TRANSPORT FOR THE South East

Report prepared to support the development of the Transport Strategy for the South East

# Scenario forecasting summary report

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Transport Strategy for the South East

# Scenario Forecasting Summary Report

Client: Transport for the South East
4 October 2019
Our ref: 234337

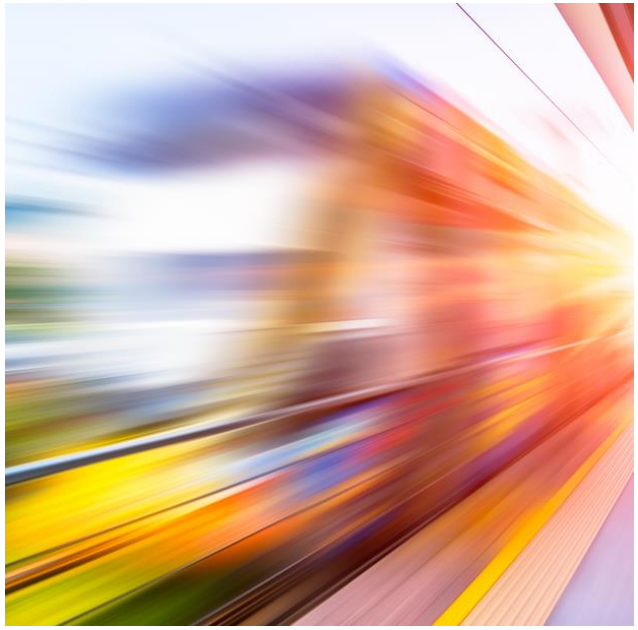
steer

# Content

## Introduction

**1.1 This Summary Report describes how Transport for the South East has used Scenario Forecasting techniques to inform the development of the Transport Strategy for the South East.**

1.2 This report is underpinned by a more detailed "Scenario Forecasting Technical Report", which has been published alongside this document.



## The Challenges in Forecasting

1.3 Forecasting typically seeks to present a quantifiable, modelled set of outputs describing the future. Traditional forecasting methods have relied on extrapolating existing patterns and trends to project ahead. This approach typically assumes recent growth will continue at a similar rate without dramatic change. However, it has several limitations:

- it assumes technology will not change to the extent that it radically alters travel behaviour;
- it assumes that attitudes to travel and behaviours will not change; and
- it assumes there are few feedback loops (e.g. policy responses to growing road traffic) that might alter underlying trends.

1.4 This explains why forecasting future conditions can be fraught with difficulty. The long-term future is highly uncertain, and its outcomes are shaped by a wide range of factors.

1.5 This is why Transport for the South East has adopted Scenario Forecasting as its preferred approach to modelling the future. This approach considers a range of plausible futures against which future policies and interventions can be tested, to inform a more robust strategy.

## Content

1.6 The remainder of this document describes how Transport for the South East used Scenario Forecasting to develop a Transport Strategy that reflects its ambitions for the future.

1.7 This Summary Report is structured as follows:

- **Part 2** describes the model that was used to forecast the transport and socio-economic outcomes from the scenarios;
- **Part 3** describes the key characteristics of the scenarios that were modelled and explains how they were created;
- **Part 4** describes the modelling results generated for each of the scenarios; and
- **Part 5** summarises the key conclusions drawn from this work.

# Part 2 | South East Economy and Land Use Model (SEELUM)

## Introduction

**2.1 Transport for the South East commissioned Steer to develop a model to test the impact of the scenarios described above on employment, population and travel patterns in the South East.**

2.2 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.

2.3 This section describes how SEELUM operates and how it was used for Scenario Forecasting. A high-level view of SEELUM is provided in **Figure 1**.

## Overview of SEELUM

2.4 SEELUM tests how investment in transport, coupled with changes to land-use policy, affects the economic performance of the South East area. It does this by simulating how changes in patterns of connectivity and access affect how attractive different locations are for employers and/or households to locate in, how they respond to these changes, and what transport patterns arise from these changes.

2.5 For example, if travel costs rise in a particular area (say, due to highway congestion), depending on the other options available, people may change their mode of travel, change where they live or change where they work. In the extreme, if there are no other viable options to access work, people can become unemployed. Similarly, businesses can relocate to an area if transport costs reduce, increasing their accessibility to the workforce.

2.6 SEELUM also simulates how urban areas evolve over time. It considers: how house builders and property developers provide new housing; the inward and outward migration of households; and the start-up and closure of businesses. It includes internal models of highways, bus and rail services, and walking and cycling networks. These all connect places together and influence their relative advantages as places to live or work. SEELUM can incorporate planned land-use changes and investment in transport infrastructure or services.

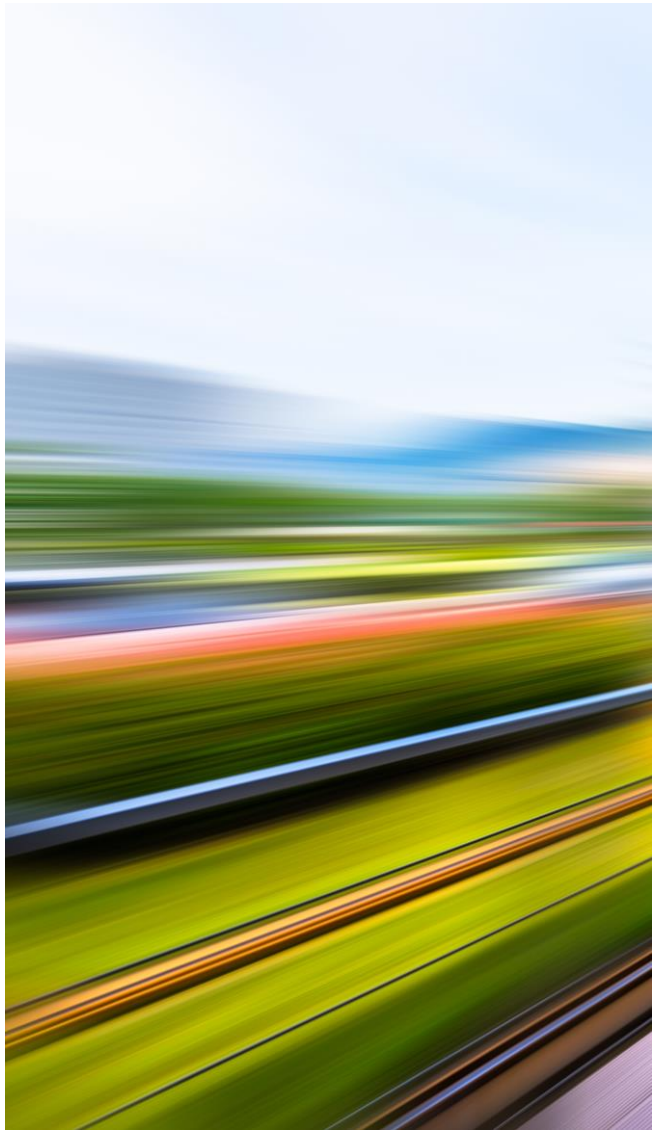
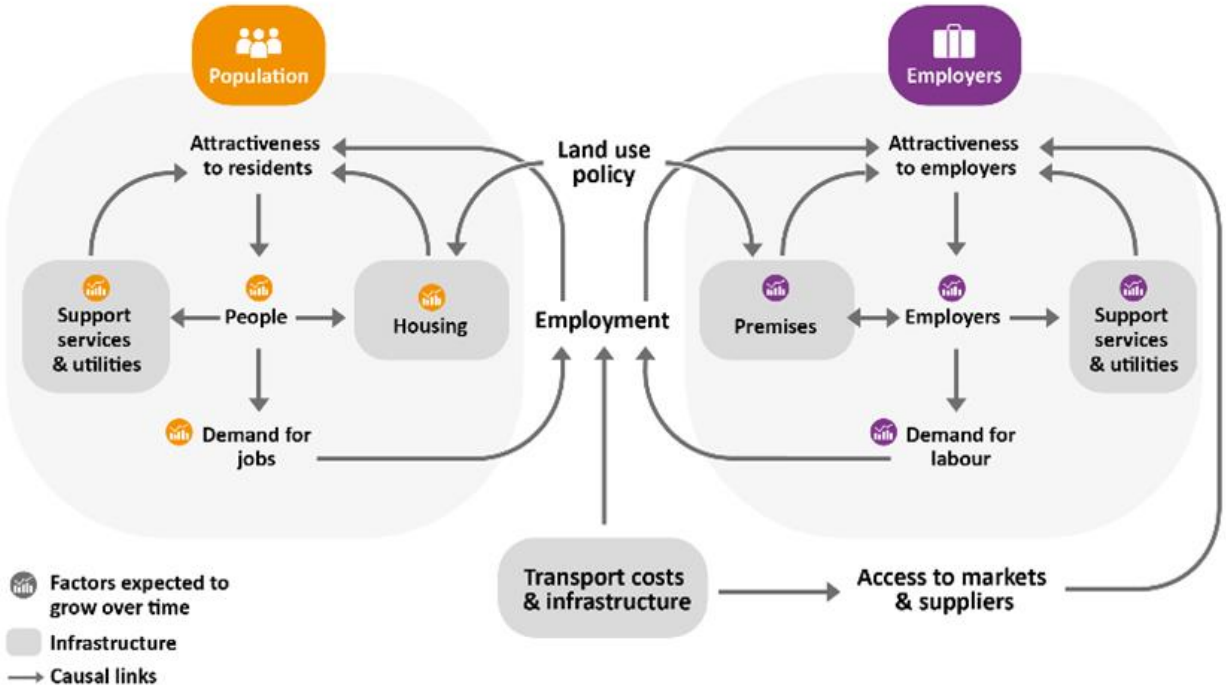


**Figure 1 | High-level overview of SEELUM**




## Outputs of SEELUM

**2.7** SEELUM generates a set of outputs allowing detailed examination of how and why conditions change in the simulated area. SEELUM produces detailed reports on:

- changes in land-use in each zone (i.e. the number of housing units and number of employment 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 CO2 emissions from transport activity; and
- travel patterns, volumes and mode shares; and
- time savings benefits for appraisal, and the wider economic impacts on productivity and agglomeration.

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

## Introduction

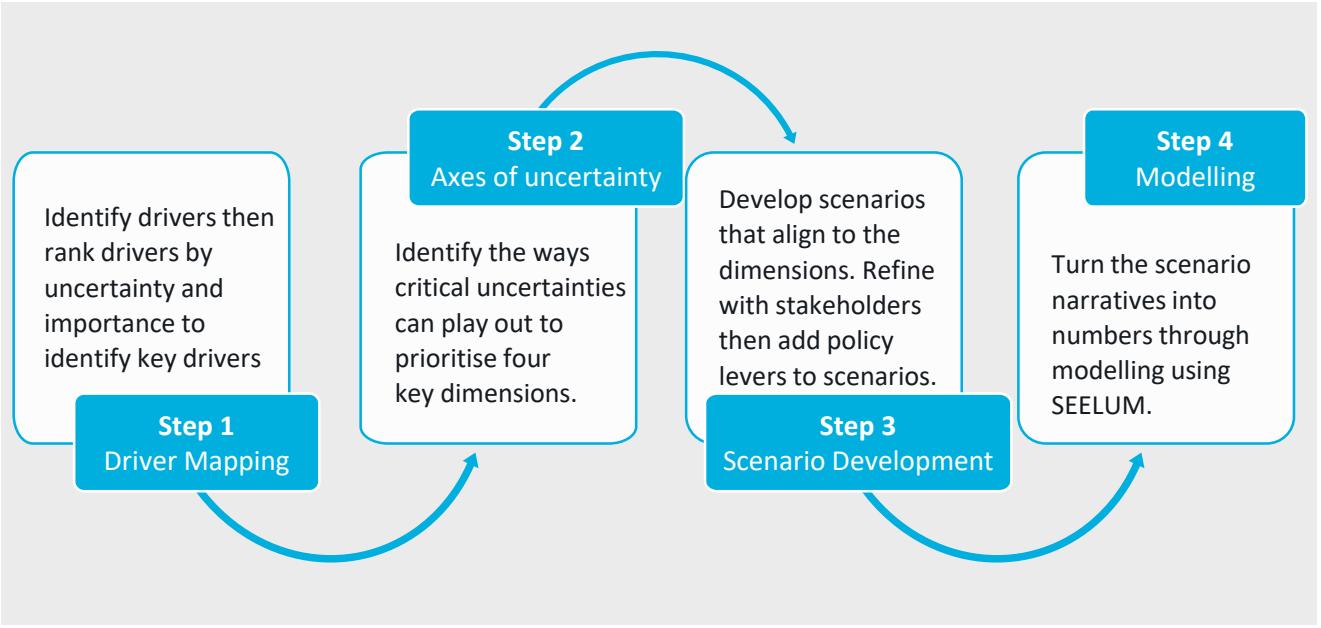
**3.1 Transport for the South East worked with a wide range of partners and stakeholders to develop alternative future scenarios that describe different visions for the future economy, spatial distribution of people and jobs, and demand for travel in the South East area.**

3.2 This was achieved by asking stakeholders to:

- identify plausible disruptions to trends that would lead to a wider spectrum of future outcomes; and
- use the insight gained to derive a preferred future which would drive the development of strategy, policy and interventions.

3.3 The scenarios were developed over a series of workshops, which involved a total of 18 stakeholders representing a wide variety of public and private sector organisations with expertise and interest in the future of transport in the study area. The scenario development process followed four steps, which are illustrated in **Figure 2.**

**Figure 2 | Scenario Development Process**



## Step 1: Driver Mapping

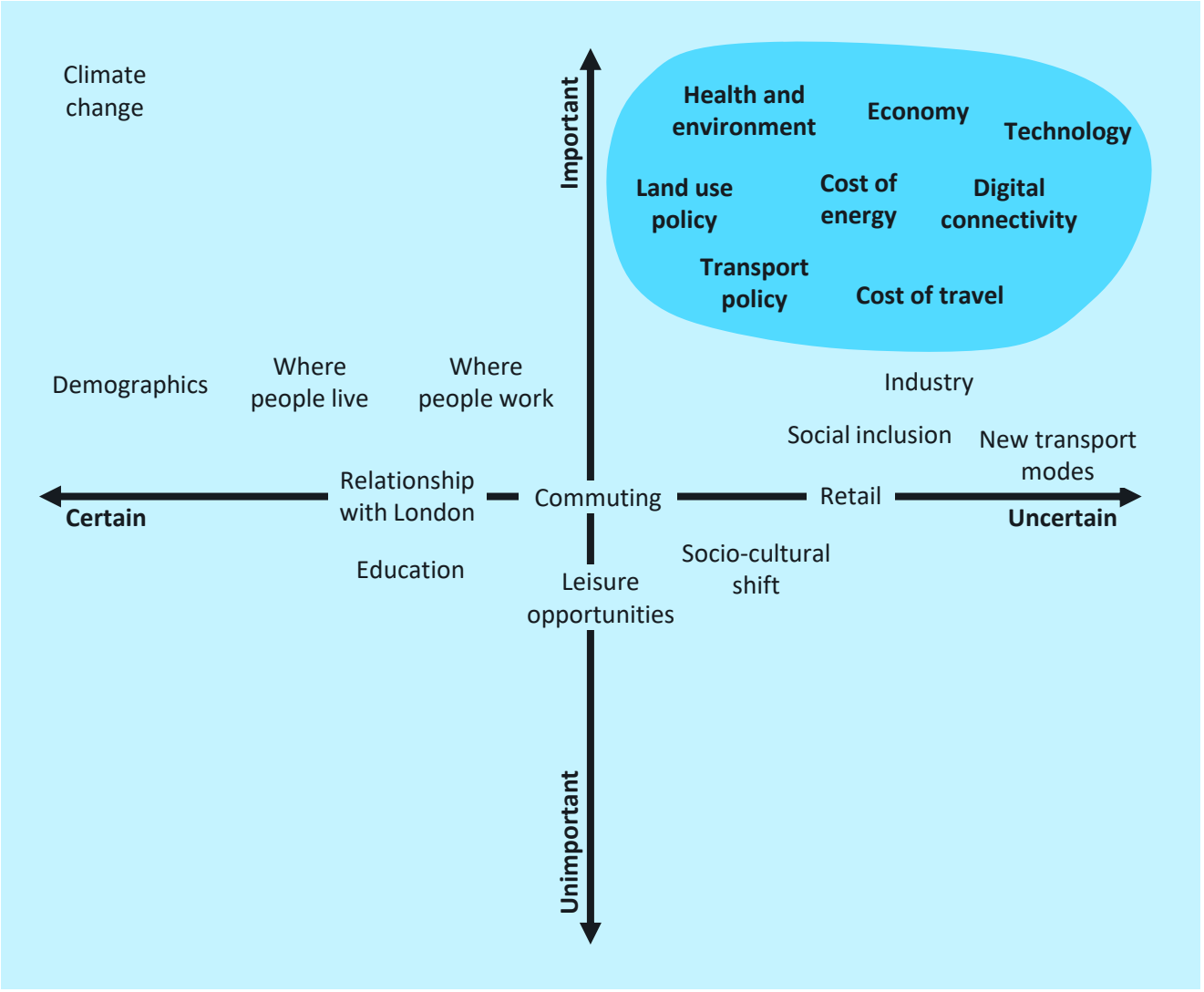
**3.4** Steer held an internal workshop with senior experts in transport policy and forecasting to identify the most important drivers in transport behaviour. The drivers identified are listed below.

| **Drivers (22)** | |
|---|---|
| Economy | Mobility-as-a-Service |
| Industry | New transport mode |
| Relationship with London | Demographics |
| Where people work | Health/environment |
| Where people live | Socio-cultural shift |
| Commuting | Social inclusion |
| Cost of travel | Leisure opportunities |
| Land use policy | Climate change |
| Transport policy | Energy cost |
| Technology | Education |
| Digital connectivity | Retail |

**3.5** At the subsequent stakeholder workshop, attendees were invited to rate the certainty and importance of each driver to create the matrix shown in **Figure 3**. The most important and uncertain drivers (also listed below) were carried into Step 2.

| **Prioritised Drivers (2)** | |
|---|---|
| Health/environment | Cost of energy |
| Economy | Land use policy |
| Technology | Transport policy |
| Digital connectivity | Cost of travel |

**Figure 3 | Importance and certainty matrix**



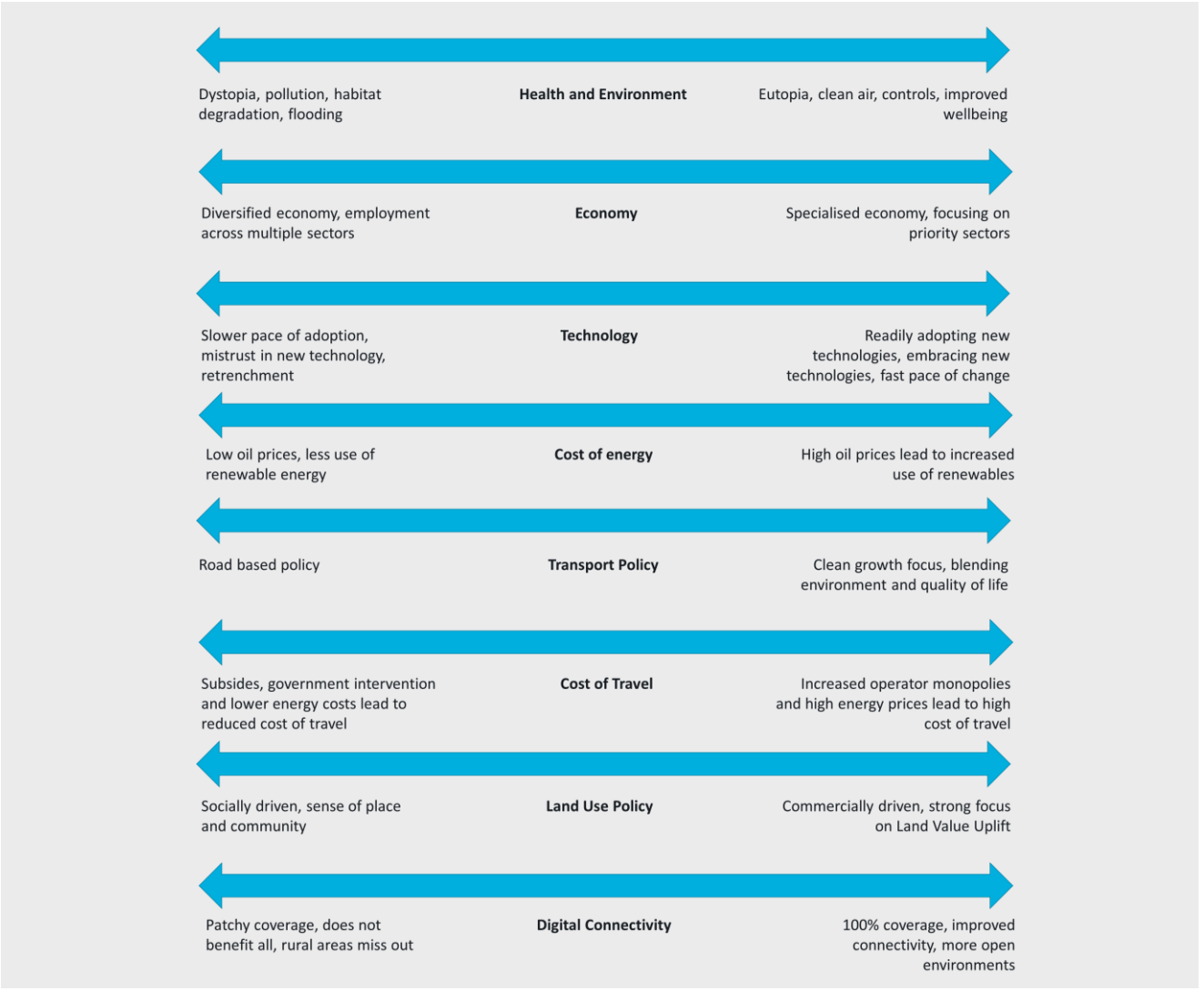
## Step 2: Axes of Uncertainty

**3.6** In the next step, stakeholders were invited to describe how each of the drivers could play out in the future. This helped create "Axes of Uncertainty", which are shown in **Figure 4.**

**3.7** Following discussion with stakeholders, four dimensions were prioritised, which were used to scope out the future scenarios:

- Economy and employment;
- Health and environment;
- Technology; and
- Transport policy.

**Figure 4 | Axes of Uncertainty**



## Step 3: Scenario Development

**3.8** The outputs from Step 2 enabled four distinct scenarios to be built:

- **London Hub**;
- **Digital Future**;
- **Our Route to Growth**; and
- **Sustainable Future**.

**3.9** Following an initial round of modelling and consultation with stakeholders, a fifth preferred scenario – **Sustainable Route to Growth** – was developed that combined the Sustainable Future and Our Route to Growth scenarios.

**3.10** A detailed narrative for each scenario was then developed to enable the way in which they should be represented in SEELUM to be determined.

**3.11** A summary of the characteristics and policies for each of the five scenarios that were modelled are set out in **Table 1**. These are used to determine the 'Do Something' transport packages for each scenario.

**3.12** It should be noted that the purpose of these scenarios is to test hypothetical, yet plausible futures scenarios to help ensure that the transport strategy is resilient to these plausible futures. Some of the interventions tested were, therefore, relatively exaggerated and do not necessarily reflect Transport for the South East's view on their desirability.

**Table 1 | Characteristics of the five scenarios**

| | London Hub | Digital Future | Our Route to Growth | Sustainable Future | Sustainable Route to Growth |
|---|---|---|---|---|---|
| Economy and Employment | • Focussed on London Growth<br>• Local employment serves local population<br>• Low local productivity<br>• High wages<br>• Local employment in enabling sectors – construction, retail, education and health | • Highly productive<br>• Efficient<br>• Short term labour market disruption<br>• Low short-term employment<br>• Inequality – haves & have nots | • Growth concentrated in large urban areas<br>• Specialised economy<br>• Service based – IT, Finance and professional<br>• Export-led growth | • Ethical economy<br>• Thriving local businesses<br>• Reasonable productivity<br>• Local employment in enabling sectors – strong retail sector, tourism | • Growth concentrated in large urban areas<br>• Investment in targeted tradeable sectors and specific deprived urban areas<br>• Boost to public/third sectors and construction |
| Health and Environment | • Quality of life is key consideration<br>• Making the South East attractive to London's high paid workers<br>• Rising health inequality | • Environment is not priority, but fares well from technology advancements<br>• Ageing society grows<br>• Health inequality | • Developed Urban Areas with protected natural landscape | • Protect and enhance the environment<br>• Reduce carbon footprint<br>• Improve health outcomes | • Reduction in energy generation/heavy industry/transport demand<br>• Protect and enhance the environment<br>• Reduction in carbon footprint |
| Technology | • Business focussed technology solutions<br>• Digital connectivity improves | • Industry 4.0<br>• Very fast adoption of technology<br>• Technology focussed solutions<br>• Convenience driven technology | • Growing tech sectors | • Environmentally focussed technology solutions<br>• Clean-tech<br>• Agri-tech<br>• Using data and smart technologies in a citizen-centred manner | • Growing tech sectors |
| Policy | • Facilitate radial travel<br>• Improved infrastructure | • Deregulation | • Favour International Gateways<br>• Improved regional connectivity | • Introduce road pricing<br>• Encourage active modes<br>• Encourage sustainable transport | • Introduce road pricing<br>• Facilitate CAVs<br>• Encourage active modes and sustainable transport |

## Step 4: Modelling

**3.13** Finally, the scenarios are used to generate socio-economic inputs (generated by Cambridge Econometrics) and transport supply inputs to run the SEELUM model. The Business as Usual scenario is also modelled using SEELUM to enable a comparison of the scenarios with a "Base Case".

**3.14** Each scenario is underpinned by a set of transport principles, which are summarised in **Table 2** and are modelled in by SEELUM.

**3.15** The SEELUM model was run twice to model different policy responses to each scenario:

- The **first model run (Do Minimum)** assumes that the transport network does not change (but includes schemes that are currently being delivered, such as Crossrail).
- The **second model run (Do Something)** run assumes additional capacity will be provided on strategic corridors for some scenarios.

**3.16** Maps showing the strategic corridors that would be upgraded to accommodate each of the scenarios is provided in **Appendix A**.

**3.17** We do not comment on the costs and feasibility of interventions required to realise the scenarios. However, in some scenarios it is clear that the level of investment (and potential impact on the environment) would be significant, particularly for the **London Hub** and **Route to Growth** scenarios.

**Table 2 | Characteristics of the five scenarios**

| Scenario | Key transport principle | Supported by | Modelled through |
|---|---|---|---|
| London Hub | Radial travel | • Rail metro-isation<br>• Access to rail<br>• Commuter rail quality<br>• Road capacity | • Double rail capacity on radials to London<br>• Reduce access time/cost to rail stations by 20%<br>• Reduce rail journey times by 20%<br>• Increase road capacity on radials to London by 50% |
| Digital Future | Connected and Autonomous Vehicle network | • No policy constraints on CAV/MAAS<br>• Pedestrianised urban centres | • Reduce car GJT by 20%<br>• Increase road capacity by 20%<br>• Reduce all rail, bus, active GJT by 30% |
| Our Route to Growth | Orbital travel | • Improved orbital road<br>• Improved orbital rail<br>• High quality urban transit | • Reduce orbital rail GJT by 20%<br>• Increase orbital rail capacity by 50%<br>• Increase orbital road capacity by 50%<br>• Reduce intra-zonal rail/bus/active GJT by 20%<br>• Reduce car GJT by 20% |
| Sustainable Future | Demand management | • Road pricing<br>• Road space reallocation<br>• Public transport fare subsidisation<br>• Better bus services (faster and more frequent services) | • Double vehicle operating costs<br>• Bus fare reduction of 50%<br>• 50% reduction in rail fare<br>• Reduce intra-zonal rail/bus/active GJT by 20% |
| Sustainable Route to Growth | Mode shift | • Road pricing<br>• PT fare subsidisation<br>• No policy constraints on CAV/Maas<br>• Road space reallocation<br>• Better bus/ high quality urban transit<br>• Pedestrianised urban centres | • Double vehicle operating costs<br>• Rail and bus fare reduction of 50%<br>• Reduce car GJT by 20%<br>• Increase road capacity by 20%<br>• Reduce all rail, bus, active GJT by 30% |

## Introduction

**4.1 Steer used SEELUM to model the socio-economic and transport outcomes of each of the scenarios, as well as a Business as Usual scenario.**

4.2 The results for the 'Do Something' model runs, which include the transport interventions described in Part 3, are presented below and compared to the Business as Usual results.

4.3 A summary of the socio-economic and transport outcomes for each scenario is provided in **Table 3** and **Table 4** respectively.

4.4 More detailed results are provided in a set of dashboards, which are provided in **Appendix B.**

## Commentary and Analysis

4.5 A commentary and analysis of the results for each of the five scenarios is provided below.

**Table 3 | Modelling socio-economic results (compared to 2018 and 2050 Business as Usual results)**

| | GVA (£ billions) | | | Employment (millions) | | | Population (millions) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2050 | Growth (2018) | Growth (BaU 2050) | 2050 | Growth | Compared to Base | 2050 | Growth | Compared to Base |
| Base Case | 399 | 119% | N/A | 3.7 | 12% | N/A | 8.7 | 12% | N/A |
| The London Hub | 430 | 136% | 8% | 3.9 | 21% | 8% | 9.7 | 25% | 12% |
| Digital Future | 411 | 125% | 3% | 3.7 | 14% | 2% | 8.5 | 10% | (3%) |
| Our Route to Growth | 481 | 164% | 21% | 4.3 | 31% | 17% | 9.1 | 17% | 4% |
| Sustainable Future | 404 | 121% | 1% | 3.7 | 14% | 2% | 8.6 | 11% | (1%) |
| Sustainable Route to Growth | 458 | 151% | 15% | 4.1 | 27% | 13% | 8.8 | 14% | 1% |

**Table 4 | Modelling transport results (compared to 2050 Business as Usual results)**

| | Trip Growth by Movement (Compared to 2050 BaU) | | | | | | Trip Growth by Mode (Compared to 2050 BaU) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Within South East | South East to London | London to South East | South East to Other | Other to South East | Total South East | Car | Rail | Bus | Cycle and Walk |
| The London Hub | 10% | 22% | 19% | 2% | 8% | 11% | 9% | 78% | 8% | 8% |
| Digital Future | (6%) | 23% | 45% | 11% | 23% | 1% | 1% | 43% | 31% | (17%) |
| Our Route to Growth | 4% | 23% | 67% | 15% | 40% | 10% | 15% | 36% | (2%) | (9%) |
| Sustainable Future | 1% | (14%) | (11%) | (18%) | (27%) | (3%) | (15%) | 36% | 57% | 17% |
| Sustainable Route to Growth | 4% | 1% | 47% | (14%) | 4% | 4% | (9%) | 108% | 120% | (7%) |

## Business as Usual

**4.6 The Business as Usual scenario is based on the Department for Transport's National Trip End Model. It assumes minimal changes in current trends, policies, and transport supply.**

**4.7** The Business as Usual scenario generates the following socio-economic results:

- Population grows from **7.8m** to **8.5m** (up 12%);
- Employment grows from **3.3m** to **3.7m** (up 12%); and
- GVA grows from **£183bn** to **£399bn** (up 119%).

**4.8** The Business as Usual scenario generates the following transport results (average weekday):

- Total trips increase from **20.9m** to **23.9m** (15%) – this driven by the population and economic growth described above;
- Car trips increase from **14.6m** to 1**7.5m** (19%);
- Rail trips increase from **0.7m** to **0.9m** (up 27%);
- Bus trips increase from **1.0m** to **1.4m** (up 30%);
- Walking and cycling trips decline from **4.4m** to **4.2m** (down 6%) – driven by easier access to alternative modes of transport.

**4.9** The results for the five scenarios, which are presented and discussed in the remainder of this commentary, are compared to the Business as Usual scenario results for 2050.

## The London Hub

**4.10 This scenario includes a package of transport interventions that focus on radial transport improvements to/from London. This includes a programme of enhancements to the radial rail network to enable "rail metro-isation" (very high frequency rail metro services).**

**4.11** Compared to the Business as Usual scenario, this scenario results in much higher population (up 12%), employment (up 8%) and GVA (up 8%). However, this comes at a cost.

**4.12** This scenario generates 22% increase in trips from the South East into London and a 19% for trips in the opposite direction (compared to the Business as Usual scenario). This is driven by improvements in the radial transport network, which enables more people in the South East to access employment in London.

**4.13** This scenario sees a significant increase in trips by rail (78% above the Business as Usual scenario), most of which will be on already congested radial routes during peak periods. There is also an increase in car (9%), bus (8%), and walking and cycling trips (8%) under this scenario – all compared to the Business as Usual scenario.

## Digital Future

**4.14 The transport package in this scenario focuses on the introduction of Connected Autonomous Vehicles and Mobility-as-a-Service (Maas), which reduces car and bus costs.**

**4.15** Compared to the Business as Usual scenario, this scenario has a lower population (down 3%) but higher employment and GVA (both up 2%).

**4.16** This scenario results in a reduction in trips within the South East area (down 6% compared to the Business as Usual scenario) but a significant increase in trips to London and other parts of the UK (both 23% above the Business as Usual scenario). It also sees a large increase in trips from the London to the South East area (45% above the Business as Usual scenario). This growth reflects the lower cost of transport, which makes it easier and cheaper to travel longer distances.

**4.17** There is a significant increase in public transport use (43% by rail and 31% by bus and taxi, which includes Mobility as a Service) but a 17% reduction in walking and cycling as other forms of transport are "cheaper" (and more attractive).

**4.18** Trip growth will not affect each strategic corridor evenly under this scenario. Corridors with relatively low demand are expected to see higher growth than already saturated corridors.

## Our Route to Growth

**4.19 The transport package in this scenario focuses on east-west travel within the South East to support the South East's high-priority, high growth industrial sectors (as opposed to focussing on radial travel to London).**

4.20 Compared to the Business as Usual scenario, this scenario results in a higher population (up 4%) and significantly higher employment (up 17%) and GVA (up 21%).

4.21 This scenario generates a significant influx of travel demand from other parts of the UK to the South East – 67% from London and 40% from the rest of the country (compared to the Business as Usual scenario). This is driven by the much higher number of (higher skilled) jobs available within the South East, which draws in people from outside.

4.22 There are also modest increases in trips from the South East to London (up 23%) and the rest of the country (up 15%). Most of this additional demand will be accommodated by rail (up 36%) and car (up 15%) – all compared to Business as Usual, which means emissions are higher under this scenario.

4.23 Given the polycentric economic geography of the South East area, this growth in demand is expected to be spread across most strategic corridors in the South East area.

## Sustainable Future

**4.24 The transport package in this scenario focuses on demand management with mode shift to active and more sustainable modes.**

4.25 Compared to the Business as Usual scenario, this scenario yields a lower population (down 3%), but higher employment (up 2%) and GVA (up 2%).

4.26 This scenario generates a decline in transport trips across almost all movement types (compared to the Business as Usual scenario). There is a very modest increase in trips within the South East area (1% compared to the Business as Usual scenario), which suggests the average trip length will reduce under this scenario.

4.27 There is significant modal shift under this scenario, resulting in an increase in rail (36%), bus (57%) and walking and cycling (17%), set against a decline in car use (15%) – all compared to the Business as Usual scenario.

4.28 Under this scenario, the corridors that see the greatest relative reduction in demand are those that are currently the most congested (e.g. M25 and radial routes close to the M25).

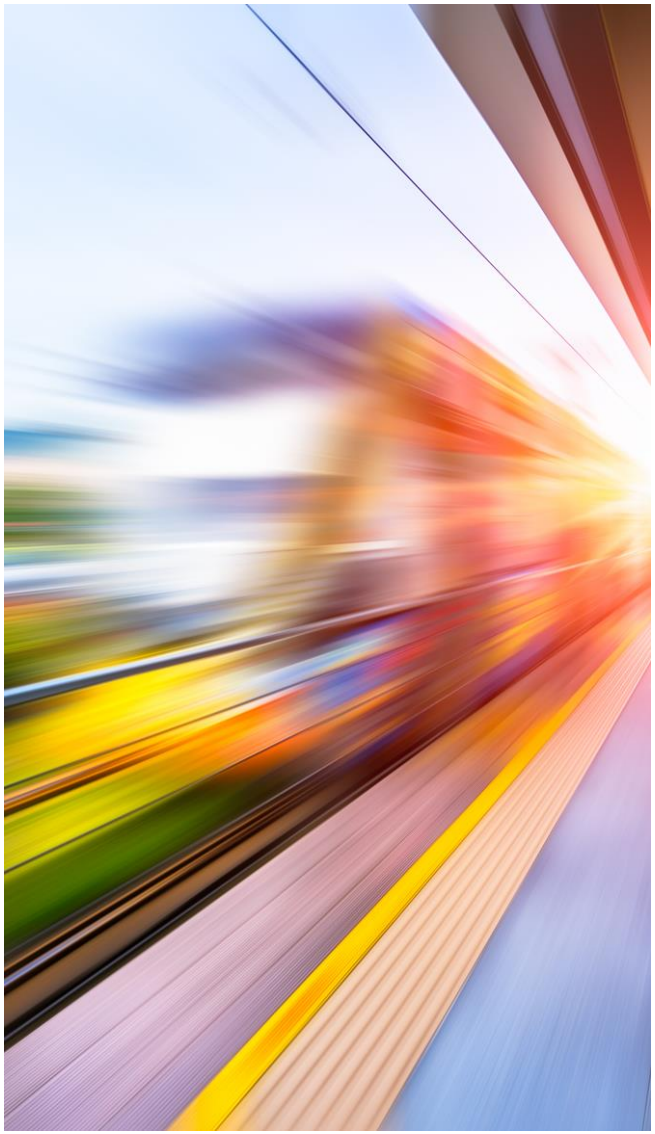
## Sustainable Route to Growth

**4.29 This scenario aims to combine the positive aspects of the Our Route to Growth and Sustainable Future scenarios. It generates results that lie between the two. There are also some interventions from the Digital Future scenario.**

4.30 This scenario generates a significant increase in trips from London to the South East area (up 47% compared to the Business as Usual scenario) as many people from outside the South East are attracted to employment opportunities in the area. Trips within the South East area and from the South East area to the rest of the country are 4% higher, which is driven by high growth in the South East's major economic hubs.

4.31 While the number of trips is higher than the Business as Usual scenario, many are being undertaken by sustainable modes. Bus and rail use increase significantly (up 120% and 108% respectively compared to the Business as Usual scenario) and car trips fall (down 9%). However, walking and cycling trips also fall (down 7%) due to the relative decline in cost of other modes.

4.32 This scenario generates significant growth in radial trips on the rail network. However, much of this growth is in the contra-peak direction, which means it should be easy to accommodate this growth where there is currently spare capacity.



## Concluding Remarks

**5.1 This Summary Report has described how Transport for the South East used Scenario Forecasting techniques, supported by the SEELUM land-use and transport model, to explore and quantify different transport and socio-economic outcomes for the future of the South East.**

5.2 The results of this work have helped Transport for the South East develop a vision based on a preferred scenario – a Sustainable Route to Growth.

5.3 This scenario seeks to deliver the following outcomes:

- a highly productive economy;
- growth of priority sectors;
- more local employment;
- reduced inequality; and
- more focus on protecting and enhancing the environment.

5.4 The scenario achieves this by deploying the following policy levers and transport interventions:

- investment in sustainable transport to support cross-regional travel;
- targeted investment in orbital coastal strategic corridors (especially rail); and
- fast adoption of digital technology; and
- demand management policies.

5.5 This scenario generates strong employment and GVA – 13% and 15% above the Base Case forecasts for 2050 (respectively), and higher than most of the other scenarios tested in this study.

5.6 However, this scenario manages to achieve these positive economic outcomes while also limiting its impact on the transport network and natural environment. Specifically, it delivers a relative reduction in car trips and a significant relative increase in public transport trips. While it generates more trips than the Base Case, many of these extra trips will be in the opposite direction to peak flows, which suggests there is a good chance many trips can be accommodated without resorting to significant increases in capacity.

5.7 That said, this scenario envisages there will still be a need for significant investment in some strategic corridors beyond current levels of investment .

Appendix A

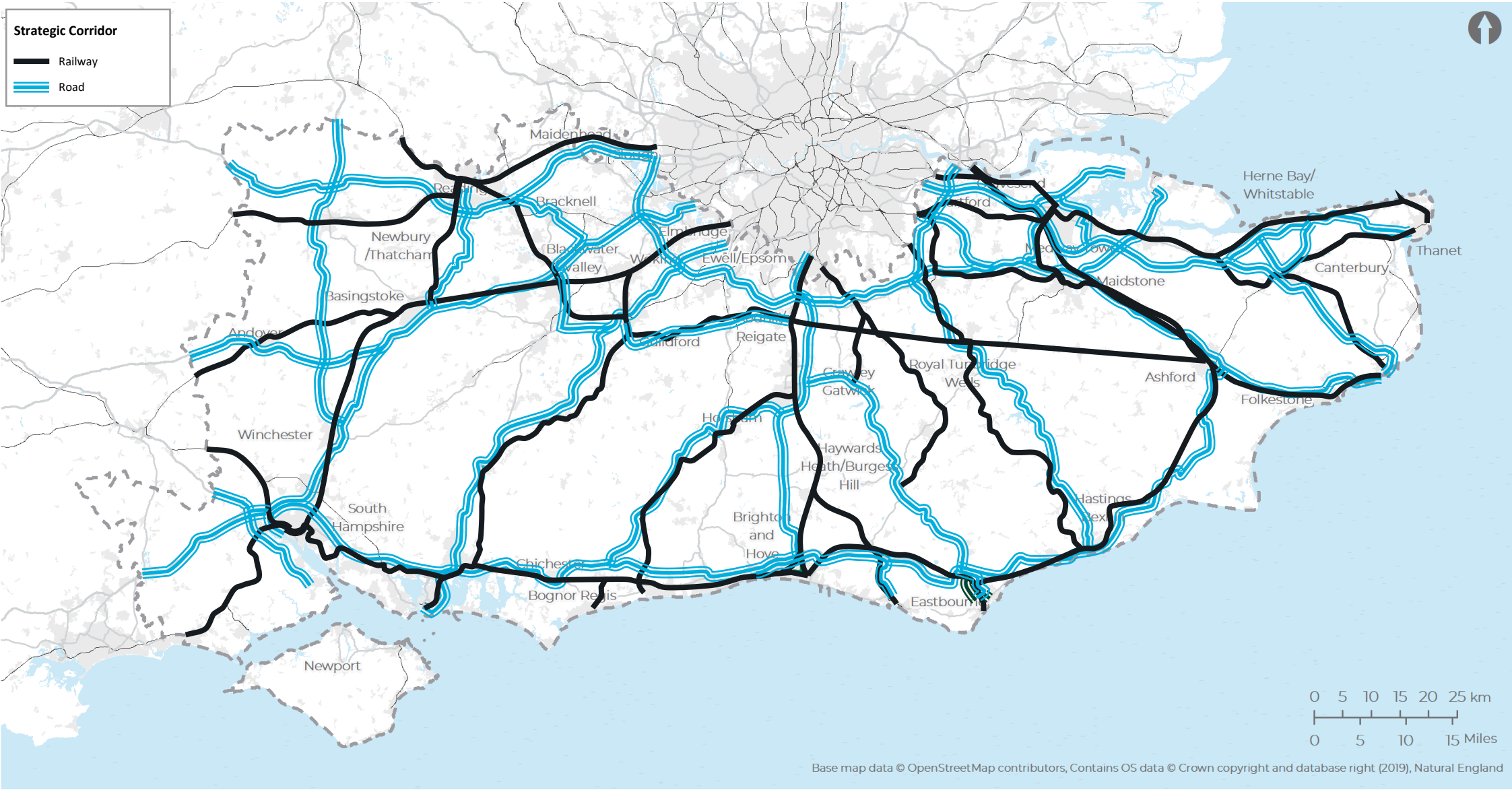
# Scenario Transport Packages

Client: Transport for the South East
4 October 2019
Our ref: 234337

steer

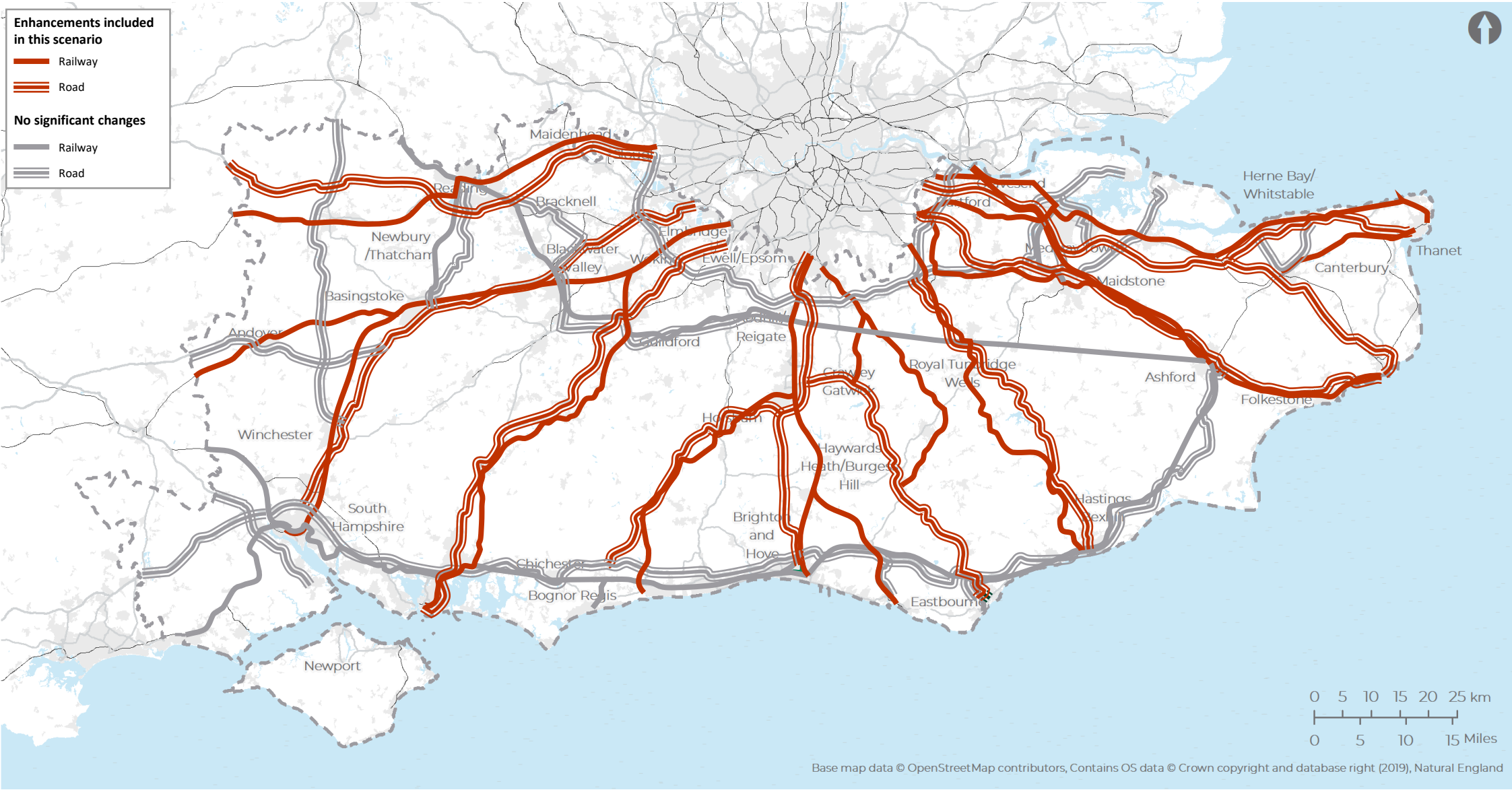
## Introduction

This appendix shows the transport packages that would need to be delivered to enable each scenario to deliver the results summarised in Part 4 and Appendix B of this Summary Report. This map shows the strategic roads and railways in the scope of this study. The following maps highlight the corridors that would need to be enhanced (usually through providing additional capacity) to support each scenario.



# The London Hub Transport Package

This scenario includes significant capacity improvements to radial strategic road and railway infrastructure. In reality, delivering these enhancements this would be a very costly undertaking.

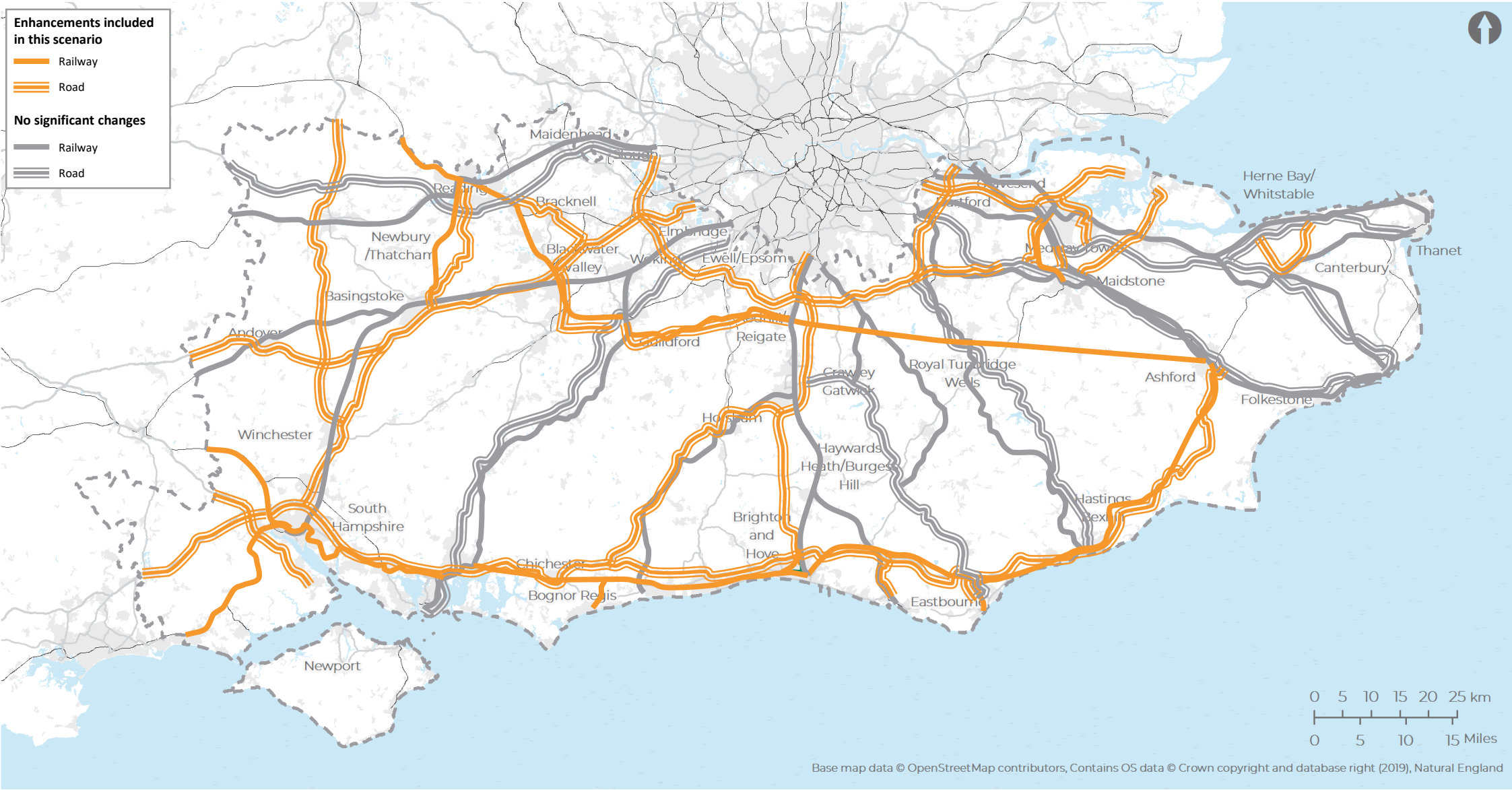


## Digital Future Transport Package

This scenario assumes that digital technology will enable much more demand to be accommodated within existing infrastructure. That said, the model results indicate there would be a significant increase in demand on the M25, A21, A24/A29 and A34 corridors, as well as on the railway between Portsmouth and Southampton.

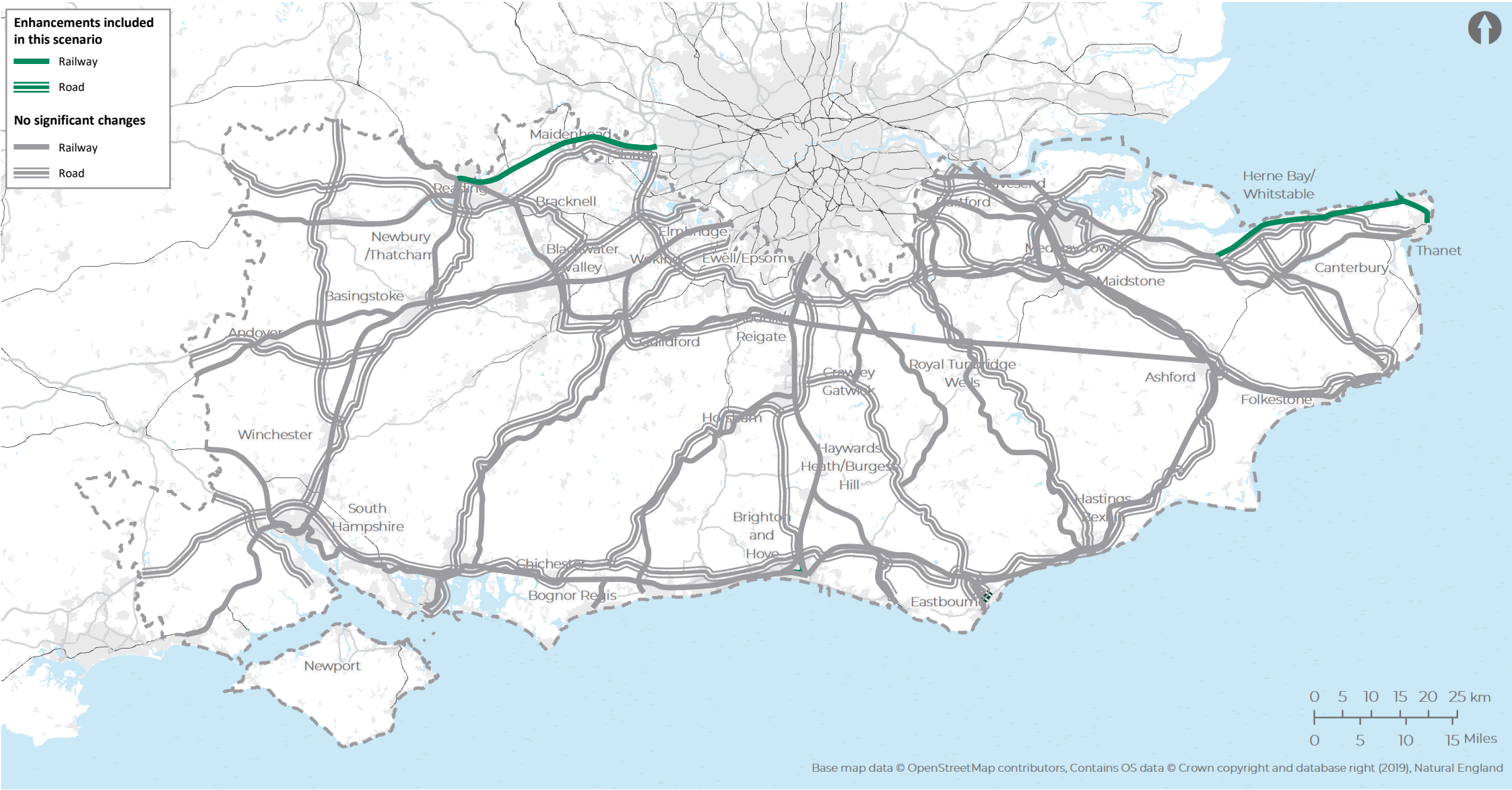
# Our Route to Growth Transport Package

This scenario includes significant capacity improvements to orbital and coastal strategic road and railway infrastructure. In reality, delivering these enhancements this would be a very costly undertaking.



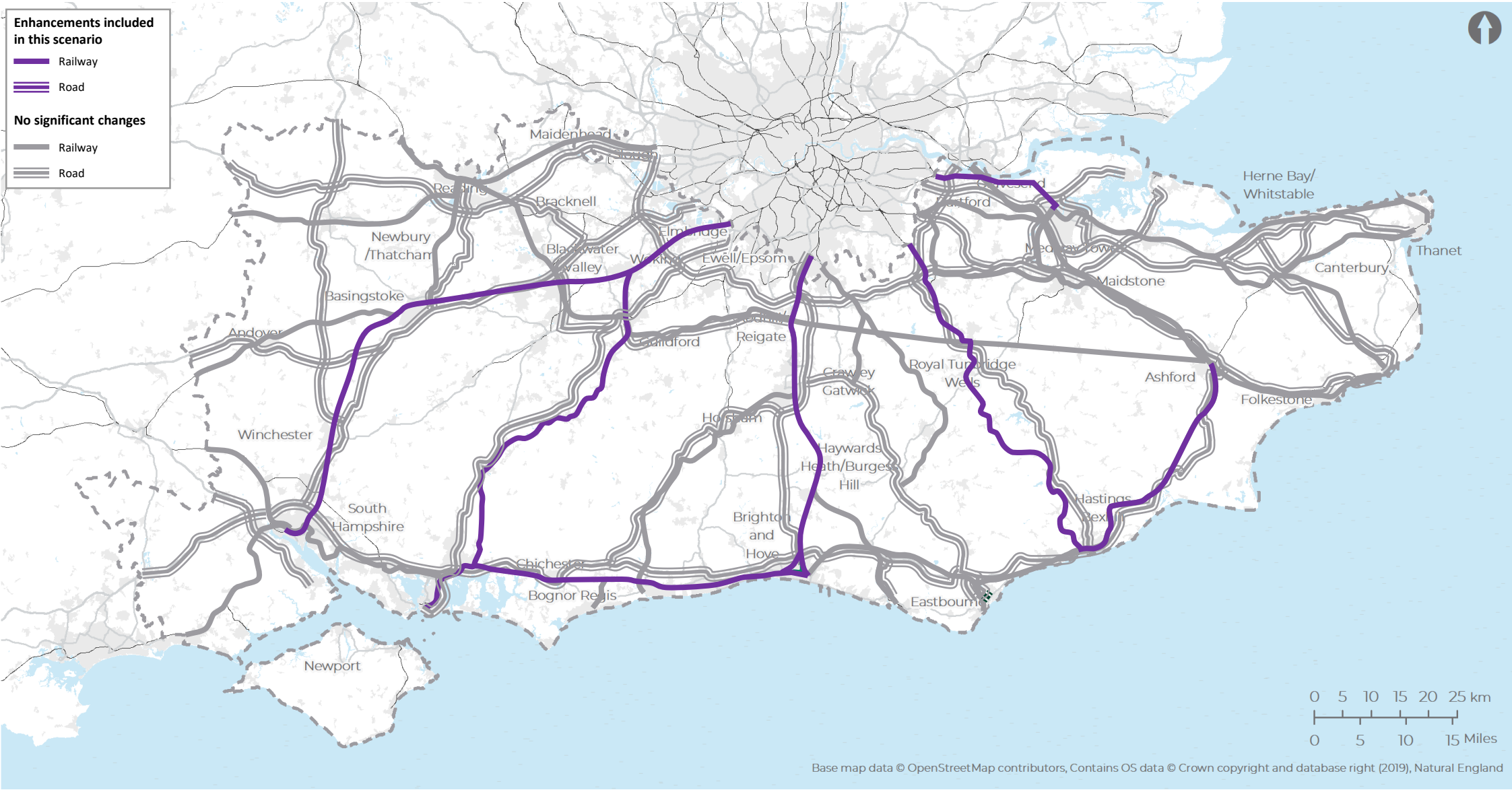
## Sustainable Future transport package

This scenario would require very little physical intervention in the transport network, if any. The model results point to significant demand increases on the Chatham Main Line (Ramsgate branch) and part of the Great Western Main Line, which may require some intervention.



## Sustainable Route to Growth Transport Package

This scenario shifts much of the demand generated by the **Our Route to Growth** scenario from the road to the rail network. This would likely require significant interventions on both radial and orbital rail routes.



Appendix B

# Scenario Results Dashboards

Client: Transport for the South East
4 October 2019
Our ref: 234337

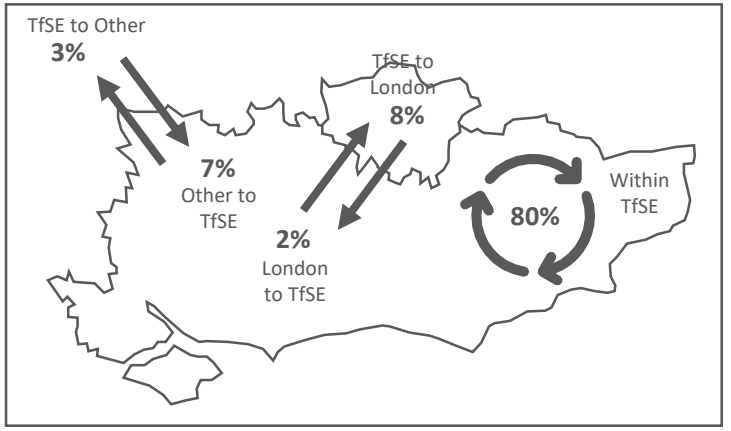
steer

# Today

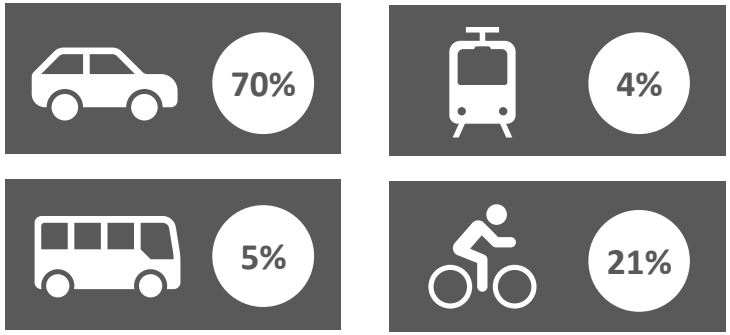
Current indicators based on the Department for Transport's National Trip End Model

| 7.8m | 3.3m | £183bn | 20.9m |
|---|---|---|---|
| Population | Employment | GVA | Trips |

## Current split of movement types



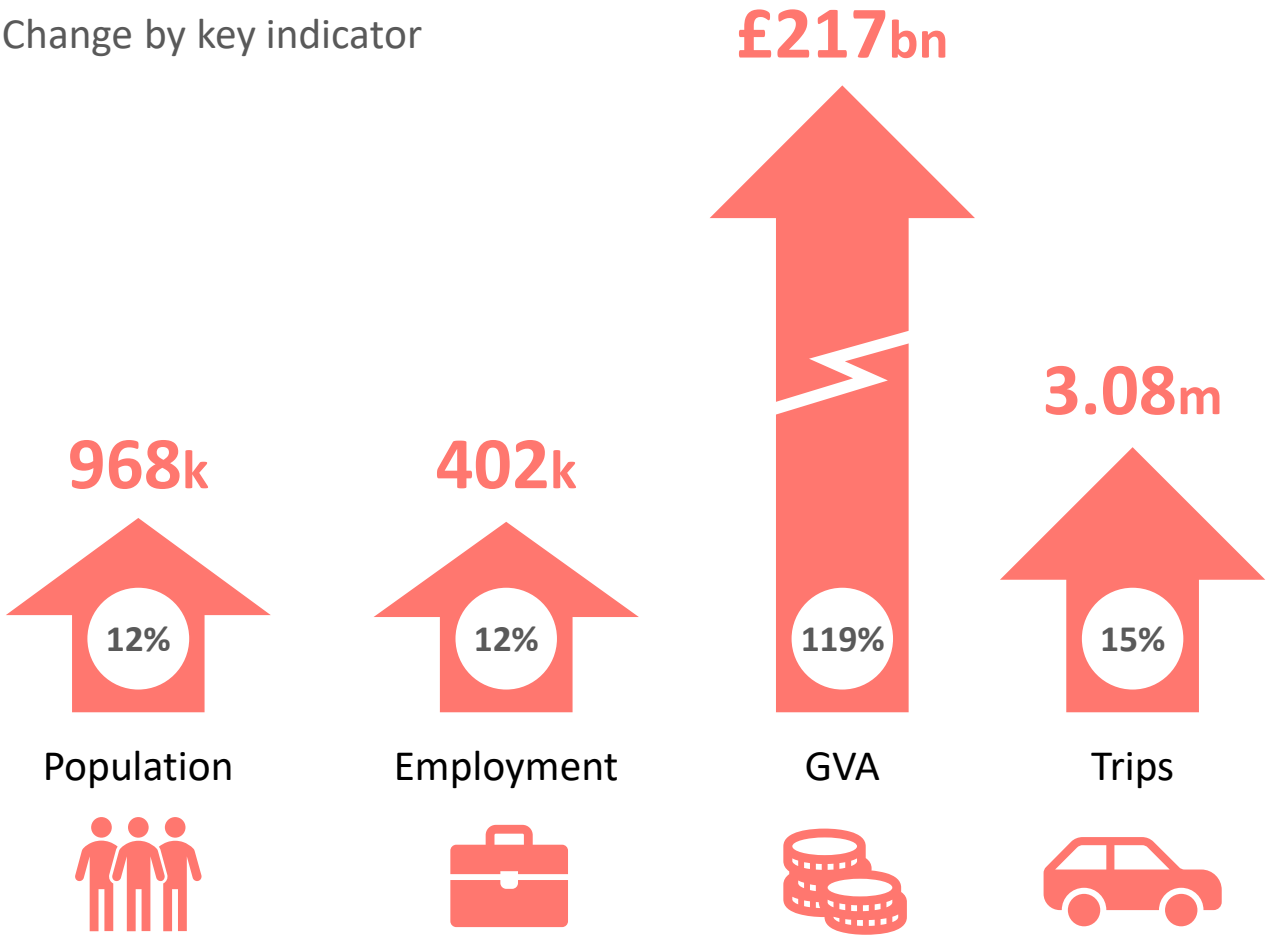

## Current mode share



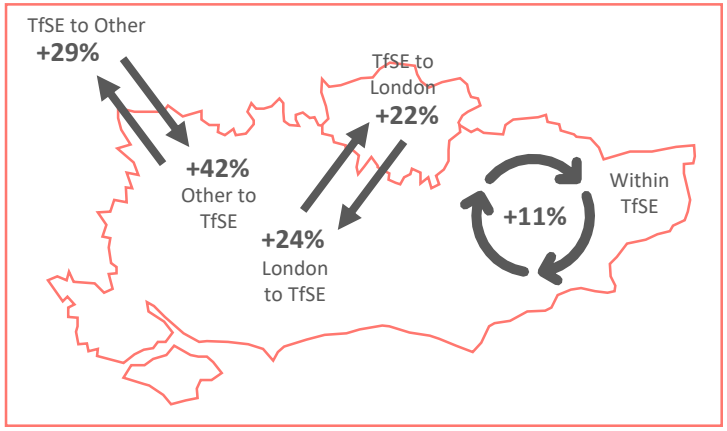

Includes walking

# Business As Usual (2050)

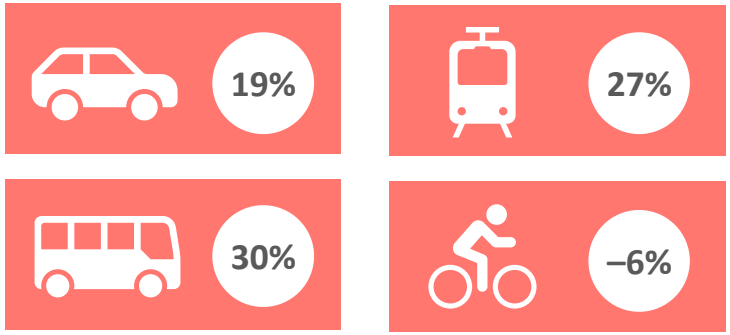
## Change by key indicator




## Change by movement type




## Change in trips by mode

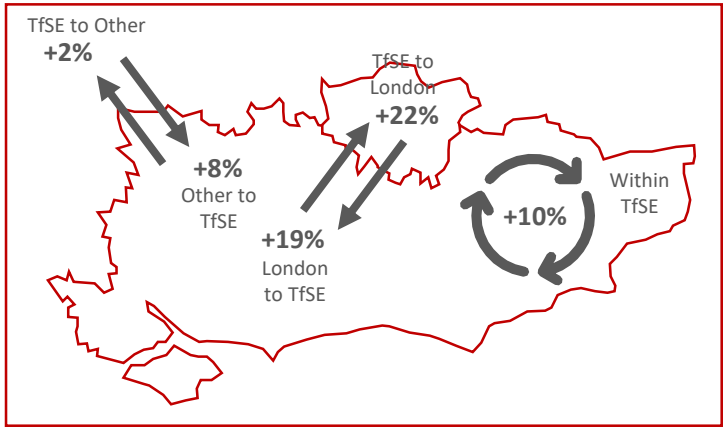


# The London Hub

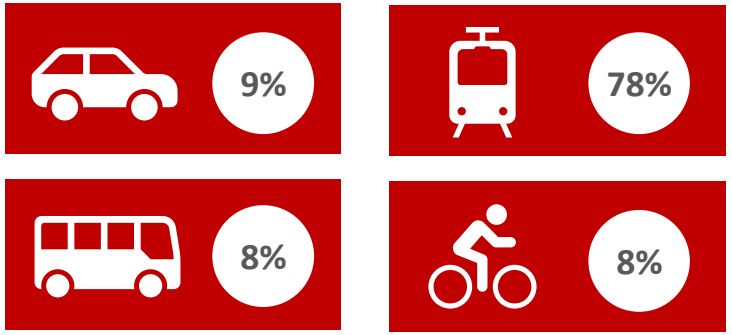
Change compared to **Business as Usual (2050)**

| | Population | Employment | GVA | Trips |
|---|---|---|---|---|
| Change | +1,006k | +284k | +£31bn | +2.67m |
| | 12% | 8% | 8% | 11% |
| BAU 2050 | 8.7m | 3.7m | £399bn | 24.0m |

Change by movement type




Change in trips by mode

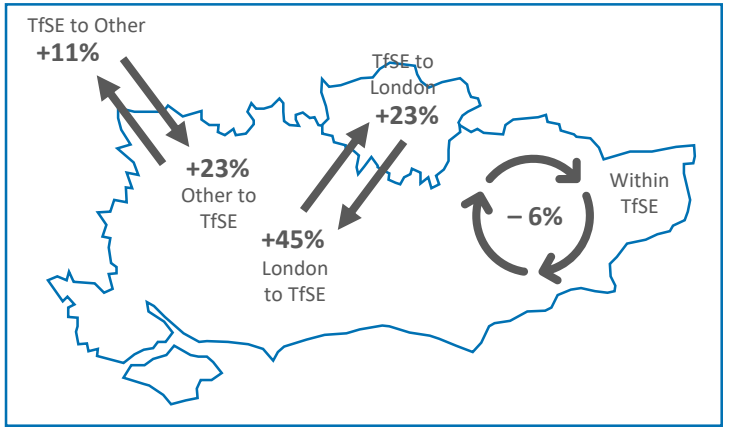


# Digital Future

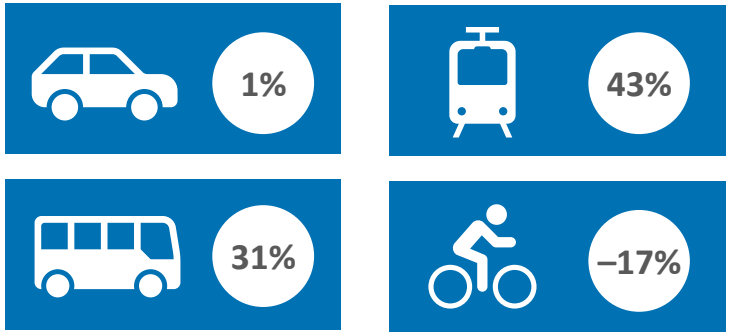
Change compared to **Business as Usual (2050)**

| | Population | Employment | GVA | Trips |
|---|---|---|---|---|
| Change | -3% | +61k (2%) | +£12bn (3%) | +0.26m (1%) |
| | –230k | | | |
| BAU 2050 | 8.7m | 3.7m | £399bn | 24.0m |

Change by movement type

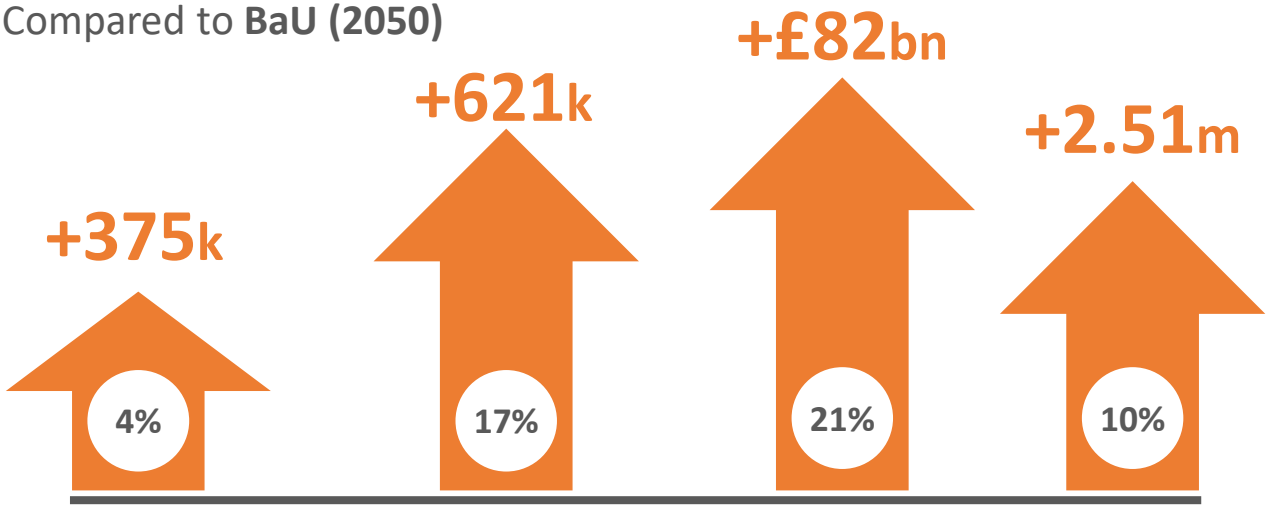



Change in trips by mode



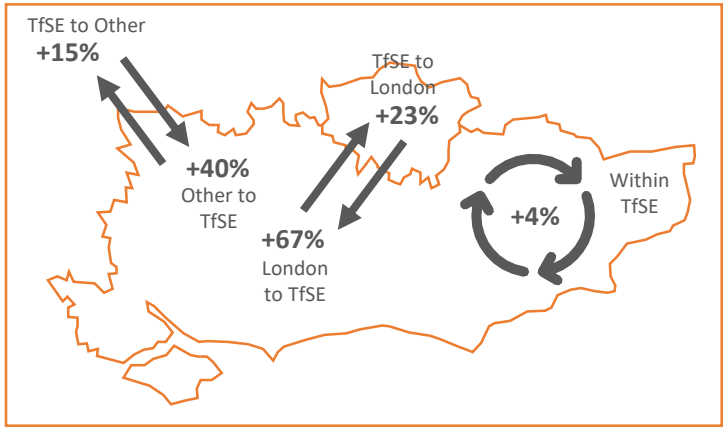
# Our Route to Growth

Compared to **BaU (2050)**

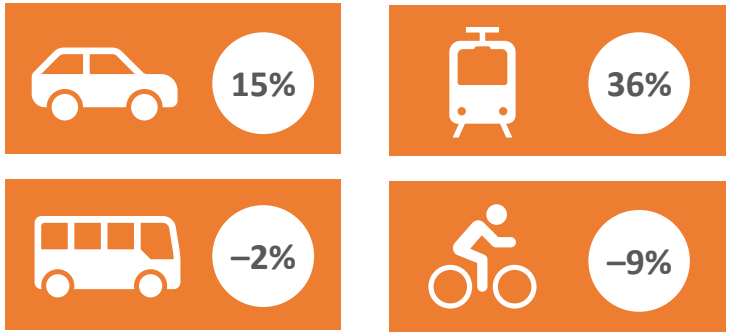



| Population | Employment | GVA | Trips |
|---|---|---|---|
| BAU 2050 | 8.7m | 3.7m | £399bn | 24.0m |

Change by movement type




Change in trips by mode

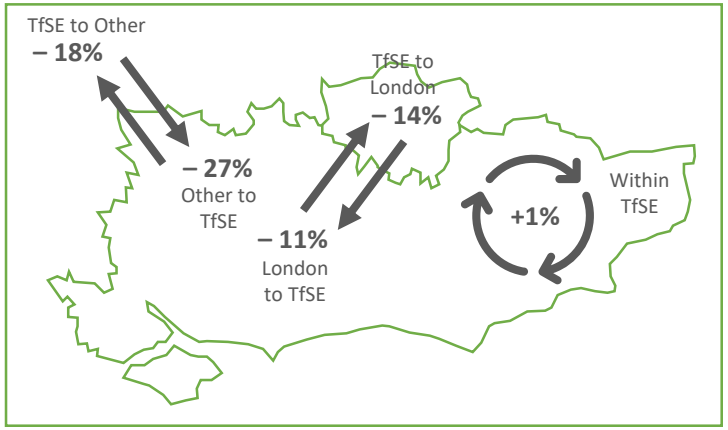


# Sustainable Future

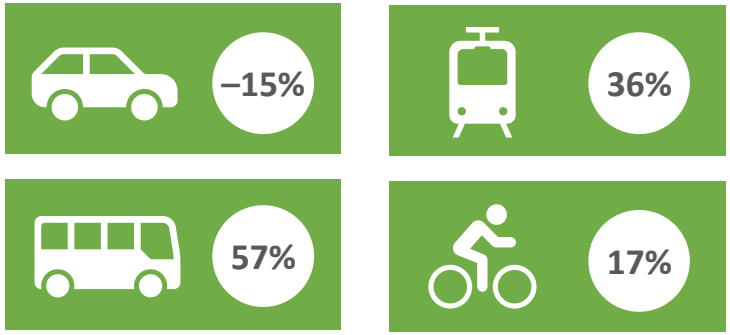
Change compared to **Business as Usual (2050)**

| | Population | Employment | GVA | Trips |
|---|---|---|---|---|
| Change | –117k | +58k | +£5bn | –817k |
| | -1% | 2% | 1% | -3% |
| BAU 2050 | 8.7m | 3.7m | £399bn | 24.0m |

## Change by movement type

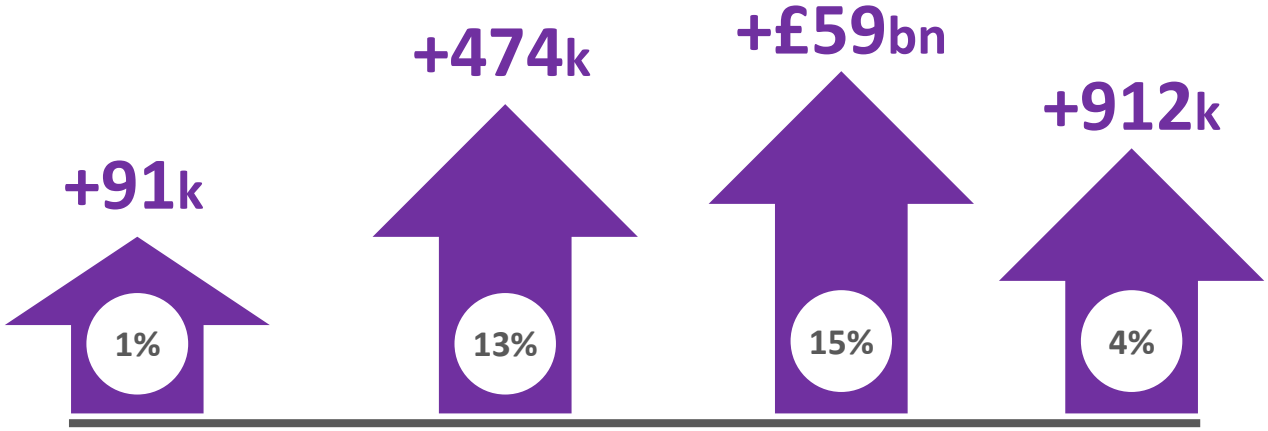



## Change in trips by mode



# Sustainable Route to Growth

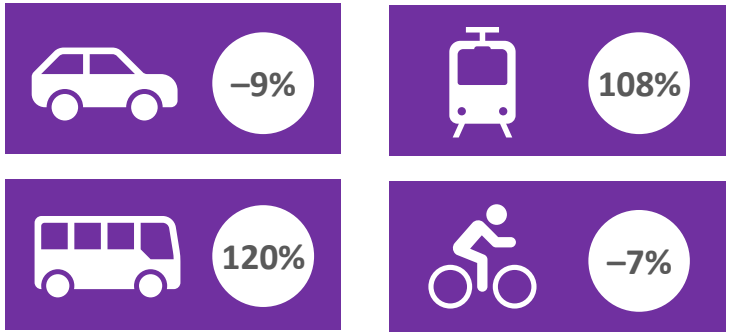
Change compared to **Business as Usual (2050)**




| | Population | Employment | GVA | Trips |
|---|---|---|---|---|
| BAU 2050 | 8.7m | 3.7m | £399bn | 24.0m |

Change by movement type


Change in trips by mode



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