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South of England North-South Connectivity

Alignment with UK Industrial Strategy: Technical Report

Bath and North East Somerset Council, Dorset County Council, Wiltshire Council

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Notice

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1. Introduction

1.1. Background

Large parts of the South of England experience poor strategic north-south transport connections, across an area bounded by the M5 to the west, A34 to the east, M4 to the north, and A31, A35 and Dorset coast to the south. Figure 1-1 shows the geography of the region.

Figure 1-1 – Geography of the region

[1] Both documents are available at http://www.bathnes.gov.uk/services/parking-and-travel/transport-plans-and-policies/north-south-connectivity-%E2%80%93-east-bath-link

Within this area, north-south connections are principally made by the A36/A46 through Bath or the A350 and A338 primary routes. Slow and unreliable journeys along these routes are constraining economic activity across Dorset, Wiltshire and the West of England.

The local authorities in the region have been working together to make the case to government for improved connectivity through the corridor. The authorities have, to date, developed a prospectus, supported by an economic study, both of which were published in October 2017[1].

The prospectus highlights the problems caused by poor connectivity in the north-south corridor. These include environmental problems in the cities, towns and villages on the route caused by slow-moving traffic, poor access to the Port of Poole and constraints to the economic performance of the region. The prospectus and supporting economic study also demonstrate the potential economic benefits of improved connectivity in the corridor.

1.2. Purpose of this report

This report further develops the evidence by considering how improved north-south connectivity through the corridor could support the objectives of the UK Industrial Strategy, which was published by the Department for Business Energy and Industrial Strategy (BEIS) in 2017, setting out the Government's policies for transforming productivity and supporting growth.

The Industrial Strategy has a strong focus on five 'Foundations of Productivity', which will be critical in transforming the local and national economy, and four 'Grand Challenges' to put the UK at the forefront of the industries of the future. This report assembles evidence on the Foundations

and Grand Challenges and demonstrates how poor connectivity is constraining the ambitions of the region.

The Industrial Strategy makes clear that proposals for major infrastructure should demonstrate how new infrastructure would support the five Foundations and help address the Grand Challenges. This report is intended to provide this evidence.

1.3. Industrial Strategy

The Industrial Strategy describes five Foundations of Productivity and four Grand Challenges. The five Foundations are:

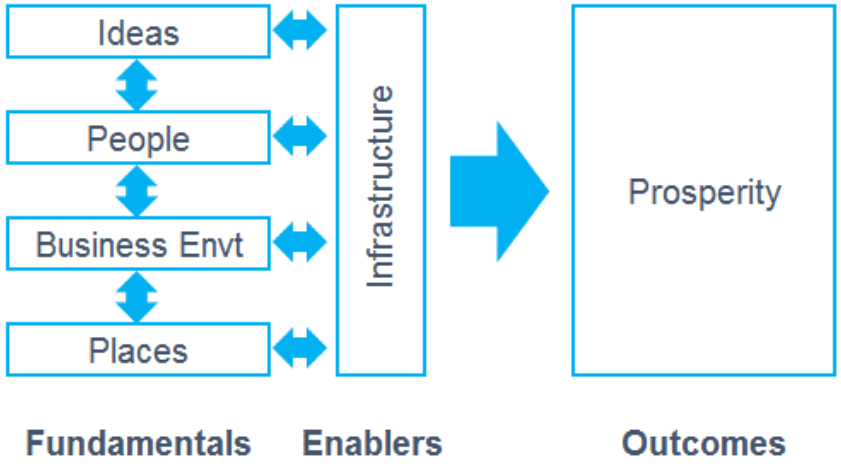
- **Ideas** – the world's most innovative economy;
- **People** – good jobs and greater earning power for us all;
- **Infrastructure** – a major upgrade to the UK's infrastructure;
- **Business environment** – the best place to start and grow a business;
- **Places** – prosperous communities across the UK.

The four Grand Challenges are to:

- Put the UK at the forefront of the **artificial intelligence and data revolution**;
- Maximise the advantages for UK industry from the global shift to **green growth**;
- Become a world leader in shaping the **future of mobility**; and
- Harness the power of innovation to help meet the **needs of an ageing society**.

Figure 1-2 illustrates the relationships between the five Foundations and prosperity outcomes. These relationships apply at both national and regional levels, and all of these conditions must be in place to support a thriving economy. It also highlights how effective infrastructure is an enabler of growth.

Figure 1-2 – Foundations of Productivity and Prosperity Outcomes



This framework has been used throughout the report to inform examination of the evidence, understand the dynamics of the economy and identify the role of transport connectivity in constraining the economic potential of the study area.

1.4. Regional Context

The authorities and Local Enterprise Partnerships in the region have already undertaken extensive work to analyse the evidence on the critical economic issues facing their areas. This is summarised in Table 1-1.

Table 1-1 – Regional evidence base

Area	Document	Weblink
Corridor level	South of England North-South Connectivity: Economic Study	Document
Dorset	Transforming Dorset: Strategic Economic Plan, March 2014	Document
	Key Sectors Report, March 2016	Document
	Economic Strategy for Dorset: Evidence Base, March 2016	Document
	Ambition and Vision for Dorset, 2018	Document
Swindon & Wiltshire	Local Economic Assessment, 2013	Document
	Strategic Economic Plan, March 2014	Document
	Strategic Economic Plan, January 2016	Document
Bath & NE Somerset and wider West of England	Bath & North East Somerset Economic Review, 2014	Document
	Strategic Economic Plan, March 2014	Document
	West of England Economic Report, 2017	Document
	West of England Strategy Discussion Paper, 2017	Document
	Shaping Our Future, 2018	Document

Further evidence on the economy of the region is also available in the Science and Innovation Audits (SIAs), which describe sectoral strengths and innovation assets throughout the corridor. These include the South West England and South East Wales Science and Innovation Audit , Innovation South (which includes Dorset and Hampshire) and Cyber-security (a belt north from Swindon & Wiltshire into the Midlands).

1.5. Why connectivity matters

Effective transport connectivity is an important enabling component in supporting the vitality of regional economies, city regions, market towns and their hinterlands.

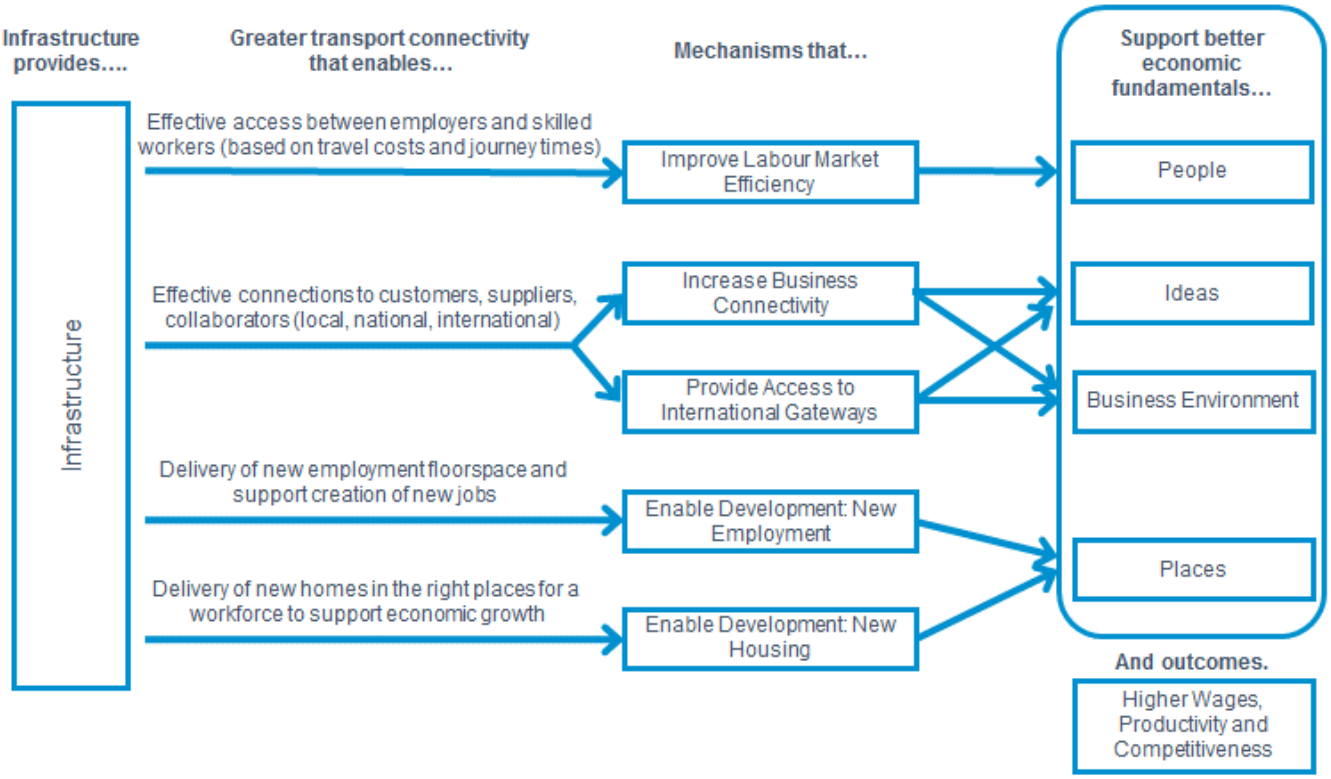
Connectivity supports the vitality of regional economies through the following mechanisms:

- **Improving labour market efficiency** (enabling businesses to access employees, and residents to access jobs, education and training);
- **Increasing business connectivity** (enabling businesses to access markets, supply chains and collaboration networks);
- **Access to international gateways** (enabling businesses to access global markets and encouraging inward investment and inbound tourism to the UK); and
- **Enabling development** (both new employment space to support growing businesses and new homes to meet the needs of the labour market – and the connectivity between them).

Figure 1-3 illustrates how these mechanisms relate to the five Foundations and support economic growth.

The evidence in this report has been used to investigate the strength of these potential linkages and the potential for improved north-south connectivity to support the ambitions of the Industrial Strategy.

Figure 1-3 – Transport connectivity and Foundations of Productivity



1.6. Structure of this report

This report describes the findings of this review.

- Chapter 2 present the **economic opportunities** in this corridor, including the current scale of activity and the growth potential of the corridor;
- Chapter 3 discusses the **economic challenges**, including competitiveness, productivity and the implications for wages;
- Chapter 4 provides **detailed evidence for the 'five foundations'**, to identify the underlying causes of the economic challenges;
- Chapter 5 discusses the extent to which the **Grand Challenges** can be addressed in the corridor; and
- Chapter 6 presents **conclusions and recommendations** for further study and practical work.

2. Economic opportunities

2.1. Introduction

This chapter describes the current economy and opportunities in the study area. The study area includes Bath & North East Somerset, Wiltshire, Dorset, Bournemouth and Poole, together with Bristol, Test Valley, New Forest and Southampton, reflecting wider regional impacts. It begins by providing an overview of the population, including key centres, and sets out the key population trends. It then provides an overview of the scale of employment, economic structure and growth potential of the study area.

2.2. Population

The population of the study area is approximately 2.6 million, including Bristol, Bath and North East Somerset, Wiltshire, Dorset, Poole, Bournemouth, New Forest, Test Valley and Southampton. This demonstrates that the area plays an important part of the economy of England as a whole.

The largest populations are in the cities: Bristol (459,000) and Southampton (252,000), whilst Bournemouth and Poole are collectively home to 346,000 residents. There are further major population centres in Swindon (220,000), Bournemouth (195,000), Bath & North East Somerset (189,000) and on the edge of Southampton in the New Forest (180,000). Wiltshire (496,000) and Dorset (423,000) comprise a mix of towns and rural areas.

There are strong clusters of population around Bristol and Bath, the towns of West Wiltshire (including Chippenham, Melksham, Trowbridge, Westbury and Warminster), the Solent city region (with Southampton and Portsmouth as dual hubs) and the South East Dorset conurbation. Salisbury is located north west of the Solent area and is a free-standing community. Large parts of the rural area are covered by environmental designations, including Areas of Outstanding Natural Beauty, and are characterised by sparse population densities. There is a network of market towns serving these rural areas, including Shaftesbury and Blandford Forum.

The population of the study area increased by 8.8% from 2007, higher than the average for England outside London (7.1%). There was particularly strong population growth during the last decade in the largest urban areas including Bristol, Swindon, Bournemouth and Southampton.

In terms of economic potential, it is important to consider the working age population. In 2017, this comprised 63% of the overall population. It was higher in the largest urban areas, including Bristol (68%), Southampton (69%) and Bournemouth (65%). The proportions are much lower in the more rural areas (e.g. 53% in East Dorset, 58% in North Dorset), reflecting the larger numbers of retired people in these areas. In terms of the working age population, it is also important to consider issues relating to worklessness and skills: these are considered later in this report.

The working age population is currently approximately 1.6 million, and it increased by 5.1% in the last decade, faster than the corresponding growth for England outside London (3.0%). The growth in working age population has, however, been at a lower rate than the growth in overall population, which is due to the rapid growth in the number of older people.

Looking forward, overall population growth in the study area is forecast to be 5.6% over the next decade, compared with 5.1% for England outside London. Growth is forecast to be highest in Bristol (9.3%) and Bournemouth (7.0%).

There will be slower growth in working age population (2.3%), although this will be faster than the average for England outside London (1.1%). Growth in working age population is forecast to be highest in Bristol (7.7%), Bournemouth (4.6%) and Southampton (3.0%). It is forecast to decrease in the more rural districts, including by up to 3.7% in North Dorset.

There will, therefore, be an increasing gap between the working age population and the total population, associated with people living longer. This gap will increase most rapidly in the rural districts and will be more modest in the cities.

Key points: this corridor has recently experienced stronger population growth than the rest of country. Forecast growth in the corridor is also forecast to be stronger than in the rest of the country. Population growth will be primarily concentrated within the city regions: Bristol and West of England, South East Dorset and Southampton / Solent area.

2.3. Jobs

The total number of people working in the study area is approximately 1.3 million. The largest numbers of jobs are in Bristol (242,000), Bournemouth and Poole (168,000), Southampton (127,000), Swindon (112,000) and Bath & North East Somerset (90,000). There are 237,000 jobs in Wiltshire, focused in the main economic centres in Salisbury, Chippenham, Trowbridge and other parts of West Wiltshire.

Employment in the corridor increased by 8.1% over the last decade, higher than the average growth for England outside London (5.4%). The most rapid growth was in Bristol (+18.9%), Bournemouth (+18.5%) and Southampton (11.3%), which reflects the economic renaissance of cities across England. There was also strong growth in Bath (+7.2%) and Wiltshire (+8.6%), but growth was less strong in the more rural areas. There were reductions in the number of jobs in Mendip (-14%) and West Dorset (-7%).

Key points: this corridor has experienced significantly stronger employment growth than the rest of country. Employment growth has been strongest in the city regions: Bristol / West of England, South East Dorset and Southampton, whilst employment has declined in rural areas. However, there will also be future challenges in delivering higher quality jobs that will support productivity growth in the corridor: this issue is explored later in the report.

It is also important to recognise that many areas, for example parts of Dorset and Wiltshire, benefit from quality of life and outstanding natural environment and amenity, which is not fully reflected in this narrowly defined economic data. This is an important issue for the study area.

2.4. Economic structure

The structure of the economy of the study area is, overall, broadly similar to the average for England outside London. London has a specific economic structure and has been excluded from the analyses. Table 2-1 shows the proportion of the workforce in different sectors of the economy.

Table 2-1 – Proportion of workforce in different sectors

Sector	Corridor	England	Maxima
Primary (incl. agriculture, mining)	3%	3%	**Mendip (9%), Purbeck (8%)**
Manufacturing	8%	9%	**East Dorset (14%), Poole (12%)**
Construction	5%	5%	**New Forest (9%), E. Dorset (8%)**
Distribution (incl. transport)	28%	29%	**Mendip (34%), Swindon (31%)**
Information and Communication	4%	3%	**Southampton (6%), Bristol (5%)**
Financial and Insurance	5%	3%	**Bournemouth (10%), Swindon (9%)**
Real Estate	2%	2%	**Bournemouth (2.9%), Test Valley (2.5%)**
Professional and Business Services	15%	16%	**Bristol (20%), Swindon (18%), Southampton (17%)**
Public Services	26%	26%	**Southampton (34%), Bath (33%), W Dorset (32%)**
Other Services (incl recreation)	4%	4%	**Purbeck (8%), New Forest (6%)**

Source: Atkins analysis, ONS Data (2016 base)

This analysis shows that there are distinct economic structures across the study area. These can be characterised as follows:

- Concentrations of employment in **financial services and business and professional services in Bournemouth, Bristol and Swindon**;
- Concentrations of employment in **public services in locations that are headquarters for major public bodies (e.g. Southampton, Bath, Dorchester)** – this is typical of the rest of the country;
- Relatively strong representation of the **visitor economy in Purbeck, Bournemouth and the New Forest** (this is also important in **Bath** and in parts of **Wiltshire** clustered around Stonehenge and Longleat);
- Relatively high representation of **manufacturing employment in Poole, East Dorset, Purbeck and North Dorset (but lower in other places)**;
- A strong focus on **quarrying in Purbeck and Mendip and agricultural activity across much of Dorset and Wiltshire**; and
- A relatively high proportion of jobs in the **construction sector in much of Dorset and the New Forest**.

The study area is home to world-leading clusters, including aerospace, advanced manufacturing, low carbon and creative industries in the West of England, financial technology in Bournemouth and maritime along the South Coast. Sector clusters and strengths are discussed later in this report.

Key points: overall, the corridor has a similar economic structure to the rest of the country in terms of the proportions of people working in different sectors. However, this masks significant differences across the broad corridor, with strong representation of business services in the city regions, an important visitor economy on the coast and a greater focus on primary activities in the more rural areas of Wiltshire and Dorset.

2.5. Gross Value Added

Gross Value Added (GVA) is a measure of the scale of output in the economy and relative economic success. The total GVA of the study area was **approximately £64 billion in 2016**. The areas with the largest GVA were Bristol (£13.8 billion), Wiltshire (£10.6 billion), Bournemouth and Poole (£7.8 billion), Swindon (£6.8 billion), Southampton (£6.0 billion) and Bath & North East Somerset (£4.6 billion).

Data is also available on the GVA by sector in each district and for the study area. Overall, this shows differences between this corridor and the national average in terms of GVA generated by each sector as a proportion of total GVA (see Table 2-2).

The most significant difference is in manufacturing. Overall, in the corridor, manufacturing only contributes 8% of total GVA, compared to 13% in England outside London[2]. Within the study area, manufacturing plays an important role in Swindon, many of the Dorset districts and Mendip, but a more minor relative role in the larger economies of Bristol, Bournemouth and Southampton.

Financial Services play a very important role in the economy of Bournemouth and Professional and Business Services is important in Bristol. Real estate plays a particularly important role in much of Dorset, including Bournemouth, East Dorset and Purbeck.

The Tech Nation Report 2018 has highlighted the **strong influence of the tech sector in parts of the corridor**, with clusters in Bristol and Bath, Bournemouth/Poole and Southampton. Bristol and Bath was identified as the UK's most important digital powerhouse, with a £320,000 turnover per worker.

The importance of Southampton as one of the UK's primary international gateways is reflected in the high proportion of GVA generated by the distribution sector in Southampton (Southampton Port itself) and Test Valley and New Forest (clustered logistics activity around the M27 corridor).

*[2] The numbers of **jobs** as a proportion of the total economy are 8% in the corridor and 9% in England outside London. In other areas, manufacturing generates more GVA per worker than the national average. This is not the case in this corridor. This productivity challenge is explored in the next chapter.*

Table 2-2 – Proportion of GVA in different sectors

Sector	Corridor	England	Maxima
Primary (incl agriculture, mining)	4%	4%	**Mendip (8%), Purbeck (6%)**
Manufacturing	8%	13%	**East Dorset (14%), Purbeck (13%), Swindon (13%)**
Construction	6%	7%	**New Forest (11%), North Dorset (10%)**
Distribution (incl transport)	20%	20%	**Southampton (25%), Test Valley (24%), New Forest (23%)**
Information and Communication	4%	5%	**Test Valley (7%), Bristol (6%)**
Financial and Insurance	7%	4%	**Bournemouth (16%), Swindon (14%)**
Real Estate	14%	14%	**East Dorset (25%), Purbeck (22%), Bournemouth (20%)**
Professional and Business Services	12%	11%	**Bristol (17%), Wiltshire (15%), Test Valley (14%)**
Public Services	20%	19%	**Southampton (26%), Bath (24%), Bristol (24%), W. Dorset (24%)**
Other Services (incl recreation)	4%	4%	**Purbeck (7%), North Dorset (6%)**

Source: Atkins analysis, ONS Data (2016 base)

Key points: there are distinct characteristics of this corridor when examined through the lens of economic output. Certain sectors, which are identified above and in the corresponding table, have significantly greater impact, when measured by GVA, in different parts of the corridor.

2.6. Connectivity

The purpose of this study is to consider how improved connectivity in the corridor can support the objectives of the UK Industrial Strategy. It is therefore important to ensure a clear understanding of current evidence and its traction both within the corridor and into national policy drivers

There are distinct dynamics in this area, including the presence of international gateways, large city regions, market towns and their rural hinterlands and a nationally significant visitor economy, all of which strongly influence the transport needs of this area as well as wider economic considerations.

Highways England plays an important role, through management of the Strategic Road Network, in supporting economic growth in England. This has included extensive research into the role of the Strategic Road Network (SRN) in enabling economic growth across England. This was set out in The Road to Growth, Highways England's Strategic Economic Growth Plan, which is supported by a wide range of supporting evidence.

The report on economic growth and the strategic road network sets out the theory and international evidence on how strategic roads support economic growth. It provides evidence on the role of the SRN in improving productivity, increasing trade, facilitating investment and helping to increase labour supply.

In the case of **productivity**, the evidence is focused on business costs and agglomeration. It shows that agglomeration[3] effects are strongest up to 40 minutes, based on typical commuting times in labour markets. This is important in influencing how different areas interact: towns and cities are much more likely to interact with other places that are easily accessible. This

[3] For example, the role proximity and distance between markets and people play in delivering enhanced productivity.

is a clear challenge in this study area, where South East Dorset is relatively accessible to the Solent region, but with poor accessibility to Bristol and Bath.

The report also highlights the importance of connectivity in **facilitating exports** through improved access to international gateways. Increased international trade can support national economic growth and firms that trade on the global stage are likely to be more productive. **New housing and employment development** can also be facilitated by improved connectivity. Whilst domestic investment could be displaced from elsewhere in the UK, there is potential for globally mobile investment to support national growth.

The report on assessment of growth impacts provides a set of case studies on the impacts of road improvement schemes on local economies. This highlighted the importance of aligning investments with the local economic context, including addressing market drivers and growth pressures. The evidence also indicates that investments can help to address challenges faced by more peripheral areas in better connecting to the SRN.

The report on commercial development and the strategic road network explains the role of the SRN in catering for different sectors and how the property market responds to strategic road connectivity. Quality of transport choices is a key determinant in location choices for local, regional, national and international investment.

It explains that the **industrial and logistics sector** is most dependent on the SRN, and that transport investment can improve productivity by reducing transport costs, employment costs or making sites more accessible.

The report highlights that most recent speculative industrial development has been along the M1/M6 economic spine between London and the Midlands and north, with relatively limited investment elsewhere, with the exception of significant investments at Southampton and Andover. The report highlights the potential for **logistics development at ports** including Southampton.

The report also discusses the drivers of **office demand** and highlights the renaissance of city centres as economic hubs, with the primary objective of the SRN being to connect cities, although there remains a role in providing access for commercial floorspace on the fringes of urban areas.

Moreover, the SRN plays a particularly important role in supporting the **leisure economy**. This corridor is home to **Stonehenge** and **Bath** (ranked 3rd and 4th outside London by visitor numbers) and **Longleat**, as well as having a leading visitor offer with the **Jurassic Coast, Bournemouth and the New Forest**.

The Report on International Gateways provides evidence on the scale of activity at England's largest ports and airports and the role of the SRN in meeting their connectivity needs. It highlights that, in 2014, **Southampton** was ranked 4th in England in terms of tonnage handled (after Grimsby / Immingham, London and Tees/Hartlepool, and ahead of Liverpool, Felixstowe and Dover). In terms of the value of imports and exports, Southampton is ranked second (just after Felixstowe, and more important than Dover). The Solent Strategic Economic Plan highlights that the ports of the Solent are the largest exporters of vehicles in the UK and Southampton home to the largest cruise port in the UK.

This scale of activity at Southampton is reflected in the scale of employment and economic value in the distribution sector within the city and surrounding areas. It also demonstrates the importance of effective road connectivity to Southampton Port as a strategic national economic asset.

Although not explicitly mentioned in the report, the **Port of Poole** plays a critical role in the economy of the study area and faces particular challenges with access to the SRN. This is discussed further in Chapter 4.

The report also included discussion of the needs of airports as international gateways. It focused on England's largest airports for passenger and freight traffic and did not analyse the airports serving the study area (Bristol, Bournemouth and Southampton). However, there is clear evidence on their role in meeting the international connectivity needs of the region, and effective surface access is a critical component. This is addressed in Chapter 4.

The evidence also includes a Report on socio-economic analysis, growth forecasts and the strategic road network. This provides evidence on the current performance of the SRN and economic performance across England, together with forecasts of growth in population, jobs and GVA.

The A46/A36 corridor, from the M4 near Bristol to the M27 near Southampton, experiences some of the highest levels of delay and lowest speeds of any SRN corridor in England. Other corridors with particular challenges elsewhere in England, including the A47 to Norwich and A69 Newcastle to Carlisle, have been considered in more detail through Strategic Studies. In contrast, there

are currently no proposals for strategic studies or major interventions on the A46/A36 corridor. The A350 is not currently an SRN corridor.

It also introduces the concept of SRN-dependent sectors, which have been defined based on the proportion of costs spent on transport, and include:

- Land transport;
- Retail and wholesale;
- Primary materials;
- Manufacturing – users of transport services; and
- Construction.

These analyses demonstrate that SRN-dependent businesses tend to cluster around major nodes on the SRN, including London and the Thames Valley, the West Midlands, Nottingham/Derby and the cities in the north. In the study area, there are clusters of SRN-dependent businesses around Bristol, Swindon, Bournemouth/Poole and the Solent region, which reflects current clusters of economic activity and access to the existing SRN.

The report provides a series of forecasts of growth in population, jobs and GVA, to inform the identification of economic growth areas in England. The scope for growth in this corridor is explored in the next section.

Key points: the evidence in these reports demonstrates the critical importance of the strategic and major road network to the UK economy. It demonstrates that the road network is importance in helping to improve business productivity, facilitate exports through access to international gateways and help to unlock the delivery of new homes and jobs.

The evidence demonstrates the importance of the road network in providing access to the Ports of Southampton and Poole and the key role played in supporting the logistics and manufacturing sectors and the visitor economy of the region.

2.7. Growth potential

There is clear evidence of strong growth potential along the corridor. The previous section has shown that there is a diverse economy, with representation of all sectors, and there is a growing population and labour market to meet business needs. The underlying conditions for growth (skills, innovation, business environment and infrastructure) are explored later in this report.

In terms of population, it has already been shown that the overall population is forecast to grow faster than the average for England outside London. The working age population, i.e. the potential labour market, is forecast to grow more slowly than the overall population. Nevertheless, working age population is forecast to grow more rapidly than the average for England outside London.

However, these forecasts mask significant differences across the study area. The growth in working age population is forecast to be highest in the cities, with decreases in the more rural areas.

Detailed evidence on forecast population, employment and GVA growth across England also provided in **Appendix A**.

Figure A-1 confirms particularly strong forecast growth in and around Bristol, Bournemouth and Southampton, with less rapid growth in overall population in the more rural parts of the corridor.

Figures A-2 and A-3 demonstrate strong potential employment growth across the corridor, and Figure A-4 shows that this will translate into strong GVA growth. Figures A-5 and A-6 show very strong forecast growth in both jobs and GVA in SRN-dependent sectors in the West of England and Dorset and the South Coast.

Key points: these analyses demonstrate strong potential for growth in the economy of the study area, in terms of overall population, labour market, employment and total GVA. However, there are also a number of challenges and constraints to future growth. The economic challenges are discussed in the next chapter.

3. Economic challenges

3.1. Introduction

This chapter describes the most significant economic challenges in the corridor. It commences with evidence on the competitiveness of each District, followed by data on employment and workplace and resident wages, which measures the prosperity of each area. From this, it is possible to distil the critical economic challenges in each part of the study area.

3.2. Competitiveness

The UK Competitiveness Index (UKCI) was developed to inform benchmarking of different parts of the UK, including towns, cities and Local Enterprise Partnership (LEP) areas. The Index is based on a Three-Factor Model: **input factors** (including economic activity rates, business start-up rates, proportion of knowledge-based businesses and proportion of the population with NVQ Level 4 qualifications and above), **output factors** (GVA per head, output per hour worked and employment rates), and **outcome factors** (gross weekly pay, unemployment rates).

Table 3-1 shows the index for each District in the study area. The UKCI is presented for both 2013 and 2016: higher scores imply higher levels of competitiveness (against a UK average of 100). The table also show the rankings of Districts, from a total of 379 Districts across the UK. The Districts are presented in order of 2016 rankings.

This shows that, overall, most parts of the study area are relatively competitive, with most areas in the top half of the rankings of UK Districts. **The most competitive Districts are Test Valley, Bristol, Swindon and Bath & North East Somerset**. These areas are characterised by higher-value activities and are also well connected to strategic road and rail networks. Southampton and Bournemouth are less competitive, although both are within the top half of Districts in the UK. **The least competitive districts are in Mendip and Dorset**: these are characterised by lower-value activities (including primary activities) and are less well connected to strategic transport networks.

Table 3-1 – Competitiveness Index of Study Area

Local Authority	UKCI 2013	Rank 2013	UKCI 2016	Rank 2016
Test Valley	104.8	71	106	66
Bristol	103.9	75	104.7	72
Swindon	102.4	83	104.1	75
Bath & North East Somerset	102.4	84	101.6	91
Poole	98.3	116	97.9	120
New Forest	98.9	110	97.8	122
Wiltshire	97.4	122	96.6	132
East Dorset	92.4	161	94.5	148
Southampton	90.1	192	92.8	166
West Dorset	95.3	136	92.5	170
Bournemouth	92.5	160	92	172
Christchurch	92.3	162	91.9	173
Purbeck	90.6	187	91.7	174
Mendip	89.9	198	91.3	176
North Dorset	87.7	230	90.3	191
Corridor average	**95.9**	**139**	**96.4**	**137**

Source: UK Competitiveness Index.

The performance (in terms of UKCI) of most Districts improved from 2013 to 2016, meaning that these Districts improved in their rankings during this period. However, some areas experienced a decline in their relative performance, including New Forest, Wiltshire, West Dorset, Poole, Bournemouth and Christchurch. North Dorset is the lowest ranking authority in the study area, but the area made a significant improvement in its relative performance between 2013 and 2016.

Key points: there is significant variation in relative competitiveness across the study area. The most competitive areas are focused around the larger city regions (West of England and Solent) and other locations with good strategic road and rail connectivity.

There is much lower competitiveness in the rural and more remote areas with poor strategic connectivity. Many of the more peripheral areas also experienced a reduction in competitiveness to 2016. This appears to indicate differentials in the dynamism of economies across the study area.

3.3. Employment

Employment statistics are an important measure of the performance of the economy, reflecting the availability of job opportunities and the strength and capacity of the labour market in responding to these opportunities.

Table 3-2 summarises employment statistics across the study area, including economic activity, employment rate and unemployment rate. The authorities are presented in ascending order of unemployment rates.

At the corridor level, the rates of unemployment, economic activity and employment are better than the national average, with lower unemployment and higher economic activity and employment than the national average.

As with the competitiveness data, **there are significant variations across the study area**. Unemployment varies between 2.6% in Purbeck and 6.5% in Mendip. There is, however, relatively limited correlation between unemployment and overall competitiveness of each area. Although Mendip has relatively high unemployment and low competitiveness, Purbeck also has relatively weak competitiveness despite much lower levels of unemployment. Swindon also has relatively high levels of unemployment, despite strong overall competitiveness.

This indicates that **there are pockets of unemployment in relatively strong local economies** (e.g. Swindon) and there can be relatively low levels of unemployment in weaker economies.

Economic activity and employment rates are highest in Test Valley, East Dorset, Swindon, Wiltshire and the New Forest. The lowest activity and employment rates are in Southampton, Bournemouth, Mendip, West Dorset and Purbeck.

Table 3-2 – Employment Data in Study Area

Local Authority	Economic activity rate %	Employment rate %	Unemployment rate %
Test Valley	86.9	83.3	4.2
East Dorset	84.9	82.6	2.7
Swindon	83.6	79.1	5.4
Wiltshire	83.5	81.0	2.9
New Forest	83.1	80.2	3.5
Bristol	81.3	78.9	2.9
Bath & North East Somerset	80.2	77.5	3.4
North Dorset	80.1	75.8	5.3
Poole	79.8	77.3	3.2
Purbeck	78.1	76.1	2.6
West Dorset	77.9	74.2	4.8
Mendip	77.9	72.8	6.5
Bournemouth	77.6	74.5	4.0
Southampton	77.4	73.2	5.5
England	78.6	75.2	4.3
England (excl Gtr London)	78.7	75.4	4.1
Corridor	**81.3**	**78.2**	**3.8**

Source: Nomis, Population Survey 2018

Key points: the study area, overall, is performing better in employment terms than the national average, but there are significant variations across the study area, with notable challenges across several indicators in certain areas including Southampton, Bournemouth, West Dorset, North Dorset and Mendip.

3.4. Relative economic performance

GVA per job and per hour worked are useful measures of relative economic performance, with pounds earned per hour worked the better measure of productivity. They have limitations due to the ways in which GVA is reported at an aggregate level, but they are useful measures of the relative performance of the economies of different areas.

Table 3-3 presents the index of GVA per filled job, with the whole of the UK indexed at 100.0, for 2010, 2013 and 2016. It is presented at the NUTS3 geographic level, which is at a larger scale than the individual districts shown in previous tables. Nevertheless, it shows distinct variations in the performance of different parts of the corridor.

England is higher than the UK average due to the high GVA per worker in London and the South East. It is important to recognise that this indicator is lower than the UK average in most regions. **The highest levels of output, based on this indicator, are in Swindon, South Hampshire (including Test Valley and New Forest) and Bath & North East Somerset.** Performance in Bristol and Southampton is slightly below the national average, while **Bournemouth and Poole, Wiltshire, Dorset and Somerset are well below the national average.**

The table also shows that there have been some significant changes in performance since 2010. **Bath & North East Somerset has strengthened its position as a high-performing economy, but Wiltshire, Dorset and Somerset have experienced decline in relative performance.**

Table 3-4 presents an alternative metric: GVA per hour worked. The top three areas are again South Hampshire, Bath & North East Somerset and Swindon, although the order has changed. Relative economic output in Bristol and Southampton is again slightly below the UK average, and **Wiltshire, Bournemouth & Poole, Dorset and Somerset are again well below the national average.**

The changes from 2010 to 2016 follow the patterns in Table 3-3: **Bath & North East Somerset has strengthened its position as a high-performing economy, but Wiltshire, Dorset and Somerset have experienced decline in relative performance.**

Table 3-3 – Index of GVA per filled job in Study Area

NUTS Area	2010	2013	2016
Swindon	111.9	109.6	107.3
South Hampshire	106.1	105.8	104.4
Bath & NE Somerset, N. Somerset, S. Gloucs	101.4	103.0	104.4
Bristol	97.4	95.0	94.4
Southampton	93.4	92.8	92.9
Bournemouth & Poole	90.1	85.3	86.0
Wiltshire	89.0	87.8	84.2
Dorset	83.3	81.3	81.7
Somerset	81.8	80.2	80.3
England	101.9	101.6	101.6
UK	100.0	100.0	100.0

Source: Table B.1, ONS Regional and Sub-Regional Productivity Release, Feb 2018

Table 3-4 – Index of GVA per hour worked in Study Area

NUTS Area	2010	2013	2016
South Hampshire	109.6	110.4	109.4
Bath & NE Somerset, N. Somerset, S. Gloucs	104.1	106.6	108.2
Swindon	111.2	106.0	105.8
Bristol	96.8	93.0	95.1
Southampton	98.5	95.3	94.8
Wiltshire	97.4	94.6	91.9
Bournemouth & Poole	90.5	86.9	88.1
Dorset	86.0	84.8	85.3
Somerset	83.0	81.8	83.3
England	101.8	101.5	101.4
UK	100.0	100.0	100.0

Source: Table A.1, ONS Regional and Sub-Regional Productivity Release, Feb 2018

Key points: there are significant disparities in economic output across the study area, with the lowest performance (and relative declines in output) in Wiltshire, Bournemouth & Poole, Dorset and Somerset. These patterns show a clear correlation with the UKCI presented in Section 3.3.

3.5. Earnings

Wages are an important measure of the strength of the economy, reflecting both the productivity of employment and the prosperity and spending power or local communities.

Table 3-5 shows workplace and resident median wages in the different local authorities in the study area. The authorities are presented in ascending order of workplace wages.

The median workplace wage is just over £23,000, slightly higher than the corresponding average for England outside Greater London. However, **the average masks a large variation in workplace wages**, ranging from only £14,000 in Christchurch to over £26,000 in Test Valley. In general, **the highest workplace wages are in the city-regions**: Solent (Test Valley and Southampton), West of England (Bristol and Bath) and South East Dorset (Poole). Swindon also provides high-paid jobs.

The average median resident wage, for the corridor, is slightly higher than the workplace average. This is due to higher-earning commuters from the area travelling to higher-paid jobs outside the study area, including London. Again, the average masks significant variation in resident wages, ranging from under £17,000 in Purbeck to almost £26,000 in Test Valley. **The highest resident wages are in areas where people commute to well-paid jobs elsewhere, in nearby city regions or to London.**

The table also shows the difference between workplace and resident wages in each District. In the cities and main towns (Bristol, Southampton and Poole), resident wages are significantly lower than workplace wages, reflecting sub-regional labour market dynamics.

There are very large differences in Christchurch and Purbeck. In Christchurch, the employment market is characterised by very low-paid jobs, but residents tend to commute to higher-paid jobs elsewhere, including Bournemouth and Southampton. Purbeck is characterised by very low wages amongst residents, which are likely to be due to employment in the visitor economy. The higher-paid jobs in Purbeck are likely to be filled by people living outside the District.

Table 3-5 – Workplace and Resident Median Wages in Study Area

Local Authority Area	Annual Workplace Median Wage (£)	Annual Resident Median Wage (£)	Diff. (Workplace - Resident) (£)
Christchurch	£14,000	£20,750	-£6,750
Mendip	£18,513	£21,006	-£2,493
West Dorset	£20,782	£21,433	-£651
Purbeck	£21,173	£16,849	£4,324
North Dorset	£21,753	£21,759	-£6
Wiltshire	£21,936	£23,655	-£1,719
New Forest	£21,965	£22,498	-£533
Bournemouth	£22,119	£23,661	-£1,542
East Dorset	£22,486	£24,829	-£2,343
Bath & North East Somerset	£22,963	£23,760	-£797
Southampton	£23,351	£22,007	£1,344
Poole	£23,857	£23,280	£577
Swindon	£24,290	£25,377	-£1,087
Bristol	£25,094	£24,122	£972
Test Valley	£26,517	£25,693	£824
England	£24,299	£24,298	£1
England (excl Gtr London)	£22,421	£23,603	-£1,182
Corridor Average	**£23,333**	£23,546	-£213

Source: Annual Survey of Hours and Earnings, Workplace and Resident Analysis

Key points: there are significant differentials between Districts in the study area: the lower wages in more rural areas are consistent with the lower overall competitiveness ratings and productivity in these areas. There is, therefore, a strong case for improving economic performance to facilitate inclusive growth across the corridor.

Pursuing objectives of 'good growth' would also be advisable, with a focus on higher paid, higher value and more productive job creation where practical to drive economic performance across the study area.

3.6. Summary

This evidence demonstrates the wide differentials in the economic performance of the study area. Whilst Bristol, Bath, Swindon and South East Hampshire are characterised by generally more competitive economies, with high productivity and high wages, there are significant challenges, in both the South East Dorset conurbation and in the more rural and peripheral areas across Wiltshire, Dorset and Somerset.

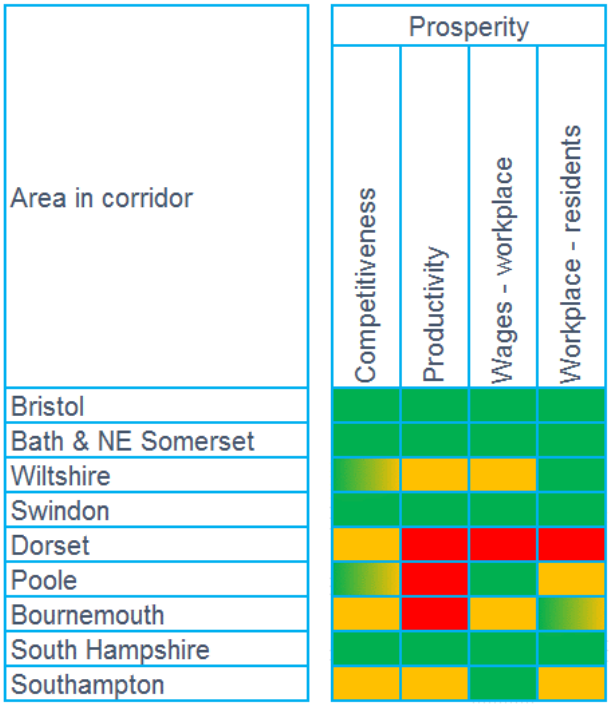
Figure 3-1 summarises the key challenges across the corridor, in relation to competitiveness, productivity / relative economic performance and workplace and resident earnings. These are rated using the following criteria:

- **Green** = performance better than national average
- **Green Amber** = performance near national average
- **Amber** = performance slightly worse than national average; and
- **Red** = performance significantly worse (>10%) than national average.

This shows broad consistency between the different indicators of prosperity. Bristol and Bath & North East Somerset are characterised by strong overall performance, although it is recognised that there are significant challenges of social exclusion and people being 'left behind' in Bristol. This challenge is being addressed in Bristol's Inclusive and Sustainable Economic Growth Strategy.

Swindon, likewise, performs strongly against all criteria. Wiltshire, however, has challenges of productivity (in terms of measures of GVA per worker and GVA per hour worked), which impacts on workplace wages. However, out-commuting from Wiltshire into well-paid jobs in the West of England and Swindon means that resident wages are high. This, together with other factors, helps to raise the competitiveness of the Wiltshire economy, but the fundamental productivity issues still need to be addressed.

Figure 3-1 – Summary of economic challenges



Source: Atkins analyses based on data in this chapter.

Dorset, Poole and Bournemouth face more significant challenges. Productivity across the sub-region (measured as GVA per worker and GVA per hour worked) is significantly below the national average. In Dorset this translates into low wages, for both workers and residents, due to limited opportunities to travel to better-paid jobs. There appears to be an anomaly in Poole, with relatively high workplace wages but relatively low productivity: this could be a risk to the future competitiveness of the area. Residents of Bournemouth have more opportunities to commute to higher-paid jobs in South Hampshire.

Chapter 4 will investigate the causes of these challenges through the lens of the five productivity Foundations.

4. Foundations of Productivity

4.1. Introduction

The previous chapters have shown that there are significant economic opportunities in this corridor, with significant forecast growth in population, jobs and GVA.

There are also current challenges that will constrain the growth potential of the corridor if they are not addressed. There are wide differentials in competitiveness, productivity and wages across the corridor, with challenges in the more peripheral areas, including Wiltshire, Dorset and Bournemouth and Poole to deliver effective rural development and 'good growth' locally.

These challenges have clear underlying causes. The productivity of local and regional economies is influenced by a number of interconnected factors. The UK Industrial Strategy has described these as the 'Foundations of Productivity' which are ideas, people, infrastructure, business environment and places. This chapter explores the evidence of these foundations in more detail and, importantly, demonstrates clear causes of the economic challenges in the corridor.

4.2. Ideas

The Industrial Strategy explains that our ability to innovate and commercialise will be central to the economic success of the UK. There is strong evidence that innovation drives productivity growth: this is likely to accelerate as the global economy undergoes the 4th industrial revolution[4]. The UK is a global leader in science and research, but the nation faces challenges in translating research into industrial and commercial practices from R&D into new products and services.

A report on mapping of comparative advantage in innovation, published by the Department for Business, Innovation and Skills in 2015, provides evidence on the state of innovation activity across England. It is based on a framework for gauging local innovation strengths, which includes innovation funding, talent, knowledge assets, structures and broader economic environment, with outcomes measures in terms of GVA per capita and hours worked.

There are stark differences in the scale of expenditure on Research and Development across the study area. Total R&D expenditure per FTE worker in 2012 (totalled across the private and public sectors) was estimated to be £1,811 in Gloucestershire, Wiltshire and the West of England and £1,796 in Hampshire but only £466 in Dorset and Somerset. The much lower levels of expenditure in R&D in Dorset and Somerset are a major influence in the lower levels of innovation in these areas. This also reflects the contrasts between the more urban and rural areas, meaning that a range of focused interventions are required, tailored to the needs of each area.

Looking at the talent dimension, there are significant differences in the proportions of the workforce employed in science, research, engineering and technology. These range from 10.2% in the West of England, 9.1% in Swindon and Wiltshire and 8.2% in Solent, which are higher than the England average of 7.2%, to 6.6% in Dorset and 5.6% in Somerset.

The proportion of the population educated to NVQ Level 4 and beyond is a critical factor in driving innovation. The proportion of the workforce educated to NVQ Level 4+ (degree equivalent) is highest in the West of England and lowest in Somerset. The skills needed to meet the needs of the future economy are explored further in the section on the People foundation.

The third aspect of the framework is knowledge assets, which include scientific research, patents and interactions between higher education, research institutes and businesses and the wider community. **There are again significant variations in the quantity and quality of research activity across the study area.**

There are ten 'recognised bodies' that can award degrees within the study area, with different strengths in teaching and research activity:

- University of Bristol;

[4] The 4th Industrial Revolution is characterized by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres, and includes robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, 3D printing and autonomous vehicles.

- University of the West of England;
- University of Bath;
- Bath Spa University;
- Oxford Brooks University (which includes a campus in Swindon);
- University of Winchester;
- Southampton Solent University;
- University of Southampton;
- Bournemouth University; and
- Arts University Bournemouth.

In addition, there are a number of 'listed bodies', whose degrees are awarded by registered bodies. These include City of Bristol College, Bath College, Wiltshire College and Bournemouth and Poole College.

Both the West of England and Solent are home to research-intensive universities, which result in disproportionately large numbers of publications. Dorset and Swindon and Wiltshire are not home to universities and there are relatively few publications generated from these areas. The largest numbers of patents are generated from within the West of England and the Solent. However, there appear to be relatively high levels of patent activity in Dorset and Swindon & Wiltshire given their lack of research-intensive universities.

The fourth aspect of the framework relates to structures, in which the actors in the system work together to deliver positive outcomes from R&D activity. **One of the most important factors is the proportion of the workforce working in digital technologies.** This varies across the study area: 4.5% of FTE employment in the Solent, 3.6% in the West of England, 3.3% in Swindon and Wiltshire, 3.0% in Dorset and 1.9% in Somerset. This is also a key factor that drives innovation across the study area.

The broader economic environment highlights the challenges with lower levels of productivity and earnings in Dorset and Somerset. It also discusses quality of life indicators: the study area lies in the middle third of rankings for quality of life, with the highest-ranking being Solent, followed by West of England, Swindon and Wiltshire, Dorset and Somerset.

There are particular sectors where innovation will be of paramount importance to economic growth. These include the sectors covered by the four Grand Challenges (AI and data, ageing society, clean growth and the future of mobility), and strategic sectors within each region. The recent Science and Innovation Audits provide strong evidence on the current status of innovation activity in different regions and sectors.

The West of England, Swindon and Wiltshire were included in the South West England and South East Wales Science and Innovation Audit (SWW SIA). This highlighted a strong range of higher-level skillsets in the region (including big data, cloud computing, quantum engineering, simulation and testing, robotics and systems integration), with leading-edge industrial capabilities in sectors including digital creative, smart cities, nuclear and aerospace. It identified **advanced engineering** and **digital innovation** as priority sectors. These all offer the potential to deliver higher levels of productivity and 'good growth' in terms of high-quality employment opportunities that both attract and retain talent.

The SIA undertook detailed analysis of the innovation assets in the region, including universities and anchor businesses and, from this, analysed the innovation ecosystems. Figure 4-1 presents the interconnected hubs and linked assets for the priority sectors of advanced engineering and digital innovation, together with underpinning capabilities in microelectronics.

Figure 4-1 – Innovation networks in the SWW SIA area

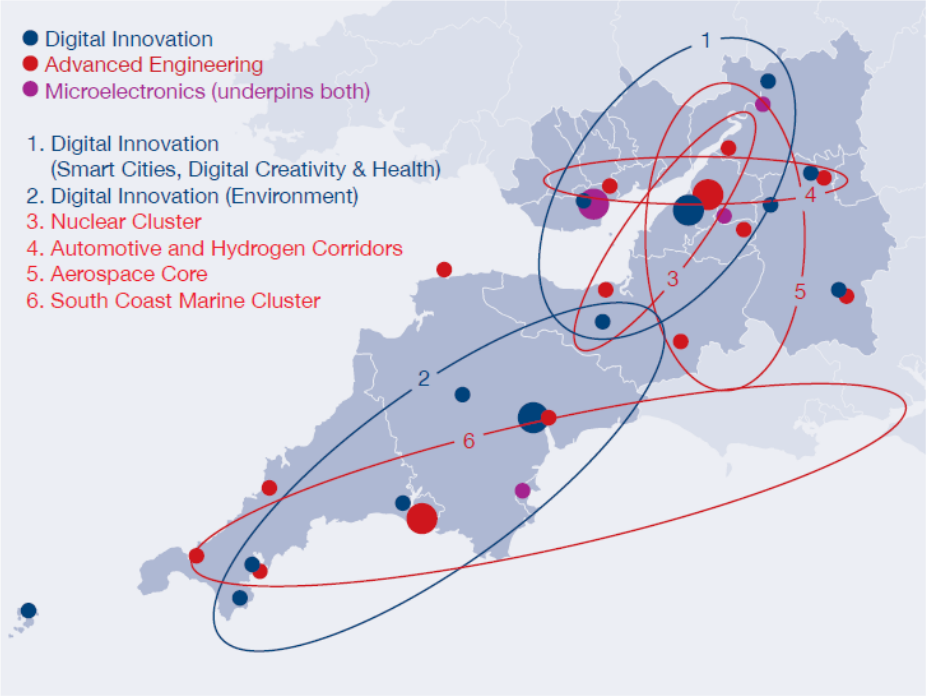


Figure 5. Advanced Engineering and Digital Innovation inter-connected hubs ◯ and linked assets ○ (Note: schematic – size does not reflect scale.)

Source: South West England and South West Wales Science and Innovation Audit

Bristol, Bath and west Wiltshire are at the heart of many of the innovation networks in the South West, including **digital innovation** extending along the M5, **nuclear** along the M5 (to Gloucester and Hinkley Point), **automotive** along the M4 and **aerospace** extending south from Gloucestershire and Bristol North Fringe into Somerset. There is also the nationally important **marine cluster** along the **South Coast**, extending from Cornwall and Plymouth to the Solent.

This appears to demonstrate that, in relation to the study area, the innovation interactions are currently limited to east-west interactions along the South Coast for the marine cluster and some north-south interactions for aerospace (connecting the Bristol North Fringe and Yeovil). From the perspective of this SIA, there is limited interaction on the north-south axis through the study corridor.

This also shows that there is a strong influence of connectivity on innovation networks. Barriers to travel create constraints to interaction, both in terms of the ability for people to access higher quality jobs and businesses and research assets to engage at the face-to-face level.

Dorset and the Solent were included in the Innovation South SIA. This identified four key sectors: **marine and maritime**, **biosciences**, **advanced engineering** and **connected digital**. These are underpinned by **digital enabling technologies** in photonics, quantum, cyber security, big data analytics and digital.

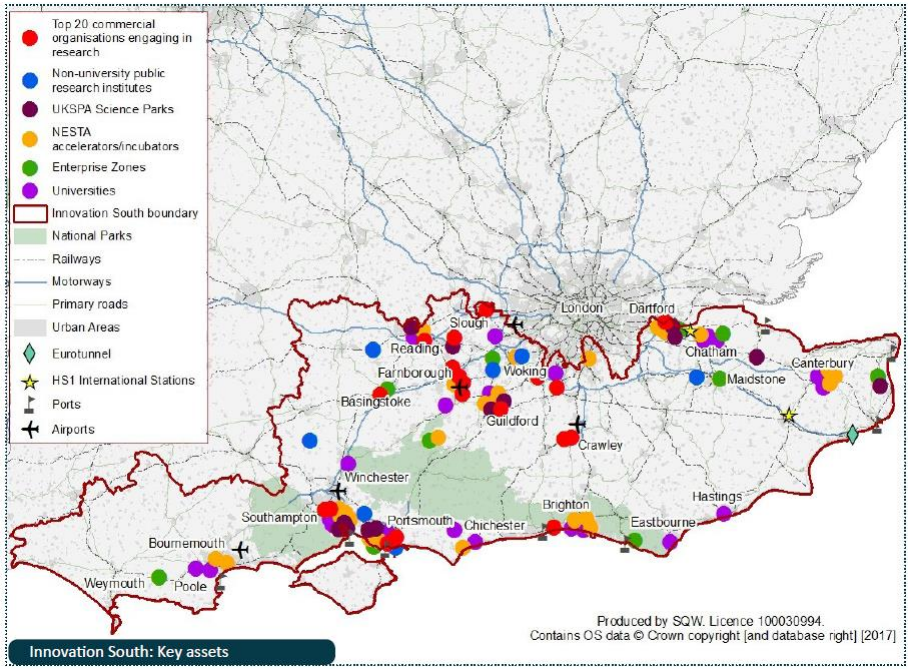
The Innovation South SIA did not map innovation hubs and networks, but instead mapped different types of innovation assets, which are shown in Figure 4-2.

The SIA highlighted that the South, considered at the regional level as a whole, is characterised by very strong innovation networks that are driving growth, which benefit from proximity to London, Heathrow and high levels of exposure to international assets.

The map shows particularly **strong clusters of innovation assets in the Solent** and, to a lesser extent, in **South East Dorset**. Assets in the Solent include universities, an Enterprise Zone, Science Parks, major commercial organisations engaging in research and NESTA incubators / accelerators. Assets in Dorset include universities, incubators and an Enterprise Zone.

The SIA highlights as a case study the work of the **SETsquared Partnership**, an enterprise collaboration of the Universities of Bristol, Bath, Exeter, Southampton and Surrey, which is focused on commercialisation of the universities' research and in promoting entrepreneurial activities in the universities and their surrounding areas.

Figure 4-2 – Innovation assets in the Innovation South SIA area



Source: Innovation South Science and Innovation Audit

The SETsquared Partnership is a strong example of collaboration between universities across the geography of the study area. This is not the only example, but it is recognised that much deeper collaboration is needed. The SIA identified, as a priority action, the need to better link innovation hotspots across the region to drive new growth, supported by digital enabling technologies. These also offer the potential to drive productivity in more rural areas if broadband connectivity is improved.

The SIA indicated strong potential for joint-working with Oxfordshire, which offers intensive research capabilities, to complement the broader portfolio of corporate R&D, academic research and SME activity across the larger region covered by Innovation South. This is facilitated by proximity and good connectivity between Oxfordshire and the South East. However, at present, there are currently limited innovation linkages with Bristol, Bath, Swindon and Wiltshire, which are likely to be constrained in part by poor connectivity.

Swindon is the central management hub for Research England and UK Research and Innovation. UK Research and Innovation (UKRI) is the national funding agency investing in science and research in the UK. Operating across the whole of the UK with a combined budget of more than £6 billion, UKRI brings together the seven Research Councils, Innovate UK and Research England.

Key points: innovation and ideas are critical to driving productivity growth in the economy, particularly with the increased focus on digital technologies. There are significant variations in the innovation capacity in different parts of the study area. R&D investment, proportions of people working in science and technology and the proportions of people with higher-level qualifications are significantly higher in the West of England, Swindon & Wiltshire and Solent than in Dorset and Somerset.

The higher levels of innovation activity are in areas with more skilled people, deeper business connections and improved connectivity. Innovation networks in the South West are enabled by good connections along the M4 and M5, with activity in South East Dorset and the Solent enabled by road and rail links to London and the Midlands. There appears to be limited networking of innovation activities in the north-south corridor, which is likely to be due to different economic structures in the different areas, but poor connectivity being one of the potential constraints.

4.3. People

The Industrial Strategy highlights that the UK has, on the one hand, one of the most successful labour markets in the world, with the employment rate at a near historic high. The labour market is underpinned by a world-class higher education system, albeit one that fails many locked-in generationally workless households, and employers are increasingly involved in delivery of training and development. However, there remain challenges in meeting business needs for talent, skills and labour. The availability of skills is a major barrier to growth in the industries that will drive the future growth of the UK economy.

The Industrial Strategy identifies that there is a need to improve the quality of technical education, tackle particular shortages of STEM skills, tackle inter- and intra-regional disparities in education and skills, and ensure that everyone has the opportunity to enter into and progress through education and training.

Table 4-1 shows the patterns of educational attainment in Districts in the corridor. The data is presented in descending order of the proportion of the population with skills at NVQ Level 4 or above.

Table 4-1 – Educational attainment in the corridor

Area	% NVQ4+ age 16-64	% NVQ3+ age 16-64	% NVQ2+ age 16-64	% NVQ1+ age 16-64	% no quals age 16-64
Bristol	54.2	70.3	82.0	90.3	5.1
Bath & NE Somerset	47.8	69.5	83.7	92.2	3.7
Wiltshire	42.1	61.9	80.5	90.0	5.1
Test Valley	38.5	72.8	87.2	93.4	3.0
Bournemouth	37.9	58.6	75.8	87.5	5.9
East Dorset	37.2	60.3	75.1	90.2	5.4
West Dorset	36.9	58.3	81.0	91.5	5.8
New Forest	36.7	58.6	82.2	93.2	3.2
Poole	36.2	59.4	77.1	88.6	6.3
Southampton	36.0	60.2	75.2	84.8	7.4
Swindon	34.2	51.9	70.5	85.9	5.6
North Dorset	32.8	55.9	70.4	85.2	6.0
Mendip	32.6	58.6	77.6	89.1	4.2
Purbeck	26.7	55.0	72.0	91.0	5.5
England	38.3	57.1	74.6	85.5	7.6
England (excl Gtr London)	35.4	55.2	74.0	85.8	7.8
Corridor	**41.3**	**62.4**	**78.8**	**89.3**	**5.2**

Source: NOMIS, Population Survey 2017

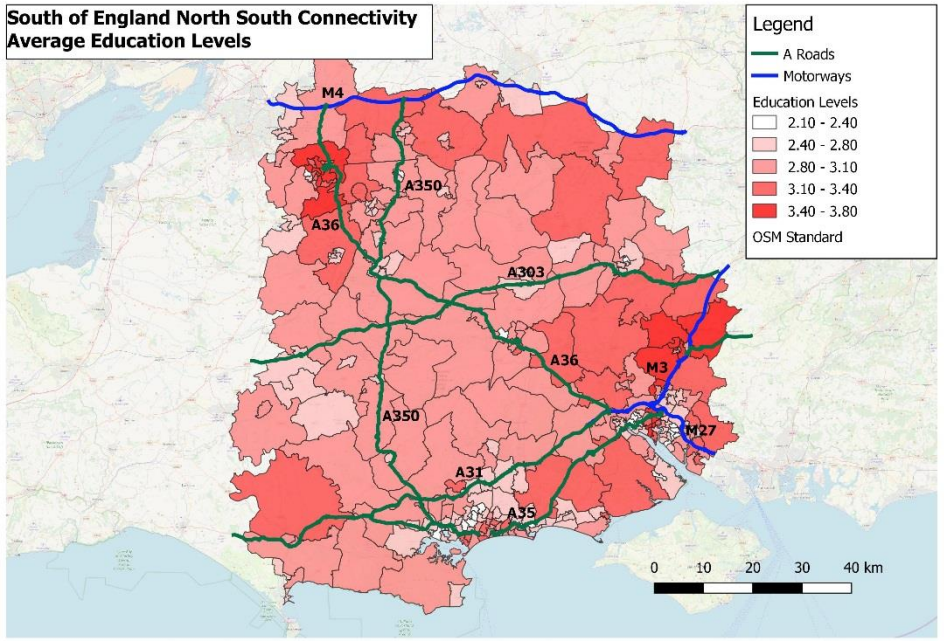
The first column shows the proportion of the population aged 16-64 educated to at least NVQ Level 4, and the following qualifications show the proportions educated to at least Levels 3, 2 and 1 respectively. The proportions increase moving from left to right in the table. The final column shows the proportion of the population with no qualifications.

The population in the study area has attained qualifications at a higher level than the national average, but there are major variations across the study area. The highest levels of attainment in Level 4 (essential for the most advanced jobs in the economy) are in areas around the city regions with the highest demand for advanced skills. These include Bristol, Bath and North East Somerset and Wiltshire. The lowest levels of Level 4 attainment are in the more rural and peripheral areas that are more distant from the city regions.

The table also shows gaps in attainment at lower levels, particularly in Swindon (at all levels), North Dorset (all levels), Purbeck (Levels 2 and 3) and Southampton (Level 1). There are also high proportions of people with no qualifications in Southampton, Poole and North Dorset.

Figure 4-3 shows average levels of educational attainment of residents in the area, taking into account numbers of people with no qualifications and qualifications up to Levels 1, 2, 3 and 4 and beyond. More deep shading shows area where average levels of attainment of residents are higher.

Figure 4-3 – Detailed patterns of educational attainment in the corridor



Source: ONS Data, Atkins analyses

This confirms the significant variations in qualifications across the study area shown in Table 4-1 and provides more detail on the 'hotspots' and 'coldspots' of educational attainment. **The lowest levels of educational attainment are, as expected in the more deprived parts of the urban areas**, including large parts of Poole, Southampton and the Totton part of New Forest.

There are also relatively low levels of attainment in some towns along the corridor, including Melksham, Trowbridge and Gillingham. The highest levels of attainment are in the Test Valley in Hampshire, parts of rural Wiltshire north of Chippenham and the areas around (and within) Bath.

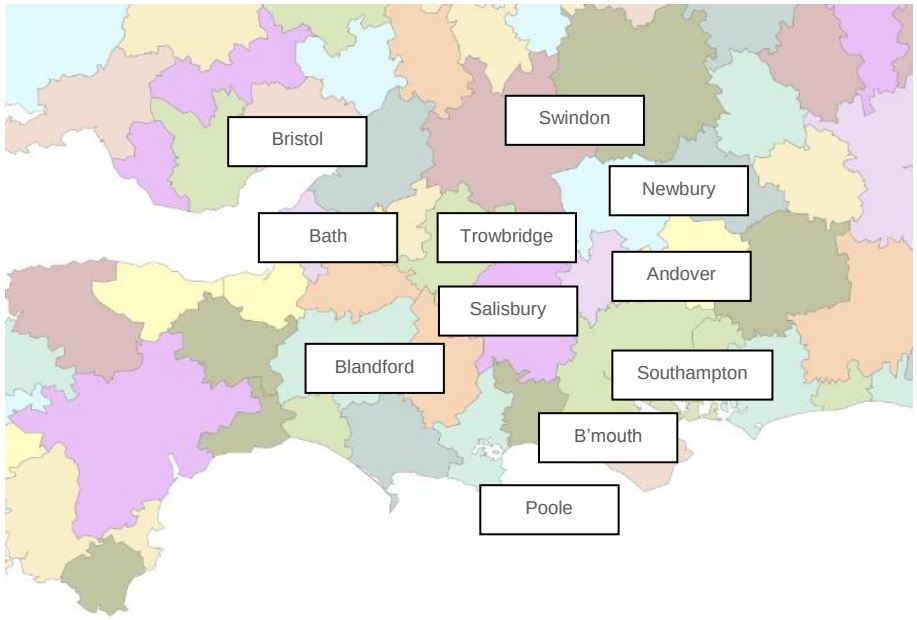
There are also significant challenges with the proportion of pupils in schools taking Science, Technology, Engineering and Maths (STEM) subjects, with disparities in the proportions of pupils taking Maths and Physics at A-Level. Data from the Centre for Education Research and Practice shows that there are variations at the regional level, but particularly significant differences in the study area. For example, the national average for the uptake of physics is 4.1% but only 2.0% in Southampton. The national average for the uptake of Further Maths is 1.7% but only 0.6% in Bournemouth. **The low level of uptake of STEM at A-Level means that, in many areas, young people are not fully equipped to meet the needs of the future economy.**

It is also important to understand the dynamics of the labour market in the study area. This is expressed through Travel to Work Areas (TTWAs) and Figure 4-4 shows the TTWAs in the region around the corridor.

The TTWAs in the study area are:

Blandford Forum	A350 from Shaftesbury to south of Blandford
Poole	Southern end of A350, west of SE Dorset urban area
Bournemouth	East side of SE Dorset urban area
Southampton	Southern end of A36 and M27 motorway
Andover	Edge of study area, including the A34
Newbury	Edge of study area, including the A34 and M4

Figure 4-4 – Travel to work areas in the corridor



Source: 2011 Census, mapped on ONS mapping website

Bristol	Northern end of A46 towards the M4
Swindon	Northern end of A350 towards the M4
Bath	A46 and A36 passing through the city
Trowbridge	A350 from Chippenham to Warminster
Salisbury	A36 through Wylye Valley, Wilton and city

The TTWAs in the region are strongly influenced by the scale of economic opportunities in key centres and the relative ease of connectivity across the region, or otherwise. The large TTWA for Swindon is strongly influenced by the M4 corridor, and the TTWA for Southampton is influenced by the M27 and rail services in the Solent. In contrast, the relatively small TTWA for Blandford is due to relatively high levels of self-containment, influenced by the relative geographic isolation of this area. The role of connectivity is explored in more detail in the infrastructure foundation.

Analyses show that the TTWAs in the study area vary for different groups of people. The TTWAs for people with lower levels of qualifications are significantly smaller (reflecting shorter travel distances) than for people with higher qualifications. The TTWAs for people in part-time employment are also significantly smaller. This is because people with lower qualifications or in part-time jobs are on lower earnings and therefore can only justify travelling shorter distances. This is a significant challenge for the labour markets in much of the study area.

Key points: higher-level qualifications and STEM skills will be important in meeting the needs of the future economy, but there are significant variations in attainment levels across the study area. There are low levels of educational attainment in Southampton, Poole, Purbeck and North Dorset. 'Coldspots' of educational attainment are not limited to the urban areas: there are also significant challenges in places such as Trowbridge and Gillingham.

There is also clear evidence that labour markets are influenced by connectivity in the region, with significantly narrowed travel horizons for people earning lower wages. It is logical that people will invest more time, effort and cost to travel further to work for higher earnings.

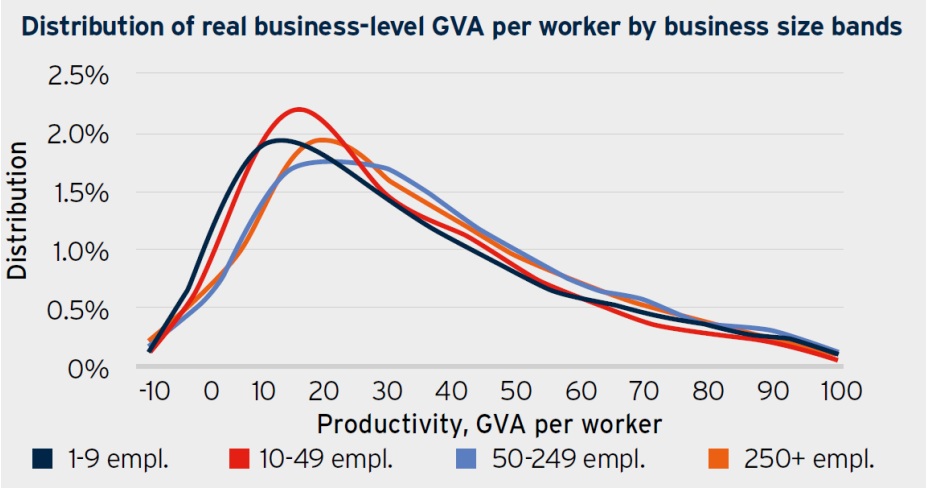
4.4. Business Environment

The Industrial Strategy highlights that the UK has a good reputation as a location to do business, and the OECD ranks the UK as one of the top places to start and grow a business. However, there are significant challenges in securing access to business finance and there is a long tail of underperforming businesses across the country. It highlights that the UK is less good at spreading good business practices and studies suggest that managers in the UK are less proficient than many overseas competitors.

Figure 4-5 shows the distribution of GVA per worker for businesses in different size bands across the UK, based on evidence shown in the Industrial Strategy and sourced from an ONS Report on firms with poor productivity.

The figure shows a long tail of businesses with low worker productivity. The report also shows that productivity is typically much lower for small and medium enterprises (SMEs) than for larger businesses. Businesses with the lowest productivity tend to be in 'Distribution, Hotels and Restaurants'.

Figure 4-5 – GVA per worker for different size bands



Source: Understanding firms in the bottom 10% of the labour productivity distribution in Great Britain, reported in Business Environment chapter of Industrial Strategy.

The same ONS report also provides data on the distribution of the bottom 10% productivity businesses ('the productivity laggards') across the UK. Table 4-2 summarises this data. The first column shows the proportion of all businesses in each region, and the second column shows the proportion of the bottom 10% ('laggard') businesses.

Table 4-2 – Distribution of 'productivity laggards' across Great Britain

Region	Total Business Population	Bottom 10% of Businesses
London	18.6	9
South East	16.2	11.9
East	10.2	7.2
East Midlands	6.7	7.4
West Midlands	8.0	10.1
North West	10.0	10.6
Yorkshire and The Humber	7.2	10.5
North East	2.9	4.7
Scotland	7.3	8.7
Wales	3.9	8.8
South West	8.9	11.1

Source: Figure 15, Understanding firms in the bottom 10% of the labour productivity distribution in Great Britain.

As expected, London, the South East and East of England are characterised by lower numbers of laggard businesses compared to the whole business population. In all other parts of Great Britain, laggard businesses are disproportionately represented, and the South West is one of the worst performers. **The high proportion of lagging businesses in the South West is likely to be due, at least in part, to the high presence of SMEs and businesses in the hospitality industry and other lower value-added sectors**

Further insights on the economic structures of the study area can be gained from the analysis of businesses of different sizes and operating in different sectors of the economy.

There are significant variations in the proportion of SMEs in Districts across the study area. Four size bandings have been used to categorise the sizes of businesses: micro (up to 9 employees), small (10-49 employees), medium (50-249 employees) and large (250+ employees).

Large businesses, despite employing a relatively large number of people, firms with over 250 staff comprise a small proportion of business units (0.4% in England, 0.3% in the South West, 0.4% in the corridor). The highest proportions of large businesses are found in Swindon (0.7%), Christchurch (0.5%), Bath (0.5%) and Bristol, Poole, Bournemouth and Southampton (0.4%). The lowest proportions are in Purbeck (<0.1%), East Dorset and North Dorset (0.1%).

Medium sized businesses also comprise a relatively small proportion of business units (1.6% in England, 1.5% in the South West, 1.6% in the corridor). The highest proportions of medium businesses are in Christchurch (2.1%) and Poole, Southampton, Bristol and Swindon (1.8%). The smallest proportions are in North Dorset (1.0%) and Purbeck (1.2%).

Large and medium-sized businesses serve larger markets and therefore require access to larger labour markets and better strategic connectivity. They are therefore more likely to locate near larger towns and cities with good access to transport links, and not in more peripheral rural areas. This is the basic rationale for agglomeration benefits that benefit sectors such as the aerospace and technology clusters in the wider Bristol area.

Small businesses form a larger proportion of total business stock (8.9% in England, 9.1% in the South West, 8.8% in the corridor). The largest proportions of small businesses are in Purbeck (11.2%), Christchurch (9.8%), Bristol (9.8%) and Bath (9.5%). The smallest proportions are in North Dorset (6.8%) and Wiltshire (7.9%).

Micro businesses form the majority of business stock (89.1% in England, 89.0% in the South West, 89.2% in the corridor). The largest proportions of micro businesses are in North Dorset (92.0%), Wiltshire (90.4%) and East Dorset (89.6%). The lowest proportions are in Purbeck (87.6%), Christchurch (87.7%) and Bristol (87.9%). On first appearances, the differences between districts do not appear to be great, but it is important to recognise that these reflect variations in the proportions of medium and large businesses. Whilst growth in micro-businesses could significantly increase employment, many are lifestyle businesses with inherently low productivity.

In many cases, micro businesses include shops and local services (serving more localised markets), the hospitality industry (on the coast) and farms in the more rural areas. **In many cases micro businesses serve more localised markets and they are less dependent on deep labour markets.**

More detailed evidence on the performance of SMEs is provided in a report on the state of small business, which highlights the significant variations in the performance of SMEs across the study area. Productivity of SMEs in Bristol is in the top 3rd in the UK, with productivity growth of 20% from 2013 to 2016. However, Bath & North East Somerset and Wiltshire are characterised by SMEs with productivity in the bottom 3rd, with productivity growth of only 2% over the same period. Productivity of SMEs in Bournemouth was in the bottom 3rd but with productivity growth exceeding 30% during this period. It is evident that there are very different dynamics of SME growth across the study area.

There are significant variations in the representation of different sectors in the economies of the districts in the study area. Tables 2-1 and 2-2 highlight the proportions of employees and GVA in each sector. From this it is possible to identify concentrations in different sectors:

- Agriculture in North Dorset, Purbeck, Wiltshire and Mendip;
- Mining in Purbeck and Mendip;
- Distribution in Swindon and across the Southampton area;
- Information and communication in Bristol and Bath;
- Financial services in Bristol, Swindon, Bournemouth and Poole;
- Professional and business services in Bristol
- Public services in Southampton, Bath and Bristol; and
- Other parts of the service economy in Purbeck and North Dorset.

This is an important factor in the performance of the economies of different areas, because of the relative productivity (and wage-earning potential) of each sector. Sector productivity is relatively high in:

- Manufacturing in Swindon, including (for example) the Honda Plant;
- Distribution in the Southampton area, reflecting high-value activities in and around the Port of Southampton;
- Financial services in the Southampton area and Swindon; and
- Public services in Bristol and Southampton.

Sector productivity is relatively low in:

- Production, manufacturing and distribution in much of Dorset;
- Financial Services in Wiltshire;
- Professional and business services in Bournemouth and Poole; and
- Public services in Wiltshire and the rural Dorset districts.

The low productivity of production, manufacturing and distribution in Dorset, and financial services in Wiltshire, is related to the larger numbers of micro businesses in these areas. The challenges for public services in Dorset and Wiltshire appear to be due to the relative peripherality of many areas. The poor productivity of professional and business services in Bournemouth appears counterintuitive in a medium sized city region, but the sector appears to face some specific challenges.

Key points: the region has a relatively high proportion of 'laggard' businesses with low productivity, which are dragging-down the performance of the area. The greatest challenges with low productivity appear to be focused amongst SMEs, in production, manufacturing and distribution in Dorset and financial services in Wiltshire. This appears to be directly related to the relative peripherality and costs of servicing the rural areas.

Conversely, higher productivity activities are focused around the main urban areas, which attract higher-value sectors, larger employers (that drive better business practices) and higher productivity through clustering of activities. This demonstrates that there is a strong relationship between road connectivity and the ability to attract and grow businesses, the ability to conduct business with a local supply chain and to collaborate as well as compete which drives-up output and economic performance.

4.5. Places

The vision of the Industrial Strategy is to develop more prosperous communities across the UK and achieve a more equitable balance. Our towns, cities and rural areas have competitive advantages that will be essential to shaping our economic future. However, many places are not meeting their potential. The UK has greater disparities in regional productivity than other European countries, which affects people's wages, work opportunities and life chances as well as quality of life

The Industrial Strategy states that every region has a role to play in strengthening the national economy. It states that government will work in partnership with local leaders to drive productivity, with the introduction of Local Industrial Strategies and strengthened local leadership through Local Enterprise Partnerships. Government will introduce new policies to improve skills, create more connected infrastructure, back innovation strengths, ensure that land is available for housing and strengthen cultural assets.

Place-led policy should address the main issues highlighted in this report, including strengthening innovation assets, improving educational attainment and improving business performance, all of which are medium to long term endeavours. It should also address issues relating to housing, planning for economic development and quality of place. Government recognises that effective local industrial strategies need to take a longer-term outlook and focus on critical areas where comparative advantage can be enhanced.

The preceding sections have shown clear structural differences in the economic functions between the large urban areas, market towns and rural areas. However, it is important to recognise the wider quality of life benefits of many of the rural areas, including a high-quality natural environment and lifestyle benefits.

The availability of good quality, affordable housing is a critical factor to the competitiveness of local economies. Table 4-3 shows mean house prices, average full-time earnings and the house price to earnings ratio in the corridor. The locations in the study area are shown in descending order of house price to earnings ratio.

Table 4-3 – House prices to earnings ratio in the study area

Local Authority	Mean House Price (2017)	Median annual workplace earnings (F/T)	House Price to earnings ratio, F/T workers
East Dorset	£350,000	£26,454	13.2
New Forest	£315,000	£26,389	11.9
West Dorset	£280,000	£24,836	11.3
Bath & North East Somerset	£315,000	£28,374	11.1
Purbeck	£300,000	£27,157	11.0
Mendip	£240,000	£23,602	10.2
Test Valley	£292,000	£28,719	10.2
Poole	£272,000	£27,200	10.0
Wiltshire	£257,000	£27,244	9.4
North Dorset	£250,000	£27,510	9.1
Bristol, City of	£255,000	£28,356	9.0
Bournemouth	£243,000	£27,993	8.7
Swindon	£211,500	£30,217	7.0
Southampton	£205,000	£31,145	6.6
England	£230,000	£29,079	7.9

Source: Annual Survey of Hours and Earnings workplace data, ONS house price statistics

House prices in many parts of the study area are significantly higher than the average for England. Twelve of the fourteen local areas have higher prices than the national average. The highest prices are found both in areas around the city regions (e.g. East Dorset, Bath & North East Somerset, New Forest and Test Valley) and in coastal areas (e.g. Purbeck and West Dorset). House prices are lowest in the most urban authorities: Southampton, Swindon, Bournemouth and Bristol, which reflects a wide range of housing stock, including areas with poor housing stock and wider social challenges.

In many of the areas with the highest house prices, workplace earnings are relatively low. This means that the ratio of house prices to earnings in these areas is very high. Twelve out of the fourteen local areas have a house price to earnings ratio that is greater than the national average. However, it can also be seen that workplace earnings tend to be higher in those areas where house prices are also relatively low (Southampton and Swindon), which means that housing in these areas is more affordable.

The very high house prices in many parts of the study area are a significant barrier to attracting and retaining younger people that form the future labour market. It will therefore be critical to increase housing supply, both to address demand pressures and to ensure sufficient supply of more affordable housing. This will help to ensure the availability of a well-qualified labour market and will also help in managing travel demand on the road network.

The area has strong growth potential, in terms of population, future employment and output. As shown in the forecasts in Appendix A, there will be strong growth in working age population, which will be critical in meeting the needs of the future labour market. Many parts of the area also have the conditions in place to drive high-value growth, particularly in and around the city regions.

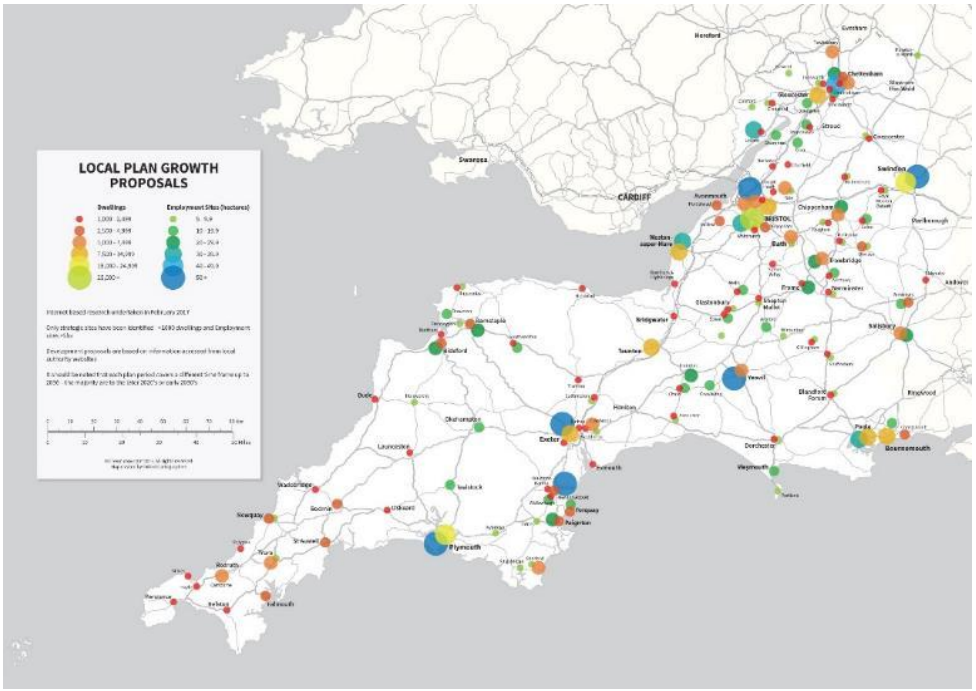
It will be important to respond to the needs of the growing population and economy through effective planning of new housing and employment floorspace. Figure 4-6 shows current Local Plan growth proposals across South West England (which does not include the Hampshire Districts).

Large-scale housing and employment growth is planned around Bristol (and neighbouring South Gloucestershire). Growth in Bath will be focused on urban regeneration in Bath Quays: the environmental designations around the city will constrain greenfield development. Ambitious longer-term growth is planned through the Joint Spatial Plan for the West of England, Joint Spatial Framework in Swindon and Wiltshire, and Local Plan Reviews across Dorset.

Significant housing and employment development is planned in the constellation of towns in western Wiltshire, with a particular focus on Chippenham and Trowbridge as the primary settlements, and major development is also proposed in Salisbury.

There will also be significant growth in Bournemouth and Poole, but growth at Blandford Forum, Shaftesbury and Gillingham will be at a smaller scale and commensurate with their roles as market towns serving more local markets.

Figure 4-6 – Local Plan Growth Proposals in South West England



Source: Western Gateway Summary Information, February 2017

This new housing and employment development will need to be supported by effective infrastructure to ensure that development is sustainable and to mitigate impacts on existing communities.

In the city regions, this will need to include a focus on reducing the need to travel and maximising the potential of walking, cycling and public transport. It will also require targeted highway investment to mitigate impacts and facilitate reallocation of roadspace in the urban areas. In the market towns, there will also need to be a focus on walking and cycling for local journeys, but it is likely that there will be a need for significant highway investment to mitigate impacts in areas of congestion.

Quality of place is critical in meeting people's needs and in attracting talented people to live in an area. The UK Prosperity Index goes beyond narrow definitions of wealth creation to capture measures relating to economic inclusion, health, education, community and environment. It shows that, in general, quality of life in rural areas is higher due to higher performance in education, health and the natural environment. Many urban areas face greater challenges overall in educational attainment, health and environmental quality.

Most parts of the study area perform relatively well on the Prosperity Index, with most local authorities in the top quartile of UK local authorities. There are challenges with a relatively low-performing business environment in Purbeck, North Somerset and Wiltshire, which is consistent with the findings from the analyses throughout this report. However, overall, the rural areas perform well in terms of overall quality of life, which is reflected in the high house prices, in which wealthier residents pay a premium to live in areas with a high-quality natural environment and higher performing schools.

In contrast, the urban authorities have real challenges in translating headline wealth into inclusion and quality of life for residents. There are particular challenges in improving health and school performance in Bristol and Southampton. The evidence clearly demonstrates the importance of focusing on wider measures of prosperity and quality of life in planning for growth and in delivering real changes that tackle inter-generational worklessness and issues connected with relative levels of deprivation.

Key points: the study area has a number of strengths under the 'Places' foundation, with generally very high quality of life and innate strengths. Many areas have very high house prices, which reflect their attractiveness to high-paid workers but also strong growth pressures in these areas.

The area is an attractive destination for businesses and residents, meaning that there is strong forecast growth in both population and jobs. It will be critical to plan effectively for this growth, including provision of effective infrastructure to facilitate sustainable travel choices and mitigate the effects on existing communities.

The evidence also shows that many parts of the area perform well in quality of life terms, with a high-quality environment, good health and high levels of educational attainment. However, there are challenges in the urban areas, which will require a coherent approach to planning for inclusive growth.

4.6. Infrastructure

The Industrial Strategy highlights that high-quality infrastructure is essential for our future growth and prosperity. Efficient transport systems bring a wide range of employment opportunities within people's reach and bring goods from suppliers to market. Clean and affordable energy holds down the costs of living and doing business, with wider environmental benefits, including reducing carbon emissions. Digital infrastructure allows people to lead modern lives and to support the technologies and industries of the future.

Decisions on physical infrastructure can narrow or widen geographic differentials in wealth and productivity and will determine whether the UK leads or lags with respect to technological change. The Industrial Strategy and national infrastructure plans and priorities will be an important opportunity to consider decisions strategically, ensuring that investment in infrastructure supports the UK's long-term national interests and help to achieve a better balance across the whole of the country.

The government has stated that it will take a more strategic approach to investment in infrastructure, focusing on three principles:

- Invest in ways that support all the objectives of the Industrial Strategy, increasing innovation, developing skills, growing businesses and driving earning power in urban and rural areas across the UK;
- Take greater account of disparities in productivity and economic opportunity between different places, ensuring that investments drive growth across all regions of the UK; and
- Invest to increase UK competitiveness in relation to long-term global economic changes, such as the shift to clean growth, to enable the UK to flourish in the context of these transformational changes.

These principles have been addressed through this study. This chapter has assessed the performance of the economy in terms of the productivity foundations and has highlighted the challenges of differential economic performance of the study area. The next chapter also considers the opportunities and challenges in relation to the 'Grand Challenges' for the UK.

There are clear infrastructure challenges in the study area. In the context of the North-South corridor, the primary challenge is long journey times exacerbated by congestion and peripherality from other parts of the UK.

This is a critical issue in terms of connectivity from the South East Dorset conurbation to the north, the market towns serving the rural areas in Dorset and Wiltshire in the central part of the corridor, and the rapidly growing towns in Wiltshire at the northern end of the corridor.

There is relatively good connectivity from many parts of the study area to London and the South East. Motorways provide good connectivity to London from the West of England (M4) and Bournemouth and the Solent (A31, M27, M3). The planned upgrade of the A303 will improve connectivity to London from Southern Wiltshire and North Dorset, although there remain challenges with the A31/A35 corridor through Dorset. Connectivity to London and the South East is one factor influencing the competitiveness of the area, but there is evidence that **poor north-south connectivity is a critical constraint.**

Different sources of data have been used to estimate journey times along the A36 and A350 routes, within the North-South corridor, including journey planning software and the Western Wiltshire Strategic Transport Model.

The A46/A36 corridor from M4 Junction 18 (north of Bath) to M27 Junction 2 (north west of Southampton) is 65 miles long. The analyses show that journey times are approximately two hours, with journey times around 15 minutes longer during the peak periods. **Average journey speeds are typically around 33 mph for journeys along the route, and even slower during the peak periods, with poor journey time predictability.**

The A36/A46 corridor forms part of the Strategic Road Network but passes through a number of cities, towns and villages, including Bath and Salisbury. Although parts of the route have been upgraded during the last 30 years, including the Beckington and Warminster bypasses, there are high levels of congestion where the route passes through the cities.

Bath is a World Heritage Site. The routing of the A36 through the middle of the city causes severance and degradation of public realm, together with major air quality problems, particularly along London Road and Bathwick Street. Air Quality Management Areas have also been declared in Bradford-on-Avon (A363), Westbury (A350) and Salisbury (primarily along the A36).

The low average journey speeds are in stark contrast with the journey speeds typically experienced on the Strategic Road Network. The Strategic Road Network Initial Report (Highways England, 2018) notes that the average speed on the SRN was just over 59 mph in 2015. The average speed in the South West is currently just over 62 mph, although it is forecast to fall more rapidly than other regions, which reflects high growth in the region.

The A350 corridor from M4 Junction 17 (north of Chippenham) to the A35 (north of Poole) is 63 miles long. Analyses using the transport model indicate that journey times are just under two hours, with journey times around 10 minutes longer during the peak periods. However, this underestimates the actual journey times, particularly through the Dorset villages, and end-to-end journey times during the day typically vary between 2 hours and 2½ hours. **Average speeds are therefore below 30 mph for many journeys on the route, with poor journey time predictability.**

The vast majority of this route has not been improved and it passes through a number of towns (including Melksham, Westbury and Shaftesbury) and villages (including Beanacre, Fontmell Magna and Charlton Marshall). On many sections of the route, the alignment is very poor, with very low traffic speeds, and the high volumes of traffic cause significant environmental and severance problems in the villages.

The transport model and other data sources have also been used to identify the major congestion hotspots in the corridors. The current congestion hotspots on the A46/A36 corridor are focused on the A46 between the M4 and Bath, through Bath itself, between Claverton and Beckington, at junctions on the Warminster Bypass and through Salisbury.

Congestion hotspots on the A350 corridor are focused at Chippenham, Melksham, Westbury, junctions on the Warminster Bypass, Shaftesbury and junctions on the Blandford Forum Bypass. In addition, the flows of heavy goods vehicles on narrow sections through villages cause traffic delays

The low journey speeds on the A36 and A350 are not just a transport problem. Slow journeys also constrain the labour market, add costs to business journeys, reduce the scope for business interactions and knowledge sharing, and constrain the potential for inward investment. Congestion and poor transport connectivity constrains economic

growth, a key issue for much of the study area. Poor air quality also causes ill health which constrains productivity in urban areas.

In terms of the labour market, the Travel to Work Areas are fragmented (see Section 4.3), with relatively limited reach of the city regions and narrow travel horizons in the areas served by the market towns. The time and cost expended in getting to work is a major constraint to the flexibility of the labour markets in the corridor and this becomes a significantly greater challenge for people in part time employment or more elementary roles.

In terms of business costs, the high costs of travel caused by the poor road connectivity impact on business productivity, with the lowest levels of productivity in the most isolated parts of the corridor (see Section 4.4). The poor connections also constrain the scope for business interactions, with higher numbers of micro-scale businesses serving more localised markets.

The poor connectivity of some parts of the study area has also constrained the ability to grow businesses and attract larger businesses. The more rural areas have much lower numbers of medium and larger businesses (see Section 4.4), partly because they are much less competitive at attracting mobile investment, and cities with a more diverse labour market are better at attracting larger-scale investment.

In some areas, congestion problems are a constraint to delivering new homes and jobs. The congestion on the A46 north of Bath and the route through the city is a particular challenge in unlocking growth in the West of England, which is one of the UK's fastest-growing city regions.

The A350 connects the fast-growing towns in West Wiltshire, which are well connected to the wider West of England economy. These towns provide a complementary economic offer to Bath and are playing an important role in catering for regional housing needs. However, major interventions will be needed on the A350 to provide the capacity to unlock this growth potential.

The capacity constraints on the A36 through Salisbury will be a constraint to unlocking the potential of the city as an economic hub between the West of England and the South Coast, and there will also be challenges in providing infrastructure to support growth in Shaftesbury, Blandford Forum and the northern edge of Poole.

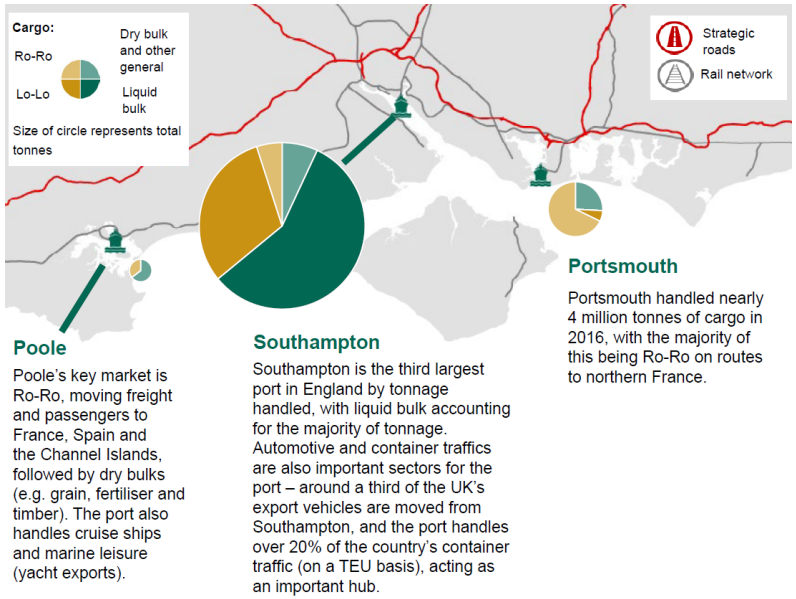
The study area is also home to a number of **international gateways**, the most relevant being the ports at Southampton and Poole and Bournemouth International Airport. **Strategic connectivity by road is a critical issue for the effectiveness of the gateways in the study area, which will also enable growth in adjacent areas that could be better connected and more productive.**

Bournemouth Airport is located on the northern edge of Christchurch, close to the A338 dual carriageway that provides access into the conurbation from the A31 trunk road. It carried just under 0.7 million passengers in 2017 (compared with 0.9 million at Exeter Airport, 2.1 million at Southampton Airport and 8.2 million at Bristol Airport). It serves a large number of destinations in the Mediterranean and across Europe and is an important employment growth area.

Data for the **Ports or Poole and Southampton** is provided in DfT's Ports Connectivity Study, which highlighted the importance of ports to the UK economy and defined Poole and Southampton (together with Portsmouth) as part of the Solent cluster of ports. Figure 4-7 shows evidence on the nature of goods traffic at the ports, extracted from the DfT study.

The study also provided evidence on the connectivity needs and issues for the ports. The A34 is the main corridor to markets in the Midlands for automotive trade and container imports. The A350 and A36 also provide important links to the West Country and for freight travelling North West from the Solent. The study highlights that Poole lacks a reliable north/south connection to the M4 and M5, and the A350 is unsuitable for freight traffic, meaning that freight often diverts via the A31, M27 and A34. A viable route to the M4 would improve connectivity and increase freight and passenger volumes.

Figure 4-7 – Ports in the Solent area



Source: England's port connectivity: the current picture). (Note: Ro-Ro = Roll-on Roll-off, Lo-Lo = Load-on Load-off (containerised) traffic).

Key points: there are clear transport-focused connectivity challenges on the major north-south routes through the study area. Average journey speeds on the A36 are only slightly higher than 30mph and lower than 30 mph on the A350. These slow journeys are contributing to the problems of peripherality in large parts of the region.

This is exacerbating problems in labour markets across the region, with fragmented travel to work areas and narrow areas of search for employment opportunities. It is adding to business costs and reducing productivity, particularly in the rural areas, and is constraining the ability to grow and attract new businesses. Congestion problems are also a significant factor in planning for new housing and employment growth in the corridor. Traffic also creates environmental impacts in the communities along the route.

4.7. Summary

Figure 4-8 (overleaf) summarises the performance of the study area. The assessments for prosperity outcomes are taken from Chapter 3 and the assessments for Ideas, People and Business use the following criteria:

- **Green** = performance better than national average
- **Green Amber** = performance near national average
- **Amber** = performance slightly worse than national average; and
- **Red** = performance significantly worse (>10%) than national average.

In Dorset, there are large variations in the proportions of people with higher levels of educational attainment, and the rating is therefore green/red.

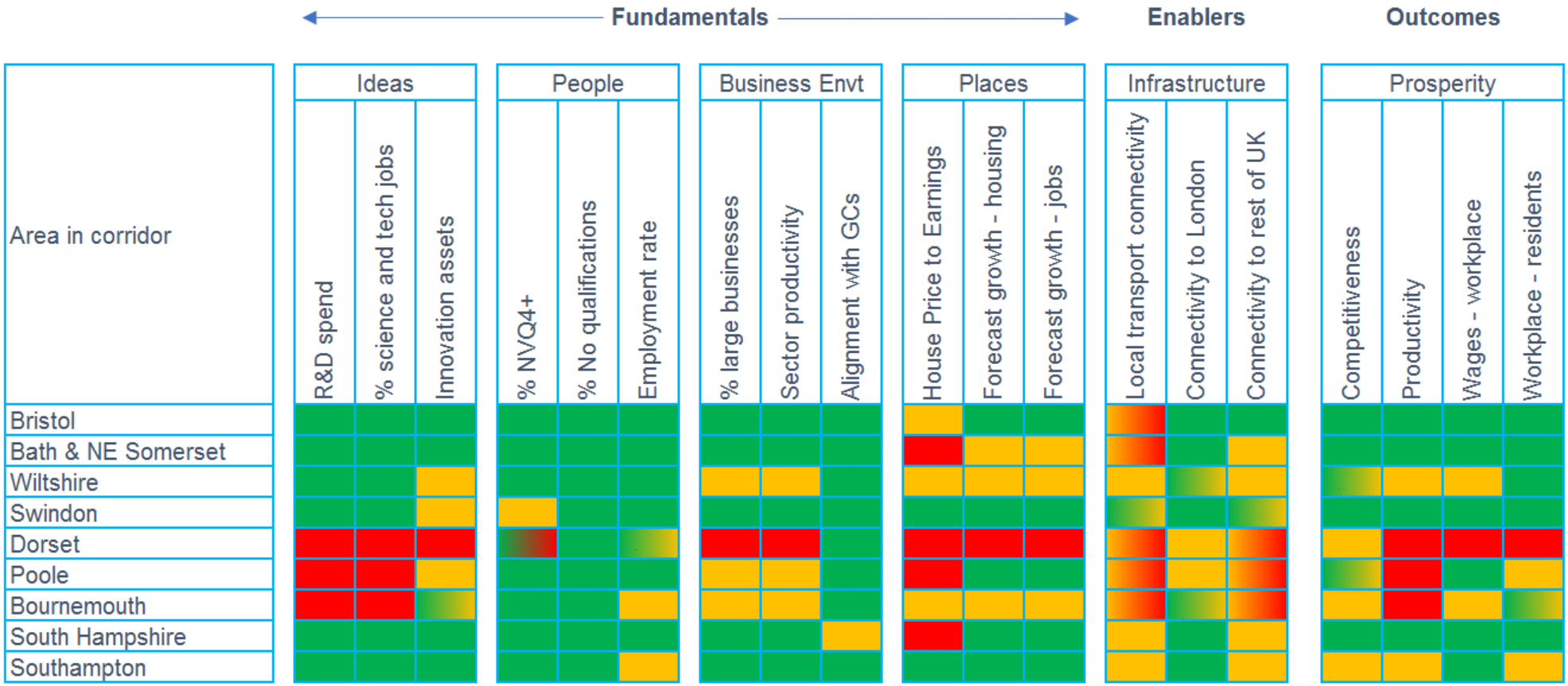
In the case of Places, the House Price to Earnings Ratio is rated as red if it is significantly higher than the national average (signalling major challenges with housing affordability), amber if higher and green if lower than average (signalling fewer challenges with affordability). In the case of forecast housing and employment growth, the assessments are based on the current allocated developments shown in Figure 4-6, with green indicating high levels of planned growth and red indicating lower levels of planned growth.

There are clear relationships between the Foundations and economic outcomes in each area. It shows that all five of the Foundations must be addressed in tackling the productivity challenges and supporting 'good growth' in the corridor. There are also different issues between areas:

- In Bristol and Bath, the most critical issues relate to addressing housing shortages and tackling local transport connectivity;
- In Wiltshire, a holistic approach will be needed to enhance local innovation assets, support higher-value businesses, support housing and employment growth and improve local and strategic connectivity;
- In Dorset, Bournemouth and Poole, there are multiple and inter-linked challenges, all of which impact on the prosperity of the area. Transport connectivity is a key challenge, which impacts on the other Foundations.

The potential roles of transport in constraining the performance of each area are discussed in Chapter 6.

Figure 4-8 – Summary of economic performance



Source: Atkins analyses based on empirical data analysed in this chapter.

5. Grand Challenges

5.1. Introduction

In addition to the productivity foundations described in the previous chapter, the Industrial Strategy sets a series of 'Grand Challenges' to put the UK at the forefront of the industries of the future. These were introduced in Chapter 1 and are discussed in more detail in this chapter.

Digital technologies will transform the ways in which we live and work, and this fourth industrial revolution of an unprecedented scale, speed and complexity. It will disrupt virtually every sector, creating new opportunities and challenges.

There is strong potential to capitalise on the benefits of these technologies in both the urban and rural parts of the corridor. However, it will be necessary to improve digital communications capability in the rural areas to ensure that these areas are able to fully benefit from new technologies.

We also face the major challenge of dramatically lowering carbon emissions and moving to cleaner growth, and responding proactively to an ageing population, ensuring that long lives are meaningful and healthy. Furthermore, we are on the verge of a profound shift in how people and goods are moved around towns, cities and the countryside, which will transform business connectivity and people's access to opportunities.

The Industrial Strategy identifies, in response, four Grand Challenges to:

- Put the UK at the forefront of the **artificial intelligence (AI) and data revolution**;
- Maximise the advantages for UK industry from the global shift to **green growth**;
- Become a world leader in shaping the **future of mobility**; and
- Harness the power of innovation to help meet the **needs of an ageing society**.

This chapter identifies the key sectors in the study area and then considers the extent to which the Grand Challenges can be applied and the implications for the future economy and its future connectivity and wider practical needs.

5.2. Key Sectors

The analyses in the previous chapters and Strategic Economic Plans have been reviewed to identify the key sectors across the study area. These are presented, together with potential links to the Grand Challenges, in Table 5-1.

Table 5-1 – Key sectors in the study area

Area	Key Sectors	AI and Data	Green Growth	Future Mobility	Ageing Society
West of England	Advanced engineering and Aerospace	*	*	*	*
	Low Carbon	*	*	*	
	Information and Communication	*			
	Financial and Insurance Services	*			
	Professional Services	*	*	*	
Swindon & Wiltshire	Health and Life Sciences	*			*
	Advanced Manufacturing	*	*	*	
	Financial and Insurance Services	*			
	Digital and ICT	*			
	Land-Based Industries	*	*		
Dorset	Advanced Manufacturing	*	*		
	Financial and Insurance Services	*			
	Creative and Digital	*			
	Healthcare Technology	*			*
	Marine Technology	*	*	*	
Solent	Marine and Maritime	*	*	*	
	Creative industries	*			
	Advanced Technologies	*	*	*	
	Financial and Business Services	*			
	Visitor Economy				

Source: reviews of Strategic Economic Plans and Atkins analysis. Note caveat below.

The reviews of the Strategic Economic Plans (SEPs) have shown that different Local Enterprise Partnerships take different approaches to the identification and categorisation of key sectors. However, there is strong potential growth in the industries of the future, with synergies with the four Grand Challenges.

The LEPs are now in the process of developing Local Industrial Strategies, which will consider how each area should respond to the Grand Challenges. Table 5-1 presents our initial assessment of how key sectors could align with the Grand Challenges but does **not** imply prioritisation of Grand Challenges in each area, which will be progressed through the Local Industrial Strategies. More fundamentally, the UK as a whole needs to address the Grand Challenges and create the new industries and jobs of the future to address these longer-term challenges.

The strong supporting role of artificial intelligence and data analytics in supporting all sectors is particularly notable, with the potential for rapid change, with a greater focus on individual sectors than the other Grand Challenges.

5.3. Artificial Intelligence and Data

Artificial intelligence and machine learning are general purpose technologies that are already transforming the global economy. They are new industries in their own right; they are also transforming business models across several sectors as they apply large datasets to improve ways of working across the wider economy.

The Industrial Strategy highlights that government will make the UK a global centre for artificial intelligence, support sectors in boosting their productivity through data analytics and help people to develop the skills needed for the jobs of the future.

The evidence in Chapter 4 has shown that many parts of the study area are well equipped to respond to the opportunities and challenges of the artificial intelligence and data revolution. There are centres of excellence in digital technology, with highly skilled workers and strong innovation networks to support knowledge transfer.

The Industrial Strategy identifies six priority sectors for artificial intelligence and data: cybersecurity, life sciences, construction, manufacturing, energy and agri-technology. Several of these sectors are strongly represented in the study area and there is potential to transform working practices through new technologies. The city regions already benefit from good digital infrastructure, but improvements will be required in the more rural parts of the study area. However, the biggest constraint is likely to be willingness to adapt by management and employees of organisations, particularly amongst SMEs.

The most direct opportunities will be for businesses in the digital sector itself. There is a strong focus on digital in Bristol, Bath and Bournemouth, with strong potential for growth in these areas. Bristol and Bath already form an established cluster of activity, but Bournemouth operates as a separate entity. By reducing journey times and improving physical connectivity between the urban areas, there is scope to increase the levels of interaction between the two clusters.

There is also a strong presence of military digital capability in Wiltshire, particularly focused in the Corsham area. Owing to the nature of these technologies, it is likely that diffusion of knowledge will be focused within government and its established supply chains. There is, however, a unique ICT infrastructure at Corsham, with strong potential to act as a hub for the growth of technology firms, supported by a deep pool of high-skilled workers living in the area.

Artificial Intelligence and Data also has strong links with the Future of Mobility Grand Challenge, particularly in terms of the development of Connected and Autonomous Vehicles, including the robotics, communications and cybersecurity capabilities in the West of England. It will also be important to consider the role of artificial intelligence and data in developing proposals for improved transport connectivity on the north-south corridor.

5.4. Green Growth

The move to cleaner economic growth through low carbon technologies and the efficient use of resources is highlighted by the Industrial Strategy as one of the most important industrial opportunities of this generation. New industries will be created, and existing industries transformed in the move to a low carbon, more resource-efficient economy.

The Industrial Strategy identifies scope for new smart systems for clean energy, transformation of construction and high-efficiency agriculture. Based on the evidence that is currently available, it is likely that this Grand Challenge would have a more focused role in the study area.

The West of England has a strong focus on clean growth and low carbon technologies, including specialist expertise in nuclear and renewables. The area also strong capabilities in testing of advanced lightweight materials for the transportation sector at the National Composites Centre and testing of advanced propulsion technologies at the Institute for Advanced Automotive Propulsion Systems.

There is also potential for capabilities in other areas, including the automotive sector in the M4 corridor. Dyson is investing in Research and Development facilities near Malmesbury and the Hydrogen Hub, based in Swindon, is leading work on hydrogen fuelling technologies. There is also strong potential for applications of clean technologies in relation to the marine sector on the South Coast.

There is strong potential to develop the agri-tech sector in the corridor. Land-based industries are a priority sector in Swindon and Wiltshire, and agri-tech has been identified as having high growth potential in Dorset. The South West Agri-Tech network identifies several clusters between Bristol and Bath and the South Coast, capitalising on the strong food and drink credentials of the region, together with new technologies that have the potential to transform the future of agriculture. This will also help to drive improved economic performance in the rural areas in Wiltshire and Dorset.

In the case of the construction sector, it is likely that efficiency programmes would be driven by national programmes, although it is important to consider how these could reach the primarily SME-oriented construction businesses in the corridor.

It will also evidently be critical to ensure that future proposals for improved connectivity are consistent with the principles of clean growth, including minimising environmental impacts in landscapes of national importance.

5.5. Future of Mobility

The Industrial Strategy highlights how profound changes could soon take place in how people and goods are moved around towns, cities and the countryside. This is being driven by new innovations in technologies and business models. Significant investments are being made in the electrification and automation of road vehicles, modernisation of rail services and in the development of autonomous aerial and marine transport. New market entrants and new business models, such as ride-hailing services, ride sharing and 'mobility as a service', are acting as major disruptors in travel markets.

There will be clear issues to be addressed in terms of consumer uptake, safety, insurance and regulatory issues, particularly in relation to connected and autonomous vehicles.

There is strong potential for different parts of the study area to take a leading role in the new industries that will develop in response to the Grand Challenge. For example, the SWW SIA (discussed in Section 4.2) highlighted the presence of an automotive and hydrogen corridor following the M4 between Swindon and South Wales.

Businesses and research bodies in the West of England are closely involved in new mobility research. Honda is located in Swindon and Dyson (located near Malmesbury) is pursuing production of electric vehicles, and both require effective access to markets.

The West of England has been the home of several trials of Connected and Autonomous Vehicles, drawing on its competitive strengths in transport research, professional services, robotics and cyber-security. These include the VENTURER, FLOURISH and CAPRI projects, which draw on the capabilities of the Universities (including the Bristol Robotics Laboratory), technology specialists and systems integrators in the area. The area is also home to strategic capabilities in automotive and materials technologies and is drawing on its world-leading aerospace capabilities to develop new products and services in drone technologies. These unique strengths will be captured and addressed in the West of England's Local Industrial Strategy.

The South Coast is home to one of the UK's leading marine technology clusters and there is strong potential to explore the potential role of new mobility technologies in the sector, including autonomous marine transport.

There is also strong potential for different parts of the study area to be at the forefront of the application of new forms of mobility on the transport network. The West of England has a strong track record in the trialling and application of innovative mobility solutions, and other areas, including South East Dorset, are taking a keen interest in the potential for new mobility solutions to help to address their connectivity challenges.

The adoption of 'Mobility as a Service' and new ways in which people travel have the potential to radically change car ownership models in the future. These changes are likely to be initially focused on the urban areas, including Bristol, where alternatives to the car are more developed. However, these changes in models of car ownership have the potential to extend to smaller towns and rural areas in the longer term, which will influence future patterns of car use. These changes will need to be taken into account in planning of future infrastructure in the corridor.

The corridor also offers the opportunity to include the implementation of fibre along its route, which will both increase digital connectivity along the corridor and future-proof infrastructure for future technological developments

Highways England is considering the types of vehicles that will be using its network in the medium to longer term. This includes the potential to transform the efficiency of its network through the use of Connected and Autonomous Vehicles in the smart motorways environment. Motorways are controlled environments and it will be much more difficult to apply these technologies on non-motorway roads. However, it will be important to consider the future-proofing of new infrastructure for the major disruptive forces in mobility forecast over the next twenty years.

5.6. Ageing Society

The UK population is ageing, as it is across the industrialised world. This will mean that there is a need to develop new products and services for the growing global population of older people, support sectors to adapt to a changing and ageing workforce, use health data to improve health outcomes and support care providers to adapt their business models.

There are clear challenges of an ageing population in the study area: Section 2.2 demonstrated that there will be an increasing gap between the total and working age populations, with rapid growth in the numbers of older people. The growing numbers of older people will result in increased demand for public services and changing demands in the wider economy.

This will bring economic opportunities in the study area. In the West of England, robotics and systems capabilities are increasingly being used to respond to the needs of older people. For example, the recent trials of Connected and Autonomous Vehicles have been considering how these vehicles could improve mobility and tackle isolation for older people.

In Dorset there is a strong focus on health services and technologies that will support living well for longer. There is growing interest from the pharma, biotech and digital sectors, together with development of R&D capabilities (including a 'living lab') to develop digital and physical healthcare products in the area, which will help to support the needs of older people.

This corridor is already home to relatively large numbers of older people and their numbers will grow rapidly over the next 20 years. There is also a strong capability to meet the future needs of older people, including supporting care and independence through robotics capabilities (in the West of England) and healthcare technologies (in South East Dorset). There is a clear opportunity to align these capabilities with the needs of people living in the corridor.

The development of future transport solutions for the North-South corridor should also take account of future demographic changes and the needs of the population. This should include planning for both the active labour market, to support future economic growth, and the needs of older people living in the corridor. This will help to ensure that future transport solutions support wider objectives for tackling isolation and improving social inclusion.

5.7. Grand Challenges and Connectivity

The four Grand Challenges will play a key role in shaping the future economies in the corridor and are being captured in the Local Industrial Strategies for each area. The evidence indicates that there is potential for strong functional relationships between the clusters in AI and data across the corridor, with more focused roles in each area for the other three Grand Challenges. Effective connectivity will be critical in supporting the growth ambitions of the industries that will drive future growth in the corridor.

Connectivity is both physical – in terms of transport links – and increasingly digital. **Digital connectivity** will be increasingly important to the future prosperity of different areas in the corridor. Whilst Bristol and Bath benefit from high-capacity digital connectivity, further enhancement will be critical to meet the needs of the future 5G economy, including the needs of the digital economy and supporting future mobility solutions, including Connected and Autonomous Vehicles.

At the same time, it will be necessary to improve basic digital connectivity in the more rural areas to support the needs of rural economies, including facilitating digital delivery of services in more isolated areas. Examples include new forms of patient consultation (through skype), which could help to reduce the need to travel to GP appointments.

The focus of this study is on the role of transport connectivity in supporting the Productivity Foundations and Grand Challenges. These issues will need to be explored in much more detail in the forthcoming Local Industrial Strategies, but the initial review indicates that this should include:

- The role of **artificial intelligence and data analytics** in developing smart travel solutions for the north-south corridor, including using data to fully understand travel needs and optimise future infrastructure proposals;
- Ensuring that the principles of **clean growth** and the highest levels of environmental protection and enhancement are taken into account in developing the north-south transport strategy;
- Ensuring that the demographic needs of different parts of the corridor are reflected in the strategy, including taking account of the needs of an **ageing society** as well as the active workforce; and
- Ensuring that the strategy is future-proofed for **future mobility needs**, including consideration of the impacts of new models of car ownership and the arrival of connected and autonomous vehicles.

6. Conclusions

6.1. Introduction

This chapter draws together the evidence and findings from the previous chapters, identifies conclusions and sets out the proposed next steps.

It first sets out the **economic potential** of the corridor before discussing the **economic challenges**. It provides detailed evidence under each of the five foundations to explore the **factors that are holding back the potential of the corridor, including the impacts of poor north-south connectivity**. It also discusses how the corridor could support delivery against the Grand Challenges and presents recommendations for the next steps of work.

6.2. This corridor has potential for significant growth over the next two decades

The study area has grown strongly during the last decade and has capacity for strong growth over the next two decades, with the potential to play a very strong role in the future UK economy.

A growing population: this corridor has recently experienced stronger population growth than the rest of country. Forecast growth in the corridor is also forecast to be stronger than in the rest of the country. Population growth will be primarily concentrated within the city regions: Bristol and West of England, South East Dorset and Southampton / Solent area. The growth in working age population, which will be critical for sustaining economic growth, is forecast to be higher than the national average, and is also likely to be concentrated in the main urban areas.

A growing economy: this corridor has experienced significantly stronger employment growth than the rest of country. Employment growth has been strongest in the city regions: Bristol / West of England South East Dorset and Southampton, whilst employment has slightly reduced in the more rural areas. This is likely to continue in the future and reflects the forecast growth in working age population in the city regions and much lower growth (or reductions) in working age population in the more rural areas.

Employment structure: overall, the corridor has a similar economic structure to the rest of the country in terms of the proportions of people working in different sectors. However, this masks significant differences across the corridor, with strong representation of business services in the city regions, an important visitor economy on the coast and a greater focus on primary activities in the more rural areas of Wiltshire and Dorset.

Economic output: there are distinct characteristics of this corridor when examined through the lens of economic output. Certain sectors have significantly greater impact, when measured by GVA, in different parts of the corridor. There are strong clusters of manufacturing in Swindon, logistics in the Solent area, professional services in Bristol and financial services in Bournemouth. This demonstrates the diversity of the economy of the study area, which strong potential for growth from the diverse economic base.

The importance of connectivity: global research, including evidence from Highways England, demonstrates the critical importance of the strategic and major road network to the UK economy. It demonstrates that the road network is importance in helping to improve business productivity, facilitate exports through access to international gateways and help to unlock the delivery of new homes and jobs.

The evidence demonstrates the importance of the road network in providing access to the Ports of Southampton and Poole and it plays a key role in supporting the logistics and manufacturing sectors and the visitor economy of the region.

Growth potential in the corridor: there is strong potential for growth in the economy of the study area, in terms of overall population, labour market, employment and total GVA. The most critical challenges will be in ensuring the availability of a suitably skilled workforce and enhanced connectivity to unlock this potential for sustainable and inclusive growth. This will be a strategic challenge that must be addressed over the next ten to twenty years.

6.3. … Major challenges must be addressed over the medium to long term

There are a number of economic challenges in the corridor, as evidenced by data on local competitiveness, educational attainment, employment indicators, productivity and local workplace earnings.

Competitiveness: there is significant variation in relative competitiveness across the study area. The most competitive areas are focused around the larger city regions (West of England and Solent) and other locations with good strategic road and rail connectivity. There is much lower competitiveness in the rural and more remote areas with poor strategic connectivity. Many of the more peripheral areas also experienced a reduction in competitiveness to 2016. This appears to reinforce the impression of different speed economies across the study area.

This is a practical reality of the geography of the region: different parts of the region perform different roles, as villages, market towns, cities and international gateways. Each area faces different challenges and specific obstacles to good growth, which include schools and educational attainment, higher education institutions, R&D-focused firms, growing firms employing talented people, affordable housing and effective place planning.

Employment indicators: the study area, overall, is performing better in employment terms than the national average, but there are significant variations, with notable challenges across several indicators in certain areas including Southampton, Bournemouth, West Dorset, North Dorset and Mendip.

Productivity: there are significant disparities in productivity across the study area, with the lowest productivity (and relative declines in productivity) in Wiltshire, Bournemouth & Poole, Dorset and Somerset. These patterns show a clear correlation with the competitiveness data for different districts.

Earnings: overall wages are broadly similar to the average for England outside London, for both workplace and resident wages. However, this masks significant differentials between Districts in the study area: the lower wages in more rural areas are consistent with the lower overall competitiveness ratings and productivity in these areas. There is, therefore, a strong case for improving economic performance to facilitate inclusive growth across the corridor.

6.4. There are linked causes: these are the foundations for unlocking local growth

There is a clear rationale to tackle the bigger picture and address the five Foundations that drive local growth. These are all closely linked and relate to innovation and ideas, people and skills, the local business environment, places and regional infrastructure.

Innovation and Ideas: innovation and ideas are critical to driving productivity and 'good growth[5]' in the economy, particularly with the increased focus on digital technologies. There are significant variations in the innovation capacity in different parts of the study area. R&D investment, proportions of people working in science and technology and the proportions of people with higher-level qualifications are significantly higher in the West of England, Swindon & Wiltshire and Solent than in Dorset and Somerset.

The higher levels of innovation activity are in areas with more skilled people, deeper business connections and improved connectivity. Innovation networks in the South West are enabled by good connections along the M4 and M5, with activity in South East Dorset and the Solent enabled by road and rail links to London and the Midlands. There appears to be limited networking of innovation activities in the north-south corridor, which is likely to be due to different economic structures in the different areas, but poor connectivity being one of the potential constraints.

People: higher-level qualifications and STEM skills will be important in meeting the needs of the future economy which have been demonstrated within the sphere of the Grand Challenges', however, there are significant variations across the study area. There are low levels of educational attainment in Southampton, Poole, Purbeck and North Dorset. 'Coldspots' of educational attainment are not limited to the urban areas: there are also

[5] Good growth is based on the principle of well-paid jobs that enable people and families to afford decent housing and contribute to successful and safe communities with good educational standards, and a climate that enables firms to grow and invest in the development of their staff and capital stock and drive productivity improvements.

significant challenges in places such as Trowbridge and Gillingham. There is also clear evidence that labour markets are influenced by poor connectivity in the region, with significantly narrowed travel horizons for people earning lower wages.

Business environment: the region has a relatively high proportion of 'laggard' businesses which are not growing, competing internationally or exporting. These businesses are characterised by low productivity and they are dragging-down the performance of the area. The greatest challenges with low productivity are focused amongst SMEs, in production, manufacturing and distribution in Dorset and financial services in Wiltshire. This appears to be directly related to the relative peripherality and costs of servicing the rural areas. 5G technologies, if effectively developed and delivered, could help to tackle some of the issues that rural businesses and professionals face in these areas over the medium term.

Higher productivity activities are focused around the main urban areas, which attract higher-value sectors, larger employers (that drive better business practices) and higher productivities through clustering of activities. This demonstrates that there is a strong relationship between road connectivity and the ability to attract and grow businesses, the representation of different sectors and business performance in the corridor.

Places: the study area has a number of strengths under the 'Places' foundation, with generally very high quality of life and innate strengths. Many areas have very high house prices, which reflect their attractiveness to high-paid workers but also strong growth pressures in these areas.

The area is an attractive destination for businesses and residents, meaning that there is strong forecast growth in both population and jobs. It will be critical to plan effectively for this growth, including provision of effective infrastructure to facilitate sustainable travel choices and mitigate the effects on existing communities and for developers to help local government invest in wider capital and social infrastructure such as highways and schools.

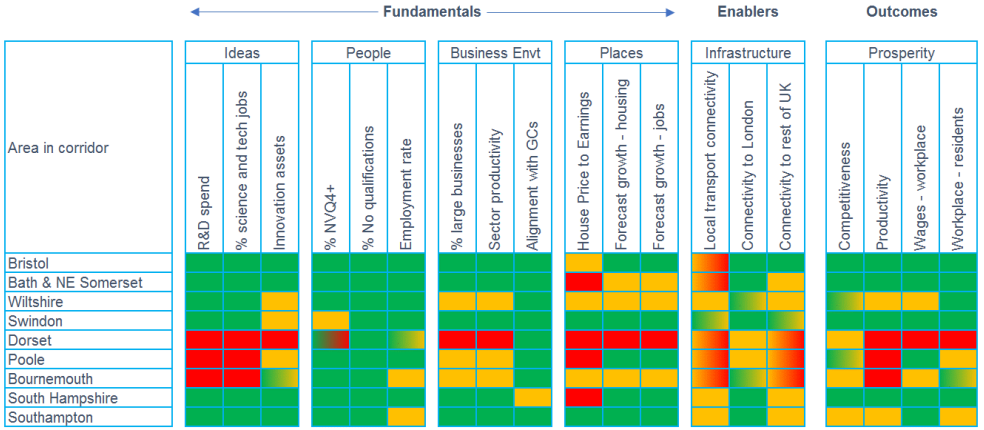
The evidence also shows that many parts of the area perform well in terms of quality of life, with a high-quality environment, good health and high levels of educational attainment. However, there are challenges in the urban areas, which will require a coherent approach to planning for inclusive growth to tackle deprivation and worklessness which undermines the wider economy and social inclusion.

Infrastructure: there are clear connectivity challenges on the major north-south routes through the study area. Average journey speeds on the A36 are only slightly higher than 30mph and lower than 30 mph on the A350. These compare with typical journey speeds on the Strategic Road Network of around 60 mph. This means that journeys typically take twice as long as many journeys on most major routes connecting major towns and cities across England. These slow journeys are contributing to the problems of peripherality in large parts of the region.

This is creating problems in labour markets across the region, with fragmented travel to work areas and narrow areas of search for employment opportunities. It is adding to business costs and reducing productivity, particularly in the rural areas, and is constraining the ability to grow and attract new businesses. Congestion problems are also a significant factor in planning for new housing and employment growth in the corridor.

These challenges are inter-linked and constrain the economic potential of different parts of the corridor. Figure 6-1 summarises these challenges.

Figure 6-1 – Summary of economic challenges



Source: Atkins analyses.

This shows clear relationships between the Foundations and economic outcomes in each area. All of the Foundations must be addressed in tackling the productivity challenges and supporting 'good growth' in the corridor. There are different issues between areas:

- In Bristol and Bath, the most critical issues relate to addressing housing shortages and tackling local transport connectivity;
- In Wiltshire, this shows a need to enhance local innovation assets, support higher-value businesses, support housing and employment growth and improve local and strategic connectivity;
- In Dorset, Bournemouth and Poole, there are several significant challenges, including local and strategic connectivity, all of which impact on the prosperity of the sub-region.

6.5. The corridor will play a key role in addressing the Grand Challenges

The corridor has strong potential to support the UK's four Grand Challenges:

- **Artificial intelligence and data:** many parts of the corridor are well equipped to respond, including the digital cluster in South East Dorset, robotics, cybersecurity and data cluster in the West of England and growing strengths of the ICT cluster in Corsham. These capabilities will be central to the development of the future economy of the corridor.
- **Clean growth:** this also shows strong potential, including new vehicle propulsion technologies in a belt from the West of England to Swindon, agricultural technologies supporting the rural areas of Swindon and Wiltshire and marine technologies on the South Coast.
- **Ageing society:** the corridor is home to clusters of activity focused on robotics (in the West of England) and digital and physical healthcare technologies (in South East Dorset) to support care and independence of older people. There is a clear opportunity to align these capabilities with the needs of the older people living in the corridor.
- **Future of mobility:** the corridor is already a leader in Research and Development in future mobility, including trialling of connected and autonomous vehicles in the West of England, activity being led by Honda and Dyson in Swindon and Wiltshire, and the planned implementation of innovative mobility solutions in South East Dorset.

The four Grand Challenges will play a key role in shaping the future economies in the corridor. The evidence indicates that there is potential for strong functional relationships between the clusters in AI and data across the corridor, with more focused roles in each area for the other three Grand Challenges. Effective connectivity will be critical in supporting the growth ambitions of the industries that will drive future growth in the corridor.

6.6. … Connectivity plays a critical role

Transport connectivity plays a critical role in constraining the economic performance of the study area, through the mechanisms described in Chapter 1 and the Foundations described above. North-south connectivity is a critical issue for the study area.

Figures 6-2 to 6-5 draw on the evidence from this report to describe how transport connectivity in the north-south corridor enables or constrains the Foundations. These include:

- **Innovation and ideas:** transport connectivity facilitating or constraining dissemination of innovation through the corridor;
- **People:** transport connectivity facilitating or constraining the effective operation of labour markets to meet the needs of business;
- **Business environment:** transport connectivity facilitating or constraining business activity, including connecting to markets and supply chains;
- **Place:** transport connectivity facilitating or constraining sustainable growth, including housing to support growing labour markets and employment floorspace for growing businesses.

In each case, red/amber/green ratings have been used to assess the extent to which transport connectivity acts as a constraint.

Figure 6-2 describes the impacts of poor north-south connectivity on the labour market and the **ideas** foundation.

Figure 6-2 – Transport connectivity and ideas

Area	Role of transport connectivity in enabling / constraining dissemination of ideas and innovation.	
Bristol		The Bristol area is home to a dense innovation ecosystem but urban congestion will reduce future efficiency of dissemination of ideas.
Bath & NE Somerset		Congestion (in Bath and the A4 corridor) could reduce the effectiveness of future innovation linkages with Bristol.
Wiltshire		Congestion could reduce the effectiveness of innovation linkages in the A350 corridor and to Bristol and Bath.
Swindon		Good strategic connectivity by road and rail facilitating innovation linkages on E-W corridor with Bristol and Bath.
Dorset		Poor strategic connectivity is impeding access to innovation assets in other parts of the region and UK.
Poole		Poor strategic E/W and N/S connectivity is impeding access to innovation assets in other parts of the region and UK.
Bournemouth		Poor strategic N/S connectivity is impeding access to innovation assets in other parts of the region and UK.
South Hampshire		Good connectivity to London, M3 and Thames Valley innovation hubs. Poor linkages with Bristol and Bath hubs.
Southampton		Good connectivity to London, M3 and Thames Valley innovation hubs. Poor linkages with Bristol and Bath hubs.

Poor north-south strategic links are causing challenges for Dorset, Poole and Bournemouth in accessing innovation assets in other parts of the region and UK. In Bristol and Bath, the challenges are more focused on reducing the effects of congestion on the dense innovation clusters, and in Wiltshire the challenge is maximising linkages to Bristol, Bath and along the A350 corridor.

Figure 6-3 describes the impacts of poor north-south connectivity on the labour market and the **people** foundation.

Figure 6-3 – Transport connectivity and people

Area	Role of transport connectivity in enabling / constraining the operation of the labour market.	
Bristol		A large labour market with matching of labour supply and demand but there are significant problems caused by congestion.
Bath & NE Somerset		Labour market draws on West Wiltshire: significant congestion problems constrain the depth of the labour market.
Wiltshire		Different labour markets for West Wiltshire and Salisbury. Fragmentation is due in part to poor strategic connectivity.
Swindon		Deep labour market for Swindon, facilitated by good E/W strategic road and rail connectivity.
Dorset		Fragmented labour markets caused by poor N/S strategic connectivity and long journey times.
Poole		Constrained labour market caused by poor E/W and N/S connectivity and urban congestion.
Bournemouth		Labour market draws on good connections to the east, but is also impacted by constrained N/S connectivity and urban congestion.
South Hampshire		Relatively deep labour markets due to good strategic road/rail connectivity, but there are challenges with congestion on key routes.
Southampton		Relatively deep labour markets due to good strategic road/rail connectivity, but there are challenges with congestion on key routes.

Poor north-south strategic links are causing challenges for Dorset and Poole in constraining the depth of skilled labour markets to meet business needs. In Poole, these challenges are exacerbated by the effects of traffic congestion. Poor strategic connectivity also causes fragmentation of the labour markets in Wiltshire. In Bristol and Bath, the main challenge is congestion, both within the

cities and in terms of connections from surrounding areas, including the towns in western Wiltshire.

Figure 6-4 describes the impacts of poor north-south connectivity on the labour market and the **business environment** foundation.

Figure 6-4 – Transport connectivity and business environment

	Role of transport connectivity in enabling / constraining business activity.	
Bristol		A deep business ecosystem, with strong connections to other cities. Congestion adds costs to businesses in the city region.
Bath & NE Somerset		Strong business connections in E-W corridor. Congestion in city and A4 increase costs to businesses.
Wiltshire		Concentration of businesses in A350 corridor. Congestion and long journeys increase costs to businesses in the corridor.
Swindon		Strong business connections in E-W (M4 and rail) corridor. Relatively low levels of congestion support competitiveness of businesses in the town.
Dorset		Dispersed business base, with poor connections to markets and urban areas, and long journey times on the N/S spine, which impact on competitiveness.
Poole		Strong business clustering in SE Dorset, but congestion and poor access to London and rest of UK impact on competitiveness.
Bournemouth		Strong business clustering in SE Dorset, but urban congestion and poor access to rest of the UK impacts on competitiveness.
South Hampshire		Congestion increases business costs but the area benefits from its role as a gateway with good access to London, South East and Midlands.
Southampton		Congestion increases business costs but the area benefits from its role as a gateway with good access to London, South East and Midlands.

Poor north-south strategic links are creating challenges for the business base in Dorset. The long journey times to other parts of the UK mean that businesses are relatively isolated from supply chains, collaborators and markets. This means that it is difficult to attract larger businesses, and the business base is likely to be focused more localised markets. This directly impacts on productivity and the economic performance of the area.

Wiltshire benefits from a stronger agglomeration of activity in the A350 corridor between Warminster and Chippenham, but the challenges of congestion and long journey times impact on the performance of businesses in the area. In the case of Bristol and Bath, businesses benefit from deep clusters and innovation ecosystems, which drive strong performance, although congestion is increasingly impacting on business costs and agglomeration.

Figure 6-5 (overleaf) describes the impacts of poor north-south connectivity on the labour market and the **place** foundation.

This shows different dynamics to those for ideas, people and business environment. The most significant transport constraints are in the urban areas, which have strong growth potential but experience constraints to development caused by congestion on the road network.

Bristol and Bath have strong potential for growth, but there are congestion constraints on sub-regional corridors and in Bath itself. Interventions will need to focus on mode shift and tackling specific congestion hotspots. Poole and Bournemouth also have strong growth potential, but this will again be constrained by capacity in the transport network. Interventions will again need to focus on mode shift and new infrastructure to support the growth ambitions.

Wiltshire has a strong focus on growth in the A350 corridor, particularly in Chippenham and Trowbridge. This will require strategic interventions to provide capacity to support planned growth in these settlements, together with further planned growth in Melksham and Westbury. In the case of Dorset, significant planned growth in both Shaftesbury and Blandford will increase congestion on the A350 on the edges of the towns, with investment required to mitigate the effects of congestion.

Figure 6-5 – Transport connectivity and place

Area	Role of transport connectivity in enabling / constraining sustainable development
Bristol	Very strong growth potential. Congestion on strategic corridors will constrain development potential without new infrastructure.
Bath & NE Somerset	Strong employment growth potential but limited new housing in Bath. Congestion in the city will constrain its capacity for growth.
Wiltshire	Strong growth potential in A350 corridor. Congestion at key locations will constrain development potential without new infrastructure.
Swindon	Very strong growth potential. Congestion to the east, south and west of the town will constrain development potential without new infrastructure.
Dorset	Growth will be distributed between main towns. Congestion in towns will constrain development potential without new infrastructure.
Poole	Very strong growth potential. Congestion in the town and on key routes will constrain development potential without new infrastructure.
Bournemouth	Strong growth potential. Congestion in the urban area will constrain development potential without new infrastructure.
South Hampshire	Very strong growth potential. Congestion on strategic corridors will constrain development potential without new infrastructure.
Southampton	Very strong growth potential. Congestion on strategic corridors will constrain development potential without new infrastructure.

6.7. Objectives and impacts of improved north-south connectivity

The evidence in this report demonstrates that improved north-south connectivity would support sustainable economic growth in the corridor. The underlying conditions are in place, with a growing population and strong latent potential for growth in employment and GVA. The key challenge is to tackle the issues that are constraining productivity, competitiveness and growth, as described through the five Foundations.

Improved connectivity will support each of the Foundations in their own right, which in turn helps to shape potential **objectives** for the corridor:

- **Innovation and ideas:** significantly reduce journey times between the innovation clusters in the corridor, which will facilitate greater interaction and knowledge spillover, and this in turn will help to drive business efficiencies, reduce costs and increase productivity;
- **People:** increase the depth of the labour markets, to provide businesses with access to larger pools of skilled workers and support access to economic opportunities. This will be important given the constraints on the size of the working age population in the more rural areas;
- **Business environment:** improve access to markets and supply chains, which will help improve the competitiveness of existing businesses, encourage new business creation and support inward investment by larger businesses into the area;
- **Place:** provide increased transport capacity to accommodate the needs of a growing population and economy, to support the delivery of more housing and increased (and more diverse) employment floorspace.

Through these individual drivers, improved connectivity would also support the continued growth of key sectors and enable the area to respond effectively to the economic opportunities associated with the Grand Challenges.

These individual factors also have the potential to work together, through a virtuous circle, to support the economic transformation of the study area. The evidence indicates that these benefits would be greatest in Dorset, which

currently experiences the most significant economic challenges, but benefits would also be experienced in Wiltshire and the West of England.

6.8. Recommendations

This study has shown that the corridor is very diverse, with different economic drivers in different areas. It demonstrates that it will be necessary to take a holistic approach to economic development in the corridor, based on the principles of supporting 'good growth' and addressing all of the productivity foundations.

This will include actions to enhance access to innovation assets, tackle challenges with education and training, improve performance amongst SMEs and businesses in certain sectors and proactively support growth.

Transport connectivity plays a critical role, in each area and in strongly influencing diffusion of innovation, sub-regional labour markets, business linkages and the ability to proactively respond to growth opportunities. Failure to tackle the strategic transport challenges will constrain the ability to address the economic fundamentals in the corridor.

It is recommended that a strategic study is undertaken during the period covered by the second Road Investment Strategy (RIS2). This should include:

- More detailed analysis of the economic evidence, to quantify the scale of the productivity gap caused by skills, innovation, business practices and strategic connectivity;
- More detailed analysis of the transport issues, including travel demands, journey times, congestion and delays, both at present and in the future;
- Consideration of different future scenarios, taking account of different growth projections and testing the potential implications of different mobility futures;
- Identification of the critical transport challenges in the corridor, based on the above analyses, considering both symptoms and root causes of the challenges;
- Development of agreed objectives for improving connectivity, based on addressing the challenges, to help inform the identification of potential options for improving connectivity in the corridor;
- Identification, sifting and shortlisting of potential options, based on performance against a series of key metrics, which should include the environmental constraints in the corridor;
- Development and testing of more detailed options, including transport modelling, initial economic appraisal, costing and environmental appraisal; and
- Development of a recommended package, to demonstrate the strategic and economic case for investment in the corridor.

The strategic study should provide an evidence base to help the case for investment in the corridor, and support further development work, both by Highways England (in relation to the Strategic Road Network) and the local authorities, in developing their pipeline for the Major Road Network.

The evidence from this study strongly demonstrates that poor north-south connectivity is significantly constraining the economic performance of the South of England. This poor connectivity is compromising the ability of the area to support delivery of the UK Industrial Strategy. There is clear evidence that improved connectivity would support all five Foundations of the Industrial Strategy.

It is therefore recommended that a strategic study is undertaken as part of the second Road Investment Strategy. This will be a critical step in the development of the strategic investment case and prioritisation of resources across the area.

Appendix A. Growth Forecasts

A.1. Introduction

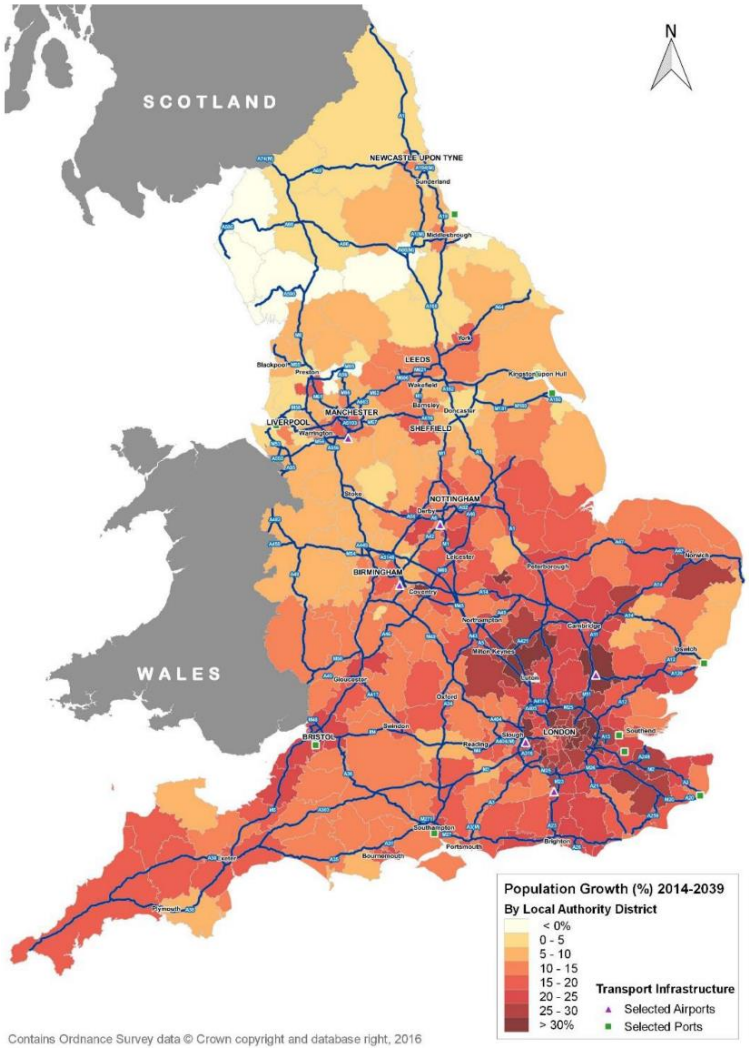
This technical appendix provides background detail on growth forecasts for population, employment and GVA from work undertaken by Highways England for its Strategic Economic Growth Plan ('The Road to Growth'). It shows particularly strong growth in the study corridor.

Section A.1 presents population forecasts, A.2 presents employment and GVA forecasts for the whole economy, and A.3 presents forecasts for 'SRN-dependent' sectors, which are particularly dependent on effective road connectivity.

A.2. Population Forecasts

The population growth forecasts prepared for Road to Growth are shown in Figure A-1. This shows that there will be strong population growth, particularly in Bristol and South Gloucestershire, but with strong growth also forecast in the South East Dorset urban area and at Southampton.

Figure A-1 – Forecast population growth in England 2015-2030



Source: Socio-economic analysis, future forecasts and the strategic road network, Highways England, Nov 2016.

A.3. Employment and GVA Forecasts

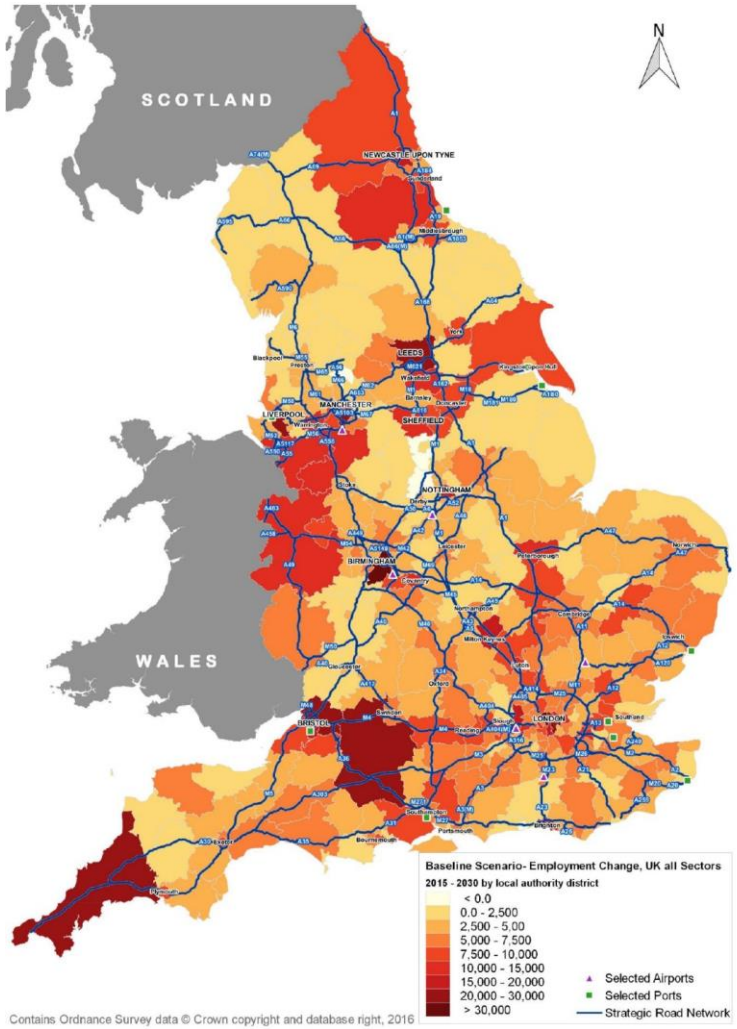
The forecasts of growth in employment and GVA are shown in Figures A-2, A-3 and A-4. This highlights comparative economic performance between areas, but not productivity which is measured by hours per worker earned.

Figure A-2 shows the total forecast employment growth, at local authority level, across England between 2015 and 2030. As expected, the largest absolute increases are forecast in the authorities with the largest populations and existing economies. In the study area, the largest increases are forecast in Bristol, South Gloucestershire and Wiltshire, which reflect their current economic scale.

Figure A-3 (on the next page) shows the percentage growth in employment compared to the 2015 base. The study area is forecast to experience some of the strongest growth in England, across the West of England, Wiltshire, much of Dorset and the Solent area. This confirms the strong underlying employment growth potential across the study area.

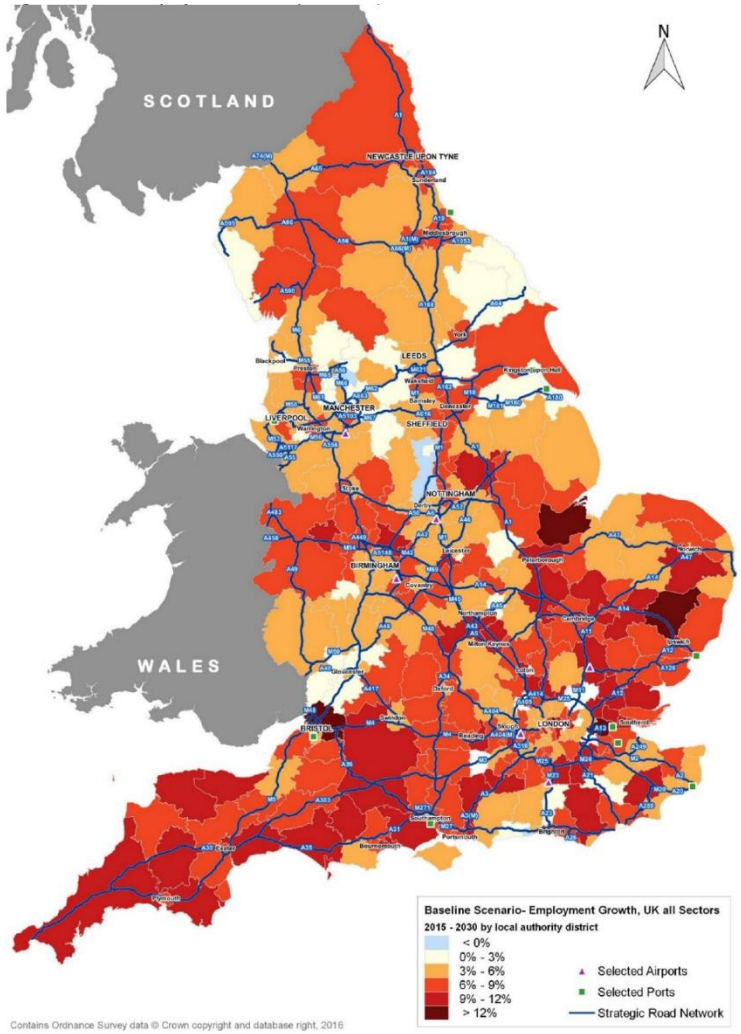
Figure A-4 shows percentage growth in GVA across England between 2015 and 2030 using the same Highways England data. This again shows that there will be strong growth in GVA across the study area.

Figure A-2 – Forecast employment growth in England 2015-2030



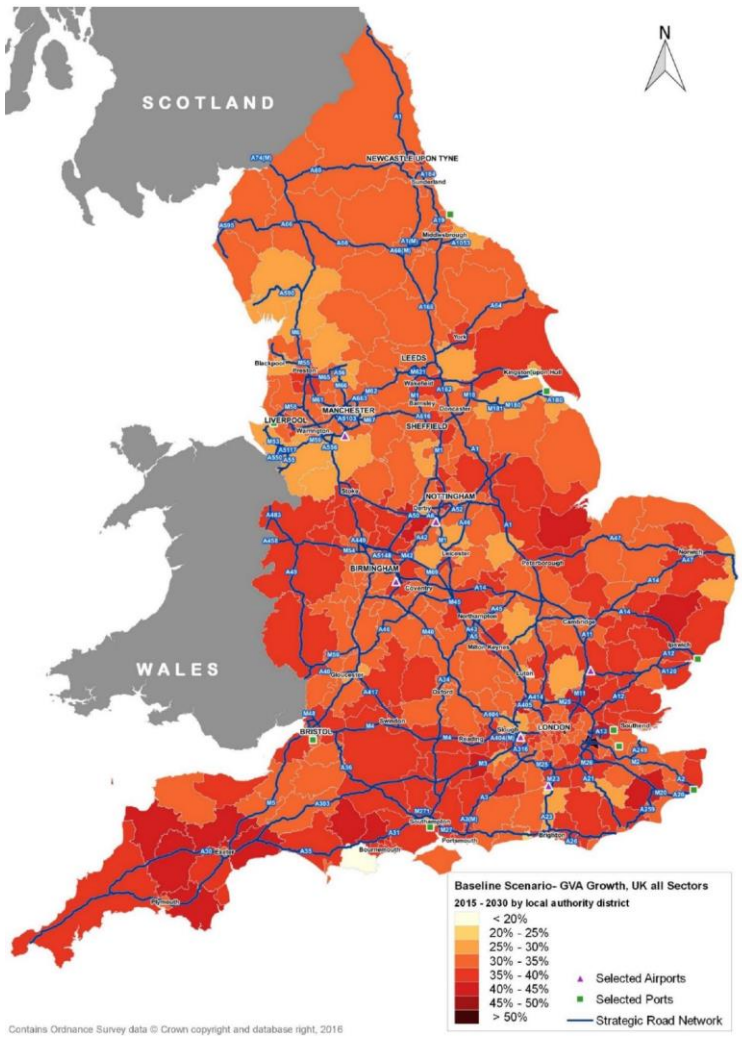
Source: Socio-economic analysis, future forecasts and the strategic road network, Highways England, Nov 2016.

Figure A-3 – Forecast % employment growth in England 2015-2030



Source: Socio-economic analysis, future forecasts and the strategic road network, Highways England, Nov 2016.

Figure A-4 – Forecast % GVA growth in England 2015-2030



Source: Socio-economic analysis, future forecasts and the strategic road network, Highways England, Nov 2016.

A.4. Forecasts for SRN-Dependent Sectors

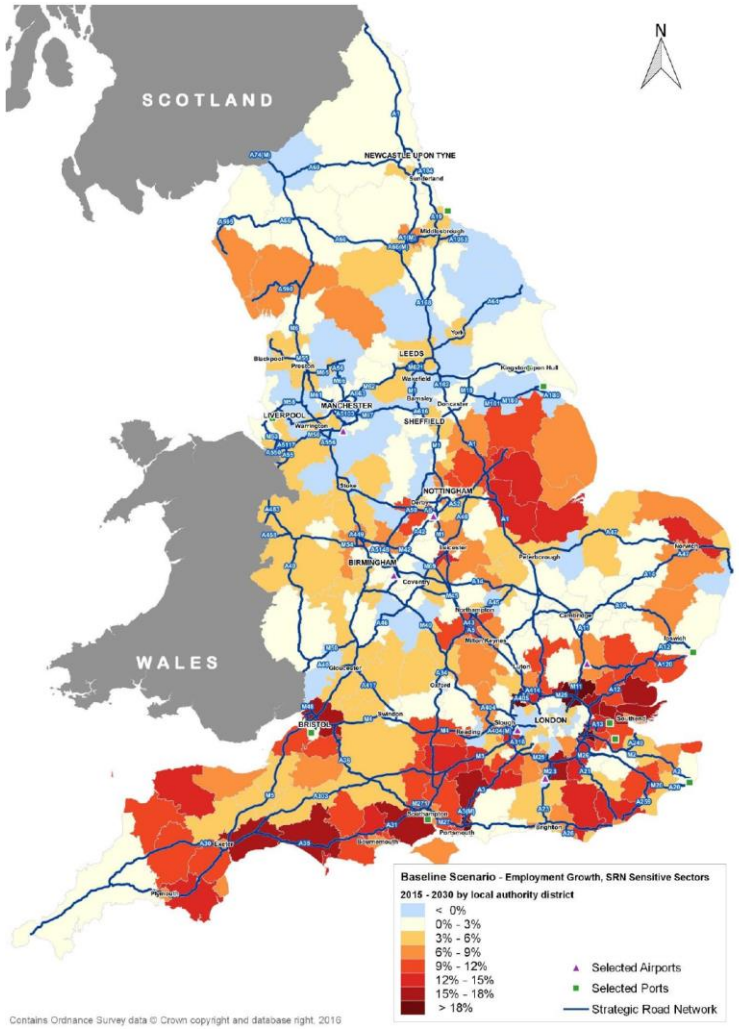
The maps in this section show forecast growth in employment and GVA in 'SRN-dependent' sectors. These have been defined based on the proportion of costs spent on transport include the following sectors:

- Land transport;
- Retail and wholesale;
- Primary materials;
- Manufacturing – users of transport services; and
- Construction.

Figure A-5 shows the forecast percentage growth in employment in the SRN-dependent sectors. It shows particularly strong growth in the West of England and along the coastal area through Dorset to the Solent.

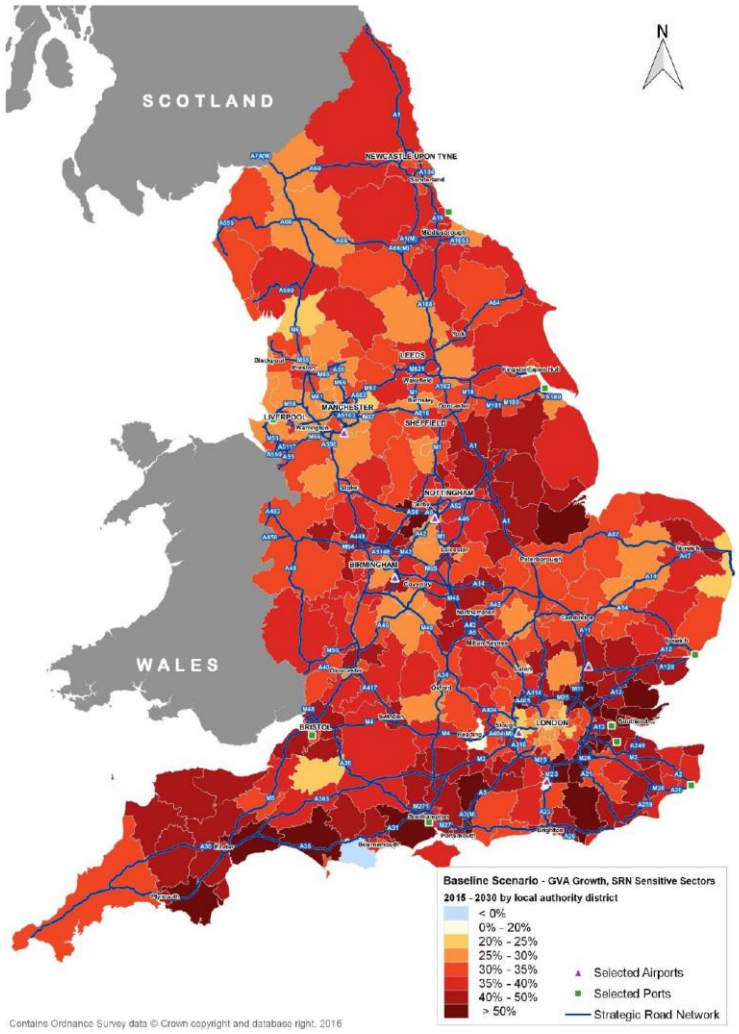
Figure A-6 shows the forecast percentage growth in GVA in the SRN-dependent sectors. It again shows strong growth in the West of England and along the coastal area from West Dorset to the Solent.

Figure A-5 – Forecast % employment growth in SRN sectors 2015-2030



Source: Socio-economic analysis, future forecasts and the strategic road network, Highways England, Nov 2016.

Figure A-6 – Forecast % GVA growth in SRN sectors 2015-2030



Source: Socio-economic analysis, future forecasts and the strategic road network, Highways England, Nov 2016.

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