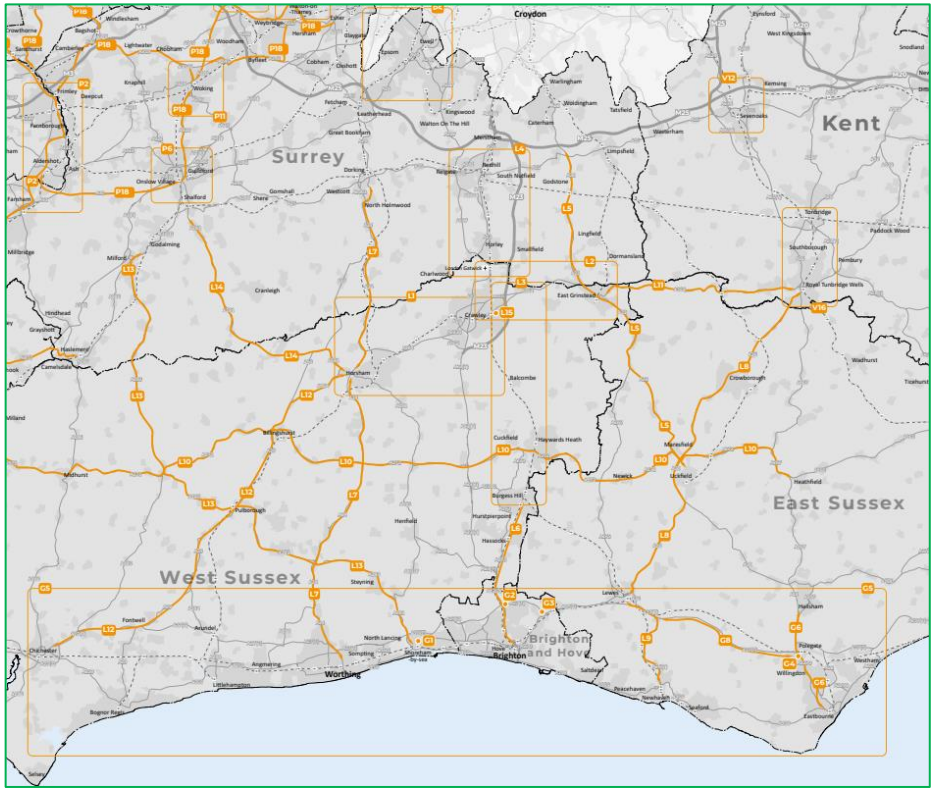
- Improvement in the **speed, frequency** and **connectivity** of mass transit services
- Better **interchange** and **service quality** at Strategic Mobility Hubs
- Improvement in the **journey experience** with better quality vehicles
- **Significant mode shift** from car to bus

Modelling Results

£100m GVA uplift per annum (by 2050, 2020 prices)

60,000 More return mass transit trips per weekday

35,000 Fewer return car trips per weekday



Package M: London – Sussex Coast Active Travel

Overview

All four Local Transport Authorities in the London to Sussex Coast area have ambitious plans to improve cycling and walking in their areas. This ambition is supported by this study.

The **Active Travel Package** expands on this, delivering improvements to enable reinstatement of the National Cycle Network routes between Crawley and Brighton & Hove and between Crawley and Chichester. This will be complemented by a more direct Avenue Verte, serving international leisure trips.

The package also includes continued roll out of regional cycleways in the four Local Transport Authorities. This will involve development of consistent branding and wayfinding and creation of an integrated network with assurance of cycle path quality.

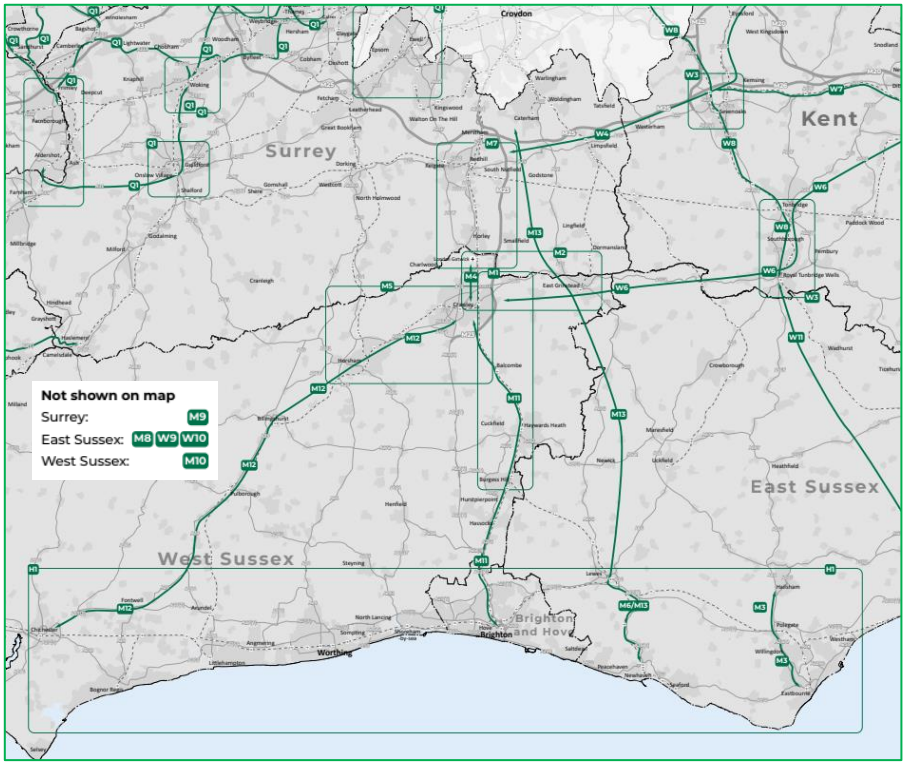
Several highway interventions – including bypasses at Godstone and improvements to the Uckfield bypass – unlock opportunities for pedestrians and cyclists by freeing up more public space in town centres.

Benefits

- Significant **mode shift** from car to active travel, with associated health benefits
- Improvements in **air quality**, particularly in urban parts of the area
- Improvements to the urban and rural public realm in London to Sussex Coast Area, improving **quality of life** and unlocking **regeneration** opportunities

Modelling Results

£10m	GVA uplift per annum (by 2050, 2020 prices)
40,000	More return active travel trips per weekday
35,000	Fewer return car trips per weekday



TRANSPORT FOR THE South East

Package N: London – Sussex Coast Highways

Overview

Components of the London to Sussex Coast highways package have been designed to de-conflict local and longer-distance traffic, and support safety and air quality objectives. They should support (and be supported by) public transport improvements.

This package includes interventions that support access to international gateways (M23 Junction 9), regeneration areas (Crawley Western Link Road), and placemaking (a Godstone bypass and improvements to the Uckfield bypass to reduce the amount of traffic diverting through the town, unlocking public spaces).

Also included is a new junction on the M23 for Redhill, which could be linked to the A23 and East Surrey Hospital by a new road running near to a nearby aerodrome. This would help relieve pressure on the A217 at Reigate Level Crossing, facilitating more rail services on the North Downs Line.

Several interventions unlock opportunities to reallocate road-space or to create shared road space to active travel and public transport such as A24 Horsham – Leatherhead and East Sussex's A2270/A2101 MRN Scheme.

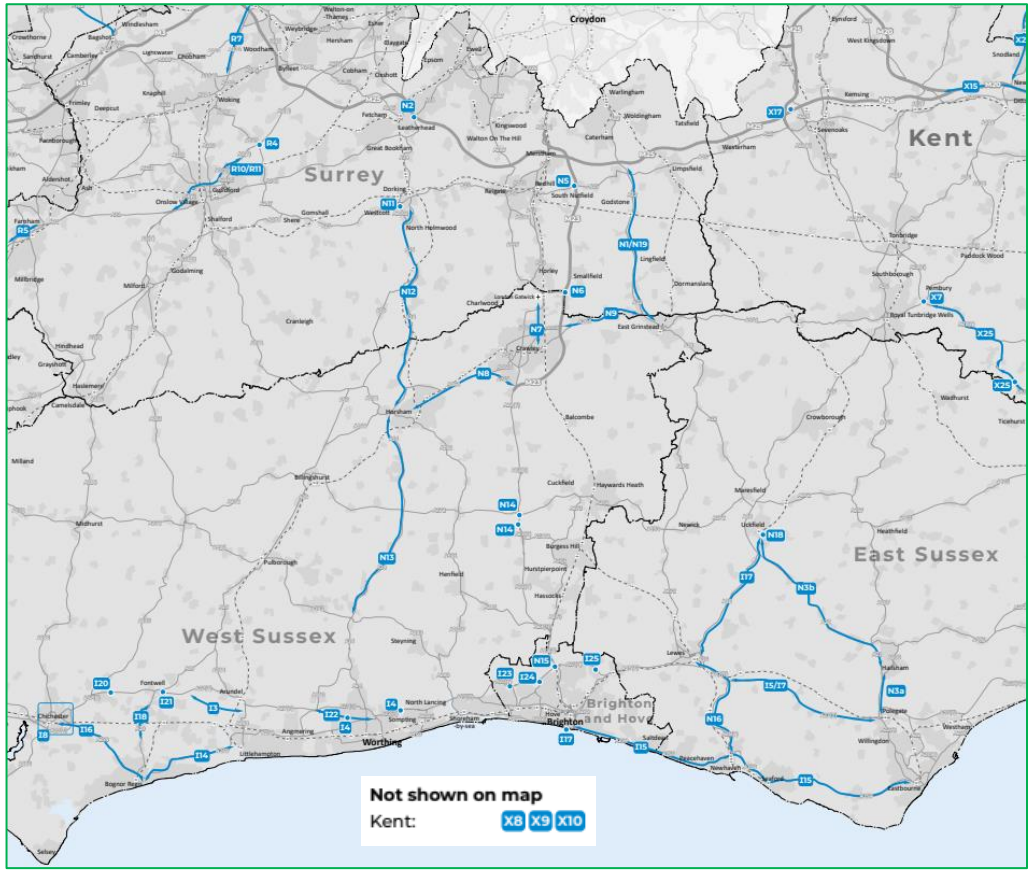
Benefits

- **Safer highways**, notably in urban areas
- A more **reliable** and **resilient** highway network
- **Improved air quality** in urban areas
- Scope to **reallocate road space** to active travel and public transport

Modelling Results

£140m GVA uplift per annum (by 2050, 2018 prices)

5,000 *More* return car journeys per weekday



Packages of Interventions – Wessex Thames

The OAR recommended eight Packages of Interventions to be included in the SPOC. These are listed here and described in detail in the following pages. This details the **scope of the intervention** and summarises its **strategic benefits**.

Rail Package

- **O1** Western Rail Link to Heathrow
- **O2** Southern Rail Link to Heathrow
- **O3** Reading to Basingstoke Enhancement
- **O4** North Downs Line - Electrification
- **O5** North Downs Line - Level Crossing Removals
- **O6** North Downs Line - Service Level and Capacity Enhancements
- **O7** Guildford Station Upgrade
- **O8** New Station Guildford West (Park Barn)
- **O9** New Station Guildford East (Merrow)
- **O10** Redhill Station Upgrade
- **O11** Dorking Deepdene Station Upgrade
- **O12** South West Main Line / Portsmouth Direct Line - Woking Area Capacity Enhancement
- **O13** South West Main Line / Basingstoke Branch Line - Basingstoke Enhancement Scheme
- **O14** Cross Country Service Enhancements
- **O15** Portsmouth Direct Line - Line Speed Enhancements
- **O16** Portsmouth Direct Line - Buriton Tunnel Upgrade
- **O17** South West Main Line - Digital Signalling
- **O18** Theale Strategic Rail Freight Terminal
- **O19** West of England Main Line - Electrification from Basingstoke to Salisbury
- **O20** Reading to Waterloo Service Enhancements

Mass Transit

- **P1** Basingstoke Mass Rapid Transit
- **P2** Blackwater Valley Mass Rapid Transit
- **P3** Bracknell / Wokingham Bus Enhancements
- **P4** Elmbridge Bus Enhancements
- **P5** Epsom / Ewell Bus Enhancements
- **P6** Guildford Sustainable Movement Corridor
- **P7** Slough / Windsor / Maidenhead Area Bus Enhancements
- **P8** Newbury / Thatcham Bus Enhancements
- **P9** Reading Mass Rapid Transit
- **P10** Spelthorne Bus Enhancements
- **P11** Woking Bus Enhancements
- **P12** A4 Reading - Maidenhead - Slough - London Heathrow Airport Mass Rapid Transit
- **P13** A329 / B3408 Reading - Bracknell / Wokingham Mass Rapid Transit
- **P14** Winchester Bus Enhancements
- **P15** Andover Bus Enhancements
- **P16** Runnymede Bus Enhancements
- **P17** London Heathrow Airport Bus Access Enhancements
- **P18** Berkshire, Hampshire and Surrey Inter-urban Bus Enhancments

Active Travel

- **Q1** Berkshire, Hampshire and Surrey Urban and Inter-urban Active Travel Infrastructure

Highways

- **R1** M3 Junction 9 (RIS2)
- **R2** M3 Junction 9 - Junction 14 Smart Motorway (SMP)
- **R3** A404 Bisham Junction (RIS3 Pipeline)
- **R4** A3 / A247 Ripley South (RIS3 Pipeline)
- **R5** A31 Farnham Corridor (LLM)
- **R6** New Thames Crossing East of Reading (LLM)
- **R7** A320 North Corridor (HIF)
- **R8** M4 Junction 10 Safety Enhancments
- **R9** M3 Junction 7 and Junction 8 Safety and Capacity Enhancements
- **R10** A3 Guildford Local Traffic Segregation
- **R11** A3 Guildford Long Term Solution
- **R12** A34 Junction and Safety Enhancements
- **R13** A322 and A329(M) Smart Corridor
- **R14** A339 Newbury to Basingstoke Safety Enhancements
- **R15** M4 Junction 3 to Junction 12 Smart Motorway (SMP)

Package O: Wessex Thames Rail

Overview

TfSE, in collaboration with Network Rail and local stakeholders, have developed a comprehensive package of interventions that will deliver greater capacity and resilience to strategic railways which will translate to a higher number of passenger and freight services to be run across the Wessex Thames area.

This package includes new infrastructure interventions, the largest of which involve establishing new rail links to Heathrow, possibly via interchange Reading in the medium-term.

This package also includes targeted infrastructure enhancements at known bottlenecks along Strategic Rail corridors including Woking, Guildford and Basingstoke. This will translate to more capacity for both passenger and freight services to the Solent Ports.

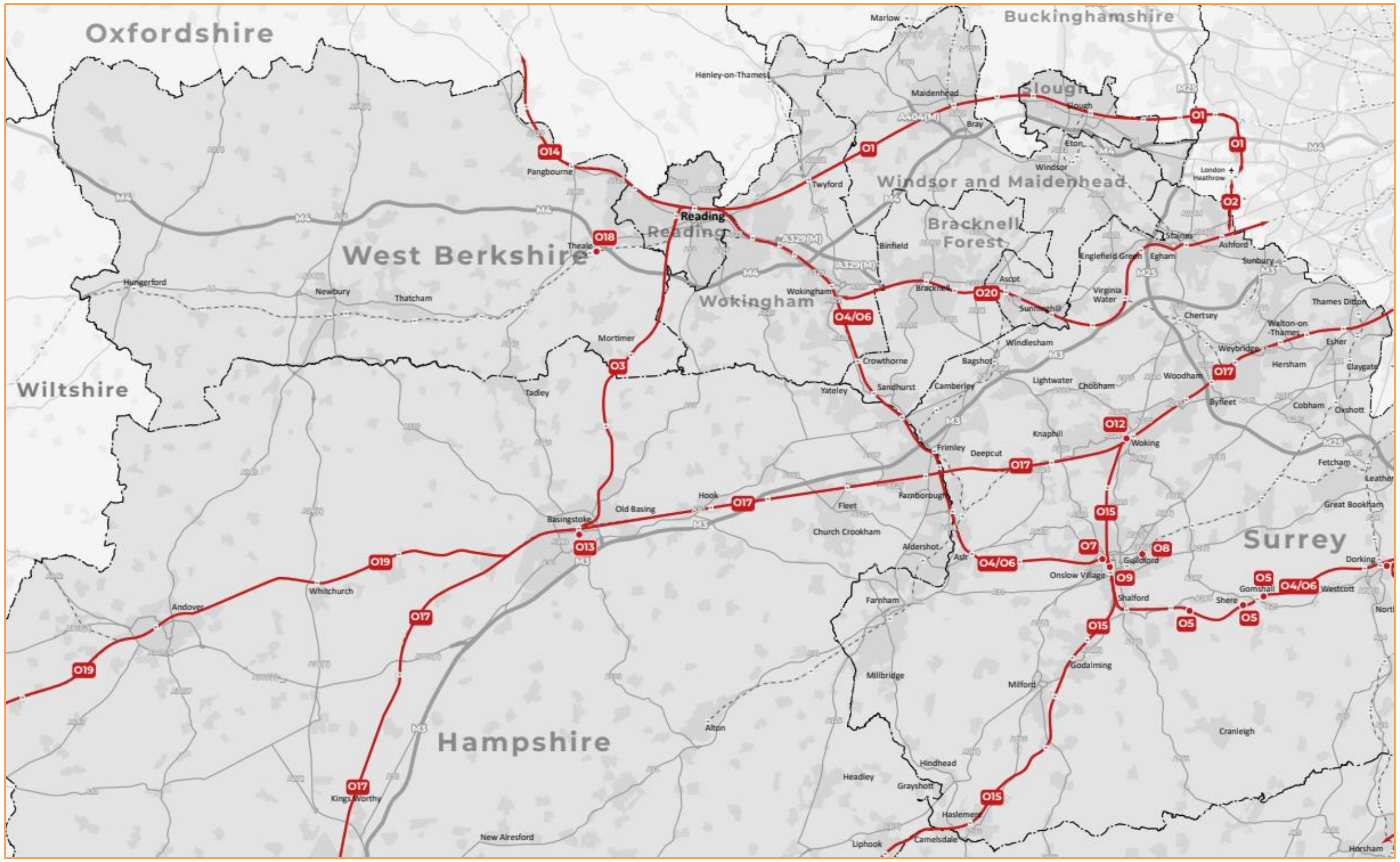
This package delivers a transformational change in orbital rail connectivity, connecting Major Economic Hubs across the area. Additionally, there is a focus on out-of-region connectivity to other prominent regions in Great Britain.

Benefits

- Increased capacity on key corridors
- Increased resilience and reliability
- Faster, more frequent services connecting Major Economic Hubs
- Faster, more frequent services connecting the area to Global Gateways

Modelling Results

£850m	GVA uplift per annum (by 2050, 2020 prices)
50,000	More return rail trips per weekday
5,000	Fewer car journeys per weekday



TRANSPORT FOR THE South East

Package P: Wessex Thames Mass Transit

Overview

TfSE and local stakeholders are committed to providing an alternative to car use in urban centres across the area.

Mass transit options have been considered for Major Economic Hubs across the area. Enhancements include increasing the frequency, operating hours, reliability and catchment of bus services, supported with bus priority infrastructure where appropriate. Corridors with strong existing bus patronage, sufficient density and an appropriate network for bus priority include the Slough-Maidenhead-Windsor corridors, on corridors within Reading and in the Blackwater Valley – Farnham, Aldershot, Farnborough, Frimley, Camberley, Owlsmoor, Sandhurst, Yately and Blackwater.

There is a focus on ensuring Mass Rapid Transit interventions are supported by Strategic Mobility Hubs in Major Economic Hubs to provide an integrated network which facilitates seamless journeys between modes across the area.

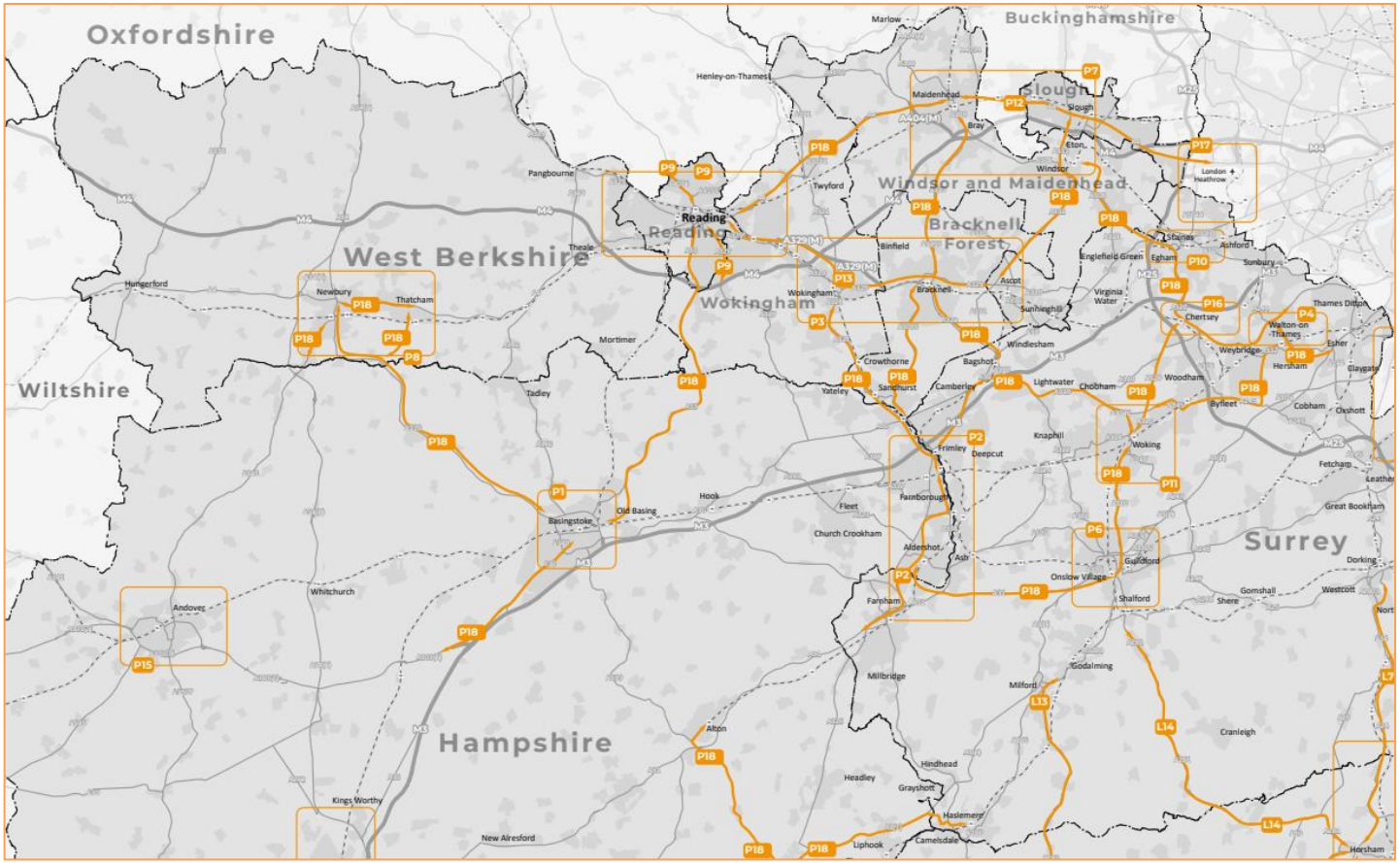
Benefits

- Improvement in the speed, frequency and connectivity of mass transit services
- Better interchange and service quality at Strategic Mobility Hubs
- Better service quality
- Significant mode shift from car to bus

Modelling Results

£245m GVA uplift per annum (by 2050, 2020 prices)

225,000 More return mass transit trips per weekday



TRANSPORT FOR THE South East

Package Q: Wessex Thames Active Travel

Overview

Local Transport Authorities supports the creation of extensive walking and cycling networks that serve the requirements of local residents and connect key destinations within centres such as railway stations, schools, hospitals and promote local placemaking.

For each of the centres and corridors identified previously which stand to benefit from bus service enhancements, priority, and Mass Transit, the opportunity for a series of urban mobility interventions which increase the attractiveness of active travel have been identified. Innovations such as e-bikes now make cycling longer-distances between centres possible. Through providing segregated cycling infrastructure in line with LTN 1/20 where capacity permits, there is opportunity to make these cycle trips safer, more accessible and faster for users. Inter-urban mobility corridors can also support cycling for leisure and other purposes for those who live along or near corridors. Lastly, they can support local placemaking, with new mobility infrastructure acting as the spine which supports a transformation of public places.

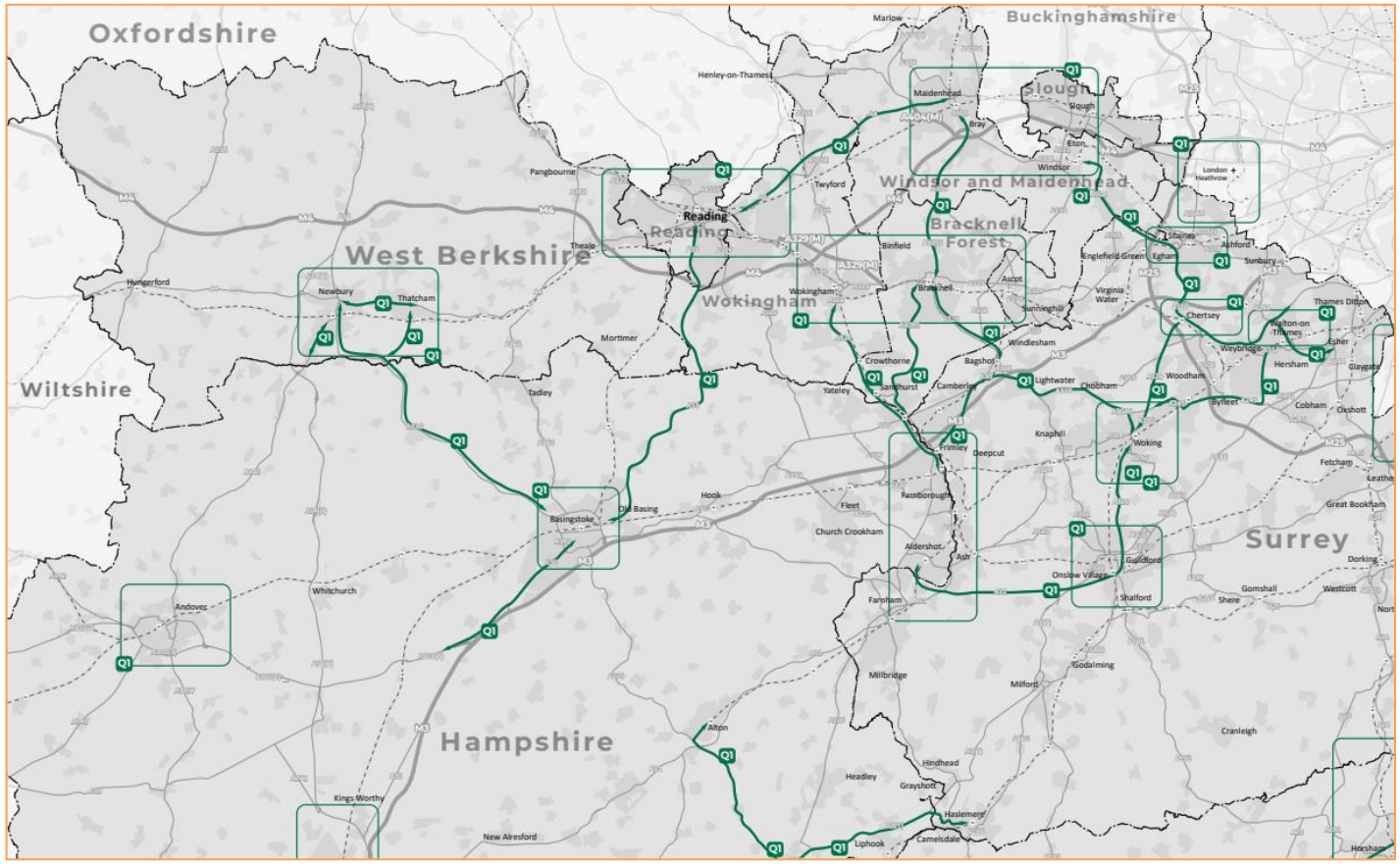
Benefits

- Significant mode shift from car to active travel, with associated health benefits
- Improvements in air quality
- Improvements to the urban and rural public realm, improving quality of life and unlocking regeneration opportunities

Modelling Results

£35m GVA uplift per annum (by 2050, 2020 prices)

135,000 More return active travel trips per weekday



TRANSPORT FOR THE South East

Package R: Wessex Thames Highways

Overview

The Wessex Thames highways package delivers targeted improvements which support strategic passenger and freight movements through de-conflicting local and longer-distance traffic, and supports safety and air quality objectives. Many interventions support (and are supported by) public transport improvements.

This package includes interventions that support better access to the Solent Ports, a significant contributor to economic growth in the region. These include Smart Motorway enhancements along the M3 and targeted junction enhancements and climber lanes for HGVs and other slower vehicles, where appropriate, on the A34.

This package also includes interventions which support the sustainable regeneration of areas and local placemaking, such as A3 Guildford, the A320 North Corridor and a new Thames River Crossing to the east of Reading. These schemes are designed to unlock opportunities to reallocate road-space to active travel and public transport.

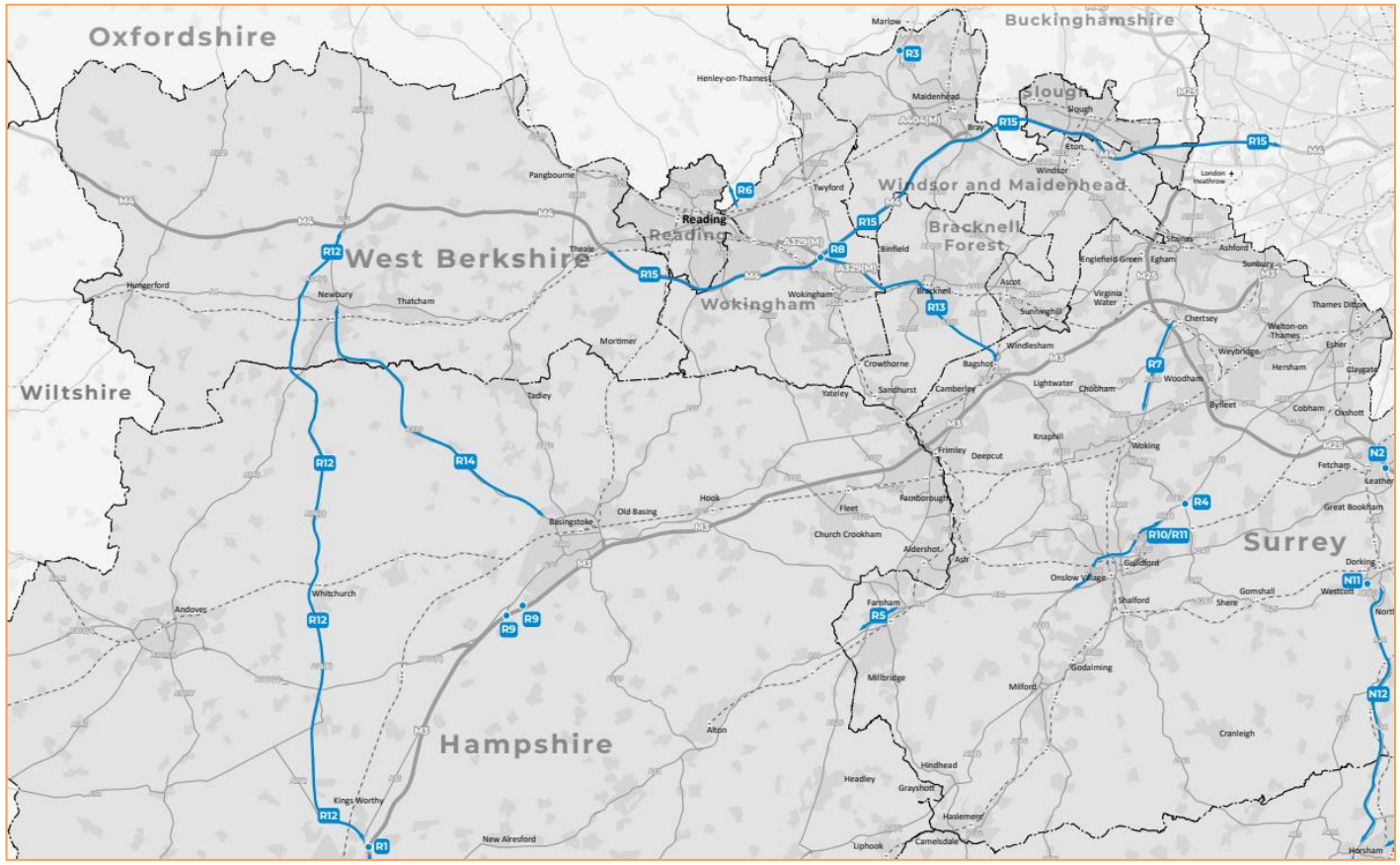
Benefits

- More reliable and resilient highway network
- Safer highways, notably in urban areas
- Improved air quality in urban areas
- Scope to reallocate road space to active travel and public transport

Modelling Results

£90m GVA uplift per annum (by 2050, 2020 prices)

5,000 **More** car journeys per weekday



TRANSPORT FOR THE South East

Packages of Interventions – Kent, Medway and East Sussex

The OAR recommended eight Packages of Interventions to be included in the SPOC. These are listed here and described in detail in the following pages. This details the **scope of the intervention** and summarises its **strategic benefits**.

Classic Rail Package

- **S1** St Pancras International Domestic High Speed Platform Capacity
- **S2** London Victoria Capacity Enhancements - Signalling and Digital Rail
- **S3** Bakerloo Line Extension
- **S4** south eastern Main Line - Chislehurst to Tonbridge Capacity Enhancements
- **S5** London Victoria to Shortlands Capacity Enhancements
- **S6** Hoo Peninsula Passenger Rail Services
- **S7** North Kent Line / Hundred of Hoo Railway - Rail Chord
- **S8** Thameslink - Extension to Maidstone and Ashford
- **S9** North Kent Line - Service Enhancements
- **S10** North Kent Line / Chatham Main Line - Line Speed Enhancements
- **S11** OOtterpool Park / Westenhanger Station Platform Extensions and Station Upgrade
- **S12** Integrated Maidstone Stations
- **S13** Dartford Station Remodelling / Relocation
- **S14** Canterbury Rail Chord
- **S15** New Station - Canterbury Interchange
- **S16** New Strood Rail Interchange
- **S17** Rail Freight Gauge Clearance Enhancements
- **S18** Crossrail - Extension from Abbey Wood to Dartford / Ebbsfleet
- **S19** High Speed 1 / Waterloo Connection Chord - Ebbsfleet Southern Rail Access
- **S20** Ebbsfleet International (Northfleet Connection)
- **S21** Ebbsfleet International (Swanscombe Connection)
- **S22** Gatwick - Kent Service Enhancements

High Speed Rail Package

- **T1** High Speed East - Dollands Moor Connection
- **T2** High Speed 1 / Marsh Link - Hastings, Bexhill and Eastbourne Upgrade
- **U1** High Speed 1 - Link to Medway (Chatham)
- **U2** High Speed 1 - Additional Services to West Coast Main Line

Mass Transit

- **V1** Fastrack Expansion - Swanscombe Peninsula
- **V2** Fastrack Expansion - Northfleet to Gravesend
- **V3** Fastrack Expansion - Medway
- **V4** Medway Mass Transit
- **V5** Medway Mass Transit - Extension to Hoo Peninsula
- **V6** Medway to Maidstone Bus Priority
- **V7** Medway Mass Transit - Chatham to Medway City Estate New Bridge
- **V8** Medway Mass Transit - Chatham to Medway City Estate Water Taxi
- **V9** Maidstone Bus Enhancements
- **V10** Dover Bus Rapid Transit
- **V11** Sittingbourne Bus Enhancements
- **V12** Sevenoaks Bus Enhancements
- **V13** Thanet Bus Enhancements
- **V14** Folkestone Bus Enhancements
- **V15** Ashford Bus Enhancements
- **V16** Royal Tunbridge Wells / Tonbridge Bus Enhancements
- **V17** Thames Gateway / Gravesham Bus Enhancements
- **V18** Canterbury / Whitstable / Herne Bay Bus Enhancements
- **V19** Ferry Crossings - New Sheerness to Hoo Peninsula Service
- **V20** Ferry Crossings - Sheerness to Chatham / Medway City Estate / Strood Enhancements
- **V21** Ferry Crossings - Ebbsfleet - Tilbury Enhancements
- **V22** Inland Waterway Freight Enhancements

Active Travel

- **W1** Medway Active Travel Enhancements
- **W2** Medway Active Travel - Chatham to Medway City Estate River Crossing
- **W3** Kent Urban Active Travel Infrastructure
- **W4** Kent Inter-urban Active Travel Infrastructure
- **W5** Faversham - Canterbury - Ashford - Hastings National Cycle Network Enhancements
- **W6** Tonbridge - Maidstone National Cycle Network Enhancements
- **W7** Sevenoaks - Maidstone - Sittingbourne National Cycle Network Enhancements
- **W8** Bromley - Sevenoaks - Royal Tunbridge Wells National Cycle Network Enhancements
- **W9** East Sussex Local Active Travel Infrastructure
- **W10** East Sussex Inter-urban Active Travel Infrastructure
- **W11** Royal Tunbridge Wells - Hastings National Cycle Network Enhancements
- **W12** Canterbury Placemaking and Demand Management Measures
- **W13** Medway Placemaking and Demand Management Measures
- **W14** Dover Placemaking and Demand Management Measures

Highways

- **X1** M2 Junction 5 (RIS2)
- **X2** A2 Brenley Corner Enhancements (RIS3 Pipeline)
- **X3** A2 Dover Access (RIS3 Pipeline)
- **X4** A21 Safety Enhancements (RIS3 Pipeline, brought forward to RP2)
- **X5** A229 Bluebell Hill Junction Upgrades (LLM)
- **X6** A28 Birchington, Acol and Westgate-on-Sea Relief Road (MRN)
- **X7** A228 Colts Hill Strategic Link (MRN Pipeline)
- **X8** Digital Operations Stack and Brock
- **X9** A20 Enhancements for Operations Stack & Brock
- **X10** Kent Lorry Parks (Long Term Solution)
- **X11** Dover Freight Diversification
- **X12** A2 Canterbury Junctions Enhancements
- **X13** M2 Junction 4 - Junction 7 Smart Motorway (SMP)
- **X14** M20 Junction 6 Sandling Interchange Enhancements
- **X15** M20 Junction 3 - Junction 5 Smart Motorway
- **X16** M25 Junction 1a Enhancements
- **X17** M25 Junction 5 Enhancements
- **X18** Herne Relief Road
- **X19** Canterbury East Relief Road
- **X20** New Maidstone south east Relief Road
- **X21** A228 Hoo Peninsula Enhancements
- **X22** A228 Medway Valley Enhancements
- **X23** Strood Riverside Highways Enhancement and Bus Lane
- **X24** A259 Level Crossing Removals – East of Rye
- **X25** A21 Kippings Cross to Lamberhurst Dualling and Flimwell and Hurst Green Bypasses
- **X26** Hastings and Bexhill Distributor Roads
- **Y1** Lower Thames Crossing (costings for Kent-side only)

Package S: Classic Rail Package

Overview

This package adds capacity to the classic rail network in the South East Area. It targets the areas of Kent that lie closest to London.

Areas further away from London will be served by High Speed interventions described in the following slide.

The package includes several interventions that add capacity through additional services (e.g. Crossrail to Ebbsfleet, Thameslink to Maidstone) as well as interventions that materially increase track and platform capacity (e.g. through capacity released by the Bakerloo Line extension).

It also includes interventions that improve the integration of the rail system – notably at Ebbsfleet, Canterbury, Maidstone, and Strood – where several railway lines cross each other without providing easy interchange from one railway to another.

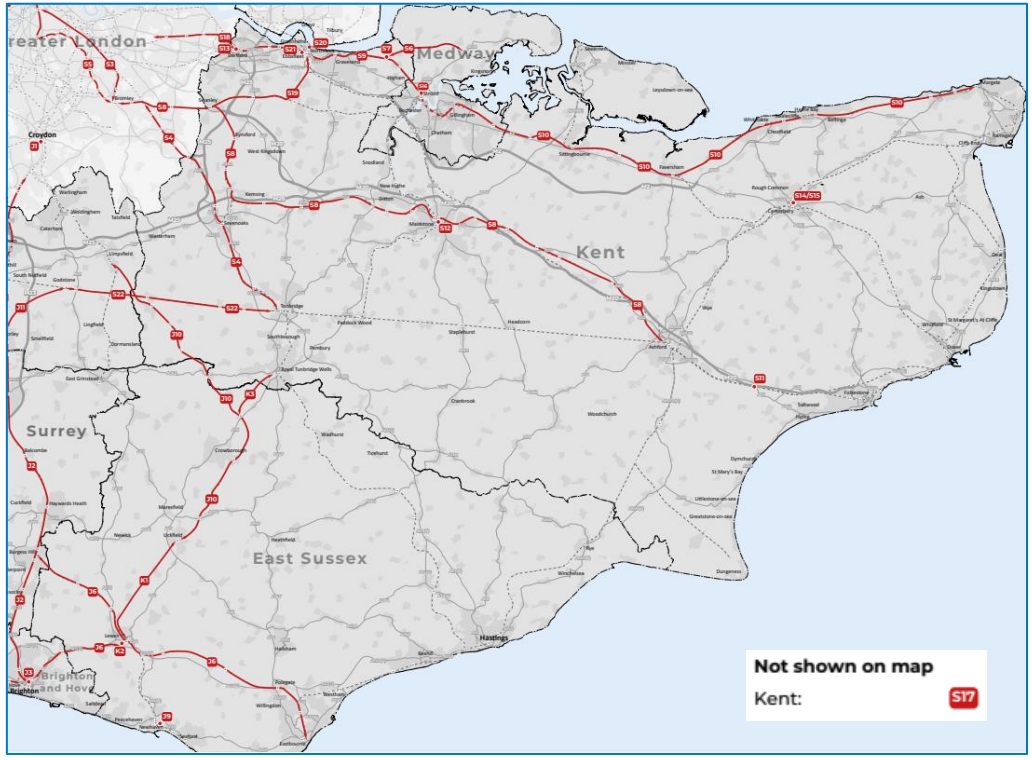
It also includes the introduction of passenger rail services on the Grain Branch and direct services between Gatwick Airport and Mid/East Kent.

Benefits

- **Capacity** enhancements at key bottlenecks on radial corridors
- Improvements in **service frequencies**, especially for urban metro services
- Better **interchange** between rail services and other modes
- Better rail access for new/growing areas
- Large **reduction in carbon emissions**

Modelling Results

£140m	GVA uplift per annum (by 2050, 2018 prices)
15,000	More return rail journeys per weekday
15,000	Reduction in carbon emissions due to modal shift (tonnes)



Packages T & U: High Speed Rail Packages

Overview

These packages includes some of the more radical interventions in the long list for this study. They are based around expanding the domestic high speed service to deliver transformational improvements in journey times to Kent, Medway, and East Sussex.

The **East Package** would deliver direct High Speed services from London to Eastbourne via Ashford and Hastings, reducing journey times from Hastings/Bexhill to London by 20 minutes. It would also deliver faster journey times to Dover using a connection to HS1 at Dollands Moor, and an increase in the frequency of HS1 services to Ashford

The **North Package** aims to deliver significant improvements in connectivity to North Kent to ensure coastal communities in Medway, Swale, Canterbury, and Thanet are as well served as other parts of Kent. Several high-level options have been considered, ranging from a new link between HS1 and Medway to improvements to the North Kent Line and Rochester Bridge. The modelling represented for this package reflects one of the more interventionalist options.

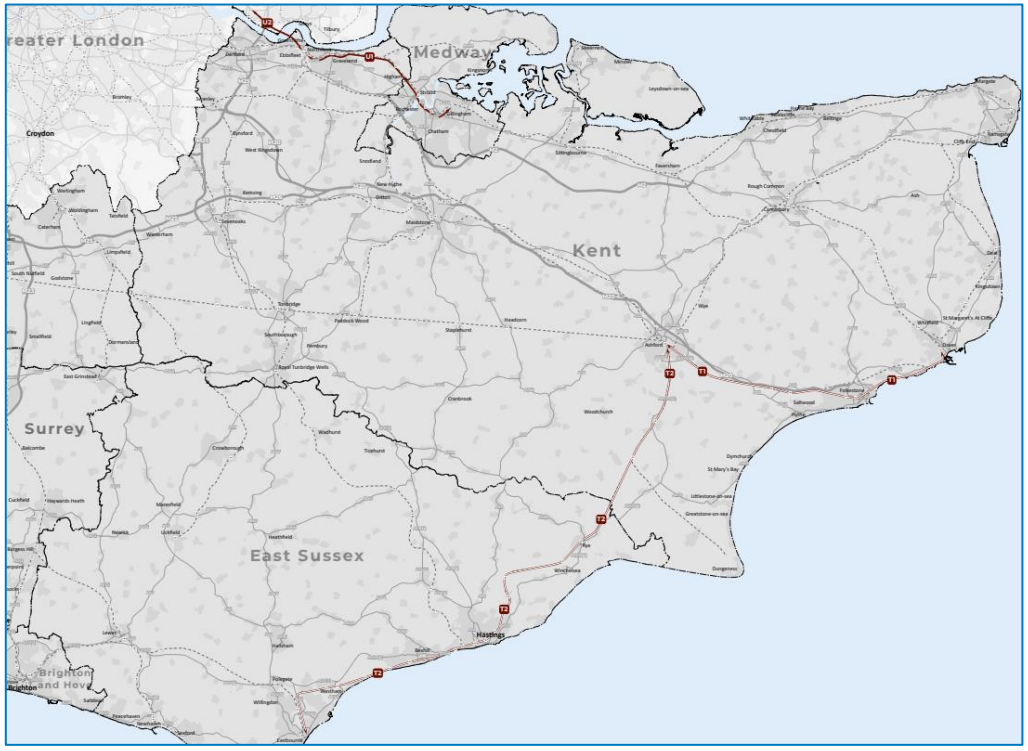
There are also opportunities to replace domestic service rolling stock on HS1 and expand the fleet to capitalise on network enhancements.

Benefits

- **Transformational improvements in journey times** between London (and the rest of the UK) and coastal Kent / Medway / East Sussex
- Potentially **transformational improvements in capacity** between London and coastal Kent/Medway/East Sussex, depending on which options are taken forward
- Large **reduction in carbon emissions**

Modelling Results (additional to core package)

£350m	GVA uplift per annum (by 2050, 2018 prices)
50,000	More return rail journeys per weekday
30,000	Reduction in carbon emissions due to modal shift (tonnes)



TRANSPORT FOR THE South East

Package V: Mass Transit Package

Overview

This package delivers improvements to bus services in Kent, Medway, and East Sussex.

The scope for improvements and expansion are particularly strong in the North Kent and Medway areas, where high levels of growth and regeneration are expected. A step change in infrastructure and service provision should be viable thanks to the underlying demographics in this area.

This package includes an opportunity to create a new Medway River Crossing to enable faster journeys between the north and south of this conurbation by bus/mass transit and active modes (e.g. walk, wheel, cycle and microtransit such as bike hire and e-scooters).

This intervention assumes all other conventional bus services in the Kent, Medway and East Sussex area experience general improvements in journey times, frequencies, and service quality.

Benefits

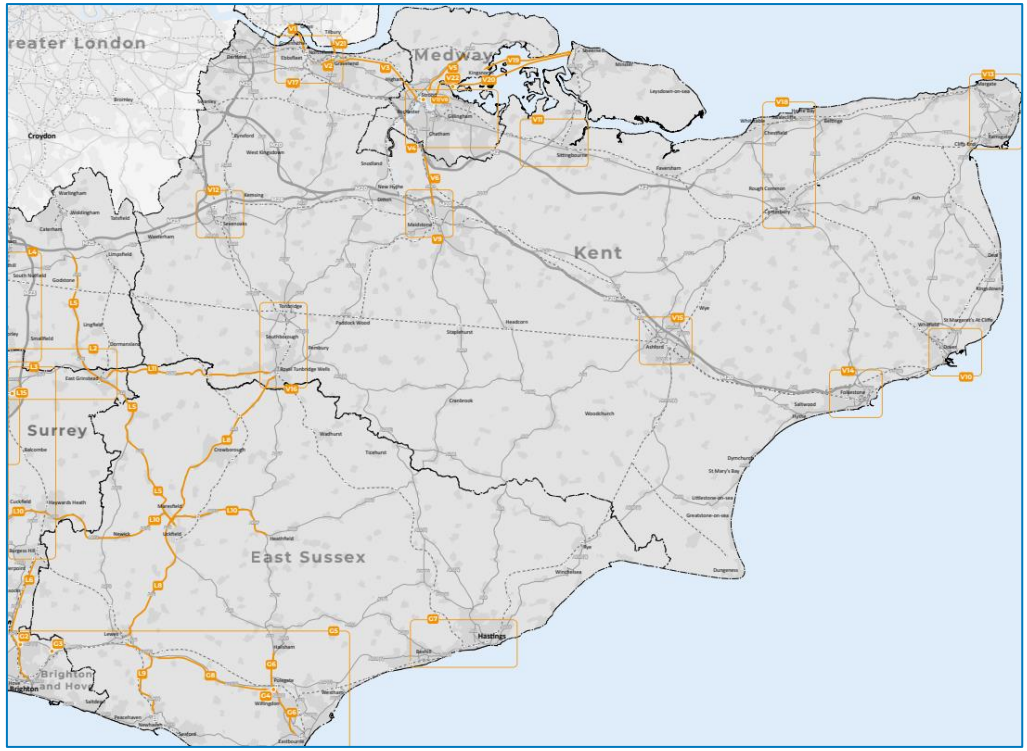
- **Significant improvements** in the quality, speed, and frequency of bus services in Kent, Medway, and East Sussex
- Better **interchange** between bus and rail
- Improvements in **connectivity** between **islands and peninsulas** in North Kent
- **Modal shift** from car to bus (and in some instances, ferries)

Modelling Results

50,000 Fewer return car journeys per weekday

85,000 More return bus journeys per weekday

25,000 Reduction in carbon emissions due to modal shift (tonnes)



Package W: Active Travel Package

Overview

This package delivers general uplift in the quality of walking and cycling infrastructure, particularly in urban areas.

Kent County Council has identified inter-urban corridors on the cycling network and identified several gaps in national and regional cycle networks that many stakeholders wish to see addressed. Urban areas are identified with most need and potential for investment.

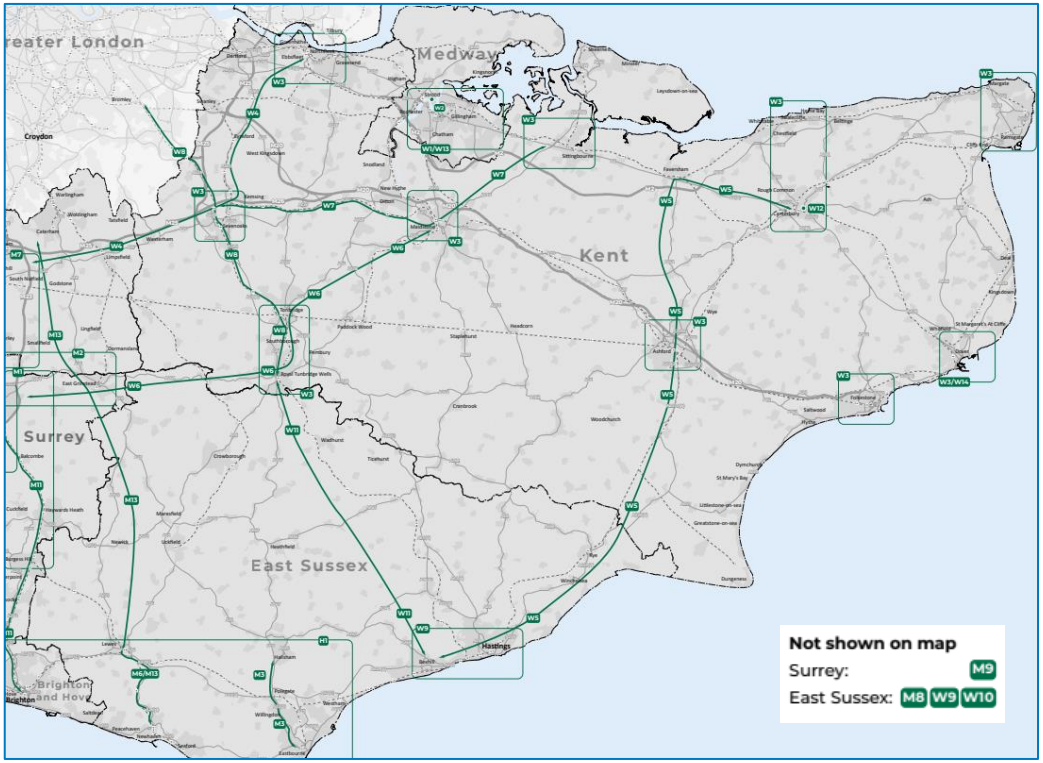
Similarly, East Sussex County Council has developed a Local Walking and Cycling Infrastructure Plan which provides details of network of routes for its main towns including Bexhill, Hastings, Battle and Rye.

Benefits

- **Material improvements to the urban realm** of urban areas, unlocking active travel and regeneration opportunities
- Improvements in **air quality** in Brighton and Hove
- Significant **mode shift** from car to active travel, with associated health benefits

Modelling Results

50,000	Fewer return car journeys per weekday
110,000	More return active travel journeys per weekday
10,000	Reduction in carbon emissions due to modal shift (tonnes)



Packages X & Y: Highways Packages

Overview

The Kent, Medway and East Sussex highways package delivers the Kent Bifurcation strategy – which strengthens the resilience of Channel Port access corridors – and improved connectivity for coastal areas.

This package includes several interventions that aim to improve the resilience of the M2/A2 and M20/A20 corridors, improve the connectivity of Coastal East Sussex (via the A21 corridor), and relieve congestion in city and town centres.

Many of these interventions will enable housing growth and/or improve public transport and active travel facilities in urban areas. In this sense, highways should be viewed as multi-modal interventions.

Any highway intervention on this corridor should be designed to de-conflict local and longer-distance traffic, safety and air quality. They should support (and be supported by) public transport improvements.

When modelled in isolation, these interventions are projected to increase carbon emissions. This effect will diminish if this package is combined with Global Policy and other mode interventions.

Benefits

- **More resilient** corridors serving the key Channel Ports
- **Safer highways**, notably in urban areas
- **Faster**, more **reliable highway journeys** between Brighton and South Hampshire
- **Improved air quality** in urban areas
- Scope to **reallocate road space to active travel and public transport**

Modelling Results

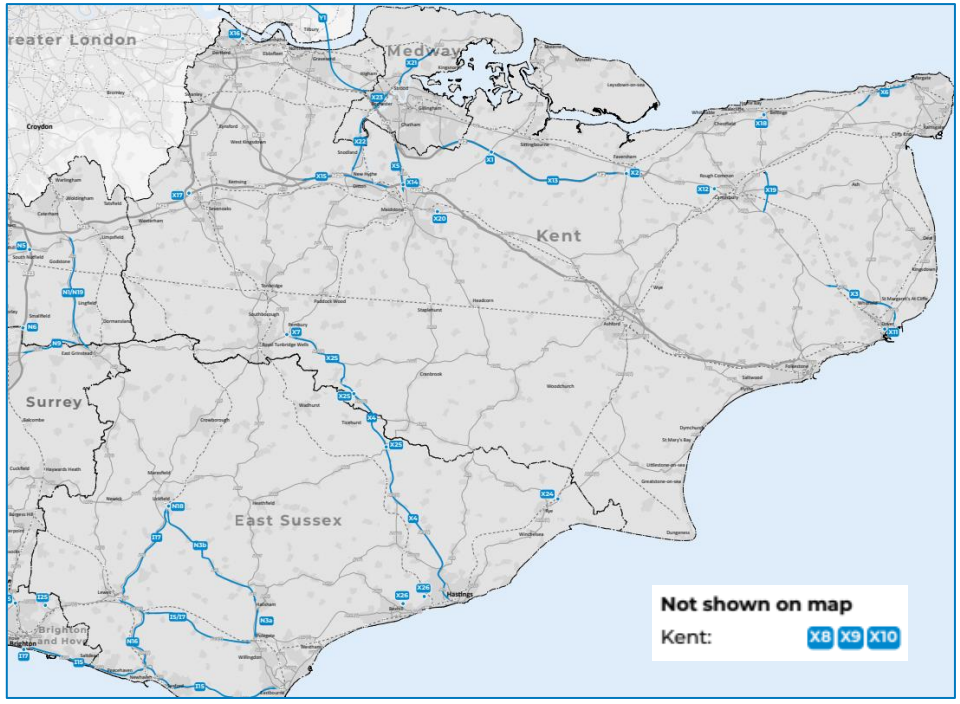
£90m GVA uplift per annum (KMES Highways)

£105m GVA uplift per annum (Lower Thames Crossing)

10,000 More weekday car trips (KMES Highways)

90,000* More weekday car trips (Lower Thames Crossing)

* Modelled flows of traffic associated with LTC will be established by National Highways and set out in the expected Development Consent Order.



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